

4.15 TRANSPORTATION AND TRAFFIC

This section evaluates the potential impacts of the proposed project in terms of traffic and circulation on Nevada County roadways and intersections. The traffic generated by the project would travel on California Department of Transportation (Caltrans), County of Nevada (County), and City of Grass Valley (City) roadways.

The following scenarios were evaluated to provide a baseline for determining project-related impacts:

- **Existing Conditions:** Existing Conditions analyzes Current Year 2012 traffic volumes within the study area.
- **Existing Plus Background Projects with Current General Plan Land Use Designation Conditions:** Existing Plus Background Projects Conditions include existing traffic plus approved projects within Nevada County and the City of Grass Valley plus traffic associated with buildout of the project sites using the current General Plan land use designations.
- **Cumulative Without Project Conditions:** Cumulative Without Project Conditions include traffic volumes forecast using the Nevada County Transportation Commission and City of Grass Valley Travel Demand models for the year 2030 with current General Plan land use designations.

In order to determine the level of the project impact at each of the study locations, an analysis was performed with the project-generated trips added to the baseline conditions. The following scenarios were evaluated:

- **Existing Plus Background Projects Plus Project Conditions:** Existing Plus Background Projects Plus Project conditions include existing traffic plus traffic generated by approved projects within the vicinity of the project sites (baseline) and the addition traffic associated with buildout of the project rezone sites using the Project land under the proposed Housing Element Rezone program land use designation amendments.
- **Cumulative With Project Conditions:** Cumulative With Project Conditions include cumulative traffic volumes (baseline) and project generated traffic volumes.

4.15.1 EXISTING ENVIRONMENTAL SETTING

A description of the project sites and the roadway network providing access and circulation to the project site is included below. This analysis is organized into three primary study areas that encompass the eighteen project sites. The three study areas include: the City of Grass Valley Sphere of Influence (SOI) study area, the Penn Valley study area and the Lake of the Pines study area.

Grass Valley Sphere of Influence Area Sites

Site 1

Site 1 is located in the City of Grass Valley SOI area on McCourtney Road south of the intersection of McCourtney Road and Personeni Drive. Regional access to Site 1 is provided by SR 20 from the west, SR 49 and McCourtney Road from the north and south. Site 1 is

currently vacant, and existing site access is provided via a driveway to McCourtney Road. The following roadways in proximity to Site 1 were analyzed in this EIR:

SR 20

SR 20 is a west-east state highway that runs from SR 49 in the City of Grass Valley in the east to the Yuba County line in the west and is accessible from the project site via ramps on McCourtney Road. SR 20 is a four-lane roadway between SR 49 and Brighton Street and transitions to a two-lane facility west of the Brighton Street overpass. The posted speed limit on SR 20 is 65 miles per hour on the four-lane portion west of Penn Valley. SR 20 connects the City of Grass Valley to other cities to the west and north, including Yuba City and Nevada City.

McCourtney Road

McCourtney Road is a two-lane north-south major collector originating at SR 20 to the north. It provides access from SR 20 to residential and commercial development on Brighton Street, to the Nevada County Fairgrounds, and to the rural areas south of the City of Grass Valley. The posted speed limit on McCourtney Road is 35 miles per hour. Site 1 is located on the east side of McCourtney Road.

Site 2

Site 2 is a vacant site located south of the City of Grass Valley SOI area on the east side of La Barr Meadows Road, approximately 600 feet to the south of the intersection of La Barr Meadows Road / Auburn Street and McKnight Way. Regional access to Site 2 is provided from SR 49 to the north and south, SR 20 to the west and Empire Street to the east. The site is currently vacant and does not have an established driveway access onto La Barr Meadows Road. The following roadways in the area of Site 2 were analyzed in the EIR:

SR 49

SR 49 is a north-south state highway accessible from the project site via the ramps at McKnight Way. SR 49 connects the City of Grass Valley and Nevada City in the north to other cities to the south, including the Lake of the Pines Community and Auburn. In the vicinity of Site 2, SR 49 is a four-lane highway with a grade-separated interchange at McKnight Way. The posted speed limit near the project site is 60 miles per hour.

McKnight Way

McKnight Way is a short east-west arterial that primarily serves as an interchange to SR 49. It provides access to the retail and commercial uses near the highway. McKnight Way is a four-lane overcrossing at SR 49, and a two-lane roadway on the east and west sides of SR 49.

La Barr Meadows Road

La Barr Meadows Road is predominantly a north-south, two-lane arterial roadway along the east side of SR 49. The speed limit on La Barr Meadows Road varies from 35 to 45 miles per hour. North of McKnight Way, La Barr Meadows Road is named South Auburn Street. Site 2 is located along the east side of La Barr Meadows Road.

South Auburn Street

South Auburn Street is a north-south, two-lane arterial roadway north of McKnight Way that provides access to the City of Grass Valley from Site 2. South of McKnight Way, the roadway is named La Barr Meadows Road. The posted speed limit on South Auburn Street is 35 miles per hour.

Sites 3, 4, 5, 6 & 9

Sites 3, 4, 5, 6 and 9 form a contiguous parcel located in the northeast Grass Valley SOI area on the west side of Brunswick Road. The sites are located approximately ½ mile east of the SR 20/49 interchange at Brunswick Road and ½ mile north of the intersection of Brunswick Road and Idaho-Maryland Road. The site currently consists of a single-family home with driveway access via Triple Crown Drive to Brunswick Road. Regional access to the project area is provided by SR 20 from the west, SR 49 from the north and south, and Colfax Highway (Highway 174) from the southeast.

Sites 7 & 8

Sites 7 & 8 form a contiguous parcel located in the northeast Grass Valley SOI area on the east side of Brunswick Road directly across from Sites 3-6 and 9. The sites are located approximately ½ mile east of the SR 20/49 interchange at Brunswick Road and ½ mile north of the intersection of Brunswick Road and Idaho-Maryland Road. The site currently consists of multiple single-family homes with access to Brunswick Road provided via Bubbling Wells Road / Town Talk Road. Regional access to the project area is provided by SR 20 from the west, SR 49 from the north and south, and Colfax Highway (Highway 174) from the southeast. The following roadways in the area of Sites 3-9 were analyzed in the EIR:

SR 20-49

SR 20-49 in Grass Valley is the combined highways of east-west SR 49 and north-south SR 20. In the vicinity of the project, SR 20-49 is a four-lane facility with various access interchanges in the City. In the project vicinity, access to the freeway is from Brunswick Road and Idaho-Maryland Road. The posted speed limit on SR 20-49 is 55 miles per hour.

Brunswick Road

Brunswick Road is a north-south minor arterial that connects East Main Street/Nevada City Highway in the north to SR 174 in the south. The facility is four lanes near SR 20-49 and drops to two lanes near Old Tunnel Road in the vicinity of the project area. The posted speed limit along Brunswick Road ranges from 35 miles per hour near SR 20-49 to 50 miles per hour near the project area. The roadway has two southbound lanes between Idaho-Maryland Road and Whispering Pines Road. Sites 3 – 9 are located on Brunswick Road between Idaho-Maryland Road and Old Tunnel Road.

Idaho-Maryland Road

Idaho-Maryland Road is a two-lane collector east of Centennial Drive and a two-lane arterial west of Centennial Drive that connects SR 20-49 in the west to Brunswick Road. The intersection with Brunswick Road restricts the eastbound left and eastbound through movements and the westbound through movements. Vehicles traveling eastbound destined for points east of Grass Valley must use Centennial Drive and Whispering Pines Lanes to access Idaho-Maryland Road east of Brunswick Road. The posted speed limit along Idaho-Maryland Road varies from 30 miles per hour from the East Main Street / Idaho-Maryland Road roundabout to Railroad, and 35 miles per hour from Railroad to Spring Hill Drive.

Nevada City Highway

Nevada City Highway is primarily a two-lane minor arterial that transitions from East Main Street at Brunswick Road and transitions into Zion Street at Ridge Road just south of Nevada City. It contains a two-way left turn lane from just north of Brunswick Road to just south of Glenbrook Road. The posted speed limit on Nevada City Highway is 35 miles per hour.

Sutton Way

Sutton Way is a north-south two-lane collector. It connects Idaho-Maryland Road with Brunswick Road and provides access to residential neighborhoods and commercial/retail business areas to the north. The posted speed limit along Sutton Way is 25 miles per hour at the Brunswick Road intersection and 35 miles per hour at the Idaho-Maryland Road intersection.

Penn Valley Area Sites

Sites 10, 11, 13

Sites 10, 11 and 13 form a contiguous parcel located in the residential area of the Penn Valley Community on the north side of Penn Valley Drive approximately ¼ mile east of the intersection of Penn Valley Drive and Spenceville Road. The sites are currently vacant; however, there is an existing access road at the Penn Valley Drive street frontage of Site 11. Regional access to Sites 10, 11, and 13 is provided by SR 20 from the east and west.

Site 12

Site 12 is located in the Penn Valley Community south of Penn Valley Drive on Broken Oak Court. Site 12 is located to the south of Sites 10, 11, and 13, approximately ¼ mile from the intersection of Broken Oak Court and Penn Valley Drive. Site 12 is a vacant parcel located within an existing residential neighborhood. Broken Oak Court fronts the entire east side of the site and includes a cul-de-sac at the northeast and southeast corners. The following Penn Valley area roadways were examined in the EIR:

SR 20

SR 20 is a west-east highway that runs from the Yuba County line in the west through the cities of Grass Valley and Nevada City and terminates at Interstate 80 in the east. The posted speed limit on SR 20 is 55 miles per hour east of Penn Valley Drive and 65 miles per hour on the four-lane portion west of Penn Valley.

Penn Valley Drive

Penn Valley Drive is the primary two-lane major collector through the Penn Valley Community and provides access to SR 20 to the east and west. Penn Valley Drive travels in an east-west direction parallel to SR 20 from the south leg of SR 20 and Rough and Ready Highway, through the Penn Valley Community, to Pleasant Valley Road and Chances Rural Road in the east. Sites 10, 11, 12 and 13 are all accessible via access roads onto Penn Valley Drive. The Penn Valley Pathway (Class I facility) runs parallel to Penn Valley Drive between Horton Street and Spenceville Road. The posted speed limit on Penn Valley Drive is 35 miles per hour.

Lake of the Pines Area Sites

Site 14

Site 14 is located in the Lake of the Pines area on Cameo Drive approximately 1/3 mile to the south of the intersection of SR 49 and Cameo Drive. Site 14 is a vacant parcel with no established connection to the roadway network. Regional access to the site is provided by SR 49 via Cameo Drive from the north and south.

Site 15 & 16

Sites 15 and 16 are located in the Lake of the Pines area on Woodridge Drive approximately 1/3 mile to the east of the intersection of SR 49 and Cameo Drive. Sites 15 and 16 have an established connection at Site 16's frontage with Woodridge Drive which consists of an access gate and gravel road. Regional access to the site is provided by SR 49 via Woodridge Drive.

Site 17

Site 17 is located in the Lake of the Pines area at the southeast corner of Rosewood Road and Combie Road. Site 17 is an undeveloped parcel with no established connections to the roadway network. The site is approximately 1/2 mile to the east of SR 49. Regional access to the site is provided via Combie Road to SR 49 from the north and south

Site 18

Site 18 is located in the Lake of the Pines area on the north side of Combie Road approximately two miles southeast of the intersection of Combie Road / Magnolia Road / Hacienda Drive. The site is a vacant parcel fronting Combie Road; however, there is no established connection to the roadway network. Regional access to the site is provided from SR 49 via Combie Road. The following Lake of the Pines area roadways were examined in this EIR:

SR 49

SR 49 is a four-lane highway that provides north-south access through the foothills. SR 49 runs from SR 41 in the south to SR 70 in the north. In the vicinity of the project, SR 49 is a four-lane facility with various access interchanges in the City. In the project vicinity, access is from Combie Road, Cameo Drive, and Woodridge Drive. The posted speed limit on SR 49 is 55 miles per hour.

Combie Road

Combie Road is a major collector that runs in an east-west direction from SR 49 to West Hacienda Drive, and a north-south direction from the Combie Road / Magnolia Road, West Hacienda Drive intersection to the south. The posted speed limit on Combie Road is 35 miles per hour.

Cameo Drive

Cameo Drive is a two-lane local road that originates at SR 49 in the west and dead ends approximately 3/4 mile to the east of SR 49.

4.15.2 STUDY LOCATIONS

Study Intersections

With cooperation from the City, County and Caltrans, the following intersections were selected for analysis. These intersections were projected to be the most likely to be impacted by the proposed project site. The study intersections locations are identified, existing intersection geometry and control type are shown in Figure 4.15-1a-c, *Existing Intersection Geometry*.

Grass Valley SOI Area Study Intersections

- Existing Study Intersections
 1. Nevada City Highway / Brunswick Road

2. SR 20-49 SB Ramps / Brunswick Road
 3. SR 20-49 NB Ramps / Brunswick Road
 4. Sutton Way / Brunswick Road
 5. Brunswick Road / Idaho-Maryland Road
 6. McCourtney Drive / Personeni Road
 7. Taylorville Road / McKnight Way
 8. SR 49 SB Ramps / McKnight Way
 9. SR 49 NB Ramps / McKnight Way
 10. La Barr Meadows Road / McKnight Way
 27. Brunswick Road / Loma Rica Drive
- Future Study Intersections
 20. Brunswick Road / Town Talk Road (Sites 7 & 8 Access Road)
 21. Brunswick Road / Triple Crown Drive (Site 3-6 & 9 Access Road)
 22. La Barr Meadows Drive / Driveway Site 2

McCourtney Road / Driveway Site / Penn Valley Area Study Intersections

- Existing Study Intersections
 11. Pleasant Valley Road / SR 20
 12. Cattle Road / SR 20
 13. Rough and Ready Highway / Penn Valley Drive / SR 20
 14. Penn Valley Road / Spenceville Road
- Future Study Intersections
 23. Sites 10, 11, 13 Access Road / Penn Valley Drive
 24. Broken Oak Court (Site 12 Access) / Penn Valley Drive

Lake of the Pines Area Study Intersections

- Existing Study Intersections
 15. SR 49 / Cameo Drive
 16. SR 49 / Combie Road
 17. Rosewood Road / Combie Road
 18. Hacienda Drive / Combie Road / Magnolia Road
 19. SR 49 / Woodridge Drive
 28. Combie Road / Higgins Road
- Future Study Intersections
 26. Driveway Site 18 / Combie Drive

Existing Pedestrian and Bicycle Circulation

The Nevada County Transportation Commission (NCTC) adopted the Nevada County Bicycle Master Plan in July 2007. The following provides a description of bicycle facility classifications:

- **Class I Bikeway (Bike Path)** – A Class I Bikeway is a physically separated bike path that does not share the roadway with motorized vehicles. They can be separated by either open space or a physical barrier and are generally two-way facilities.
- **Class II Bikeway (Bike Lane)** – A Class II Bikeway is a bike lane that shares a portion of the roadway with motorized vehicles. They are separated by striping and are signed and marked for exclusive use by bicycle traffic. Class II Bikeways provide service for one-way bicycle traffic and are located outside of the through lanes for motorized vehicles.
- **Class III Bikeway (Bike Route)** – A Class III Bikeway is a bike route that shares the roadway with motorized vehicles. They are identified by signs and not separated by striping. Class III Bikeways are utilized in locations that do not have Class I or Class II facilities or to connect Class II Bikeways to provide a continuous bikeway system.

Grass Valley SOI Area Bicycle and Pedestrian Facilities

Currently, the only designated bicycle facilities within the City are a Class II facility on Ridge Road from Hughes Road to the Nevada Union High School and a Class II facility on East Main Street from Scandling Avenue to north of Dorsey Drive. None of the project study roadways currently have bicycle facilities.

Penn Valley Bicycle and Pedestrian Facilities

Bicycle and Pedestrian facilities in the Penn Valley area include the Penn Valley Pathway. The Penn Valley Pathway is a 1-mile long Class I shared path that runs parallel to Penn Valley Road between Horton Street and Spenceville Road.

Lake of the Pines Area Bicycle and Pedestrian Facilities

According to the County General Plan EIR, bicycling and walking have not been widely used as transportation modes in Nevada County with the exception of students commuting to school and recreational trips (Nevada County, 1994). Limited dedicated facilities for walking and bicycling are available in the Lake of the Pines project area, and no existing bikeway or pedestrian facilities were identified within the immediate area of the project sites.

The Higgins Area Plan proposes to construct a Class I multi-purpose trail on the north side of Combie Road SR 49 to the Magnolia Intermediate School on Kingston Road. The proposed facility will include an 8-foot wide multi-purpose trail that meanders through a landscaped frontage on the north side of Combie Road.

Transit Service

Nevada County is serviced by three public transportation services. These include the Gold Country Stage, Gold Country Telecare and Dial-a-Ride. Dial-a-ride is a private, non-profit organization that provides service to the elderly and disabled riders on a demand basis. Gold County TeleCare is also a private, non-profit organization that transports elderly and disabled riders to shopping and medical appointments. Paratransit Services, Inc., will be taking over County paratransit services from TeleCare beginning July 1, 2013.

Grass Valley SOI Area Transit Service

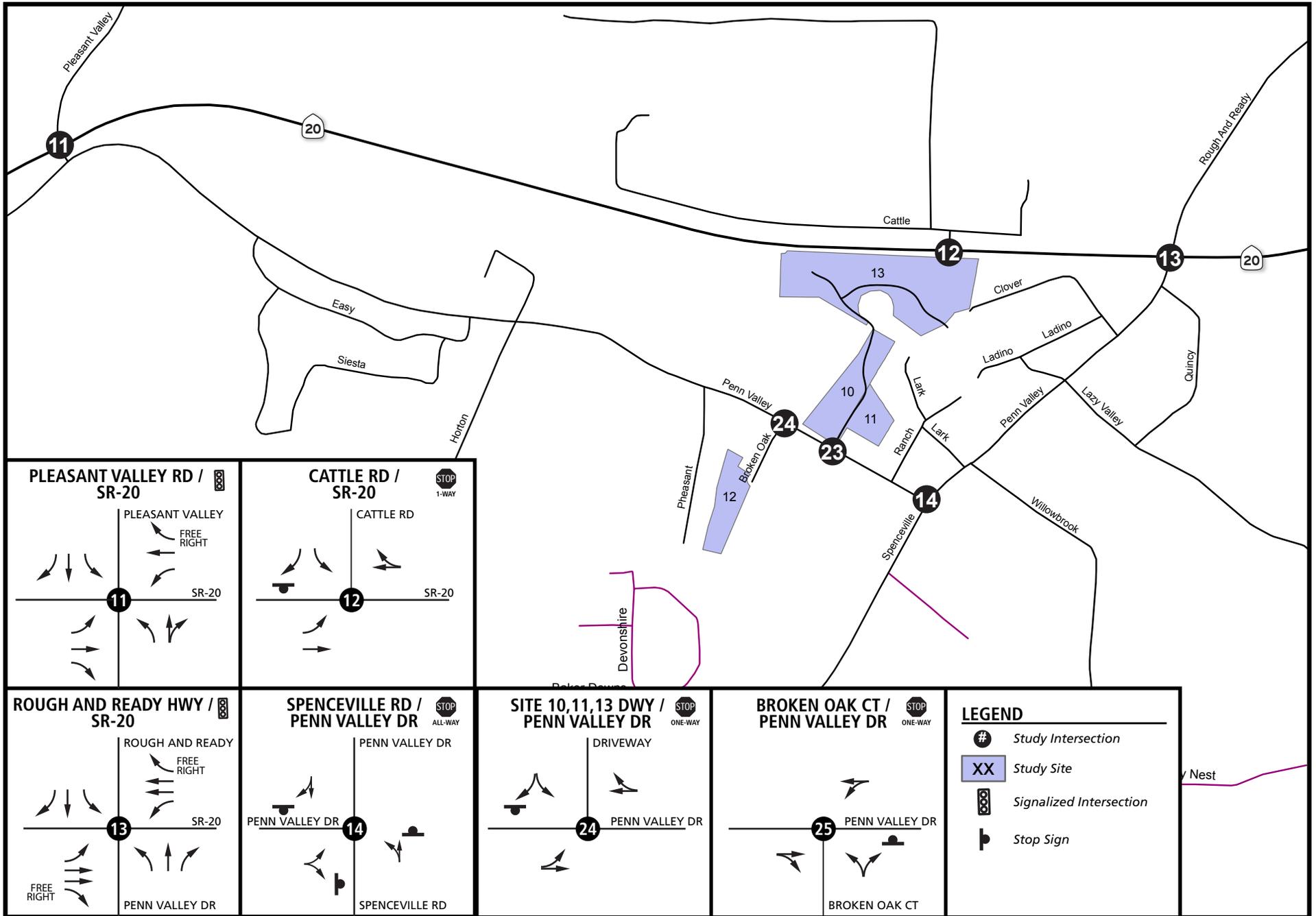
The Gold Country Stage provides bus service throughout Grass Valley and Nevada City. It provides service to the Alta Sierra, Chicago Park, Lake of the Pines, Bitney Springs, Lake Wildwood, San Juan Ridge and Penn Valley neighborhoods and to the cities of Auburn and Colfax in Placer County. All of the buses in the Gold Country Stage fleet are equipped with wheelchair lifts and front-mounted bicycle racks. Ridership on the transit service, according to the Nevada County Bicycle Master Plan, is approximately 0.76 percent of daily commuters.

In the vicinity of the Grass Valley project area, there are two bus routes, Route 4 – Brunswick Basin and Route 8 – Loma Rica. Route 4 operates service between Grass Valley and Nevada City, with service originating at the Tinloy Street Transit Center on Bank Street and the Fowler Center. Hourly service is provided at these points Monday through Saturday from 8:10 AM to 5:10 PM in the northbound direction and from 7:44 AM to 5:44 PM in the southbound direction. Major stops on this route include downtown Grass Valley, Safeway, Sierra Nevada College, Sierra Nevada Memorial Hospital, Glenbrook Shopping Center, Gold Country Shopping Center, and the Fowler Center. Route 4 travels along Dorsey Drive and Sutton Way adjacent to the project area.

Route 8 provides service in the eastern area of Grass Valley in the project vicinity. Service is provided westbound departing from the Tinloy Street Transit Center on Bank Street, from 7:30 AM to 5:00 PM, and in the eastbound direction, departing from the Nevada County Airpark and GCS office, from 7:43 AM to 3:43 PM. Saturday service is provided five times per day, departing Grass Valley between 9:00 AM and 3:15 PM. Major stops include PRIDE, Crown Point Circle, Nevada County Airpark, and the GCS offices. Route 8 travels along Loma Rica Drive adjacent to the project area. The Gold Country Stage plans to change Route 8 to Route 3 in May 2010.

Penn Valley Area Transit Service

The Penn Valley area is serviced by Gold Country Stage Route 6. Route 6 travels along Penn Valley Road throughout the project area. The route terminates at the west at the Wildwood Center on Pleasant Valley Road and to the eastern most terminus at Tinloy Street Transit Center in the City of Grass Valley. Route 6 makes several stops in the Penn Valley study area, including stops at Penn Valley and Hwy 20, Gateway Park, Valley Oak Court, and Northridge Pizza.



Source: RBF Consulting 2013



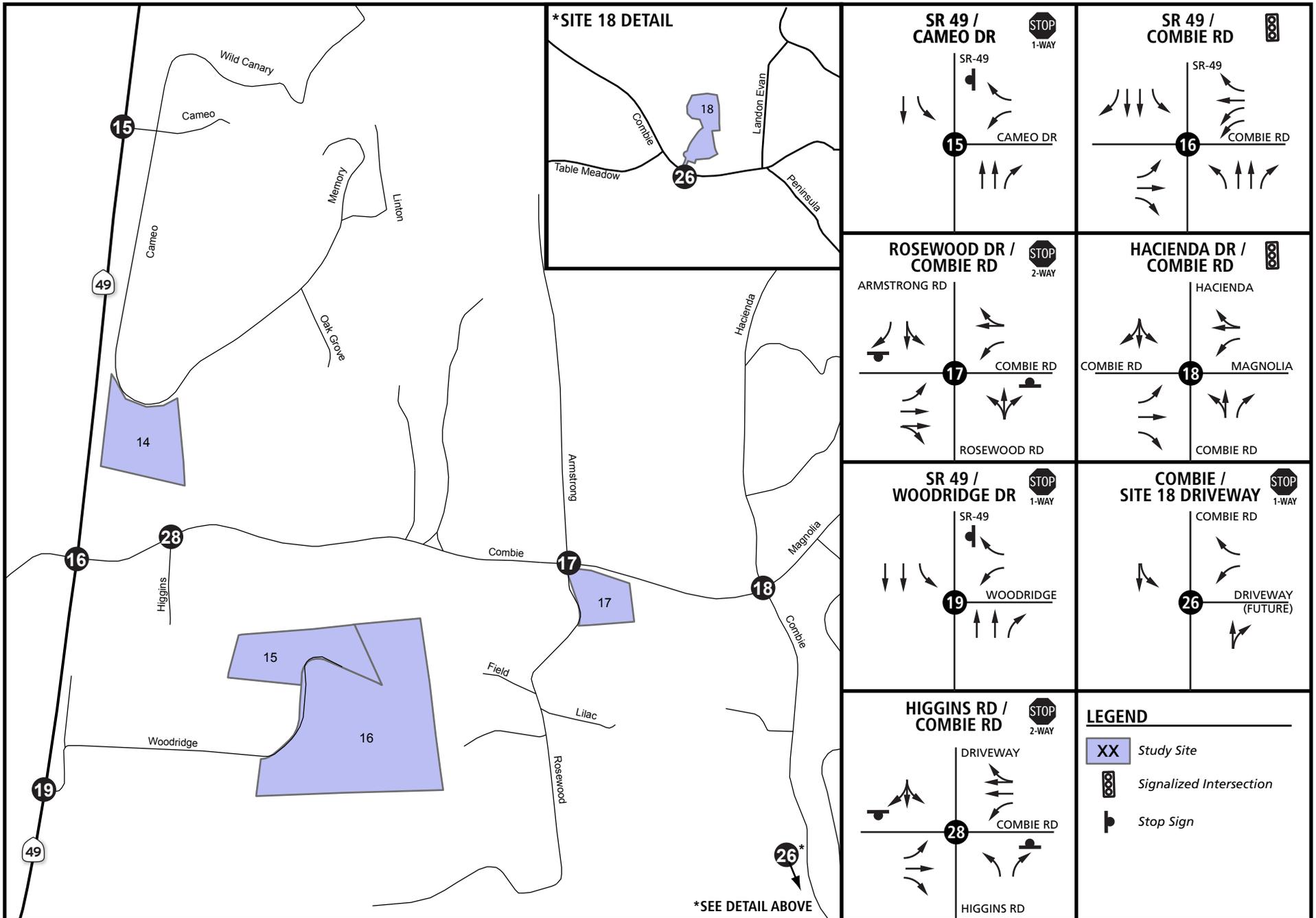
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4/21/2013 • JN 131242-18945

PENN VALLEY STUDY AREA
 COUNTY OF NEVADA: 2009-2014 HOUSING ELEMENT REZONE PROGRAM IMPLEMENTATION EIR

Existing Intersection Geometry

FIGURE 4.15-1b



Source: RBF Consulting 2013



Not to Scale

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LAKE OF THE PINES STUDY AREA
 COUNTY OF NEVADA: 2009-2014 HOUSING ELEMENT REZONE PROGRAM IMPLEMENTATION EIR

Existing Intersection Geometry

FIGURE 4.15-1c

Lake of the Pines Area Transit Service

One route, Gold Country Stage Route 5, provides service to the Lake of Pines area. This route travels north/south on SR 49 to Combie Road and the turnaround at the Lake Center Shopping plaza. Route 5 connects to Nevada City, Grass Valley and the Auburn multi-modal center at the Amtrak station. This service includes 12 buses per day operating at approximately two-hour headways.

Rail

While fixed rail service is not provided in Nevada County, Amtrak operates Thruway bus service. This connects Nevada City, Grass Valley, and Lake of the Pines with the ‘Capitol Corridor’ rail service between Auburn and San Jose. In addition, the ‘San Joaquin’ rail service provides service between Emeryville and Bakersfield.

4.15.3 ANALYSIS METHODOLOGY

The analysis methods outlined in the Transportation Research Board’s 2000 and 2010 Highway Capacity Manual (HCM) were used in this study. It should be noted that differences in the analysis results for standard signalized and stop controlled intersection evaluation would be negligible between the 2000 and 2010 HCM. The results of this analysis on operational performance of a roadway network are commonly described using a grading system called Level of Service (LOS). LOS is a description of intersection operating conditions, ranging from LOS A (free flow traffic conditions with little or no delay) to LOS F (oversaturated conditions where traffic flows exceed design capacity, resulting in long queues and delays). The threshold for each LOS grade is provided in Table 4.15-1, *HCM Level of Service Criteria for Unsignalized Intersections*. The HCM methods for calculating LOS and significance criteria for signalized intersections, stop controlled intersections, and roundabouts are described below.

The evaluation of signalized, all-way stop (AWS), and side street stop (SSS) controlled intersection operations was performed using the Synchro analysis software. The new 2010 HCM was available at the time of this report; however, few jurisdictions have adopted the 2010 HCM in their analysis, as many LOS software programs have only recently released updated software programs that incorporate the 2010 HCM methodologies.

The 2010 HCM provides a completely new procedure for analysis of roundabouts that is based on research conducted on roundabouts in the United States. Roundabouts were analyzed using Sidra software, which is based on the 2010 HCM methodologies for roundabout controlled intersections. This is the most up-to-date recognized software tool available for roundabout analysis and is also being utilized by Caltrans. These methodologies are consistent with Nevada County and City of Grass Valley standards for traffic analysis.

Factors used in determining intersection LOS vary depending on the control device at the intersection. For all-way (four-way) stop intersections, average delay per vehicle is used to define the LOS of the intersection operation. The average delay is determined based on the roadway capacity (number of travel lanes) provided on each intersection approach and the traffic demand.

**Table 4.15-1
 HCM Level of Service Criteria for Unsignalized Controlled Intersections:
 All-Way Stop, Side Street Stop, and Roundabout Controlled Intersections**

Level of Service	Description	Control Delay (seconds/vehicle)
A	Intersections operating at LOS A contain no congestion. The intersection operates with very little delay.	< 10
B	Intersections operating at LOS B contain very little congestion. The intersection operates with minimal delay.	>10 – 15
C	Intersections operating at LOS C contain little congestion. The intersection operates with some delay.	>15 – 25
D	Intersections operating at LOS D contain some congestion. The intersection operates with longer delays.	>25 – 35
E	Intersections operating at LOS E border on being congested. The intersection operates with very long delays.	>35 – 50
F	Intersections operating at LOS F contain congestion. The intersection operates with extreme delays. This condition usually warrants improvements to the intersection.	>50

Source: *Highway Capacity Manual*, (2000 and 2010)

For side street stop controlled (one- and two-way stop) intersections, delay is calculated for each stop-controlled movement and for the uncontrolled left turns, if any, from the main street. For two-way stop controlled intersections, the overall average delay and LOS were reported as well as the delay and LOS for the worst intersection movement. Both are reported in this study because traffic on the minor street approaches has the lowest priority of right-of-way at the intersection and is the most critical in terms of delay. Generally, an LOS operation on the side street approach is the threshold that warrants improvements. For all-way stop controlled intersections, the overall intersection average delay and LOS were reported.

The HCM calculates the LOS of the minor street approaches and the overall intersection LOS based on this data. It should be noted that both the overall intersection LOS and the minor approach LOS are provided in this EIR. This is because traffic on the minor street approaches has the lowest priority of right-of-way at the intersection and, therefore, is the most critical in terms of delay.

For signalized intersections, average control delay per vehicle is utilized to define intersection LOS. Delay is dependent on a number of factors, including the signal cycle length, the roadway capacity (number of travel lanes) provided on each intersection approach and the traffic demand. The threshold for each LOS grade is provided in Table 4.15-2, *HCM Level of Service Criteria for Signalized Intersections*.

**Table 4.15-2
HCM Level of Service Criteria for Signalized Intersections**

Level of Service	Description	Volume / Capacity Ratio	Control Delay (seconds /vehicle)
A	Free flow conditions, unimpeded ability to maneuver and pass, very little delay, no platoons, highest average travel speeds.	≤ 0.60	0 – 10
B	Mostly free flow conditions, presence of other vehicles beings to be noticeable. Passing is required to maintain speeds, slightly less average travel speeds than Level of Service "A".	0.61 – 0.70	>10 – 20
C	Traffic density clearly affects the ability to pass and maneuver within the stream. Speeds are reduced to about 50 mph on highways and about 50% of the average on urban arterials.	0.71 – 0.80	>20 – 35
D	Unstable flow. Speeds are reduced from 40% to 60% of normal. Passing demand is high although mostly impossible on 2-lane highways. Traffic disruptions usually cause extensive queues.	0.81 – 0.90	>35 – 55
E	Very unstable flow at or near capacity. Passing and maneuvering virtually impossible. Extensive platooning on highways and queuing on arterials. Speeds range from 20 mph to less on arterials and 2 lane highways, and up to 50 mph on multi-lane highways.	0.91 – 1.00	>55 – 80
F	Forced or breakdown flow. Demand exceeds capacity. Vehicles experience short spurts of movement followed by stoppages. Intersection congestion, long queues and delays are common.	> 1.00	>80

Source: *Highway Capacity Manual*, (2000 & 2010), Chapter 16, Signalized Intersections, p. 16-2.

Signal warrant analysis was conducted based upon the methodology recommended in the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD) and associated Caltrans state guidelines. This analysis requires that an engineering study be performed before traffic signals are installed. Recommendations to provide signals are based on limited planning-level data for the peak hour signal warrants only and may not be sufficient for installing signals. Furthermore, the decision to install a traffic signal should not be based solely upon the warrants, since the installation of traffic signals can lead to certain types of accidents. The relevant local or state agency should undertake regular monitoring of actual traffic conditions and accident data, and perform re-evaluation of the full set of warrants in order to prioritize and program intersections for signalization.

It is possible that an unsignalized intersection will not meet signal warrants, even though one or more movement may experience LOS F operations. Although vehicles stopped on minor streets may experience long delays of one minute or more, there would not be an overall benefit if the higher number of vehicles on the major street were stopped in favor of the few vehicles on the minor street. The signal warrant analysis balances major street and minor street delays, and may indicate that there is an overall benefit if driver for some turning movements from the minor street continue to experience long (LOS E or F) delays.

4.15.4 EXISTING TRAFFIC OPERATIONS AND LEVELS OF SERVICES

In accordance with the Nevada County policies and the City of Grass Valley *Policy Adopting Traffic Impact Study Methodology and Evaluation Criteria for Critical Intersections*, traffic counts were performed during the PM peak hour (4:00 PM to 6:00 PM) at the twenty eight study intersections in the vicinity of the project area on November 8, 2012. The PM peak hour is defined by the highest hour for overall traffic volumes or the worst-case traffic conditions during the day. This is reflective of typical travel patterns throughout Nevada County and due to the low number of retail-related trips that take place during the AM peak hour. In addition, the project trip generation rate is highest during the PM peak hour.

The trip generation per dwelling unit for the proposed project land use of multi-family housing (ITE Land Use # 230 Condominiums / Townhouse) is highest during the PM peak hour, at 0.44 trips during the AM peak hour, 0.52 trips per during the PM peak hour, and 0.47 trips during the weekend peak hour.

Traffic volumes at the intersection of Brunswick Road and Loma Rica Drive were obtained from the Loma Rica Ranch Specific Plan EIR (RBF Consulting, September 2010). Traffic volumes at the intersection of Higgins Road and Combie Road in the Lake of the Pines area were obtained from the Traffic Impact Analysis for Higgins Marketplace (KD Anderson & Associates, August 13, 2007). The traffic volumes at these two locations were compared to the traffic volumes at nearby intersections which did not indicate growth (less than 2%) that would significantly change the operational analysis. The volumes were adjusted to balance with intersections immediately adjacent to each location.

The existing intersection configuration and traffic counts are provided in Figure 4.15.2a-c, *Existing Peak Hour Volumes*.

EXISTING INTERSECTION TRAFFIC CONDITIONS

The Synchro 8 analysis software program, which uses the HCM methodologies, was used to determine the LOS for the weekday existing PM peak hour at each of the intersections within the project area. The results of the analysis for all the study intersections are listed in Table 4.15-3, *Signalized Intersection HCM LOS – Existing Conditions*, and Table 4.15-4, *Unsignalized Intersection HCM LOS – Existing Conditions*. All intersections operate at an acceptable LOS except for the following:

Grass Valley SOI Area:

- Brunswick Road / Idaho-Maryland Road intersection currently operates at LOS F on the worst approach (westbound) during the PM peak hour. This intersection meets the peak hour signal warrants for the PM peak hour under existing conditions.

Lake of the Pines Area:

- Rosewood & Armstrong Road / Combie Road intersection currently operates at LOS F on the worst approach (northbound) during the PM peak hour. This intersection does not meet the peak hour signal warrants for the PM peak hour under existing conditions.

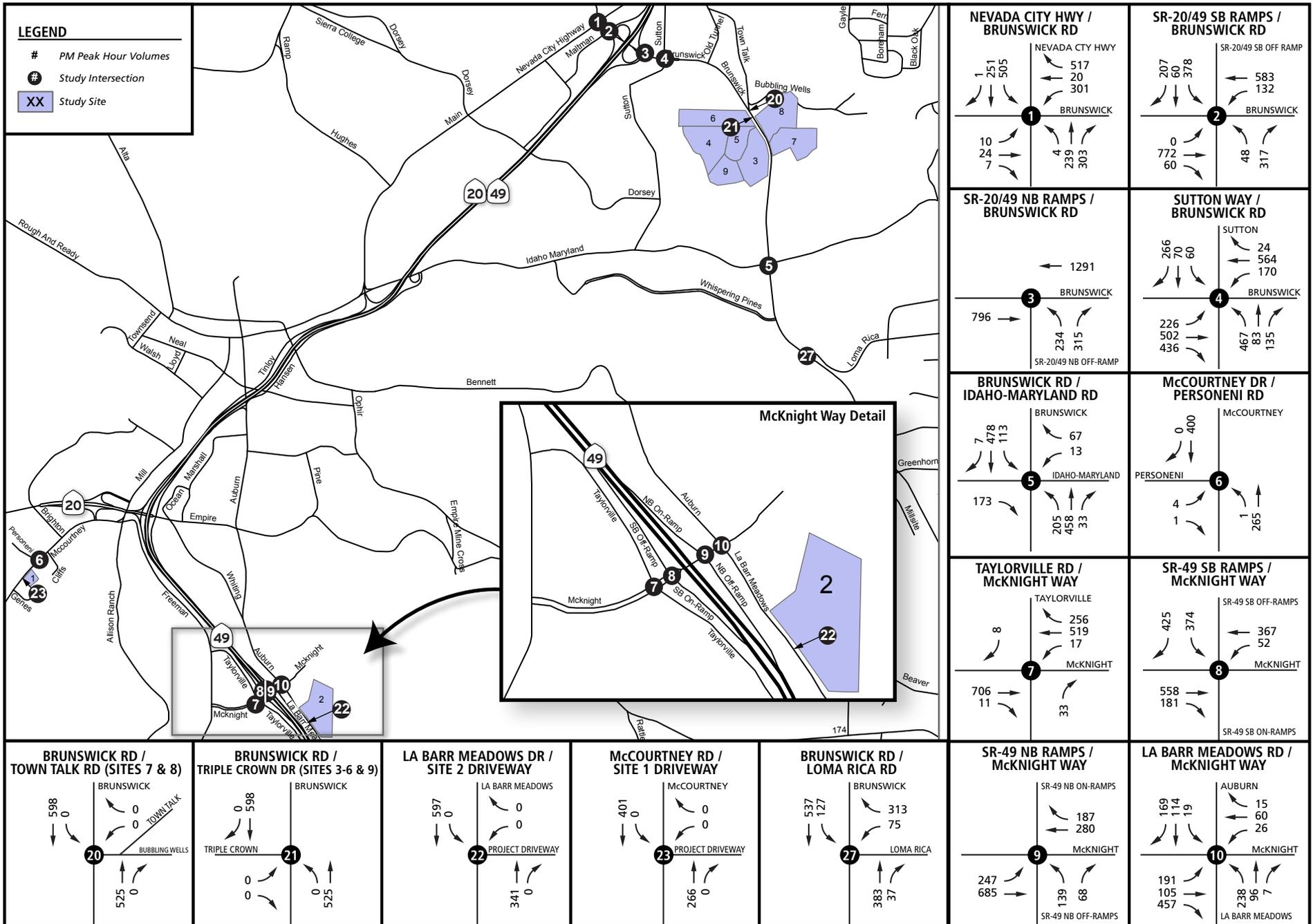
**Table 4.15-3
Signalized Intersection HCM LOS – Existing Conditions**

Intersection	Intersection Control	Agency LOS Threshold	Existing		
			V/C Ratio	Delay (Secs.)	LOS
Grass Valley SOI Study Intersections					
1. Nevada City Highway / Brunswick Road	Signal	G.V. D	0.51	27.4	C
2. SR 20-49 SB Ramps / Brunswick Road	Signal	Caltrans C/D	0.69	21.8	C
3. SR 20-49 NB Ramps / Brunswick Road	Signal	Caltrans C/D	0.48	16.9	B
4. Sutton Way / Brunswick Road	Signal	G.V. C	0.69	26.7	C
8. SR 49 SB Ramps / McKnight Way	Signal	Caltrans C/D	0.59	21.4	C
9. SR 49 NB Ramps McKnight Way	Signal	Caltrans C/D	0.60	25.4	C
Penn Valley Study Intersections					
11. Pleasant Valley Rd / SR-20	Signal	Caltrans C/D	0.58	23.8	C
13. Penn Valley Drive / SR-20	Signal	Caltrans C/D	0.52	17.7	B
Lake of the Pines Study Intersections					
16. SR-49 Combie Road	Signal	Caltrans C/D	0.72	31.5	C
17. Hacienda Drive Combie Road	Signal	Nev. Cnty. C	0.68	25.7	C

Source: RBF Consulting 2013

Notes: GV = City of Grass Valley, Nev. Cnty = Nevada County

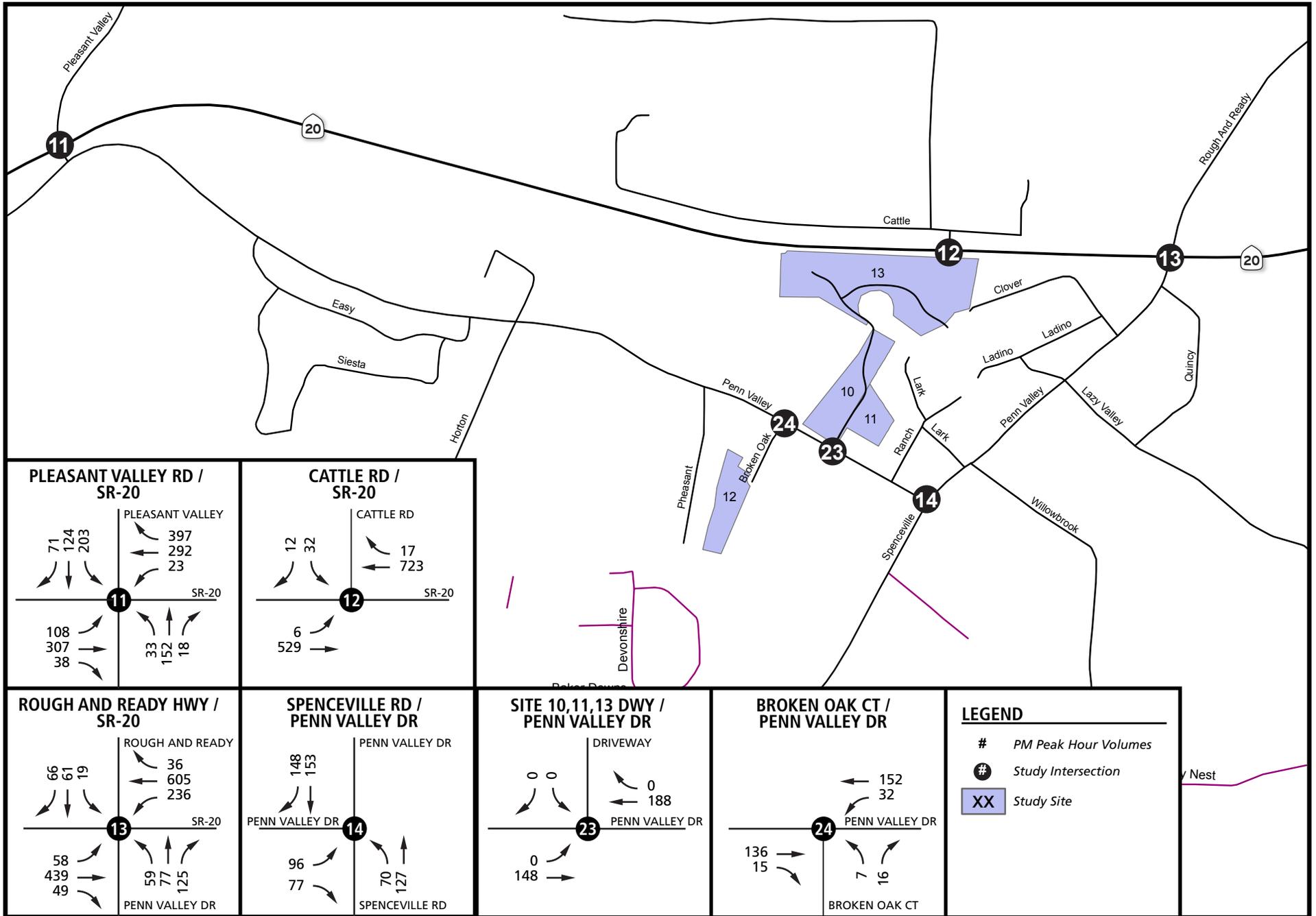
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Source: RBF Consulting 2013 Not to Scale

GRASS VALLEY SOI STUDY AREA
 COUNTY OF NEVADA: 2009-2014 HOUSING ELEMENT REZONE PROGRAM IMPLEMENTATION EIR

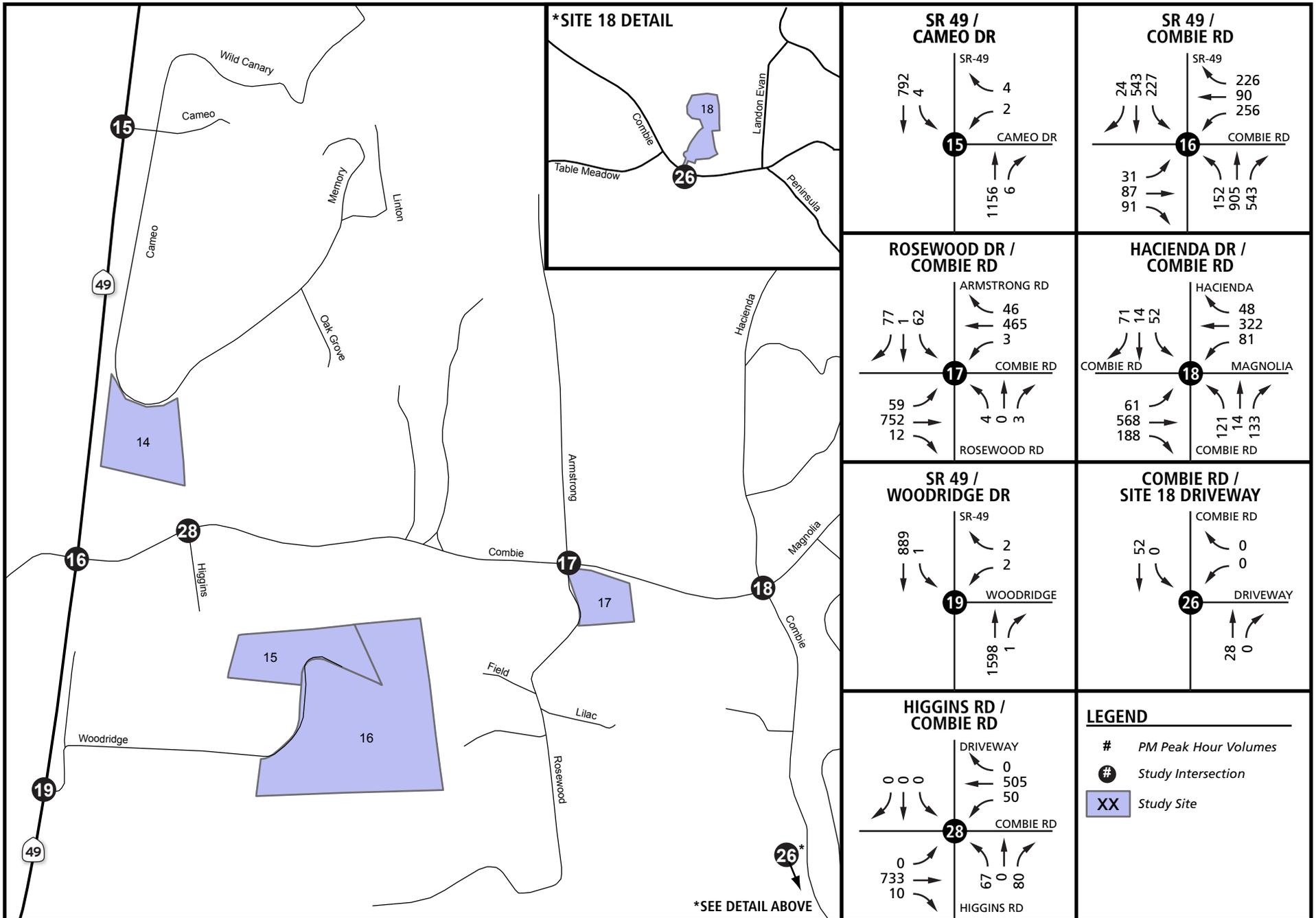




Source: RBF Consulting 2013 Not to Scale

PENN VALLEY STUDY AREA
 COUNTY OF NEVADA: 2009-2014 HOUSING ELEMENT REZONE PROGRAM IMPLEMENTATION EIR





Source: RBF Consulting 2013 Not to Scale

LAKE OF THE PINES STUDY AREA
 COUNTY OF NEVADA: 2009-2014 HOUSING ELEMENT REZONE PROGRAM IMPLEMENTATION EIR



**Table 4.15-4
Unsignalized Intersection HCM LOS – Existing Conditions**

Intersection	Intersection Control	Existing		
		Agency LOS Threshold	Delay (Secs.)	LOS
Grass Valley SOI Study Intersections				
5. Brunswick Road Idaho-Maryland Road	SSS (EB/WB) Worst Approach	G.V.	7.4	A
		D	73.5	F
6. McCourtney Road Personeni Road	SSS (EB) Worst Approach	G.V.	0.1	A
		D	13.6	B
7. Taylorville Road McKnight Way	SSS (NB/SB) Worst Approach	G.V.	0.4	A
		D	14.2	B
10. La Barr Meadows Road McKnight Way	SSS (NB/SB) Worst Approach	G.V.	22.5	C
		D	29.5	D
27. Brunswick Road Loma Rica Drive	SSS (EB/WB) Worst Approach	G.V.	5.5	A
		D	18.0	C
Penn Valley Study Intersections				
12. Cattle Drive SR-20	SSS (SB) Worst Approach	Caltrans	1.0	A
		C/D	27.6	D
14. Spenceville / Penn Valley Road Penn Valley Drive	AWS Worst Approach	Nev. Cnty.	10.2	B
		D	10.5	B
Lake of the Pines Study Intersections				
15. SR-49 Cameo Drive	SSS (WB) Worst Approach	Caltrans	0.1	A
		C/D	16.3	C
17. Rosewood Road Combie Road	SSS (NB/SB) Worst Approach	Nev. Cnty.	3.4	A
		D	53.2	F
19. SR-49 Woodridge Drive	SSS (NB) Worst Approach	Caltrans	0.0	A
		C/D	23.0	C

Source: RBF Consulting 2013

Notes: 1. NB, SB, EB, WB, AWS, SSS = Northbound, Southbound, Eastbound, Westbound, All Way, Side Street Stop

2. Worst approach delay utilized to identify operating conditions. Overall delay includes through traffic.

EXISTING PLUS BACKGROUND PROJECTS TRAFFIC WITH CURRENT GENERAL PLAN CONDITIONS

Existing Plus Background Projects with Current General Plan conditions include existing traffic plus the traffic generated by approved projects within the vicinity of the project areas plus traffic associated with buildout of the project sites using the Current Nevada County General Plan land use designations. The Background Projects trip distributions were provided by Nevada County and the City of Grass Valley. The Background Projects trip generation is provided in Table 4.15-5a, *Background Projects Trip Generation*. The location of background projects is shown in Figure 4.15-3.

To calculate trips generation for the project sites under existing General Plan land use designations, the Institute of Transportation Engineers 9th Edition (ITE, 2012) trip generation rates were utilized. Table 4.15-5b summarizes the ITE trip generation rates used.

These trips were then added to the Existing and Background Project traffic volumes to calculate Existing plus Background with Current General Plan Conditions. The Nevada

County Transportation Commission (NCTC) and Grass Valley Travel Demand Model were utilized to estimate the trip distribution for each of the proposed project sites. The models were reviewed to ensure that they accurately represented the existing road networks within, and adjacent to the project area. The model was adjusted to assume construction of the Dorsey Drive / SR 20/49 in the City of Grass Valley. The Existing Plus Background Projects traffic volumes are indicated in Figure 4.15-4a-c, *Existing Plus Background Project Plus Sites Under Current General Plan Land Use Designations PM Peak Hour Volumes*.

This condition provides a baseline for determining project-related impacts at the study intersections.

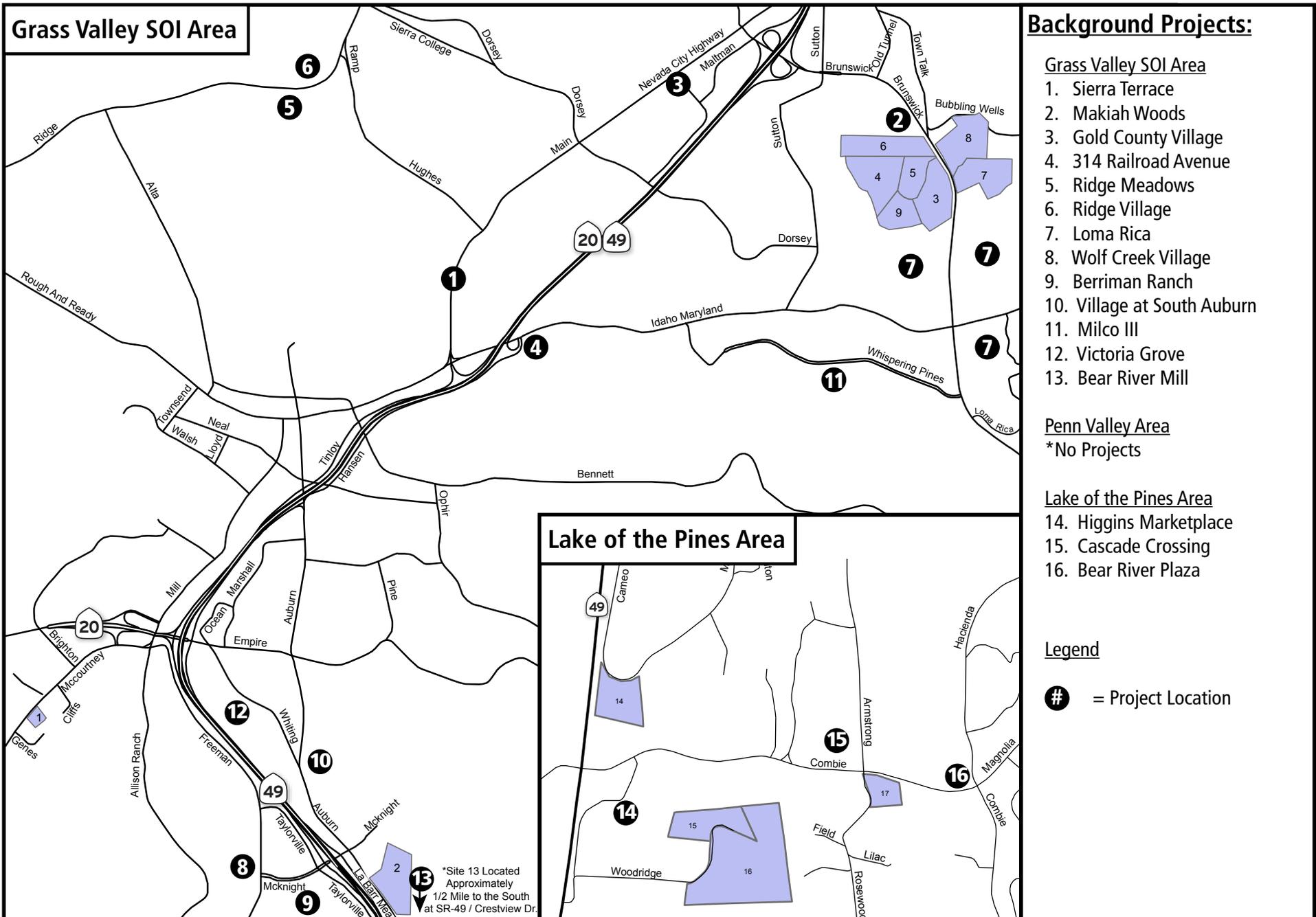
The Synchro 8 analysis software program, which uses the HCM methodologies, was used to determine the LOS for the weekday Existing Plus Background Projects with Current General Plan Conditions PM peak hour at each of the intersections. The results of the analysis are listed in Table 4.15-6 and Table 4.15-7. All intersections would continue to operate at an acceptable LOS, except for the following.

Grass Valley SOI Area:

- Brunswick Road / Idaho-Maryland Road intersection is anticipated to continue to operate at an overall LOS F in the PM peak hour. This intersection would meet both volume and delay peak hour signal warrants during the PM peak hour under Existing plus Background with Current General Plan conditions.
- La Barr Meadows Road / McKnight Way intersection is anticipated to operate at an overall LOS F in the PM peak hour. This intersection would meet both volume and delay peak hour signal warrants during the PM peak hour under Existing plus Background with Current General Plan conditions.

Lake of the Pines Area:

- SR 49 / Combie Road intersection is anticipated to operate at an overall LOS E in the PM peak hour.
- Rosewood & Armstrong Road / Combie Road intersection is anticipated to operate at an overall LOS F in the PM peak hour. This intersection would meet both volume and delay peak hour signal warrants during the PM peak hour under Existing plus Background with Current General Plan conditions.
- Higgins Road / Combie Road intersection is anticipated to operate at an overall LOS E and LOS F on the worst approach (northbound) during the PM peak hour. This intersection would meet both volume and delay peak hour signal warrants during the PM peak hour under Existing plus Background with Current General Plan conditions.



Background Projects:

Grass Valley SOI Area

1. Sierra Terrace
2. Makiah Woods
3. Gold County Village
4. 314 Railroad Avenue
5. Ridge Meadows
6. Ridge Village
7. Loma Rica
8. Wolf Creek Village
9. Berriman Ranch
10. Village at South Auburn
11. Milco III
12. Victoria Grove
13. Bear River Mill

Penn Valley Area

*No Projects

Lake of the Pines Area

14. Higgins Marketplace
15. Cascade Crossing
16. Bear River Plaza

Legend

= Project Location

Source: RBF Consulting 2013



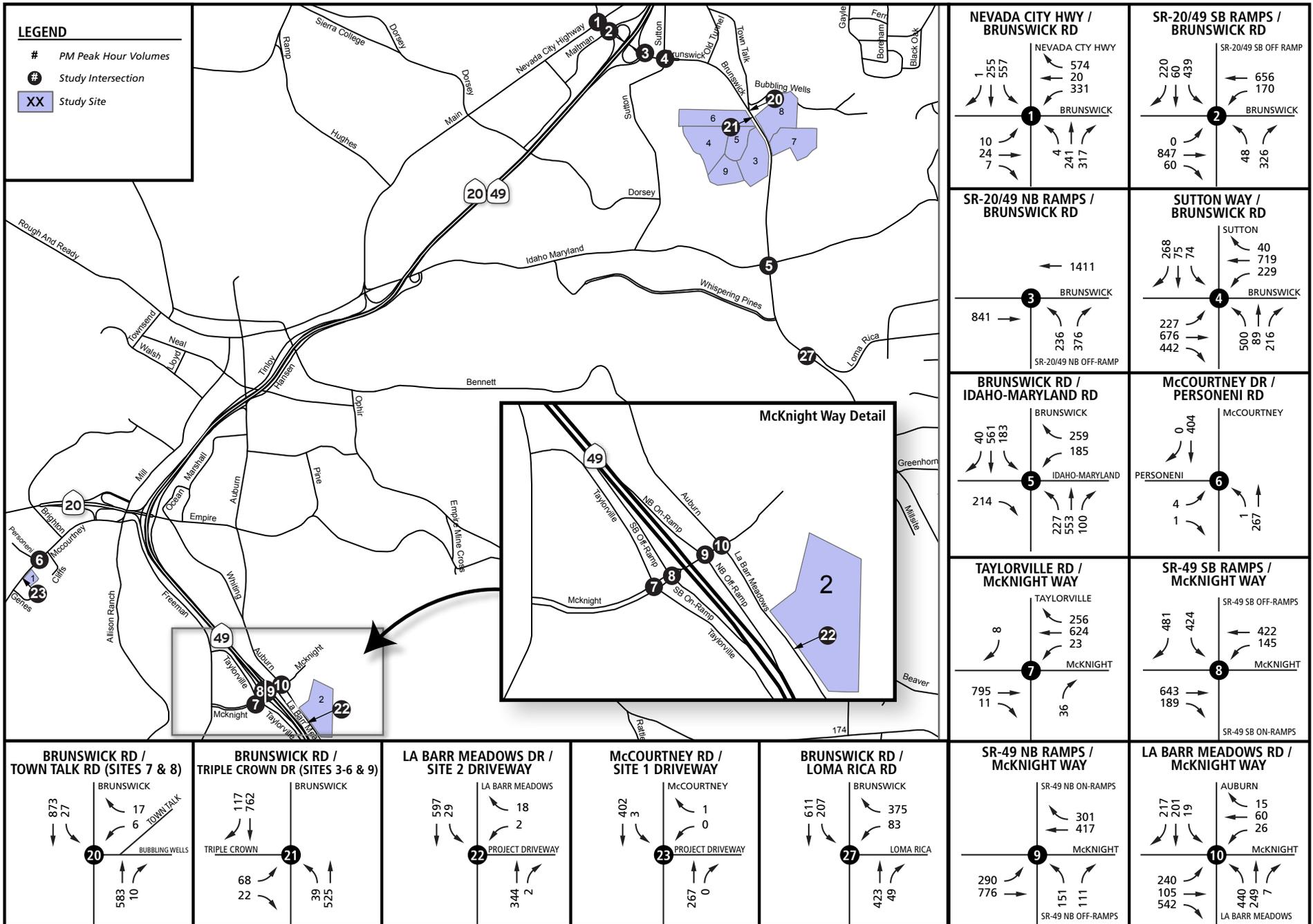
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COUNTY OF NEVADA
2009-2014 HOUSING ELEMENT REZONE PROGRAM IMPLEMENTATION EIR

Background Projects Map

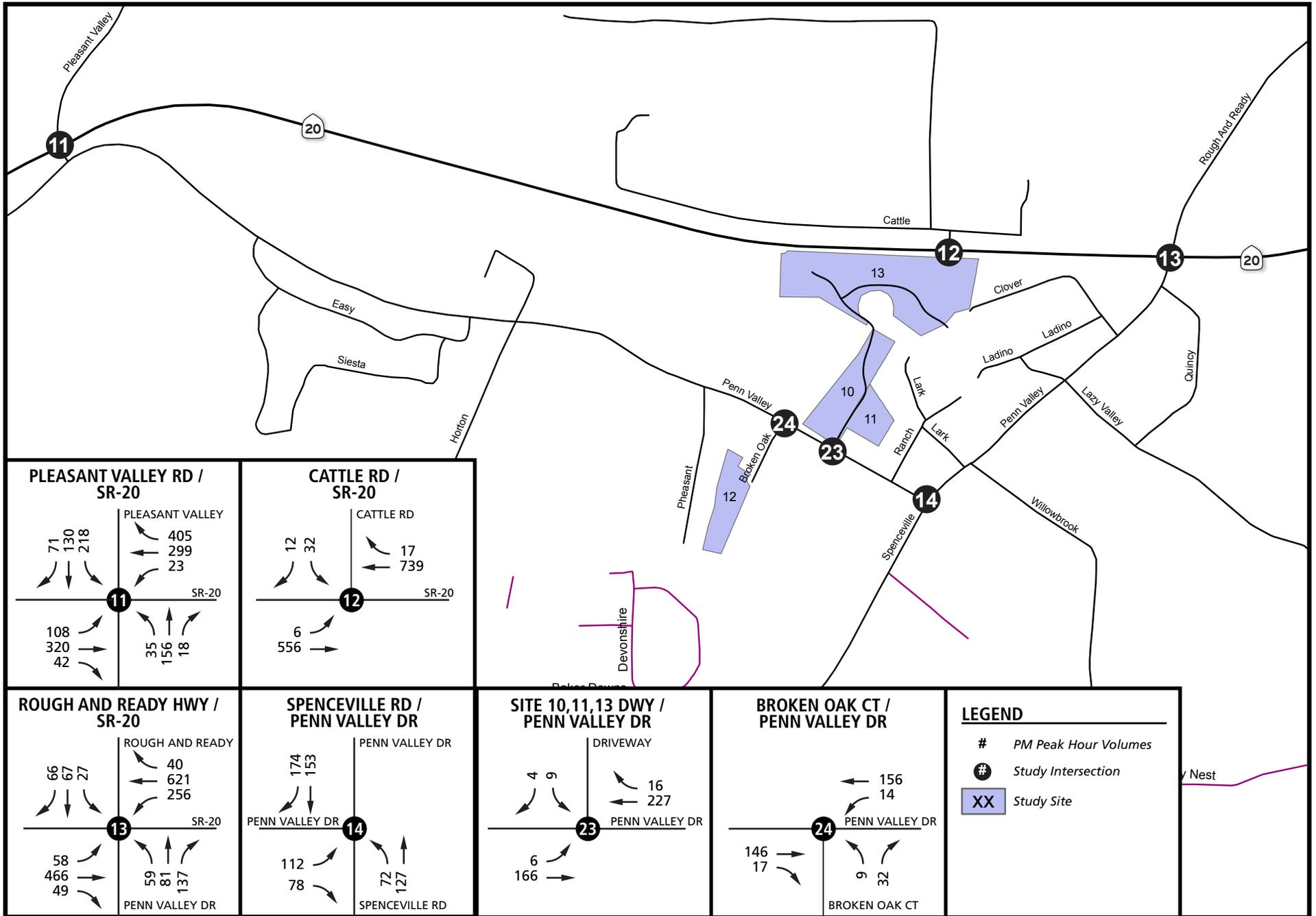
FIGURE 4.15-3



Source: RBF Consulting 2013 Not to Scale

GRASS VALLEY SOI STUDY AREA
 COUNTY OF NEVADA: 2009-2014 HOUSING ELEMENT REZONE PROGRAM IMPLEMENTATION EIR

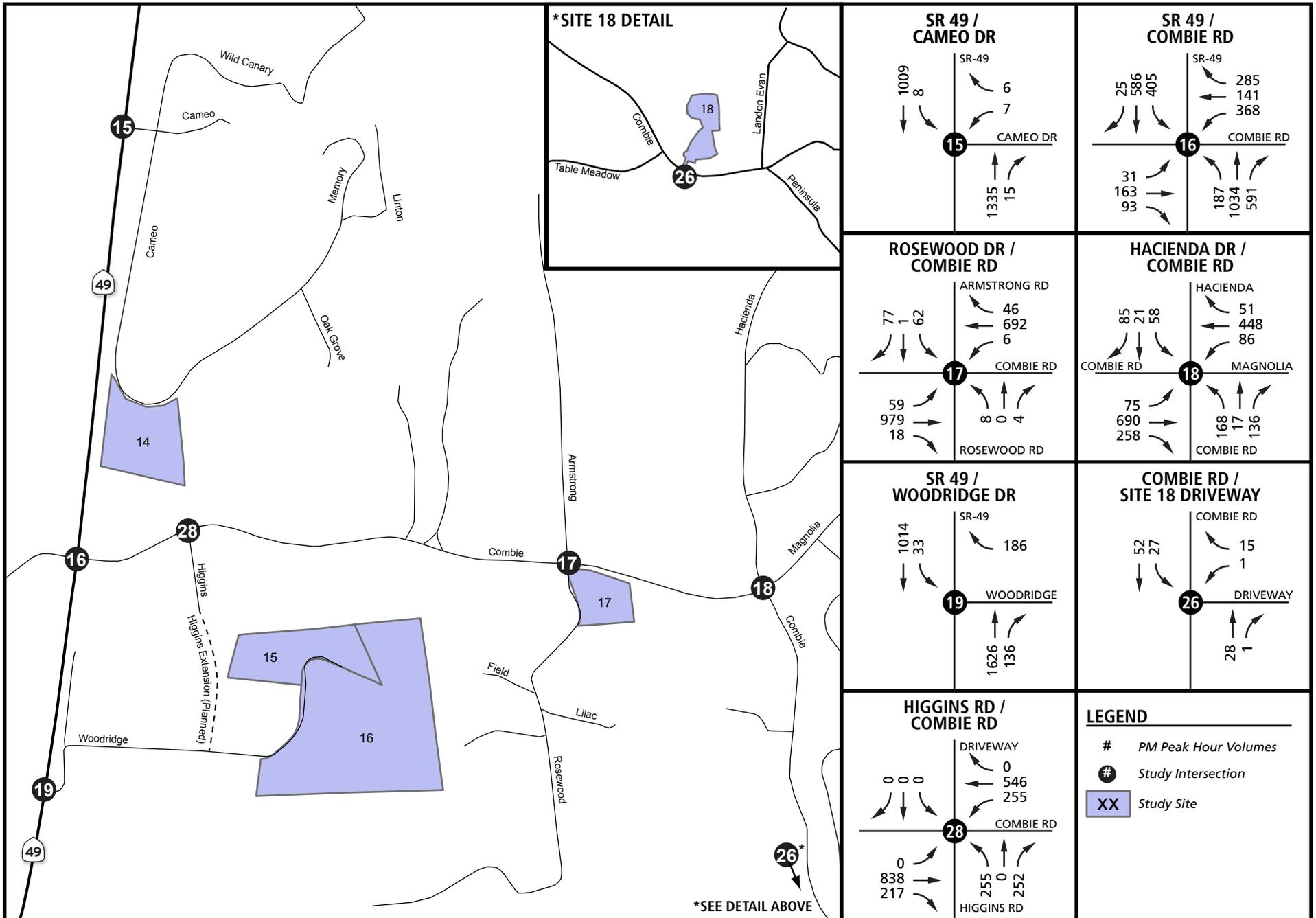




Source: RBF Consulting 2013 Not to Scale

PENN VALLEY STUDY AREA
 COUNTY OF NEVADA: 2009-2014 HOUSING ELEMENT REZONE PROGRAM IMPLEMENTATION EIR





Source: RBF Consulting 2013 Not to Scale

LAKE OF THE PINES STUDY AREA
 COUNTY OF NEVADA: 2009-2014 HOUSING ELEMENT REZONE PROGRAM IMPLEMENTATION EIR



Existing + Background + Sites Under Current General Plan Land Use Designations PM Peak Hour Traffic Volumes

**Table 4.15-5a
Background Projects Trip Generation**

	ITE LAND USE CODE	PROJECT SIZE		PM PEAK HOUR			
				TOTAL PEAK HOUR	IN	/	OUT
Grass Valley SOI Background Projects							
Sierra Terrace							
Single Family Detached Homes	210	14	Units	14	9	/	5
Residential Condo/Townhouse	230	8	Units	4	3	/	1
Apartment	220	14	Units	9	5	/	4
Total				27	17	/	10
Makiah Woods							
Single Family Detached Homes	210	49	Units	56	28	/	28
Gold Country Village							
Senior Housing		175	Units	33	20	/	13
314 Railroad Avenue							
General Office		27,596	SF	30	5	/	25
Ridge Meadows							
Single Family Detached Homes	210	49	Units	46	29	/	17
Ridge Village							
Single Family Detached Homes	210	55	SF	54	34	/	20
Loma Rica							
Residential Single Family, Apartments, Mixed Use, Commercial, Business Park	Multiple	**	**	1,402	635	/	767
Wolf Creek Village							
Single Family Detached Homes	210	40	Units	22	14	/	8
Berriman Ranch							
Single Family Detached Homes	210	121	Units	122	77	/	45
Village at South Auburn							
Single Family Detached Homes	210	49	Units	49	31	/	18
Retail / Office	750	23,264	SF	28	5	/	23
Total				77	36	/	41
Milco II							
Light Industrial		57,315	SF	56	7	/	49
Victoria Grove							
Single Family Detached Homes	210	72	Units	73	47	/	26
Bear River Mill							
Single Family Detached Homes	210	66	Units	57	31	/	26
Residential Condo/Townhouse	230	461	Units	435	238	/	197
Light Industrial		1,000,000	SF	894	107	/	787
Commercial / Retail / Office		425,000	SF	1,193	585	/	608
Total				2,579	961	/	1,618
Penn Valley Area Background Projects							
Penn Valley Oaks							
Single Family Detached Homes	210	46	Units	46	29	/	17
Residential Condo/Townhouse	230	2	Units	1	1	/	0
Retail / Office	750	6,874	SF	10	1	/	9
Total				57	31	/	26
Lake of the Pines Background Projects							
Higgins Marketplace							
Retail / Supermarket / Office		127,600	SF	694	362	/	333
Cascade Crossing							
Single Family Detached Homes	210	80	Units	80	50	/	30
Bear River Plaza							
Office Space	710	25,666	SF	38	6	/	32
Specialty Commercial	826	13,819	SF	38	16	/	22
Residential Condominium / Townhomes	230	28	Units	17	11	/	6
Total				93	33	/	60

Table 4.15-5a, continued

Source: Nevada County / City of Grass Valley, 2012

** The Loma Rica Ranch Project consists of 129 multi-family units, 571 single-family homes, 364,161 square feet of business and light industrial, 54,000 square feet of commercial and retail, 21 acres of parks, and 1 organic farm.

**Table 4.15-5b
 Current General Plan Land Use Designations Trip Generation**

	ITE LAND USE CODE	PROJECT SIZE	PM PEAK HOUR						
			TOTAL PEAK HOUR	IN	/	OUT			
Grass Valley SOI Sites									
Site 1	SFD	210	4	Units	4	3	/	1	
Site 2	SFD	210	45	Units	45	28	/	17	
Site 3	SFD	210	54	Units	54	34	/	20	
Site 4	SFD	210	68	Units	68	43	/	25	
Site 5	SFD	210	27	Units	27	17	/	10	
Site 6	SFD	210	58	Units	58	37	/	21	
Site 7	SFD	210	6	Units	6	4	/	2	
Site 8	SFD	210	54	Units	54	34	/	20	
Site 9	SFD	210	39	Units	39	25	/	14	
Penn Valley Area Sites									
Site 10	SFD	210	23	Units	23	14	/	9	
Site 11	SFD	210	12	Units	12	8	/	4	
Site 12	SFD	210	1	Units	26	16	/	10	
Site 13	SFD	210	26	Units	1	1	/	0	
Lake of the Pines Area Sites									
Site 14	SFD	210	20	Units	20	13	/	7	
Site 15	MFD	230	74	Units	39	26	/	13	
Site 16	MFD	230	271	Units	141	94	/	47	
Site 17	SFD	210	14	Units	14	9	/	5	
Site 18	SFD	210	44	Units	44	28	/	16	
Countywide Total:					674	432	/	242	

Source: RBF Consulting, 2013

Notes: SFD = Single-Family Detached Land Use, MFD = Multi-Family Dwellings (Condos / Townhouse) Land Use
 Utilized average trip generation rates from ITE Trip Generation 9th Edition (2012)

**Table 4.15-6
Signalized Intersection HCM LOS – Existing Plus Background Projects Plus Sites
under Current General Plan Land Use Designations**

Intersection	Intersection Control	LOS Threshold	Existing			Existing + Background w/ Current GP		
			V/C Ratio	Delay (Secs.)	LOS	V/C Ratio	Delay (Secs.)	LOS
Grass Valley SOI Study Intersections								
1. Nevada City Highway / Brunswick Road	Signal	G.V. D	0.51	27.4	C	0.54	28.0	C
2. SR 20-49 SB Ramps / Brunswick Road	Signal	Caltrans C/D	0.69	21.8	C	0.74	25.1	C
3. SR 20-49 NB Ramps / Brunswick Road	Signal	Caltrans C/D	0.48	16.9	B	0.56	17.6	B
4. Sutton Way / Brunswick Road	Signal	G.V. D	0.69	26.7	C	0.78	34.8	C
8. SR 49 SB Ramps / McKnight Way	Signal	Caltrans C/D	0.59	21.4	C	0.69	24.8	C
9. SR 49 NB Ramps McKnight Way	Signal	Caltrans C/D	0.60	25.4	C	0.68	31.3	C
Penn Valley Study Intersections								
11. Pleasant Valley Rd / SR-20	Signal	Caltrans C/D	0.58	23.8	C	0.61	25.3	C
13. Penn Valley Drive / Rough and Ready Hwy SR-20	Signal	Caltrans C/D	0.52	17.7	B	0.57	17.7	B
Lake of the Pines Study Intersections								
16. SR-49 Combie Road	Signal	Caltrans C/D	0.72	31.5	C	0.99	98.6	F
18. Hacienda Drive Combie Road	Signal	Nev. Cnty. C	0.68	25.7	C	0.81	33.0	C
Source: RBF Consulting 2013 Notes: 1. GV = City of Grass Valley, Nev. Cnty = Nevada County								

**Table 4.15-7
Unsignalized Intersection HCM LOS – Existing Plus Background Projects Plus
Project Sites Under Current General Plan Conditions**

			Existing		Existing + Background w/ Current GP	
Intersection	Intersection Control	LOS Threshold	Delay (Secs.)	LOS	Delay (Secs.)	LOS
5. Brunswick Road / Idaho-Maryland Road	SSS (EB/WB) <i>Worst Approach</i>	G.V.	7.4	A	>100 *	F
		D	73.5	F		F
6. McCourtney Road / Personeni Road	SSS (EB) <i>Worst Approach</i>	G.V.	0.1	A	0.1	A
		D	13.6	B	13.7	B
7. Taylorville Road / McKnight Way	SSS (NB/SB) <i>Worst Approach</i>	G.V.	0.4	A	0.4	A
		D	14.2	B	16.2	C
10. La Barr Meadows Road / McKnight Way	SSS (NB/SB) <i>Worst Approach</i>	G.V.	22.5	C	72.5	F
		D	29.5	D	97.8	F
20. Brunswick Road / Town Talk Road / Sites 7,8	SSS (EB) <i>Worst Approach</i>	G.V.	n/a		0.5	A
		D			20.3	C
21. Brunswick Road / Triple Crown Drive / Sites 3-6, 9	SSS (WB) <i>Worst Approach</i>	G.V.	n/a		3.9	A
		D			61.6	F
22. McCourtney Road / Driveway Site 1	SSS (WB) <i>Worst Approach</i>	G.V.	n/a		0.5	A
		D			11.5	B
27. Brunswick Road / Loma Rica Drive	SSS (EB/WB) <i>Worst Approach</i>	G.V.	5.5	A	7.8	A
		D	18.0	C	25.5	D
Penn Valley Study Area						
12. Cattle Drive / SR-20	SSS (SB) <i>Worst Approach</i>	Caltrans	1.0	A	1.0	A
		C/D	27.6	D	29.3	D
14. Spenceville / Penn Valley Rd/ Penn Valley Drive	AWS <i>Worst Approach</i>	Nev. Cnty.	10.2	B	10.6	B
		C	10.5	B	11.1	B
23. Penn Valley Drive / Driveway to Sites 10, 11, 13	SSS (SB) <i>Worst Approach</i>	Nev. Cnty.	n/a		0.5	A
		C			10.9	B
24. Penn Valley Drive / Broken Oak Court / Site 12	SSS (NB) <i>Worst Approach</i>	Nev. Cnty.	1.2	A	1.4	A
		C	8.9	A	9.7	A
Lake of the Pines Study Area						
15. SR-49 / Cameo Drive	SSS (WB) <i>Worst Approach</i>	Caltrans	0.1	A	0.2	A
		C/D	16.3	C	24.2	C
17. Rosewood Road / Combie Road	SSS (NB/SB) <i>Worst Approach</i>	Nev. Cnty.	3.4	A	12.8	B
		C	53.2	F	>100	F
19. SR-49 / Woodridge Drive	SSS (NB) <i>Worst Approach</i>	Caltrans	0.0	A	1.8	A
		C/D	23.0	C	26.3	D
26. Combie Road / Driveway to Site 18	SSS (NB) <i>Worst Approach</i>	Nev. Cnty.	n/a		2.7	A
		C			8.6	A
28. Higgins Road / Combie Road	SSS (NB/SB) <i>Worst Approach</i>	Nev. Cnty.	2.5	A	68.6	E
		C	20.8	C	>100	F

Source: RBF Consulting 2013

Notes: 1. NB, SB, EB, WB, AWS, SSS = Northbound, Southbound, Eastbound, Westbound, All Way, Side Street Stop

2. Worst approach delay utilized to identify operating conditions. Overall delay includes through traffic.

3. **Bold** indicates LOS below acceptable LOS standard

4.15.5 REGULATORY SETTING

Traffic analysis in California is guided by policies and standards set at the state level by Caltrans and at the local level by the applicable jurisdictions. Three agencies have jurisdiction over the roadways studied for the proposed project: Caltrans, the County of Nevada, and the City of Grass Valley.

COUNTY OF NEVADA

County of Nevada's Traffic Impact Mitigation Fee Program

Regional Transportation Mitigation Fee and Local Traffic Mitigation Fee

The current Traffic Impact Mitigation Program was established in 1997 with the adoption of a Local Traffic Mitigation Fee (LTMF). In 2001, the adoption of a Regional Traffic Mitigation Fee (RTMF) recognized cross-jurisdictional traffic between western County cities and unincorporated County. The LTMF and RTMF combine to provide both local and regional methods to allow development on an incremental basis while collecting fees to offset growth impacts.

Nevada County General Plan

The Nevada County General Plan provides the following policies to address traffic and circulation issues. The following sections identify General Plan policies for circulation that are relevant to the proposed project.

- Policy LU-4.1.1 The minimum level of service allowable in the Rural Regions of the County, as identified in the General Plan, shall be level of service (LOS) C, except where the existing LOS is less than C. In those situations, the LOS shall not be allowed to drop below the existing LOS. Level of service shall be based on the typical highest peak hour of weekday traffic. Special events may be permitted which temporarily exceed this minimum LOS.
- Policy LU-4.1.2 The minimum acceptable level of service (LOS) for area identified as Community Regions in the General Plan shall be LOS D, except where the existing LOS is less than D. In those situations, the LOS shall not be allowed to drop below the existing LOS. Level of service shall be based on the typical highest peak hour of weekday traffic.
- Policy LU-4.1.3 The land use pattern reflected in the Nevada County General Plan Land Use Map is correlated with the future ability of the transportation system, including the major roadway network, to adequately serve said land uses based upon the service criteria and levels of service identified in Policy 4.1, Policy 4.3, Policy 3.1, and Policy 3.10. All General Plan amendments shall be required to show that the proposed development is also correlated with the future provision of transportation facilities and levels of service according to the same criteria.
- Policy LU-4.1.11 New roads built to serve discretionary projects shall be maintained through private maintenance agreements,

- homeowners associations, Permanent Road Divisions (PRDs), or Community Service Areas (CSAs)
- Policy MV-4.2.4 The County shall maintain the function and integrity of arterial and major collector roads by limiting access wherever possible. For all new development, allow access via the lowest roadway classification, consistent with safe operation of the roadways and environmental constraints
- Policy MV-4.2.5 In the review of all discretionary permits, the County shall consider the effect of the proposed development on the area-wide transportation network and the effect of the proposed development on the road network and other transportation facilities in the immediate vicinity of the project site
- Policy MV-4.2.10 Discretionary development served by a dead end road and located beyond the dead end road limit shall be required, at a minimum, to construct secondary access roads in accordance with Chapters XVI and XVII of the Nevada County Land Use Code. Secondary access roads shall meet Nevada County Fire Standard Access Road standards unless a Petition for Exception is approved granting lesser standards.
- Policy RD-4.3.1 All discretionary and ministerial non-residential projects shall consider the feasibility of providing transit alternatives to automobile transportation and ways to reduce the dependence on the automobile. For projects generating 50 or more employees, the applicant shall prepare an analysis documenting means to reduce automobile dependence. Wherever feasible, measures documented in the analysis shall be incorporated into the project. This process shall be coordinated with the applicable Transportation Management Association (TMA) or successor agencies.
- Policy RD-4.3.6 Sidewalks, walkways, bicycle facilities and paths should be provided where necessary, and on an equitable basis with roadway improvements.
- Policy EP-4.4.1 The County shall require environmentally sound practices for transportation facility construction and maintenance. New roads or improvements to the existing road system and all trails and pathways shall be located, constructed and maintained in a manner compatible with the environment.

CITY OF GRASS VALLEY

Grass Valley Traffic Impact Fee Program

The Grass Valley Traffic Impact Fee Program (GVTIF) collects fees from future developments as mitigation to improve the City's road network infrastructure as the City grows through General Plan buildout. The GVTIF is updated periodically.

Grass Valley 2020 General Plan

The City of Grass Valley General Plan provides the following goals and objectives to address traffic and circulation issues.

- 1-CG: Provide a circulation system that utilizes a variety of transportation modes, including alternative means of transportation.
- 1-CO: Development of a viable pedestrian and bicycle transportation network (sidewalks, paths, lanes and trails) providing alternatives to motorized vehicular transportation.
- 2-CO: Ongoing examination of transit opportunities and funding mechanisms.
- 3-CO: Inclusion of alternative transportation in local and regional transportation plans, as needed.
- 2-CG: Ensure that street and roadway improvements complement and support land use goals, objectives, policies and plans.
- 4-CO: Placement of public transportation access at convenient locations.
- 5-CO: Convenient, safe and functional facilities for pedestrians, bicyclists and equestrians.
- 6-CO: Flexible standards that respect existing neighborhoods.
- 7-CO: Use of City standards throughout the Planning Area.
- 3-CG: Provide for the safe and efficient movement of people and goods in a manner that respects existing neighborhoods and the natural environment.
- 8-CO: Routing of through-traffic around neighborhoods to collector streets.
- 9-CO: Use of traffic calming techniques to protect neighborhoods and residents from adverse traffic impacts.
- 10-CO: Protection of stream courses, riparian areas and other natural features.
- 11-CO: Development and implementation of a comprehensive traffic safety program, including improvement of facilities serving pedestrian needs.
- 4-CG: Maintain, improve and expand the existing circulation and transportation system to provide reasonable ingress, egress and internal movement.
- 12-CO: Establishment of and adherence to a functional hierarchy of streets and highways, both within the city and throughout the Planning Area.
- 13-CO: Improvement of the transportation system to facilitate commerce and economic development.

- 5-CG: Maintain Adequate Emergency Access
- 12-CO: Improvement and maintenance of adequate emergency access throughout the city.

Grass Valley Policy Adopting Traffic Impact Study Methodology and Evaluation Criteria for Critical Intersections

The Grass Valley City Council adopted Resolution No. 06-21 approving the revised and updated Traffic Impact Study Methodology and Evaluation Criteria for Critical Intersections. The revised and updated criteria provide the following objectives:

- Develop a standard and accepted methodology or approach for preparing traffic reports.
- Develop a standard and accepted methodology for when a traffic report is required.
- Develop language that will clarify the intent of General Plan Policy 7-CI and a procedure for determining thresholds of significance for intersections currently operating at LOS D or worse. The procedure would involve a series of transportation engineering analyses to determine if a proposed development project would have a significant impact on the operating capacity and function of critical intersections. These levels, or steps, would be developed as a screening tool to determine if the project would breach an established threshold of significance (relative to the California Environmental Quality Act) and found consistent with Circulation policies of the City General Plan.
- Develop yearly monitoring system for checking the status of all affected intersections/roadways that is tied to the City/Regional Capital Improvement Program.
- Implement the work programs of the “Street System Master Plan” that would serve to link all local and regional policy documents as to the identification of circulation improvements, funding sources and timing of installation.

4.15.6 ENVIRONMENTAL ANALYSIS

THRESHOLDS OF SIGNIFICANCE

California Environmental Quality Act

According to Appendix G of the *CEQA Guidelines*, the proposed project would have a significant impact on traffic if the project would:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit
- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks

- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)
- Result in inadequate emergency access
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities

California Department of Transportation

The Caltrans Guide for the Preparation of Traffic Impact Studies (Caltrans, 2002) states that if an existing state highway facility is operating at less than the target LOS, the existing LOS should be maintained, thus adding any trips to a facility operating at adverse LOS would be a significant impact. The minimum acceptable LOS standard for Caltrans is LOS C.

Nevada County

Nevada County has the following criteria for determining the level of significance of project impacts:

- The minimum level of service allowable in the Rural Regions of the County, as identified in the General Plan, shall be LOS C, except where the existing LOS is less than C. In those situations, the LOS shall not be allowed to drop below the existing LOS. Level of service shall be based on the typical highest peak hour of weekday traffic. Special events may be permitted which temporarily exceed this minimum LOS.
- The minimum acceptable LOS for areas identified as Community Regions in the General Plan shall be LOS D, except where the existing LOS is less than D. In those situations, the LOS shall not be allowed to drop below the existing LOS. Level of service shall be based on the typical highest peak hour of weekday traffic.

City of Grass Valley

The City has the following additional criteria for determining the level of significance of project impacts:

- Project is not consistent with 2020 General Plan and NCTC traffic model or future City-wide traffic model relative to land use and generation of higher traffic projections.
- There are no feasible mitigation measures to reduce the impact of the project to less-than-significant levels. “Feasible” means mitigation has been identified in City’s General Plan, Street System Master Plan, Capital Improvement Program (CIP), or Regional or Local Transportation Fee Program.
- LOS A, B, C, and D are considered acceptable LOS’s for City intersections and roadway segments.
- If the project traffic causes an intersection or roadway segment to worsen from acceptable LOS to LOS E or worse or is distributed to an intersection or roadway segment currently operating at an unacceptable LOS, the project is determined to cause a significant impact which must be mitigated. It is acceptable to mitigate an intersection or roadway segment from an unacceptable LOS to an acceptable LOS. In the event of a significant impact, cumulative year analyses are required.

PROJECT CONDITIONS

The following sections describe the analysis to determine PM peak hour traffic conditions under the Existing Plus Background Projects Plus Project and provide an explanation of project trip generation, distribution and assignment. Project trips are defined as the net increase in trips generated by the Housing Element Rezone program from current General Plan conditions. This calculation is shown in Table 4.15-8 for each of the project sites. In this table, “Net New Trips” indicates the project trips or the additional trips generated as a result of the Housing Element Rezone program. In order to analyze the worst-case conditions, full buildout of the project sites was analyzed.

Project Trip Generation

Table 4.15-8, *Project Trip Generation*, contains the trip generation estimates for the each of the eighteen project sites. The trips are based upon rates published in the Institute of Transportation Engineers (ITE) Trip Generation, 9th Edition, 2012.

**Table 4.15-8
 Project Land Use Assumptions and Trip Generation under the Housing Element
 Rezone Program Land Use Designations**

PROJECT SITE	SCENARIO	Land Use	ITE LAND USE CODE	PROJECT SIZE		PM PEAK HOUR			
						TOTAL PEAK HOUR	IN	/	OUT
<i>Grass Valley SOI Sites</i>									
Site 1	Current GP	SFD	210	4	Units	4	3	/	1
	Housing Rezone Program	MFD	230	22	Units	11	8	/	3
<i>Net New Trips (Project Trips)</i>						7	5	/	2
Site 2	Current GP	SFD	210	45	Units	45	28	/	17
	Housing Rezone Program	MFD	230	227	Units	118	79	/	39
<i>Net New Trips (Project Trips)</i>						73	51	/	22
Site 3	Current GP	SFD	210	54	Units	54	34	/	20
	Housing Rezone Program	MFD	230	183	Units	95	64	/	31
<i>Net New Trips (Project Trips)</i>						41	30	/	11
Site 4	Current GP	SFD	210	68	Units	68	43	/	25
	Housing Rezone Program	MFD	230	227	Units	118	79	/	39
<i>Net New Trips (Project Trips)</i>						50	36	/	14
Site 5	Current GP	SFD	210	27	Units	27	17	/	10
	Housing Rezone Program	MFD	230	90	Units	47	32	/	15
<i>Net New Trips (Project Trips)</i>						20	15	/	5
Site 6	Current GP	SFD	210	58	Units	58	37	/	21
	Housing Rezone Program	MFD	230	194	Units	101	68	/	33
<i>Net New Trips (Project Trips)</i>						43	31	/	12
Site 7	Current GP	SFD	210	54	Units	6	4	/	2
	Housing Rezone Program	MFD	230	209	Units	103	69	/	34
<i>Net New Trips (Project Trips)</i>						97	65	/	32

Table 4.15-8, continued

PROJECT SITE	SCENARIO	Land Use	ITE LAND USE CODE	PROJECT SIZE		PM PEAK HOUR			
						TOTAL PEAK HOUR	IN	/	OUT
Site 8	Current GP	SFD	210	39	Units	54	34	/	20
	Housing Rezone Program	MFD	230	130	Units	109	73	/	36
	Net New Trips (Project Trips)					55	39	/	16
Site 9	Current GP	SFD	210	23	Units	39	25	/	14
	Housing Rezone Program	MFD	230	95	Units	68	46	/	22
	Net New Trips (Project Trips)					29	21	/	8
	Grass Valley SOI Area Net New Trip Subtotal					415	293	/	122
Penn Valley Area Sites									
Site 10	Current GP	SFD	210	23	Units	23	14	/	9
	Housing Rezone Program	MFD	230	95	Units	49	33	/	16
	Net New Trips (Project Trips)					26	19	/	7
Site 11	Current GP	SFD	210	12	Units	12	8	/	4
	Housing Rezone Program	MFD	230	50	Units	25	17	/	8
	Net New Trips (Project Trips)					13	9	/	4
Site 12	Current GP	SFD	210	26	Units	26	16	/	10
	Housing Rezone Program	MFD	230	36	Units	36	24	/	12
	Net New Trips (Project Trips)					10	8	/	2
Site 13	Current GP	SFD	210	1	Units	1	1	/	0
	Housing Rezone Program	MFD	230	322	Units	167	112	/	55
	Net New Trips (Project Trips)					166	111	/	55
	Penn Valley Net New Trips Subtotal					216	147	/	68
Lake of the Pines Area Sites									
Site 14	Current GP	SFD	210	20	Units	20	13	/	7
	Housing Rezone Program	MFD	230	42	Units	42	28	/	14
	Net New Trips (Project Trips)					22	15	/	7
Site 15	Current GP	MFD	230	38	Units	39	26	/	13
	Housing Rezone Program	MFD	230	42	Units	42	28	/	14
	Net New Trips (Project Trips)					3	2	/	1
Site 16	Current GP	MFD	230	271	Units	141	94	/	47
	Housing Rezone Program	MFD	230	290	Units	151	101	/	50
	Net New Trips (Project Trips)					10	7	/	3
Site 17	Current GP	SFD	210	14	Units	14	9	/	5
	Housing Rezone Program	MFD	230	38	Units	20	13	/	7
	Net New Trips (Project Trips)					6	4	/	2
Site 18	Current GP	SFD	210	44	Units	44	28	/	16
	Housing Rezone Program	MFD	230	176	Units	92	62	/	30
	Net New Trips (Project Trips)					48	34	/	14

Table 4.15-8, continued

PROJECT SITE	SCENARIO	Land Use	ITE LAND USE CODE	PROJECT SIZE	PM PEAK HOUR			
					TOTAL PEAK HOUR	IN	/	OUT
	<i>Lakes of the Pines Area Net New Trips Subtotal</i>				89	62	/	27
	<i>Countywide Net New Trips</i>				720	502	/	218

Source: RBF Consulting, 2013

Notes: SFD = Single-Family Detached Land Use, MFD = Multi-Family Dwellings (Condos / Townhouse) Land Use
 Utilized average trip generation rates from ITE Trip Generation 9th Edition (2012)

The sum of all trips may differ by +/- 1 trips overall due to rounding

The project proposes to implement a housing rezone program at eighteen project sites within the three study areas of the unincorporated Nevada County. The program proposes to rezone each of the eighteen project sites to a higher residential density to meet the minimum low and very low income requirements of the updated Nevada County Housing Element (Adopted May 11, 2010). The number of housing units assumed under Current General Plan zoning and under the housing rezone program are shown in Table 4.15-8 above.

The proposed rezone of all eighteen project sites (project) would add a net 8,860 trips per day on the roadway network, of which 720 trips (502 in and 218 out) would occur during the PM peak hour.

The following section provides a description of the project sites and an examination of site access locations. Several project sites form contiguous parcels and utilize shared access and internal circulation roads as indicated below. Refer to the maps provided in Figures 3-5 through 3-14 for additional site detail and access points.

Existing sight distances were reviewed in the field for potential sight distance deficiencies. During the design process of each site, attention should be given to horizontal and vertical sight distance constraints. Where horizontal/vertical limitations are infeasible to remove, restricted access should be considered. These limitations would be identified at the time the design of the roadways is prepared. Also, driveway conditions will have to be designed and constructed to provide adequate sight distances per City, County, and Caltrans standards as appropriate. In most cases, frontage improvements (e.g. roadway widening, curb, gutter, sidewalk, etc.) would be required in areas that are currently unimproved.

PROJECT SITE CONDITIONS / SIGHT DISTANCE CONSTRAINTS:

GRASS VALLEY SPHERE OF INFLUENCE AREA SITES

Site 1

Site 1 is located in the Grass Valley SOI area on McCourtney Road south of the intersection of McCourtney Road and Personeni Drive. Access to Site 1 will be provided at a single driveway to the west on the McCourtney Road frontage. Grading and vegetation removal may be required at the site driveway in order to provide sufficient sight distance if the future driveway is located at the existing location.

Site 2

Site 2 is a vacant site located south of the City of Grass Valley SOI area on the east side of La Barr Meadows Road approximately 600 feet to the south of the intersection of La Barr Meadows Road / Auburn Street and McKnight Way. Site access is anticipated to be provided via a single driveway to La Barr Meadows Road. Due to the steep topography along La Barr

Meadows Road, significant cut and grading may be required in order to allow for sufficient sight distance in and out of the project driveway.

Sites 3, 4, 5, 6 & 9

Sites 3, 4, 5, 6 and 9 form a contiguous parcel located in the northeast Grass Valley SOI area on the west side of Brunswick Road, directly west of Sites 7 and 8. Sites 3, 4, 5, 6 and 9 are anticipated to utilize Triple Crown Drive as a single shared driveway to Brunswick Road at the east side of the combined site. Sight distance to the south of the Triple Crown Drive is limited to 350 feet and constrained due to the curve on Brunswick Road and existing vegetation; sight distance to the north is constrained due to the uphill grade on Brunswick Road.

Sites 7 & 8

Sites 7 & 8 form a contiguous parcel located in the northeast Grass Valley SOI area on the east side of Brunswick Road, directly across from Sites 3-6 and 9. Site access is anticipated to be provided via a shared driveway at the intersection at Town Talk Road / Bubbling Wells Road. This proposed access will be located approximately 375 feet from the Site Access driveway to Sites 3, 4, 5, 6 and 9 at Triple Crown Drive.

PENN VALLEY AREA SITES

Sites 10, 11, 13

Sites 10, 11 and 13 form a contiguous parcel located in a residential area of the Penn Valley Community. Shared access to Sites 10, 11, and 13 will be provided at the location of the existing access road on the Penn Valley street frontage of Site 11. Internal circulation roads will be constructed connecting the sites, including a bridge / culvert structure over the creek at the northern portion corner of Site 12 providing a link to Site 13. A landscaped berm will be constructed at the northern boundary of Site 13 along SR 20 to provide noise screening and prohibit access to SR 20. Sight distance in and out of the site access road on Penn Valley Road is currently restricted due to the location of multiple large trees along the Penn Valley Road frontage. Removal of selected trees may be required to allow for adequate site distance at this location.

Site 12

Site 12 is located in the Penn Valley Community south of Penn Valley Drive on Broken Oak Court. Site access to Penn Valley Drive will be provided at the east side of the site via a driveway to Broken Oak Court.

LAKE OF THE PINES AREA SITES

Site 14

Site 14 is located in the Lake of the Pines area on Cameo Drive approximately 1/3 mile to the south of the intersection of SR 49 and Cameo Drive. Access to Site 13 is anticipated to be provided at the northwest corner of the property at the frontage on Cameo Drive. Sight distance at this location is highly constrained due to the tight curve and uphill grade on Cameo Drive.

Sites 15 & 16

Sites 15 and 16 form a contiguous parcel located in the Lake of the Pines area on Woodridge Drive approximately 1/3 mile to the east of the intersection of SR 49 and Woodridge Drive.

For this analysis, it was assumed that the approved Higgins Marketplace project located adjacent to the west side of Site 15 would be developed. The Higgins Marketplace project will implement the following improvements to the local transportation network:

- The existing Higgins Road will be extended to a connection with Woodridge Court.
- Access to and from northbound SR 49 at Woodridge Drive shall be limited to right-in/right-out turn movements. Left turns from Woodridge Drive to southbound SR 49 shall not be allowed. Left turns onto Woodridge Drive from southbound SR 49 shall be allowed.

Access to Sites 15 and 16 would be established at west side of Site 16 at Woodridge Road. The majority of trips would access the site via the Higgins Road extension to Woodridge Drive due to the turn restrictions as described above at SR 49 / Woodridge Drive. Only trips destined for points north of the SR 49 / Combie Road intersection and trips northbound on SR 49 to Sites 15 and 16 were assumed to utilize the SR 49 / Woodridge Drive intersection.

Site 17

Site 17 is located in the Lake of the Pines area at the southeast corner of Rosewood Road and Combie Road. Site access will be established via a driveway on the west side of the site to Rosewood Road. Rosewood Road is a private road owned and maintained by the surrounding residential property owners. Consequently, the development of Site 17 shall be coordinated with the surrounding property owners to ensure potential impacts are mitigated.

Site 18

Site 18 is a vacant parcel located on the north side Combie Road approximately two miles southeast of the intersection of Combie Road / Magnolia Road / Hacienda Road. Site access will be provided with an access road to the south side of the site at the frontage on Combie Road. Sight distance at the Combie Road driveway will be limited in all directions due to the existing topography and sharp curve on Combie Road. Grading and removal of vegetation will be required in order to provide adequate sight distance at this location.

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

The Nevada County Transportation Commission (NCTC) and Grass Valley Travel Demand Model were utilized to estimate the trip distribution for each of the proposed project sites. The models were reviewed to ensure that they accurately represented the existing road networks within, and adjacent to the project area. The Grass Valley Travel Demand model was updated to reflect the new Dorsey Drive Interchange with SR 20-49 in the Grass Valley SOI area. The model was not revalidated or recalibrated. Project trips and road networks were added and outputs generated. The NCTC Travel Demand Model Update project was still in progress at the time of this analysis (as of February 2013). For purposes of this analysis, the origin and destination matrices from the NCTC model were utilized to obtain the project trip distribution.

The NCTC and City of Grass Valley travel demand models were refined to include nine separate Traffic Analysis Zones (TAZs) rather than eighteen TAZs for each of the project site's. This was done because of the project's geographical layout and relation to the surrounding roadway network and study intersections. The sites were grouped into TAZs according by shared access. The Grass Valley Travel Demand Model was used for Sites 1, 2, 3, 4, 5, 6, 7, 8 and 9. The NCTC Travel Demand Model was used for Sites 10, 11, 12, 13, 14, 15, 16, 17, and 18.

Details of the project distribution for the three project study areas are indicated graphically on Figure 4.15-5a-c, *Net Project Trip Assignment and Distribution*.

The travel demand model, together with engineering judgment based on the knowledge of the existing traffic distribution, was used to determine the trip distribution along the roadway network in the vicinity of the proposed project.

The Existing Plus Background Projects Plus Project traffic volumes are indicated in Figure 4.15-6a-c, *Existing Plus Background Projects Plus Project Peak Hour Volumes*.

EXISTING PLUS BACKGROUND PROJECTS PLUS PROJECT INTERSECTION TRAFFIC CONDITIONS

The Synchro analysis software program, which uses the HCM methodologies, was used to determine the LOS for the weekday existing PM peak hour at each of the intersections within the project area. The results of the analysis for all the study intersections are listed in Table 4.15-9, *Signalized Intersection HCM LOS – Existing Plus Approved Projects Plus Project Conditions*, and Table 4.15-10, *Unsignalized Intersection HCM LOS – Existing Plus Approved Projects Plus Project Conditions*. All intersections would operate at an acceptable LOS, except for the following.

- Brunswick Road / Idaho-Maryland is anticipated to operate at LOS F during the PM peak hour.
- La Barr Meadows Road / McKnight Way is anticipated to operate at overall LOS E and LOS F at the worst approach during the PM peak hour.
- Brunswick Road / Triple Crown Road (Sites 3-6 & 9 Access Road) is anticipated to operate at an overall LOS D and LOS F at the worst approach during PM peak hour.

**Table 4.15-9
Signalized Intersection HCM LOS – Existing Plus Background Projects Plus Project Conditions**

Intersection	Intersection Control	LOS Threshold	Existing + Background w/ Current GP			Existing + Background + Project		
			V/C Ratio	Delay (Secs.)	LOS	V/C Ratio	Delay (Secs.)	LOS
Grass Valley SOI Study Intersections								
1. Nevada City Highway / Brunswick Road	Signal	G.V. D	0.54	28.0	C	0.55	28.3	C
2. SR 20-49 SB Ramps / Brunswick Road	Signal	Caltrans C/D	0.74	25.1	C	0.76	27.2	C
3. SR 20-49 NB Ramps / Brunswick Road	Signal	Caltrans C/D	0.56	17.6	B	0.61	18.1	B
4. Sutton Way / Brunswick Road	Signal	G.V. D	0.78	34.8	C	0.81	37.1	D
8. SR 49 SB Ramps / McKnight Way	Signal	Caltrans C/D	0.69	24.8	C	0.72	25.3	C
9. SR 49 NB Ramps McKnight Way	Signal	Caltrans C/D	0.68	31.3	C	0.70	34.2	C
Penn Valley Study Intersections								
11. Pleasant Valley Rd / SR-20	Signal	Caltrans C/D	0.61	25.3	C	0.62	25.5	C
13. Penn Valley Drive / SR-20	Signal	Caltrans C/D	0.56	17.4	B	0.65	22.0	C

Table 4.15-9, continued

Intersection	Intersection Control	LOS Threshold	Existing + Background w/ Current GP			Existing + Background + Project		
			V/C Ratio	Delay (Secs.)	LOS	V/C Ratio	Delay (Secs.)	LOS
Lake of the Pines Study Intersections								
16. SR-49 Combie Road	Signal	Caltrans C/D	0.99	98.6	F	1.02	>100	F
		Mitigation (MM 4.15-5): Add Southbound Left Turn Lane and Extend Westbound Left lane to 250 Ft.			0.80	35.0	C	
18. Hacienda Drive Combie Road	Signal	Nev. Cnty. D	0.81	33.0	C	0.82	33.7	C
Source: RBF Consulting 2013 Notes: 1. GV = City of Grass Valley, Nev. Cnty = Nevada County								

**Table 4.15-10
Unsignalized Intersection HCM LOS – Existing Plus Background Projects Plus Project Conditions**

Intersection	Intersection Control	LOS Threshold	Existing + Background w/Current GP		Existing + Background + Project	
			Delay (Secs.)	LOS	Delay (Secs.)	LOS
Grass Valley SOI Study Area						
5. Brunswick Road / Idaho-Maryland Road	SSS (EB/WB) Worst Approach	G.V.	>100	F	>100	F
		D	*	F	*	F
Mitigation (MM 4.15-2): Roundabout					8.3	A
6. McCourtney Road / Personeni Road	SSS (EB) Worst Approach	G.V.	0.1	A	0.1	A
		D	13.7	B	13.8	B
7. Taylorville Road / McKnight Way	SSS (NB/SB) Worst Approach	G.V.	0.4	A	0.4	A
		D	16.2	C	16.2	C
10. La Barr Meadows Road / McKnight Way	SSS (NB/SB) Worst Approach	G.V.	72.5	F	88.5	F
		D	97.8	F	>100	F
Mitigation (MM 4.15-3): Roundabout					12.4	B
20. Brunswick Road / Town Talk Road / Sites 7,8	SSS (EB) Worst Approach	G.V.	0.5	A	2.2	A
		D	20.3	C	45.9	E
21. Brunswick Road / Triple Crown Drive / Sites 3-6, 9	SSS (WB) Worst Approach	G.V.	3.9	A	32.0	D
		D	61.6	F	>100	F
Mitigation (MM 4.15-4): Signalize and Align with Town Talk Road					11.0	B
22. McCourtney Road / Driveway Site 1	SSS (WB) Worst Approach	G.V.	0.5	A	1.1	A
		D	11.5	B	12.0	B
27. Brunswick Road / Loma Rica Drive	SSS (WB) Worst Approach	G.V.	7.8	A	8.2	A
		D	25.5	D	27.3	D
Penn Valley Study Area						
12. Cattle Drive / SR-20	SSS (SB) Worst Approach	Caltrans	1.0	A	1.0	A
		C/D	29.3	D	31.2	D
14. Spenceville / Penn Valley Rd/ Penn Valley Drive	AWS Worst Approach	Nev. Cnty.	10.6	B	13.3	B
		D	11.1	B	14.8	B
23. Penn Valley Drive / Driveway to Sites 10, 11, 13	SSS (SB) Worst Approach	Nev. Cnty.	0.5	A	2.3	A
		D	10.9	B	13.2	B
24. Penn Valley Drive / Broken Oak Court / Site 12	SSS (NB) Worst Approach	Nev. Cnty.	1.4	A	1.4	A
		D	9.7	A	10.0	B
Lake of the Pines Study Area						
15. SR-49 / Cameo Drive	SSS (WB) Worst Approach	Caltrans	0.2	A	0.3	A
		C/D	24.2	C	27.1	D
17. Rosewood Road / Combie Road	SSS (NB/SB) Worst Approach	Nev. Cnty.	12.8	B	15.6	C
		D	>100	F	>100	F

Table 4.15-10, continued

Intersection	Intersection Control	LOS Threshold	Existing + Background w/Current GP		Existing + Background + Project	
			Delay (Secs.)	LOS	Delay (Secs.)	LOS
19. SR-49 / Woodridge Ct	SSS (NB)	Caltrans	1.8	A	1.9	A
	Worst Approach	C/D	26.3	D	27.7	D
26. Combie Road / Driveway to Site 18	SSS (NB)	Nev. Cnty.	2.7	A	4.0	A
	Worst Approach	D	8.6	A	8.7	A
28. Higgins Road / Combie Road	SSS (NB)	Nev. Cnty.	68.6	F	>100	F
	Worst Approach	D	>100	F	>100	F
Mitigation (MM 4.15-7): Signalize and Construct Additional Eastbound Through Lane					25.0	C

Source: RBF Consulting 2013

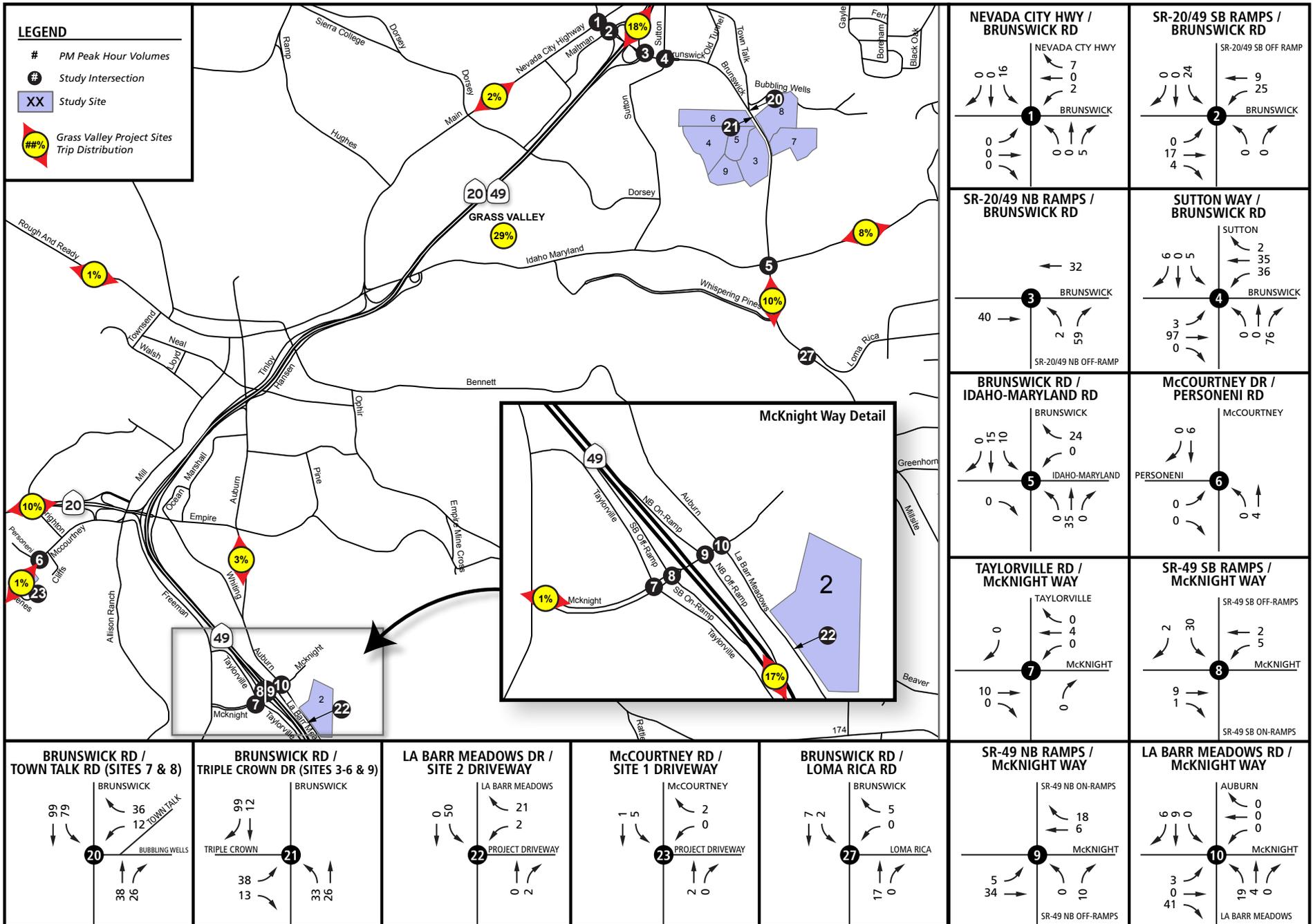
Notes: 1. NB, SB, EB, WB, AWS, SSS = Northbound, Southbound, Eastbound, Westbound, All Way, Side Street Stop

2. Worst approach delay utilized to identify operating conditions. Overall delay includes through traffic.

3. **Bold** indicates LOS below acceptable LOS standard

* Indicates delay beyond the capability of the Synchro analysis software

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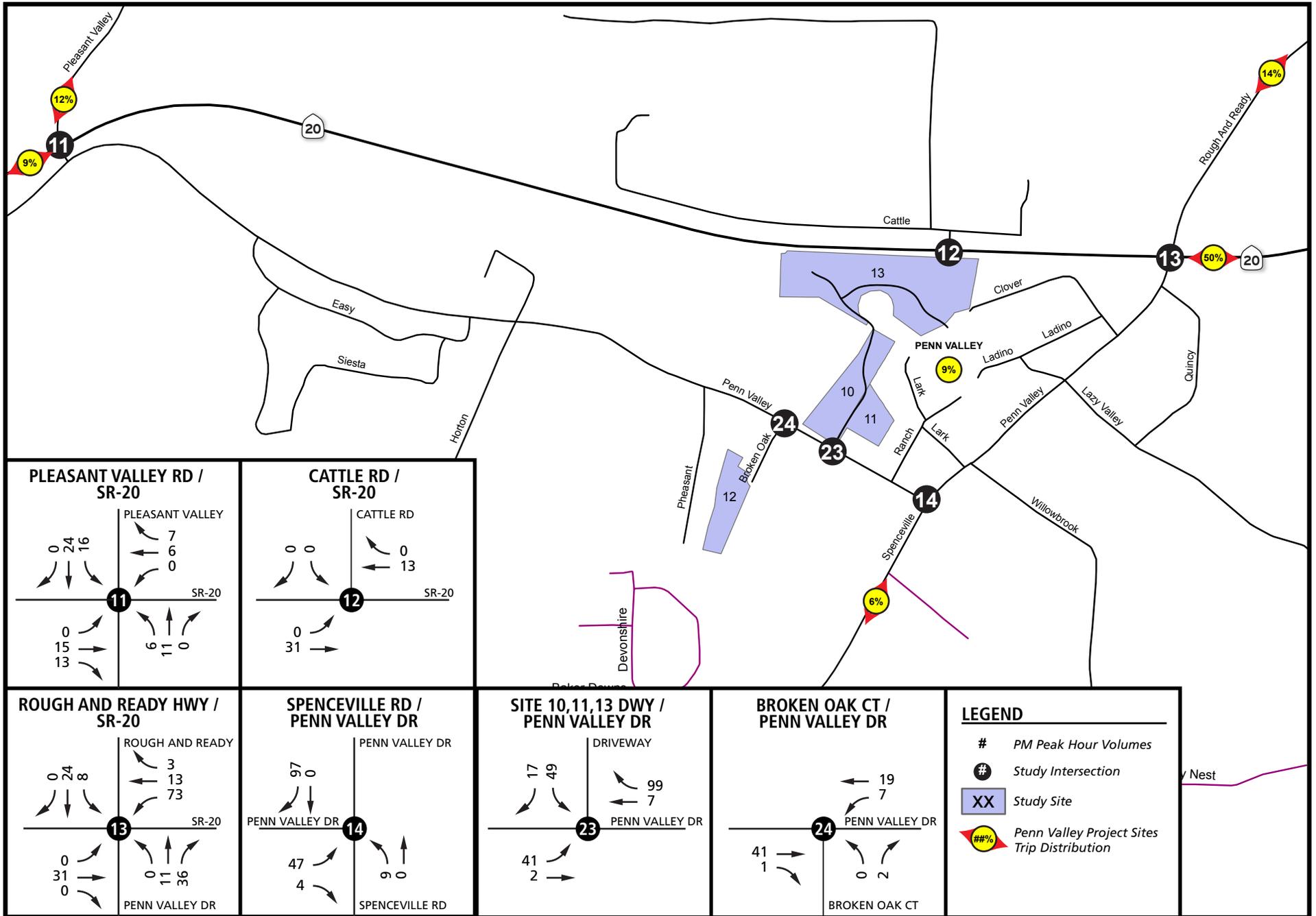


Source: RBF Consulting 2013 Not to Scale

GRASS VALLEY SOI STUDY AREA

COUNTY OF NEVADA: 2009-2014 HOUSING ELEMENT REZONE PROGRAM IMPLEMENTATION EIR



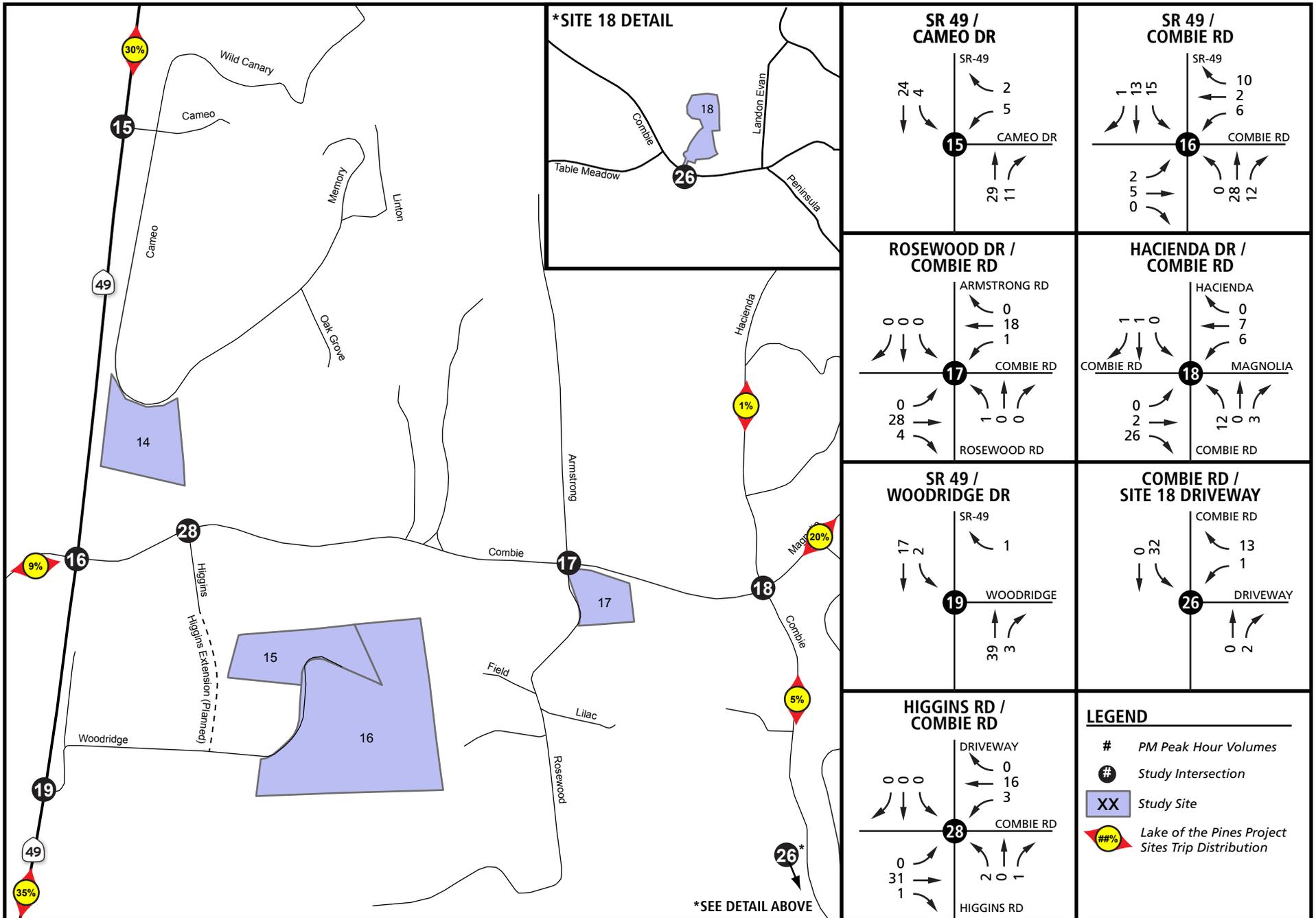


Source: RBF Consulting 2013 Not to Scale

PENN VALLEY STUDY AREA
 COUNTY OF NEVADA: 2009-2014 HOUSING ELEMENT REZONE PROGRAM IMPLEMENTATION EIR

Net Project PM Peak Hour Trip Distribution and Assignment



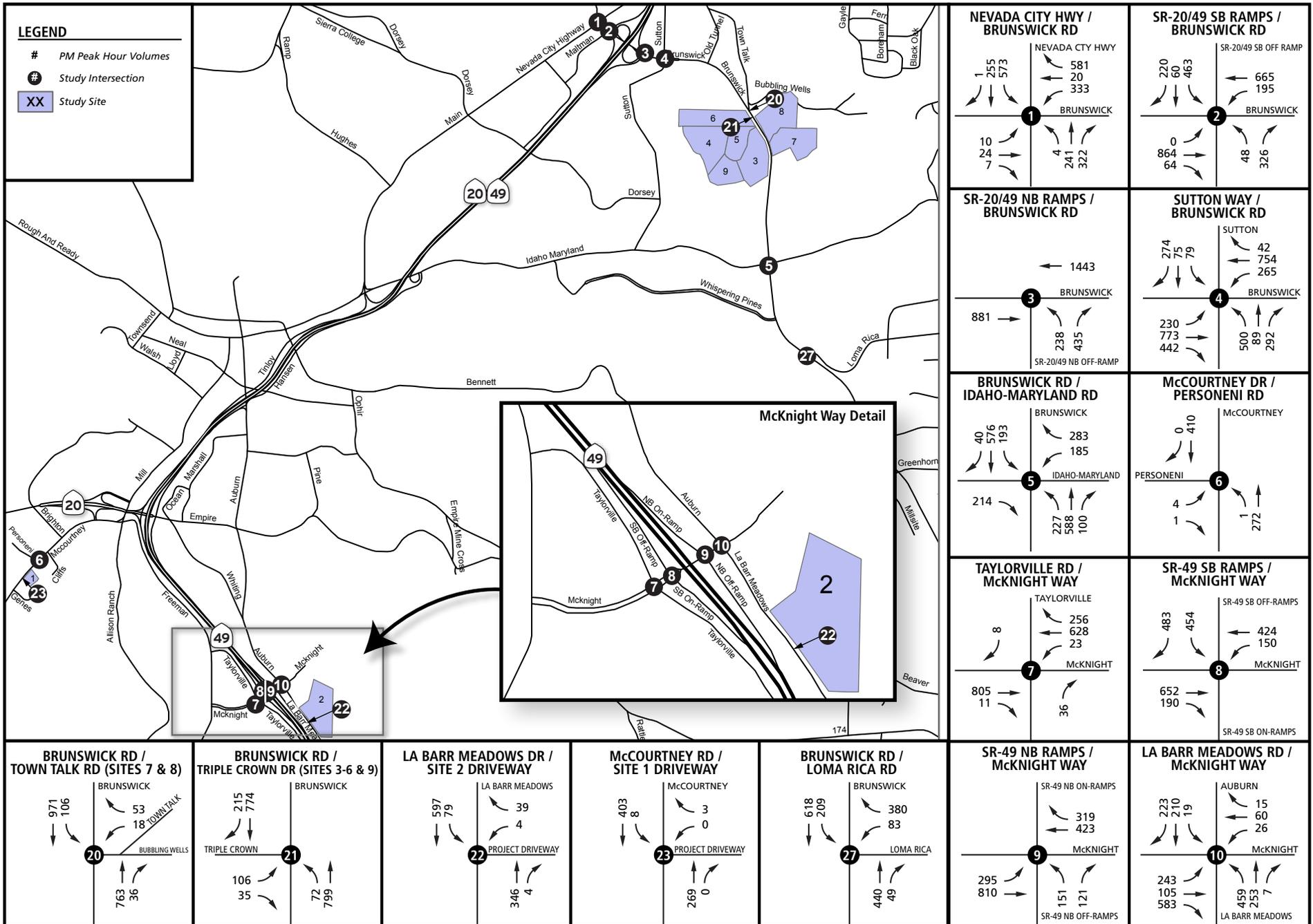


Source: RBF Consulting 2013 Not to Scale

LAKE OF THE PINES STUDY AREA
 COUNTY OF NEVADA: 2009-2014 HOUSING ELEMENT REZONE PROGRAM IMPLEMENTATION EIR

Net Project PM Peak Hour Trip Distribution and Assignment

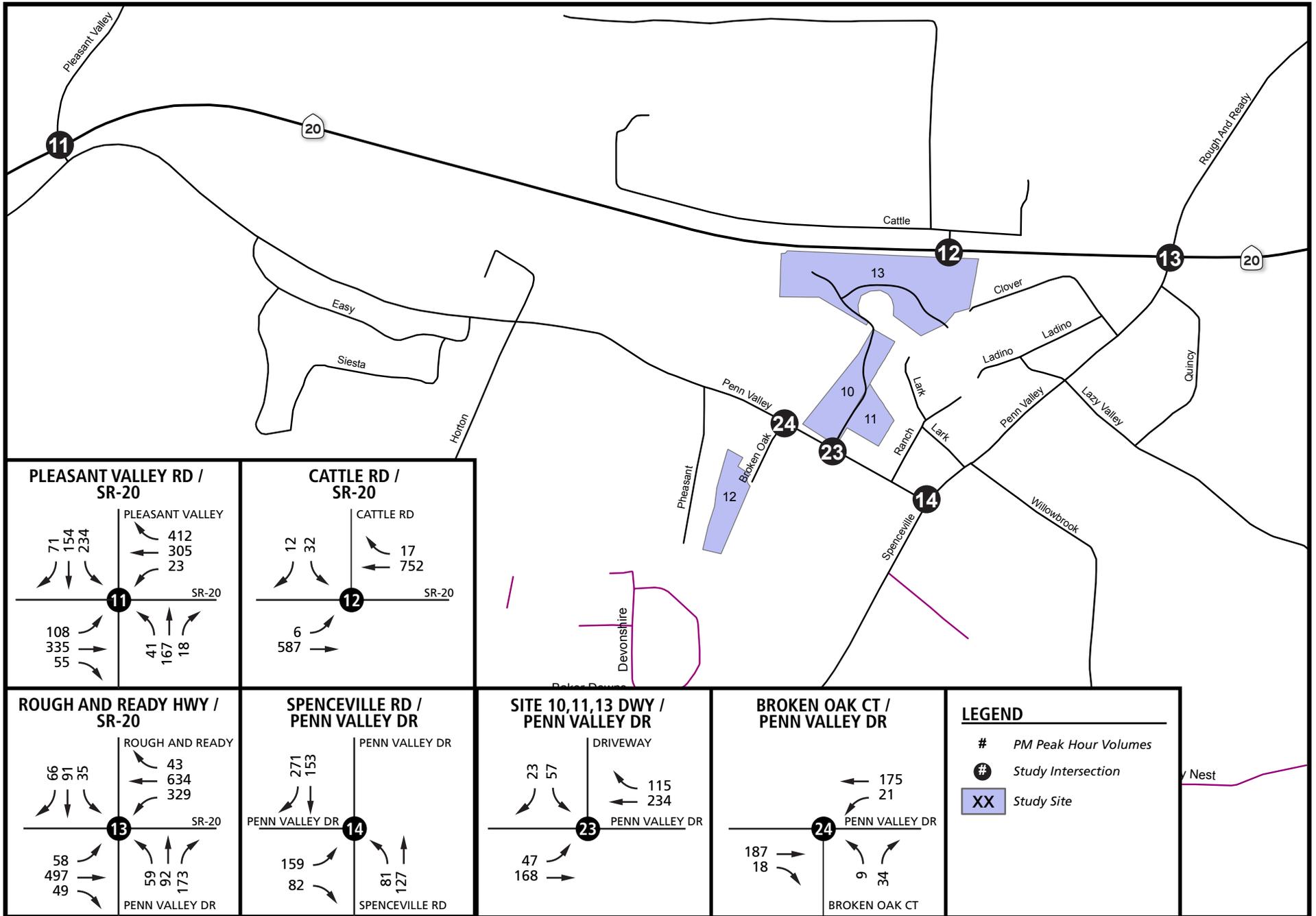




Source: RBF Consulting 2013 Not to Scale

GRASS VALLEY SOI STUDY AREA
 COUNTY OF NEVADA: 2009-2014 HOUSING ELEMENT REZONE PROGRAM IMPLEMENTATION EIR



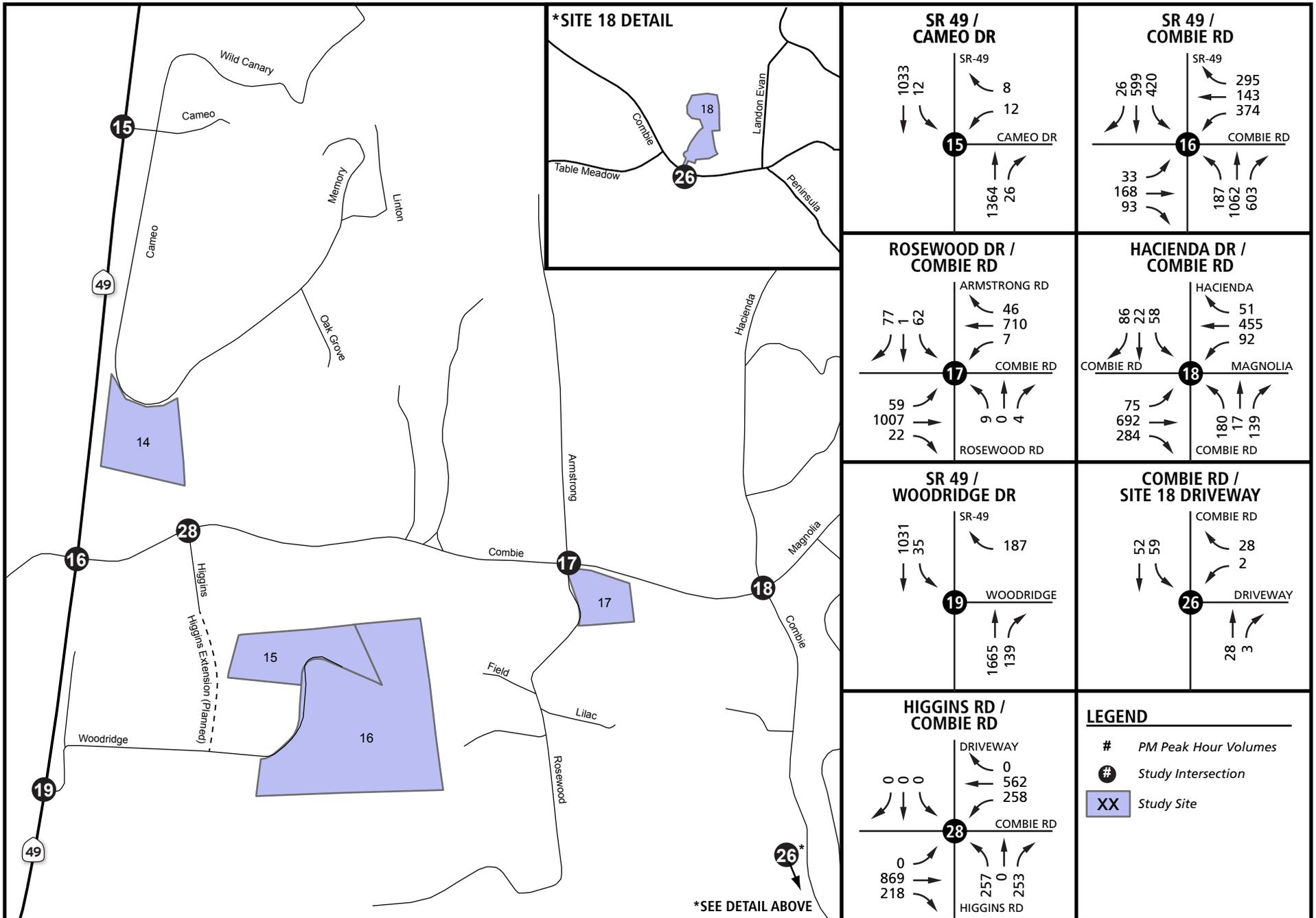


Source: RBF Consulting 2013 Not to Scale

PENN VALLEY STUDY AREA
 COUNTY OF NEVADA: 2009-2014 HOUSING ELEMENT REZONE PROGRAM IMPLEMENTATION EIR

Existing + Background + Project PM Peak Hour Traffic Volumes





Source: RBF Consulting 2013 Not to Scale

LAKE OF THE PINES STUDY AREA
 COUNTY OF NEVADA: 2009-2014 HOUSING ELEMENT REZONE PROGRAM IMPLEMENTATION EIR

Existing + Background + Project PM Peak Hour Traffic Volumes



POTENTIAL IMPACTS AND MITIGATION MEASURES

The following section provides descriptions of potential project related impacts and improvements to mitigate the impacts. Table 4.15-11, *Project Mitigation Triggers*, identifies the mitigation triggers on a site-by-site basis. The sites identified in Table 4.15-11 were determined to trigger mitigation based upon the individual buildout of each site. Figures 4.15-7a-b, *Intersection Mitigations – Cumulative plus Project Conditions*, provide a graphical representation of the proposed improvements to mitigate impacts under Cumulative plus Project Conditions.

**Table 4.15-11
Project Mitigation Triggers
(Under Individual Site Build Out Conditions)**

Intersection	Mitigation Measure #	Number of PM Peak Hour Project Trips Added that Trigger Mitigation	Sites That Will Trigger Mitigation
Grass Valley SOI Study Area			
5. Brunswick Road / Idaho-Maryland Road	4.15-2	1 Trip	Site 3 Site 4 Site 5 Site 6 Site 7 Site 8 Site 9
10. La Barr Meadows Road / McKnight Way	4.15-3	10 Trips	Site 2
21. Brunswick Road / Triple Crown Drive / Sites 3-6, 9	4.15-4	1 Trip	Site 3 Site 4 Site 5 Site 6 Site 7 Site 8 Site 9
Lake of the Pines Study Area			
16. SR-49 / Combie Road	4.15-5	1 Trip	Site 14 Site 15 Site 16 Site 17 Site 18
28. Higgins Road / Combie Road	4.15-6	1 Trip	Site 14 Site 15 Site 16 Site 17 Site 18

Source: RBF Consulting 2013

4.15-1

THE PROPOSED PROJECT WOULD RESULT IN AN INCREASE IN TRAFFIC AT STUDY AREA INTERSECTIONS AND ROADWAY SEGMENTS. TWENTY THREE STUDY INTERSECTIONS WOULD CONTINUE TO OPERATE AT ACCEPTABLE LEVELS OF SERVICE IN ACCORDANCE WITH NEVADA COUNTY AND THE CITY OF GRASS VALLEY SIGNIFICANCE CRITERIA DURING THE WEEKDAY PM PEAK HOUR.

Level of Significance Before Mitigation: Less Than Significant Impact

Impact Analysis

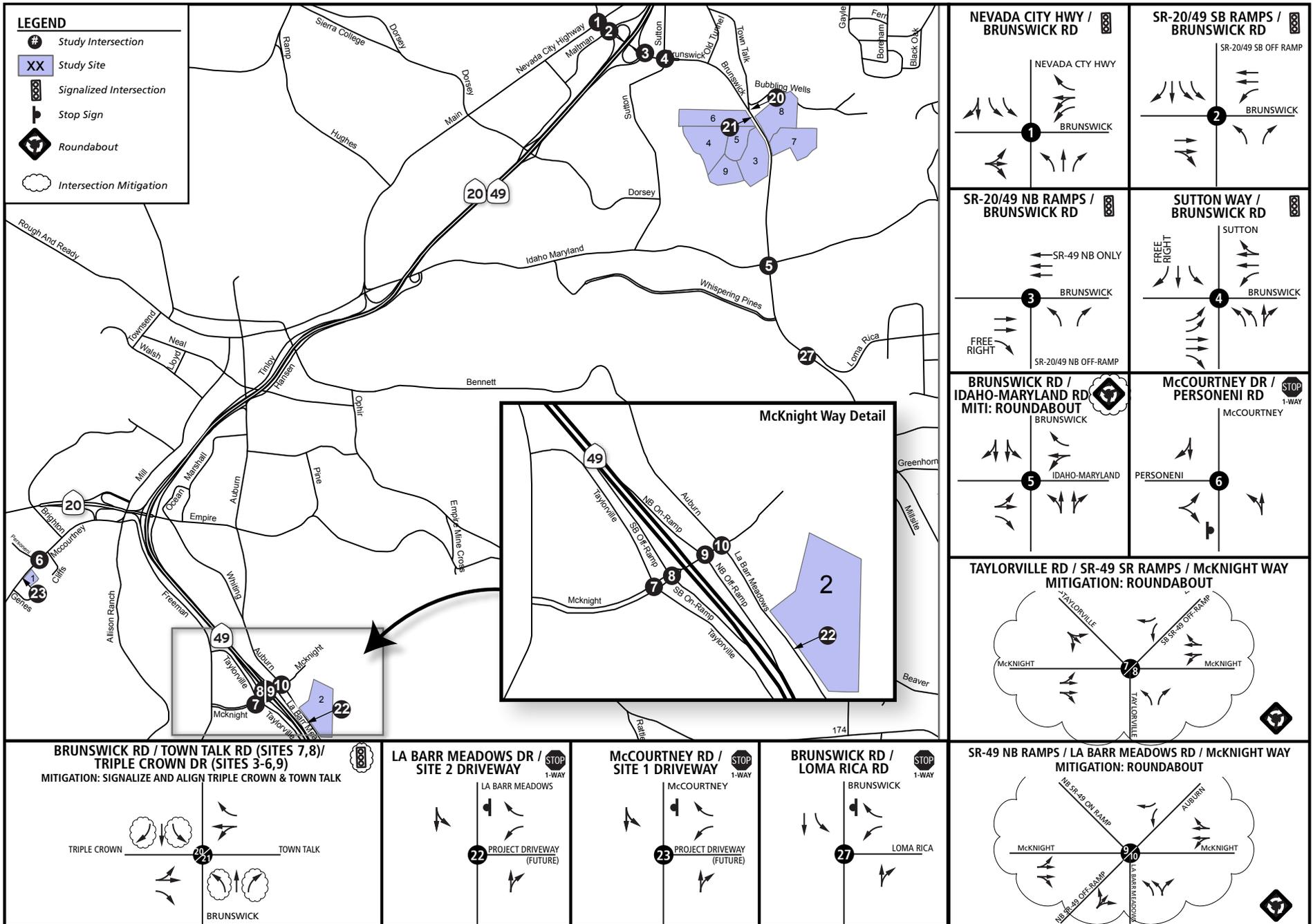
The level of service for the following intersections would remain at an acceptable level of service in accordance with City of Grass Valley (LOS D or better) and Nevada County (LOS D or better in Community Regions, LOS C or better in Rural Regions) significance thresholds and Caltrans (LOS C or better) standards as shown in Table 4.15-9 and 4.15-10.

1. Nevada City Highway/Brunswick Road,
2. SR 20-49 SB Ramps/Brunswick Road,
3. SR 20-49 NB Ramps/Brunswick Road,
4. Brunswick Road/Sutton Way,
6. McCourtney Road / Personeni Way
7. Taylorville Road / McKnight Way
8. SR 49 SB Ramps/McKnight Way,
9. SR 49 NB Ramps/McKnight Way
11. Pleasant Valley Road/ SR 20
12. Cattle Drive / SR 20
13. Penn Valley Drive/ SR 20
14. Spenceville Road / Penn Valley Drive
15. SR 49 / Cameo Drive
17. Rosewood Road / Combie Road
18. Hacienda Drive / Combie Road
19. SR 49 / Woodridge Drive
20. Brunswick Road / Town Talk (Site 7/8 Access Road)
22. McCourtney Road / Site 1 Access Road
23. Penn Valley Driveway / Site 10,11, 13 Access Road
24. Penn Valley Drive / Broken Oak Court (Site 12 Access Road)
26. Combie Road / Site 18 Access Road
27. Brunswick Road / Loma Rica Drive

As the proposed project would not degrade the level of service below LOS D for these intersections, the proposed project would have a less than significant impact at these intersections or LOS C for Caltrans intersections.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.



Source: RBF Consulting 2013

GRASS VALLEY SOI STUDY AREA
 COUNTY OF NEVADA: 2009-2014 HOUSING ELEMENT REZONE PROGRAM IMPLEMENTATION EIR

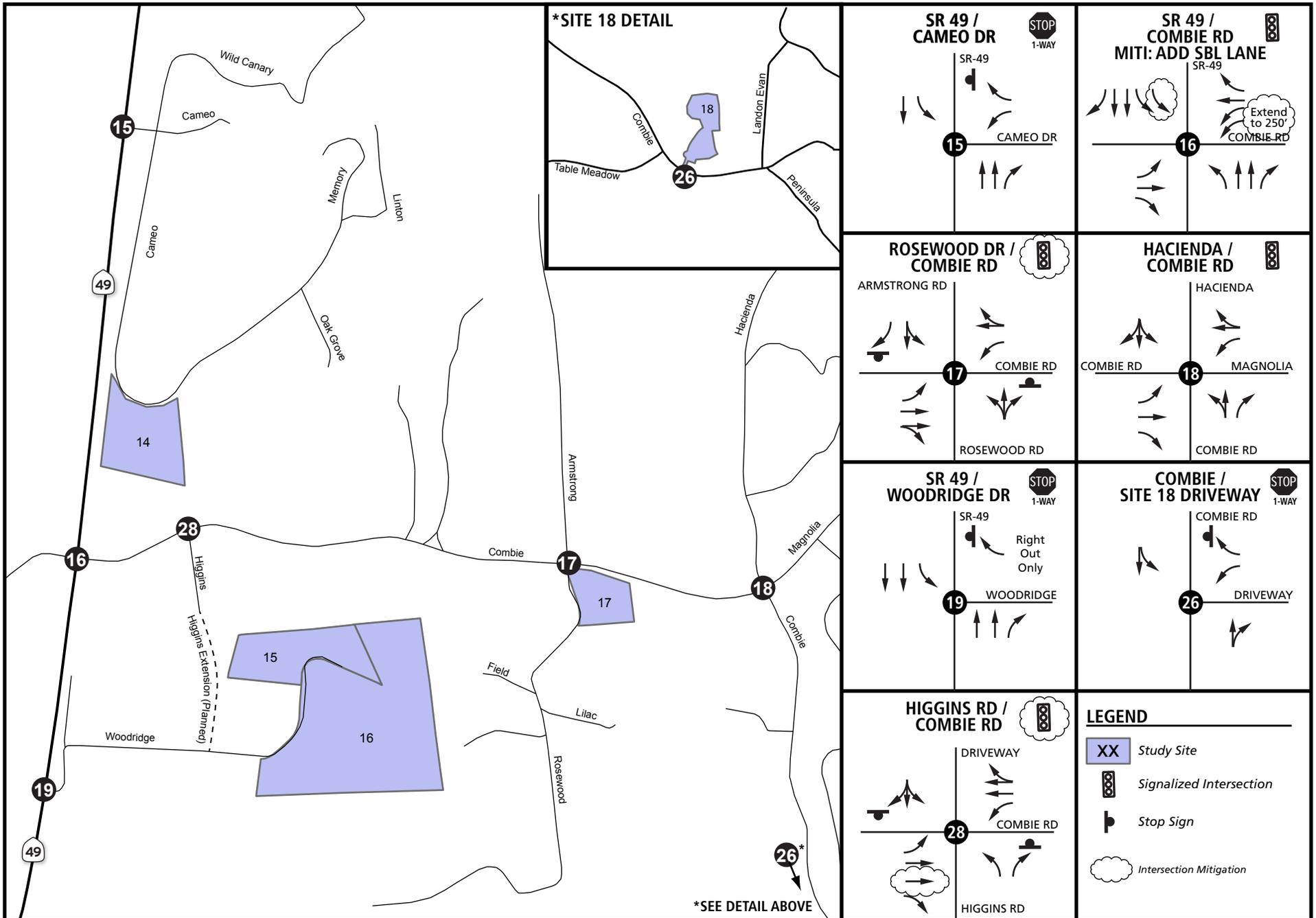


Not to Scale

Intersection Mitigations - Existing plus Background plus Project Conditions

4/21/2013 • JN 131242-18945

FIGURE 4.15-7A



Source: RBF Consulting 2013



Not to Scale

Intersection Mitigations - Existing plus Background plus Project Conditions

7/31/2013 • JN 131242-18945

LAKE OF THE PINES STUDY AREA
 COUNTY OF NEVADA: 2009-2014 HOUSING ELEMENT REZONE PROGRAM IMPLEMENTATION EIR

FIGURE 4.15-7B

4.15-2 *THE PROPOSED PROJECT WOULD ADD TRAFFIC TO THE INTERSECTION OF IDAHO-MARYLAND ROAD AND BRUNSWICK ROAD. THIS INTERSECTION IS PROJECTED TO OPERATE AT LOS F (UNACCEPTABLE) IN THE PM PEAK HOUR.*

Level of Significance Before Mitigation: Potentially Significant Impact

Impact Analysis

The intersection of Idaho-Maryland Road and Brunswick Road would operate at LOS F without project generated traffic and LOS F during the PM peak hour with the addition of the project-generated traffic. This is considered a potentially significant impact.

Mitigation Measure:

The following mitigation measure applies to Sites 3 through 9:

- 4.15-2 As described in the Loma Rica Ranch Specific Plan EIR (RBF Consulting, 2011), a roundabout shall be constructed at the intersection of Idaho-Maryland Road and Brunswick Road. This intersection is located on the downhill slope. The installation of a roundabout has been shown to reduce the number and severity of accidents. This mitigation would improve the operation of the intersection to LOS A. The improvement is identified in the Grass Valley Traffic Impact Fee (GVTIF).

To mitigate direct traffic impacts on the Idaho-Maryland Road and Brunswick Road intersection, a new roundabout is required at this intersection. However, the County of Nevada does not control the timing or implementation of construction because the intersection is within the jurisdiction of the City of Grass Valley. Additionally, it is not known whether it is feasible for one project applicant to construct the roundabout in its entirety as part of a single development project. Therefore, the developer shall pay a fair share contribution to the City of Grass Valley Development Impact Fee Capital Improvement Program towards the construction cost of this future intersection improvement.

Site Specific Development Analysis: The individual development of Sites 3, 4, 5, 6, 7, 8 or 9 would generate 1 or more trips at the intersection and require implementation of the intersection mitigation.

Timing Implementation: Prior to issuance of a building permit

Enforcement / Monitoring Agency: City of Grass Valley

Level of Significance After Mitigation: Significant and Unavoidable. This impact remains significant because it is unknown when the intersection improvement would occur, and the construction of the complete improvement may not be feasible for a single project. Furthermore, the County of Nevada does not have jurisdiction over the approval of construction or timing of when the improvement would occur within the City of Grass Valley.

4.15-3 *THE PROPOSED PROJECT WOULD ADD TRAFFIC TO THE INTERSECTION OF LA BARR MEADOWS DRIVE AND MCKNIGHT WAY. THIS INTERSECTION IS*

PROJECTED TO OPERATE AT LOS F ON THE WORST APPROACH (UNACCEPTABLE) IN THE PM PEAK HOUR.

Level of Significance before Mitigation: Potentially Significant Impact

Impact Analysis

The intersection of La Barr Meadows Drive and McKnight Way is anticipated to operate at LOS F without the project and LOS F with the project traffic during the PM peak hour. The intersection meets peak hour Caltrans peak hour signal warrant for the installation of a traffic signal under Existing plus Background plus Project conditions. This is considered a potentially significant impact.

Mitigation Measure:

The following mitigation measure applies to Site 2:

- 4.15-3 The provision of the dual roundabouts on McKnight Way at the SR 49 interchange would improve operation of the intersection to LOS A. This improvement would combine the McKnight Way / La Barr Meadows Road / Auburn Street and McKnight Way / SR 49 Northbound Ramps intersection into one intersection, and the McKnight Way / Taylorville Road and McKnight Way / SR 49 Southbound Ramps intersections into one intersection. Due to the close intersection spacing and the coordinated operation of the intersections, the roundabouts would need to be installed simultaneously in order to adequately accommodate traffic flows. This improvement is identified in the Nevada County Regional Transportation Plan and the City of Grass Valley Capital Improvement Program.

To mitigate direct impacts at the La Barr Meadows Road and McKnight Way intersection, dual roundabouts would be required to be constructed. However, the County of Nevada does not control the timing or implementation of construction because the intersection is within the jurisdiction of the City of Grass Valley. Additionally, it is not known whether it is feasible for one project applicant to construct the required dual roundabouts in their entirety as part of a single development project. Therefore, the developer shall pay a fair share contribution to the City of Grass Valley Development Impact Fee Capital Improvement Program towards the construction cost of this future intersection improvement.

Site Specific Development Analysis: The individual development of Site 2 would generate 10 or more trips at the intersection and require implementation of the intersection mitigation.

Timing Implementation: Prior to issuance of a building permit

Enforcement / Monitoring Agency: City of Grass Valley

Level of Significance After Mitigation: Significant and Unavoidable. This impact remains significant because it is unknown when the intersection improvement would occur, and the construction of the complete improvement may not be feasible for a single project. Furthermore, the County of Nevada does not have jurisdiction over the approval of construction or timing of when the improvement would occur within the City of Grass Valley.

- 4.15-4 ***THE PROPOSED PROJECT WOULD ADD TRAFFIC TO THE INTERSECTION OF BRUNSWICK ROAD AND***

TRIPLE CROWN ROAD. THIS INTERSECTION IS PROJECTED TO OPERATE AT AN OVERALL LOS E AND LOS F ON THE WORST APPROACH (UNACCEPTABLE) IN THE PM PEAK HOUR.

Level of Significance before Mitigation: Potentially Significant Impact

Impact Analysis

The intersection of Brunswick Road and Triple Crown Road (Sites 3-6 & 9 Access Road) is anticipated to operate at LOS A without the project and an overall LOS E and LOS F on the worst approach with the addition of project traffic during the PM peak hour. This is considered a potentially significant impact.

Mitigation Measure:

The following mitigation measure applies to Sites 3 through 9:

- 4.15-4 The realignment of Triple Crown Road with Town Talk Road into one intersection and the installation of a traffic signal will improve intersections of Brunswick Road and Triple Crown Drive and Brunswick Road and Town Talk Road / Bubbling Wells Road to LOS B during the PM peak hour. The intersection does meet peak hour Caltrans peak hour signal warrant for the installation of a traffic signal under Existing plus Background plus Project conditions. The proposed mitigation includes one additional southbound right turn lane, one southbound left turn lane, one northbound left turn lane and one northbound right turn lane. In addition, the existing unsigned driveway (designated as "Ranchview Court" in County Map data) located approximately 35 feet to the south of Town Talk Road shall be combined with Town Talk Road at the west leg of the intersection.

The project developer shall install or fund the improvement at the intersection prior to issuance of a building permit.

Site Specific Development Analysis: This improvement would be triggered when the proposed project generates 1 or more trip to the intersection of Brunswick Road and Triple Crown Road. The individual development of Sites 3, 4, 5, 6, 7, 8 or 9 would generate 1 or more trips at the intersection and require implementation of the intersection mitigation.

Timing Implementation: Prior to issuance of a building permit

Enforcement / Monitoring Agency: City of Grass Valley

Level of Significance After Mitigation: Significant and Unavoidable. While the proposed improvement is expected to mitigate the potential impacts to less than significant, this impact remains significant because the County of Nevada does not have jurisdiction over the approval of construction or timing of when the improvement would occur within the City of Grass Valley.

4.15-5

THE PROPOSED PROJECT WOULD ADD TRAFFIC TO THE INTERSECTIONS OF SR 49 / COMBIE ROAD. THIS INTERSECTION IS PROJECTED TO OPERATE AT LOS F (UNACCEPTABLE) IN THE PM PEAK HOUR.

Level of Significance Before Mitigation: Potentially Significant Impact

The intersection of SR 49 and Combie Road would operate at LOS F without project-generated traffic. The intersection would continue to operate at an unacceptable LOS F with the addition of project traffic. This is considered a potentially significant impact.

Mitigation Measure:

The following mitigation measure applies to Sites 14 through 18:

4.15-5 The Nevada County Regional Transportation Plan and RTMF include the following improvements to the SR 49 / Combie Road intersection. The improvements would improve the PM peak hour level of service to LOS C.

- Construct one additional southbound left turn lane that is at least 325 feet in length
- Construct one additional receiving lane at the east leg of intersection on Combie Road
- Reconstruct or reconfigure the westbound left turn lanes to be a minimum of 250 feet in length to allow for adequate storage

The project applicant shall install or fund the improvement at the intersection. The applicant and the County of Nevada should enter into a reimbursement agreement for the remaining portion of the improvement costs that are not the project applicant's fair share.

Site Specific Development Analysis: This improvement would be triggered when the proposed project generates 1 or more trip to the intersection of SR 49 / Combie Road. The individual development of Sites 14, 15, 16, 17, or 18 would generate 1 or more trips at the intersection and require implementation of the intersection mitigation.

Timing Implementation: Prior to issuance of a building permit

Enforcement / Monitoring Agency: Nevada County

Level of Significance After Mitigation: Less Than Significant Impact

4.15-6

THE PROPOSED PROJECT WOULD ADD TRAFFIC TO THE INTERSECTIONS OF HIGGINS ROAD AND COMBIE ROAD. THIS INTERSECTION IS PROJECTED TO OPERATE AT LOS F (UNACCEPTABLE) IN THE PM PEAK HOUR.

Level of Significance Before Mitigation: Potentially Significant Impact

The intersection of Higgins Road and Combie Road is anticipated to operate at LOS F on the northbound approach under both without and with project traffic during the PM peak hour. The addition of project will result in increased traffic delay at the intersection during the PM

peak hour and the intersection would meet peak hour signal warrants under Existing plus Background plus Project conditions. This is considered a potentially significant impact.

Mitigation Measure:

The following mitigation measure applies to Sites 14 through 18:

- 4.15-6 The Higgins Marketplace EIR (2007) identified mitigation for this intersection including the installation of a traffic signal and the installation of an additional eastbound through lane. Implementation of this mitigation measure would improve level of service to an acceptable LOS C during the PM peak hour.

Prior to the development of the project site, the Project Developer shall pay a fair share contribution to the LTMF and RTMF program.

Site Specific Development Analysis: This improvement would be triggered when the proposed project generates 1 or more trips to the intersection of Higgins Road and Combie Road. The individual development of Sites 14, 15, 16, 17, or 18 would generate 1 or more trips at the intersection and require implementation of the intersection mitigation.

Timing Implementation: Prior to issuance of a building permit

Enforcement / Monitoring Agency: Nevada County

Level of Significance After Mitigation: Less Than Significant Impact

- 4.15-7 ***THE PROPOSED PROJECT WOULD ADD TRAFFIC AT NEW DRIVEWAY INTERSECTIONS WHICH WOULD HAVE RESTRICTED SIGHT DISTANCE AND CLOSE SPACING AND MAY IMPACT SAFETY AND TRAFFIC OPERATIONS.***

Level of Significance Before Mitigation: Potentially Significant Impact

Impact Analysis

Safety is a concern, and the addition of traffic is considered a potentially significant impact. Several new project driveways would be constructed on the study area street network. Some of these driveways exist as dirt roads only and the exact location may change.

The precise roadway alignments at the site access intersections have yet to be designed, thus existing sight distances were reviewed in the field as it relates to the approximate location of proposed access locations. The following site access intersections were identified to have existing sight distance deficiencies:

- Brunswick Road / Town Talk Road / Bubbling Wells (Access Sites 3-6, 9)
- La Barr Meadows / Access Site 2
- McCourtney Road / Access Site 1
- Brunswick Road / Triple Crown Drive (Access Sites 7-8)
- Penn Valley Drive / Access Sites 10,11,13
- Cameo Drive / Access Site 14
- Combie Drive / Access Site 18

Mitigation Measure:

This mitigation measure applies to all sites:

4.15-7 The sight distances at all project site access intersections shall be reviewed during the design phase of the project sites with attention given to horizontal and vertical sight distance constraints. To maintain adequate corner sight distance consistent with Caltrans Highway Design Manual requirements, parking shall not be permitted on major onsite roadways within close proximity to intersections. All onsite intersections, landscaping, signing, and parking shall be designed so that adequate corner sight distance is achieved.

Prior to issuance of a building permit, the developer shall provide verification by a professional engineer that sight distance has been evaluated.

Level of Significance After Mitigation: Less Than Significant Impact