Final Transportation Impact Analysis for the Northwest Rocklin Area General Development Plan

Prepared for
City of Rocklin

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FEHR & PEERS

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EXECUTIVE SUMMARY

This study analyzes the transportation-related effects of several approved and potential land use changes within the Northwest Rocklin Area (NWRA). This study compares the average daily trip generation associated with the approved and potential land use changes to the maximum daily trip cap established as part of the original approval of the NWRA General Development Plan (GDP) in 2002. The study then evaluates whether the approved and potential land use changes would result in intersection operations that meet applicable level of service (LOS) policies from the *City of Rocklin General Plan* (2012).

BACKGROUND

The portion of the NWRA under study is generally bounded by SR 65 on the west, Wildcat Boulevard on the east, the Rocklin/Lincoln City Limits on the north, and Sunset Boulevard on the south. The *Northwest Rocklin General Development Plan* (2002) generally referred to this area as the "Highway 65 Corridor Planning Area" consisting of development areas 104 through 116 on its zoning map. These properties were granted a maximum daily trip cap of 77,043 trips, which is the level of traffic expected to maintain acceptable operations on the City's roadway system. Traffic volumes generated by these properties may only exceed the trip cap if a supporting traffic study demonstrates that all intersections and roadway segments will continue to operate acceptably with the increase in trips. The land use allotments on certain properties represent less than their full buildout potential.

The City of Rocklin recognizes that limiting the development potential of NWRA properties may pose certain marketing and economic disadvantages. Additionally, given that intersections in the vicinity were shown in the *City of Rocklin General Plan Circulation Element* (2012) as operating at LOS C or better under cumulative conditions, the intersections may have additional reserve capacity to accommodate more traffic.

The 2012 General Plan Update and subsequent land use amendments intended to implement the City's 2013 Housing Element were primarily "downzones" from Retail Commercial, Business Professional and/or Industrial land uses to a Mixed Use (MU) category that introduced the potential for high density residential uses as either standalone uses or in combination with non-residential development. (i.e., 2012 GP Update - Sites 2, 3, 10, 107B, 108B and 110A and B went to MU; Site 1 outside of the study area went from BP to HDR; Site 22 outside of the study area went from HDR to MDR; Site 113B went from LI to MU). Some sites designated as MU in 2012 were also recently redesignated as Medium High Density Residential (MHDR) – Sites 108B and 110A and B as part of the Spring Valley Development proposal. Refer to Appendix A for map of sites.

Therefore, the City has requested that Fehr & Peers update the analyses originally conducted for the NWRA GDP using updated travel demand models, changes in background roadway improvements and land use assumptions, and approved and potential changes in land uses on several of the NWRA GDP properties.

The City has also reconsidered whether some of the locations where the Mixed Use (MU) designation was applied should be converted back to Retail Commercial (i.e., 6.6 acres on the Whitney Ranch Parkway frontage of Site 2) and/or entirely High Density Residential 22 units per acre (i.e., Site 3 - 12 acres just outside the study area and fronting on Whitney Ranch Parkway west of Wildcat). There is also the possibility that up to 20 percent of the 17.7 acre Mixed Use site west of William Jessup University could be considered for High Density Residential/22 units per acre rather than a mix of 50 percent office and 50 percent retail commercial. Those changes have not been formally made at this time, but are contemplated in modeling of Scenario 1A presented in this study should the City wish to pursue them.

PROJECT DESCRIPTION

Table ES-1 summarizes the permitted land uses (by type) under the NWRA GDP. This table also shows the approved and potential land use changes being analyzed in this study. As shown, the approved and potential land use changes would result in substantially more retail and less industrial, along with the introduction of new residential and additional William Jessup University (WJU) students to the area.

TABLE ES-1:
NWRA GDP PERMITTED AND APPROVED AND POTENTIAL LAND USES

NWRA GDP Scenario	Office (KSF)	Retail (KSF)	Light Industrial (KSF)	Single Family Dwelling Units (DU)	Multi-Family Dwelling Units (DU)	University Students
Permitted 2008 GDP Trip Cap Land Uses [1]	1,373	1,038	810	0	0	1,200
Approved and Potential Land Use Changes [1, 2]	1,390	1,482	91	370	417	3,300
Difference	+17	+444	- 719	+370	+417	+2,100

Note: KSF = Thousand Square Feet
[1] Land use totals for Atherton Tech Center only include the undeveloped properties.
[2] Refer to Table 3 of report for detailed land use assumptions by individual development area.
Fehr & Peers, 2016

The approved and potential land use changes would increase the existing daily trip cap from 77,043 to 98,010 trips, which is an approximate 21,000 daily trip increase. The calculations for the daily trip cap are

based on 'gross trips' and do not consider internalization of trips within the NWRA by complementary land uses (e.g., residential and retail). The approved and potential land use changes would result in a greater diversity of uses in the NWRA, which is expected to result in more internalization of trips than the presently permitted uses.

CITY OF ROCKLIN 2030 TRAVEL DEMAND MODEL

As part of this study, Fehr & Peers updated the version of the City of Rocklin 2030 travel demand model used for the City's General Plan Update. The model was modified to include only those roadway improvements that are programmed for construction by 2030 and land uses that are reasonably foreseeable by 2030. The model was also updated to reflect the approved and potential land use changes in Table 3. Refer to pages 17-18 for specific land use and roadway network edits made to the model.

TRANSPORTATION-RELATED EFFECTS OF APPROVED AND POTENTIAL LAND USE CHANGES

Since the approved and potential land use changes would result in the NWRA GDP maximum daily trip cap being exceeded, it is necessary to study the effects of this additional traffic on operations at surrounding intersections.

Eight signalized intersections were selected for analysis based on their proximity to the NWRA, their anticipated use by project trips, and their susceptibility of being impacted (i.e., intersections operating in the LOS C range in the General Plan cumulative condition). **Table ES-2** displays the PM peak hour LOS at these intersections. The following key conclusions are drawn from this table:

- All intersections would operate at an acceptable LOS C or better under Cumulative Conditions with Buildout of Potential General Plan (with GP Mitigations). The suggested restriping simply reassigns lanes on the SB approach and does not require any further widening beyond which has already been planned.
- The approved and potential land use changes would cause four of the eight study intersections to not meet the City of Rocklin General Plan LOS C policy under cumulative conditions. The following modifications would restore operations to LOS C at these intersections (see Table 10 for details):
    - Sunset Boulevard/Atherton Road/University Avenue – Restripe southbound University Avenue approach and construct right-turn only driveway on the north side of Sunset Boulevard west of University Avenue.
    - Sunset Boulevard/West Oaks Boulevard - Restripe the southbound West Oaks Boulevard approach to include an additional left-turn lane and modify the receiving lane on Sunset Boulevard (see Figure 3 for concept).

  - Sunset Boulevard/Blue Oaks Boulevard – Add a second left turn lane on westbound Sunset Boulevard (see Figure 4 for concept) and reconfigure the eastbound Sunset Boulevard right-turn lane onto Blue Oaks Boulevard from a channelized lane to a signal controlled movement.
  - Wildcat Boulevard/Ranch View Drive – Restripe the eastbound Ranch View Drive approach to consist of one left-turn, one shared left/through, and one dedicated right-turn lane (see Figure 5 for concept).

- The use of corrected (as discussed on page 28) methodologies for right-turn-on-red also resulted in LOS C under cumulative conditions at the following intersections:
  - Sunset Boulevard/West Stanford Ranch Road
  - Whitney Ranch Parkway/University Avenue
  - Whitney Ranch Parkway/Wildcat Boulevard
  - Wildcat Boulevard/West Stanford Ranch Road

Other key findings from this study include:

1. University Avenue should be constructed as a four-lane arterial between Sunset Boulevard and Whitney Ranch Parkway to accommodate buildout of the NWRA.
2. The approved and potential levels of retail (482,000 square feet) and business professional (708,000 square feet) development intensity in Areas 104 and 106 represent approximately 35 percent more development on these parcels than the currently permitted uses. Based on the projected changes in traffic volumes on roadways providing access to these properties, Fehr & Peers recommends the following:
   a. Construct University Avenue as a four-lane arterial between Whitney Ranch Parkway and Ranch View Drive.
   b. Maintain Ranch View Drive between Wildcat Boulevard and University Avenue as a two-lane street.
3. The extension of Whitney Ranch Parkway easterly from Old Ranch House Road/Painted Pony Lane to Park Drive was studied under cumulative conditions. Based on projected traffic levels, this extension should constructed as four-lanes assuming Park Drive is extended through the Clover Valley Lakes Development to Sierra College Boulevard. However, if Park Drive extends into the Clover Valley Lakes Development, but does not connect to Sierra College Boulevard, operations would be acceptable as a two-lane divided roadway.
4. West Oaks Boulevard is planned to extend northerly from its current terminus north of Holly Drive to Whitney Ranch Parkway. Projected traffic levels suggest that operations would be acceptable as a two-lane roadway.

TABLE ES-2:
PM PEAK HOUR INTERSECTION LEVEL OF SERVICE – CUMULATIVE CONDITIONS

Intersection	Traffic Control	V/C / LOS			
		Existing Conditions[1]	2030 General Plan With EIR Mitigation[1]	2030 General Plan for Approved and Potential Land Use Changes [2]	2030 General Plan for Approved and Potential Land Use Changes with EIR Mitigation and RTOR Adjustments and Additional Mitigation [3]
1. Sunset Boulevard/ Atherton Road/University Avenue	Signal	0.34 / A	0.77 / C	**0.95 / E**	0.80 / C
2. Sunset Boulevard/West Stanford Ranch Road	Signal	0.47 / A	0.80 / C	0.71 / C	0.71 / C
3. Sunset Boulevard/West Oaks Boulevard	Signal	0.35 / A	0.71 / C	**0.84 / D**	0.74 / C
4. Sunset Boulevard/Blue Oaks Boulevard	Signal	0.68 / B	0.79 / C	**0.91 / E**	0.76 / C
5. Whitney Ranch Parkway/ University Avenue	Signal	-	0.64 / B	0.66 / B	0.78 / C
6. Whitney Ranch Parkway/ Wildcat Boulevard	Signal	0.18 / A	0.67 / B	0.78 / C	0.73 / C
7. Wildcat Boulevard/ Ranch View Drive	Signal	0.18 / A	0.79 / C	**0.98 / E**	0.78 / C
8. Wildcat Boulevard/West Stanford Ranch Road	Signal	0.46 / A	0.80 / C	**0.83 / D**	0.79 / C

Notes:

V/C = Volume-to-Capacity Ratio. LOS = Level of Service.

[1] Reported results from the *City of Rocklin General Plan Draft EIR* (2011).

[2] Refer to Table 3 for approved and potential land use changes. This scenario includes various background updates to the City's 2030 travel demand model. It also assumes identical lane configurations, signal phasing, and right-turn treatments as GP EIR with mitigation scenario.

[3] Refer to Table 10 and Figures 3 – 5 for recommended improvements (beyond GP mitigations).

- = Intersection did not exist when GP EIR was being prepared.

1. INTRODUCTION

This chapter describes the purpose and background of the study. It also provides an overview of the organization of this report.

PURPOSE

This study analyzes the transportation-related effects of several approved and potential land use changes within the Northwest Rocklin Area General Development Plan (NWRA GDP). This study compares the average daily trip generation associated with the approved and potential land uses to a maximum daily trip cap established as part of the original approval of the NWRA GDP in 2002. The study also evaluates whether the approved and potential land use changes would result in intersection operations that meet applicable level of service (LOS) policies contained in the *City of Rocklin General Plan* (2012).

BACKGROUND

The portion of the NWRA GDP under study is generally bounded by SR 65 on the west, Wildcat Boulevard on the east, the Rocklin/Lincoln City Limits on the north, and Sunset Boulevard on the south. Existing land uses within this area are comprised of William Jessup University (north of Sunset Boulevard) and several residential and business professional uses located west of Wildcat Boulevard.

The *Northwest Rocklin General Development Plan* (2002) generally referred to the area under study as the "Highway 65 Corridor Planning Area" consisting of development areas 104 through 116 on its associated zoning map. It should be noted that Areas 115 and 116 include Atherton Tech Center and adjacent open space. Since Atherton Tech Center is nearly built out and no changes in land use are approved and potential, this study considers Atherton Tech Center as a background land use under cumulative conditions. Trips from Atherton Tech Center were considered in the original maximum daily trip cap. Accordingly, it is considered in the same manner as part of the trip cap calculations for the approved and potential land uses.

The Rocklin City Council approved an amendment to the NWRA GDP in 2008. However, the 2008 changes were internal to Whitney Ranch and did not increase total residential numbers in that development area beyond NWRA EIR assumptions. The overall trip caps in the Highway 65 Corridor did not change. The original approval and amendment permits development of a variety of residential and non-residential land uses in the NWRA GDP. Due to concerns regarding potential traffic impacts, certain properties were granted land use allocations with restricted (i.e., less than build-out) levels of development intensity in all versions of the *NWRA General Plan Development Plan*. The NWRA GDP properties were granted a maximum daily trip cap of 77,043 trips, as is described on pages 25-27 of Exhibit C of the *Northwest Rocklin*

General Development Plan Amendment (2008). This level of traffic was estimated, based on travel demand models available at the time, to result in acceptable operations on the City's roadway system.

The City of Rocklin recognizes that limiting the development potential of these properties may pose certain marketing and economic disadvantages. Additionally, given that intersections in the vicinity were shown in the *City of Rocklin General Plan Circulation Element* (2012) as operating at LOS C or better under cumulative conditions, the intersections may have additional reserve capacity to accommodate more traffic.

The 2012 General Plan Update and subsequent land use amendments intended to implement the City's 2013 Housing Element were primarily "downzones" from Retail Commercial, Business Professional and/or Industrial land uses to a Mixed Use (MU) category that introduced the potential for high density residential uses as either standalone uses or in combination with non-residential development. (i.e., 2012 GP Update - Sites 2, 3, 10, 107B, 108B and 110A and B went to MU; Site 1 outside of the study area went from BP to HDR; Site 22 outside of the study area went from HDR to MDR). (2013 Housing Element - Site 113B went from LI to MU). Some sites designated as MU in 2012 were also recently redesignated as Medium High Density Residential (MHDR) – Sites 108B and 110A and B as part of the Spring Valley Development proposal. Refer to Appendix A for map of sites. Therefore, the City has requested that Fehr & Peers update the analyses originally conducted for the NWRA GDP using updated travel demand models, changes in background roadway improvements and land use assumptions, and approved and potential changes in land uses on several of the NWRA GDP properties.

Since that time, the City has also reconsidered whether some of the locations where the Mixed Use (MU) designation was applied should be converted back to Retail Commercial (i.e., 6.6 acres on the Whitney Ranch Parkway frontage of Site 2) and/or straight High Density Residential 22 units per acre (i.e., Site 3 - 12 acres just outside the study area and fronting on Whitney Ranch Parkway west of Wildcat). There is also the possibility that up to 20 percent of the 17.7 acre Mixed Use site west of William Jessup University could be considered for High Density Residential/22 units per acre rather than a mix of 50% office and 50% retail commercial. Those changes have not been formally made at this time, but are contemplated in modeling of Scenario 1A presented in this study should the City wish to pursue them.

REPORT ORGANIZATION

The remainder of this report is comprised of the following chapters:

- Chapter 2 (Northwest Rocklin Land Use Assumptions) – discusses the current NWRA GDP maximum trip cap, permitted and currently approved and potential land uses, and trip generation methodologies used in this study.

- Chapter 3 (City of Rocklin Travel Demand Model) – describes the base year and cumulative year version of the City of Rocklin Travel Demand Model. It also presents a sub-area model validation and the methodology for developing cumulative year forecasts.

- Chapter 4 (Intersection Operations) – presents signalized intersection operations within and in the vicinity of the NWRA GDP without and with the approved and potential land use changes.

2. NORTHWEST ROCKLIN LAND USE ASSUMPTIONS

This chapter discusses the current NWRA GDP trip cap, permitted and approved and potential land uses, and trip generation methodologies used in this study.

MAXIMUM DAILY TRIP CAP

The maximum daily trip cap of 77,043 vehicle trips established in the NWRA GDP was originally derived as the approximate amount of development allowable such that intersections and roadway segments within the NWRA GDP will operate within acceptable levels of service established in the General Plan, assuming all traffic and roadway improvements outlined in the GDP are constructed. **Table 1** shows the specific ADT values that constitute the 77,043 vehicle trip cap associated with the four development areas that comprise the NWRA GDP.

TABLE 1:
NWRA GDP DAILY TRIP CAP

Development Area	Trips (ADT)	Notes/Explanations
JBC Investments	21,608	Total trips based on approved and potential land uses (from Table 8) and trip rates (from page 25) of Exhibit C to the NWRA GDP[1].
Placer Ranch	26,877	
William Jessup University	19,798	
Atherton Tech Center	8,760	
Total	77,043	Sum of development area daily trips.

Notes:
[1] NWRA GDP trip generation rates are as follows:
Business Professional = 17.7 daily trips per 1,000 square feet
Commercial = 35 daily trips per 1,000 square feet
Light Industrial = 7.6 daily trips per 1,000 square feet
Fehr & Peers, 2016

Page 25 of Exhibit C of the *Northwest Rocklin General Development Plan Amendment* (2008) states the following:

- *To ensure that development intensity stays within levels assumed by the traffic study, future uses shall be required to demonstrate that the volume of traffic generated by each development does not exceed the ADT shown on each development area in Table 8.*

The above statement implies that the maximum daily trip cap is the sum of trips generated by all individual development areas (without regard to the level of internal trip-making between them). When the original development cap was created, planned land uses in the area consisted of retail, industrial, and business

professional land uses, which generally result in few internal trips. However, the reuse of the Herman Miller property as William Jessup University began a planning shift in which land uses that generate trip productions (i.e., households and dorms) were being contemplated for the area. Since that time, the City has approved rezones of other NWRA GDP areas to residential. The effect of these land use changes is the creation of a more diverse mix of land uses within the NWRA GDP, for which a greater percentage of internal trips is expected. Therefore, in light of the intended function of the trip cap and the more diverse mix of land uses within the area, the City has asked Fehr & Peers to consider how the internalization of trips between complementary uses might affect the trip cap and surrounding intersection operations.

PERMITTED AND APPROVED AND POTENTIAL LAND USE CHANGES

A meeting was held on September 4, 2015 between Fehr & Peers and City of Rocklin Community Development Department staff to identify a series of approved and potential land use changes within the NWRA that would be analyzed in this study.

Table 2 summarizes the permitted land uses within the NWRA GDP. This table also shows the "Approved and Potential Land Use Changes". As shown, the major changes would result in substantially more retail and less industrial, along with the introduction of residential and additional William Jessup University (WJU) Students (per a September 4, 2015 e-mail from John Jackson of WJU regarding future enrollment of traditional undergraduate, adult evening, and graduate students).

The following section further separates the approved and potential land uses into individual development areas.

TABLE 2:
NWRA GDP PERMITTED AND APPROVED AND POTENTIAL LAND USES

NWRA GDP Scenario	Office (KSF)	Retail (KSF)	Light Industrial (KSF)	Single Family Dwelling Units (DU)	Multi-Family Dwelling Units (DU)	University Students
Permitted 2008 GDP Trip Cap Land Uses [1]	1,373	1,038	810	0	0	1,200
Approved and Potential Land Use Changes [1]	1,390	1,482	91	370	417	3,300
Difference	+17	+444	- 719	+370	+417	+2,100

Note: KSF = Thousand Square Feet
[1] Land use totals for Atherton Tech Center only include the undeveloped properties.
Fehr & Peers, 2016

TRIP GENERATION

The NWRA GDP specifies that the following daily trip generation rates be used when calculating the trip cap:

- Business Professional = 17.7 daily trips per 1,000 square feet (ksf)
- Commercial = 35 daily trips per 1,000 square feet
- Light Industrial = 7.6 daily trips per 1,000 square feet

These rates represent gross trips (i.e., prior to any reductions for internal trip-making between complementary land uses). It should also be noted that the commercial trip rate (35 trips per ksf) is slightly lower than the corresponding daily trip rate (about 43 trips per ksf) in *Trip Generation, 9th Edition* (Institute of Transportation Engineers, 2012). This is because the NWRA GDP trip rate is derived from the City's travel demand model, which like all other 'trip-based models' does not model the effects of pass-by traffic. In contrast, the ITE rate represents all trips entering/exiting a commercial site, including pass-by trips. If it is assumed that about 20 percent of daily trips are pass-by, then the ITE trip rate would be about 35 new trips per ksf. Thus, the two rates are comparable in terms of new trips.

Since the approved and potential land use changes would introduce both single-family and multi-family residential, it was necessary to identify appropriate trip rates for these uses. Based on consultations with City staff, the following rates were selected for use:

- Single Family Dwelling Unit (DU) = 9 daily trips per DU
- Multi-Family Dwelling Unit (DU) = 6.5 daily trips per DU

These rates are already in use in the City's travel demand model (which meets applicable validation criteria within the NWRA GDP area as documented in Chapter 3). Since the base year model validates adequately with these rates, they are considered acceptable for use in estimating trips for the new cap. Please refer to Appendix A trip generation estimates for a variety of land use types included in the City's travel demand model.

The trip generation associated with the projected enrollment increase from 1,200 to 3,300 total students at William Jessup University (WJU) was calculated using 2.25 daily trips per university student. This rate was derived based on data published in *Trip Generation, 9th Edition* (Institute of Transportation Engineers, 2012) and empirical measurements at other campuses such as California State University Sacramento and California Polytechnic Pomona.

Table 3 shows that the approved and potential land use changes would increase the daily trip cap from 77,043 to 98,010 trips, which is an approximate 21,000 daily trip increase (refer to **Figure 1** for a map showing the traffic analysis zones and individual development areas within the plan area). The increase in trips is expected given the following:

- Several parcels were rezoned from less intense industrial to more intense retail or office.
- Greater levels of land use coverage were assumed on the majority of parcels.
- Future enrollment of 3,300 students at William Jessup University increased significantly over the prior assumption of 1,200 students.

It should be noted that the totals in Table 3 do not show the expected internalization of trips associated with complementary land uses, which is discussed in the following section. Rather, the values in Table 3 represent total trips.

INTERNALIZATION OF TRIPS

The greater diversity of uses associated with the approved and potential land use changes in the NWRA area are expected to result in more internalization of trips than expected with the permitted uses. Since Atherton Tech Center is physically separated (by Sunset Boulevard) from the rest of the properties, it is excluded from the internalization calculations. The expected internalization of trips was calculated and then compared using the following two methods:

- Method 1: City of Rocklin 2030 Travel Demand Model
- Method 2: ITE Trip Generation/Mixed-Use Trip Generation Model (MXD)

Each of these methods is described below.

TABLE 3:
TRIP GENERATION OF APPROVED AND POTENTIAL LAND USE CHANGES

TAZ	Dev Area #	Location	Acreage	Assumed Zoning	Office (KSF)	Retail (KSF)	Light Industrial (KSF)	Dwelling Units	University (Students)	Assumed FAR	Total (KSF)	Daily Trip Generation	ADT (GDP Table 8)
467	115	Atherton Tech Center	81.8	LI	39	0	91			N/A	130	8,760	8,760
468	113 A	Nearest to CalTrans ROW	13.9	HDR				417		N/A	N/A	2,711	
	113 B	West of University Drive	17.7	MU	135	97				30%	232	5,785	8,325
	113 C	East of University Drive (WJU)	74.5	N/A					3,300	N/A	N/A	7,425	
	114	North of Sunset Boulevard	30.1	COMM		328				25%	328	11,480	11,473
469	107 A	West of University Drive	32.4	COMM		353				25%	353	12,355	8,313
	107 B	East of University Drive	6	COMM		66				25%	66	2,310	
	108 A	West of University Drive	47.6	BP/COMM	508	156				32%	664	14,452	14,764
	108 B	East of University Drive	20.4	MHDR				174		N/A	N/A	1,566	
	110	North of Syracuse Drive	22.9	MHDR				196		N/A	N/A	1,764	3,800
470	104	North of Whitney Ranch Pkwy	66.3	BP/COMM	708	217				32%	925	20,127	14,626
	106	North of Whitney Ranch Pkwy	24.3	COMM		265				25%	265	9,275	6,982
				Sum Totals	1,390	1,482	91	787	3,300		2,963	98,010	77,043
				Difference								+20,967	

Note: TAZ = Traffic Analysis Zone. KSF = Thousand Square Feet. FAR = Floor Area Ratio. KSF = Thousand Square Feet.
1. Development areas 105, 109, 112, and 116 are open space parcels, which are excluded from above list.

Source: Fehr & Peers, 2016

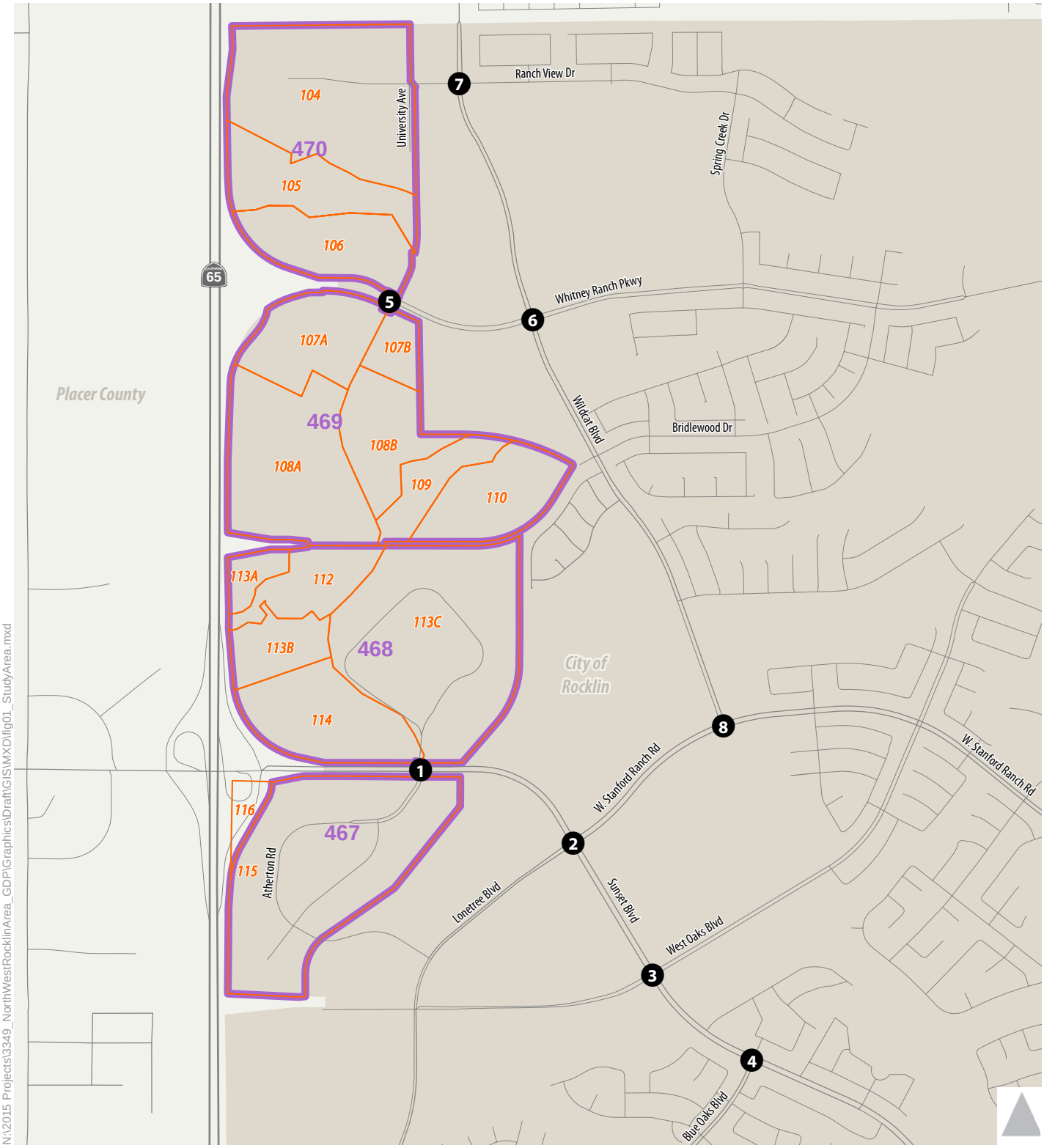


Figure 1

Study Area

Method 1: City of Rocklin 2030 Travel Demand Model

Fehr & Peers updated the City of Rocklin 2030 travel demand model to represent the land uses shown in Table 3. As part of this effort, it was necessary to create additional traffic analysis zones (TAZs) to better reflect the loading of trips from each parcel onto existing and planned roadways. **Table 4** indicates the following:

- The City's model estimates the NWRA GDP area (for all properties excluding Atherton Tech Center because it is physically separated from the remainder of the area by Sunset Boulevard)) would generate 84,439 gross daily trips. This is slightly less than the estimate of 89,250 trips shown in Table 3 because the City's model (like all trip-based models) matches trip productions and attractions, which can have the effect of modifying trip rates slightly.

The City's model estimates that 4.6 percent of daily trips would remain internal to the NWRA GDP area, thereby resulting in 80,591 external daily trips.

Method 2: ITE Trip Generation/Mixed-Use Trip Generation Model (MXD)

The MXD model was developed for the US Environmental Protection Agency (EPA) by academic researchers and consultants (including Fehr & Peers) to estimate internal trip-making and external trips made by non-auto travel modes. This model was developed to more accurately estimate the external vehicular trip generation of mixed-use land development projects than prior methods (e.g., ITE internalization spreadsheet). The model was developed based on empirical evidence at 240 mixed-use projects located across the U.S. The model considers various built environment variables such as land use density, regional location, proximity to transit, and various design variables when calculating the project's internal trips, and external trips made by auto, transit, and non-motorized modes. The MXD model has been applied in numerous EIRs, General Plans, and Specific Plans throughout California.

The MXD model uses ITE *Trip Generation*, *9th Edition (2012)* trip rates as a starting point. It then estimates internal trips and external trips made by walking, bicycling, and transit. Due to the site characteristics of the area, it is anticipated that external trips made by non-auto modes will be nominal (the ITE rates already account for modest levels of bicycling, walking, and transit use). The results of this method are shown in **Table 4**, indicating the following:

- The ITE/MXD model estimates that the NWRA GDP area (excluding Atherton Tech Center because it is physically separated from the remainder of the area by Sunset Boulevard) would generate 91,870 gross daily trips, which is 8.8 percent greater than the estimate of 84,439 trips from the City's model.

- The ITE/MXD model estimates that 5.6 percent of daily trips would remain internal to the NWRA GDP area, thereby resulting in 80,751 external daily trips. This estimate is within 0.2 percent of the external trip estimate of 80,591 daily trips from the City's model.

TABLE 4:
TRIP GENERATION COMPARISON

Daily Trip Generation	Method 1: City of Rocklin 2030 Travel Demand Model	Method 2: ITE Trip Generation / MXD Model	Difference
Gross Daily Trips	84,439	91,870	8.8%
Internalization	4.6%	5.6%	-
External Daily Trips	80,591	80,751	0.2%

Note: Trip generation totals calculated for NWRA GDP areas shown in Table 3.
Fehr & Peers, 2016

The conclusion from the comparison of these methods is clear. The use of the City's travel demand model (for this specific area and for the approved and potential land uses) results in an external vehicle trip generation estimate that closely matches the estimate from the state-of-the-practice ITE/MXD method. For this reason, the City's travel demand model is considered suitable for use in estimating NWRA GDP trips on streets and intersections in the project vicinity. Refer to Appendix A for ITE/MXD outputs and summary comparison.

3. CITY OF ROCKLIN TRAVEL DEMAND MODEL

This chapter provides an overview of the base year and cumulative year versions of the City of Rocklin Travel Demand Model. This is important because this model is used in Chapter 4 to analyze the effects of the approved and potential land use changes at various intersections. This chapter also describes the methodology used for developing cumulative year traffic forecasts.

CITY OF ROCKLIN BASE YEAR AND CUMULATIVE YEAR TRAVEL DEMAND MODEL

In 2011, Fehr & Peers developed a new base year model that represents land use and travel conditions throughout the South Placer region as of 2011. In addition to South Placer County, the model also covers portions of Sacramento and Sutter Counties. The model has been used for studies in Roseville, Lincoln, and unincorporated Placer County. The model has a detailed land use database within the City of Rocklin and includes all of its collector and arterial roadways. As is discussed below, Fehr & Peers reviewed the adequacy of this model to represent existing conditions within the NWRA.

The cumulative year version of the City's travel demand model corresponds to Year 2030 conditions. The version of the model used for the City's General Plan update (adopted in 2012) was used. Similar to the base year model, this model also covers land uses and roadways within the Cities of Roseville, Lincoln, Loomis, and unincorporated Placer, Sutter, and Sacramento Counties. Fehr & Peers coordinated with the City of Rocklin staff to identify several land use and roadway network modifications (discussed below) that should be made to the model to better represent 2030 conditions.

BASE YEAR MODEL VALIDATION TESTS

This section presents the results of the Fehr & Peers' validation tests of the base year (2011) travel demand model. The intent is for the model to be validated so that it accurately predicts existing travel conditions observed in circa 2011.

The *2010 Regional Transportation Plan (RTP) Guidelines* specify that travel demand models to be used in the preparation of RTPs should undergo a series of diagnostic tests to determine their ability to accurately estimate traffic volumes and other travel parameters. Fehr & Peers interprets this guidance to also extend to travel demand models being developed for other purposes such as fee programs, CIPs, LOS policy development, specific/master plan land use changes, infrastructure studies, etc. In accordance with this guidance, the model's performance was evaluated using criteria described in the Caltrans *Travel Forecasting Guidelines*, November 1992, *Travel Model Improvement Program (TMIP) Model Validation and Reasonableness Checking Manual*, February 1997, and Fehr & Peers' internal standards. In particular, the following validation measures were evaluated:

- Volume-to-Count Ratio – Divides the model volume by the actual traffic count for individual roadways throughout the model.
- Percent of Links Within Caltrans Deviation Allowance – Calculated as the difference between the model and actual traffic count divided by the actual traffic count. Result is then evaluated against prescribed deviation thresholds.
- Correlation Coefficient – estimates the correlation (strength and direction of the linear relationship) between the actual traffic counts and the estimated volumes from the model.
- Percent Root Mean Square Error (%RMSE) – is the square root of the model volume minus the actual count squared divided by the number of counts. It is a measure similar to standard deviation in that it assesses the accuracy of the entire model.

Fehr & Peers analyzed fourteen roadway segments within and adjacent to the City of Rocklin for use in the validation tests. The segments were analyzed for average daily conditions by comparing the model's average daily traffic (ADT) estimate to the existing (2008) condition volumes contained on Exhibit 4.4-3 of the *City's General Plan DEIR* (2011)[1]. These segments consist primarily of arterial roadways, which are situated at the project's study area entry/exit points, across geographic boundaries (e.g., railroad or freeway overpasses), or on otherwise critical travel corridors within the City.

To improve the base year model validation, minor changes in roadway free-flow speeds on West Stanford Ranch Road and Wildcat Boulevard were made. On West Stanford Ranch Road, speeds were increased from 40 to 45 miles per hour (mph) between Sunset Boulevard and Park Drive. Additionally, Wildcat Boulevard was increased from 40 to 45 mph from West Stanford Ranch Road to Westview Drive. These changes were made to reflect more accurate prevailing free-flow speeds on these roadways.

Table 5 shows the model validation results. As shown, the 2011 base year travel demand model passes all three validation tests that have measurable acceptance criteria. In addition, the summation of the model's estimated traffic volumes across 13 of the 14 validation roadway segments is nearly identical to the actual volume observed on these segments from the 2008 counts. Appendix A displays the detailed validation statistics (including the existing daily volumes on each roadway segments along with the predicted traffic volume from the base year traffic model). In conclusion, the 2011 base year travel demand

[1] Although the existing counts correspond to 2008 and the model corresponds to 2011, the 2008 counts are considered reasonable to compare against the 2011 model due to the effects of the recession, which resulted in limited new development and actual decreases in travel on most roadways throughout the Sacramento region.

model (within the NWRA) meets the applicable validation tests, and is considered acceptable in using for forecasting cumulative condition volumes.

TABLE 5:
BASE YEAR MODEL VALIDATION

Validation Test	Criteria for Acceptance	City of Rocklin (2011) Base Year Traffic Model
Volume-to-Count Ratio	Not Defined	Model Volume = 193,435 Actual Volume = 176,300
Percent of Links Within Allowable Deviation	≥ 75%	93%
Correlation Coefficient	≥ 0.88	0.94
Percent Root Mean Squared Error (%RMSE)	≤ 40%	24%

Sources: Validation tests and acceptance criteria are *Travel Forecasting Guidelines*, Caltrans, 1992.
Existing roadway segment volumes are City of Rocklin 2030 General Plan, Figure 4.4-3.
Notes: Validation only applicable to area bounded by SR 65 (west), Twelve Bridges Drive (north), West Oaks Boulevard (east), and Blue Oaks Boulevard (south).
Fehr & Peers, 2016

CUMULATIVE YEAR MODEL MODIFICATIONS

The City of Rocklin 2030 General Plan cumulative model was used to forecast cumulative year conditions at intersections within and adjacent to the NWRA. On September 4, 2015, Fehr & Peers met with City of Rocklin staff to discuss specific land use assumptions and roadway network improvements contained in the model. Fehr & Peers made several recommendations regarding the model inputs to achieve the following objectives:

1. The list of assumed roadway improvements includes only those improvements programmed in Capital Improvement Programs (CIPs) or in other fee programs with identified funding sources.

2. The list of cumulative land use assumptions is comprised of "reasonably foreseeable projects" likely to be constructed by the 2030 horizon year of the model.

Per the meeting outcome, the 2030 General Plan travel demand model's roadway system was modified as follows:

- Reduce SR 65 from six to four lanes between Blue Oaks Boulevard and Sunset Boulevard (SR 65 widening is currently only planned to extend northerly to Blue Oaks Boulevard).

- Reduce Atherton Road from four to two lanes between Sunset Boulevard and Lonetree Boulevard (was incorrectly coded in the model, though this change had little effect on travel conditions).
- Reduce Athens Avenue from four to two lanes between Industrial Avenue and Fiddyment Road (widening to four lanes not planned)
- Reduce Industrial Avenue from four to two lanes between Sunset Boulevard and Athens Avenue (widening to four lanes not planned).
- Reduce build-out stage of Placer Parkway from Phase 3 to Phase 1 (Placer Parkway terminates at Foothills Boulevard; future phases beyond Phase 1 are not fully funded).

The 2030 model had included buildout of the 2008 version of the Placer Ranch Specific Plan (PRSP). In Fall 2015, the applicant for a revised Placer Ranch project withdrew their application from the City of Roseville. With this plan no longer being contemplated, it was not reasonable to assume development of such a large project by 2030.

The model had also assumed substantial levels of new residential development within the City of Lincoln 'villages' associated with its General Plan Update. The level of assumed development was considered unreasonable given the model's 2030 horizon year as well as current development activity in the City of Lincoln. Accordingly, Fehr & Peers made the following land use adjustments to the 2030 Rocklin General Plan model:

- Eliminated approximately 6,000 dwelling units from various villages within the City of Lincoln to replicate the level of assumed development in other models being used in South Placer area (e.g., City of Roseville 2035 CIP model).
- Remove Placer Ranch Specific Plan (PRSP) land uses and associated roadways.
- Reallocate one million square feet of planned light industrial land use currently situated in more remote (i.e., further from SR 65) parts of the Sunset Industrial Area (SIA) to more central locations near Sunset Boulevard and Foothills Boulevard (in conjunction with vacant parcels created by the removal of PRSP).
- Add 1,500 dwelling units within the now vacated Placer Ranch site (750 units on either side of Fiddyment Road south of Sunset Blvd. West) as the most likely development scenario in light of Placer Ranch's recent development application withdrawal.

CUMULATIVE TRAFFIC FORECASTING METHODOLOGY

Year 2030 cumulative traffic forecasts were developed by applying the following "difference method" forecasting procedure:

Year 2030 Forecast = Existing Traffic Volume + {Cumulative Year Model Volume – Base Year Model Volume}

This procedure is routinely applied when developing traffic forecasts because it accounts for potential inaccuracies in the base year model, which if not accounted for in this adjustment process, could also cause inaccuracies in the cumulative year forecasts. For situations in which the roadway or intersection does not currently exist, the model forecast is used directly. A model plot showing the number of lanes assumed within the 2030 cumulative model can be seen in Appendix B.

Table 6 displays the ADT and number of lanes on various roadways within the NWRA. These forecasts represent cumulative conditions with the approved and potential land uses in place.

TABLE 6:
AVERAGE DAILY TRAFFIC – CUMULATIVE CONDITIONS WITH APPROVED AND POTENTIAL LAND USE CHANGES

Roadway Segment	Number of Lanes	ADT
University Avenue – North of Sunset Boulevard	4	27,000
University Avenue – South of Whitney Ranch Parkway	4	21,900
Whitney Ranch Parkway – East of University Avenue	6	32,100
Whitney Ranch Parkway – West of University Avenue	6	42,800
Wildcat Boulevard – North of West Stanford Ranch Rd	4	30,500
Wildcat Boulevard – South of Whitney Ranch Parkway	4	31,600
Wildcat Boulevard – North of Ranch View Drive	4	41,200
University Avenue – North of Whitney Ranch Parkway	2	13,900
Ranch View Drive – West of Wildcat Boulevard	2	12,200
Bridlewood Drive – West of Wildcat Boulevard	2	2,000

Note: ADT = Average Daily Traffic. Volumes rounded to the nearest 100.
Fehr & Peers, 2016

Key findings from this table include the following:

1. Wildcat Boulevard is projected to carry between 30,500 and 41,200 ADT between West Stanford Ranch Road and the Rocklin/Lincoln City Limits. This level of traffic is caused by several factors including the assumptions that the parallel segment of SR 65 remains four lanes as well as substantial new development in Lincoln.

2. University Avenue should be constructed as a four-lane arterial between Sunset Boulevard and Whitney Ranch Parkway to accommodate buildout of the NWRA.

3. The approved and potential levels of retail (482,000 square feet) and business professional (708,000 square feet) development intensity in Areas 104 and 106 represent approximately 35 percent more development on these parcels than the currently permitted uses. The following describes how these land use changes would affect adjacent roadways:
    - University Avenue north of Whitney Ranch Parkway – this segment is projected to carry 13,900 ADT. According to the General Plan Circulation Element and current *NWRA General Development Plan*, the segment of University Avenue between Whitney Ranch Parkway and Ranch View Drive is planned to be constructed as a four-lane arterial. Review of intersection ramps, fire hydrants, street signs, median configurations, etc. confirms this. Currently, only the two easterly lanes have been constructed. Similarly, only two lanes of University Avenue north of Whitney Ranch Parkway have been constructed. Accordingly, Fehr & Peers recommends the following:
        - Construct University Avenue as a four-lane arterial between Whitney Ranch Parkway and Ranch View Drive.
    - Ranch View Drive between Wildcat Boulevard and University Avenue is projected to carry 12,200 ADT. This 500-foot segment consists of one travel lane in each direction separated by a turn lane. Given its short distance and projected traffic volumes, operations at intersections (versus its mid-block roadway capacity) will be the critical elements that dictate overall traffic operations. Accordingly, Fehr & Peers recommends the following:
        - Maintain Ranch View Drive between Wildcat Boulevard and University Avenue as a two-lane street.

CROSS-SECTIONS FOR PLANNED WHITNEY RANCH PARKWAY AND WEST OAKS BOULEVARD EXTENSIONS

Whitney Ranch Parkway's easterly terminus is currently at Old Ranch House Road/Painted Pony Lane. It is planned to continue easterly for a 1.5-mile distance to connect with Park Drive in Whitney Oaks. Existing Whitney Ranch Parkway is a four-lane divided roadway, while existing Park Drive is a four-lane undivided roadway. Ultimately, Whitney Ranch Parkway/Park Drive is planned to provide a continuous connection between SR 65 and Sierra College Boulevard.

West Oaks Boulevard is planned to extend northerly for approximately 0.5 miles from its current terminus north of Holly Drive to Whitney Ranch Parkway. It is constructed as a four-lane street between Stanford

Ranch Road and Hunter Drive. However, north of Hunter Drive, only the two planned northbound lanes are constructed.

At the City's request, Fehr & Peers developed cumulative ADT estimates for the planned extensions of Whitney Ranch Parkway and West Oaks Boulevard using the 2030 With Approved and Potential Land Uses Conditions travel demand model. Using this model, forecasts were developed for the two following two scenarios:

- Scenario 1 – Park Drive extends to Sierra College Boulevard (through the Clover Valley Lakes Development)
- Scenario 2 – Park Drive extends into the Clover Valley Lakes Development, but does not connect to Sierra College Boulevard

Scenario 1 assumes buildout of the Clover Valley Lakes Development, while Scenario 2 assumes development of 140 dwelling units per City staff direction.

Table 7 displays the cumulative ADT estimates for each segment of Whitney Ranch Parkway and West Oaks Boulevard for each scenario. Based on Table 7, Fehr & Peers recommends that the Whitney Ranch Parkway extension be constructed as four-lanes under Scenario 1. Under Scenario 2, operations would be acceptable as a two-lane divided roadway. The projected volume under either scenario along the extension of West Oaks Boulevard suggests that operations would be acceptable as a two-lane roadway. However, turn lanes would be necessary at intersections along the roadway extension.

TABLE 7:
AVERAGE DAILY TRAFFIC – CUMULATIVE CONDITIONS ALONG EXTENSIONS OF WHITNEY RANCH PARKWAY AND WEST OAKS BOULEVARD

	Cumulative ADT	
Roadway Segment	Scenario 1	Scenario 2
Whitney Ranch Parkway – East of Painted Pony Lane	10,200	7,500
Whitney Ranch Parkway – East of West Oaks Blvd.	18,600	13,400
Whitney Ranch Parkway – West of Whitney Oaks Dr.	9,800	2,300
West Oaks Boulevard – North of Holly Drive	12,400	10,900
West Oaks Boulevard – South of Whitney Ranch Parkway	9,800	8,200

Note: ADT = Average Daily Traffic. Volumes rounded to the nearest 100.
Fehr & Peers, 2016

4. INTERSECTION OPERATIONS

It is apparent from Chapter 2 that the approved and potential land use changes would result in the NWRA GDP maximum daily trip cap being exceeded. Therefore, according to the *Northwest Rocklin General Development Plan Amendment* (2008), it is necessary to study the effects of this additional traffic on operations at surrounding intersections and roadway segments. This chapter presents this analysis.

This chapter also analyzes intersection operations associated with Scenario 1A, which includes the approved and potential land use changes as well as several additional land use modifications being considered by the City.

CITY OF ROCKLIN LOS POLICY

Policy C-10 of the *City of Rocklin General Plan Circulation Element* (2012) states the following:

A. Maintain a minimum traffic Level of Service "C" for all signalized intersections during the p.m. peak hour on an average weekday, except in the circumstances described in C-10.B and C. below

B. Recognizing that some signalized intersections within the City serve and are impacted by development located in adjacent jurisdictions, and that these impacts are outside the control of the City, a development project which is determined to result in a Level of Service worse than "C" may be approved, if the approving body finds (1) the diminished level of service is an interim situation which will be alleviated by the implementation of planned improvements or (2) based on the specific circumstances described in Section C. below, there are no feasible street improvements that will improve the Level of Service to "C" or better as set forward in the Action Plan for the Circulation Element.

C. All development in another jurisdiction outside of Rocklin's control which creates traffic impacts in Rocklin should be required to construct all mitigation necessary in order to maintain a LOS C in Rocklin unless the mitigation is determined to be infeasible by the Rocklin City Council. The standard for determining the feasibility of the mitigation would be whether or not the improvements create unusual economic, legal, social, technological, physical or other similar burdens and considerations".

Based on the above policy, this study first seeks to determine whether the approved and potential land use changes (along with other background roadway and land use changes in the model) would maintain LOS C or better operations at study intersections under cumulative conditions with the lane configurations assumed in the 2030 General Plan EIR. Based on those results, mitigations are identified, if necessary, to improve operations to LOS C or better. Finally, if no mitigations were available to restore operations to LOS C or better, then the sub-section of Policy C-10 relating to effects caused by future development in other jurisdictions is considered.

It is worth noting that roadway network analysis in the City of Rocklin General Plan DEIR (2011) was limited to signalized intersections for the PM peak hour. Although average daily traffic volumes were reported on various City roadways for informational purposes, they were not analyzed for LOS impacts. This study follows this same analysis approach.

ANALYSIS METHODOLOGY

The level of service at signalized intersections in the City of Rocklin is analyzed using the software program Traffix. Consistent with City of Rocklin standards[2], all signalized intersections were analyzed using the *Interim Materials on Highway Capacity – Circular 212* (Transportation Research Board, 1980) methodology with the following capacities (specified by the City):

Number of Signal Phases	Capacity
2 Phases	1,600 vphpl [3]
3 Phases	1,500 vphpl
4 or more Phases	1,450 vphpl

Each signalized study intersection is analyzed using the Circular 212 methodology to determine the volume-to-capacity (v/c) ratio during the PM peak hour. **Table 8** displays the v/c ratio range associated with each LOS grade.

TABLE 8:
VOLUME TO CAPACITY RATIO AND LOS AT SIGNALIZED INTERSECTIONS

Level of Service	V/C Ratio Range
A	≤ 0.60
B	0.61 – 0.70
C	0.71 – 0.80
D	0.81 – 0.90
E	0.91 – 1.00
F	> 1.00
Source: City of Rocklin.	

[2] As described on page 4.4-38 of the *City of Rocklin General Plan Update DEIR* (2011).

[3] vphpl = vehicles per hour per lane.

SELECTION OF STUDY INTERSECTIONS

Figure 1 shows the eight signalized intersections that were selected for study. These intersections were selected based on their proximity to the NWRA, their anticipated use by project trips, and their susceptibility of being impacted (i.e., intersections operating in the LOS C range under cumulative conditions in the General Plan).

INTERSECTION OPERATIONS

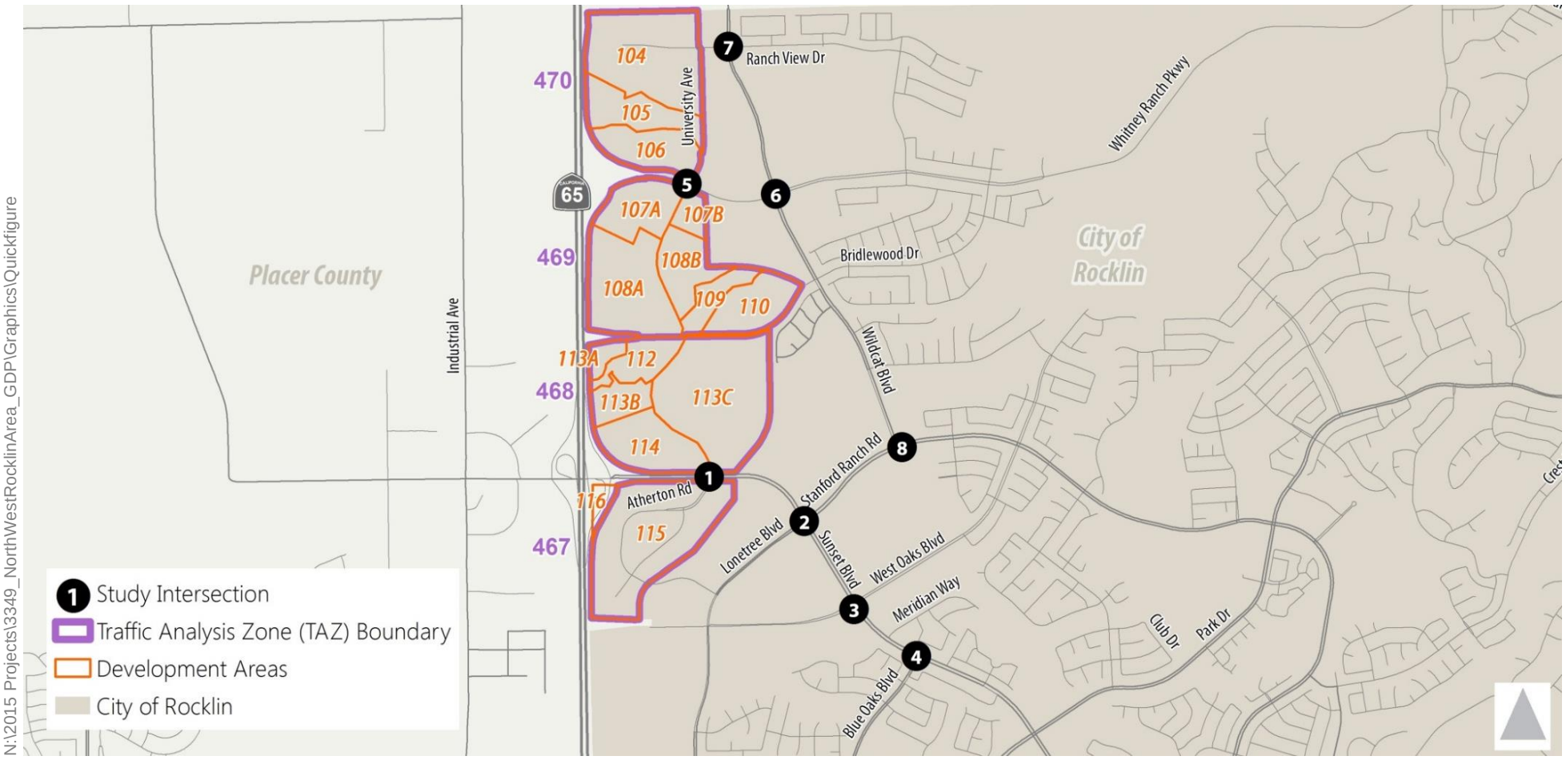
Table 9 displays the existing PM peak hour LOS at the signalized study intersections, as presented in the *City of Rocklin General Plan Draft EIR* (2011). As shown, each intersection currently operates at LOS B or better.

TABLE 9:
PM PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING CONDITIONS

Intersection	Traffic Control	Existing Conditions [1]
		V/C / LOS
1. Sunset Boulevard/Atherton Road/University Ave.	Signal	0.34 / A
2. Sunset Boulevard/West Stanford Ranch Road	Signal	0.47 / A
3. Sunset Boulevard/West Oaks Boulevard	Signal	0.35 / A
4. Sunset Boulevard/Blue Oaks Boulevard	Signal	0.68 / B
5. Whitney Ranch Parkway/University Avenue	Did not exist when GP EIR was prepared	
6. Whitney Ranch Parkway/Wildcat Boulevard	Signal	0.18 / A
7. Wildcat Boulevard/Ranch View Drive	Signal	0.18 / A
8. Wildcat Boulevard/West Stanford Ranch Road	Signal	0.46 / A

Notes:
V/C = Volume-to-Capacity Ratio. LOS = Level of Service.
[1] Reported results from the *City of Rocklin General Plan Draft EIR* (2011).

Fehr & Peers developed "Cumulative (2030) With Approved and Potential Land Use Changes" PM peak hour traffic forecasts at the study intersections based on the forecasting approach described in Chapter 3. **Figure 2** displays the resulting forecasts. Lane configurations for each intersection were derived from the City of Rocklin 2030 GP EIR "Cumulative Conditions with Buildout of Potential General Plan (with Mitigation)" scenario. Figure 2 shows the assumed lane configurations.



Note: Arrows shown in red represent additional lanes assumed under 2030 City of Rocklin General Plan

PM Peak Hour Traffic Volume

Existing Conditions Turn Lane

Cumulative Conditions Turn Lane

Traffic Signal

Figure 2

PM Peak Hour Traffic Volumes and Lane Configurations - Cumulative Plus Approved and Potential Land Use Changes Conditions

Table 10 displays the the PM peak hour LOS at the study intersections for the following scenarios:

- Cumulative with Buildout of Potential General Plan (with GP Mitigations)
- Cumulative With Approved and Potential Land Use Changes (with GP Mitigations)

The results in Table 10 are based on identical lane configurations, signal phasing, and right-turn-on-red (RTOR) treatments at each intersection between scenarios to facilitate an apples-to-apples comparison. Thus, the only difference between the scenarios relates to the traffic forecasts. Table 10 also provides notes that help explain the differences in LOS results between the two scenarios. Refer to Appendix B for technical calculations.

One particularly important component of the Circular 212 calculations is the treatment of right-turns. The Traffix software program allows for right-turn movements to be considered as: "ignore", "include", or "overlap". The following describes conditions associated with each treatment option:

- Ignore – the turn lane is channelized and has its own receiving lane. This treatment completely removes the right-turn volume from the LOS calculation.
- Include – right-turns are made from a shared through lane, or prohibited from being made on red. This treatment includes the entire right-turn volume in the LOS calculation.
- Overlap – right-turns are made from a turn pocket (but not channelized), have a complimentary/opposing left-turn phase, and are permitted to turn right on red. This treatment includes a portion of the right-turn volume in the LOS calculation[4]. This treatment is also used for intersections with right-turn overlap (arrow) signal phasing.

As noted previously, all results in Table 10 use the identical right-turn treatments as were applied for each intersection in the City of Rocklin General Plan DEIR. However, Fehr & Peers' review of those right-turn treatments yielded several instances in which the treatment was incorrectly applied. Therefore, the results in the following section address the need for additional improvements (mitigations) and/or corrections to the treatment of right-turn movements at the five intersections anticipated to operate at worse than LOS C.

[4] For example, a northbound right-turn volume of 300 vph with a westbound left-turn volume of 100 vph would have 33 percent right turn on red, which results in a right-turn volume of 200 vph for LOS calculation.

TABLE 10:
PM PEAK HOUR INTERSECTION LEVEL OF SERVICE – CUMULATIVE (2030) CONDITIONS

Intersection	Traffic Control	2030 General Plan With EIR Mitigation [1]	2030 with Approved and Potential Land Use Changes [2]	Notes/Explanations
		V/C / LOS	V/C / LOS	
1. Sunset Boulevard/Atherton Road/University Avenue	Signal	0.77 / C	**0.95 / E**	Substantially greater use of University Avenue (ADT increases from 10,900 to 27,000)
2. Sunset Boulevard/West Stanford Ranch Road	Signal	0.80 / C	0.71 / C	Modest decrease in 'critical' turning movements.
3. Sunset Boulevard/West Oaks Boulevard	Signal	0.71 / C	**0.84 / D**	Degraded LOS due to combined effect of: - SR 65 reduction from 6 to 4 lanes from Blue Oaks Blvd. to Sunset Blvd. shifts traffic to Sunset Blvd, - Greater number of trips generated in NWRA GDP.
4. Sunset Boulevard/Blue Oaks Boulevard	Signal	0.79 / C	**0.91 / E**	
5. Whitney Ranch Parkway/University Avenue	Signal	0.64 / B	0.66 / B	Significant differences in turn movements due to approved and Potential rezonings and improvements in model. Resulting operations remain similar however.
6. Whitney Ranch Parkway/Wildcat Boulevard	Signal	0.67 / B	0.78 / C	Additional traffic on north-south approaches has greater effect versus reduced traffic on east-west approaches.
7. Wildcat Boulevard/Ranch View Drive	Signal	0.79 / C	**0.98 / E**	Substantially greater use of Ranch View Drive West (ADT increases from 7,800 to 12,200)
8. Wildcat Boulevard/West Stanford Ranch Road	Signal	0.80 / C	**0.83 / D**	Modest differences in turn movements due to factors in footnote #2. Resulting operations remain similar.

Notes:
V/C = Volume-to-Capacity Ratio. LOS = Level of Service.

[1] Reported results from the *City of Rocklin General Plan Draft EIR* (2011).

[2] Approved and Potential land use changes include various rezonings within the Northwest Rocklin Area per direction provided by City staff on 9/4/2015 (see Table 3). This scenario also assumes various background and roadway network changes in the South Placer area, which also affect cumulative traffic forecasts (see Chapter 3). This scenario assumes identical lane configurations, signal phasing, and right-turn treatments as GP EIR with mitigation scenario.

Note: Cells shown in bold represent an intersection LOS that is worse than the City's LOS C policy.

INTERSECTION MITIGATION MEASURES AND METHODOLOGY CORRECTIONS

The following describes recommended improvements at each signalized study intersection to achieve LOS C or better operations. In addition, each intersection's LOS calculations were reviewed to determine whether right-turns were being treated correctly. In instances in which the right-turn movement clearly qualified as being 'ignore' or 'include', this option was selected. For all other right-turns, a 20 percent right-turn-on-red (RTOR) reduction was conservatively chosen. This was selected over the use of 'overlap' because the resulting RTOR percentages would have been excessively high and unrealistic.

Intersection Mitigations

Sunset Boulevard/Atherton Road/University Avenue

- Restripe the southbound University Avenue approach from a planned 1 left turn lane, 2 through lanes and 1 right turn lane to consist of 2 left turn lanes, 1 through lane, and 1 right turn lane. The suggested restriping simply reassigns lanes on the SB approach and does not require any further widening beyond which has already been planned. Eastbound Sunset Boulevard currently has a sufficient number of receiving lanes to accommodate this restriping without requiring any additional ROW or restriping.
- Provide a right-turn only driveway on the north side of Sunset Boulevard west of University Avenue to serve the retail parcel (i.e., acts to reduce southbound right-turn volume).

Sunset Boulevard/West Oaks Boulevard (refer to **Figure 3** for improvement concept)

- Restripe the southbound West Oaks Boulevard approach from (a planned) 2 left turn lanes, 2 through lanes, and 1 right turn lane to consist of 3 left turn lanes, 1 through lane, and 1 right turn lane.
- Restripe the northbound West Oaks Boulevard approach from 1 left turn lane, 2 through lanes, and 1 right turn lane to consist of 2 left turn lanes, 1 through lane, and 1 through/right lane to achieve proper lane alignments.

Sunset Boulevard/Blue Oaks Boulevard (refer to **Figure 4** for improvement concept)

- The westbound Sunset Boulevard approach currently consists of one left-turn lane, three through lanes, and one right-turn lane. Add a second left turn lane on westbound Sunset Boulevard (constructed from existing median and minor restriping/narrowing of existing lanes).
- Convert eastbound Sunset Boulevard channelized right turn to a signal controlled movement with overlap arrow to better accommodate westbound dual left-turn movement (see Figure 4 for illustration of improvement).

Wildcat Boulevard/Ranch View Drive (refer to **Figure 5** for improvement concept)

- Restripe the eastbound Ranch View Drive approach from 1 left turn lane and 1 through/right lane to consist of 1 left turn lane, 1 shared left/through lane, and 1 dedicated right-turn lane.

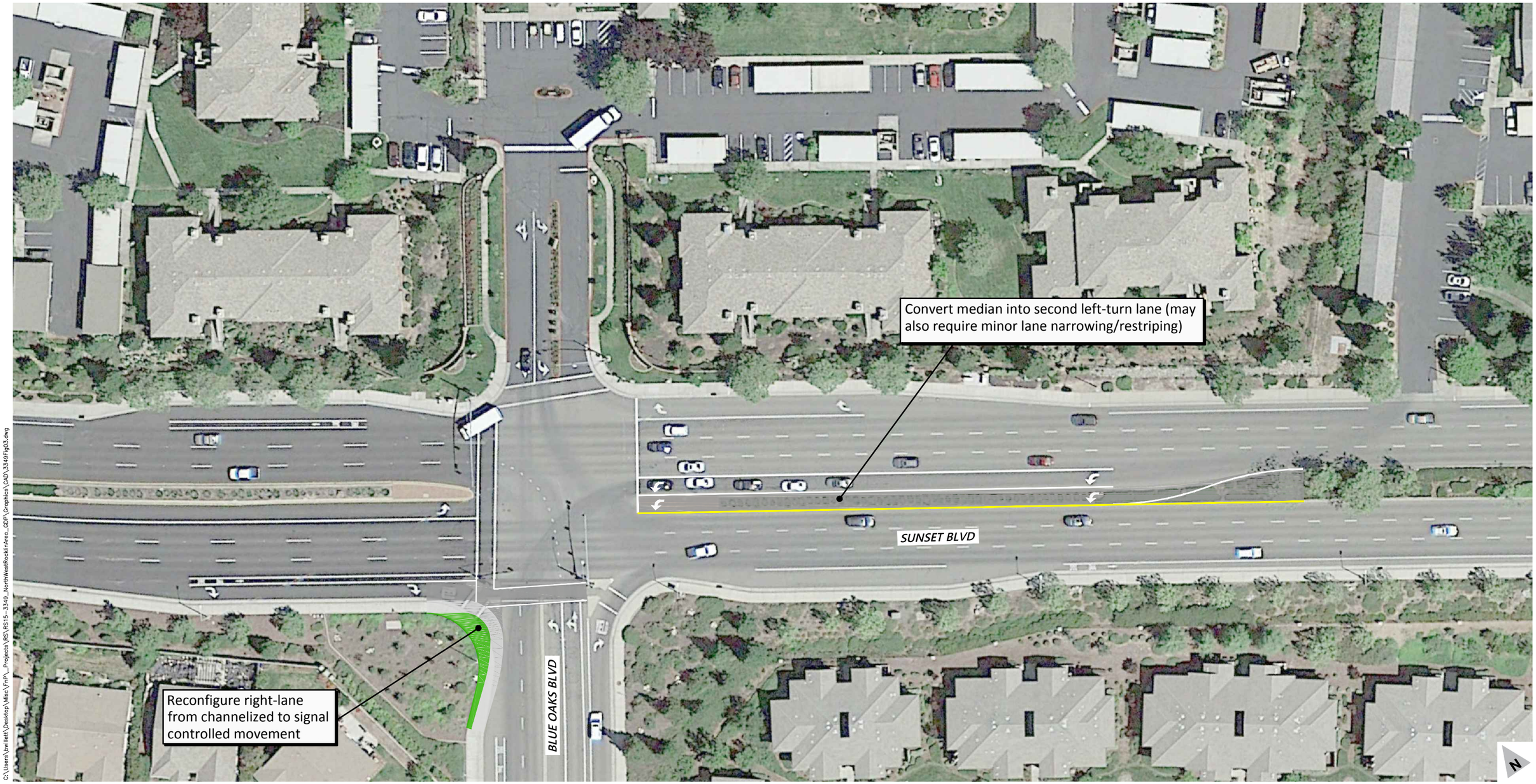


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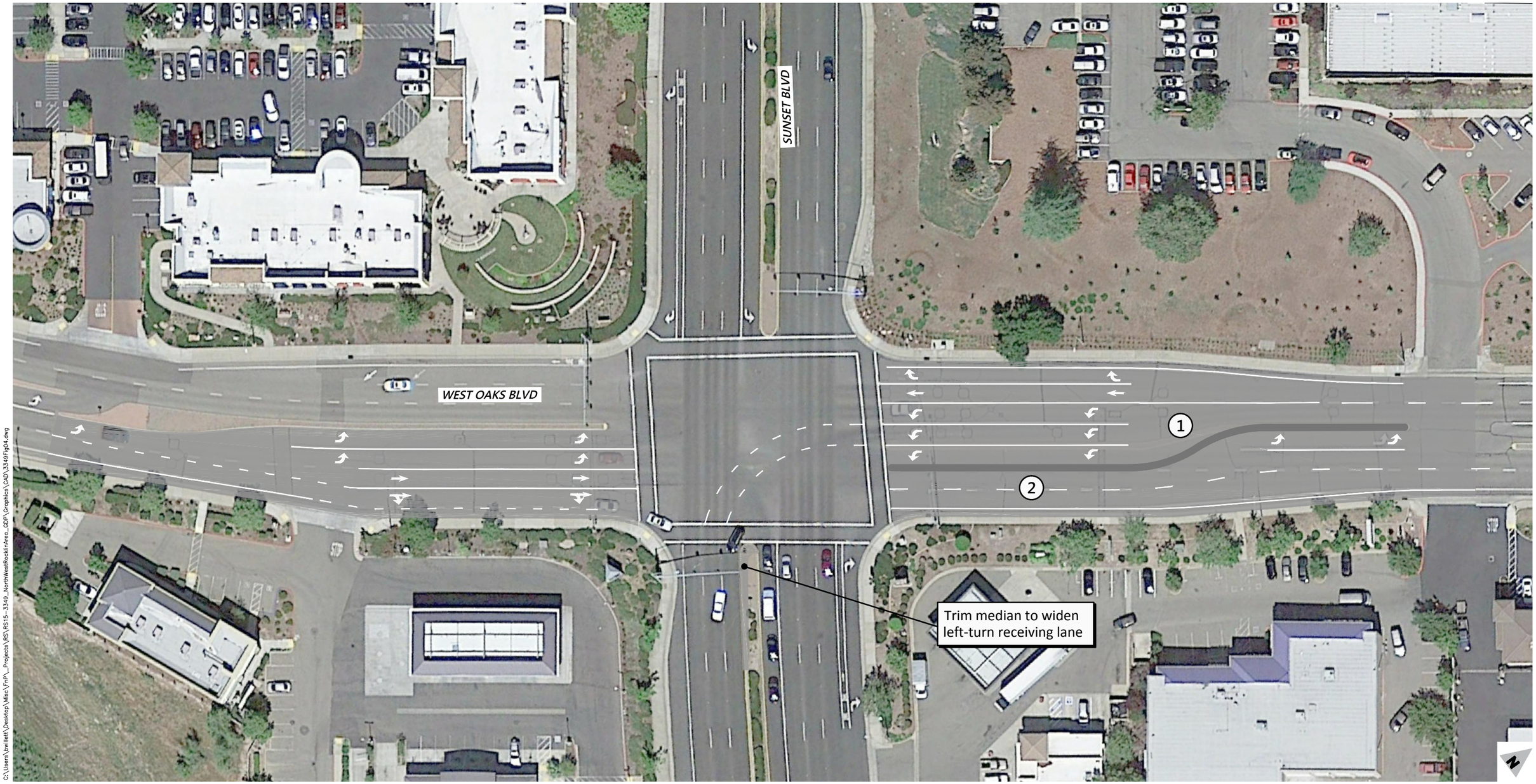
Figure 3
Sunset Boulevard / Blue Oaks Boulevard
Proposed Improvements Concept



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NOTE:

1. City of Rocklin GP contemplates this approach being expanded from four to five lanes
2. Additional civil engineering required to address lane transition

Figure 4
Sunset Boulevard / West Oaks Boulevard
Proposed Improvements Concept

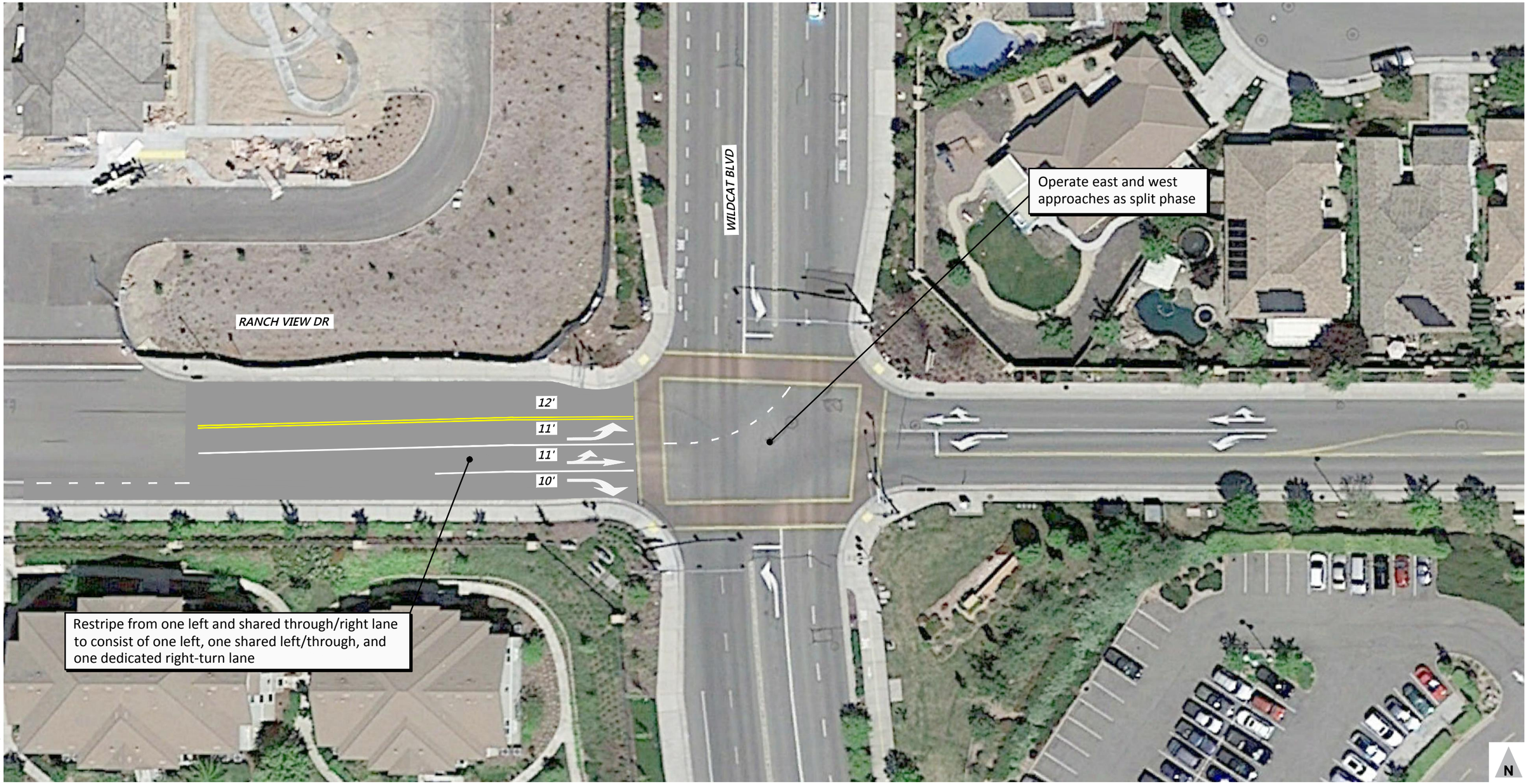

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Figure 5
Wildcat Boulevard / Ranch View Drive
Proposed Improvements Concept

Methodology Corrections

Sunset Boulevard/West Stanford Ranch Road

- The General Plan EIR analysis had coded the westbound Sunset Boulevard right-turn as 'ignore', meaning it had its own receiving lane, which is not the case. Update LOS calculation using more reasonable assumption of 'include' for right-turn treatment (with 20 percent RTOR assumption).

Whitney Ranch Parkway/University Avenue

- The General Plan EIR analysis had coded the southbound University Avenue right-turn as 'ignore', meaning it had its own receiving lane, which is not the case. Update LOS calculation using more reasonable assumption of 'include' for right-turn treatment (with 20 percent RTOR assumption).

Whitney Ranch Parkway/Wildcat Boulevard

- The General Plan EIR analysis had coded right-turns on all approaches as either 'ignore' or 'overlap'. Update LOS calculation using more reasonable assumption of 'include' for all right-turn treatments (with 20 percent RTOR assumption).

Wildcat Boulevard/West Stanford Ranch Road

- The General Plan EIR analysis had coded right-turns on all approaches as either 'ignore' or 'overlap'. Update LOS calculation using more reasonable assumption of 'include' for all right-turn treatments (with 20 percent RTOR assumption).

Table 11 displays the effectiveness of the above mitigation measures and right-turn treatment adjustments under Cumulative (2030) Plus Approved and Potential Land Use Changes conditions. As shown, these measures would restore operations to LOS C or better under cumulative conditions at all eight study intersections. Refer to Appendix B for technical calculations. Therefore, all intersections would meet the City's LOS C policy.

TABLE 11:
PM PEAK HOUR INTERSECTION LEVEL OF SERVICE – CUMULATIVE CONDITIONS WITH POTENTIAL MITIGATION MEASURES

Intersection	Traffic Control	2030 General Plan With EIR Mitigation [1]	2030 with Approved and Potential Land Use Changes and Right-Turn Adjustments and Additional Mitigation[2]	Right-Turn Adjustments / Additional Mitigation [2]
		V/C / LOS	V/C / LOS	
1. Sunset Boulevard/Atherton Road/University Avenue	Signal	0.77 / C	0.80 / C	Restripe SB approach from 1 LT, 2 TH, and 1 RT to consist of 2 LT, 1 TH, and 1 RT. Construct right-turn driveway into retail parcel west of University Drive.
2. Sunset Blvd./West Stanford Ranch Rd.	Signal	0.80 / C	0.71 / C	Right-turn adjustments made.
3. Sunset Boulevard/West Oaks Boulevard	Signal	0.71 / C	0.74 / C	Restripe SB approach from 2 LT, 2 TH, and 1 RT to consist of 3 LT, 1 TH, and 1 RT Restripe NB approach from 1 LT, 2 TH, and 1 RT to consist of 2 LT, 1 TH, and 1 TH/RT
4. Sunset Boulevard/Blue Oaks Boulevard	Signal	0.79 / C	0.76 / C	Add 2nd WB LT lane (from median and minor restriping). Convert EB RT to signal controlled movement with overlap arrow
5. Whitney Ranch Pkwy./University Ave.	Signal	0.64 / B	0.78 / C	Right-turn adjustments made.
6. Whitney Ranch Parkway/Wildcat Blvd.	Signal	0.67 / B	0.73 / C	Right-turn adjustments made.
7. Wildcat Boulevard/Ranch View Drive	Signal	0.79 / C	0.78 / C	Restripe EB approach from 1 LT & 1 TH/RT to consist of 1 LT, 1 shared LT/TH, and 1 RT lane
8. Wildcat Blvd./West Stanford Ranch Rd.	Signal	0.80 / C	0.79 / C	Right-turn adjustments made.

Notes:
V/C = Volume-to-Capacity Ratio. LOS = Level of Service.
[1] Reported results from the *City of Rocklin General Plan Draft EIR* (2011).
[2] Refer to previous text for more detailed discussion of improvements and adjustments to right-turn movement.
Source: Fehr & Peers, 2016.

ANALYSIS OF SCENARIO 1A

Scenario 1A consists of the following additional land use changes, which may be contemplated by the City of Rocklin (refer to map in Appendix A for site locations):

- Development Area 113B (17.7 acres): Rezone 20 percent of area from mixed-use to high-density residential (at 22 units per acre). This area would consist of: 78 multi-family dwelling units, 77,000 square feet of retail, and 108,000 square feet of office.
- Area 1 (9.2 acres located west of Wildcat Boulevard at Bridlewood Drive): Rezone from business professional to high-density residential (at 22 units per acre). This area would consist of: 202 multi-family dwelling units.
- Area 3 (12 acres located along Whitney Ranch Parkway): Rezone from mixed-use to multi-family residential (at 22 units per acre). This area would consist of: 264 multi-family dwelling units.

These uses would result in a net decrease in overall trip generation (i.e., an approximate 2,500 daily trip reduction compared to the Approved and Potential Land Use Changes scenario).

The City has also considered rezoning 6.5 acres of land in Area 2 (located in the southwest quadrant of the Whitney Ranch Parkway/Wildcat Boulevard intersection) from mixed-use to retail. However, since the model had already assumed retail in this area, no additional land use changes were necessary.

These land use changes were applied to the 2030 Approved and Potential Land Use Changes scenario. Consequently, Scenario 1A evaluates the effects of both the Approved and Potential Land Use Changes analyzed earlier as well as the potential land use modifications listed directly above.

Table 12 compares PM peak hour intersection operations under 2030 conditions with the Approved and Potential Land Use Changes against Scenario 1A. As shown, all intersections would continue operating at the same PM peak hour LOS under each scenario. Therefore, it can be concluded that the additional land use adjustments in Scenario 1A would not adversely affect any study intersections.

TABLE 12:
PM PEAK HOUR INTERSECTION LEVEL OF SERVICE – CUMULATIVE CONDITIONS WITH SCENARIO 1A

Intersection	Traffic Control	2030 Conditions with Right-Turn Adjustments and Additional Mitigation [2]	
		with Approved and Potential Land Use Changes	With Scenario 1A
		V/C / LOS	V/C / LOS
1. Sunset Boulevard/Atherton Road/University Avenue	Signal	0.80 / C	0.80 / C
2. Sunset Blvd./West Stanford Ranch Rd.	Signal	0.71 / C	0.72 / C
3. Sunset Boulevard/West Oaks Boulevard	Signal	0.74 / C	0.74 / C
4. Sunset Boulevard/Blue Oaks Boulevard	Signal	0.76 / C	0.75 / C
5. Whitney Ranch Pkwy./University Ave.	Signal	0.78 / C	0.77 / C
6. Whitney Ranch Parkway/Wildcat Blvd.	Signal	0.73 / C	0.73 / C
7. Wildcat Boulevard/Ranch View Drive	Signal	0.78 / C	0.78 / C
8. Wildcat Blvd./West Stanford Ranch Rd.	Signal	0.79 / C	0.79 / C

Notes:
V/C = Volume-to-Capacity Ratio. LOS = Level of Service.
[1] Reported results from the *City of Rocklin General Plan Draft EIR* (2011).
[2] Refer to previous text for more detailed discussion of improvements and adjustments to right-turn movement.
Source: Fehr & Peers, 2016.

Appendix A

Trip Generation Table

City of Rocklin Trip Rates
Land Use Input Categories and Units:

Name	Description	Units	Average Daily Trip Generation Rates
SFDU	Single Family	Dwelling Units	9.0
MFDU	Multi-Family	Dwelling Units	6.5
ARDU	Age-Restricted	Dwelling Units	3.0
RET	Retail	Thousand Square Feet (KSF)	35.0
MALL	Mall	KSF	26.0
OFF	Office	KSF	17.7
IND	Industrial	KSF	7.6
HTI	High-Tech Industrial	KSF	10.5
CC	Convention Center	KSF	132.2
CHURCH	Church/Worship Center	KSF	9.3
LODGE	Lodging	KSF	19.0
MED	Medical Office/Clinics	KSF	36.1
HOSP	Hospital	KSF	17.6
CONV	Convalescent Home	KSF	5.0
HOTEL	Hotel	Rooms	5.6
PQPL	Public/Quasi-Public Low	KSF	9.0
PQPH	Public/Quasi-Public High	KSF	25.0
SCHOOL	School (K-12)	Students	1.0
GOLF	Golf Course	Acres	8.3
PARK	Park	Acres	2.2
CEM	Cemetery	Acres	4.2
FAIR	Fairgrounds	Acres	1.59
UNIV	University	Students	1.4

Source: 2030 City of Rocklin Travel Demand Model
Note: Peak Hour Trip Rates are factored down from daily rates and are not readily available.

MXD+/ITE Internalization Calculations

Rocklin NWRA GDP Trip Generation Comparison			
	Travel Demand Model (TDM) Trip Generation	**ITE 9th Edition/MXD+ Trip Generation**	**Comments**
Gross Daily Trips	89,248	91,870	TDM: Based on static trip rates ITE: Based on 9th Edition of Trip Generation Manual
Traffic Model (Post P-A) Assigned Daily Trips	84,439	-	Due to model-wide differences in trip productions (Ps) and attractions (As), the model 'chops' some trips to balance P-As
Internalization	4.60%	5.60%	TDM: Calculated as difference from Post P-A trips and external trips. ITE: Based on MXD+ model.
Retail Pass-by Trips	-	-5,974	TDM: Pass-by trips are not considered in model. ITE: Assumes 10% pass-by for AM and daily, and 25% pass-by for PM.
External Daily Trips	80,591	80,751	**TDM estimate is nearly identical to ITE/MXD+ estimate.**
Gross AM Trips	5,198	4,428	TDM: Based on static trip rates ITE: Based on 9th Edition of Trip Generation Manual
Traffic Model (Post P-A) Assigned Daily Trips	4,495	-	Due to model-wide differences in trip productions (Ps) and attractions (As), the model 'chops' some trips to balance P-As
Internalization	7.70%	8.70%	TDM: Calculated as difference from Post P-A trips and external trips. ITE: Based on MXD+ model.
Retail Pass-by Trips	-	-129	TDM: Pass-by trips are not considered in model. ITE: Assumes 10% pass-by for AM and daily, and 25% pass-by for PM.
External Daily Trips	4,149	3,915	**TDM estimate is 6% above ITE/MXD+ estimate.**
Gross PM Trips	7,483	8,686	TDM: Based on static trip rates ITE: Based on 9th Edition of Trip Generation Manual
Traffic Model (Post P-A) Assigned Daily Trips	6,549	-	Due to model-wide differences in trip productions (Ps) and attractions (As), the model 'chops' some trips to balance P-As
Internalization	8.80%	13.20%	TDM: Calculated as difference from Post P-A trips and external trips. ITE: Based on MXD+ model.
Retail Pass-by Trips	-	-1,183	TDM: Pass-by trips are not considered in model. ITE: Assumes 25% pass-by for PM.
External Daily Trips	5,973	6,355	**TDM estimate is 6% below ITE/MXD+ estimate.**

Project Name: Rocklin NWRA GDP | Scenario Name: Trip Generation Check | Scenario ID: 595_1

Model Output

Results Summary | ITE Results | ITE Handbook Results | **MXD+ Results**

Basic Output

MXD+ External Vehicle Trip In/Out Summary

	Daily	AM In	AM Out	AM Total	PM In	PM Out	PM Total
Vehicle Trips	83,878	2,722	1,088	3,810	2,935	4,199	7,134

MXD+ External Vehicle Trip Generation

Methodology	Daily	AM Peak Hour	PM Peak Hour
ITE	91,870	4,428	8,686
MXD+	83,878	3,810	7,134

MXD+ External VMT

Methodology	Daily	AM Peak Hour	PM Peak Hour
ITE	643,090	35,424	60,802
MXD+	587,146	30,480	49,938

Methodology Comparison

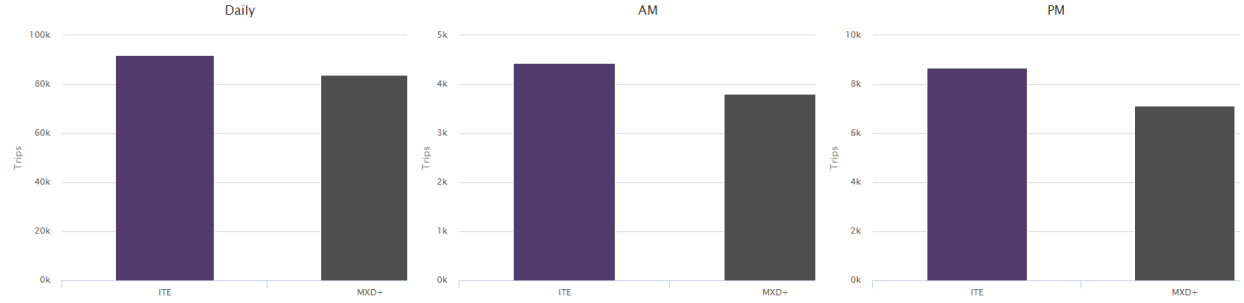
MXD+ Vehicle Trip Generation Reductions

	Daily	AM Peak Hour	PM Peak Hour
Internal Capture	5,114	384	1,148
Shift to Transit	2,050	181	330
Shift to Walk/Bike	828	53	74

MXD+ Vehicle Trip Generation Reduction Percent

	Daily	AM Peak Hour	PM Peak Hour
Internal Capture	5.6%	8.7%	13.2%
Shift to Transit	2.2%	4.1%	3.8%
Shift to Walk/Bike	0.9%	1.2%	0.9%

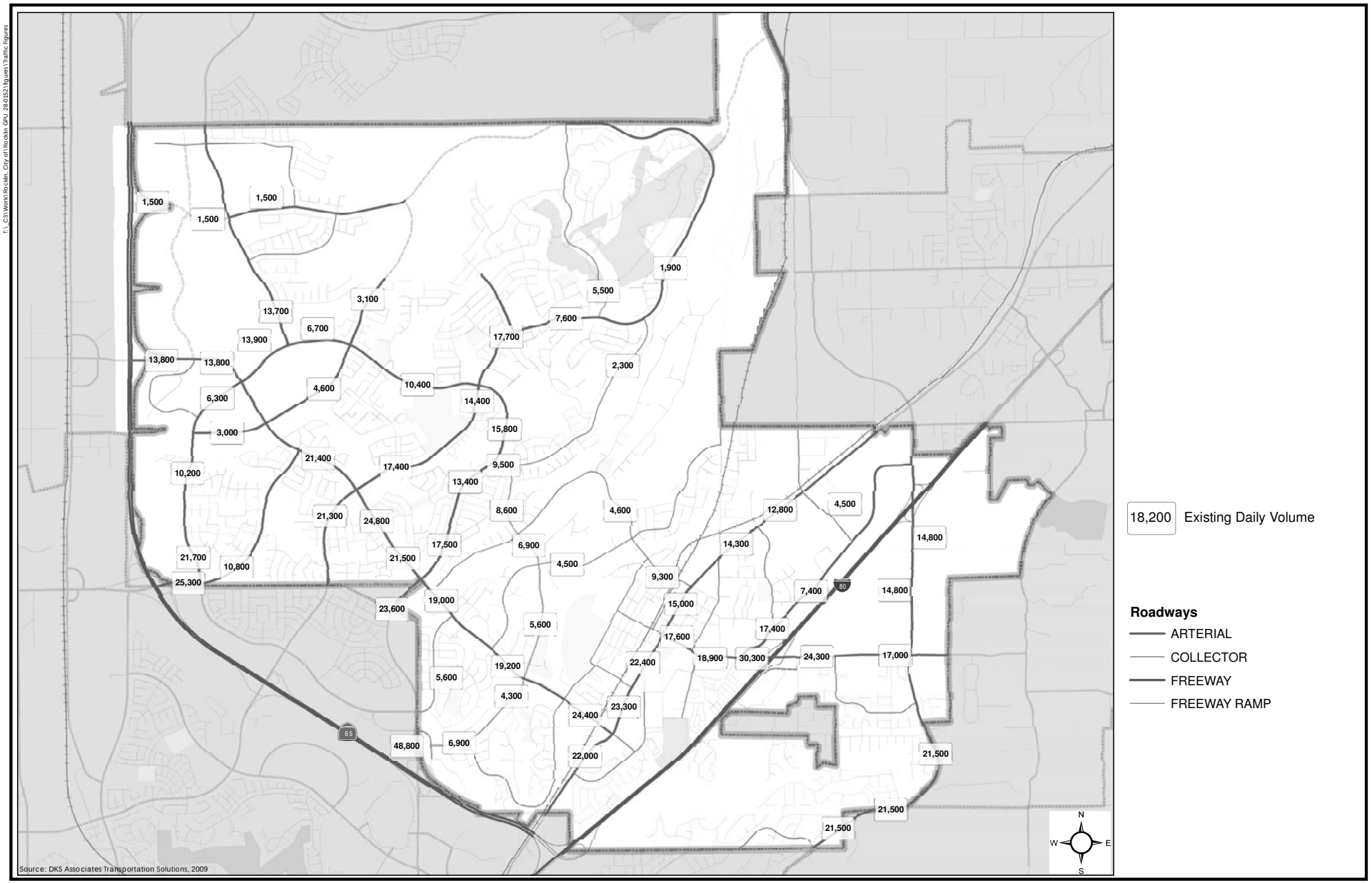
External Trip Generation Comparison Charts



Existing Conditions Model Validation

Base Year (2011) Travel Demand Model - Static Validation Results for Daily Conditions

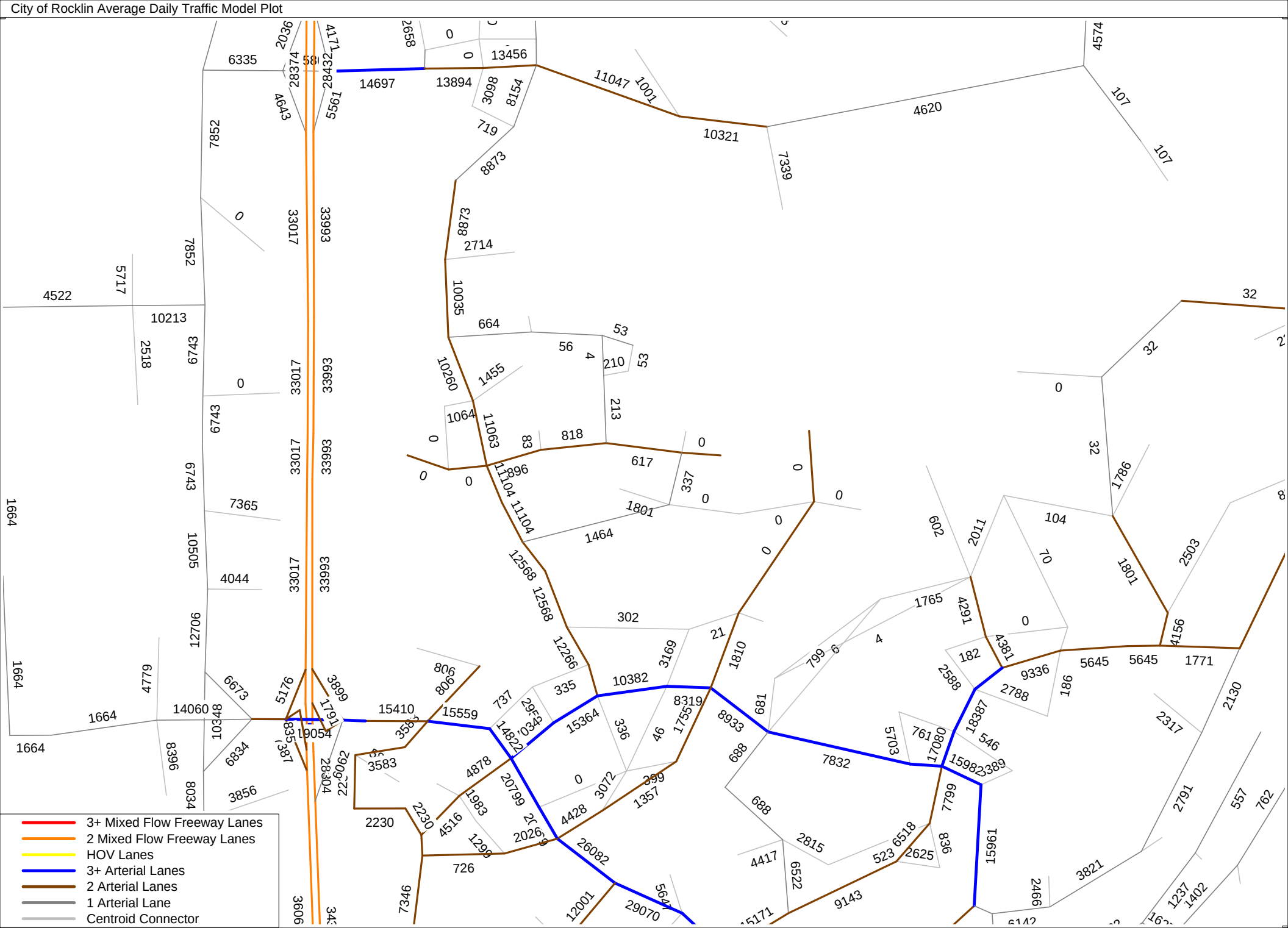
ID	Link ID	LOCATION	Daily Traffic Counts	Model	Model/ Count	Deviation	Maximum Deviation	Within Deviation	Model-Count	Difference Squared
1		Sunset East of SR 65	13,800	15,410	1.12	0.12	0.32	YES	1,610	2,592,100
2		Lonetree south of Sunset	3,000	4,578	1.53	0.53	0.60	YES	1,578	2,490,084
3		W. Stanford Ranch east of Sunset	13,900	15,364	1.11	0.11	0.32	YES	1,464	2,143,296
4		W. Stanford Ranch east of Wildcat	6,700	8,319	1.24	0.24	0.43	YES	1,619	2,621,161
5		West Oaks east of Sunset	4,600	4,428	0.96	0.04	0.60	YES	-172	29,584
6		Wildcat north of W. Stanford Ranch	13,700	12,568	0.92	0.08	0.32	YES	-1,132	1,281,424
7		Lincoln Parkway at Lincoln CL	6,600	8,873	1.34	0.34	0.43	YES	2,273	5,166,529
8		Twelve Bridges Dr east of SR 65	14,200	14,697	1.04	0.03	0.31	YES	497	247,009
9		W. Stanford Ranch Rd east of West Oaks	10,400	8,933	0.86	0.14	0.37	YES	-1,467	2,152,089
10		Sunset south of Blue Oaks	21,400	29,070	1.36	0.36	0.27	**NO**	**7,670**	58,828,900
11		Blue Oaks east of Lonetree	10,800	14,470	1.34	0.34	0.36	YES	3,670	13,468,900
12		Lonetree south of West Oaks	10,200	7,346	0.72	0.28	0.37	YES	-2,854	8,145,316
13		Lonetree north of Blue Oaks	21,700	19,648	0.91	0.09	0.27	YES	-2,052	4,210,704
14		Blue Oaks east of SR 65	25,300	29,731	1.18	0.18	0.26	YES	4,431	19,633,761
			176,300	193,435				**Model/Count Ratio =**	**1.10**	
								Percent Within Caltrans Maximum Deviation =	**93%**	> 75%
								Percent Root Mean Square Error =	**24%**	< 40%
								Correlation Coefficient =	**0.94**	> 0.88



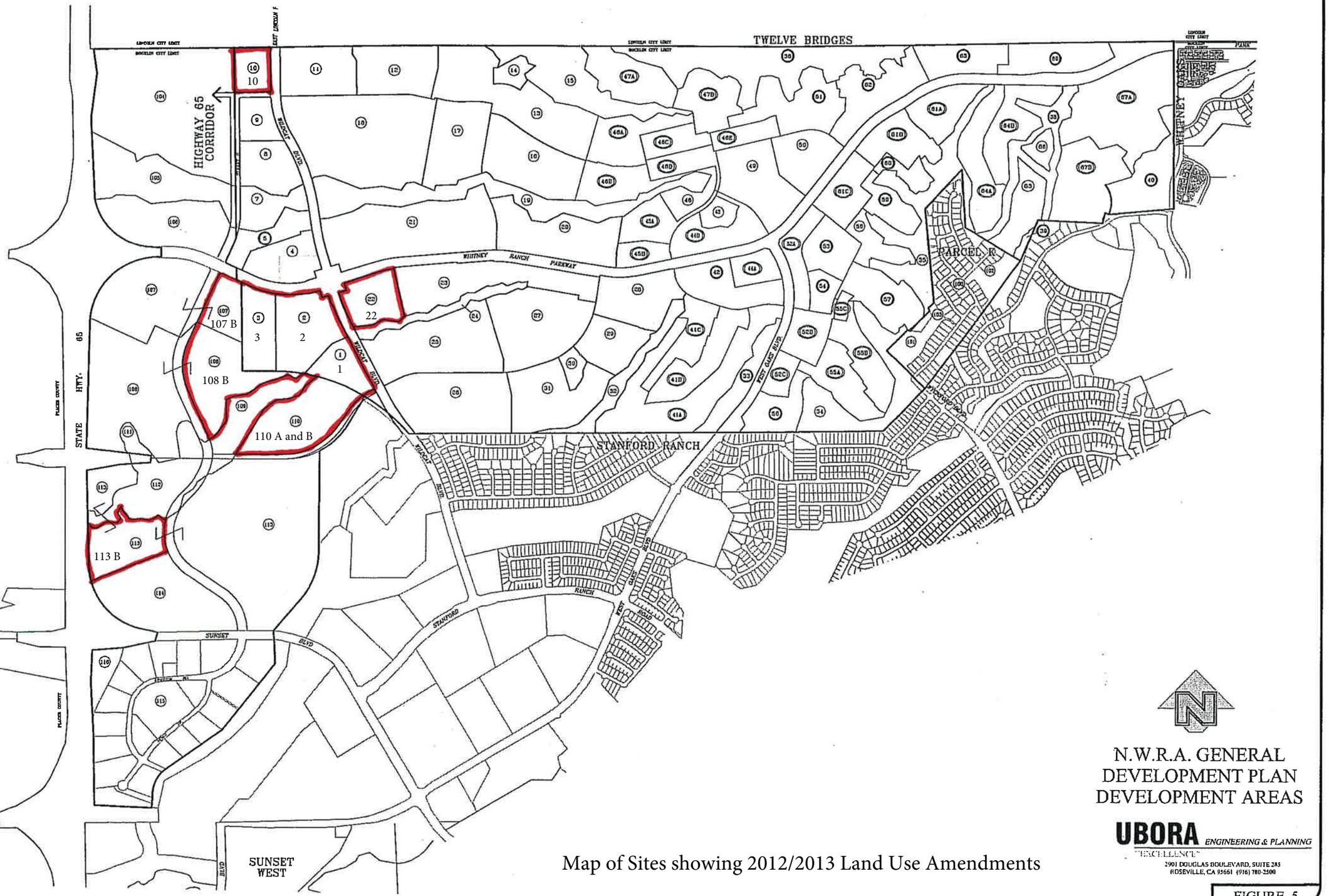
NO SCALE

N

Figure 4.4-3
Existing Daily Traffic Volumes on Rocklin Roadways



2011 Roadway Network



Map of Sites showing 2012/2013 Land Use Amendments

N.W.R.A. GENERAL DEVELOPMENT PLAN DEVELOPMENT AREAS

UBORA ENGINEERING & PLANNING
TERCELLENCE
2901 DOUGLAS BOULEVARD, SUITE 285
ROSEVILLE, CA 95661 (916) 780-2500

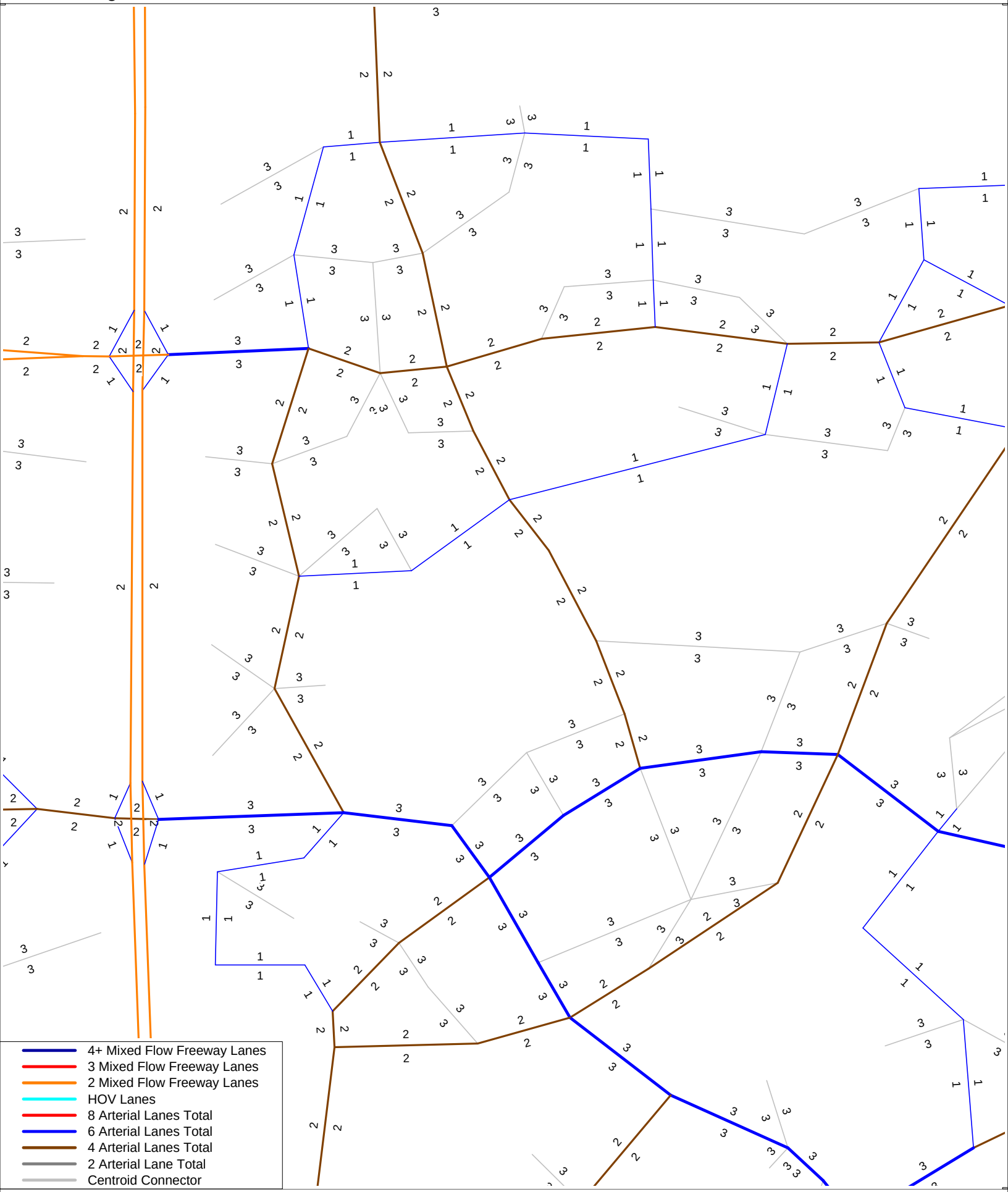
FIGURE 5

P:\1PROJECT\05-110.10 (Whitney Ranch)\General Development Plan\GDP Final Maps-Exhibits 2008-10-14\GDP doc Fig 4-9\FIG 5-GDP Dev Areas.dwg

Appendix B

Cumulative Conditions Lane Assumptions

2030 NWRA GDP Land Use Update
Lane Configuration



10/19/2015

Cumulative Conditions Technical Calculations

2030 General Plan

GP30 Mitigations Fri May 22, 2009 11:27:28 Page 12-1

Rocklin General Plan Update
Cumulative With Buildout of Proposed General Plan
With Identified Intersection Mitigations

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #128 Sunset Bl & Atherton

Cycle (sec): 100 Critical Vol./Cap.(X): 0.768
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 98 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Ignore			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2	0 1	0 1	1	0 2	0 1	2	0 3	0 1	1	0 3	0 1
Volume Module:												
Base Vol:	392	108	77	193	18	213	228	1187	68	21	1830	541
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	392	108	77	193	18	213	228	1187	68	21	1830	541
User Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	392	108	77	193	18	0	228	1187	68	21	1830	541
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	392	108	77	193	18	0	228	1187	68	21	1830	541
PCE Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	392	108	77	193	18	0	228	1187	68	21	1830	541
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	1.00	1.00	1.00	2.00	1.00	2.00	3.00	1.00	1.00	3.00	1.00
Final Sat.:	2900	1450	1450	1450	2900	1450	2900	4350	1450	1450	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.14	0.07	0.05	0.13	0.01	0.00	0.08	0.27	0.05	0.01	0.42	0.37
Crit Volume:	196			193			114				610	
Crit Moves:	****			****			****				****	

GP30 Mitigations Fri May 22, 2009 11:27:28 Page 13-1

Rocklin General Plan Update
Cumulative With Buildout of Proposed General Plan
With Identified Intersection Mitigations

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #132 Sunset Bl & Park Dr

Cycle (sec): 100 Critical Vol./Cap.(X): 0.736
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 86 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	3	0 3	0 1	2	0 3	0 1	2	0 3	0 1	2	0 3	0 1
Volume Module:												
Base Vol:	737	602	117	249	422	92	405	1349	355	462	1404	116
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	737	602	117	249	422	92	405	1349	355	462	1404	116
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Volume:	737	602	117	249	422	92	405	1349	0	462	1404	116
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	737	602	117	249	422	92	405	1349	0	462	1404	116
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	737	602	117	249	422	92	405	1349	0	462	1404	116
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	3.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	4350	4350	1450	2900	4350	1450	2900	4350	1450	2900	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.17	0.14	0.08	0.09	0.10	0.06	0.14	0.31	0.00	0.16	0.32	0.08
Crit Volume:	246			141			450			231		
Crit Moves:	****			****			****			****		

Rocklin General Plan Update
Cumulative With Buildout of Proposed General Plan
With Identified Intersection Mitigations

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #135 Sunset Bl & West Oaks Bl

Cycle (sec): 100 Critical Vol./Cap.(X): 0.709
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 78 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Ignore			Ignore		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0 2	0 1	2	0 2	0 1	1	0 3	0 1	1	0 3	0 1
Volume Module:												
Base Vol:	47	226	230	760	153	123	68	1025	6	193	1290	564
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	47	226	230	760	153	123	68	1025	6	193	1290	564
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Volume:	47	226	0	760	153	123	68	1025	0	193	1290	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	47	226	0	760	153	123	68	1025	0	193	1290	0
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
FinalVolume:	47	226	0	760	153	123	68	1025	0	193	1290	0
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	2.00	2.00	1.00	1.00	3.00	1.00	1.00	3.00	1.00
Final Sat.:	1450	2900	1450	2900	2900	1450	1450	4350	1450	1450	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.03	0.08	0.00	0.26	0.05	0.08	0.05	0.24	0.00	0.13	0.30	0.00
Crit Volume:		113		380				342		193		
Crit Moves:		****		****				****		****		

Rocklin General Plan Update
Cumulative With Buildout of Proposed General Plan
With Identified Intersection Mitigations

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #136 W Stanford Ranch Rd & Sunset Bl

Cycle (sec): 100 Critical Vol./Cap.(X): 0.796
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 112 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Ignore		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2	0 3	0 1	2	0 2	1 0	2	0 2	0 1	2	0 3	0 1
Volume Module:												
Base Vol:	105	1141	154	412	516	377	790	493	122	229	517	311
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	105	1141	154	412	516	377	790	493	122	229	517	311
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Volume:	105	1141	154	412	516	377	790	493	122	229	517	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	105	1141	154	412	516	377	790	493	122	229	517	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	105	1141	154	412	516	377	790	493	122	229	517	0
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00	2.00	3.00	1.00
Final Sat.:	2900	4350	1450	2900	2900	1450	2900	2900	1450	2900	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.04	0.26	0.11	0.14	0.18	0.26	0.27	0.17	0.08	0.08	0.12	0.00
Crit Volume:		380		206			395				172	
Crit Moves:		****		****			****				****	

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City of Rocklin General Plan Update
2030 Plus Project
PM Peak Hour LOS (Modified Circular 212 Capacities)

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #129 Sunset Bl & Blue Oaks Bl

Cycle (sec): 100 Critical Vol./Cap.(X): 0.791
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 109 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:		Ovl			Include			Ignore			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	1	0 0 1	1	0	0 1 0	1	0	3 0 1	1	0	3 0 1
Volume Module:												
Base Vol:	303	36	338	29	20	4	27	1653	377	398	1720	58
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	303	36	338	29	20	4	27	1653	377	398	1720	58
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Volume:	303	36	338	29	20	4	27	1653	0	398	1720	58
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	303	36	338	29	20	4	27	1653	0	398	1720	58
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	303	36	338	29	20	4	27	1653	0	398	1720	58
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.79	0.21	1.00	1.00	0.83	0.17	1.00	3.00	1.00	1.00	3.00	1.00
Final Sat.:	2592	308	1450	1450	1208	242	1450	4350	1450	1450	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.12	0.12	0.23	0.02	0.02	0.02	0.02	0.38	0.00	0.27	0.40	0.04
Crit Volume:		170		29				551		398		
Crit Moves:		****		****				****		****		

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City of Rocklin General Plan Update
2030 Plus Project
PM Peak Hour LOS (Modified Circular 212 Capacities)

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #130 Sunset Bl & Fairway Dr

Cycle (sec): 100 Critical Vol./Cap.(X): 0.743
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 72 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1 0 1	0	0	1! 0 0	1	0	2 0 1	1	0	1 1 0
Volume Module:												
Base Vol:	139	32	237	13	19	29	63	1463	106	183	1669	13
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	139	32	237	13	19	29	63	1463	106	183	1669	13
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	139	32	237	13	19	29	63	1463	106	183	1669	13
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	139	32	237	13	19	29	63	1463	106	183	1669	13
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	139	32	237	13	19	29	63	1463	106	183	1669	13
Saturation Flow Module:												
Sat/Lane:	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	0.21	0.31	0.48	1.00	2.00	1.00	1.00	1.98	0.02
Final Sat.:	1500	1500	1500	320	467	713	1500	3000	1500	1500	2977	23
Capacity Analysis Module:												
Vol/Sat:	0.09	0.02	0.16	0.04	0.04	0.04	0.04	0.49	0.07	0.12	0.56	0.56
Crit Volume:	139				61			732		183		
Crit Moves:	****				****			****		****		

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City of Rocklin General Plan Update
2030 Plus Project
PM Peak Hour LOS (Modified Circular 212 Capacities)

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #165 Sierra College Bl & Valley View Pkwy

Cycle (sec): 100 Critical Vol./Cap.(X): 0.611
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 59 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Protected				Protected			
Rights:	Include				Include				Ignore				Include			
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2	0	2	0 0	0	0	2	0 1	2	0	0	0 1	0	0	0	0 0
Volume Module:																
Base Vol:	257	1415	0	0	744	296	419	0	603	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	257	1415	0	0	744	296	419	0	603	0	0	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00				
PHF Volume:	257	1415	0	0	744	296	419	0	0	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	257	1415	0	0	744	296	419	0	0	0	0	0				
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00				
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00				
FinalVolume:	257	1415	0	0	744	296	419	0	0	0	0	0				
Saturation Flow Module:																
Sat/Lane:	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500				
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Lanes:	2.00	2.00	0.00	0.00	2.00	1.00	2.00	0.00	1.00	0.00	0.00	0.00				
Final Sat.:	3000	3000	0	0	3000	1500	3000	0	1500	0	0	0				
Capacity Analysis Module:																
Vol/Sat:	0.09	0.47	0.00	0.00	0.25	0.20	0.14	0.00	0.00	0.00	0.00	0.00				
Crit Volume:	708			0			210					0				
Crit Moves:	****			****			****									

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City of Rocklin General Plan Update
2030 Plus Project
PM Peak Hour LOS (Modified Circular 212 Capacities)

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #166 University Ave & Whitney Ranch Pkwy

Cycle (sec): 100 Critical Vol./Cap.(X): 0.644
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 64 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Protected				Protected				Protected				Protected			
Rights:	Include				Ignore				Include				Include			
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2	0	2	0 1	2	0	2	0 1	2	0	3	0 1	2	0	3	0 1
Volume Module:																
Base Vol:	335	186	36	179	72	489	337	1254	82	37	1684	84				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	335	186	36	179	72	489	337	1254	82	37	1684	84				
User Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	335	186	36	179	72	0	337	1254	82	37	1684	84				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	335	186	36	179	72	0	337	1254	82	37	1684	84				
PCE Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00				
MLF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00				
FinalVolume:	335	186	36	179	72	0	337	1254	82	37	1684	84				
Saturation Flow Module:																
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450				
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Lanes:	2.00	2.00	1.00	2.00	2.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00				
Final Sat.:	2900	2900	1450	2900	2900	1450	2900	4350	1450	2900	4350	1450				
Capacity Analysis Module:																
Vol/Sat:	0.12	0.06	0.02	0.06	0.02	0.00	0.12	0.29	0.06	0.01	0.39	0.06				
Crit Volume:	168				36		169				561					
Crit Moves:	****				****		****				****					

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City of Rocklin General Plan Update
2030 Plus Project
PM Peak Hour LOS (Modified Circular 212 Capacities)

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #141 Wildcat Bl & Bridlewood Dr

Cycle (sec): 100 Critical Vol./Cap.(X): 0.586
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 55 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0 1	1 0	1	0 1	1 0	1	0 1	0 1	1	0 0	1 0
Volume Module:												
Base Vol:	1	1265	135	44	1157	1	1	35	2	70	7	24
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	1265	135	44	1157	1	1	35	2	70	7	24
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	1	1265	135	44	1157	1	1	35	2	70	7	24
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	1265	135	44	1157	1	1	35	2	70	7	24
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	1	1265	135	44	1157	1	1	35	2	70	7	24
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.81	0.19	1.00	1.99	0.01	1.00	1.00	1.00	1.00	0.23	0.77
Final Sat.:	1450	2620	280	1450	2897	3	1450	1450	1450	1450	327	1123
Capacity Analysis Module:												
Vol/Sat:	0.00	0.48	0.48	0.03	0.40	0.40	0.00	0.02	0.00	0.05	0.02	0.02
Crit Volume:		700		44				35		70		
Crit Moves:		****		****				****		****		

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City of Rocklin General Plan Update
2030 Plus Project
PM Peak Hour LOS (Modified Circular 212 Capacities)

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #142 Wildcat Bl & Whitney Ranch Pkwy

Cycle (sec): 100 Critical Vol./Cap.(X): 0.671
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 69 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0 2	0 1	1	0 2	0 1	2	0 3	0 1	2	0 2	0 1
Volume Module:												
Base Vol:	369	738	49	85	354	207	434	695	373	49	325	101
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	369	738	49	85	354	207	434	695	373	49	325	101
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	369	738	49	85	354	207	434	695	373	49	325	101
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	369	738	49	85	354	207	434	695	373	49	325	101
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	369	738	49	85	354	207	434	695	373	49	325	101
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	2.00	3.00	1.00	2.00	2.00	1.00
Final Sat.:	1450	2900	1450	1450	2900	1450	2900	4350	1450	2900	2900	1450
Capacity Analysis Module:												
Vol/Sat:	0.25	0.25	0.03	0.06	0.12	0.14	0.15	0.16	0.26	0.02	0.11	0.07
Crit Volume:	369					207			373	24		
Crit Moves:	****					****			****	****		

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City of Rocklin General Plan Update
2030 Plus Project
PM Peak Hour LOS (Modified Circular 212 Capacities)

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #145 Wildcat Bl & Ranch View Dr

Cycle (sec): 100 Critical Vol./Cap.(X): 0.786
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 107 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0 1	1 0	1	0 1	1 0	1	0 0	1 0	1	0 0	1 0
Volume Module:												
Base Vol:	2	1124	56	28	524	77	485	31	6	46	3	34
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	2	1124	56	28	524	77	485	31	6	46	3	34
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	2	1124	56	28	524	77	485	31	6	46	3	34
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	2	1124	56	28	524	77	485	31	6	46	3	34
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	2	1124	56	28	524	77	485	31	6	46	3	34
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.91	0.09	1.00	1.74	0.26	1.00	0.84	0.16	1.00	0.08	0.92
Final Sat.:	1450	2762	138	1450	2528	372	1450	1215	235	1450	118	1332
Capacity Analysis Module:												
Vol/Sat:	0.00	0.41	0.41	0.02	0.21	0.21	0.33	0.03	0.03	0.03	0.03	0.03
Crit Volume:		590			28			485				37
Crit Moves:		****			****			****				****

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City of Rocklin General Plan Update
2030 Plus Project
PM Peak Hour LOS (Modified Circular 212 Capacities)

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #152 Stanford Ranch Rd & Crest Dr

Cycle (sec): 100 Critical Vol./Cap.(X): 0.920
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0 1	1 0	1	0 2	0 0	0	0 0	0 0	1	0 0	0 1
Volume Module:												
Base Vol:	0	569	295	589	437	0	0	0	0	143	0	359
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	569	295	589	437	0	0	0	0	143	0	359
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	569	295	589	437	0	0	0	0	143	0	359
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	569	295	589	437	0	0	0	0	143	0	359
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	569	295	589	437	0	0	0	0	143	0	359
Saturation Flow Module:												
Sat/Lane:	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	1.32	0.68	1.00	2.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1976	1024	1500	3000	0	0	0	0	1500	0	1500
Capacity Analysis Module:												
Vol/Sat:	0.00	0.29	0.29	0.39	0.15	0.00	0.00	0.00	0.00	0.10	0.00	0.24
Crit Volume:		432			589			0				359
Crit Moves:		****			****							****

City of Rocklin General Plan Update
2030 Plus Project
PM Peak Hour LOS (Modified Circular 212 Capacities)

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #137 W Stanford Ranch Rd & Wildcat Bl

Cycle (sec): 100 Critical Vol./Cap.(X): 0.796
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 112 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0 2	0 1	2	0 1	0 2	2	0 2	0 1	1	0 3	0 1
Volume Module:												
Base Vol:	14	442	0	568	129	510	609	614	13	1	247	345
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	14	442	0	568	129	510	609	614	13	1	247	345
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	14	442	0	568	129	510	609	614	13	1	247	345
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	14	442	0	568	129	510	609	614	13	1	247	345
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	14	442	0	568	129	510	609	614	13	1	247	345
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	2.00	1.00	2.00	2.00	2.00	1.00	1.00	3.00	1.00
Final Sat.:	1450	2900	1450	2900	1450	2900	2900	2900	1450	1450	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.01	0.15	0.00	0.20	0.09	0.18	0.21	0.21	0.01	0.00	0.06	0.24
Crit Volume:		221		284			305					345
Crit Moves:		****		****			****					****

City of Rocklin General Plan Update
2030 Plus Project
PM Peak Hour LOS (Modified Circular 212 Capacities)

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #138 Whitney Ranch Pkwy & Bridlewood Dr

Cycle (sec): 100 Critical Vol./Cap.(X): 0.334
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 28 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0 1! 0	0	0	0 1! 0	0	1	0 1	1 0	1	0 1	1 0
Volume Module:												
Base Vol:	53	1	25	3	0	7	7	660	91	44	375	14
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	53	1	25	3	0	7	7	660	91	44	375	14
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	53	1	25	3	0	7	7	660	91	44	375	14
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	53	1	25	3	0	7	7	660	91	44	375	14
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	53	1	25	3	0	7	7	660	91	44	375	14
Saturation Flow Module:												
Sat/Lane:	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.67	0.01	0.32	0.30	0.00	0.70	1.00	1.76	0.24	1.00	1.93	0.07
Final Sat.:	1006	19	475	450	0	1050	1500	2636	364	1500	2892	108
Capacity Analysis Module:												
Vol/Sat:	0.05	0.05	0.05	0.01	0.00	0.01	0.00	0.25	0.25	0.03	0.13	0.13
Crit Volume:				79		3			376	44		
Crit Moves:			****	****					****	****		

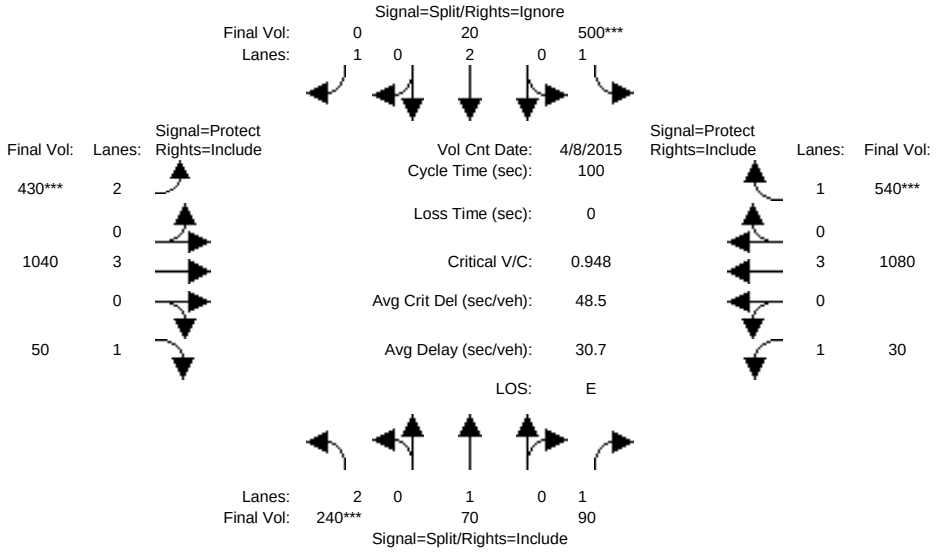
Cumulative Conditions Technical Calculations

Proposed Land Use Changes

City of Rocklin
Cumulative Conditions PM Peak Hour
NWRA GDP 2030

Level Of Service Computation Report
Circular 212 Planning (Future Volume Alternative)
PM Peak Hour Scenario

Intersection #1: Sunset Blvd/Atherton Dr/University Dr

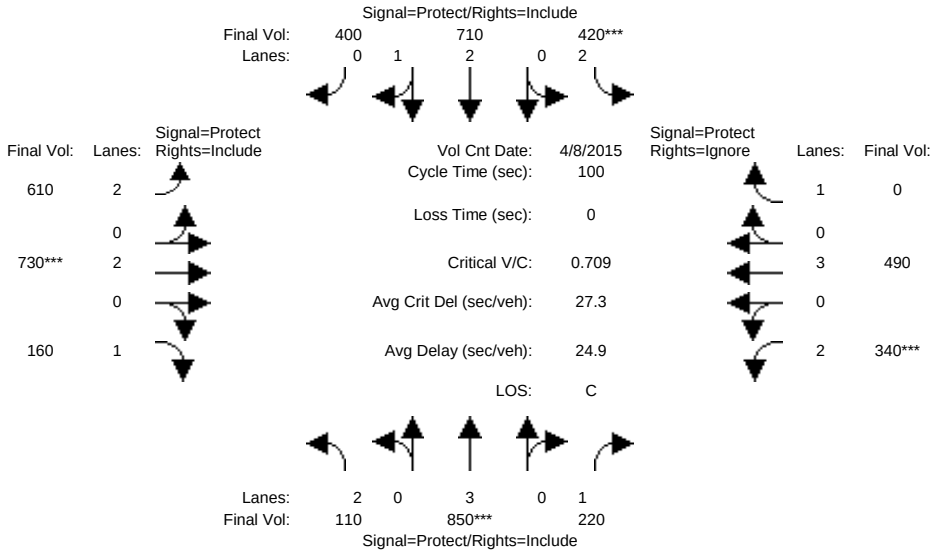


Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Apr 2015 <<												
Base Vol:	240	70	90	500	20	670	430	1040	50	30	1080	540
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	240	70	90	500	20	670	430	1040	50	30	1080	540
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	240	70	90	500	20	670	430	1040	50	30	1080	540
User Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	240	70	90	500	20	0	430	1040	50	30	1080	540
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	240	70	90	500	20	0	430	1040	50	30	1080	540
PCE Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	240	70	90	500	20	0	430	1040	50	30	1080	540
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	1.00	1.00	1.00	2.00	1.00	2.00	3.00	1.00	1.00	3.00	1.00
Final Sat.:	2900	1450	1450	1450	2900	1450	2900	4350	1450	1450	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.08	0.05	0.06	0.34	0.01	0.00	0.15	0.24	0.03	0.02	0.25	0.37
Crit Volume:	120			500			215					540
Crit Moves:	****			****			****					****

City of Rocklin
Cumulative Conditions PM Peak Hour
NWRA GDP 2030

Level Of Service Computation Report
Circular 212 Planning (Future Volume Alternative)
PM Peak Hour Scenario

Intersection #2: Sunset Blvd/West Stanford Ranch Rd

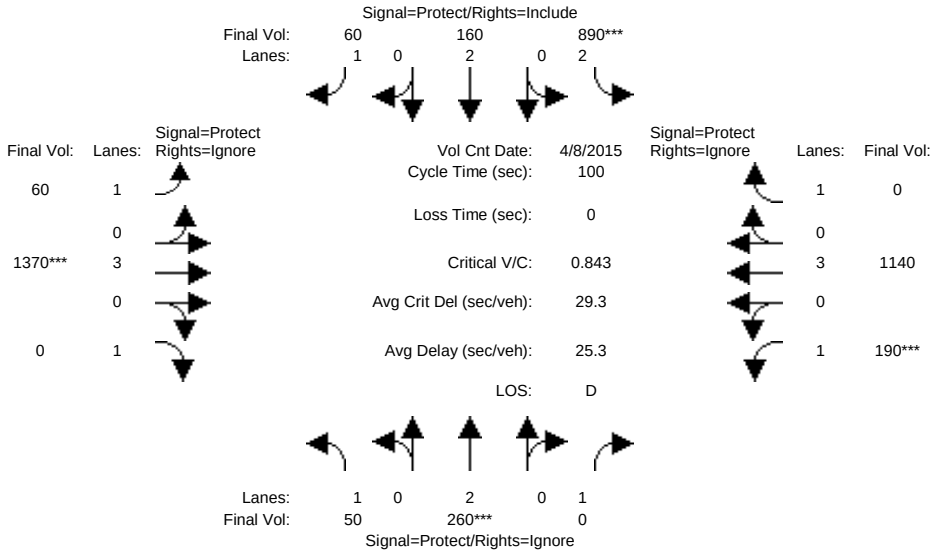


Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Apr 2015 <<												
Base Vol:	110	850	220	420	710	400	610	730	160	340	490	290
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	110	850	220	420	710	400	610	730	160	340	490	290
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	110	850	220	420	710	400	610	730	160	340	490	290
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Volume:	110	850	220	420	710	400	610	730	160	340	490	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	110	850	220	420	710	400	610	730	160	340	490	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	110	850	220	420	710	400	610	730	160	340	490	0
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00	2.00	3.00	1.00
Final Sat.:	2900	4350	1450	2900	2900	1450	2900	2900	1450	2900	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.04	0.20	0.15	0.14	0.24	0.28	0.21	0.25	0.11	0.12	0.11	0.00
Crit Volume:		283		210				365		170		
Crit Moves:		****		****				****		****		

City of Rocklin
Cumulative Conditions PM Peak Hour
NWRA GDP 2030

Level Of Service Computation Report
Circular 212 Planning (Future Volume Alternative)
PM Peak Hour Scenario

Intersection #3: Sunset Blvd/West Oaks Blvd

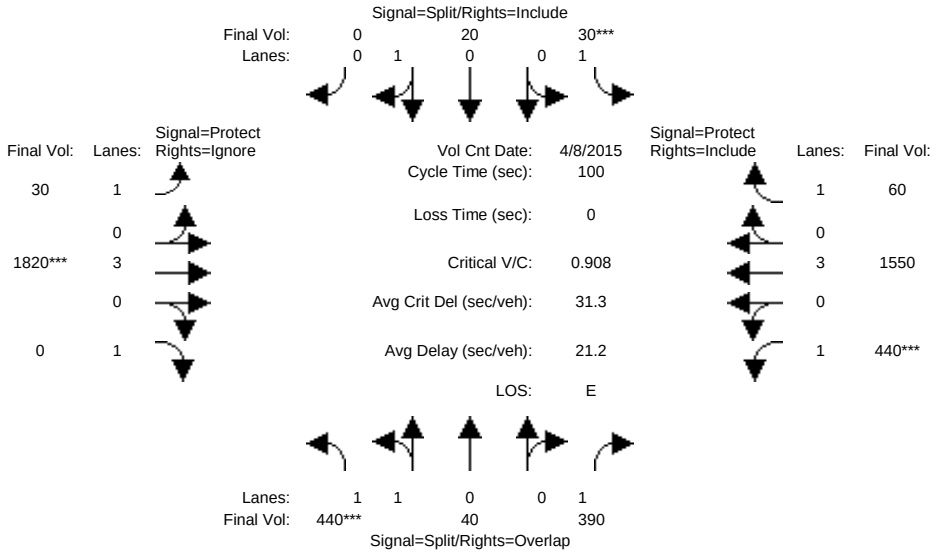


Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Apr 2015 <<												
Base Vol:	50	260	220	890	160	60	60	1370	10	190	1140	680
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	50	260	220	890	160	60	60	1370	10	190	1140	680
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	50	260	220	890	160	60	60	1370	10	190	1140	680
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Volume:	50	260	0	890	160	60	60	1370	0	190	1140	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	50	260	0	890	160	60	60	1370	0	190	1140	0
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
FinalVolume:	50	260	0	890	160	60	60	1370	0	190	1140	0
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	2.00	2.00	1.00	1.00	3.00	1.00	1.00	3.00	1.00
Final Sat.:	1450	2900	1450	2900	2900	1450	1450	4350	1450	1450	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.03	0.09	0.00	0.31	0.06	0.04	0.04	0.31	0.00	0.13	0.26	0.00
Crit Volume:		130		445				457		190		
Crit Moves:		****		****				****		****		

City of Rocklin
Cumulative Conditions PM Peak Hour
NWRA GDP 2030

Level Of Service Computation Report
Circular 212 Planning (Future Volume Alternative)
PM Peak Hour Scenario

Intersection #4: Sunset Blvd/Blue Oaks Blvd

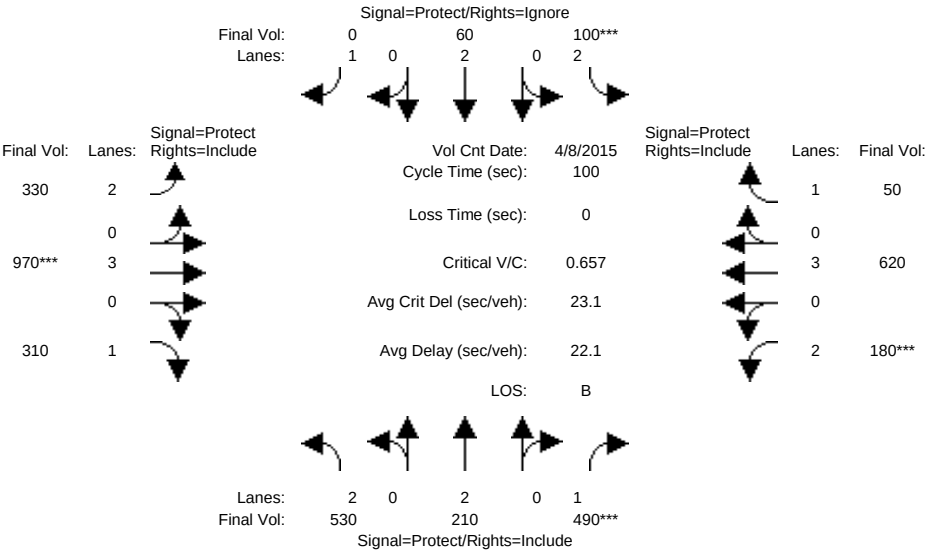


Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Apr 2015 <<												
Base Vol:	440	40	390	30	20	0	30	1820	680	440	1550	60
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	440	40	390	30	20	0	30	1820	680	440	1550	60
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	440	40	390	30	20	0	30	1820	680	440	1550	60
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Volume:	440	40	390	30	20	0	30	1820	0	440	1550	60
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	440	40	390	30	20	0	30	1820	0	440	1550	60
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	440	40	390	30	20	0	30	1820	0	440	1550	60
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.83	0.17	1.00	1.00	1.00	0.00	1.00	3.00	1.00	1.00	3.00	1.00
Final Sat.:	2658	242	1450	1450	1450	0	1450	4350	1450	1450	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.17	0.17	0.27	0.02	0.01	0.00	0.02	0.42	0.00	0.30	0.36	0.04
Crit Volume:	240			30			607			440		
Crit Moves:	****			****			****			****		

City of Rocklin
Cumulative Conditions PM Peak Hour
NWRA GDP 2030

Level Of Service Computation Report
Circular 212 Planning (Future Volume Alternative)
PM Peak Hour Scenario

Intersection #5: Whitney Ranch Pkwy/University Dr

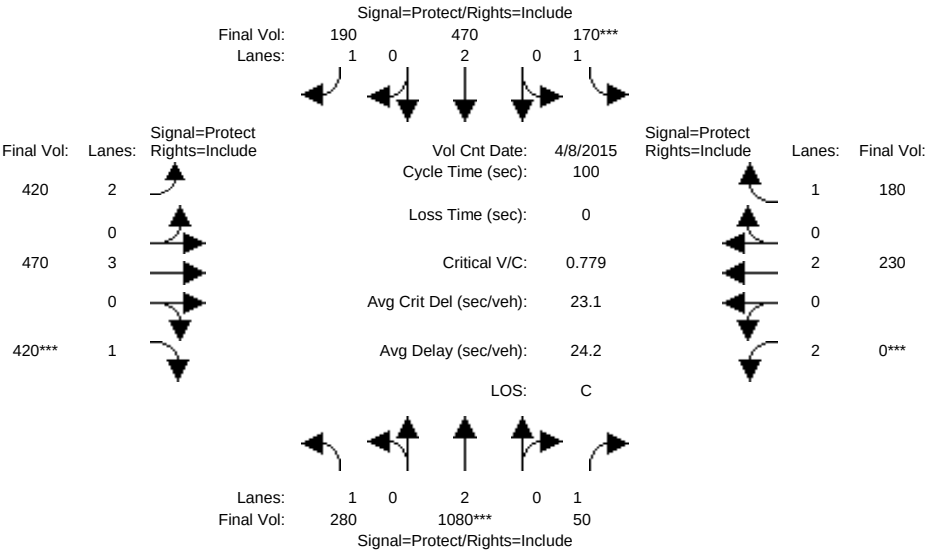


Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Apr 2015 <<												
Base Vol:	530	210	490	100	60	570	330	970	310	180	620	50
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	530	210	490	100	60	570	330	970	310	180	620	50
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	530	210	490	100	60	570	330	970	310	180	620	50
User Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	530	210	490	100	60	0	330	970	310	180	620	50
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	530	210	490	100	60	0	330	970	310	180	620	50
PCE Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	530	210	490	100	60	0	330	970	310	180	620	50
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	2.00	1.00	2.00	2.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	2900	2900	1450	2900	2900	1450	2900	4350	1450	2900	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.18	0.07	0.34	0.03	0.02	0.00	0.11	0.22	0.21	0.06	0.14	0.03
Crit Volume:			490	50				323		90		
Crit Moves:			****	****				****		****		

City of Rocklin
Cumulative Conditions PM Peak Hour
NWRA GDP 2030

Level Of Service Computation Report
Circular 212 Planning (Future Volume Alternative)
PM Peak Hour Scenario

Intersection #6: Whitney Ranch Pkwy/Wildcat Blvd

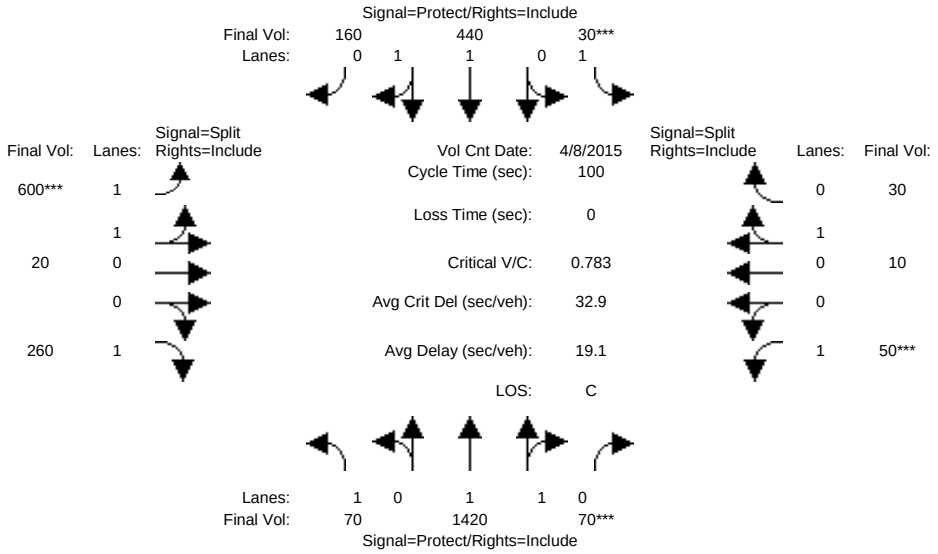


Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Apr 2015 <<												
Base Vol:	280	1080	50	170	470	190	420	470	420	0	230	180
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	280	1080	50	170	470	190	420	470	420	0	230	180
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	280	1080	50	170	470	190	420	470	420	0	230	180
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	280	1080	50	170	470	190	420	470	420	0	230	180
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	280	1080	50	170	470	190	420	470	420	0	230	180
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	280	1080	50	170	470	190	420	470	420	0	230	180
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	2.00	3.00	1.00	2.00	2.00	1.00
Final Sat.:	1450	2900	1450	1450	2900	1450	2900	4350	1450	2900	2900	1450
Capacity Analysis Module:												
Vol/Sat:	0.19	0.37	0.03	0.12	0.16	0.13	0.14	0.11	0.29	0.00	0.08	0.12
Crit Volume:		540		170					420	0		
Crit Moves:		****		****					****	****		

City of Rocklin
Cumulative Conditions PM Peak Hour
NWRA GDP 2030

Level Of Service Computation Report
Circular 212 Planning (Future Volume Alternative)
PM Peak Hour Scenario

Intersection #7: Wildcat Blvd/Ranch View Dr

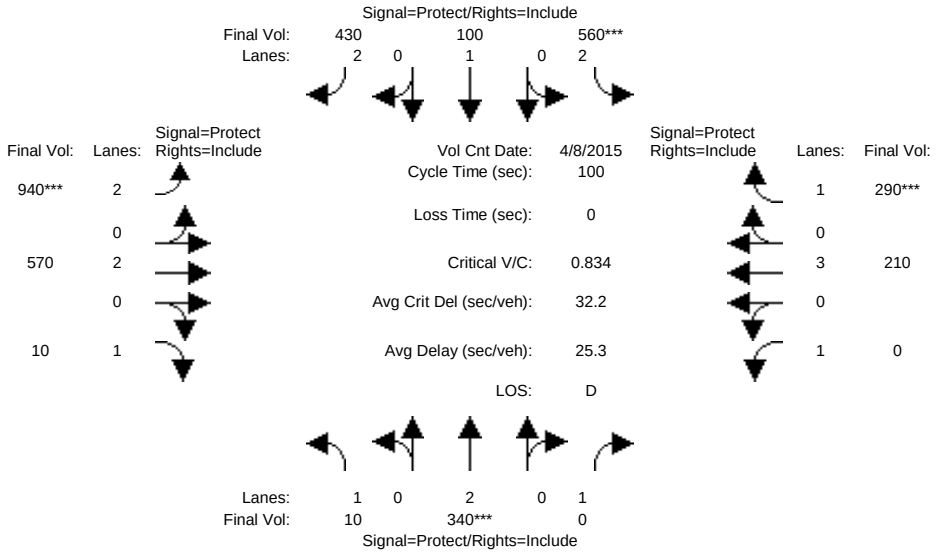


Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Apr 2015 <<												
Base Vol:	70	1420	70	30	440	160	600	20	260	50	10	30
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	70	1420	70	30	440	160	600	20	260	50	10	30
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	70	1420	70	30	440	160	600	20	260	50	10	30
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	70	1420	70	30	440	160	600	20	260	50	10	30
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	70	1420	70	30	440	160	600	20	260	50	10	30
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	70	1420	70	30	440	160	600	20	260	50	10	30
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.91	0.09	1.00	1.47	0.53	1.94	0.06	1.00	1.00	0.25	0.75
Final Sat.:	1450	2764	136	1450	2127	773	2806	94	1450	1450	363	1088
Capacity Analysis Module:												
Vol/Sat:	0.05	0.51	0.51	0.02	0.21	0.21	0.21	0.21	0.18	0.03	0.03	0.03
Crit Volume:			745	30			310			50		
Crit Moves:			****	****			****			****		

City of Rocklin
Cumulative Conditions PM Peak Hour
NWRA GDP 2030

Level Of Service Computation Report
Circular 212 Planning (Future Volume Alternative)
PM Peak Hour Scenario

Intersection #8: Wildcat Blvd/West Stanford Ranch Rd



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Apr 2015 <<												
Base Vol:	10	340	0	560	100	430	940	570	10	0	210	290
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	10	340	0	560	100	430	940	570	10	0	210	290
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	10	340	0	560	100	430	940	570	10	0	210	290
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	10	340	0	560	100	430	940	570	10	0	210	290
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	340	0	560	100	430	940	570	10	0	210	290
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	340	0	560	100	430	940	570	10	0	210	290
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	2.00	1.00	2.00	2.00	2.00	1.00	1.00	3.00	1.00
Final Sat.:	1450	2900	1450	2900	1450	2900	2900	2900	1450	1450	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.01	0.12	0.00	0.19	0.07	0.15	0.32	0.20	0.01	0.00	0.05	0.20
Crit Volume:		170		280			470					290
Crit Moves:		****		****			****					****

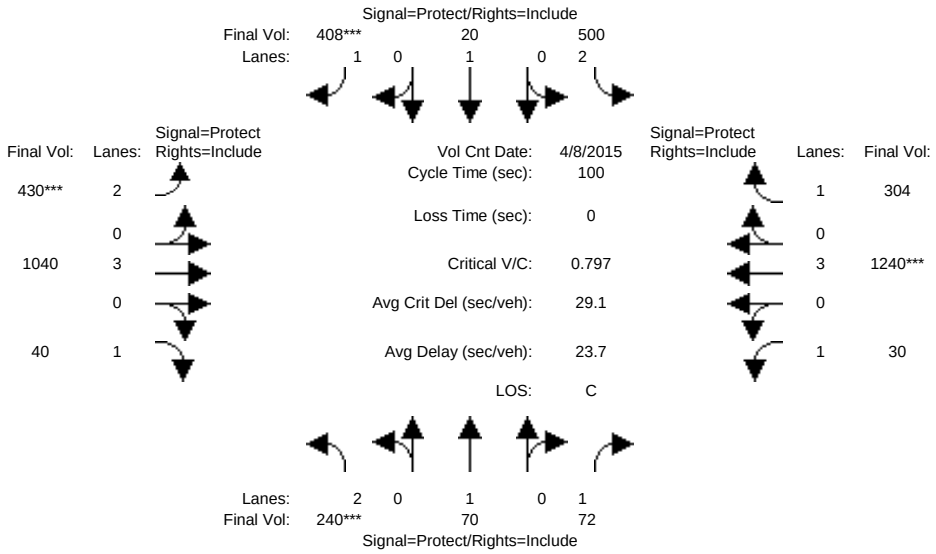
Cumulative Conditions Technical Calculations

Proposed Land Use Changes – Mitigations/RTOR Adjustments

City of Rocklin
Cumulative Conditions PM Peak Hour with Right Turn on Red Adjustments Mitigated
NWRA GDP 2030

Level Of Service Computation Report
Circular 212 Planning (Future Volume Alternative)
PM Peak Hour Scenario

Intersection #1: Sunset Blvd/Atherton Dr/University Dr

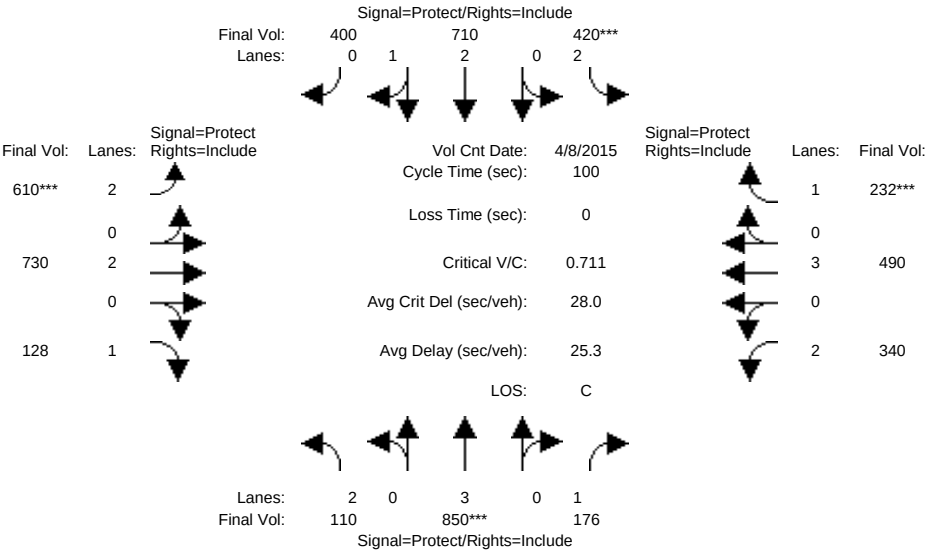


Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Apr 2015 <<												
Base Vol:	240	70	90	500	20	510	430	1040	50	30	1240	380
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	240	70	90	500	20	510	430	1040	50	30	1240	380
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	240	70	90	500	20	510	430	1040	50	30	1240	380
User Adj:	1.00	1.00	0.80	1.00	1.00	0.80	1.00	1.00	0.80	1.00	1.00	0.80
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	240	70	72	500	20	408	430	1040	40	30	1240	304
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	240	70	72	500	20	408	430	1040	40	30	1240	304
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	240	70	72	500	20	408	430	1040	40	30	1240	304
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	1.00	1.00	2.00	1.00	1.00	2.00	3.00	1.00	1.00	3.00	1.00
Final Sat.:	2900	1450	1450	2900	1450	1450	2900	4350	1450	1450	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.08	0.05	0.05	0.17	0.01	0.28	0.15	0.24	0.03	0.02	0.29	0.21
Crit Volume:	120					408	215				413	
Crit Moves:	****					****	****				****	

City of Rocklin
Cumulative Conditions PM Peak Hour with Right Turn on Red Adjustments Mitigated
NWRA GDP 2030

Level Of Service Computation Report
Circular 212 Planning (Future Volume Alternative)
PM Peak Hour Scenario

Intersection #2: Sunset Blvd/West Stanford Ranch Rd

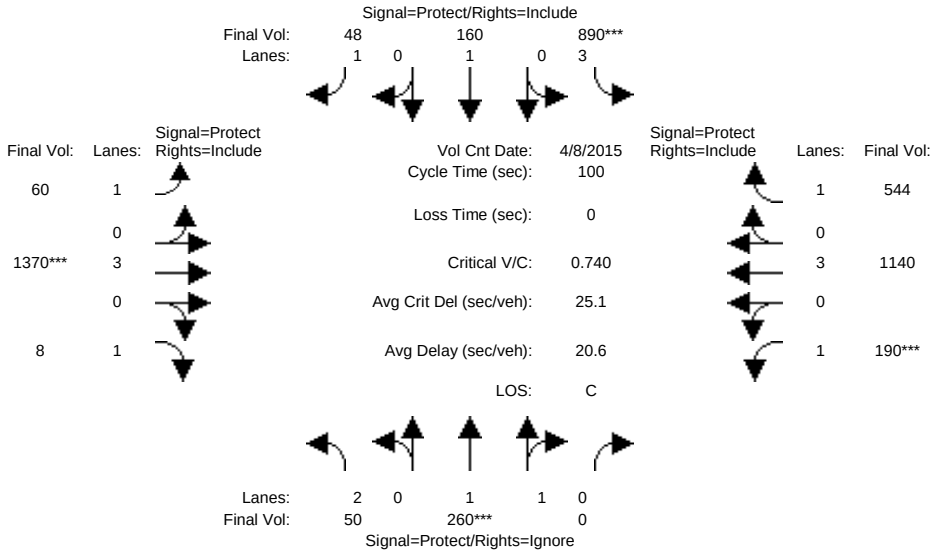


Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Apr 2015 <<												
Base Vol:	110	850	220	420	710	400	610	730	160	340	490	290
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	110	850	220	420	710	400	610	730	160	340	490	290
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	110	850	220	420	710	400	610	730	160	340	490	290
User Adj:	1.00	1.00	0.80	1.00	1.00	1.00	1.00	1.00	0.80	1.00	1.00	0.80
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	110	850	176	420	710	400	610	730	128	340	490	232
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	110	850	176	420	710	400	610	730	128	340	490	232
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	110	850	176	420	710	400	610	730	128	340	490	232
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00	2.00	3.00	1.00
Final Sat.:	2900	4350	1450	2900	2900	1450	2900	2900	1450	2900	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.04	0.20	0.12	0.14	0.24	0.28	0.21	0.25	0.09	0.12	0.11	0.16
Crit Volume:		283		210			305					232
Crit Moves:		****		****			****					****

City of Rocklin
Cumulative Conditions PM Peak Hour with Right Turn on Red Adjustments Mitigated
NWRA GDP 2030

Level Of Service Computation Report
Circular 212 Planning (Future Volume Alternative)
PM Peak Hour Scenario

Intersection #3: Sunset Blvd/West Oaks Blvd

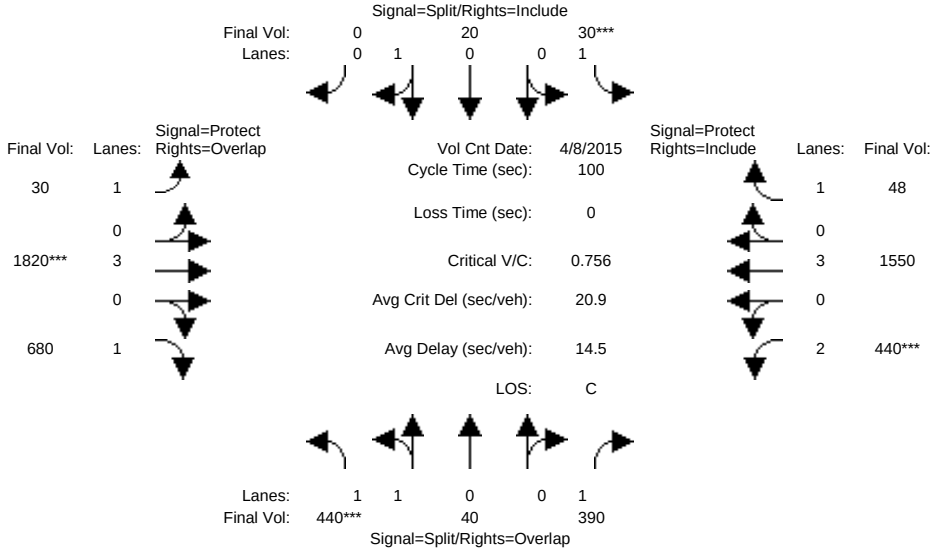


Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Apr 2015 <<												
Base Vol:	50	260	220	890	160	60	60	1370	10	190	1140	680
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	50	260	220	890	160	60	60	1370	10	190	1140	680
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	50	260	220	890	160	60	60	1370	10	190	1140	680
User Adj:	1.00	1.00	0.00	1.00	1.00	0.80	1.00	1.00	0.80	1.00	1.00	0.80
PHF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	50	260	0	890	160	48	60	1370	8	190	1140	544
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	50	260	0	890	160	48	60	1370	8	190	1140	544
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	50	260	0	890	160	48	60	1370	8	190	1140	544
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	2.00	0.00	3.00	1.00	1.00	1.00	3.00	1.00	1.00	3.00	1.00
Final Sat.:	2900	2900	0	4350	1450	1450	1450	4350	1450	1450	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.02	0.09	0.00	0.20	0.11	0.03	0.04	0.31	0.01	0.13	0.26	0.38
Crit Volume:		130		297				457		190		
Crit Moves:		****		****				****		****		

City of Rocklin
Cumulative Conditions PM Peak Hour with Right Turn on Red Adjustments Mitigated
NWRA GDP 2030

Level Of Service Computation Report
Circular 212 Planning (Future Volume Alternative)
PM Peak Hour Scenario

Intersection #4: Sunset Blvd/Blue Oaks Blvd

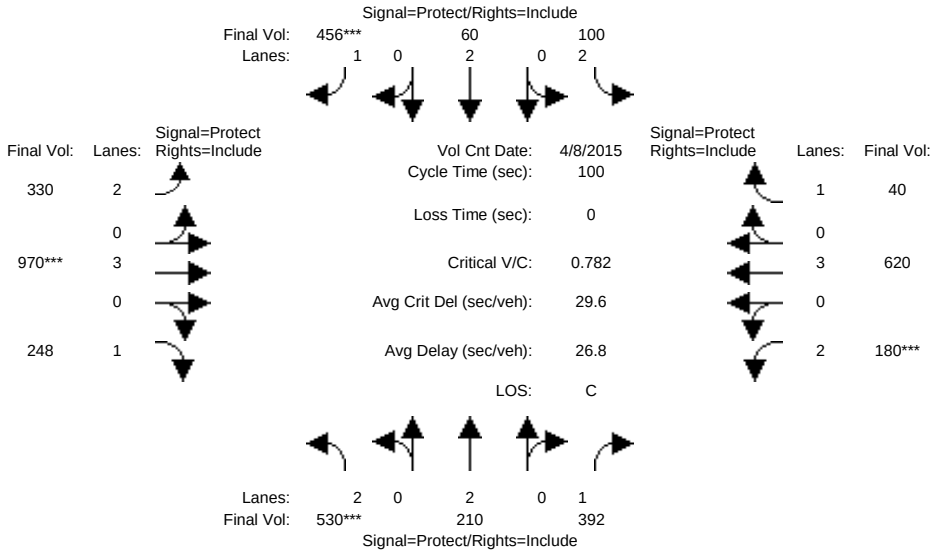


Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Apr 2015 <<												
Base Vol:	440	40	390	30	20	0	30	1820	680	440	1550	60
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	440	40	390	30	20	0	30	1820	680	440	1550	60
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	440	40	390	30	20	0	30	1820	680	440	1550	60
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.80
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	440	40	390	30	20	0	30	1820	680	440	1550	48
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	440	40	390	30	20	0	30	1820	680	440	1550	48
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	440	40	390	30	20	0	30	1820	680	440	1550	48
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.83	0.17	1.00	1.00	1.00	0.00	1.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	2658	242	1450	1450	1450	0	1450	4350	1450	2900	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.17	0.17	0.27	0.02	0.01	0.00	0.02	0.42	0.47	0.15	0.36	0.03
Crit Volume:	240			30				607		220		
Crit Moves:	****			****				****		****		

City of Rocklin
Cumulative Conditions PM Peak Hour with Right Turn on Red Adjustments Mitigated
NWRA GDP 2030

Level Of Service Computation Report
Circular 212 Planning (Future Volume Alternative)
PM Peak Hour Scenario

Intersection #5: Whitney Ranch Pkwy/University Dr

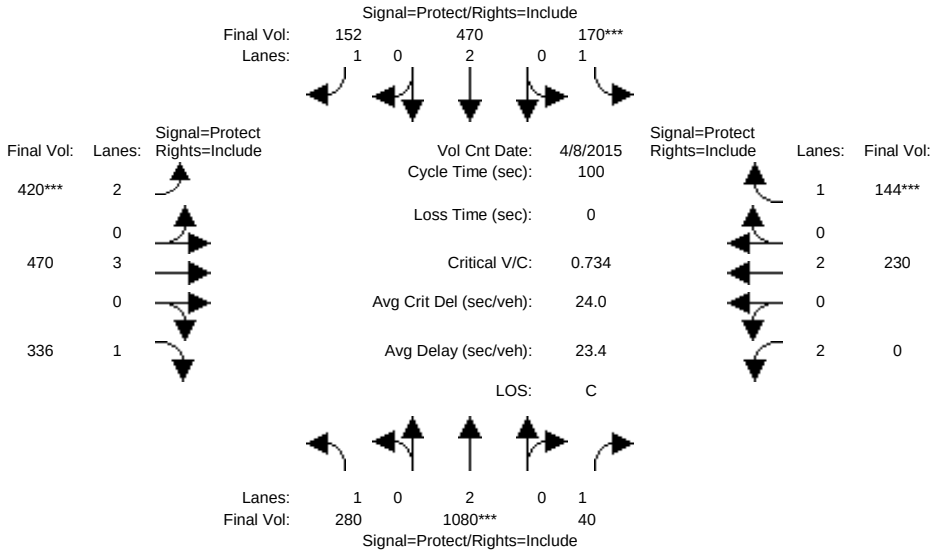


Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Apr 2015 <<												
Base Vol:	530	210	490	100	60	570	330	970	310	180	620	50
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	530	210	490	100	60	570	330	970	310	180	620	50
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	530	210	490	100	60	570	330	970	310	180	620	50
User Adj:	1.00	1.00	0.80	1.00	1.00	0.80	1.00	1.00	0.80	1.00	1.00	0.80
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	530	210	392	100	60	456	330	970	248	180	620	40
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	530	210	392	100	60	456	330	970	248	180	620	40
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	530	210	392	100	60	456	330	970	248	180	620	40
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	2.00	1.00	2.00	2.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	2900	2900	1450	2900	2900	1450	2900	4350	1450	2900	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.18	0.07	0.27	0.03	0.02	0.31	0.11	0.22	0.17	0.06	0.14	0.03
Crit Volume:	265					456		323		90		
Crit Moves:	****					****		****		****		

City of Rocklin
Cumulative Conditions PM Peak Hour with Right Turn on Red Adjustments Mitigated
NWRA GDP 2030

Level Of Service Computation Report
Circular 212 Planning (Future Volume Alternative)
PM Peak Hour Scenario

Intersection #6: Whitney Ranch Pkwy/Wildcat Blvd

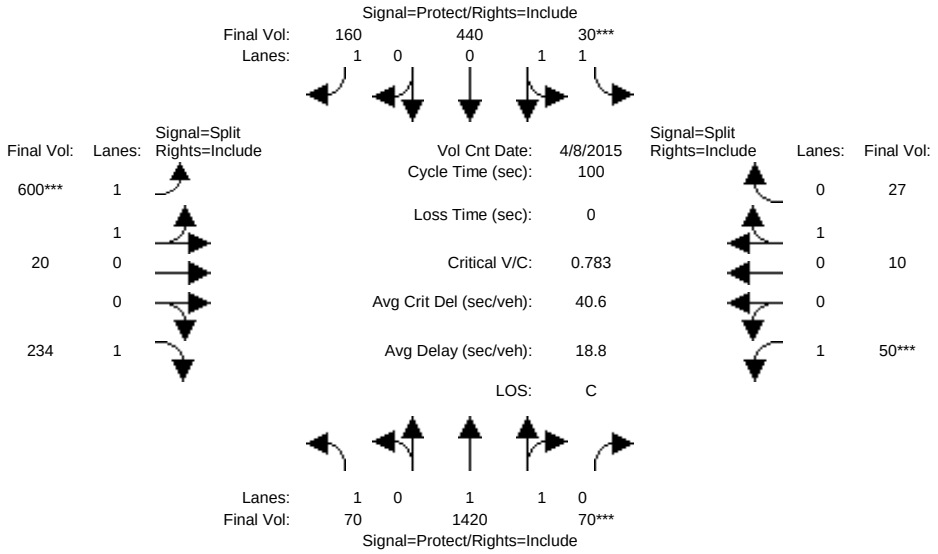


Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Apr 2015 <<												
Base Vol:	280	1080	50	170	470	190	420	470	420	0	230	180
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	280	1080	50	170	470	190	420	470	420	0	230	180
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	280	1080	50	170	470	190	420	470	420	0	230	180
User Adj:	1.00	1.00	0.80	1.00	1.00	0.80	1.00	1.00	0.80	1.00	1.00	0.80
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	280	1080	40	170	470	152	420	470	336	0	230	144
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	280	1080	40	170	470	152	420	470	336	0	230	144
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	280	1080	40	170	470	152	420	470	336	0	230	144
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	2.00	3.00	1.00	2.00	2.00	1.00
Final Sat.:	1450	2900	1450	1450	2900	1450	2900	4350	1450	2900	2900	1450
Capacity Analysis Module:												
Vol/Sat:	0.19	0.37	0.03	0.12	0.16	0.10	0.14	0.11	0.23	0.00	0.08	0.10
Crit Volume:		540			170			210				144
Crit Moves:		****			****			****				****

City of Rocklin
Cumulative Conditions PM Peak Hour with Right Turn on Red Adjustments Mitigated
NWRA GDP 2030

Level Of Service Computation Report
Circular 212 Planning (Future Volume Alternative)
PM Peak Hour Scenario

Intersection #7: Wildcat Blvd/Ranch View Dr

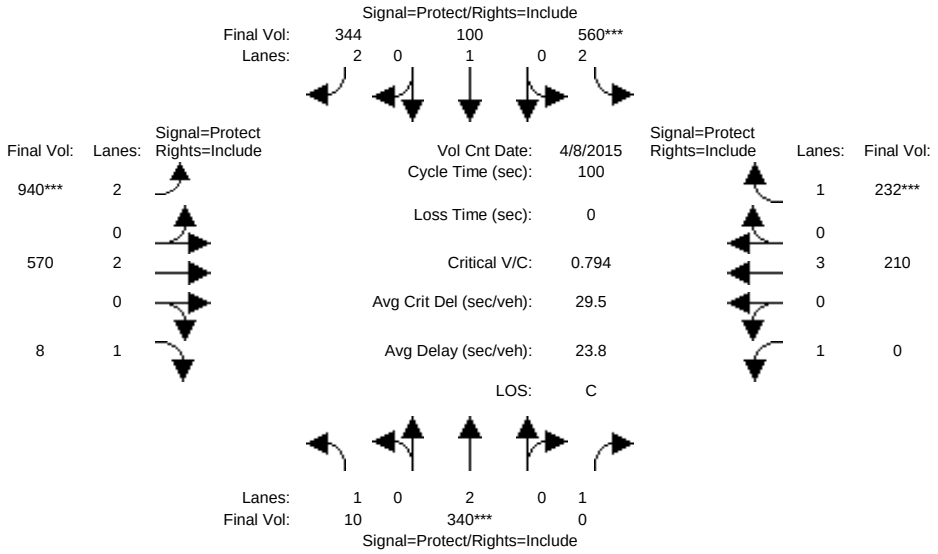


Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Apr 2015 <<												
Base Vol:	70	1420	70	30	440	160	600	20	260	50	10	30
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	70	1420	70	30	440	160	600	20	260	50	10	30
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	70	1420	70	30	440	160	600	20	260	50	10	30
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	0.90
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	70	1420	70	30	440	160	600	20	234	50	10	27
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	70	1420	70	30	440	160	600	20	234	50	10	27
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	70	1420	70	30	440	160	600	20	234	50	10	27
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.91	0.09	1.00	1.00	1.00	1.94	0.06	1.00	1.00	0.27	0.73
Final Sat.:	1450	2764	136	1450	1450	1450	2806	94	1450	1450	392	1058
Capacity Analysis Module:												
Vol/Sat:	0.05	0.51	0.51	0.02	0.30	0.11	0.21	0.21	0.16	0.03	0.03	0.03
Crit Volume:			745	30			310			50		
Crit Moves:			****	****			****			****		

City of Rocklin
Cumulative Conditions PM Peak Hour with Right Turn on Red Adjustments Mitigated
NWRA GDP 2030

Level Of Service Computation Report
Circular 212 Planning (Future Volume Alternative)
PM Peak Hour Scenario

Intersection #8: Wildcat Blvd/West Stanford Ranch Rd



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Apr 2015 <<												
Base Vol:	10	340	0	560	100	430	940	570	10	0	210	290
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	10	340	0	560	100	430	940	570	10	0	210	290
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	10	340	0	560	100	430	940	570	10	0	210	290
User Adj:	1.00	1.00	0.80	1.00	1.00	0.80	1.00	1.00	0.80	1.00	1.00	0.80
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	10	340	0	560	100	344	940	570	8	0	210	232
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	340	0	560	100	344	940	570	8	0	210	232
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	340	0	560	100	344	940	570	8	0	210	232
Saturation Flow Module:												
Sat/Lane:	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	2.00	1.00	2.00	2.00	2.00	1.00	1.00	3.00	1.00
Final Sat.:	1450	2900	1450	2900	1450	2900	2900	2900	1450	1450	4350	1450
Capacity Analysis Module:												
Vol/Sat:	0.01	0.12	0.00	0.19	0.07	0.12	0.32	0.20	0.01	0.00	0.05	0.16
Crit Volume:		170		280			470					232
Crit Moves:		****		****			****					****