Transportation Impact Analysis

VINE HILL RESIDENTIAL PROJECT

City of Martinez

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Vine Hill Residential Project
in the
City of Martinez

TRANSPORTATION AND CIRCULATION

1) INTRODUCTION

This transportation impact analysis describes the existing and future conditions for transportation and circulation both with and without the proposed project. The study presents information on the regional and local roadway networks, pedestrian and transit conditions, and provides an analysis of the effects on transportation facilities associated with the project. This study also describes the regulatory setting; the criterion used for determining the significance of environmental impacts; and summarizes potential environmental impacts and appropriate mitigation measures when necessary. In addition, this analysis provides an assessment of the traffic operations at the site access. This study has been conducted in accordance with the requirements and methodologies set forth by the City of Martinez, Contra Costa County, Caltrans, and the applicable provisions of CEQA.

2) PROJECT DESCRIPTION

The proposed project is a single family residential development expected to include 100 single family homes. The project is located to the east of Morello Avenue and to the north of Center Street in the City of Martinez. Primary access to the site will be from a new intersection on Morello Avenue. A secondary access will also be provided on Vine Hill Way. **Figure 1** shows the location of the project and the surrounding roadway network. **Figure 2** shows the proposed site plan for the project.

3) ENVIRONMENTAL SETTING

This section of the report describes the roadways, traffic conditions and other existing transportation characteristics in the vicinity of the project. The primary basis of the analysis is the peak hour level of service for the key study intersections. Throughout this report, these peak commute hours will be identified as the AM and PM peak hours.

3.1 Project Study Intersections

Based on the project's trip generation and the potential for traffic impacts a list of project study intersections was prepared. **Figure 1** shows the location of the project study intersections.

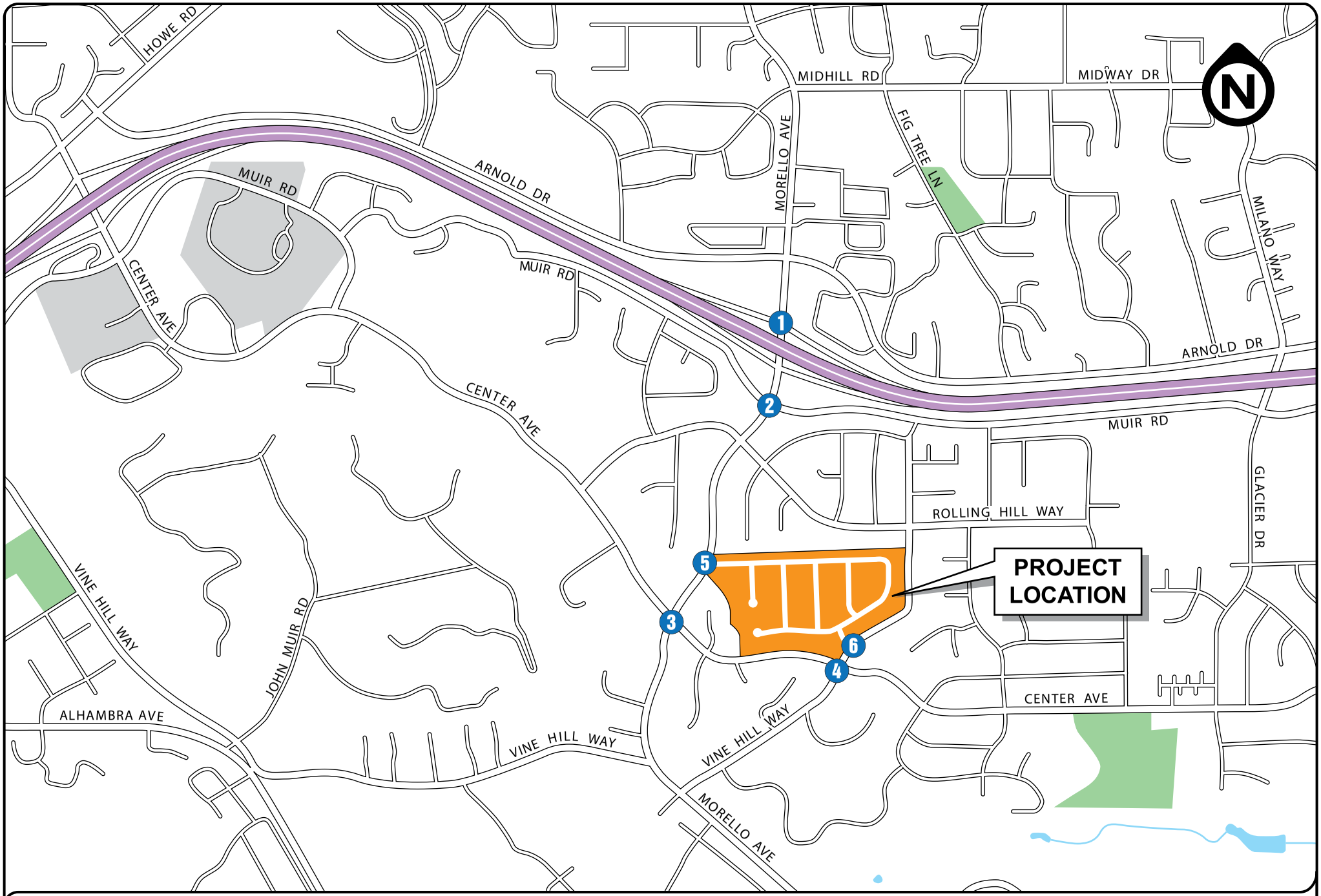

FIGURE 1 | PROJECT LOCATION
TRANSPORTATION IMPACT ANALYSIS
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FIGURE 2 | SITE PLAN

TRANSPORTATION IMPACT ANALYSIS

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There are six study intersections that have been included in the analysis. Five of the existing intersections are currently controlled by traffic signals while the intersection of Granit Springs Way and Newell Drive is controlled with stop sign on the minor side street approach.

Project Study Intersections

1. Morello Avenue and the State Route 4 Westbound Ramps
2. Morello Avenue and the State Route 4 Eastbound Ramps
3. Morello Avenue at Center Avenue
4. Vine Hill Way and Center Avenue
5. Morelo Avenue and the Main Project Entrance
6. Vine Hill Way and the Secondary Project Entrance

3.2 Traffic Analysis Scenarios

The study intersections were evaluated for the following six scenarios:

- Scenario 1: *Existing Conditions* – Level of Service (LOS) based on existing peak hour volumes and existing intersection configurations.

- Scenario 2: *Existing Plus Project* – Existing traffic volumes plus trips from the proposed project.

- Scenario 3: *Baseline (No Project) Conditions* – The Baseline scenario is based on the existing volumes plus growth in background traffic (for three years) plus the traffic from all reasonably foreseeable developments that could substantially affect the volumes at the project study intersections.

- Scenario 4: *Baseline Plus Project Conditions* – This scenario is based on the Baseline traffic volumes plus the trips from the proposed project.

- Scenario 5: *Cumulative Conditions* – This scenario includes cumulative volumes based on the most recent release of the Countywide Travel Demand Model.

- Scenario 6: *Cumulative Plus Project Conditions* – This scenario includes cumulative volumes plus the trips from the proposed project

3.3 Existing Roadway Network

The following is a detailed description of the roadways that could be affected by the project:

- **State Route 4 (SR 4) –** SR 4 is the primary east-west corridor in Contra Costa County. It connects Interstate 80 in the city of Hercules to the west with SR 160 and the cities of Oakley and Brentwood to the east. SR 4 is currently a six-lane freeway in the vicinity of the proposed project.

- **Morello Avenue –** Morello Avenue is a north-south collector roadway that extends north from Taylor Boulevard to Pacheco Boulevard on the north. It provides the closest access to and underneath the SR 4 freeway for the proposed project.

- **Center Avenue –** Center Avenue is a two lane east-west collector street extending from Howe Road to terminate at Marsh Drive to the east. It serves primarily school and residential traffic from the adjacent neighborhoods.

- **Vine Hill Way –** Vine Hill Way is a two lane collector street extending north from Morello Avenue to Muir Road. It serves primarily residential traffic from the adjacent neighborhoods.

3.4 Intersection Analysis Methodology

Existing operational conditions at the seven (7) study intersections have been evaluated according to the requirements set forth by the City of Martinez. Analysis of traffic operations was conducted using the 2010 *Highway Capacity Manual* (*HCM*) Level of Service (LOS) methodology with Synchro software.[1] Level of service is an expression, in the form of a scale, of the relationship between the capacity of an intersection (or roadway segment) to accommodate the volume of traffic moving through it at any given time. The level of service scale describes traffic flow with six ratings ranging from A to F, with "A" indicating relatively free flow of traffic and "F" indicating stop-and-go traffic characterized by traffic jams.

As the amount of traffic moving through a given intersection or roadway segment increases, the traffic flow conditions that motorists experience rapidly deteriorate as the capacity of the intersection or roadway segment is reached. Under such conditions, there is general instability in the traffic flow, which means that relatively small incidents (e.g., momentary engine stall) can cause considerable fluctuations in speeds and delays that lead to traffic congestion. This near-capacity situation is labeled level of service (LOS) E. Beyond LOS E, the intersection or roadway segment capacity has been exceeded, and arriving traffic will exceed the ability of the intersection to accommodate it. **Table 1** summarizes the relationship between LOS, average control delay, and the volume to capacity ratio at signalized intersections. **Table 2** summarizes the relationship between LOS and delay at <u>unsignalized</u> intersections

<u>For signalized intersections</u>, The City of Martinez's LOS standards are based on the average delay for the entire intersection. The *HCM* methodology determines the capacity of each lane group approaching the intersection. The LOS is then based on average control delay (in seconds per vehicle) for the various movements within the intersection. A combined weighted average control delay and LOS are presented for the intersection. A summary of the HCM results and copies of the detailed HCM LOS calculations are included in the appendix to this report.

<u>For unsignalized</u> (all-way stop controlled and two-way stop controlled) <u>intersections</u>, the average control delay and LOS operating conditions are calculated by approach (e.g., northbound) and movement (e.g., northbound left-turn) for those movements that are subject to delay. Operating conditions for unsignalized intersections are presented for the worst approach.

[1] *2010 Highway Capacity Manual*, Transportation Research Board, Washington D.C., 2011

TABLE 1
SIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description of Operations	Average Delay (sec/veh)	Volume to Capacity Ratio
A	Insignificant Delays: No approach phase is fully used and no vehicle waits longer than one red indication.	≤ 10	< 0.60
B	Minimal Delays: An occasional approach phase is fully used. Drivers begin to feel restricted.	> 10 to 20	> 0.61 to 0.70
C	Acceptable Delays: Major approach phase may become fully used. Most drivers feel somewhat restricted.	> 20 to 35	> 0.71 to 0.80
D	Tolerable Delays: Drivers may wait through no more than one red indication. Queues may develop but dissipate rapidly without excessive delays.	> 35 to 55	> 0.81 to 0.90
E	Significant Delays: Volumes approaching capacity. Vehicles may wait through several signal cycles and long vehicle queues from upstream.	> 55 to 80	> 0.91 to 1.00
F	Excessive Delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80	> 1.00

SOURCES: 2010 *Highway Capacity Manual*, Transportation Research Board, 2011.

TABLE 2
UNSIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description of Operations	Average Delay (seconds/vehicle)
A	No delay for stop-controlled approaches.	0 to 10
B	Operations with minor delays.	> 10 to 15
C	Operations with moderate delays.	> 15 to 25
D	Operations with some delays.	> 25 to 35
E	Operations with high delays and long queues.	> 35 to 50
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers.	> 50

SOURCE: 2010 *Highway Capacity Manual*, Transportation Research Board, 2011.

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3.5 Existing Intersection Capacity Conditions

The existing intersection geometry at each of the project study intersections can be seen in **Figure 3.** The traffic volumes at the study intersections for weekday AM and PM peak hours are presented in **Figure 4**. Traffic counts at all of the study intersections were conducted in November of 2013. **Table 3** summarizes the associated LOS computation results for the existing weekday AM and PM peak hour conditions. As shown in **Table 3**, all of the signalized study intersections currently have acceptable conditions (LOS B or better) during the weekday AM and PM peak hours.

3.6 Pedestrian and Bicycle Facilities

Bicycle paths, lanes and routes are typical examples of bicycle transportation facilities, which are defined by Caltrans as being in one of the following three classes:

Class I – Provides a completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.
Class II – Provides a restricted right-of-way designated lane for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and cross-flows by pedestrians and motorists permitted.
Class III – Provides a right-of-way designated by signs or permanent markings and shared with pedestrians and motorists.

There are existing bike lanes on Morello Avenue and Center Avenue adjacent to the project.

TABLE 3
EXISTING INTERSECTION LEVEL OF SERVICE CONDITIONS

INTERSECTION		CONTROL	PEAK HOUR	EXISTING		EXISTING PLUS PROJECT	
				Delay	LOS	Delay	LOS
1	MORELLO AVE & SR-4 WB RAMPS	Traffic Signal	AM	12.1	B	12.4	B
			PM	12.9	B	13.2	B
2	MORELLO AVE & SR-4 EB RAMPS	Traffic Signal	AM	11.2	B	11.4	B
			PM	14.3	B	14.7	B
3	MORELLO AVE & CENTER AVE	Traffic Signal	AM	13.1	B	13.1	B
			PM	13.8	B	13.9	B
4	VINE HILL WY & CENTER AVE	Traffic Signal	AM	8.3	A	8.3	A
			PM	8.2	A	8.2	A
5	MORELLO AVE & PROJECT ENTRANCE	Side Street Stop	AM	N/A	N/A	10.7	B
			PM	N/A	N/A	11.3	B
6	VINE HILL WY & PROJECT ENTRANCE	Side Street Stop	AM	N/A	N/A	9.3	A
			PM	N/A	N/A	9.1	A

SOURCE: Abrams Associates, 2013

NOTES: HCM LOS results are presented in terms of average intersection delay in seconds per vehicle. For stop controlled intersections the results for the worst side street approach are presented.

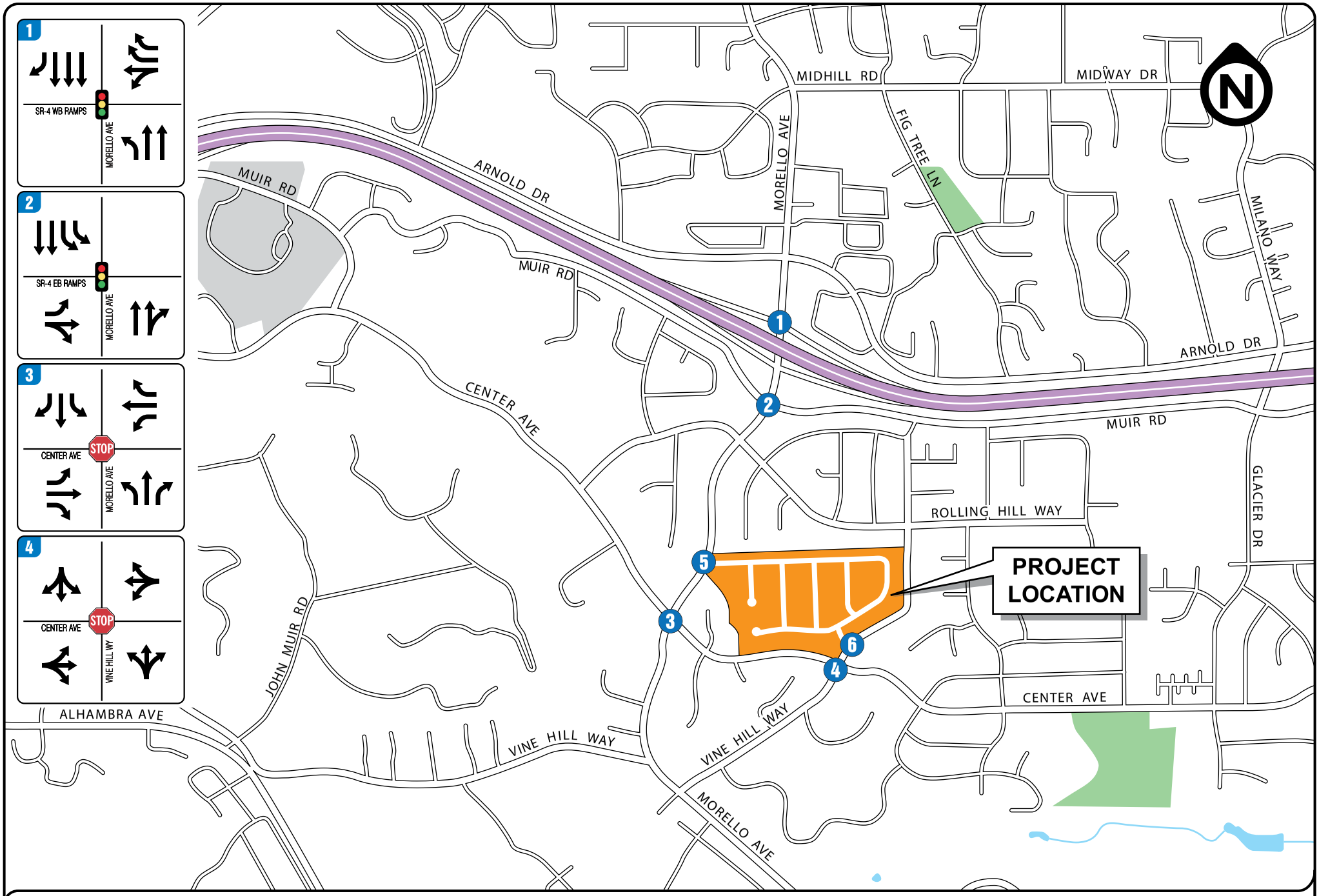

FIGURE 3 | EXISTING LANE CONFIGURATIONS

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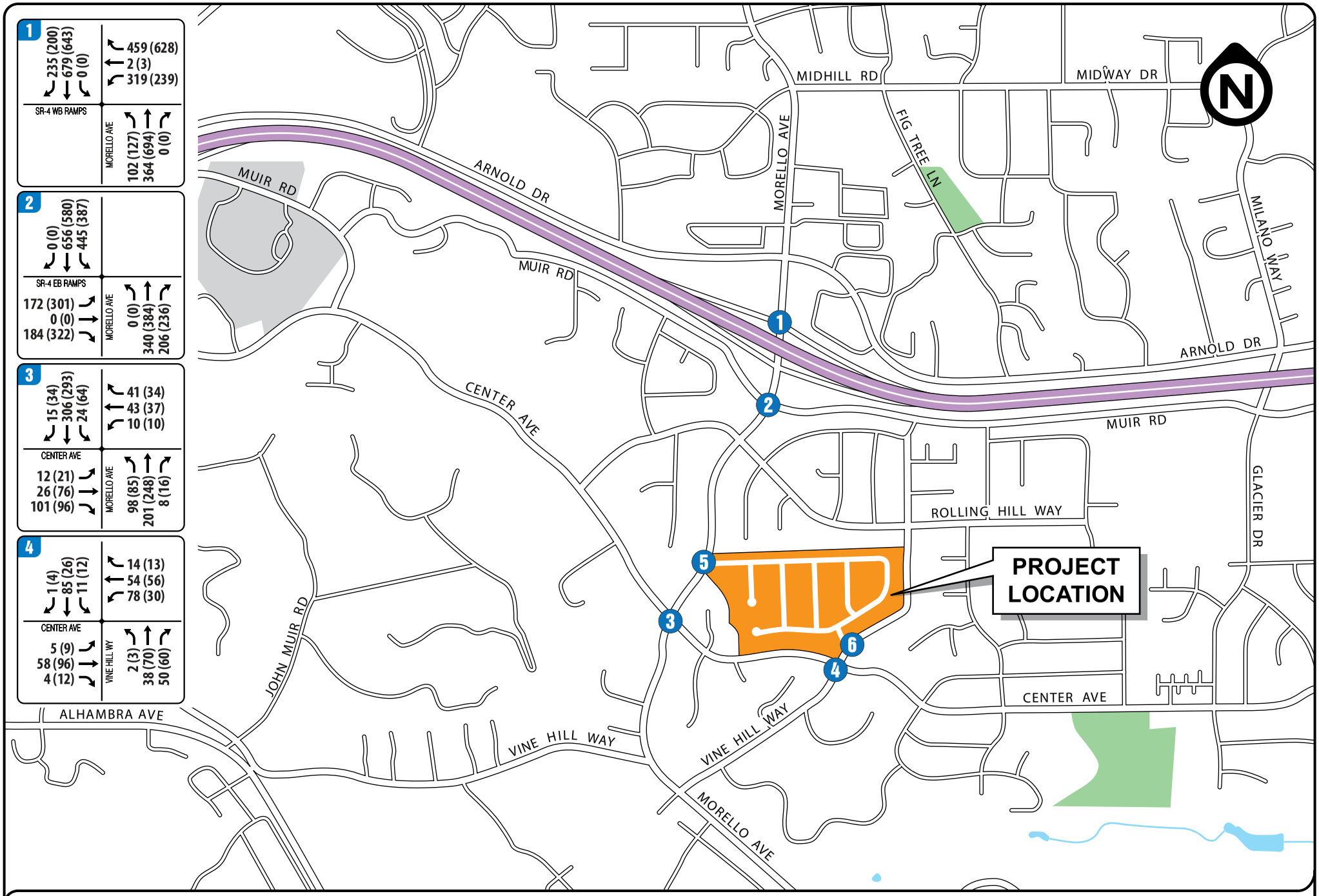

FIGURE 4 | EXISTING AM(PM) PEAK HOUR TRAFFIC VOLUMES

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3.8 Transit Service

The County Connection currently operates approximately 31 fixed-route bus routes on weekdays throughout Central Contra Costa County but has limited service in the project area. The route that serves the project area is Route 28. This route runs from the North Concord BART station to the Downtown Martinez Amtrak station. This route has a frequency of 60 minutes during peak periods and 90 minutes during off peak periods. It runs from 5:45 am to 8:46 pm during the weekdays. Currently, the bus stop for Route 28 nearest to the proposed project is located at within walking distance on Morello Avenue, just north of Center Avenue.

4) REGULATORY CONTEXT

Existing policies, laws and regulations that apply to the proposed project are summarized below.

4.1 State

The California Department of Transportation (Caltrans) has jurisdiction over State highways. Therefore, Caltrans controls all construction, modification, and maintenance of State highways, such as SR 29. Any improvements to these roadways would require Caltrans' approval. The Guide for the Preparation of Traffic Impact Studies provides consistent guidance for Caltrans staff who review local development and land use change proposals. The Guide also informs local agencies about the information needed for Caltrans to analyze the traffic impacts to state highway facilities which include freeway segments, on- or off-ramps, and signalized intersections.

4.2 Local

***City of Martinez General Plan* -** The Transportation and Circulation Element included in the City of Martinez General Plan was prepared pursuant to Section 65302(b) of the California Government Code. The Transportation and Circulation Element addresses the location and extent of existing and planned transportation routes, terminals, and other local public utilities and facilities. The General Plan identifies roadway and transit goals and policies that have been adopted to ensure that the transportation system of the City will have adequate capacity to serve planned growth. These goals and policies are intended to provide a plan and implementation measures for an integrated, multi-modal transportation system that will safely and efficiently meet the transportation needs of all economic and social segments of the City.

4.3 Significance Criteria

The goal of the City of Martinez is to maintain Level of Service (LOS) D during the peak hours according to the General Plan. For all signalized intersections a volume to capacity ratio (V/C) of 0.89 has been established for the downtown area and a V/C of 0.84 has been established for all other areas.

According to CEQA guidelines, a project would also have a significant impact if it 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 a county congestion management agency for designated roadways.
- Result in inadequate emergency vehicle 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.
- Result in an internal circulation system design that does not meet City standards.

5) IMPACTS AND MITIGATION MEASURES

5.1 Project Trip Generation

The proposed project will consist of include 100 single family homes. The trip generation calculations are shown in **Table 4**. They are based on the average trip generation rates for (Land Use Code 210) from the Institute of Transportation Engineer's (ITE) Trip Generation Manual, 9th Edition.

TABLE 4
TRIP GENERATION CALCULATIONS

Land Use	*Size*	*ADT*	*AM Peak Hour*			*PM Peak Hour*		
			In	*Out*	*Total*	*In*	*Out*	*Total*
Single Family Dwellings	100 units	952	19	56	75	63	37	100

The total trip generation reflects all vehicle trips that would be counted at the project driveways, both inbound and outbound. Since the project is residential there were no adjustments applied to account for pass-by or internal trips. Although there is a potential for transit use no reduction has been applied to the project trip generation. The project is forecast to generate a total of 75 vehicle trips during the AM peak hour and 100 trips during the PM peak hour.

For purposes of determining the reasonable worst-case impacts of traffic on the surrounding street network from a proposed project, the trips generated by this proposed development are estimated for the peak commute hours which represent the peak of "*adjacent street traffic*". This is the time period when the project traffic would generally contribute to the greatest amount of congestion.

5.2 Project Trip Distribution

The trip distribution assumptions have been based on the project's proximity to freeway interchanges, existing traffic count data including daily directional volume and peak-hour turning movements, the Contra Costa County travel demand model, and existing knowledge of the surrounding area such as commute patterns and the overall land use patterns in the area. **Figure 5** shows the project traffic that would be added at each of the study intersections.

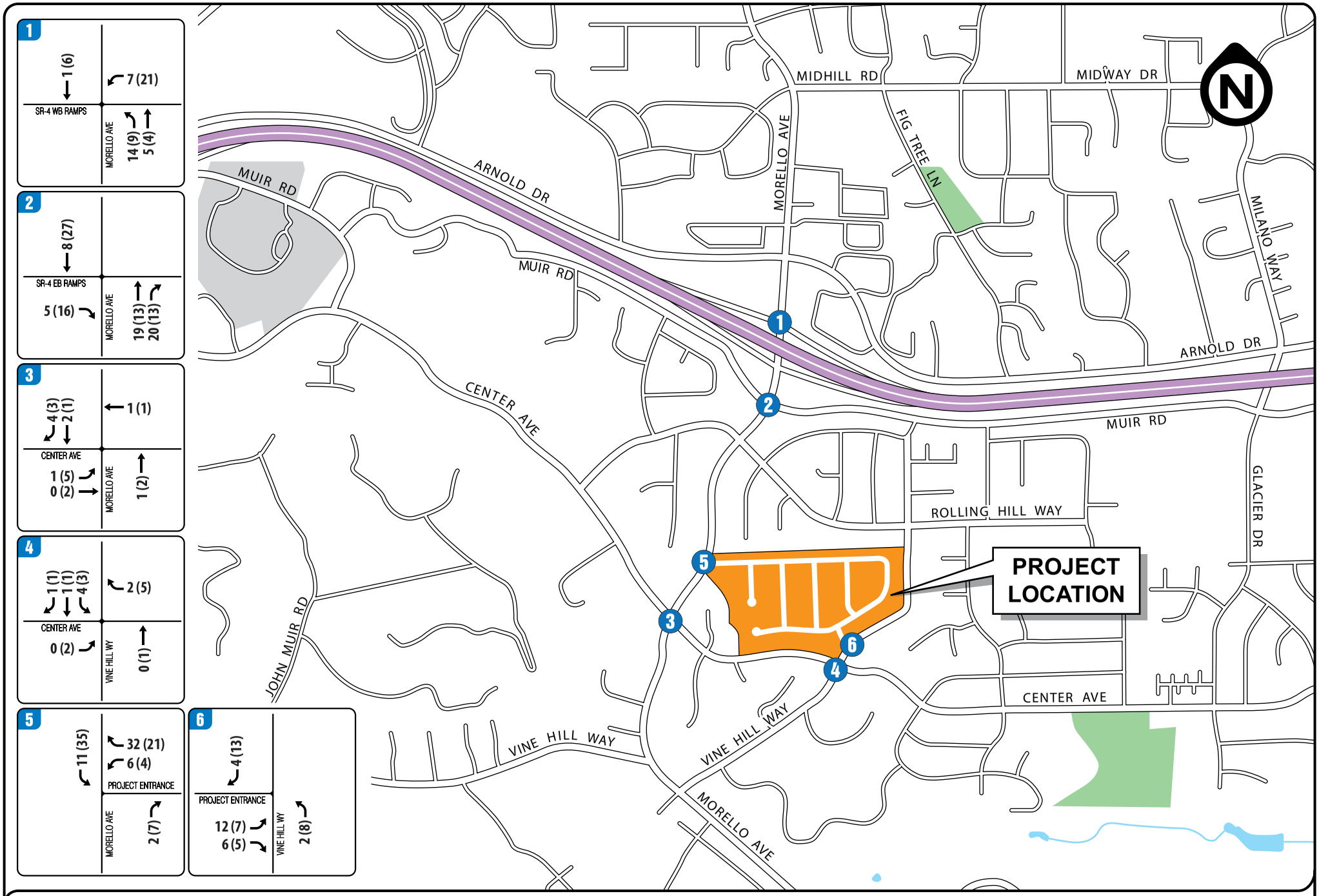

FIGURE 5 | PROJECT AM(PM) PEAK HOUR TRIPS

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5.3 Existing Plus Project Traffic Capacity Conditions

This scenario evaluates the existing conditions with the addition of traffic from the proposed project. The capacity calculations for the Existing Plus Project scenario are shown previously in **Table 3**. Please note that the corresponding LOS analysis calculation sheets are presented in the Traffic Analysis Appendix. As shown in **Table 3**, all of the signalized study intersections would continue to have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours. **Figure 6** presents the resulting existing plus project traffic volumes at each of the study intersections.

5.4 Baseline Traffic Capacity Conditions

The Baseline scenario evaluates the existing conditions with the addition of traffic from reasonably foreseeable projects in the area. This includes traffic from the Taco Bell and Dentist's Office project currently under construction on Arnold Drive. In addition, the general baseline growth in traffic was developed based on the assumption that the project completion date would be 2015. This scenario includes all reasonably foreseeable projects that would significantly affect the traffic volumes in the project study area. **Figure 7** presents the resulting baseline volumes at each of the project study intersections.

Table 5 summarizes the associated LOS computation results for the Baseline and Baseline Plus Project weekday AM and PM peak hour conditions. The corresponding LOS analysis calculation sheets are presented in the *Traffic Analysis Appendix*. As shown in **Table 5**, with addition of traffic from the proposed project all study intersections would continue have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours.

5.5 Baseline *Plus Project* Intersection Capacity Conditions

The Baseline plus proposed project traffic forecasts were developed by adding project-related traffic to the baseline traffic volumes. **Figure 8** presents the Baseline Plus Project traffic volumes that were used in the analysis. As noted above, **Table 5** summarizes the LOS results for the Baseline Plus Project weekday AM and PM peak hour conditions (i.e. the existing roadway network). Please note that the corresponding LOS analysis calculation sheets are presented in the appendix. As shown in **Table 5**, all of the signalized study intersections would continue to have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours.

5.6 Cumulative Year 2035 Traffic Capacity Conditions

The Cumulative Scenario, which represents 2035 conditions, corresponds to the build-out of the City of Martinez and Contra Costa County General Plans which include many significant land use changes. For the cumulative conditions, the intersection traffic volumes were based on the existing turning movements with the addition of traffic from all planned and approved projects plus the addition of growth estimated by the County's traffic model. **Figure 9** presents the future lane configurations used in the analysis. **Figure 10** presents the cumulative build-out traffic at the project study intersections (without the proposed project). As shown in **Table 6**, all of the signalized study intersections would continue to have acceptable conditions (LOS D or better) under this scenario during the weekday AM and PM peak.

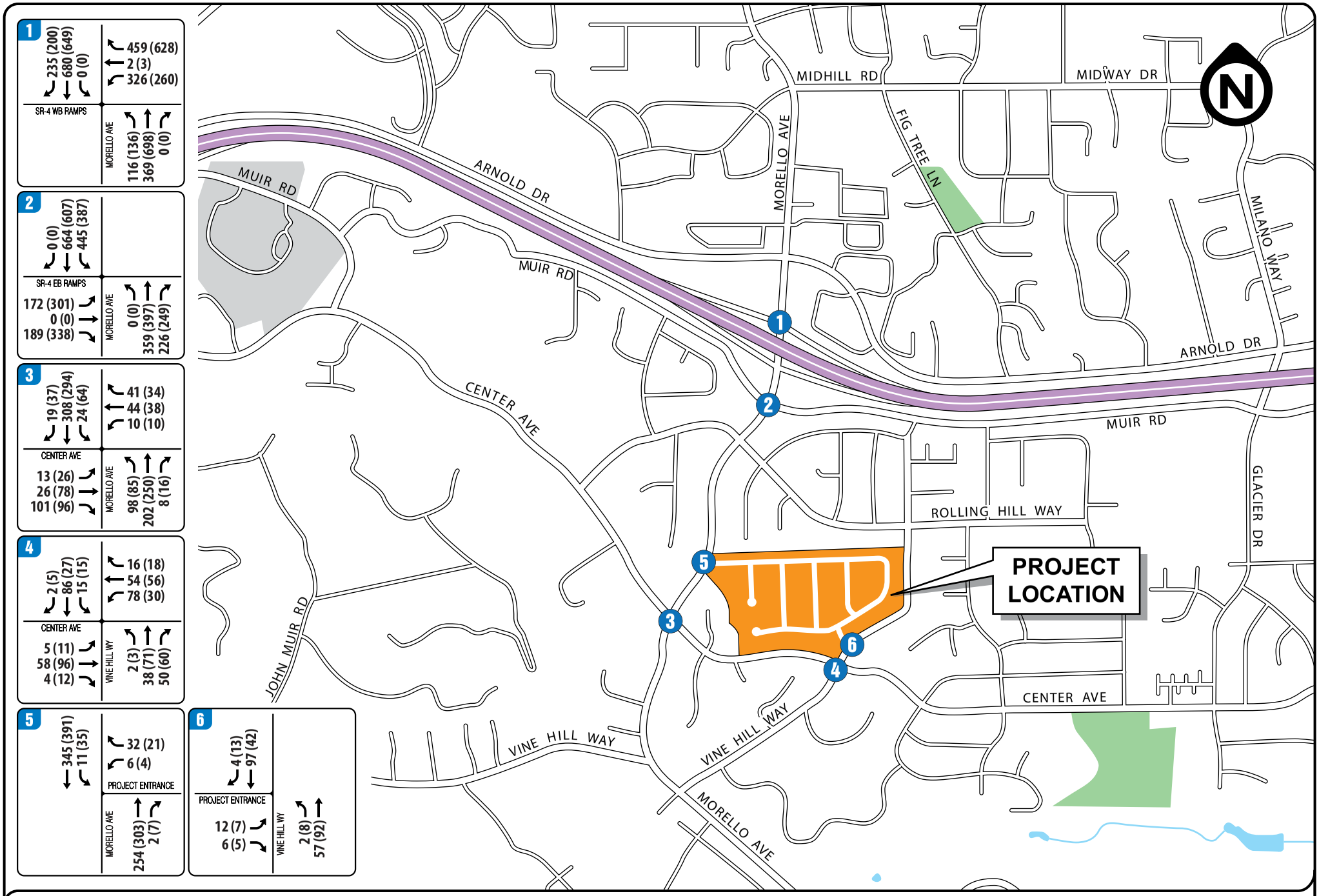

FIGURE 6 | EXISTING PLUS PROJECT AM(PM) PEAK HOUR TRAFFIC VOLUMES

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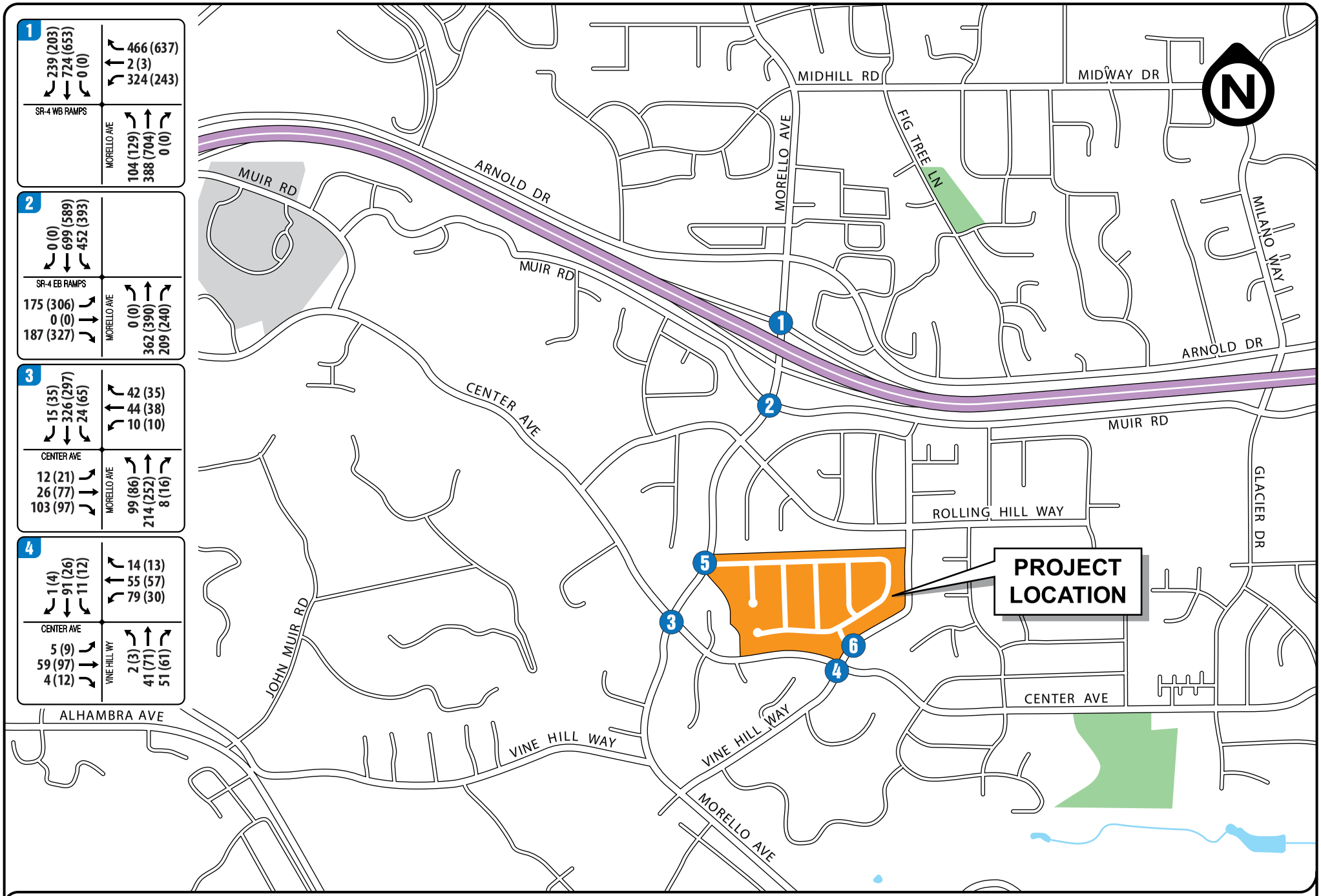

FIGURE 7 | BACKGROUND AM(PM) PEAK HOUR TRAFFIC VOLUMES

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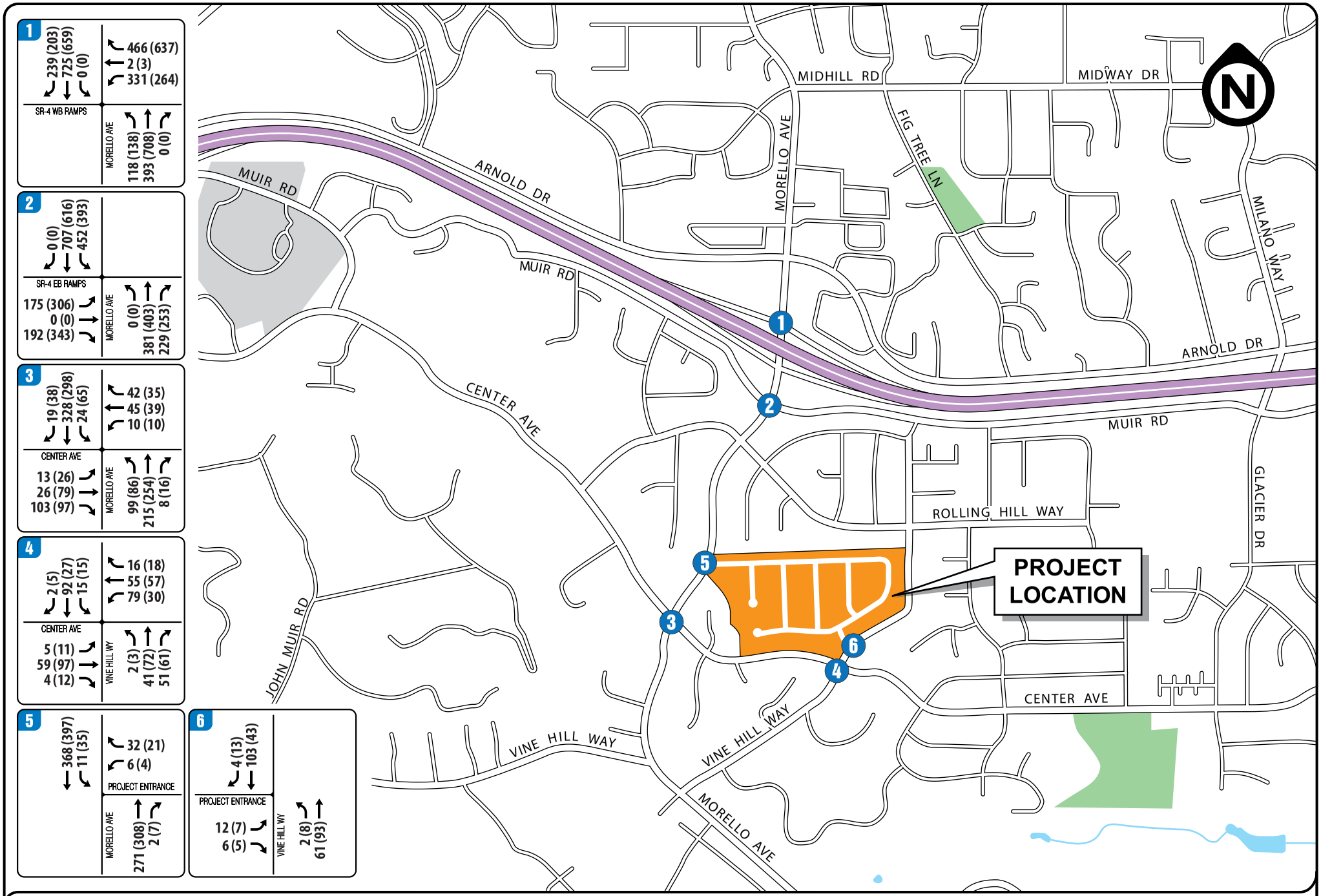

FIGURE 8 | BACKGROUND PLUS PROJECT AM(PM) PEAK HOUR TRAFFIC VOLUMES

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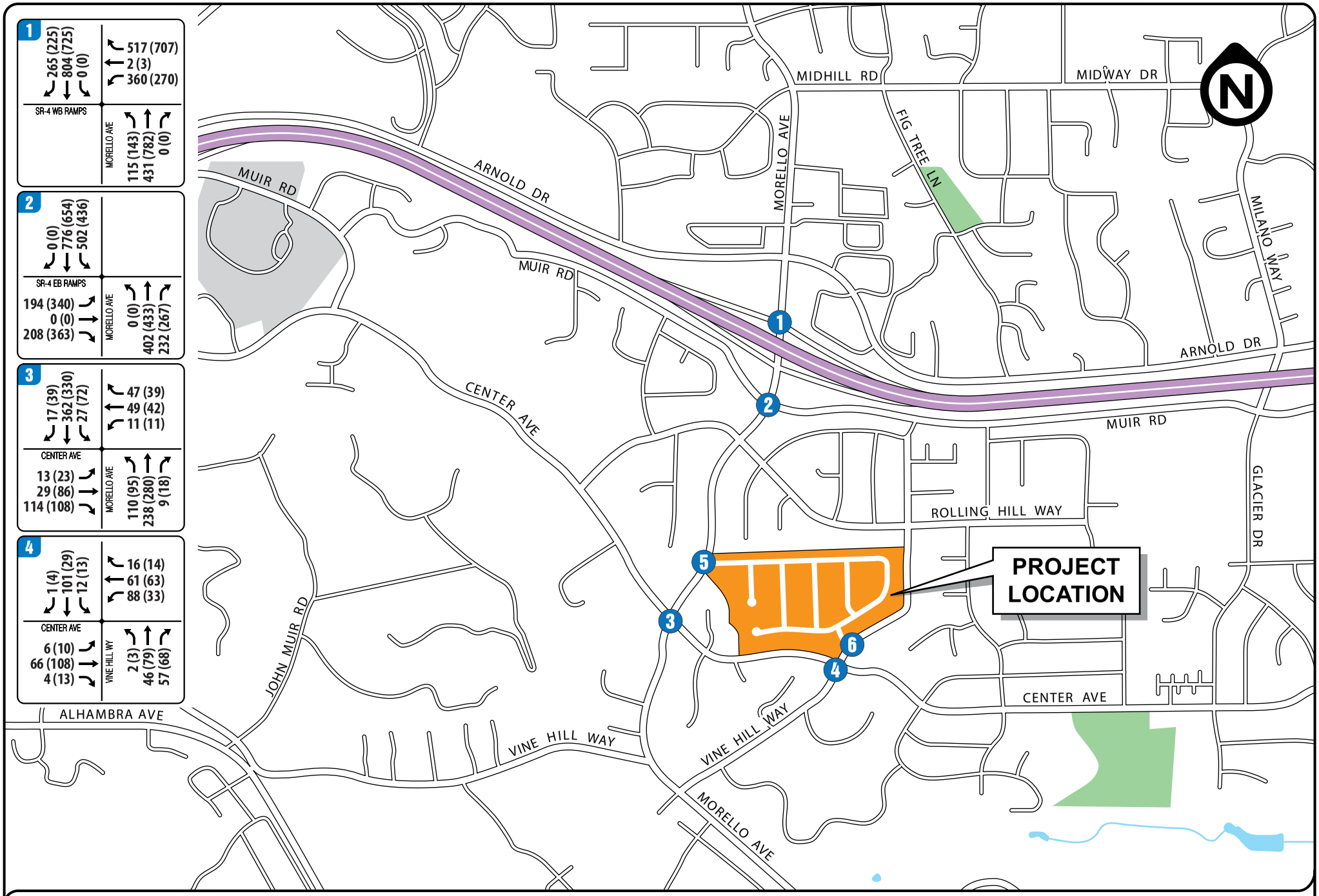

FIGURE 9 | CUMULATIVE AM(PM) PEAK HOUR TRAFFIC VOLUMES

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TABLE 5
BASELINE PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS

INTERSECTION		CONTROL	PEAK HOUR	BACKGROUND		BACKGROUND PLUS PROJECT	
				Delay	LOS	Delay	LOS
1	MORELLO AVE & SR-4 WB RAMPS	Traffic Signal	AM	12.4	B	12.8	B
			PM	13.1	B	13.8	B
2	MORELLO AVE & SR-4 EB RAMPS	Traffic Signal	AM	11.4	B	11.7	B
			PM	14.5	B	15.1	B
3	MORELLO AVE & CENTER AVE	All-Way Stop	AM	13.9	B	14.0	B
			PM	14.1	B	14.2	B
4	VINE HILL WY & CENTER AVE	All-Way Stop	AM	8.4	A	8.4	A
			PM	8.2	A	8.3	A
5	MORELLO AVE & PROJECT ENTRANCE	Side Street Stop	AM	N/A	N/A	10.9	B
			PM	N/A	N/A	11.4	B
6	VINE HILL WY & PROJECT ENTRANCE	Side Street Stop	AM	N/A	N/A	9.4	A
			PM	N/A	N/A	9.1	A

SOURCE: Abrams Associates, 2013

NOTES: HCM LOS results are presented in terms of average intersection delay in seconds per vehicle. For stop controlled intersections the results for the worst side street approach are presented.

5.7 Cumulative Plus Project Traffic Capacity Conditions

Figure 10 presents the cumulative build-out traffic volumes including the traffic from the proposed residential project. **Table 6** summarizes the LOS results for the Cumulative Plus Project (Year 2035) traffic conditions at each of the project study intersections. As shown on this table, all of the signalized study intersections would continue to have acceptable conditions during the weekday AM and PM peak commute hours.

5.8 Internal Circulation and Access

No site circulation or access issues have been identified that would cause a traffic safety problem or any unusual traffic congestion or delay. The volumes on the internal residential roadways (with homes fronting on them) would be light enough so that no significant conflicts would be expected with through traffic and vehicles backing out of the driveways and/or garages within the project.

At the proposed project entrances on Morello Avenue and Vine Hill Way there were no safety, capacity, or sight distance problems identified and the intersections would meet all required design standards as planned. In addition, with the addition of project traffic none of the warrants for a traffic signal would be met at either location. Our analysis indicates the intersections would continue to have safe operations in the future with the side street stop control and a traffic signal would not be required under cumulative plus project conditions.

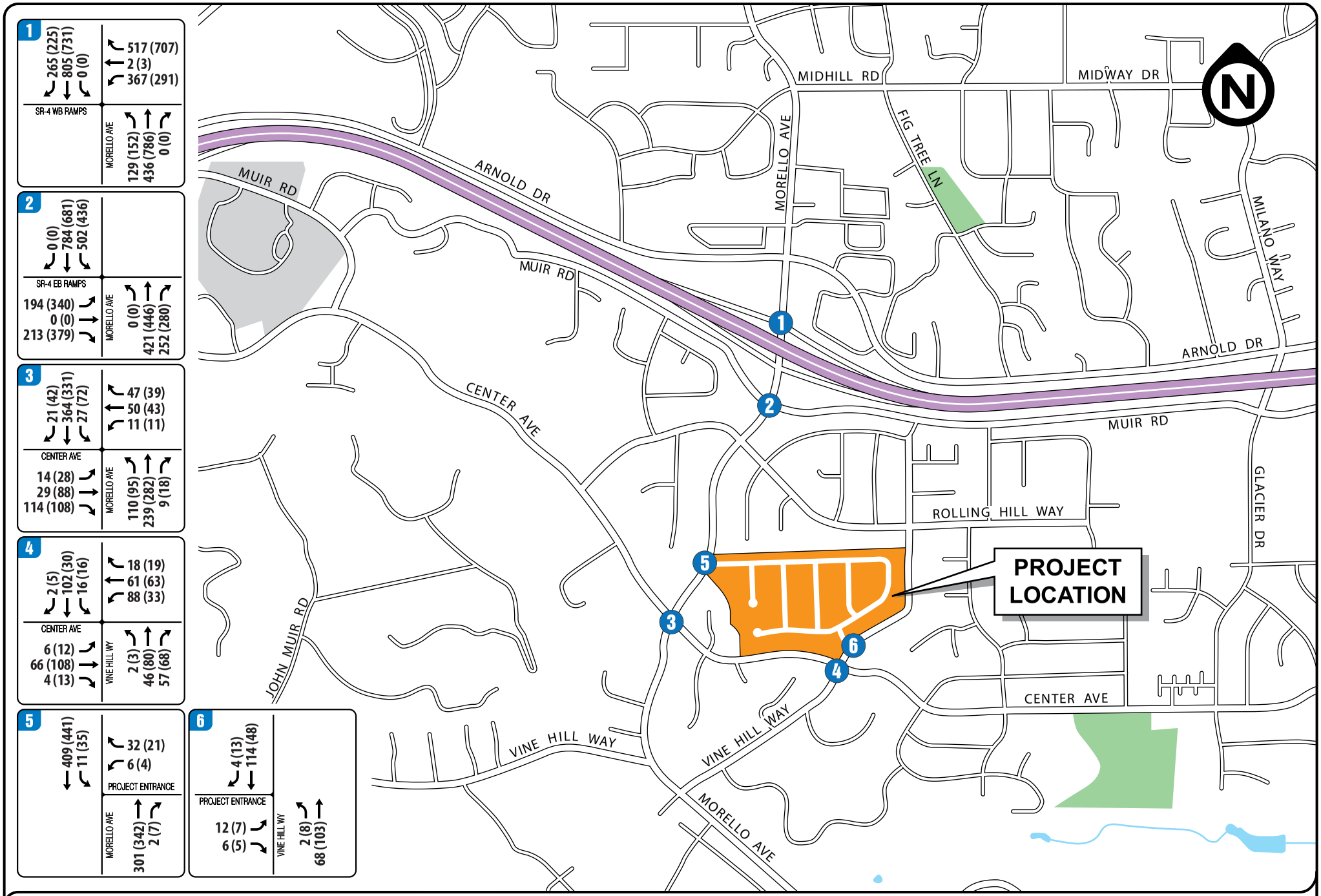

FIGURE 10 | CUMULATIVE PLUS PROJECT AM(PM) PEAK HOUR TRAFFIC VOLUMES

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TABLE 6
CUMULATIVE INTERSECTION LEVEL OF SERVICE CONDITIONS

INTERSECTION		CONTROL	PEAK HOUR	CUMULATIVE		CUMULATIVE PLUS PROJECT	
				Delay	LOS	Delay	LOS
1	MORELLO AVE & SR-4 WB RAMPS	Traffic Signal	AM	13.7	B	14.1	B
			PM	14.6	B	14.9	B
2	MORELLO AVE & SR-4 EB RAMPS	Traffic Signal	AM	12.6	B	12.9	B
			PM	16.3	B	17.0	B
3	MORELLO AVE & CENTER AVE	All-Way Stop	AM	16.3	C	16.5	C
			PM	16.4	C	16.6	C
4	VINE HILL WY & CENTER AVE	All-Way Stop	AM	8.6	A	8.6	A
			PM	8.4	A	8.5	A
5	MORELLO AVE & PROJECT ENTRANCE	Side Street Stop	AM	N/A	N/A	11.3	B
			PM	N/A	N/A	11.9	B
6	VINE HILL WY & PROJECT ENTRANCE	Side Street Stop	AM	N/A	N/A	9.5	A
			PM	N/A	N/A	9.2	A

SOURCE: Abrams Associates, 2013

NOTES: HCM LOS results are presented in terms of average intersection delay in seconds per vehicle. For stop controlled intersections the results for the worst side street approach are presented.

5.9 Parking Impacts

The proposed project would provide an adequate supply of off-street parking based on the City's requirements. The project is currently proposing to exceed the City's parking requirements and based on our review of the proposed parking plan there would be no significant impacts to the surrounding properties.

5.10 Pedestrian and Bicycle Impacts

In general, the proposed project would not generate a significant increase in traffic in the area (in comparison to the existing volumes) given the size of the proposed project (100 units). In addition, the proposed project would not significantly impact or change the design of any existing pedestrian facilities or create any new safety problems in the area.

The proposed project would also not significantly impact any existing bicycle facilities, including bike lanes, routes, or paths in the area. The project will add a small amount of both pedestrians and bicyclists who will utilize both existing and planned facilities connecting the project site with the community. In general, the proposed project would not generate any significant increases to pedestrian or bicycle traffic and would not significantly impact or change the design of any existing bicycle facilities.

5.11 Transit Impacts

The proposed project would not interfere with any existing bus routes and would not remove or relocate any existing bus stops. The proposed Project also would not conflict with any transit plans or goals of the City of Martinez and, based on the size of the project, it would be expected to generate only limited transit ridership. However, the project would be expected to provide a

minimal amount of additional ridership for local bus companies. Therefore, the impact of the proposed Project on existing transit operations or adopted plans related to transit would be less than significant.

5.12 Greenhouse Gas Emissions/Transportation Demand Management

In September 2010, the California Air Resources Board (ARB or Board) set passenger vehicle greenhouse gas (GHG) emission reduction targets for 2020 and 2035 for each of the 18 Metropolitan Planning Organization (MPO) regions in California under the Sustainable Communities and Climate Protection Act of 2008 (SB 375). The City of Martinez supports these goals by implementing policies that require new projects achieve a reduction in the number of peak hour drive-alone commute vehicle trips. This project transportation demand management program is intended to reduce the total vehicle miles traveled (VMT) by the project. Please note that reductions in VMT are generally considered to translate directly into reduced GHG's. [1]

Proposed Trip Reduction Strategies - The following is a list of some potential GHG reduction strategies being proposed by the project. Please note that some aspects of the project that are listed might not necessarily be considered "*strategies*" and are essentially components of the project. However for the purposes of this review any aspect of the project that might be considered to have trip reducing qualities has been described. The following is a summary of strategies that are being proposed based on data on their potential effectiveness set forth by the California Air Pollution Control Officers Association (CAPCOA):

*Proximity to Bike Paths/Bike Lane*s– A Project that is designed around an existing or planned bicycle facility encourages alternative mode use. The project design should include a comparable network that connects the project uses to the existing offsite facilities. In this case the project will be located adjacent to a Class I path and will include frontage improvements along Newell Drive to facilitate ease of access to bicycle facilities.

Provide Pedestrian Network Improvements - Providing a pedestrian access network to link areas of the project site encourage people to walk instead of drive. This mode shift results in people driving less and thus a reduction in VMT. The project will provide a pedestrian access network that internally links all uses and connects to all existing or planned external streets and pedestrian facilities contiguous with the project site. The project will minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation will be minimized.

Internal Ride-Share Matching Services – This project will deliver a ride-share education and awareness packet for all new tenants. Providing tenants with ride-share resources, such as carpoolworld.com serving the area and region, encourages the use of trip reducing tools.

Telecommuting Education and Awareness – This project will deliver a telecommuting education, awareness and equipment requirements packet for all new tenants. This will provide tenants with telecommuting resources, such as information on collaboration software. For example, services like GoToMeeting and Skype encourage the use of trip reducing technologies.

Increase Transit Accessibility - Locating a project near transit will facilitate the use of transit by people traveling to or from the Project site. The use of transit results in a mode shift and therefore reduced VMT. The project description should include, at a minimum, the following

[1] *Quantifying Greenhouse Gas Mitigation Measures*, California Air Pollution Control Officers Association, Sacramento, CA, August, 2010.

design features: A transit stop with high-quality, high-frequency bus service located within a 5-10 minute walk (or roughly ¼ mile from stop to edge of development), and/or a neighborhood designed for walking and cycling.

Attainment of Trip Reduction Goals - The quantification of trip reductions from mitigation measures such as those listed above are specified in a recent study by the California Air Pollution Control Officers Association (CAPCOA). The following list specifies the potential reductions in VMT that could be expected (according to the CAPCOA study) with the various mitigation measures described above.

Locate Project near Bike Path/Bike Lane – 0.625% reduction in VMT

Provide Pedestrian Network Improvements – Range of Effectiveness: 1 - 2% reduction in VMT

Telecommuting Education and Awareness – Not Quantified

Increase Transit Accessibility – Range of Effectiveness: 0.05 - 24.6% reduction in VMT

Through the implementation of the proposed trip reduction strategies listed above it can be concluded (based on the research conducted by CAPCOA) that the project vehicular traffic would be reduced by a minimum of about 2%. Based on an evaluation of the specific components of the proposed project the estimated reduction could be as high as 15%. It should be again noted this, by definition, would also translate into a 15% reduction in greenhouse gases.

5.13 Project-Specific Impacts

TR-1 Demolition and construction activities associated with the proposed project would result in an increase in traffic to and from the site and could lead to unsafe conditions near the project site.

The increase in traffic as a result of demolition and construction activities associated with the proposed project has been quantified assuming single phase construction period of 48 months. However, please note that for these custom homes the construction period could potentially last for up 5 years.

Heavy Equipment

Approximately four pieces of heavy equipment are estimated to be transported on and off the site each month throughout the demolition and construction of the proposed project. Heavy equipment transport to and from the site could cause traffic impacts in the vicinity of the project site during construction. However, each load would be required to obtain all necessary permits, which would include conditions. Prior to issuance of grading and building permits, the project applicant would be required to submit a Traffic Control Plan.

The requirements within the Traffic Control Plan include, but are not limited to, the following: truck drivers would be notified of and required to use the most direct route between the site and SR 4, as determined by the City Engineering Department; all site ingress and egress would occur only at the main driveways to the project site and construction activities may require temporary traffic controls as determined by the City

Engineer; specifically designated travel routes for large vehicles would be monitored and controlled by flaggers for large construction vehicle ingress and egress; and debris and mud these and other nearby streets caused by trucks would be monitored daily and may require instituting a street cleaning program. In addition, five loads of heavy equipment being hauled to and from the site each month would be short-term and temporary.

Employees

The weekday work is expected to begin around 7:00 AM and end around 4:00 PM. The construction worker arrival peak would occur between 6:30 AM and 7:30 AM, and the departure peak would occur between 4:00 PM and 5:00 PM. These peak hours are slightly before the citywide commute peaks. It should be noted that the number of trips generated during construction would not only be temporary, but would also be substantially less than the proposed project at buildout.

Based on past construction of similar projects, construction workers could require parking for up to 25 vehicles during the peak construction period. Additionally, deliveries, visits, and other activities may generate peak non-worker parking demand of 5 to 10 trucks and automobiles per day. Therefore, up to 35 vehicle parking spaces may be required during the peak construction period for the construction employees. Furthermore the Traffic Control Plan requires construction employee parking be provided on the project site to eliminate conflicts with nearby residential areas. Because the construction of the project can be staggered so that employee parking demand is met by using on-site parking, the impacts of construction-related employee traffic and parking are considered less-than-significant.

Construction Material Import

The project would also require the importation of construction material, including raw materials for the building pads, the buildings, the parking area, and landscaping. Based on past construction of similar projects, importing this material is estimated to require substantial amounts of truck traffic. Under the provisions of the Traffic Control Plan, if importation and exportation of material becomes a traffic nuisance, then the City Engineer may limit the hours the activities can take place.

Traffic Control Plan

The Traffic Control Plan would indicate how parking for construction workers would be provided during construction and ensure a safe flow of traffic in the project area during construction. This analysis assumed construction of the entire project in one phase to identify the potential worst-case traffic effects.

Each phase will be subject to a Traffic Control Plan and oversight by the City Engineer and construction traffic is not forecast to exceed the post construction traffic conditions created by the proposed project. As a result the potential construction traffic impacts have been adequately addressed through the project impact analysis. Therefore, the demolition and construction activities associated with the proposed project or its individual phases would not lead to noticeable congestion in the vicinity of the site or the perception of decreased traffic safety resulting in a ***less-than-significant*** impact.

<u>Mitigation Measure(s)</u>
None required.

TR-2 Impacts related to site access and circulation.

Based on a review of the proposed site plan it was determined that the site circulation should function well and would not cause any safety or operational problems. The project site design has been required to conform to City design standards and is not expected to create any significant impacts to pedestrians, bicyclists or traffic operations. Therefore, impacts related to site access and circulation to the proposed project would be ***less-than-significant***.

Mitigation Measure(s)
None required.

TR-3 Impacts regarding emergency vehicle access on and surrounding the proposed project site.

Sufficient emergency access is determined by factors such as number of access points, roadway width, and proximity to fire stations. The land use plan for the proposed project would have one main entrance on Morello Avenue but it would also provide for an alternate emergency vehicle access via Vine Hill Way.

All lane widths within the project would meet the minimum width that can accommodate an emergency vehicle; therefore, the width of the internal roadways would be adequate. Therefore, the development of the proposed project is expected to have ***less-than-significant*** impacts regarding emergency vehicle access.

Mitigation Measure(s)
None required.

TR-4 Impacts relating to the presence and availability of adequate parking.

The proposed project is expected to provide a minimum of two off-street parking spaces for each residential unit and would provide adequate on-street parking for guests to ensure consistency with the City requirements. Therefore, the proposed project is not expected to create parking impacts on the surrounding areas, and impacts related to adequate parking would be ***less-than-significant***.

Mitigation Measure(s)
None required.

5.13 Mitigations and Improvement Measures

Based on this analysis there would be no significant transportation impacts according to established standards and no off-site traffic or transportation mitigations would be required.