Traffic Technical Report

Perris Valley Line Commuter Rail

Riverside County, California

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Riverside County Transportation Commission

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TRAFFIC TECHNICAL REPORT

PERRIS VALLEY LINE COMMUTER RAIL
RIVERSIDE COUNTY, CALIFORNIA

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A. PROJECT DESCRIPTION

The Riverside County Transportation Commission (RCTC) proposes to establish a commuter rail service on the portion of the San Jacinto Branch Line (SJBL) between Riverside and South Perris as an extension of the Metrolink 91 commuter rail service from Los Angeles. This proposed service, to be known as the Perris Valley Line (PVL), would operate on existing rail rights-of-way owned by RCTC, and would include six stations, four of which (Hunter Park, Moreno Valley/March Field, Downtown Perris, and South Perris) would be operational by the 2012 opening year, and the remaining two in the future. The proposed station locations are listed in Table 1. As described in Table 1 and illustrated on Figure 1, the Hunter Park Station would be located at one of three proximate sites. The Palmyrita Station option is proposed for the east side of the San Jacinto Branch Line (SJBL) main track east of Iowa Avenue between Palmyrita and Columbia Avenues. The Columbia and Marlborough Station options have been identified along the west side of the main track, with entry and exit from Columbia and Marlborough Avenues, respectively.

Table 1: Proposed Station Locations

Station	Proposed Location
Hunter Park	Palmyrita Option - East side of the SJBL main track east of Iowa Avenue between Palmyrita and Columbia Avenues
	Columbia Option - West side of the SJBL main track on Columbia Avenue
	Marlborough Option - West side of the SJBL main track on Marlborough Avenue
UC Riverside	Watkins Drive and Valencia Hill Drive
Moreno Valley/March Field	Brown Street, between Alessandro Boulevard and Cactus Avenue
Ramona	Cajalco Expressway, between Harvill Avenue and I-215 ramps
Downtown Perris	C and 4th Streets
South Perris	Case Road and southbound I-215 off-ramp

This technical report supports the Environmental Impact Report (EIR) prepared for the PVL project in accordance with the National Environmental Policy Act (NEPA) and FTA guidelines. This study analyzes the potential traffic impacts of the proposed commuter rail project in Riverside County, and addresses issues associated with roadway capacity and level of service.

Study Area

The proposed PVL is approximately 24 miles long, and traverses through the Cities of Riverside and Perris in Riverside County. Traffic study intersections were identified for each of the six proposed stations that considered the primary streets serving the general area, the potential access points to the stations, and key intersections likely to be affected by the assignment of project-generated trips. A total of 38 intersections was selected for analysis for the six stations, and are identified by station area location as follows:

<u>Hunter Park Station (see the three proposed station location options along Palmyrita, Columbia, and Marlborough Avenues on Figure 1)</u>

- Iowa Avenue at Center Street
- Iowa Avenue at Palmyrita Avenue
- Northgate Street at Palmyrita Avenue
- Iowa Avenue at Columbia Avenue

- Northgate Street at Columbia Avenue
- Northgate Street at Marlborough Avenue
- Iowa Avenue at Marlborough Avenue
- Rustin Avenue at Marlborough Avenue

UC Riverside Station (see Figure 2)
- Iowa Avenue at Spruce Street
- Iowa Avenue at Massachusetts Avenue
- Iowa Avenue at Blaine Street
- Blaine Street at Watkins Drive
- Big Springs Road at Watkins Drive

Moreno Valley/March Field Station (see Figure 3)
- Alessandro Boulevard at Mission Grove Parkway
- Alessandro Avenue at Old 215
- Cactus Avenue at Old 215
- Cactus Avenue at southbound I-215 ramps

Ramona Station (see Figure 4)
- Cajalco Road at Clark Street
- Cajalco Expressway at Harvill Avenue
- Ramona Expressway at Webster Avenue
- Ramona Expressway at Perris Boulevard

Downtown Perris Station (see Figure 5)
- Nuevo Road at Perris Boulevard
- San Jacinto Avenue at Redlands Avenue
- San Jacinto Avenue at Perris Boulevard
- San Jacinto Avenue at C Street
- San Jacinto Avenue at D Street
- SR-74 at Navajo Road
- SR-74 at C Street
- SR-74 at D Street
- SR-74 at Perris Boulevard
- 6th Street at C Street
- 6th Street at D Street
- 7th Street at C Street
- 7th Street at D Street
- 7th Street at Perris Boulevard

South Perris Station (see Figure 6)
- Bonnie Drive at southbound I-215 ramps
- SR-74 at northbound I-215 off-ramp
- SR-74 at Sherman Road

Figure 1: Hunter Park Station Location and Study Intersections

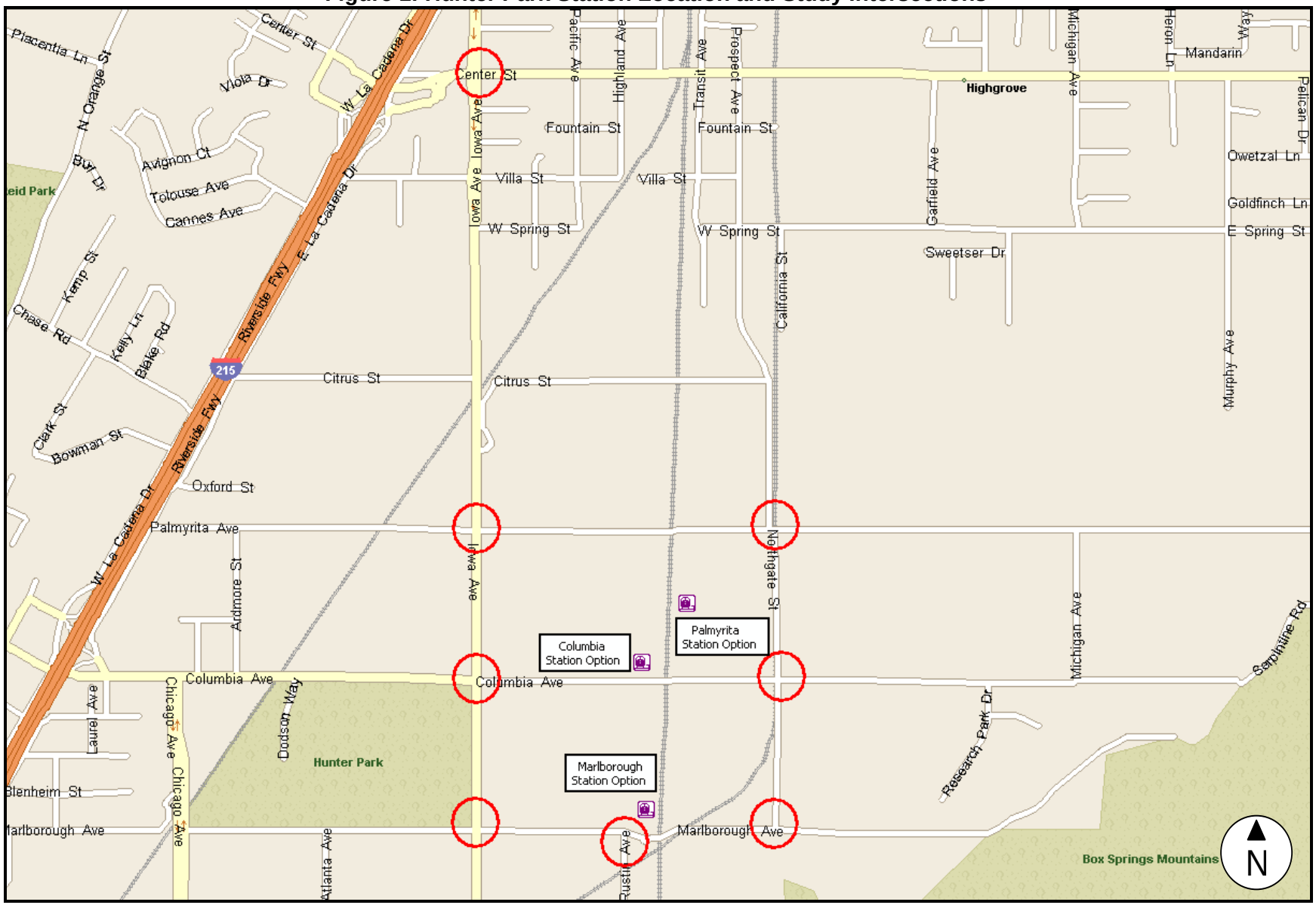


Figure 2: UC Riverside Station Location and Study Intersections

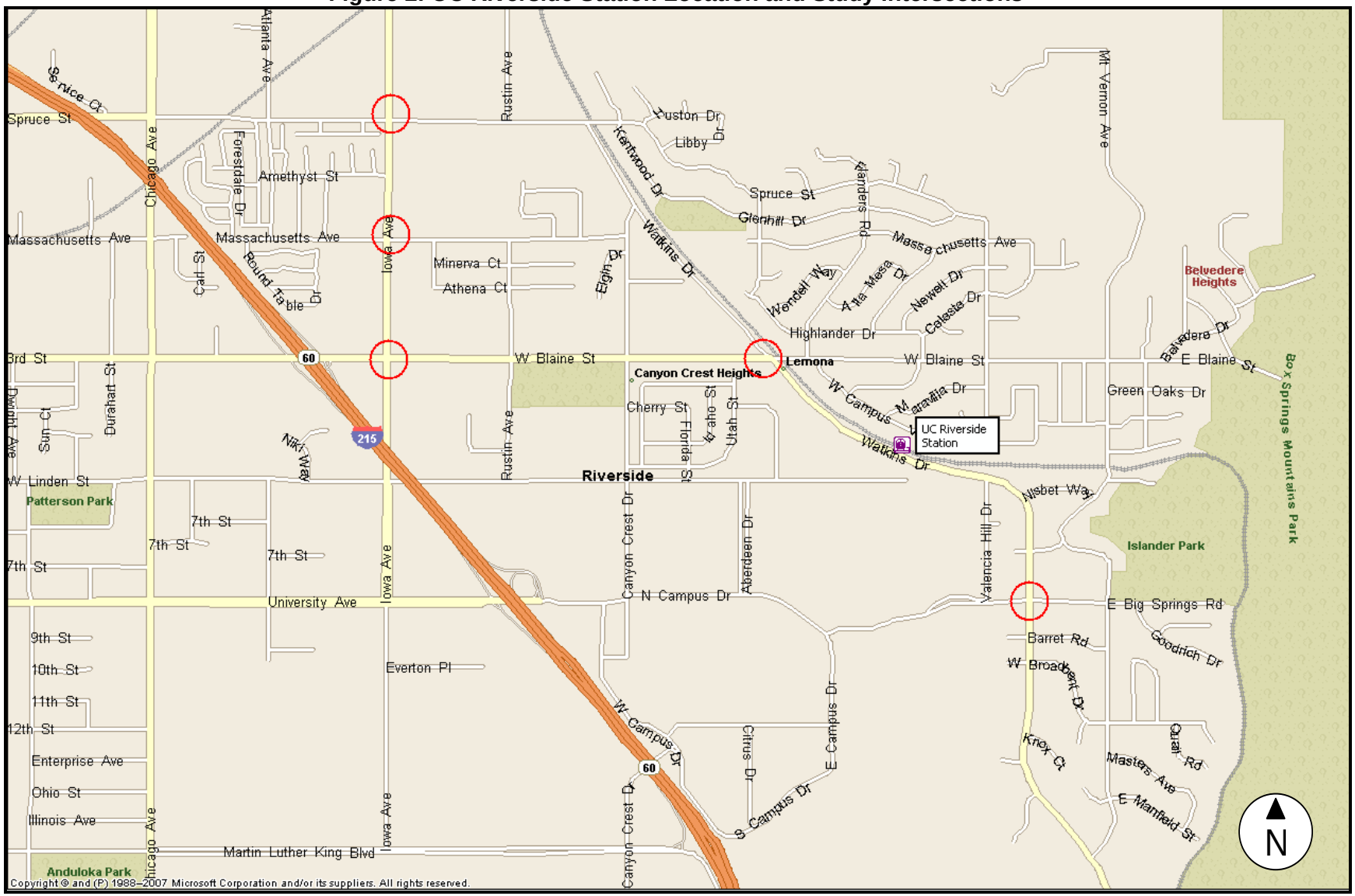


Figure 3: Moreno Valley/March Field Station Location and Study Intersections

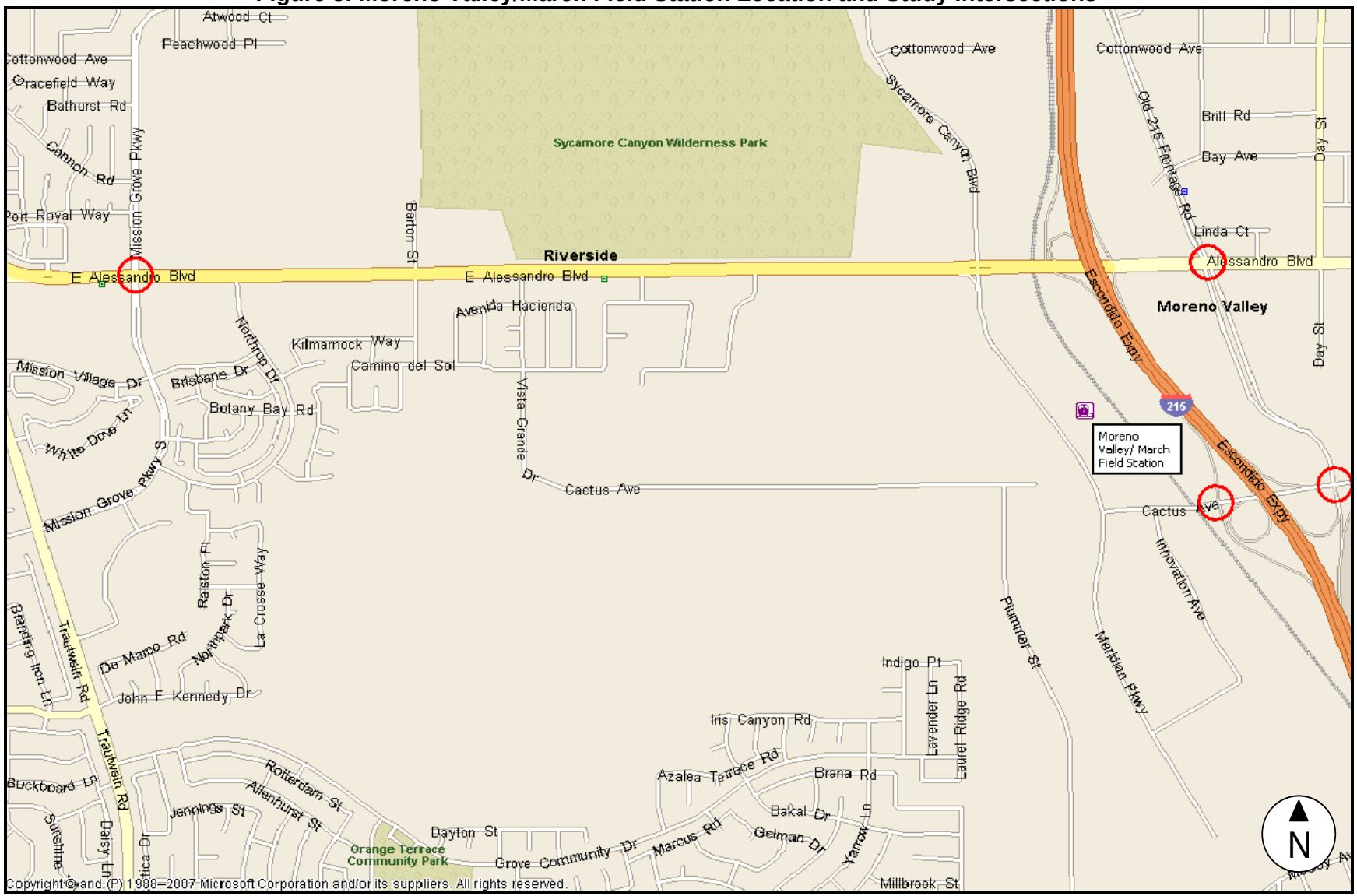


Figure 4: Ramona Station Location and Study Intersections

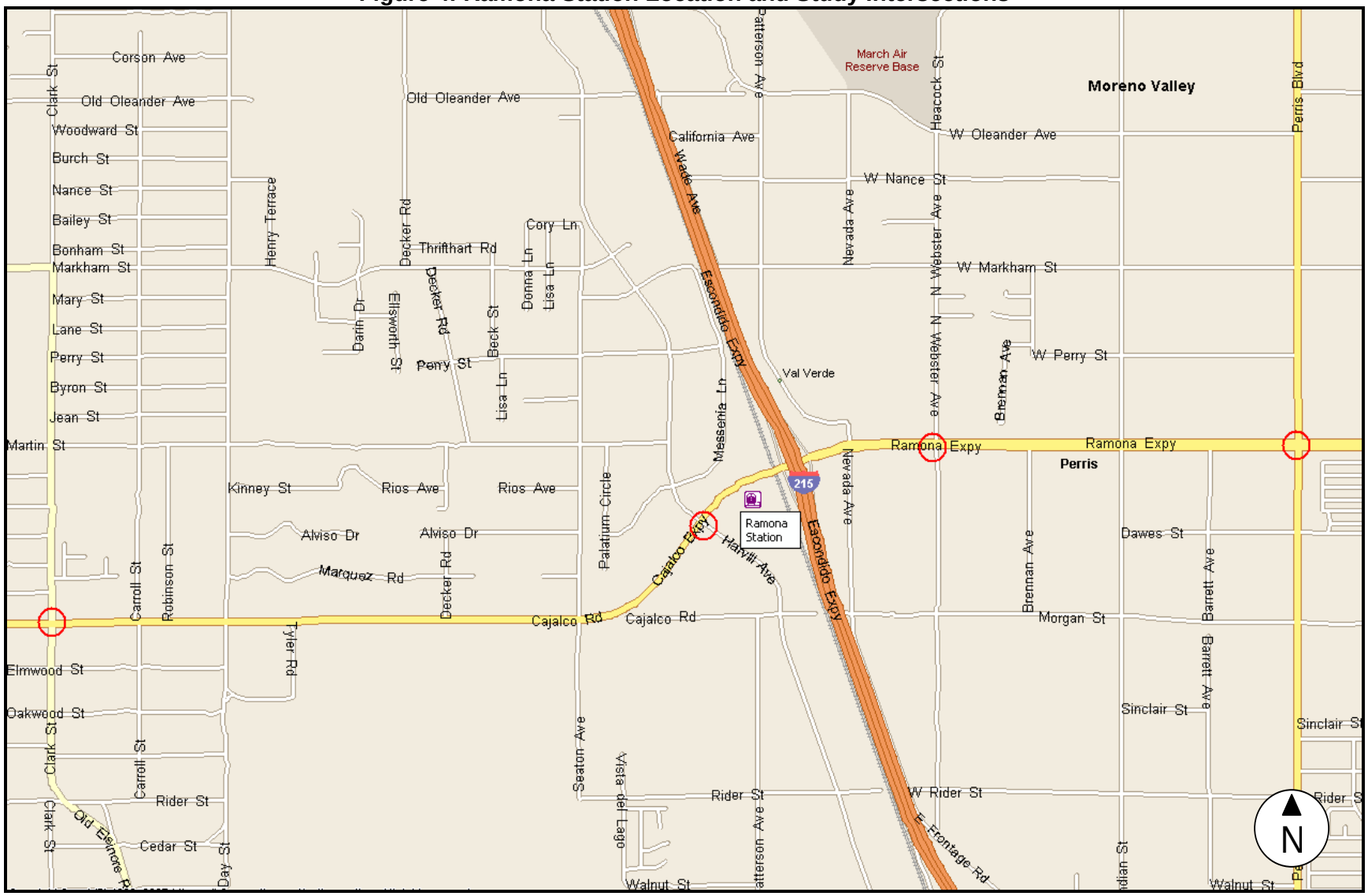


Figure 5: Downtown Perris Station Location and Study Intersections

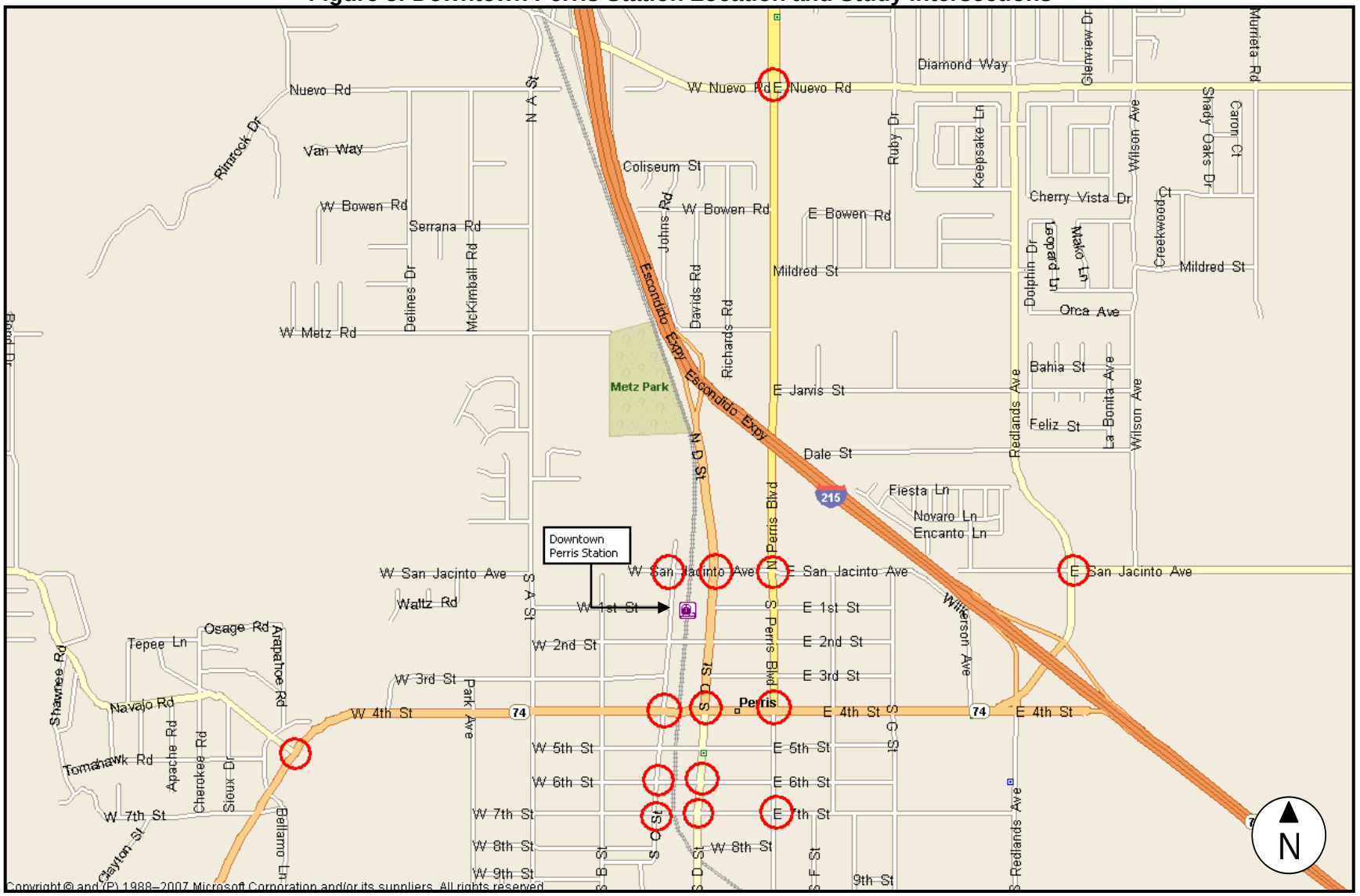
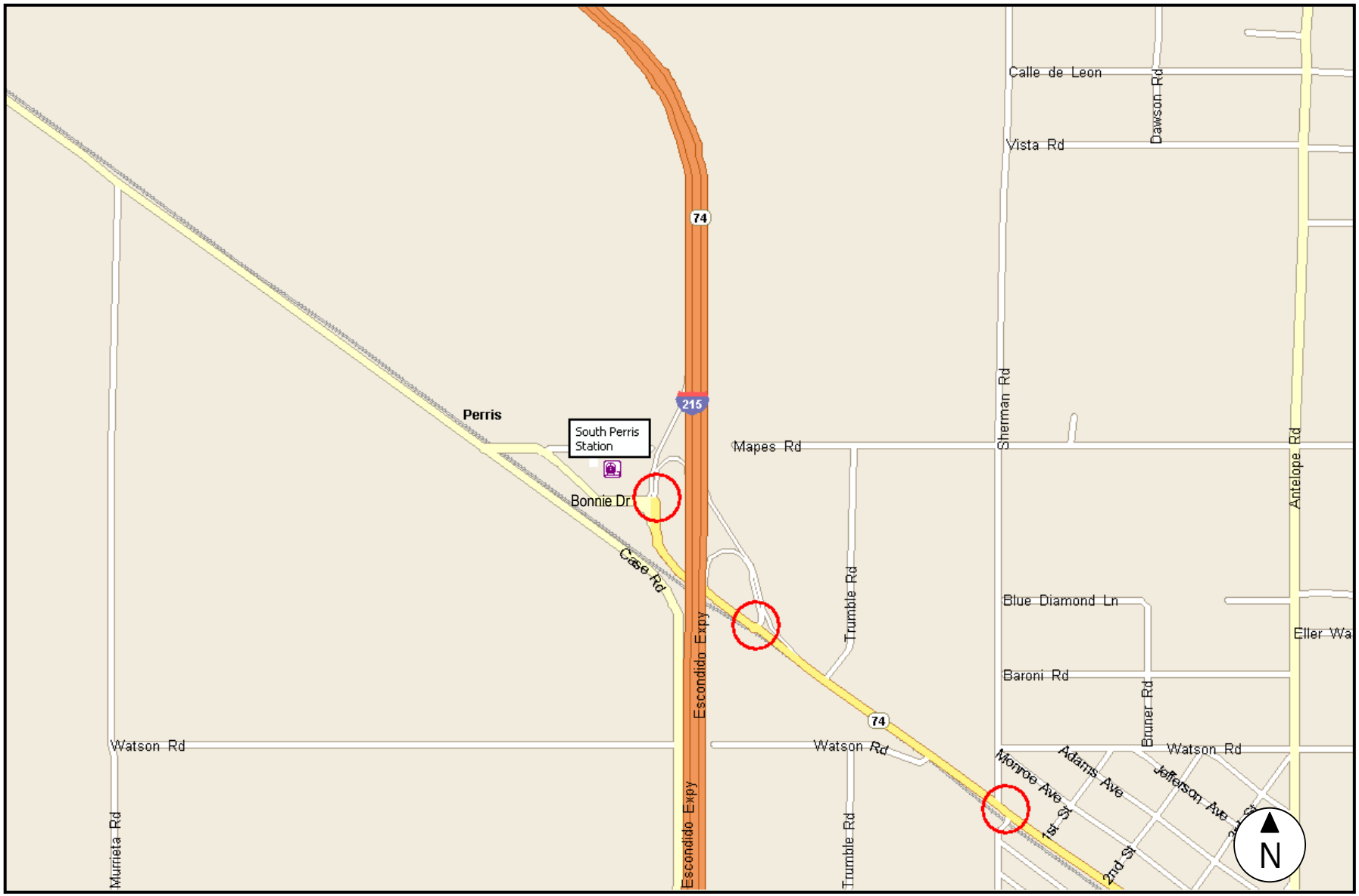


Figure 6: South Perris Station Location and Study Intersections



B. EXISTING CONDITIONS

Roadway Network

The key travel routes in the vicinity of each station are described below:

Hunter Park Station

- *Iowa Avenue* is a six-lane, north-south arterial that carries traffic between Hunter Industrial Park neighborhood to the north and Canyon Crest neighborhood to the south in Riverside. Riverside Transit Agency Route (Rt.) 25 runs along Iowa Avenue within the study area.
- *Center Street* is a four-lane undivided arterial oriented in the east-west direction within the study area, and ends just west of its intersection with I-215.
- *Palmyrita Avenue* between Iowa and Prospect Avenues is a two-lane undivided roadway extending in the east-west direction. It is lined with office buildings and warehouses within the study area.
- *Columbia Avenue* is a four-lane arterial that carries traffic in the east-west direction between the Hunter Industrial Park and Northside areas in Riverside.
- *Marlborough Avenue* is an east-west collector road that becomes an arterial between Chicago and Rustin Avenues in Riverside. East of Iowa Avenue, a bike lane is provided along both sides of the street.

UC Riverside Station

- *Spruce Street* is an undivided east-west arterial roadway providing four lanes west of and two lanes east of Iowa Avenue. It is lined mostly with residential land uses in the study area.
- *Massachusetts Avenue* is a two-lane undivided roadway, which extends in the east-west direction between I-215/SR-60 and Canyon Crest Drive in the study area, and serves the residential areas in between. A bike lane is provided along its north side west of Iowa Avenue.
- *Blaine Street* west of Iowa Avenue is a three-lane undivided arterial lined with commercial uses. It extends in the east-west direction and becomes four lanes through the residential areas east of Iowa Avenue.
- *Watkins Drive* between Blaine Street and Big Springs Road is two-lane undivided arterial extending in the northwest-southeast direction. A parking lane is provided along both sides of the street through the study area.
- *Big Springs Road* is a two-lane east-west local roadway. It provides parking and bike lanes along both sides, and is served by the Rt. 10 bus within the study area.

Moreno Valley/March Field Station

- *Alessandro Boulevard* is a six-lane, divided arterial roadway extending in the east-west direction within the study area, and is served by the Rt. 20 bus.
- *Cactus Avenue* between Meridian Parkway and Old 215 is an undivided east-west arterial within the limits of the City of Moreno Valley providing access to north and southbound I-215. It provides four lanes east of Old 215, and narrows to two lanes at its intersection with southbound I-215 ramps.

Ramona Station

- *Cajalco Expressway* is a two-lane undivided east-west arterial, which becomes a divided four-lane arterial at Harvill Avenue, and continues as Ramona Expressway east of I-215. The Rt. 41 bus follows Cajalco/Ramona Expressway within the study area.

- *Clark Street* is a two-lane undivided north-south roadway. It is served by the Rt. 22 bus.
- *Harvill Avenue* is a four-lane undivided arterial that stretches in the north-south direction in the City of Perris.
- *Webster Avenue* is a two-lane undivided arterial extending in the north-south direction in Perris. It is lined mostly with empty lots and some residences in the study area.
- *Perris Boulevard* is a north-south, primary arterial that extends from Moreno Valley to downtown Perris. It is two lanes wide north of and four lanes wide south of Ramona Expressway, and widens to six lanes between Citrus Avenue and Nuevo Road. Perris Boulevard is also included in the Downtown Perris Station study area. The Rt. 19, 22, 27, 30, and 74 buses travel along Perris Boulevard in downtown Perris.

Downtown Perris Station

- *San Jacinto Avenue* is a two-lane, secondary arterial oriented in the east-west direction.
- *State Route (SR)-74, known as 4th Street in downtown Perris,* provides regional access to downtown Perris, and is a four-lane facility oriented in the east-west direction in this area. The Rt. 19, 22, 27, 30, 74, and 208 buses travel along a section of SR-74 to serve downtown Perris. SR-74 extends into the South Perris Station study area.
- *D Street* is a two-lane, north-south collector road that extends from 11th Street to I-215 in downtown Perris. It is served by the Rt. 30 bus. On-street parking is available on the east and west sides of D Street between 1st and 7th Streets.
- *C Street* is a north-south, local road that extends from 11th Street to San Jacinto Avenue in downtown Perris.

South Perris Station

- *Sherman Road* is a two-lane, undivided roadway that extends in the north-south direction. It is mostly lined with empty lots and some residential land uses in the study area.
- *Bonnie Drive* is a short, two-lane roadway segment that connects Case Road with southbound I-215 on- and off-ramps and SR-74.

Traffic Volumes

Intersection counts, including manual turning movement and vehicle classification, were conducted at the study intersections during the weekday AM and PM periods. Additionally, 24-hour automatic traffic recorder (ATR) machine counts were collected at the following locations concurrent with turning movement counts:

- Iowa Avenue south of Spring Street
- Iowa Avenue south of Marlborough Avenue
- Columbia Avenue east of Iowa Avenue
- Watkins Drive east of Blaine Street
- Alessandro Boulevard east of Mission Grove Parkway
- Cactus Avenue west of Old 215
- Cajalco Expressway east of Harvill Avenue
- Perris Boulevard south of Bowen Road
- SR-74 east of D Street
- SR-74 east of Trumble Road

The manual and ATR count data were reviewed to ensure that traffic volumes for a representative day (during clear weather and while schools are in session) are reflected in the traffic analyses (Appendices A and B contain traffic count information). From the data collected, the weekday AM and PM peak traffic hours throughout the entire PVL study area typically occur during the 7:15 to 8:15 AM and 4:30 to 5:30 PM periods, respectively. However, peak PVL ridership periods within the study area are from 5 to 7 AM and 5 to 7 PM based on ridership projections (before and after the existing AM and PM peak travel times for area traffic, respectively, with a little overlap in the PM peak). This is due to the travel times of PVL passengers to/from stations depending on their desired arrival/departure times in Los Angeles, with taking approximately one hour 15 minutes to two hours and 20 minutes of train travel time into account. For analysis purposes, the 6-7 AM and 5-6 PM analysis hours were selected since the combination of project-generated traffic and background volumes would be highest. Following is a brief description of traffic volumes on the roadways serving the station areas during these time periods.

Iowa Avenue carries the highest traffic volumes in the Hunter Park and UC Riverside Station areas, with approximately 330 to 1,490 vehicles per hour (vph) per direction during the 6-7 AM and 5-6 PM analysis hours. The remaining roadways in the vicinity of these two stations process up to 365 vph per direction during the AM analysis hour and 675 vph per direction during the PM analysis hour, with the exception of Blaine Street, which carries bi-directional volumes of up to 470 and 1,010 vph during the AM and PM analysis hours, respectively (see Figures 7 and 8).

The analysis-hour volumes are between 450 and 2,200 vph along eastbound Alessandro Boulevard and between 810 and 1,815 vph along westbound Alessandro Boulevard (higher near Mission Grove Parkway) within the study area for the Moreno Valley/March Field Station. Westbound Cactus Avenue volumes are between 1,360 and 1,875 vph, and eastbound Cactus Avenue volumes are between 485 to 720 vph at Old 215, and decrease to 500-715 vph and 90-280 vph respectively at southbound I-215 ramps as a result of entering/exiting vehicles to/from I-215 in between these two intersections (see Figure 9).

The highest traffic volumes in the vicinity of Ramona Station are carried along Cajalco/Ramona Expressway with 515 to 1,080 vph per direction during the AM and PM analysis hours. Perris

Boulevard processes bi-directional traffic volumes ranging from 525 to 595 vph during the analysis hours. Harvill Avenue carries approximately 440 vph northbound and 220 vph southbound during both analysis hours. The remaining roadways in the area carry less than 300 vph (see Figure 10).

The traffic volumes within the Downtown Perris Station area are highest along SR-74 and range from 430 to 1,200 vph eastbound and from 350 to 1,375 vph westbound. Bi-directional traffic volumes along the remaining roadways in the area are less than 420 vph during the analysis hours, with the exception of Nuevo Road, which carries up to 1,170 vph eastbound and D Street and Perris Boulevard, both of which carry up to 830 vph southbound during the PM analysis hour (see Figure 7). SR-74 also carries the highest traffic volumes in the vicinity of South Perris Station. The volumes in this area are higher compared to Downtown Perris, and vary between 600 and 1,095 vph in the eastbound direction, and between 820 and 1,145 vph in the westbound direction (see Figures 11 and 12).

Figure 7: Hunter Park Station Area Existing Traffic Volumes

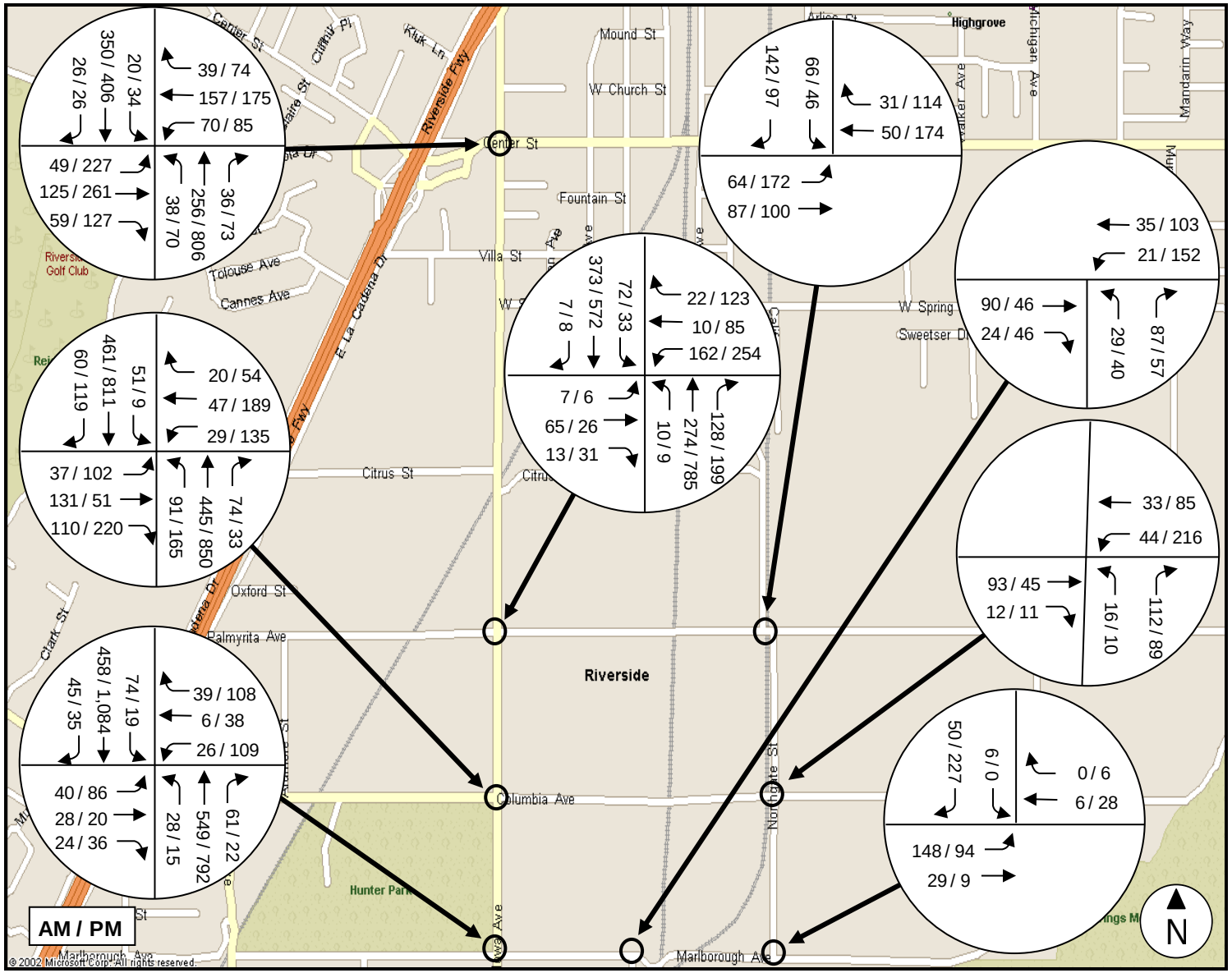


Figure 8: UC Riverside Station Area Existing Traffic Volumes

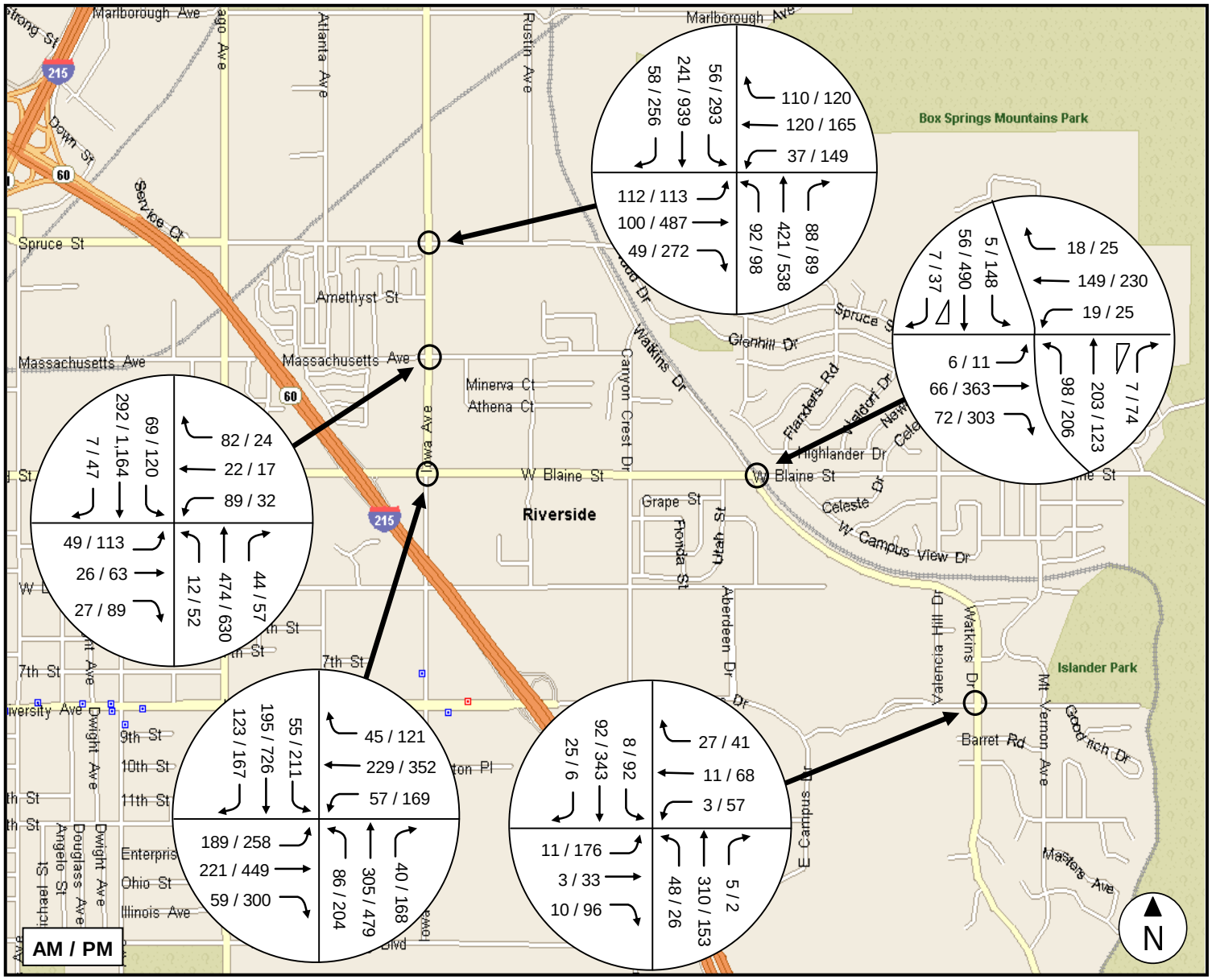


Figure 9: Moreno Valley/March Field Station Area Existing Traffic Volumes

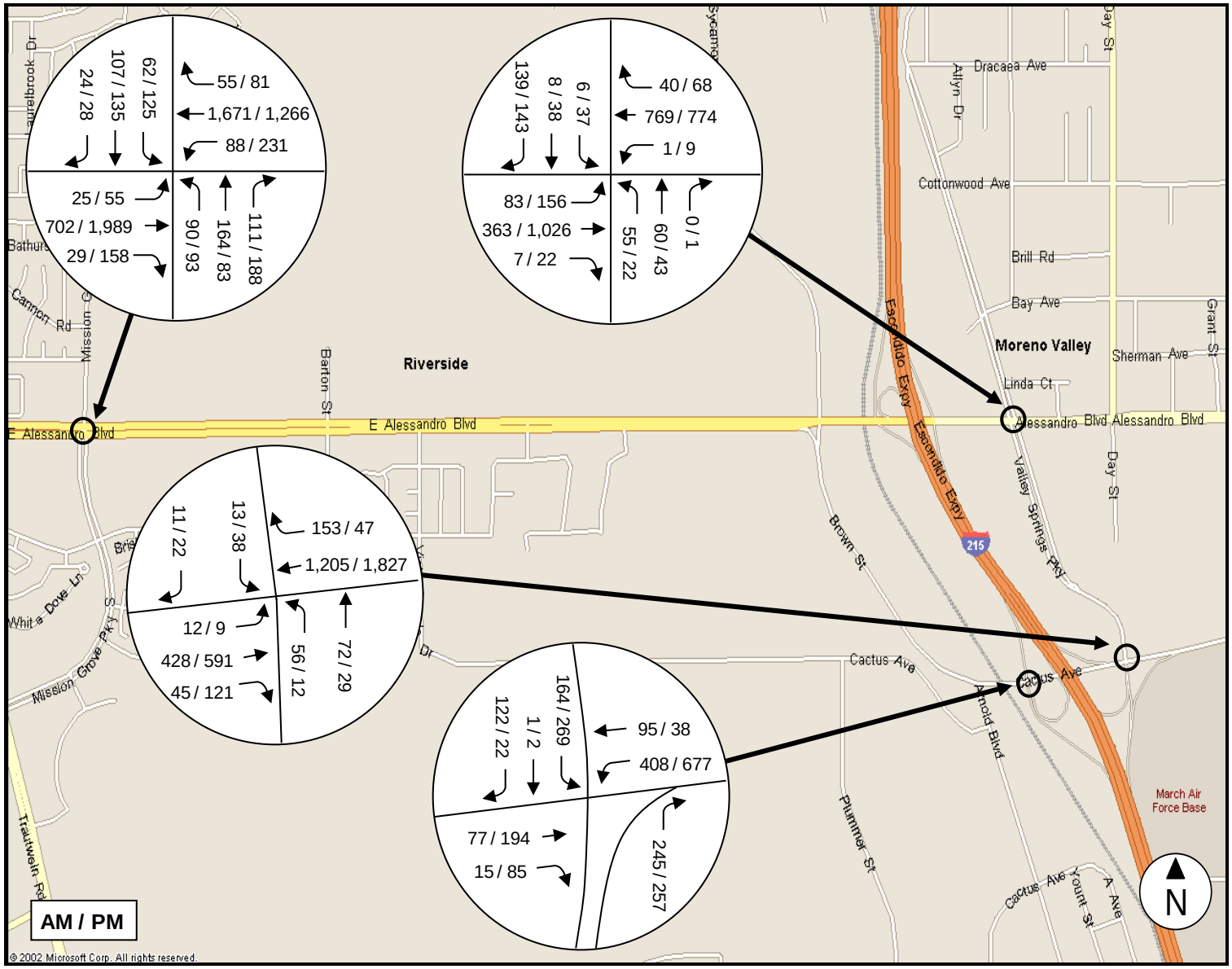


Figure 10: Ramona Station Area Existing Traffic Volumes

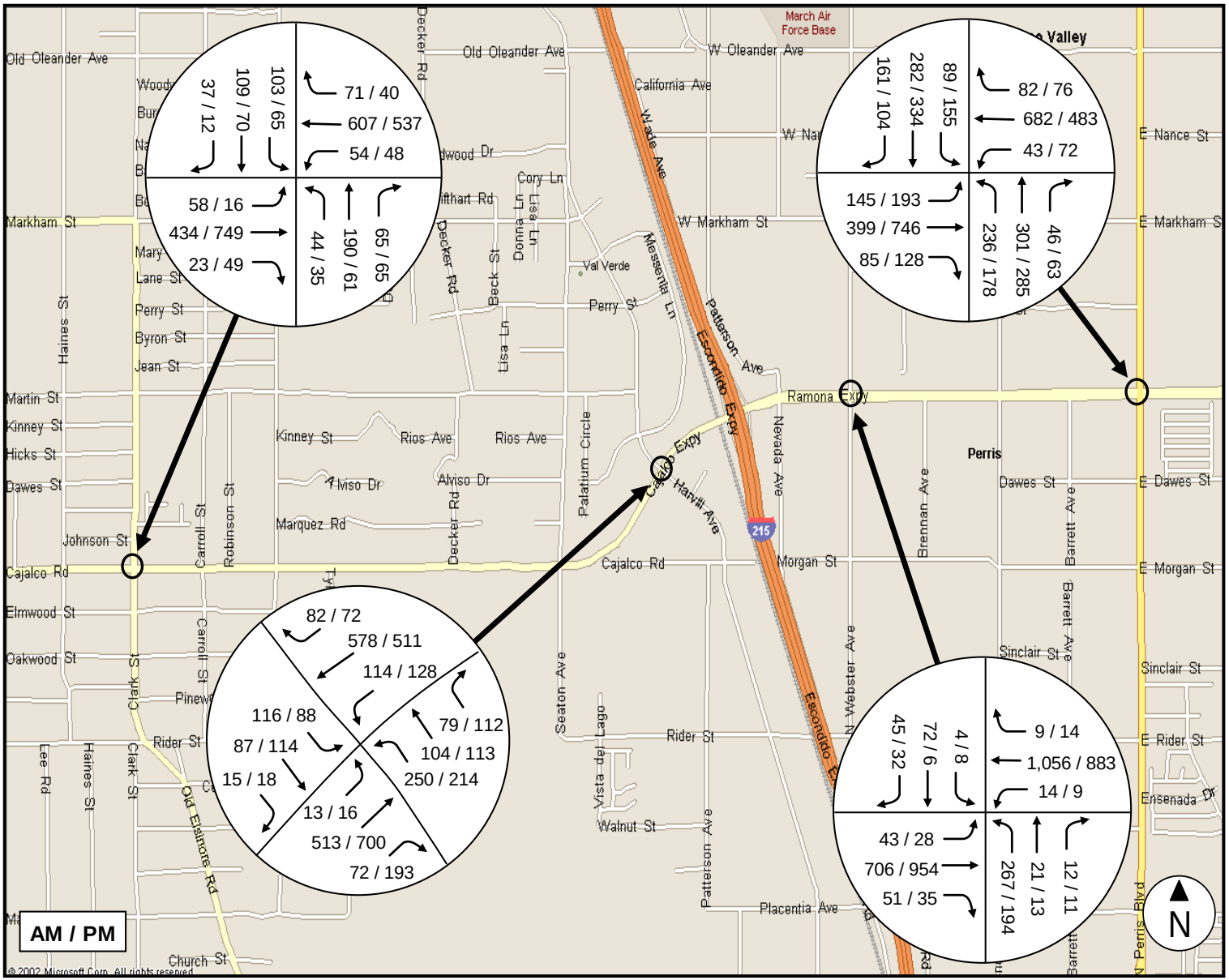


Figure 11: Downtown Perris Station Area Existing Traffic Volumes

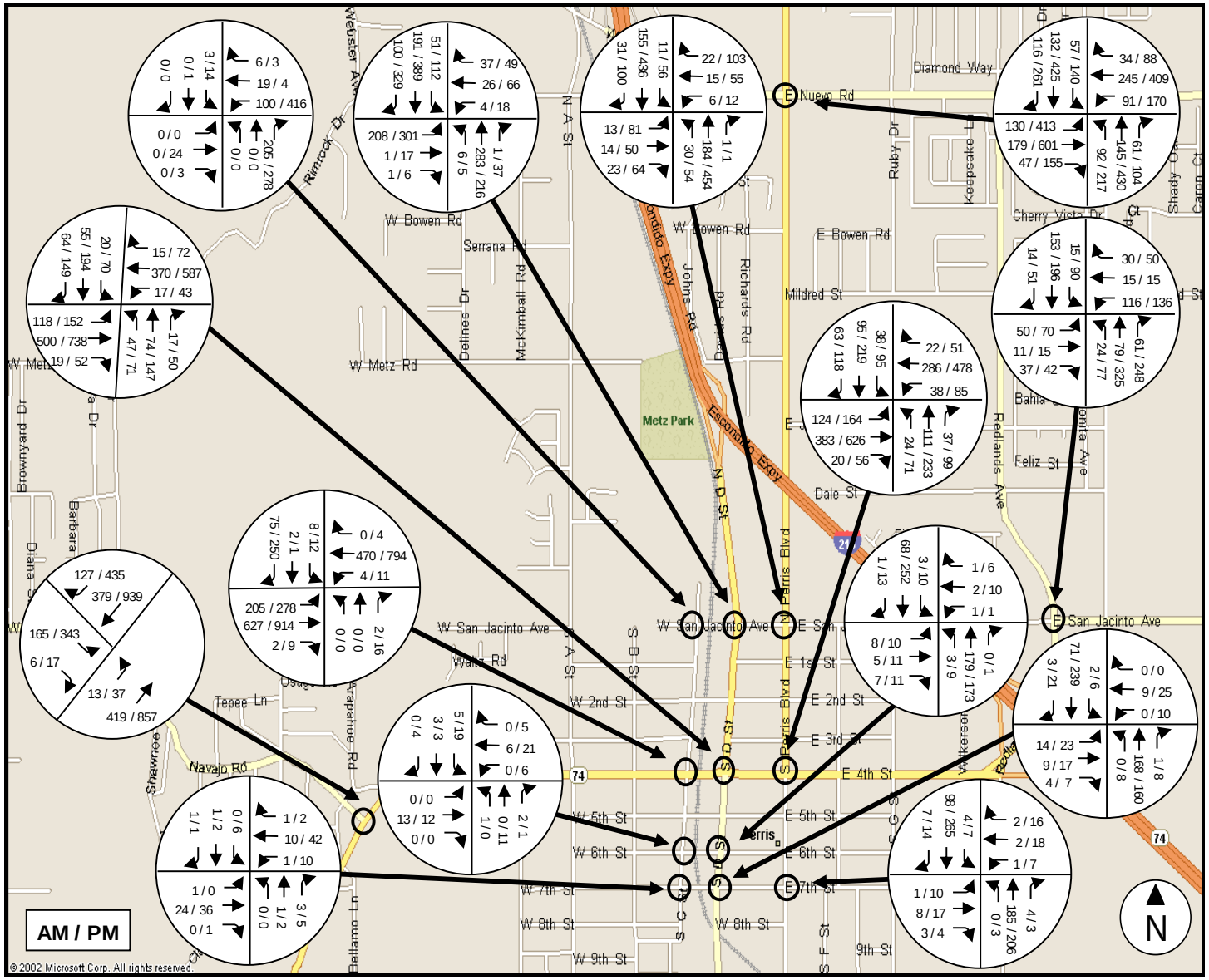
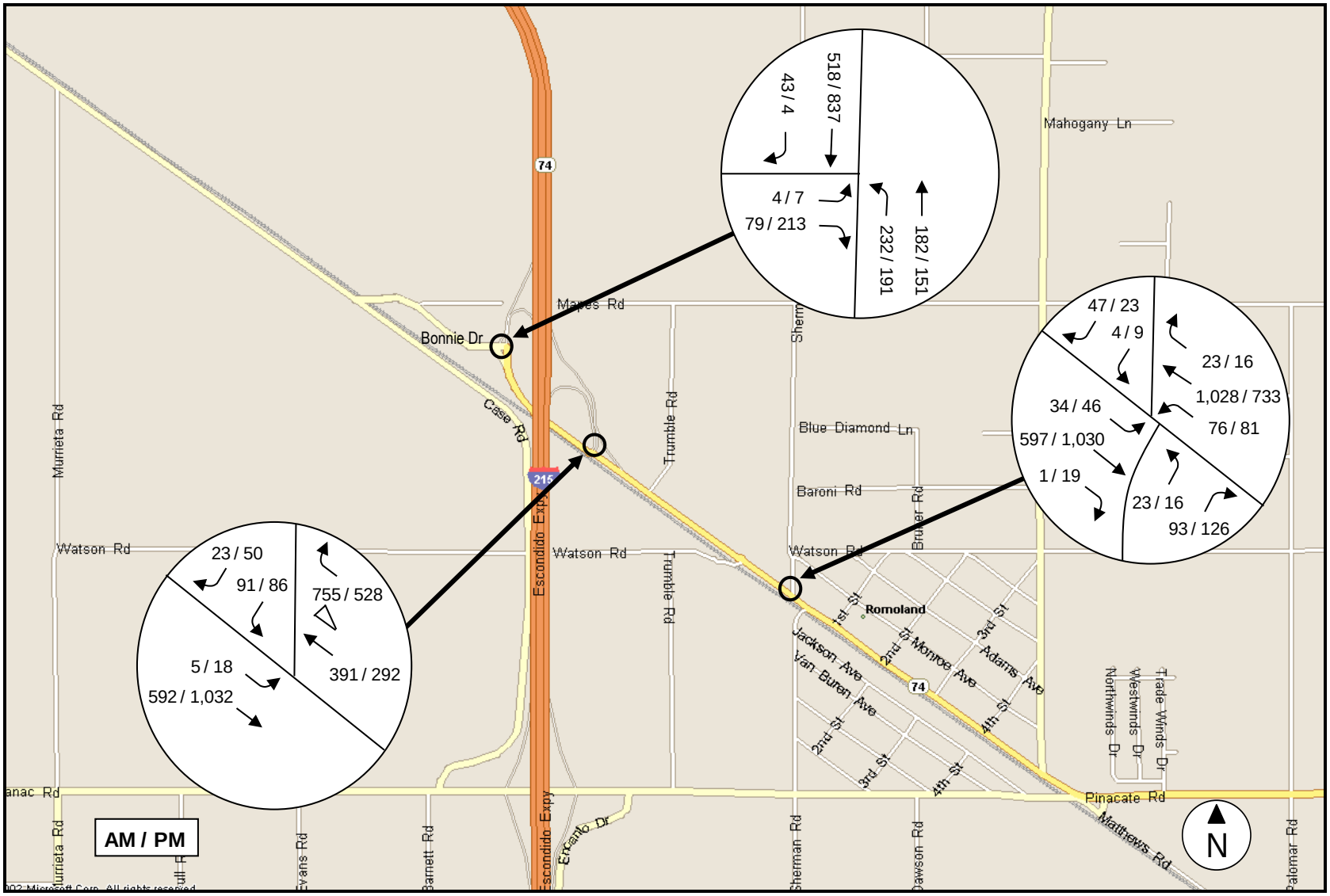


Figure 12: South Perris Station Area Existing Traffic Volumes



Analysis Methodology and Results

In accordance with the accepted analysis practices of Riverside County and the Cities of Riverside and Perris, the *Highway Capacity Manual 2000 (HCM2000)* procedures were used to determine the capacities and levels of service for each of the intersections comprising the traffic study area. For a signalized intersection, levels of service are determined for the intersection and its individual lane groups and are defined in terms of the average control delays experienced by all vehicles that arrive in the analysis period, including delays incurred beyond the analysis period when the intersection or lane group is saturated. For an unsignalized intersection, levels of service are determined for minor movements only and are defined as the total elapsed time between a vehicle stopping at the end of the queue and departing from the stop line.

The delay levels for signalized intersections are detailed below.

- LOS A describes operations with very low delay, i.e., less than 10 seconds per vehicle. This occurs when signal progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all.

- LOS B describes operations with delay in the range of 10.1 to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. Again, most vehicles do not stop at the intersection.

- LOS C describes operations with delay in the range of 20.1 to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. The number of vehicles stopping at an intersection is significant at this level, although many still pass through without stopping.

- LOS D describes operations with delay in the range of 35.1 to 55.0 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity (v/c) ratios. Many vehicles stop, and the proportion of vehicles that do not stop declines.

- LOS E describes operations with delay in the range of 55.1 to 80.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume-to-capacity ratios.

- LOS F describes operations with delay in excess of 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume-to-capacity ratios with cycle failures. Poor progression and long cycle lengths may also be contributing to such delays. Often, vehicles do not pass through the intersection in one signal cycle.

The level-of-service thresholds for unsignalized intersections differ slightly from those for signalized intersections. Delay levels for unsignalized intersections are detailed below

- LOS A describes operations with very low delay, i.e., less than 10 seconds per vehicle. This generally occurs when little or no delay is experienced at the intersection.

- LOS B describes operations with delay in the range of 10.1 to 15.0 seconds per vehicle. This generally occurs when short traffic delays are experienced at the intersection.

- LOS C describes operations with delay in the range of 15.1 to 25.0 seconds per vehicle. This generally occurs when average traffic delays are experienced at the intersection.

- LOS D describes operations with delay in the range of 25.1 to 35.0 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable, and longer traffic delays are experienced.

- LOS E describes operations with delay in the range of 35.1 to 50.0 seconds per vehicle. At LOS E, there is obvious congestion, and very long traffic delays are experienced at the intersection.

- LOS F describes operations with delay greater than 50.0 seconds per vehicle. At LOS F, there is heavy congestion, and excessive traffic delays are experienced at the intersection.

The Cities of Riverside, Moreno Valley, and Perris, and the County of Riverside, which are the agencies whose jurisdiction the study area falls under, have adopted the following thresholds for levels of service.

According to the City of Riverside General Plan:

> *Maintain LOS D or better on arterial streets and LOS C or better on Local and Collector streets in residential areas. LOS E may be acceptable as determined on a case-by-case basis at key locations such as City arterial roadways which are used as a freeway bypass by regional through traffic and at heavily traveled freeway interchanges.*

According to the City of Moreno Valley General Plan:

> *Maintain LOS C where possible. Peak hour levels of service in the LOS D range may be acceptable in certain locations including areas of high employment concentration, north/south roads in the vicinity of SR-60 or other locations in already developed areas of the City with geometric constraints that prevent LOS C from being achieved.*

According to the City of Perris General Plan:

> *Maintain LOS E along all Local roads (for both segments and intersections) and LOS D along I-215 and SR-74 (including intersections with local streets and roads).*

According to the Riverside County General Plan:

> *Maintain LOS C along all County maintained roads and conventional state highways. As an exception, LOS D may be allowed in Community Development areas, only at intersections of any combination of Secondary Highways, Major Highways, Arterials, Urban Arterials, Expressways, conventional state highways or freeway ramp intersections. LOS E may be allowed in designated community centers to the extent that it would support transit-oriented development and walkable communities.*

Each of the study intersections was analyzed in terms of its capacity to accommodate existing traffic volumes as defined by the resulting levels of service. A summary of the findings is discussed below and presented in Table 2 (Appendix C contains Highway Capacity Software (HCS) analysis sheets).

Hunter Park Station

All movements at the study intersections operate at LOS D or better during both the AM and PM analysis hours, with the exception of Iowa Avenue at Center Street, where the northbound Iowa Avenue through movement operates at LOS E during the PM analysis hour.

UC Riverside Station

The levels of service for all movements are at LOS C or better during the AM analysis hour. During the PM analysis hour, the following movements operate at poor levels of service:

- Watkins Drive's northbound left-turn movement at Blaine Street operates at LOS F.
- Southbound Watkins Drive's through/right-turn movement at Big Springs Road operates at LOS E.

Moreno Valley/March Field Station

The intersection operations are at LOS D or better during both analysis hours with the following exceptions:

- At Alessandro Boulevard and Mission Grove Parkway, westbound Alessandro Boulevard and southbound Mission Grove Parkway left-turn movements operate at LOS E during the PM analysis hour.
- Westbound Cactus Avenue's through movement at Old 215 operates at LOS E during the PM analysis hour.

Ramona Station

The overall operations at the study intersections are at acceptable levels during the AM and PM analysis hours. The following individual movements, however, operate at unacceptable levels of service:

- Southbound Clark Street's left-turn onto Cajalco Expressway functions at LOS F during the AM analysis hour.
- Ramona Expressway's eastbound left-turn movement onto Webster Avenue functions at LOS E during the AM analysis hour.
- Westbound Ramona Expressway's through movement at Perris Boulevard functions at LOS F during the AM analysis hour.

Downtown Perris Station

All movements at the study intersections operate at LOS D or better during both the AM and PM analysis hours, with the exception of D Street's northbound shared through/left-turn movements at SR-74, which operates at LOS E during the PM, and southbound C Street's shared through/left-turn movements at SR-74, which operates at LOS F, during both the AM and PM analysis hour.

South Perris Station

All movements at the three study intersections operate at LOS C or better during both analysis hours with the following exceptions:

- Bonnie Drive's eastbound right-turn movement at southbound I-215 ramps operates at LOS F during the PM analysis hour.
- Sherman Road's northbound left-turn movement at SR-74 operates at LOS F during both the AM and PM analysis hours, and southbound left/right-turn movement operates at LOS F during the PM analysis hour.

Table 2: 2008 Existing Levels of Service

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Hunter Park Station								
Signalized								
Center Street at Iowa Avenue								
Center Street	EB	LTR	0.42	37.2	D	0.88	42.4	D
	WB	L	0.23	31.0	C	0.38	32.5	C
		T	0.48	33.9	C	0.74	43.4	D
		R	0.07	29.6	C	0.17	30.9	C
Iowa Avenue	NB	L	0.29	43.6	D	0.32	31.3	C
		T	0.48	35.3	D	1.06	78.0	E
		R	0.08	21.6	C	0.13	22.9	C
	SB	L	0.12	42.0	D	0.37	40.0	D
		T	0.51	35.5	D	0.58	29.8	C
		R	0.05	31.3	C	0.05	25.2	C
Overall Intersection		-		**35.3**	**D**		**51.8**	**D**
Palmyrita Avenue at Iowa Avenue								
Palmyrita Avenue	EB	LT	0.12	11.5	B	0.08	13.6	B
		R	0.02	10.9	B	0.05	13.4	B
	WB	L	0.42	13.7	B	0.82	29.8	C
		TR	0.04	11.0	B	0.32	15.0	B
Iowa Avenue	NB	L	0.15	31.9	C	0.08	24.6	C
		T	0.31	19.7	B	0.74	19.0	B
		R	0.20	19.2	B	0.26	14.0	B
	SB	L	0.40	28.1	C	0.30	26.1	C
		T	0.42	19.2	B	0.57	16.2	B
		R	0.01	16.5	B	0.01	12.5	B
Overall Intersection		-		**18.2**	**B**		**19.2**	**B**
Columbia Avenue at Iowa Avenue								
Columbia Avenue	EB	L	0.20	41.8	D	0.40	31.9	C
		T	0.32	32.0	C	0.16	28.3	C
		R	0.15	30.3	C	0.39	30.2	C
	WB	L	0.17	41.6	D	0.57	34.7	C
		T	0.07	29.5	C	0.35	29.6	C
		R	0.03	29.3	C	0.12	28.1	C
Iowa Avenue	NB	L	0.40	42.0	D	0.66	38.6	D
		T	0.43	29.5	C	0.82	31.6	C
		R	0.10	26.3	C	0.05	20.1	C
	SB	L	0.26	40.7	D	0.06	35.2	D
		T	0.54	30.9	C	0.82	33.0	C
		R	0.08	26.1	C	0.14	22.2	C
Overall Intersection		-		**31.8**	**C**		**32.1**	**C**

Table 2: 2008 Existing Levels of Service (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Marlborough Avenue at Iowa Avenue								
Marlborough Avenue	EB	L	0.30	27.3	C	0.40	28.2	C
		TR	0.40	30.1	C	0.28	30.6	C
	WB	L	0.17	26.4	C	0.55	30.3	C
		T	0.05	27.5	C	0.27	30.5	C
		R	0.17	28.3	C	0.41	31.7	C
Iowa Avenue	NB	L	0.14	26.2	C	0.14	32.5	C
		T	0.47	16.4	B	0.62	17.8	B
		R	0.06	13.7	B	0.02	12.8	B
	SB	L	0.24	21.9	C	0.17	32.7	C
		T	0.40	14.6	B	0.81	22.5	C
		R	0.04	12.3	B	0.03	12.8	B
Overall Intersection		-		**17.6**	**B**		**22.2**	**C**
Unsignalized								
Palmyrita Avenue at Northgate Street								
Palmyrita Avenue	EB	L	0.05	7.6	A	0.20	9.2	A
Northgate Street	SB	L	0.14	11.5	B	0.25	25.4	D
		R	0.19	9.3	A	0.15	10.2	B
Columbia Avenue at Northgate Street								
Columbia Avenue	EB	T	0.10	8.6	A	0.05	8.7	A
		TR	0.13	8.6	A	0.07	8.6	A
	WB	L	0.13	9.4	A	0.51	13.7	B
		T	0.09	8.6	A	0.18	8.7	A
Northgate Street	NB	L	0.04	8.1	A	0.02	8.5	A
		R	0.24	8.4	A	0.14	8.3	A
Overall Intersection		-		**8.6**	**A**		**11.2**	**B**
Marlborough Avenue at Northgate Street								
Marlborough Avenue	EB	LT	0.19	7.8	A	0.07	7.5	A
Northgate Street	SB	LR	0.10	9.5	A	0.31	10.2	B
Marlborough Avenue at Rustin Avenue								
Marlborough Avenue	WB	L	0.03	7.7	A	0.17	8.0	A
Rustin Avenue	NB	LR	0.32	11.7	B	0.26	14.5	B
UCR Station								
Signalized								
Spruce Street at Iowa Avenue								
Spruce Street	EB	L	0.32	23.2	C	0.34	32.3	C
		TR	0.22	24.6	C	0.84	42.8	D
	WB	L	0.19	28.6	C	0.68	44.0	D
		TR	0.40	28.8	C	0.36	31.1	C
Iowa Avenue	NB	L	0.29	24.5	C	0.54	42.1	D
		T	0.48	21.3	C	0.67	34.2	C
		R	0.11	18.7	B	0.12	27.8	C
	SB	L	0.32	28.8	C	0.82	45.5	D
		T	0.35	21.0	C	0.96	49.3	D
		R	0.09	19.3	B	0.28	23.5	C
Overall Intersection		-		**23.2**	**C**		**41.5**	**D**

Table 2: 2008 Existing Levels of Service (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Massachusetts Avenue at Iowa Avenue								
Massachusetts Avenue	EB	L	0.17	15.3	B	0.45	20.8	C
		TR	0.10	14.9	B	0.33	19.7	B
	WB	L	0.40	16.8	B	0.17	18.8	B
		TR	0.21	15.5	B	0.12	18.5	B
Iowa Avenue	NB	L	0.07	20.4	C	0.32	23.9	C
		T	0.48	13.4	B	0.42	10.0	A
		R	0.05	11.1	B	0.04	8.0	A
	SB	L	0.25	16.5	B	0.73	38.7	D
		TR	0.29	11.0	B	0.76	14.2	B
Overall Intersection		-		**13.5**	**B**		**15.2**	**B**
Blaine Street at Iowa Avenue								
Blaine Street	EB	L	0.40	24.5	C	0.75	36.2	D
		T	0.28	23.2	C	0.92	53.4	D
		R	0.08	21.8	C	0.67	38.2	D
	WB	L	0.26	32.3	C	0.74	40.7	D
		TR	0.42	30.1	C	0.73	33.5	C
Iowa Avenue	NB	L	0.35	31.1	C	0.73	41.2	D
		T	0.43	27.6	C	0.57	27.7	C
		R	0.06	24.9	C	0.20	24.4	C
	SB	L	0.35	34.8	C	0.58	28.9	C
		TR	0.45	28.2	C	0.98	53.4	D
Overall Intersection		-		**27.5**	**C**		**41.3**	**D**
Blaine Street at Watkins Drive								
Blaine Street	EB	L	0.06	32.3	C	0.11	38.3	D
		TR	0.15	16.9	B	0.65	27.8	C
	WB	L	0.17	33.0	C	0.29	39.9	D
		TR	0.30	18.1	B	0.50	25.6	C
Watkins Drive	NB	L	0.29	25.9	C	1.00	94.4	F
		T	0.43	24.8	C	0.24	23.0	C
	SB	L	0.05	32.7	C	0.63	39.4	D
		T	0.22	27.7	C	0.94	53.7	D
Overall Intersection		-		**22.3**	**C**		**43.1**	**D**
Unsignalized								
Big Springs Road at Watkins Drive								
Big Springs Road	EB	LTR	0.06	8.4	A	0.77	29.4	D
	WB	LTR	0.06	8.3	A	0.40	15.5	C
Watkins Drive	NB	L	0.08	8.6	A	0.07	11.9	B
		TR	0.47	11.8	B	0.40	16.0	C
	SB	L	0.01	8.5	A	0.25	13.2	B
		TR	0.20	9.0	A	0.89	45.4	E

Table 2: 2008 Existing Levels of Service (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Moreno Valley/March Field Station								
Signalized								
Cactus Avenue at Southbound I-215 Ramps								
Cactus Avenue	EB	T	0.30	14.6	B	0.80	43.7	D
		R	0.05	13.4	B	0.24	28.4	C
	WB	L	0.54	4.4	A	0.85	21.6	C
		T	0.10	3.5	A	0.03	4.5	A
Southbound I-215 Ramps	SB	LT	0.69	23.4	C	0.75	36.9	D
		R	0.32	16.5	B	0.04	25.3	C
Overall Intersection		-		**10.3**	**B**		**28.9**	**C**
Cactus Avenue at Old 215								
Cactus Avenue	EB	L	0.14	12.3	B	0.11	10.6	B
		TR	0.32	12.8	B	0.36	11.7	B
	WB	T	0.77	19.1	B	1.06	58.4	E
		R	0.08	11.3	B	0.05	9.7	A
Old 215	NB	L	0.12	13.8	B	0.03	18.0	B
		TR	0.10	13.7	B	0.04	18.1	B
	SB	L	0.04	13.3	B	0.10	18.5	B
		TR	0.01	13.2	B	0.02	17.9	B
Overall Intersection		-		**16.7**	**B**		**44.3**	**D**
Alessandro Boulevard at Old 215								
Alessandro Boulevard	EB	L	0.30	28.9	C	0.45	35.8	D
		T	0.50	19.1	B	0.79	24.9	C
	WB	L	0.00	27.3	C	0.06	33.4	C
		T	0.69	22.0	C	0.64	21.0	C
Old 215	NB	L	0.45	32.3	C	0.14	34.9	C
		T	0.23	30.2	C	0.10	31.9	C
	SB	L	0.04	29.2	C	0.25	35.6	D
		T	0.02	29.1	C	0.09	31.8	C
Overall Intersection		-		**22.6**	**C**		**24.8**	**C**
Alessandro Boulevard at Mission Grove Parkway								
Alessandro Boulevard	EB	L	0.17	44.2	D	0.34	53.0	D
		T	0.32	17.0	B	0.87	27.1	C
		R	0.03	14.6	B	0.15	15.0	B
	WB	L	0.33	45.0	D	0.67	56.9	E
		T	0.80	25.1	C	0.56	19.1	B
		R	0.07	15.0	B	0.10	14.6	B
Mission Grove Parkway	NB	L	0.36	45.2	D	0.33	50.7	D
		T	0.70	49.9	D	0.35	46.4	D
		R	0.42	41.4	D	0.44	47.6	D
	SB	L	0.53	48.5	D	0.76	69.5	E
		TR	0.31	39.9	D	0.30	45.6	D
Overall Intersection		-		**27.7**	**C**		**29.8**	**C**

Table 2: 2008 Existing Levels of Service (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Ramona Station								
Cajalco Expressway at Clark Street								
Cajalco Expressway	EB	L	0.45	26.3	C	0.15	34.1	C
		TR	0.65	15.2	B	0.73	14.7	B
	WB	L	0.42	26.1	C	0.48	37.6	D
		TR	0.98	43.0	D	0.55	11.0	B
Clark Street	NB	L	0.26	18.1	B	0.19	27.4	C
		TR	0.81	31.7	C	0.35	28.5	C
	SB	L	0.96	83.6	F	0.36	28.8	C
		TR	0.42	19.0	B	0.28	27.9	C
Overall Intersection		-		**33.4**	**C**		**16.7**	**B**
Cajalco Expressway at Harvill Avenue								
Cajalco Expressway	EB	L	0.06	21.6	C	0.08	33.8	C
		T	0.78	27.1	C	0.64	26.1	C
		R	0.11	18.7	B	0.17	20.9	C
	WB	L	0.24	22.4	C	0.36	35.5	D
		T	0.83	30.4	C	0.55	24.6	C
		R	0.10	18.7	B	0.07	20.1	C
Harvill Avenue	NB	L	0.67	29.4	C	0.58	38.9	D
		T	0.26	24.2	C	0.22	32.1	C
		R	0.24	24.5	C	0.23	32.5	C
	SB	L	0.32	24.5	C	0.23	35.5	D
		TR	0.25	24.1	C	0.22	32.1	C
Overall Intersection		-		**27.2**	**C**		**28.6**	**C**
Ramona Expressway at Webster Avenue								
Ramona Expressway	EB	L	0.40	55.7	E	0.19	52.7	D
		T	0.66	32.1	C	0.79	37.5	D
		R	0.06	23.5	C	0.04	24.1	C
	WB	L	0.12	52.8	D	0.07	51.7	D
		TR	0.93	47.6	D	0.86	41.4	D
Webster Avenue	NB	L	0.41	39.8	D	0.44	41.2	D
		TR	0.39	39.5	D	0.42	40.9	D
	SB	LTR	0.48	51.3	D	0.18	49.1	D
Overall Intersection		-		**41.6**	**D**		**39.9**	**D**
Ramona Expressway at Perris Boulevard								
Ramona Expressway	EB	L	0.42	48.9	D	0.47	50.4	D
		T	0.39	28.2	C	0.57	29.4	C
		R	0.10	24.9	C	0.12	23.4	C
	WB	L	0.10	46.2	D	0.19	47.9	D
		T	1.05	85.1	F	0.88	49.2	D
		R	0.07	24.5	C	0.07	25.4	C
Perris Boulevard	NB	L	0.65	53.3	D	0.38	46.4	D
		T	0.51	43.8	D	0.40	40.7	D
		R	0.08	39.6	D	0.10	39.2	D
	SB	L	0.24	47.4	D	0.34	46.1	D
		T	0.47	43.4	D	0.57	46.0	D
		R	0.31	42.0	D	0.20	41.8	D
Overall Intersection		-		**52.7**	**D**		**40.9**	**D**

Table 2: 2008 Existing Levels of Service (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Downtown Perris Station								
Signalized								
SR-74 at Navajo Road								
SR-74	EB	L	0.11	26.8	C	0.20	27.7	C
		T	0.23	4.7	A	0.43	5.1	A
	WB	TR	0.34	10.6	B	0.94	29.9	C
Navajo Road	SB	L	0.23	19.0	B	0.55	25.4	C
		R	0.00	17.8	B	0.03	21.8	C
Overall Intersection		-		**9.7**	**A**		**20.7**	**C**
SR-74 at D Street								
SR-74	EB	L	0.43	28.7	C	0.51	29.5	C
		TR	0.58	22.9	C	0.78	27.9	C
	WB	L	0.06	25.8	C	0.14	26.4	C
		TR	0.41	21.0	C	0.63	23.8	C
D Street	NB	LT	0.35	20.7	C	1.00	72.9	E
		R	0.02	18.1	B	0.07	18.5	B
	SB	LT	0.20	19.4	B	0.82	38.5	D
		R	0.06	18.4	B	0.14	19.0	B
Overall Intersection		-		**22.3**	**C**		**34.2**	**C**
SR-74 at Perris Boulevard								
SR-74	EB	L	0.52	28.0	C	0.68	38.0	D
		TR	0.39	16.7	B	0.52	17.6	B
	WB	L	0.16	24.8	C	0.50	34.5	C
		TR	0.30	16.0	B	0.48	19.7	B
Perris Boulevard	NB	L	0.09	18.2	B	0.32	21.4	C
		T	0.28	19.5	B	0.50	22.7	C
		R	0.05	17.9	B	0.14	19.7	B
	SB	L	0.14	18.6	B	0.48	23.5	C
		T	0.22	19.1	B	0.48	22.6	C
		R	0.07	18.1	B	0.15	19.7	B
Overall Intersection		-		**18.6**	**B**		**21.9**	**C**
San Jacinto Avenue at Perris Boulevard								
San Jacinto Avenue	EB	L	0.10	29.5	C	0.48	38.5	D
		TR	0.24	30.5	C	0.24	25.2	C
	WB	L	0.05	29.2	C	0.08	35.1	D
		T	0.12	29.7	C	0.15	24.4	C
		R	0.14	29.9	C	0.24	25.2	C
Perris Boulevard	NB	L	0.41	35.3	D	0.31	36.7	D
		TR	0.32	11.4	B	0.85	39.6	D
	SB	L	0.12	32.4	C	0.32	36.8	D
		TR	0.24	10.8	B	0.88	41.8	D
Overall Intersection		-		**16.1**	**B**		**37.4**	**D**

Table 2: 2008 Existing Levels of Service (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Nuevo Road at Perris Boulevard								
Nuevo Road	EB	L	0.33	33.8	C	0.60	27.1	C
		T	0.28	26.7	C	0.74	28.8	C
		R	0.07	25.0	C	0.22	22.0	C
	WB	L	0.22	32.9	C	0.49	31.5	C
		TR	0.34	27.2	C	0.67	29.9	C
Perris Boulevard	NB	L	0.35	33.6	C	0.78	40.3	D
		TR	0.18	28.0	C	0.48	24.5	C
	SB	L	0.20	38.5	D	0.57	33.7	C
		T	0.22	31.4	C	0.86	38.3	D
		R	0.08	15.5	B	0.30	14.8	B
Overall Intersection		-		**29.4**	**C**		**30.0**	**C**
Unsignalized								
San Jacinto Avenue at C Street								
San Jacinto Avenue	EB	LTR	0.00	7.5	A	0.05	8.6	A
	WB	LTR	0.18	8.7	A	0.65	16.8	C
C Street	NB	LTR	0.23	7.7	A	0.40	10.8	B
	SB	LTR	0.01	7.7	A	0.03	9.3	A
Overall Intersection		-		**8.1**	**A**		**14.0**	**B**
San Jacinto Avenue at D Street								
San Jacinto Avenue	EB	LTR	0.40	13.1	B	0.75	28.9	D
	WB	LTR	0.13	10.4	B	0.38	15.0	B
D Street	NB	L	0.01	9.4	A	0.01	11.1	B
		TR	0.53	15.5	C	0.63	22.4	C
	SB	L	0.10	10.1	B	0.26	13.6	B
		TR	0.51	14.6	B	0.72	25.3	D
Overall Intersection		-		**14.0**	**B**		**23.2**	**C**
San Jacinto Avenue at Redlands Avenue								
San Jacinto Avenue	EB	L	0.12	10.2	B	0.18	12.3	B
		TR	0.10	8.8	A	0.13	10.6	B
	WB	LT	0.31	11.9	B	0.35	14.5	B
		R	0.06	8.3	A	0.10	10.0	A
Redlands Avenue	NB	LT	0.24	10.5	B	0.81	30.6	D
		R	0.12	8.6	A	0.44	12.4	B
	SB	L	0.03	9.3	A	0.22	12.1	B
		TR	0.34	11.4	B	0.27	11.6	B
Overall Intersection		-		**10.6**	**B**		**18.5**	**C**
SR-74 at C Street								
SR-74	EB	L	0.22	9.5	A	0.36	12.1	B
	WB	L	0.00	9.4	A	0.02	10.1	B
C Street	NB	LTR	0.01	10.2	B	0.04	11.3	B
	SB	LT	0.15	63.8	F	0.50	225.0	F
		R	0.13	10.8	B	0.44	15.0	B

Table 2: 2008 Existing Levels of Service (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
6th Street at C Street								
6th Street	EB	LTR	0.00	7.2	A	0.00	7.3	A
	WB	LTR	0.00	7.2	A	0.00	7.2	A
C Street	NB	LTR	0.00	8.5	A	0.03	9.4	A
	SB	LTR	0.01	8.9	A	0.05	9.1	A
6th Street at D Street								
6th Street	EB	LTR	0.04	10.7	B	0.07	13.0	B
	WB	LTR	0.01	10.7	B	0.06	12.5	B
D Street	NB	LTR	0.00	7.4	A	0.01	7.9	A
	SB	LTR	0.00	7.7	A	0.01	7.7	A
7th Street at C Street								
7th Street	EB	LTR	0.00	7.3	A	0.00	7.3	A
	WB	LTR	0.00	7.3	A	0.01	7.3	A
C Street	NB	LTR	0.01	8.9	A	0.02	8.9	A
	SB	LTR	0.00	8.8	A	0.02	9.4	A
7th Street at D Street								
7th Street	EB	LTR	0.04	11.0	B	0.13	14.6	B
	WB	LTR	0.02	11.1	B	0.11	14.9	B
D Street	NB	LTR	0.00	7.4	A	0.01	7.8	A
	SB	LTR	0.00	7.7	A	0.00	7.8	A
7th Street at Perris Boulevard								
7th Street	EB	LTR	0.04	11.4	B	0.11	14.3	B
	WB	LTR	0.01	10.8	B	0.11	12.9	B
Perris Boulevard	NB	LTR	0.00	7.7	A	0.00	7.9	A
	SB	LTR	0.00	7.8	A	0.01	7.7	A
South Perris Station								
Unsignalized								
Bonnie Drive at Southbound I-215 Ramps								
Bonnie Drive	EB	L	0.02	23.4	C	0.04	23.6	C
		R	0.24	15.4	C	0.91	66.7	F
Southbound I-215 Ramps	NB	L	0.32	10.7	B	0.32	12.4	B
SR-74 at Northbound I-215 Off Ramp								
SR-74	EB	L	0.00	8.3	A	0.02	8.1	A
Northbound I-215 Off-Ramp	SB	LR	0.42	21.8	C	0.44	23.2	C

Table 2: 2008 Existing Levels of Service (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
SR-74 at Sherman Road								
SR-74	EB	L	0.07	11.7	B	0.06	9.8	A
	WB	L	0.09	9.5	A	0.15	12.1	B
Sherman Road	NB	L	0.42	92.9	F	0.44	143.2	F
		R	0.17	11.7	B	0.31	15.9	C
	SB	LR	0.25	22.7	C	0.32	51.1	F

Notes:

1. "Mvt." refers to the specific intersection approach lane(s) and how the lane(s) operate and/or specific pavement striping. TR is a combined through- right turn lane(s), R or L refers to exclusive right- or left-turn movement lane(s), and LTR is a mixed lane(s) that allows for all movement types. It is possible that lane uses change in different time periods. For example, a very heavy right-turn volume may exceed a single lane capacity, thus forcing drivers to use (or "share") an adjacent lane for additional travel capacity in the AM, but as flows decrease later in the day, a shared lane may not be needed. DefL is a defacto left-turn lane automatically input by the HCS software when the volume of left turns is high enough to create a "natural" turn lane to accommodate the demand; through movements would then use the adjacent travel lane.
2. V/C is the volume-to-capacity ratio for the Mvt. listed in the first column. Values above 1.0 indicate an excess of demand over capacity.
3. Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group listed in the Mvt. Column as noted in the 2000 HCM - TRB.
4. The delay calculations for signalized intersections represent the average control delay experienced by all vehicles that arrive in the analysis period, including delays incurred beyond the analysis period when the lane group is saturated.
5. LOS for unsignalized intersections is based upon total average delay per vehicle (sec/veh) for each lane group listed in the Mvt. column as noted in the 2000 HCM -TRB.

C. 2012 TRAFFIC CONDITIONS WITHOUT THE PROJECT

The analysis of the 2012 future traffic conditions without the proposed project serves as the baseline against which opening year impacts of the project are compared. Because only four of the six proposed stations would be operational by the opening year (Hunter Park, Moreno Valley/March Field, Downtown and South Perris Stations), these analyses only concern study locations in the vicinity of those four stations. The future conditions with the project include the traffic volume increases expected due to an overall growth in traffic through and within the study area, and major approved land developments and roadway system changes scheduled to be occupied or implemented by the 2012 opening year for the PVL.

A generally applied background growth rate of two percent per year, resulting in an overall growth of approximately eight percent by 2012, was assumed for the Hunter Park and Moreno Valley/March Field station areas per the guidelines of the Cities of Riverside and Moreno Valley. For Downtown and South Perris stations, which are within the City of Perris, an annual background growth rate of three percent (approximately 13 percent over four years) was used, per City guidelines.

No major developments are planned in the area surrounding the Hunter Park Station by 2012.[1] However, ~~two~~ three major improvement projects involving railroad grade separations at Columbia and Iowa Avenues and 3rd Street are planned to be completed ~~in 2009 and 2011~~prior to 2013~~, respectively~~. The grade separation of Columbia Avenue and the BNSF railroad tracks

[1] According to the City of Riverside, the Hunter Business Park development is not fully built out. However, this development is not expected to be a significant generator of traffic due to its designated industrial/warehouse land use and the size of the remaining parcels.

would raise Columbia Avenue over the BNSF railroad between La Cadena Drive and Iowa Avenue. Similarly, the Iowa Avenue grade-separation project would raise Iowa Avenue over the BNSF tracks between Palmyrita Avenue and Spring Street. These projects are not expected to affect the traffic volumes in the area, and would neither increase nor reduce roadway capacity.

A number of approved development projects were identified by the City of Moreno Valley within the Moreno Valley/March Field Station area:

1. Centerpointe Industrial and Business Park project is located northeast of Cactus Avenue and Graham Street, and will be a 162-acre business park.

2. Meridian Business Park (formerly known as March Business Center) project is located southwest of I-215 and Alessandro Boulevard on a 1,290-acre site. The project land uses consist primarily of industrial park, warehousing, research and development, and associated business support uses. It is planned to be constructed in three phases, two of which would be completed by 2012.

3. Gateway Center is an industrial/business park project on a 25-acre site on Day Street south of Alessandro Boulevard.

4. Cactus/Commerce Commercial Center is a 16,000-square-foot commercial/retail development on Cactus Avenue between Day and Elsworth Streets.

The trip generation and assignment for these projects were taken from the *Cactus Avenue and Commerce Center Drive Commercial Center Traffic Impact Study* (Urban Crossroads, 2008).

5. March Lifecare Campus~~Village~~ is a development project including a mix of healthcare and ancillary uses, including hospitals, general and specialty medical offices, medical retail, research and education, a wellness center, senior center, independent/assisted-living facilities, skilled nursing facilities, and related support facilities. The project will be developed in five planning areas, of which the first two are expected to be developed by 2011, and include a 50-bed hospital, 660 units of institutional residential, 190,000 square feet of medical office, 200,000 square feet of research and education, and 210,000 square feet of retail land uses. The remaining planning areas will be developed over the next 20 to 25 years. Therefore, the trip generation and vehicle assignments associated with only the first two planning areas for this project were incorporated into the 2012 future traffic volumes without the project. Vehicle trip generation and assignments for this development project were obtained from the *March Lifecare Campus Specific Plan Draft Program Environmental Impact Report* (Applied Planning Inc., 2009).

~~6. approximately 30 acres of medical office/research and education/institutional residential land uses and a 60-bed hospital.~~

~~The trip generation and assignment for these projects were taken from the *Cactus Avenue and Commerce Center Drive Commercial Center Traffic Impact Study* (Urban Crossroads, 2008).~~
As previously noted, the AM analysis hour for the PVL is earlier than the AM peak hour analyzed for these development projects. It was determined that the trip distribution for the 6-7 AM time period (PVL AM analysis hour) corresponds to 35 percent of the typical AM peak hour traffic volumes based on the *Southern California Association of Governments Year 2000 Post-Census Regional Travel Survey.* Therefore, AM peak hour trip generation for the above projects was reduced by 65 percent.

In addition to the development projects, a major roadway improvement project to widen Cactus Avenue and to reconfigure its intersection with southbound I-215 ramps (March Joint Powers Authority Cactus Avenue Extension/Railroad Bridge Widening project) is planned to be completed by 2012 within the Moreno Valley/March Field study area. Upon the completion of this project Cactus Avenue would provide two east and westbound through lanes, one westbound left-turn lane, and one eastbound right-turn lane. In addition, southbound through and left-turn movements from the I-215 off-ramp onto Cactus Avenue would be no longer allowed.

Two approved projects are to be completed in the Downtown Perris Station study area by 2012:

1. The Venue at Perris development project is located on the northeast corner of I-215 and Redlands Avenue. It will include a movie theater, home improvement superstore, discount superstore, and other retail space. The trip generation for this project was developed based on rates for Land Use 862 ("Home Improvement Superstore"), 813 ("Free-Standing Discount Superstore"), 820 ("Shopping Center"), and 444 ("Movie Theater with Matinee") from the *Institute of Transportation Engineers (ITE) Trip Generation, 7th Edition*. Traffic was assigned based on existing travel patterns.

2. Perris Marketplace project is a 520,000-square-foot retail center located on the west side of Perris Boulevard, north of Nuevo Road. It includes a discount superstore with a gas station, a home improvement store, restaurants, and specialty retail space. Vehicle trip generation and assignments for this project were obtained from the *Perris Marketplace Traffic Study* (LSA Associates, Inc., 2006). This study recommends reconfiguration of the Nuevo Road/Perris Boulevard intersection to mitigate the impacts of the project as follows:
   - Provide two left-turn, two through, one through/right-turn, and one right-turn lane for eastbound Nuevo Road
   - Provide one left-turn, three through, and one right-turn lane for northbound Perris Boulevard
   - Provide two left-turn, three through, and two right-turn lanes for southbound Perris Boulevard
   - Westbound Nuevo Road approach remains the same as existing conditions.

   It is assumed that these mitigation measures were in place by 2009.

Roadway system changes by 2012 within the Downtown Perris Station area include the signalization of the C Street/SR-74 intersection, which is currently stop-controlled, and the widening and restriping of the ~~and~~ D and C Street~~/~~ intersections at San Jacinto Avenue. ~~intersections, which are currently stop-controlled.~~

Two approved projects were identified in the South Perris Station study area:

1. Towne Center project is a 470,000-square-foot retail center located in the southeastern portion of the City of Perris, on the southeast corner of I-215 and Ethanac Road. It would be anchored by a 220,000-square-foot big-box store, and would also include specialty retail space, restaurants, and a hotel. The development is expected to be opened in 2009.[2] The trip generation and assignment for this project were obtained from the *Towne Center Traffic Impact Study* (Albert A. Webb Associates, 2007).

[2] This development was not completed at the time of the traffic counts in the South Perris Station study area in 2008.

2. Perris Crossing (formerly known as Ethanac Road Retail Center) development is a 625,000-square-foot retail center located on the north side of Ethanac Road, west of Case Road. The retail center would include approximately 600,000 square feet of retail and restaurant uses, a service station, and 24,000 square feet of office uses. The *Ethanac Road Retail Center Traffic Study* (LSA Associates, Inc., 2005) was used in determining the trip generation and assignment for this development.

   Although this project is within the South Perris Station area, no project-generated trips were added to the study intersections as project traffic to/from I-215 and SR-74 would be able to access these roadways via Ethanac Road without traversing through the study intersections. However, ten percent of in and outbound trips traveling to/from the north via Case Road were assigned to intersections in the Downtown Perris area.

The trip generation for the four projects within the Downtown and South Perris Station areas was included only in the PM analysis hour traffic volumes, as they all consist of retail/commercial land uses, which would not generate traffic as early as the PVL AM analysis hour.

2012 Future traffic volumes without the project are presented in Figures 13 through 16 (Appendix D contains background project trip assignments).

Figure 13: Hunter Park Station Area 2012 Future Traffic Volumes without the Project

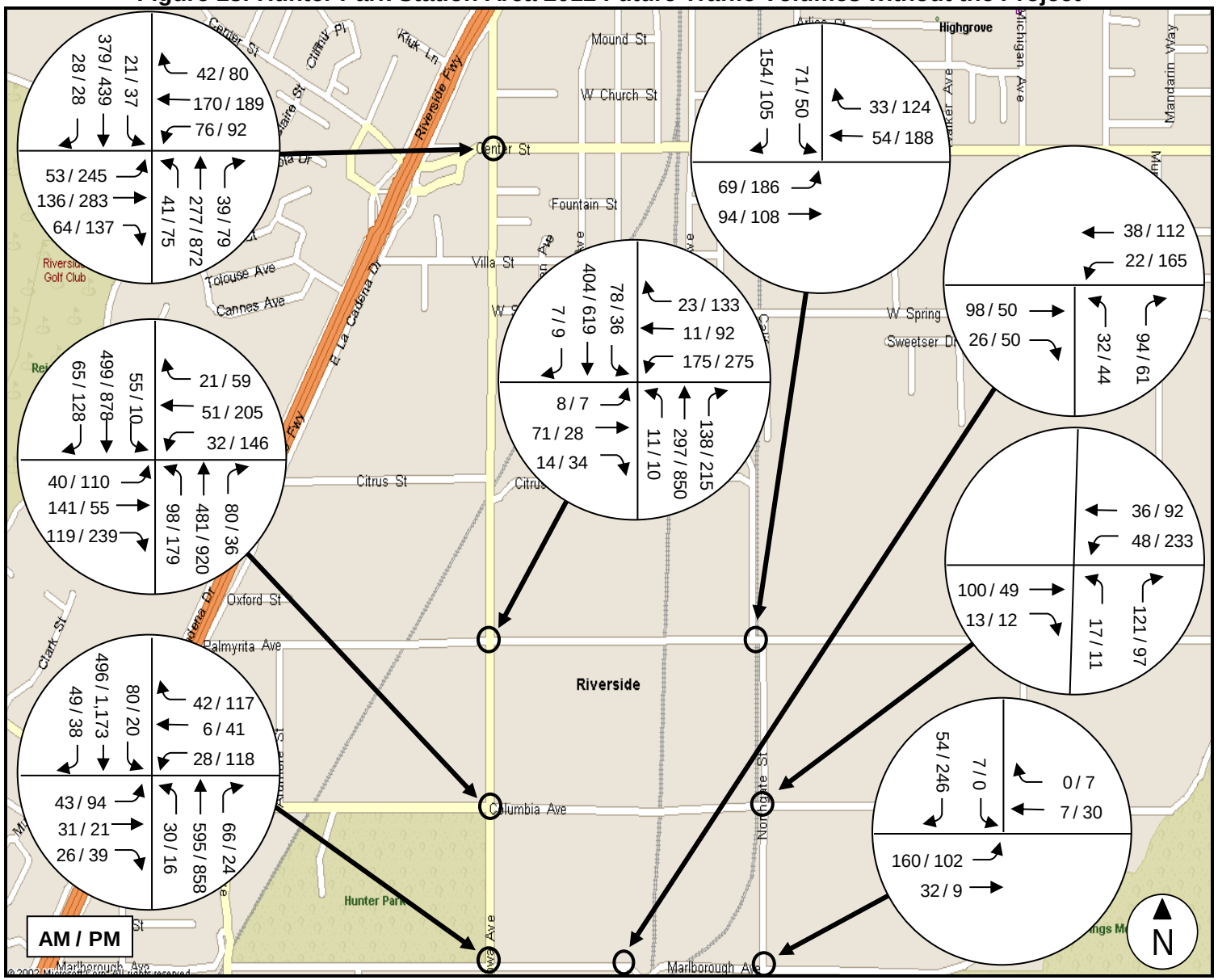


Figure 14: Moreno Valley/March Field Station Area 2012 Future Traffic Volumes without the Project[NS1]

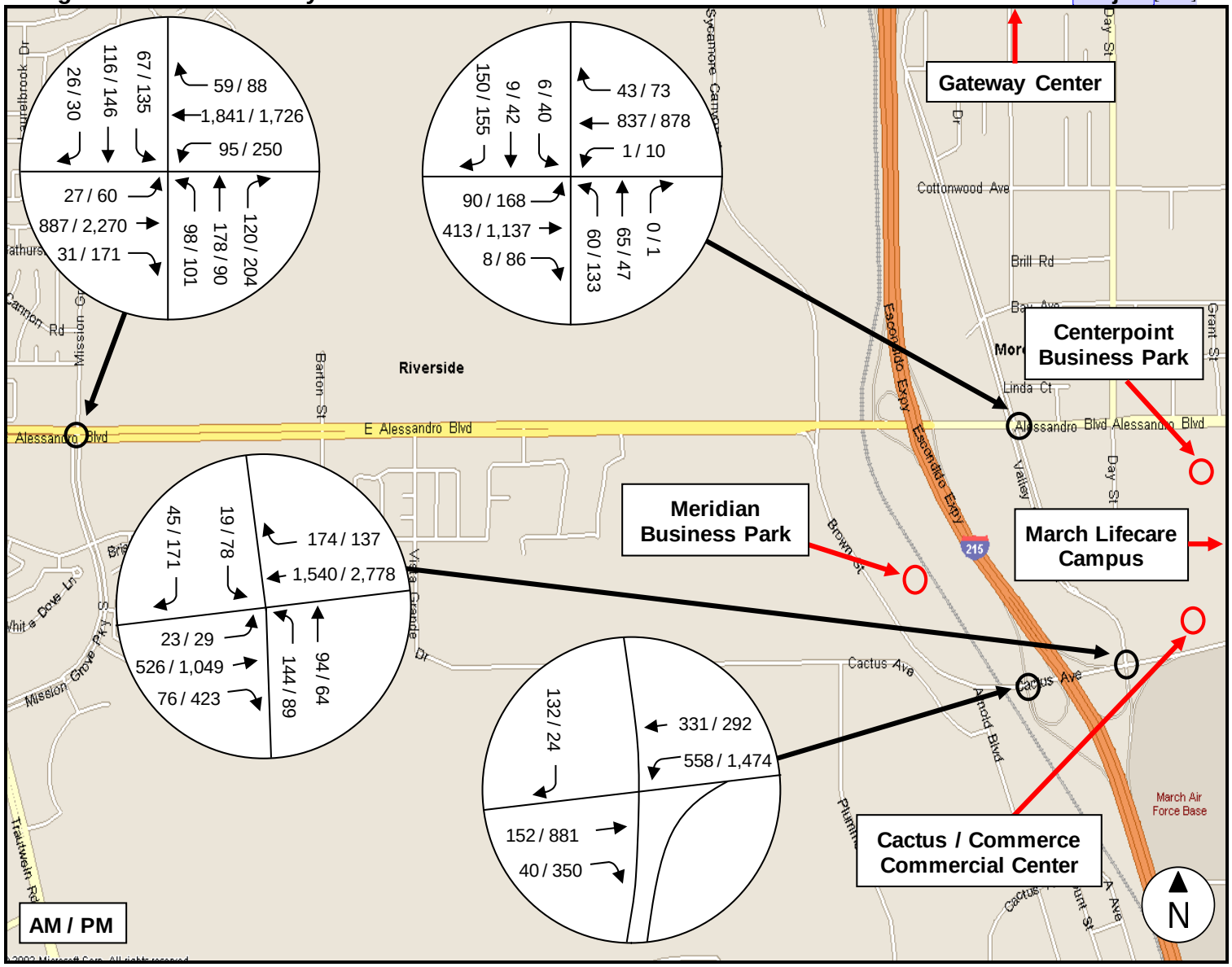


Figure 15: Downtown Perris Station Area 2012 Future Traffic Volumes without the Project

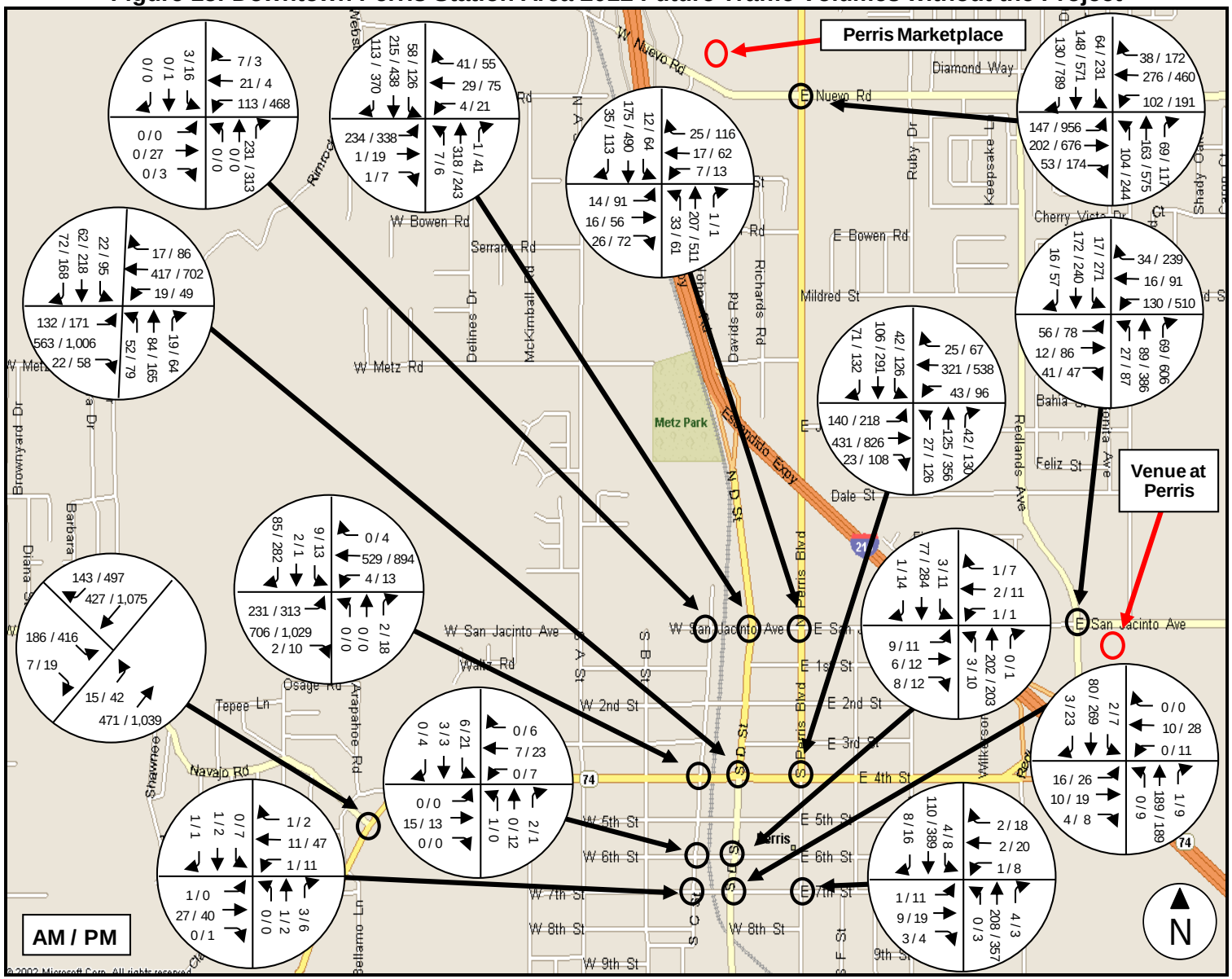
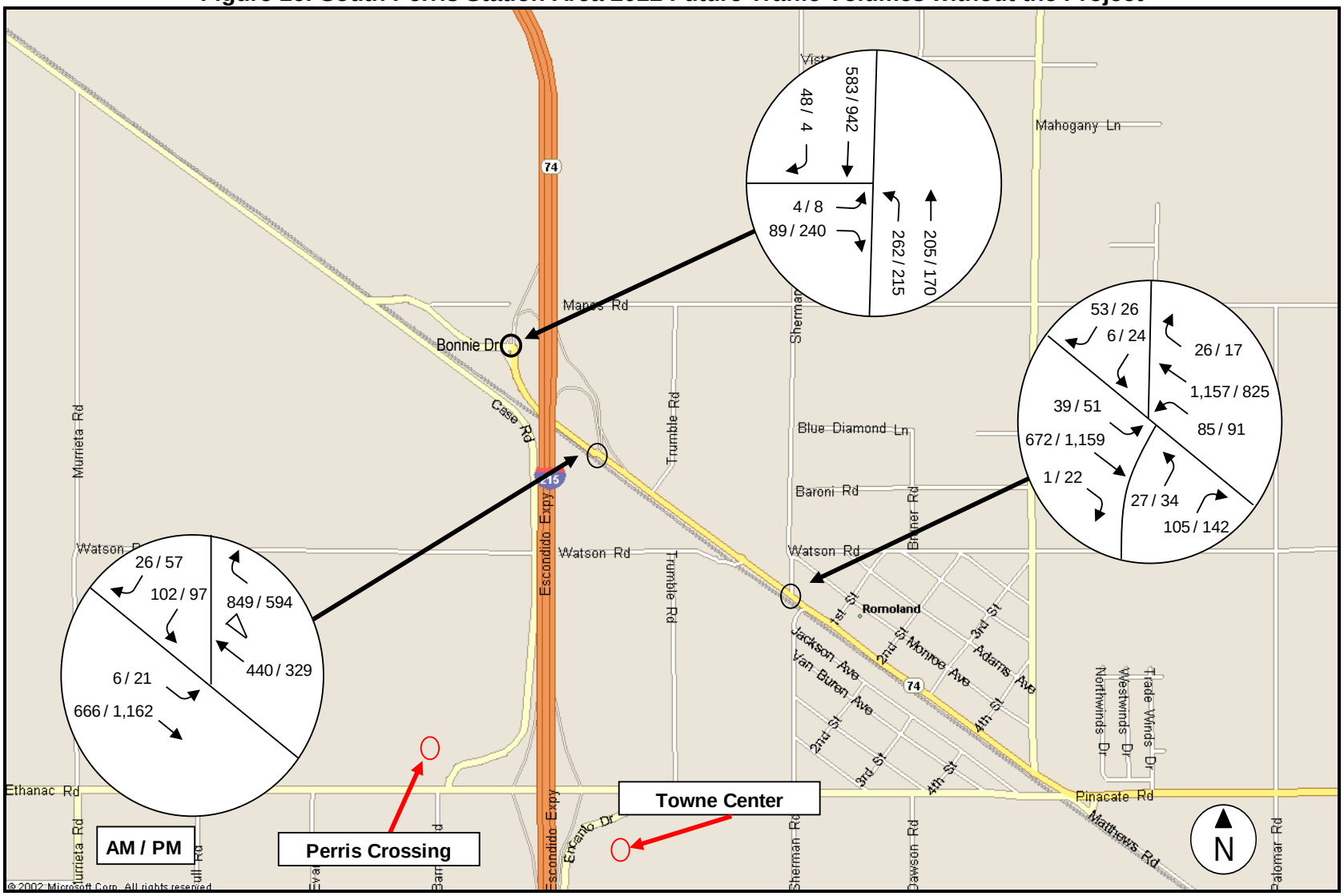


Figure 16: South Perris Station Area 2012 Future Traffic Volumes without the Project



2012 Future traffic levels of service without the project were determined based on the projected increase in traffic volumes and changes in roadway geometrics (see Table 3). A summary of the findings is discussed below.

Hunter Park Station

All movements at the study intersections would continue to operate at acceptable levels of service, with the exception of Iowa Avenue's northbound through movement at Center Street, which would worsen from LOS E (existing) to F (future without the project) during the PM analysis hour, resulting in the overall intersection level of service to deteriorate from LOS D to E.

Moreno Valley/March Field Station

All movements at the intersection of Alessandro Boulevard and Old 215 would continue to operate at acceptable levels. Several movements at the remaining three intersections, however, would worsen including:

- At Alessandro Boulevard and Mission Grove Parkway, westbound Alessandro and southbound Mission Grove Parkway's left-turn movements would incur additional delay within LOS E during the PM analysis hour.
- At the intersection of Cactus Avenue and southbound I-215 ramps, westbound Cactus Avenue's left-turn movement and the overall intersection would deteriorate from LOS C (existing) to F (future without the PVL project) during the PM analysis hour.
- Westbound Cactus Avenue's through movement would worsen from LOS E to F at Old 215, and the overall intersection level of service would deteriorate from LOS D to F during the PM analysis hour.

Downtown Perris Station

The levels of service for all movements would remain within acceptable limits during the AM analysis hour. However, several movements would deteriorate to poor levels of service during the PM analysis hour, including:

- At Nuevo Road and Perris Boulevard, eastbound Nuevo Road's left-turn movement would deteriorate from LOS C (existing) to F (future without the project); southbound Perris Boulevard's left-turn movement would deteriorate from LOS C to E. The overall intersection level of service would deteriorate from LOS C to E.
- At SR-74 and D Street, eastbound SR-74's through/right-turn movements would deteriorate from LOS C to E. Northbound D Street's through/left-turn movements would worsen from LOS E to F, and southbound left-turn movement would deteriorate from LOS D to F. The overall intersection operations would also deteriorate from LOS C to F.
- At the intersection of SR-74 and Perris Boulevard, Perris Boulevard's ~~east~~southbound left-turn movement would deteriorate from LOS C to F.
- ~~Westbound San Jacinto Avenue approach at C Street would worsen from LOS C to E.~~
- At San Jacinto Avenue and D Street, San Jacinto Avenue's eastbound left-turn and D Street's southbound through movements would deteriorate from LOS D to F, and the overall intersection level of service would deteriorate from LOS C to E.
- At San Jacinto and Redlands Avenues, San Jacinto Avenue's westbound through/left-turn movements would deteriorate from LOS B to F. Northbound Redlands Avenue's through/left-turn and right-turn movements would deteriorate from LOS D and B to LOS F, respectively. Southbound Redlands Avenue's left-turn movement would deteriorate from LOS B to F.

South Perris Station

Most movements would continue to operate within acceptable levels of service. However, the movements that currently operate at LOS F would worsen by incurring significance increases in delay (i.e., delay increases of more than two seconds), and SR-74 at southbound Sherman Road would deteriorate from LOS C to E during the PM analysis hour.

Table 3: 2012 Future Levels of Service without the Project

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Hunter Park Station								
Signalized								
Center Street at Iowa Avenue								
Center Street	EB	LTR	0.46	37.6	D	0.92	45.8	D
	WB	L	0.25	31.2	C	0.43	32.3	C
		T	0.52	34.5	C	0.83	52.8	D
		R	0.07	29.6	C	0.20	30.4	C
Iowa Avenue	NB	L	0.31	43.9	D	0.38	32.0	C
		T	0.52	35.8	D	1.21	133.3	F
		R	0.09	31.7	C	0.14	23.1	C
	SB	L	0.12	42.1	D	0.39	38.7	D
		T	0.55	36.2	D	0.60	28.7	C
		R	0.05	31.3	C	0.05	23.8	C
Overall Intersection		-		**35.8**	**D**		**73.3**	**E**
Palmyrita Avenue at Iowa Avenue								
Palmyrita Avenue	EB	LT	0.13	11.6	B	0.09	13.6	B
		R	0.02	10.9	B	0.06	13.4	B
	WB	L	0.46	14.1	B	0.89	38.6	D
		TR	0.04	11.0	B	0.36	15.2	B
Iowa Avenue	NB	L	0.16	32.0	C	0.09	24.7	C
		T	0.33	19.9	B	0.80	21.0	C
		R	0.22	19.3	B	0.28	14.1	B
	SB	L	0.43	28.4	C	0.32	26.3	C
		T	0.45	19.4	B	0.62	16.8	B
		R	0.01	16.5	B	0.01	12.5	B
Overall Intersection		-		**18.5**	**B**		**21.5**	**C**
Columbia Avenue at Iowa Avenue								
Columbia Avenue	EB	L	0.22	42.0	D	0.43	32.2	C
		T	0.34	32.2	C	0.18	28.4	C
		R	0.16	30.4	C	0.43	30.6	C
	WB	L	0.19	41.8	D	0.62	36.2	D
		T	0.07	29.6	C	0.38	29.8	C
		R	0.04	29.3	C	0.14	28.2	C
Iowa Avenue	NB	L	0.44	42.4	D	0.71	41.5	D
		T	0.47	29.9	C	0.89	36.4	D
		R	0.11	26.4	C	0.05	20.1	C
	SB	L	0.28	40.9	D	0.07	35.3	D
		T	0.58	31.7	C	0.88	37.7	D
		R	0.09	26.2	C	0.15	22.3	C
Overall Intersection		-		**32.3**	**C**		**35.4**	**D**

Table 3: 2012 Future Levels of Service without the Project (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Marlborough Avenue at Iowa Avenue								
Marlborough Avenue	EB	L	0.32	27.5	C	0.45	28.6	C
		TR	0.43	30.4	C	0.30	30.8	C
	WB	L	0.19	26.5	C	0.60	31.7	C
		T	0.05	27.5	C	0.29	30.7	C
		R	0.19	28.3	C	0.44	32.1	C
Iowa Avenue	NB	L	0.16	26.3	C	0.15	32.6	C
		T	0.51	16.7	B	0.67	18.7	B
		R	0.06	13.7	B	0.02	12.8	B
	SB	L	0.26	22.0	C	0.18	32.8	C
		T	0.43	14.8	B	0.87	26.0	C
		R	0.04	12.4	B	0.03	12.8	B
Overall Intersection		-		**17.8**	**B**		**24.3**	**C**
Unsignalized								
Palmyrita Avenue at Northgate Street								
Palmyrita Avenue	EB	L	0.06	7.6	A	0.23	9.4	A
Northgate Street	SB	L	0.15	11.9	B	0.31	30.3	D
		R	0.20	9.4	A	0.17	10.4	B
Columbia Avenue at Northgate Street								
Columbia Avenue	EB	T	0.11	8.8	A	0.05	8.8	A
		TR	0.14	8.8	A	0.08	8.7	A
	WB	L	0.14	9.6	A	0.56	14.8	B
		T	0.10	8.7	A	0.20	8.9	A
Northgate Street	NB	L	0.04	8.2	A	0.02	8.6	A
		R	0.26	8.6	A	0.15	8.5	A
Overall Intersection		-		**8.8**	**A**		**11.8**	**B**
Marlborough Avenue at Northgate Street								
Marlborough Avenue	EB	LT	0.20	7.8	A	0.08	7.5	A
Northgate Street	SB	LR	0.12	9.8	A	0.34	10.4	B
Marlborough Avenue at Rustin Avenue								
Marlborough Avenue	WB	L	0.03	7.8	A	0.18	8.1	A
Rustin Avenue	NB	LR	0.36	12.3	B	0.31	16.0	C
Moreno Valley/March Field Station								
Signalized								
Cactus Avenue at Southbound I-215 Ramps								
Cactus Avenue	EB	T	0.18	12.9	B	0.79	21.5	C
	WB	L	0.94	35.1	D	1.73	349.1	F
		T	0.13	0.0	A	0.08	0.0	A
Overall Intersection		-		**20.7**	**C**		**200.3**	**F**

[NS2]

Table 3: 2012 Future Levels of Service without the Project (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Cactus Avenue at Old 215								
Cactus Avenue	EB	L	0.27	13.8	B	0.36	14.1	B
		TR	0.41	13.4	B	0.71	16.2	B
	WB	T	0.98	38.3	D	1.48	237.4	F
		R	0.11	11.4	B	0.16	10.4	B
Old 215	NB	L	0.31	15.3	B	0.25	19.8	B
		TR	0.13	13.9	B	0.09	18.5	B
	SB	L	0.06	13.5	B	0.21	19.4	B
		TR	0.09	13.6	B	0.30	20.2	C
Overall Intersection		-		**28.1**	**C**		**145.6**	**F**
Alessandro Boulevard at Old 215								
Alessandro Boulevard	EB	L	0.33	29.1	C	0.51	38.4	D
		T	0.57	19.9	B	0.92	35.7	D
	WB	L	0.00	27.3	C	0.06	35.5	D
		T	0.75	23.6	C	0.76	26.0	C
Old 215	NB	L	0.49	32.8	C	0.63	40.9	D
		T	0.25	30.3	C	0.11	33.9	C
	SB	L	0.04	29.2	C	0.19	33.8	C
		T	0.03	29.2	C	0.11	33.9	C
Overall Intersection		-		**23.6**	**C**		**32.4**	**C**
Alessandro Boulevard at Mission Grove Parkway								
Alessandro Boulevard	EB	L	0.18	44.3	D	0.38	53.4	D
		T	0.40	17.9	B	0.99	41.7	D
		R	0.03	14.6	B	0.16	15.1	B
	WB	L	0.36	45.2	D	0.72	59.5	E
		T	0.88	28.7	C	0.76	23.1	C
		R	0.08	15.0	B	0.11	14.7	B
Mission Grove Parkway	NB	L	0.39	45.5	D	0.35	50.9	D
		T	0.76	54.4	D	0.38	46.8	D
		R	0.46	41.8	D	0.48	48.1	D
	SB	L	0.56	50.1	D	0.83	78.2	E
		TR	0.34	40.2	D	0.32	45.9	D
Overall Intersection		-		**29.7**	**C**		**37.2**	**D**
Downtown Perris Station								
Signalized								
SR-74 at Navajo Road								
SR-74	EB	L	0.13	26.9	C	0.22	30.5	C
		T	0.26	4.8	A	0.51	5.2	A
	WB	TR	0.38	10.9	B	1.01	42.9	D
Navajo Road	SB	L	0.26	19.2	B	0.71	21.5	C
		R	0.01	17.9	B	0.03	24.2	C
Overall Intersection		-		**9.9**	**A**		**27.8**	**C**

[NS3]

Table 3: 2012 Future Levels of Service without the Project (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
SR-74 at C Street								
SR-74	EB	L	0.61	21.2	C	0.90	45.7	D
		TR	0.49	9.6	A	0.76	16.2	B
	WB	L	0.04	24.2	C	0.09	23.9	C
		TR	0.79	25.4	C	0.92	32.6	C
C Street	NB	L	0.00	24.0	C	0.00	23.5	C
		TR	0.01	19.7	B	0.07	19.5	B
	SB	L	0.08	24.4	C	0.09	23.9	C
		TR	0.32	21.4	C	0.79	35.1	D
Overall Intersection		-		**17.6**	**B**		**27.5**	**C**
SR-74 at D Street								
SR-74	EB	L	0.48	29.2	C	0.57	31.0	C
		TR	0.65	24.2	C	1.06	71.9	E
	WB	L	0.07	25.9	C	0.16	26.5	C
		TR	0.46	21.5	C	0.76	27.0	C
D Street	NB	LT	0.40	21.2	C	1.30	183.1	F
		R	0.02	18.1	B	0.09	18.6	B
	SB	LT	0.23	19.7	B	1.32	194.2	F
		R	0.07	18.5	B	0.17	19.2	B
Overall Intersection		-		**23.1**	**C**		**82.8**	**F**
SR-74 at Perris Boulevard								
SR-74	EB	L	0.59	29.9	C	0.77	42.1	D
		TR	0.44	17.1	B	0.70	20.6	C
	WB	L	0.18	25.0	C	0.56	36.4	D
		TR	0.33	16.3	B	0.59	22.4	C
Perris Boulevard	NB	L	0.11	18.3	B	0.76	39.0	D
		T	0.32	19.7	B	0.76	30.2	C
		R	0.06	18.0	B	0.19	20.0	C
	SB	L	0.15	18.7	B	1.24	186.8	F
		T	0.25	19.2	B	0.63	25.6	C
		R	0.08	18.1	B	0.17	19.9	B
Overall Intersection		-		**19.1**	**B**		**33.6**	**C**
San Jacinto Avenue at Perris Boulevard								
San Jacinto Avenue	EB	L	0.11	29.6	C	0.47	38.1	D
		TR	0.27	30.7	C	0.29	27.0	C
	WB	L	0.06	29.3	C	0.08	34.8	C
		T	0.14	29.8	C	0.18	26.1	C
		R	0.17	30.1	C	0.28	27.0	C
Perris Boulevard	NB	L	0.45	35.8	D	0.45	41.6	D
		TR	0.36	11.7	B	0.90	44.1	D
	SB	L	0.14	32.6	C	0.47	41.8	D
		TR	0.28	11.0	B	0.93	48.2	D
Overall Intersection		-		**16.3**	**B**		**41.7**	**D**

Table 3: 2012 Future Levels of Service without the Project (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Nuevo Road at Perris Boulevard								
Nuevo Road	EB	L	0.37	34.2	C	1.39	214.1	F
		T	0.31	27.0	C	0.83	32.9	C
		R	0.08	25.1	C	0.25	22.3	C
	WB	L	0.25	33.2	C	0.55	32.4	C
		TR	0.25	26.4	C	0.47	26.5	C
		R	0.05	24.9	C	0.30	25.7	C
Perris Boulevard	NB	L	0.40	34.0	C	0.88	52.2	D
		T	0.17	27.9	C	0.56	25.3	C
		R	0.09	27.4	C	0.18	22.5	C
	SB	L	0.22	38.7	D	0.95	66.0	E
		T	0.18	31.0	C	0.81	32.6	C
		R	0.05	15.3	B	0.52	16.7	B
Overall Intersection		-		**29.3**	**C**		**66.1**	**E**
Unsignalized								
San Jacinto Avenue at C Street								
San Jacinto Avenue	EB	LTR	0.00	7.7	A	0.06	9.1	A
	WB	LTR	0.20	9.0	A	0.77	23.2	C
C Street	NB	L	0.00	7.6	A	0.00	8.8	A
		TR	0.30	8.7	A	0.52	13.9	B
	SB	LTR	0.01	7.9	A	0.04	9.9	A
Overall Intersection		-		**8.8**	**A**		**18.8**	**C**
San Jacinto Avenue at D Street								
San Jacinto Avenue	EB	L	0.53	17.9	C	0.94	59.2	F
		T	0.00	9.2	A	0.05	11.1	B
		R	0.00	8.3	A	0.02	9.8	A
	WB	L	0.01	10.9	B	0.07	12.7	B
		TR	0.16	11.3	B	0.30	14.7	B
D Street	NB	L	0.01	9.7	A	0.02	11.4	B
		TR	0.63	19.3	C	0.73	29.3	D
	SB	L	0.12	10.5	B	0.31	14.8	B
		T	0.00	9.2	A	1.02	74.8	F
		R	0.00	8.3	A	0.76	29.0	D
Overall Intersection		-		**15.4**	**C**		**47.7**	**E**
San Jacinto Avenue at Redlands Avenue								
San Jacinto Avenue	EB	L	0.14	10.7	B	0.26	16.5	C
		TR	0.11	9.3	A	0.41	18.8	C
	WB	LT	0.36	13.0	B	1.67	333.9	F
		R	0.07	8.6	A	0.58	21.6	C
Redlands Avenue	NB	LT	0.28	11.3	B	1.34	193.1	F
		R	0.14	9.0	A	1.56	284.2	F
	SB	L	0.04	9.5	A	0.87	51.3	F
		TR	0.40	12.6	B	0.44	18.2	C
Overall Intersection		-		**11.4**	**B**		**189.9**	**F**

[NS4]

Table 3: 2012 Future Levels of Service without the Project (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
6th Street at C Street								
6th Street	EB	LTR	0.00	7.2	A	0.00	7.3	A
	WB	LTR	0.00	7.2	A	0.00	7.2	A
C Street	NB	LTR	0.00	8.5	A	0.03	9.4	A
	SB	LTR	0.02	8.9	A	0.05	9.2	A
6th Street at D Street								
6th Street	EB	LTR	0.05	10.9	B	0.09	14.0	B
	WB	LTR	0.01	11.0	B	0.07	13.4	B
D Street	NB	LTR	0.00	7.4	A	0.01	7.9	A
	SB	LTR	0.00	7.7	A	0.01	7.8	A
7th Street at C Street								
7th Street	EB	LTR	0.00	7.3	A	0.00	7.3	A
	WB	LTR	0.00	7.3	A	0.01	7.3	A
C Street	NB	LTR	0.01	8.9	A	0.02	8.9	A
	SB	LTR	0.00	8.9	A	0.02	9.5	A
7th Street at D Street								
7th Street	EB	LTR	0.05	11.4	B	0.16	16.5	C
	WB	LTR	0.02	11.4	B	0.14	16.7	C
D Street	NB	LTR	0.00	7.4	A	0.01	7.9	A
	SB	LTR	0.00	7.7	A	0.01	8.0	A
7th Street at Perris Boulevard								
7th Street	EB	LTR	0.05	11.8	B	0.20	21.3	C
	WB	LTR	0.01	11.1	B	0.19	17.8	C
Perris Boulevard	NB	LTR	0.00	7.7	A	0.00	8.3	A
	SB	LTR	0.00	7.9	A	0.01	8.2	A
South Perris Station								
Unsignalized								
Bonnie Drive at Southbound I-215 Ramps								
Bonnie Drive	EB	L	0.03	27.8	D	0.06	28.4	D
		R	0.30	17.5	C	1.20	159.4	F
Southbound I-215 Ramps	NB	L	0.38	11.7	B	0.40	14.3	B
SR-74 at Northbound I-215 Off Ramp								
SR-74	EB	L	0.01	8.5	A	0.02	8.2	A
Northbound I-215 Off-Ramp	SB	LR	0.54	28.9	D	0.59	32.9	D
SR-74 at Sherman Road								
SR-74	EB	L	0.09	12.8	B	0.07	10.4	B
	WB	L	0.11	10.0	A	0.19	13.4	B
Sherman Road	NB	L	0.71	192.7	F	1.48	563.9	F
		R	0.21	12.5	B	0.39	18.6	C
	SB	LR	0.46	43.4	E	1.40	431.7	F

D. 2012 FUTURE CONDITIONS WITH THE PROJECT

Project Trip Generation and Modal Split

The PVL is expected to carry 3,705 passengers during each of the AM and PM peak periods in 2012 based on ridership projections. There would be four trains scheduled in the peak direction of travel (to Los Angeles in the morning, to Perris in the afternoon) during these periods, of which one would depart from South and Downtown Perris stations and two would depart from Moreno Valley/March Field and Hunter Park stations during the AM analysis hour (6 – 7 AM), and one would arrive at all stations during the PM analysis hour (5 – 6 PM). It was determined that approximately 50 percent of the AM peak period (5 - 7 AM) inbound (northbound) riders would travel on the two analysis-hour trains (leaving South Perris at 5:48 and 6:18 AM) based on existing ridership data on SCRRA/Metrolink Inland Empire-Orange County, San Bernardino, and Riverside lines. About 35 percent of the outbound (southbound) riders during the PM peak period (5 - 7 PM) would travel on the analysis-hour train. No outbound trains would arrive in the study area during the AM analysis hour, and no inbound trains would depart the area during the PM analysis hour. Table 4 shows the number of boarding and alighting passengers per station during the AM and PM analysis hours.

Table 4: AM and PM Analysis-Hour Ridership

Station	AM		PM	
	Boardings	Alightings	Boardings	Alightings
Hunter Park	241	110	83	182
Moreno Valley/March Field	205	93	70	154
Downtown Perris	134	29	45	207
South Perris	221	0	0	340
Total	**801**	**232**	**198**	**884**

Passengers would arrive at and depart from the stations by a number of travel modes, including private autos, transit buses, and walking. Auto trips would consist of drop-offs/pick-ups and park-and-ride drivers. The modal split of passengers was derived from the PVL ridership model, which included separate modal splits for passengers traveling to and from the area. However, the same modal split was applied to passengers traveling from the area during the AM and returning to the area during the PM peak period. Similarly, passengers arriving in the area during the AM and leaving during the PM exhibited the same modal splits. For example, for Hunter Park Station, it was assumed that 61 percent of boarding passengers and one percent of alighting passengers would travel to/from the station by auto during the AM peak period. During the PM peak period, 61 percent of alighting passengers and one percent of boarding passengers would travel by auto. The project modal splits are summarized in Table 5.

Table 5: Modal Split of Passengers for the AM Peak Period [3]

Station	Percentage of Passengers							
	Walk		Bus		Park-and-Ride		Drop-off/Pick-up	
	Boarding	Alighting	Boarding	Alighting	Boarding	Alighting	Boarding	Alighting
Hunter Park	4	57	9	42	61	1	26	0
Moreno Valley / March Field	0	0	19	99	63	1	18	0
Downtown Perris	20	40	10	52	56	8	14	0
South Perris	3	0	4	56	79	44	14	0

Using these modal splits, 300 drop-offs/pick-ups and 529 park-and-ride trips would be generated by the project within the overall study area during the AM analysis hour, and 302 drop-offs/pick-ups and 530 park-and-ride trips would be generated during the PM analysis hour. Drop-offs/pick-ups were assumed to make a complete in-and-out cycle within the analysis hours, i.e., arrive full and depart empty within the AM analysis hour, and arrive empty and depart full in the PM analysis hour. Table 6 shows the auto trips by station during the AM and PM analysis hours.

Table 6: Auto-Trip Generation

Station	AM					PM				
	Park-and-Ride		Drop-off/Pick-up		Bus	Park-and-Ride		Drop-off/Pick-up		Bus
	In	Out	In	Out		In	Out	In	Out	
Hunter Park	146	2	63	63	2	1	111	47	47	2
Moreno Valley / March Field	129	1	37	37	4	1	30	28	28	4
Downtown Perris	75	2	19	19	5	4	115	29	29	5
South Perris	174	0	31	31	3	0	268	47	47	3
Total	**524**	**5**	**150**	**150**	**14**	**6**	**524**	**151**	**151**	**14**

[3] PM modal splits are reversed.

Project Vehicle Assignment

The distribution of auto trips to the stations was developed from the station access maps based on the ridership model as follows:

Hunter Park Station

As discussed in Chapter 2.0 in the EIR, the Hunter Park Station would be located at one of three proximate sites. The Palmyrita Station option is proposed to be located on the east side of the SJBL main track east of Iowa Avenue between Palmyrita and Columbia Avenues. The proposed station access road for this option would connect Palmyrita and Columbia Avenues, and allow entry/exit to the station from both avenues. The Columbia Station option would be along the west side of the main track with only one entry/exit point from Columbia Avenue. The Marlborough Station option would also be located on the west side of the main track, with a single entry/exit point from Marlborough Avenue.

The project vehicle assignment for all three alternative locations for the Hunter Park Station would be the same in terms of approach routing to the station: Approximately 55 percent of drop-offs/pick-ups and 60 percent of park-and-ride passengers would come from areas north of the station. The majority of these passengers would approach the station from southbound Iowa Avenue (35 percent), with the remaining traveling southbound on Northgate Street or eastbound on Columbia Avenue. About 20 percent of drop-offs/pick-ups and park-and-ride passengers would come from the south via northbound Iowa Avenue. The remaining passengers would approach from the east along Palmyrita Avenue.

Vehicle assignments at the study intersections, particularly individual movements, would differ among the three alternative station locations due to the varying location of the proposed station access road, and are presented on Figures 17 through 19.

Moreno Valley/March Field Station

Almost all of the passengers would come from east of the station. Of the drop-offs/pick-ups, 30 percent would approach the station from westbound Alessandro Boulevard, 35 percent would approach from westbound Cactus Avenue, 15 percent would approach from southbound I-215, and 20 percent would approach from northbound I-215. Park-and-ride passengers would travel westbound on Alessandro Boulevard (35 percent) and Cactus Avenue (25 percent), southbound on I-215 (20 percent) and Old 215 (five percent), or northbound on I-215 (15 percent).

Downtown Perris Station

Approximately 40 percent of drop-offs/pick-ups and 30 percent of park-and-ride passengers would approach the station from the north via southbound Perris Boulevard, 35 percent of park-and-ride passengers and 25 percent of drop-offs/pick-ups would approach from the west via eastbound SR-74, and ten percent of each would approach from the east via westbound SR-74 and from the south via D Street. The remaining would approach from the northwest via A Street.

South Perris Station

The majority of the passengers would come from areas south of the station via I-215 (50 percent of park-and-ride passengers and 30 percent of drop-offs/pick-ups) or by following Murrieta and Goetz Roads to Case Road (15 percent of park-and-ride passengers and 25 percent of drop-offs/pick-ups). The remaining would come from the east via SR-74.

The assignment of vehicle trips generated by the PVL project during the AM and PM analysis hours are presented on Figures 17 through 22 (Appendix E includes station access maps). Overall, the increases in traffic would less than significant in relation to the existing load and capacity of the roadways at most locations (less than five percent increase); however, traffic increases would result in significant impacts in terms of added congestion at a few intersections.

Railroad Crossings

In addition to impacts at key intersections that would experience increases in traffic volumes as a result of project-generated trips, the PVL could also result in impacts at railroad crossings by creating additional delays to vehicles that would be stopped during periods of train movements.[4] However, these additional delays would not be considered significant considering that the project would operate with twelve trains per day and only one train during the peak traffic hours in 2012, and that the wait time of vehicular traffic (30 seconds for typical operations) would not be any more disruptive to traffic operations than a single red phase of a typical traffic signal cycle.

As noted in Chapter 2.0 in the EIR, the project would make improvements at ~~fifteen~~several existing grade crossings including the installation of new signals~~ at several of them~~. These signals would be placed to improve safety and meet jurisdictional requirements, and would remain inactive (i.e., display a steady green signal for vehicular traffic) unless a train is detected. Therefore, no significant delays would be expected due to the installation of the crossing signals.

Further, ~~two existing grade railroad crossings, Poarch Road in Riverside and 6th Street in downtown Perris, are planned to be permanently closed~~ as part of the PVL project, the existing grade railroad crossing at Poarch Road in Riverside is planned to be closed to the public with access by emergency vehicles only (with a locked gate).[5] Poarch Road is an unimproved dirt road that provides alternate access to a small number of residences and terminates approximately half a mile north of the railroad crossing. It connects with Morton Road via Gernert Road to the south, and provides access to an apartment complex and connection to Box Springs Road. The railroad crossing is directly across from the northbound I-215 on-ramp, and thus, is mostly used by drivers wanting to bypass the traffic on Box Springs Road to access northbound I-215. The closure of the Poarch Road crossing to the public is not expected to significantly affect the traffic volumes in the area, but may present an inconvenience to some residents.

In addition, as part of the PVL project, the existing grade railroad crossing at 6th Street in downtown Perris is planned to be closed to vehicles but would still be accessible by pedestrians to cross. The closure of 6th Street to vehicular traffic would result in the diversion of east and westbound traffic (up to 35 vph per direction during the AM and PM analysis hours) to 7th Street,

[4] During field observations in the UCR neighborhood, significant congestion was not observed that would be attributable to passing trains at railroad grade crossings. Given this observation, it is not likely that such effects would occur here or at other grade crossings.

[5] In downtown Perris, as part of the Perris Multimodal Transit Center project, the crossings at 2nd and 5th Streets were closed in 2008. The impacts of the these closures on travel patterns are already incorporated into the existing traffic network and analyses as the closures were in effect at the time the traffic data collection program was conducted.

the closest railroad crossing to remain open. The changes in traffic volumes due to this diversion would be less than significant, and are reflected in the 2012 analyses with the project. The total 2012 traffic volumes with the project during the AM and PM analysis hours are presented on Figures ~~22~~23 through 28.

In addition, the northern end of Commercial Street would be closed to the public (with locked gates) where it intersects with D Street and Perris Boulevard, which would allow access to emergency vehicles only. This closure is necessary due to potential safety issues at the tracks as the turning movements involve an acute angle and can present the motorist with limited sight distance. In terms of traffic volumes, a count of vehicle movements taken in mid-November 2010 indicated that less than five vehicles travel through this intersection in any one hour during the day, and most hours show no vehicles at all using it. Although this closure would affect few vehicles, 9th Street, which is currently a dirt road, would be paved to accommodate local property access. As there would be little inconvenience to the current low volumes along Commercial Street, and motorists can access Commercial Street via Perris Boulevard less than one-quarter mile south of D Street, the closure of Commercial Street would not be a significant impact.

Figure 17: Hunter Park Station Area Project-Generated Traffic Volumes – Palmyrita Option

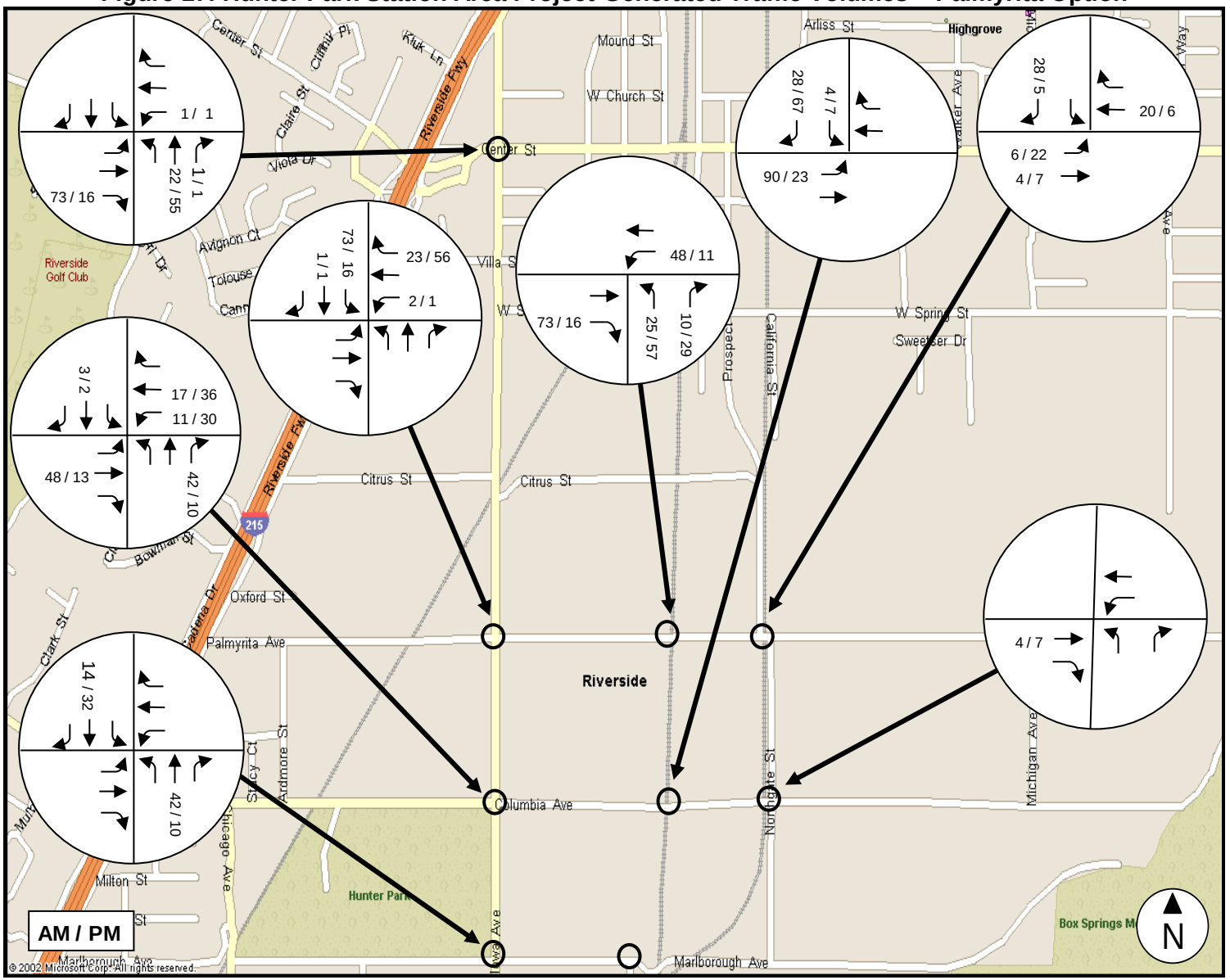


Figure 18: Hunter Park Station Area Project-Generated Traffic Volumes – Columbia Option

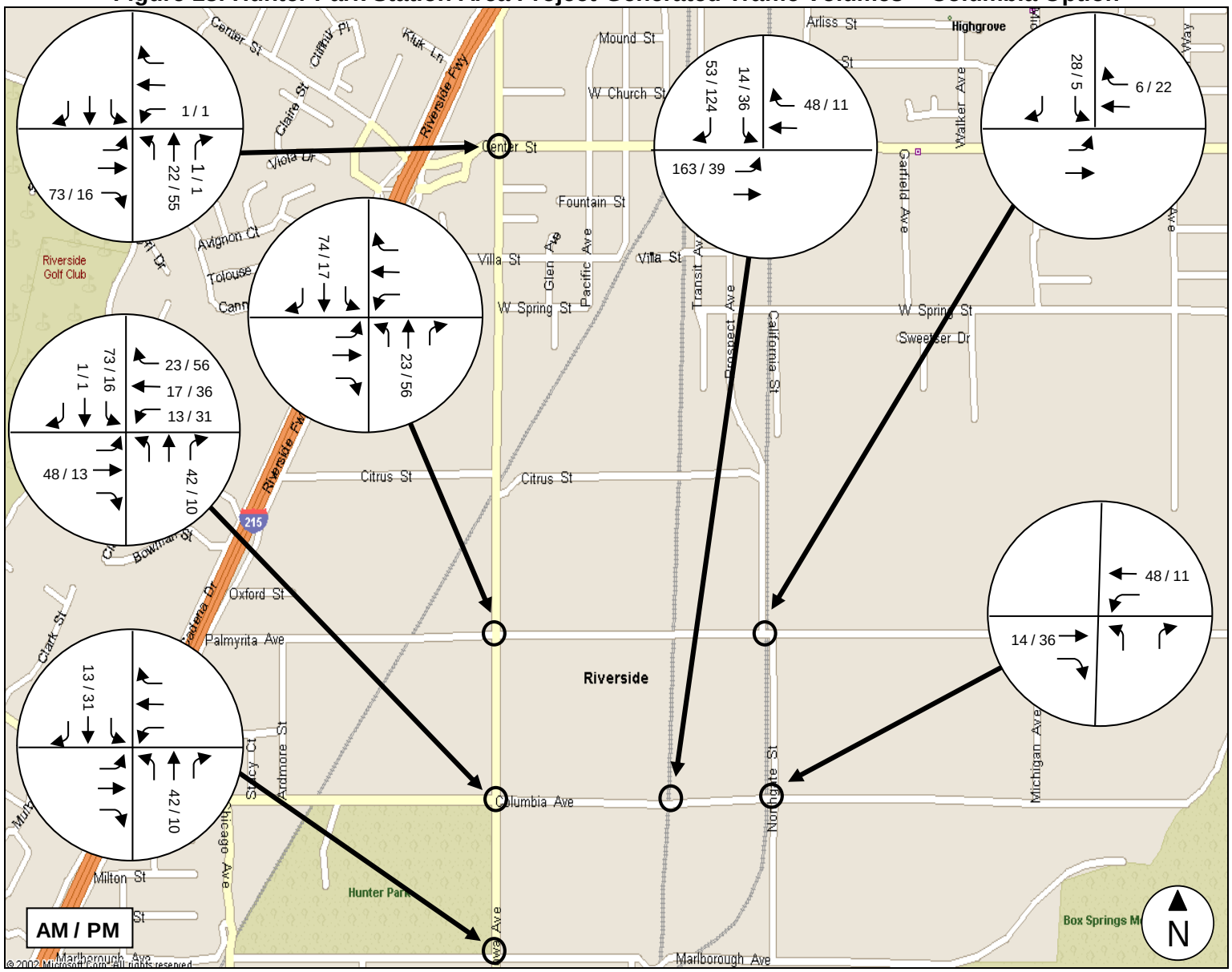


Figure 19: Hunter Park Station Area Project-Generated Traffic Volumes – Marlborough Option

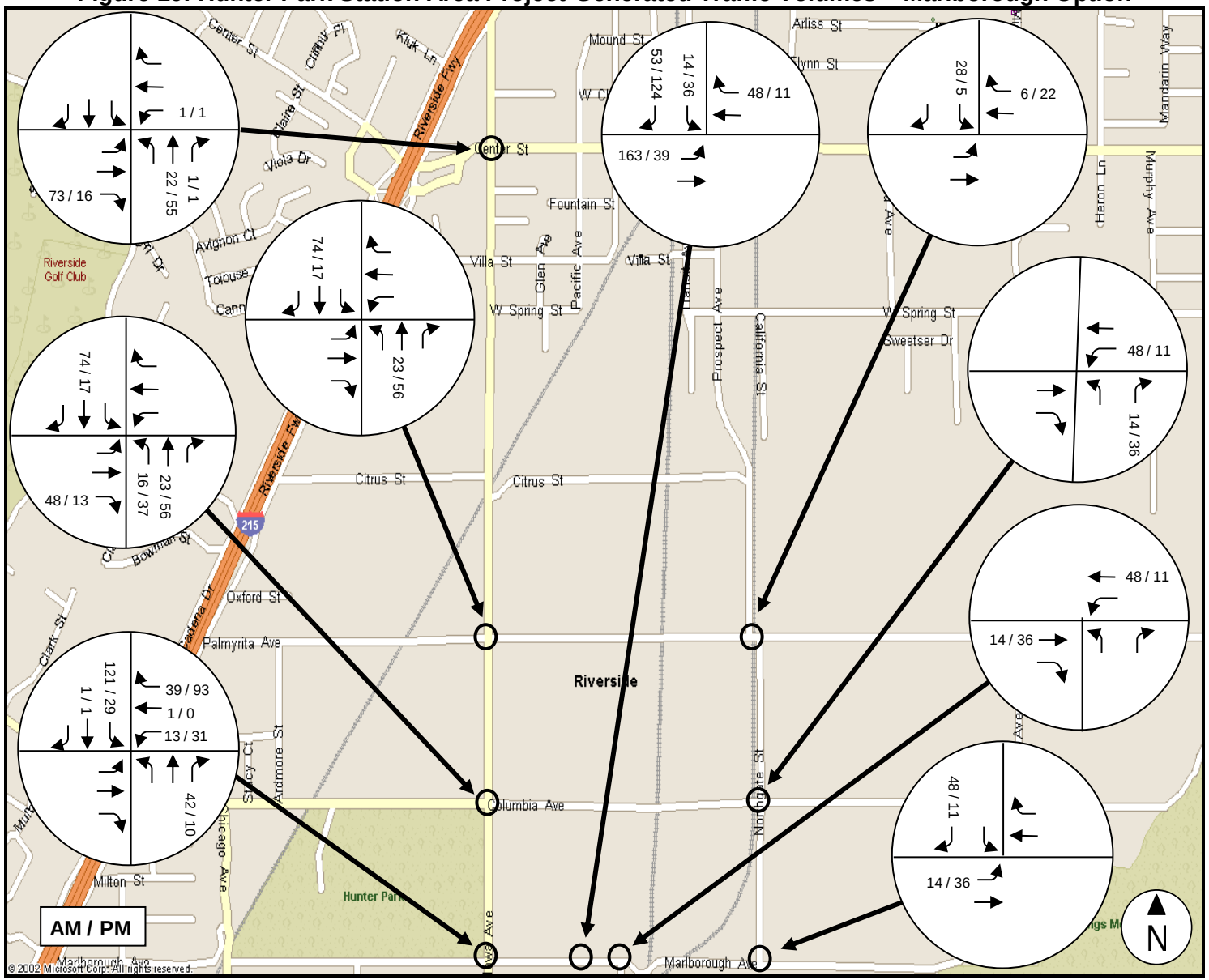


Figure 20: Moreno Valley/March Field Station Area Project-Generated Traffic Volumes

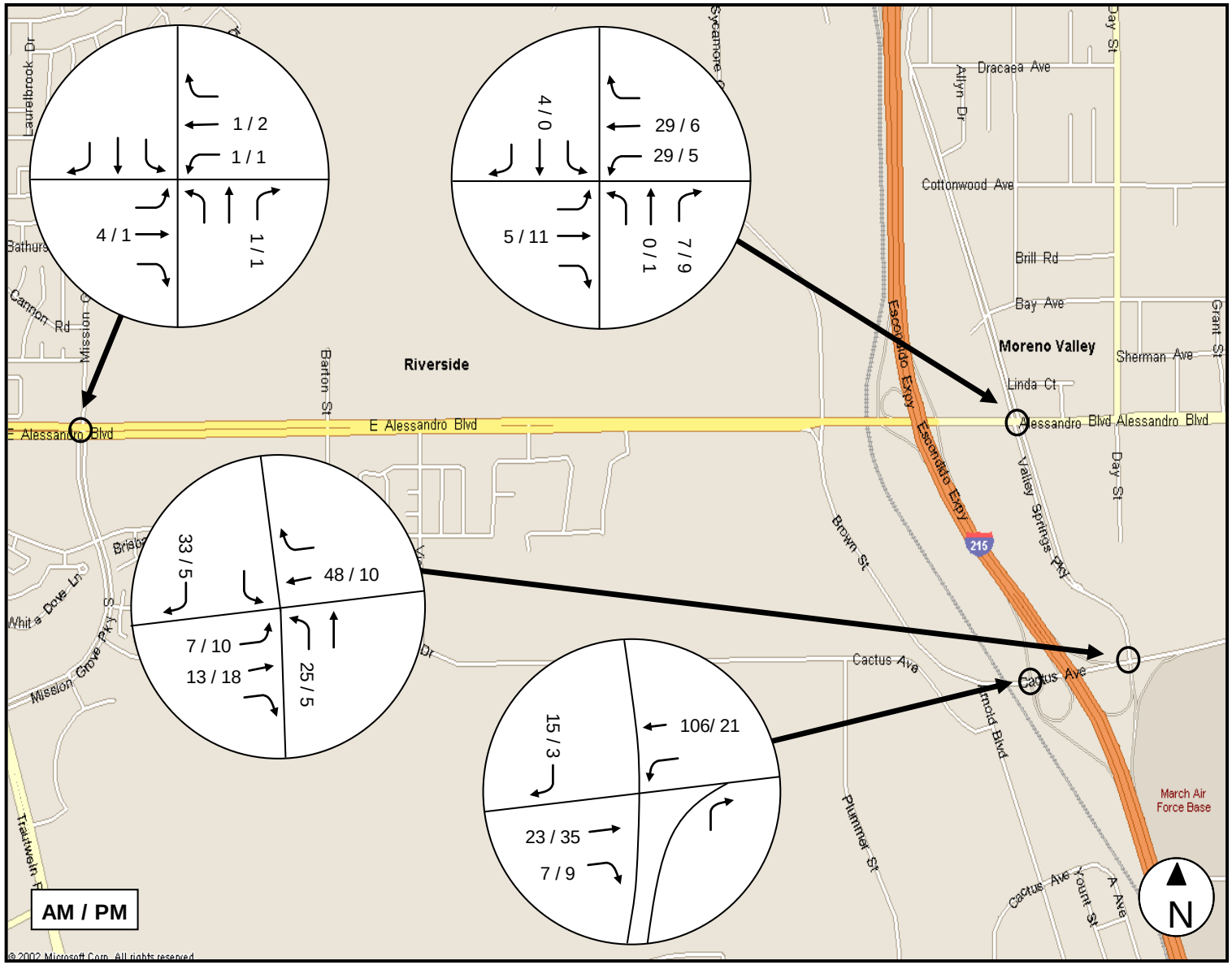


Figure 21: Downtown Perris Station Area Project-Generated Traffic Volumes

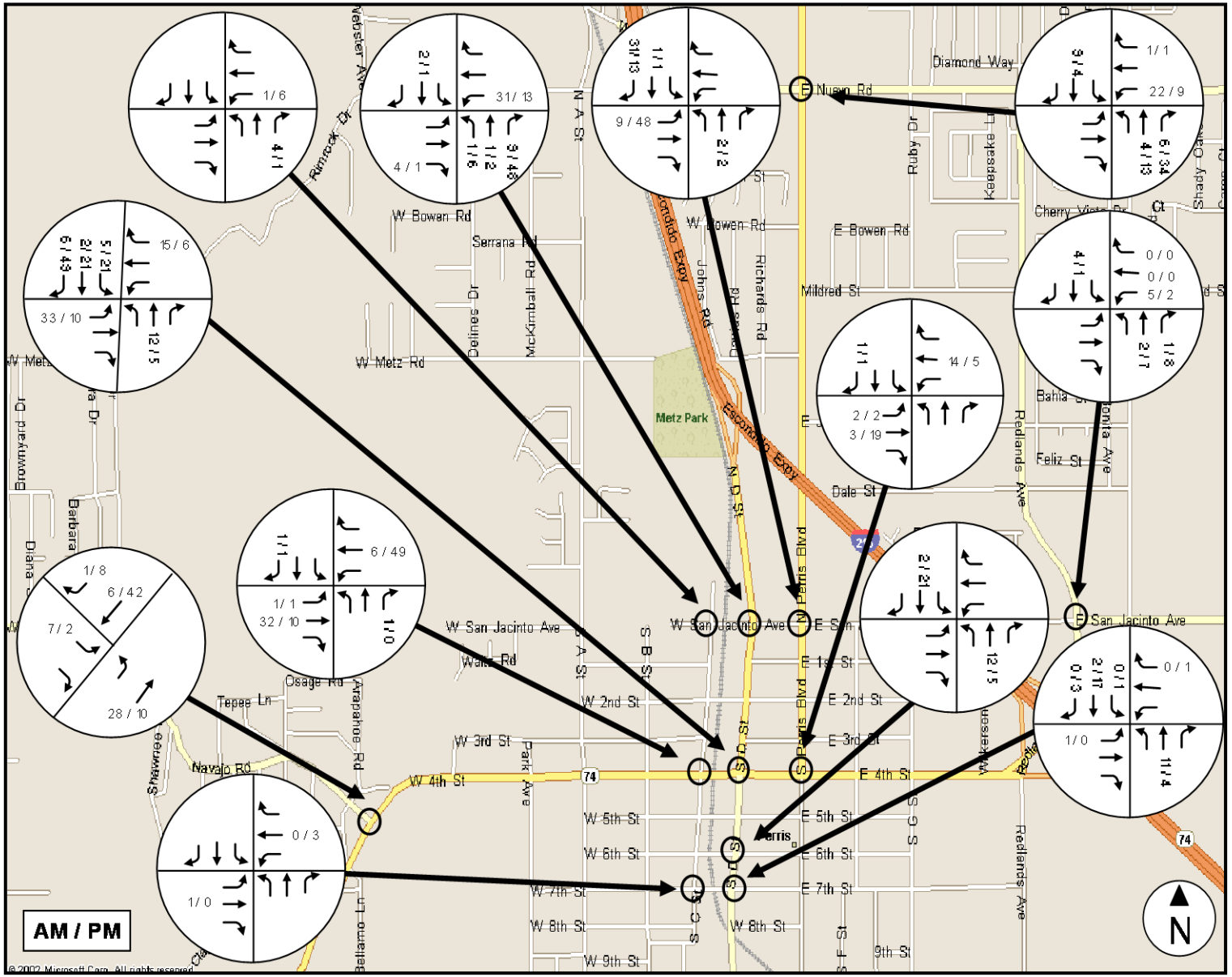


Figure 22: South Perris Station Area Project-Generated Traffic Volumes

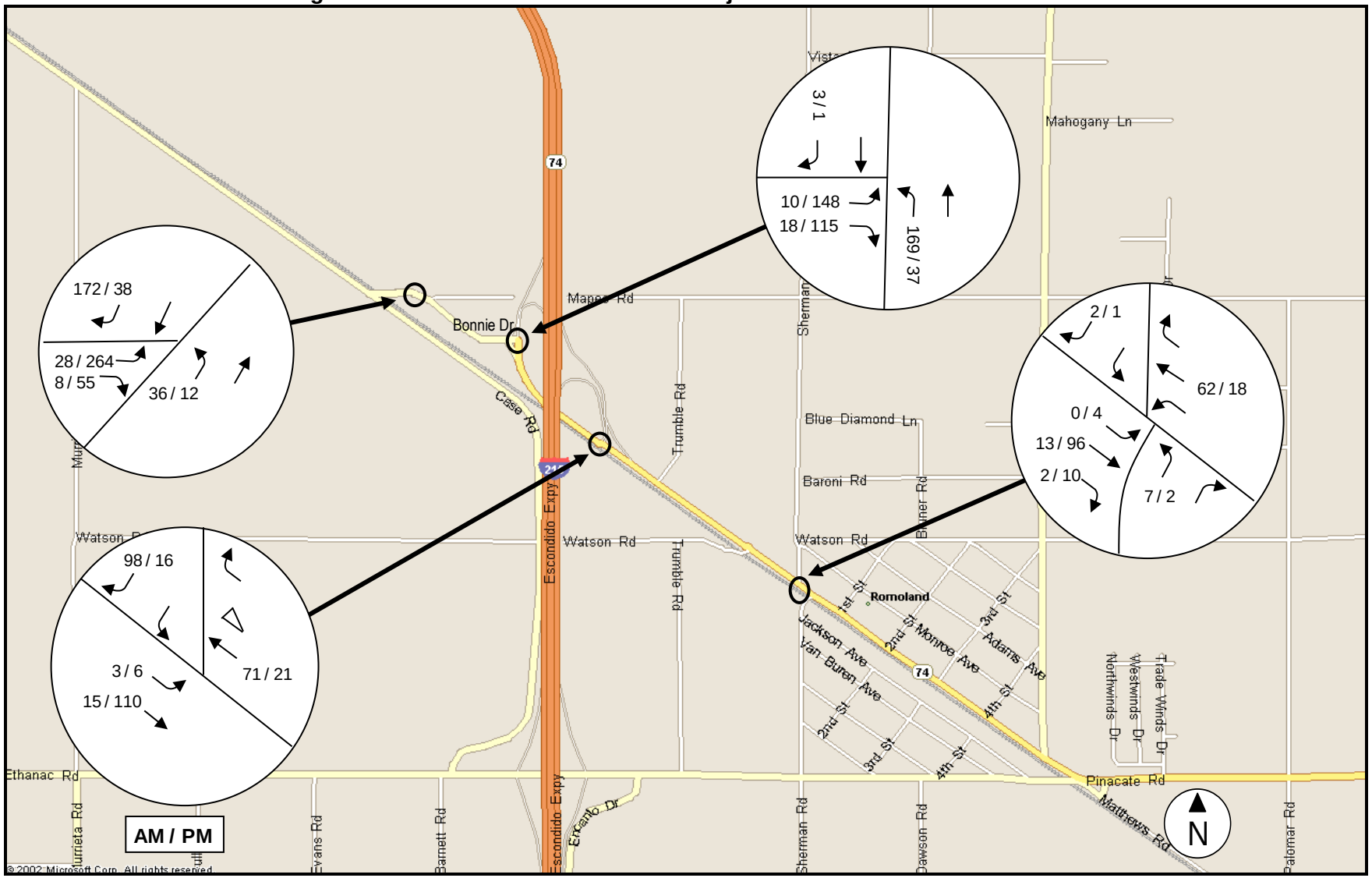


Figure 23: Hunter Park Station Area 2012 Future Traffic Volumes with the Project – Palmyrita Option

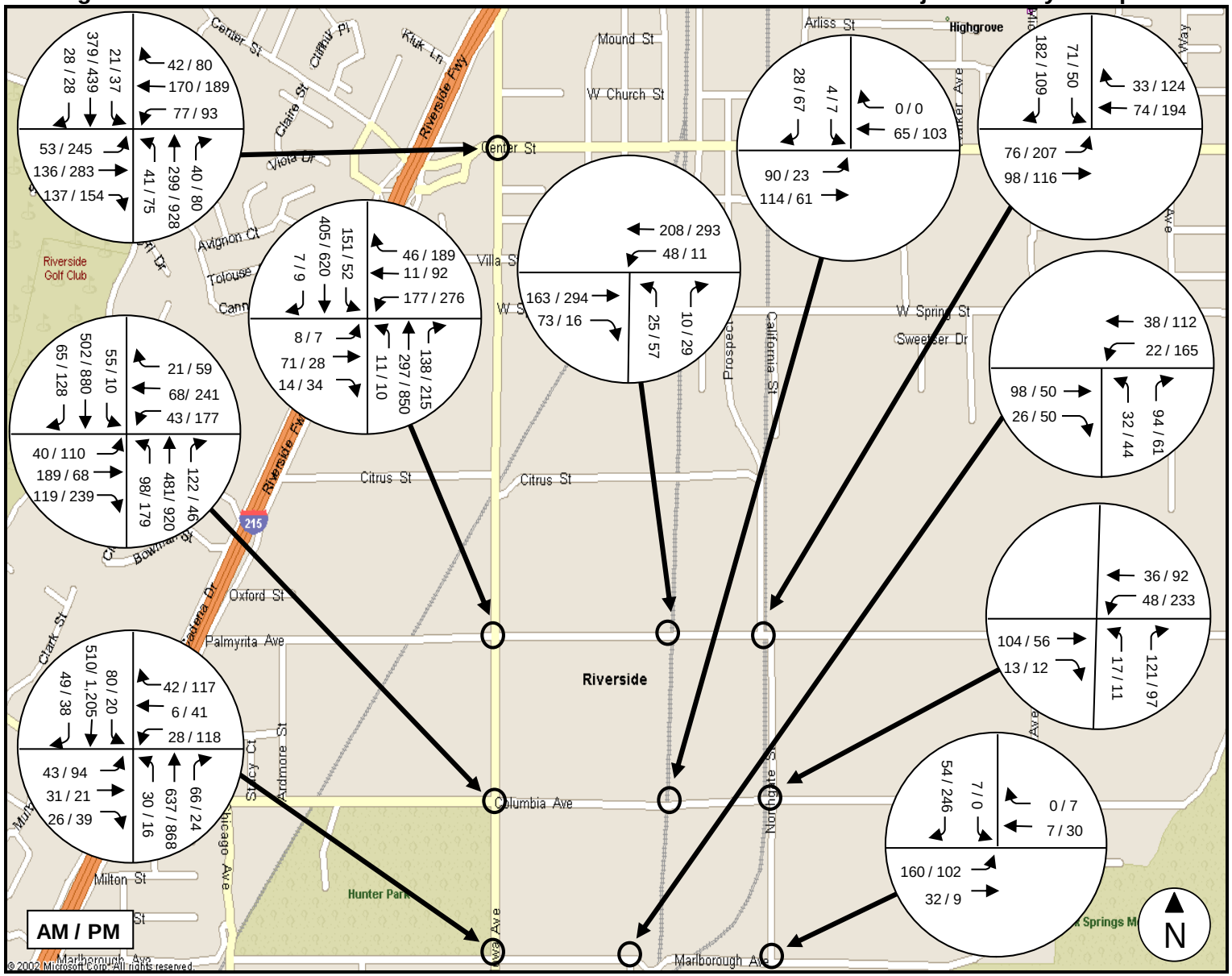


Figure 24: Hunter Park Station Area 2012 Future Traffic Volumes with the Project – Columbia Option

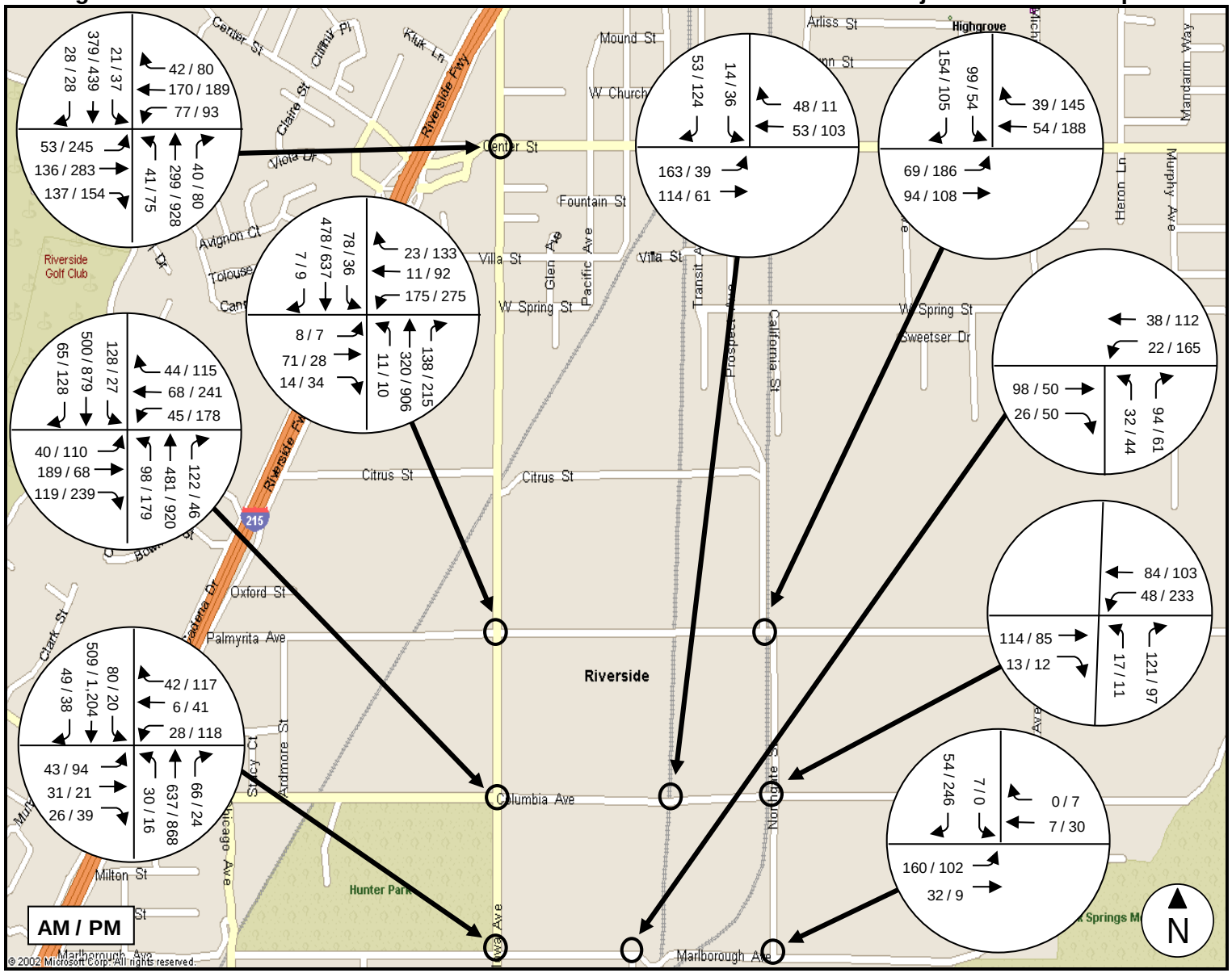


Figure 25: Hunter Park Station Area 2012 Future Traffic Volumes with the Project – Marlborough Option

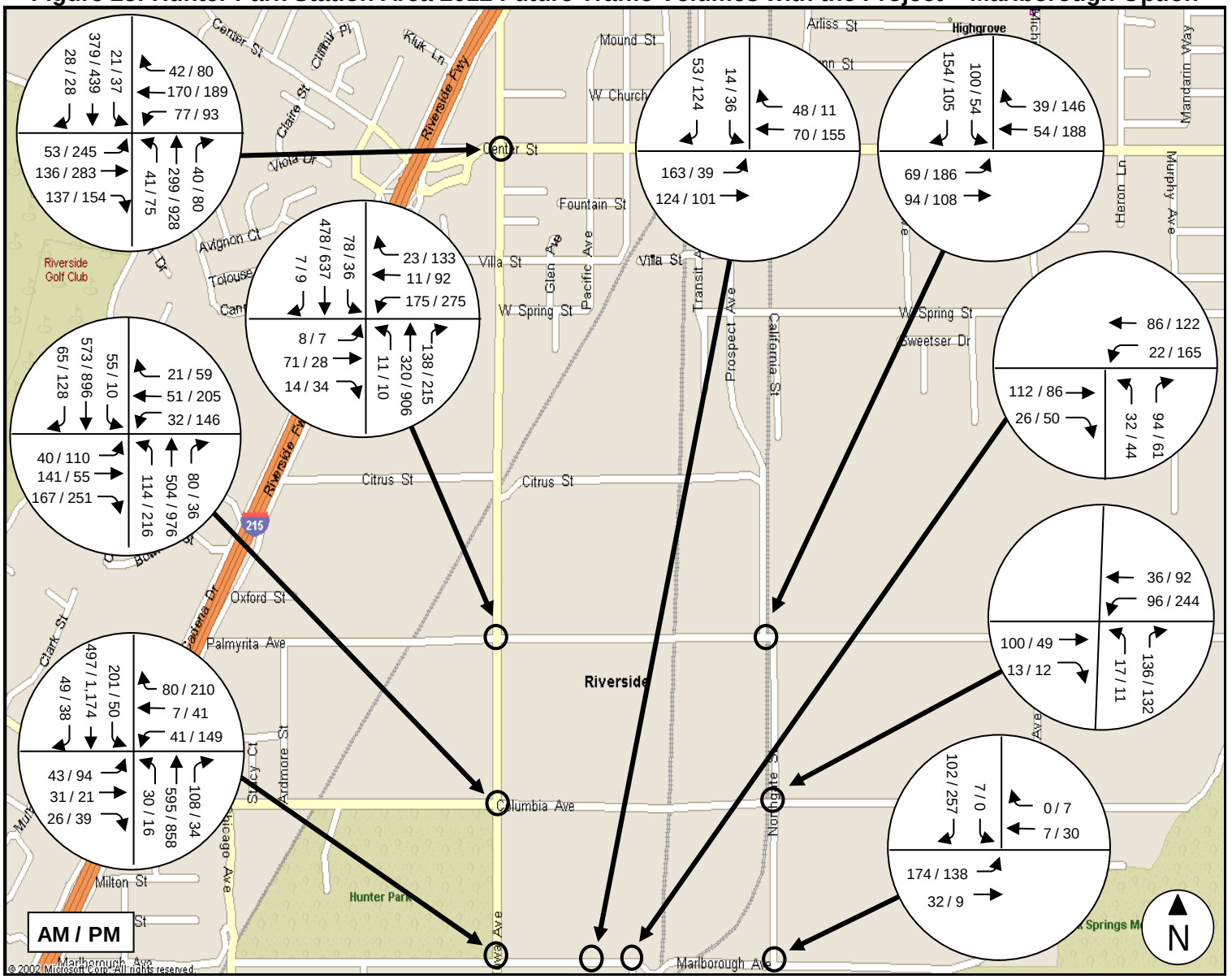
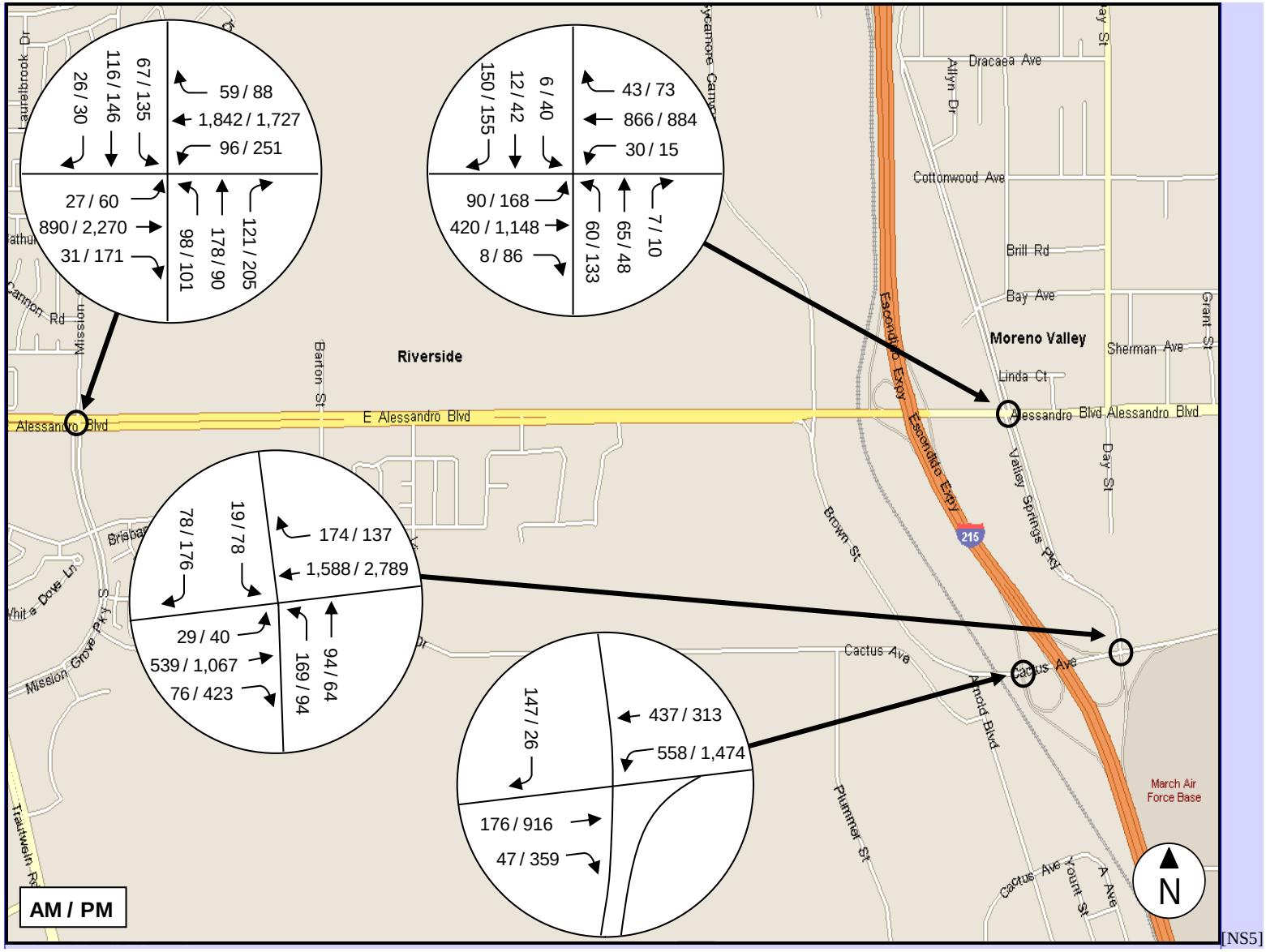


Figure 26: Moreno Valley/March Field Station Area 2012 Future Traffic Volumes with the Project



[NS5]

Figure 27: Downtown Perris Station Area 2012 Future Traffic Volumes with the Project

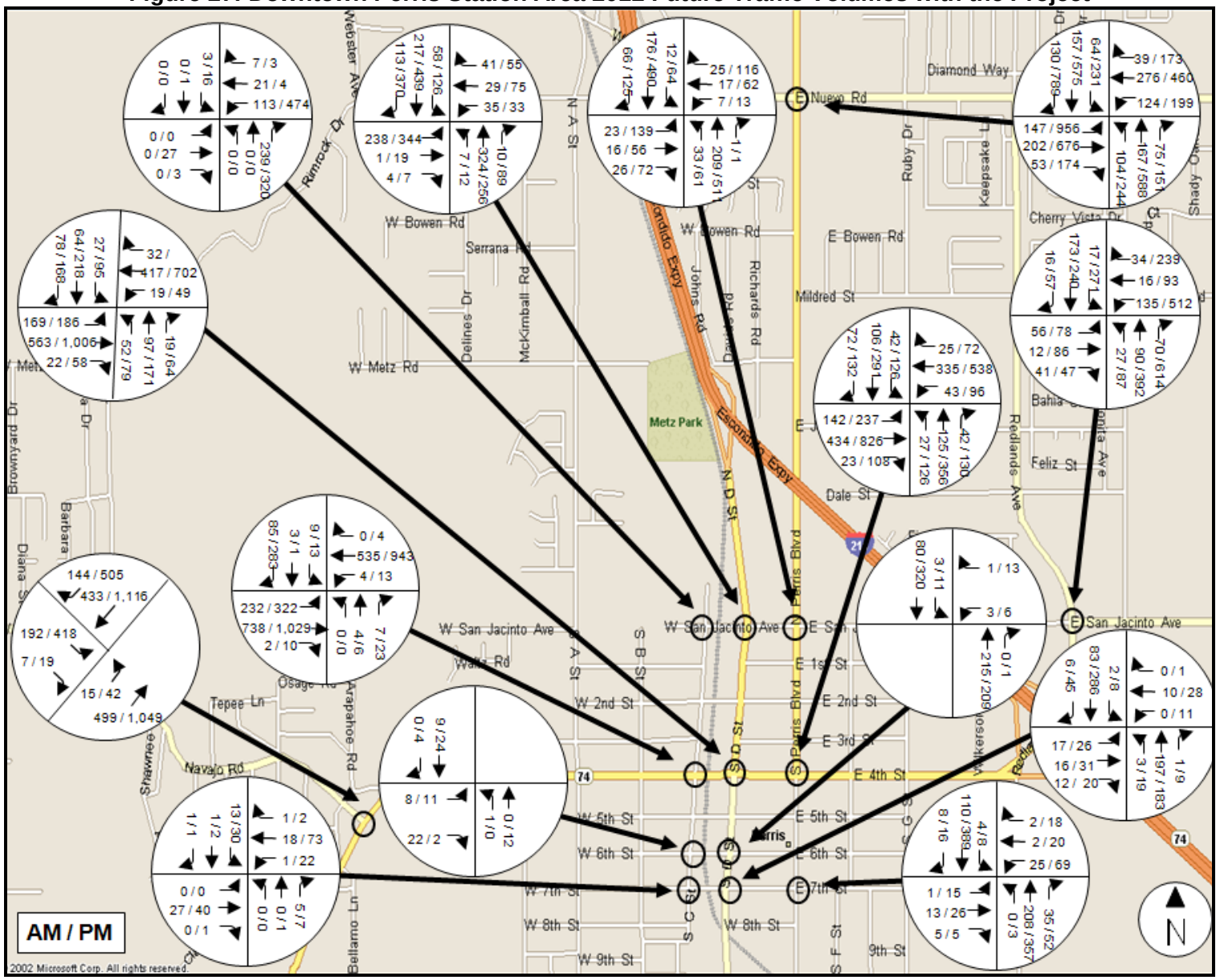
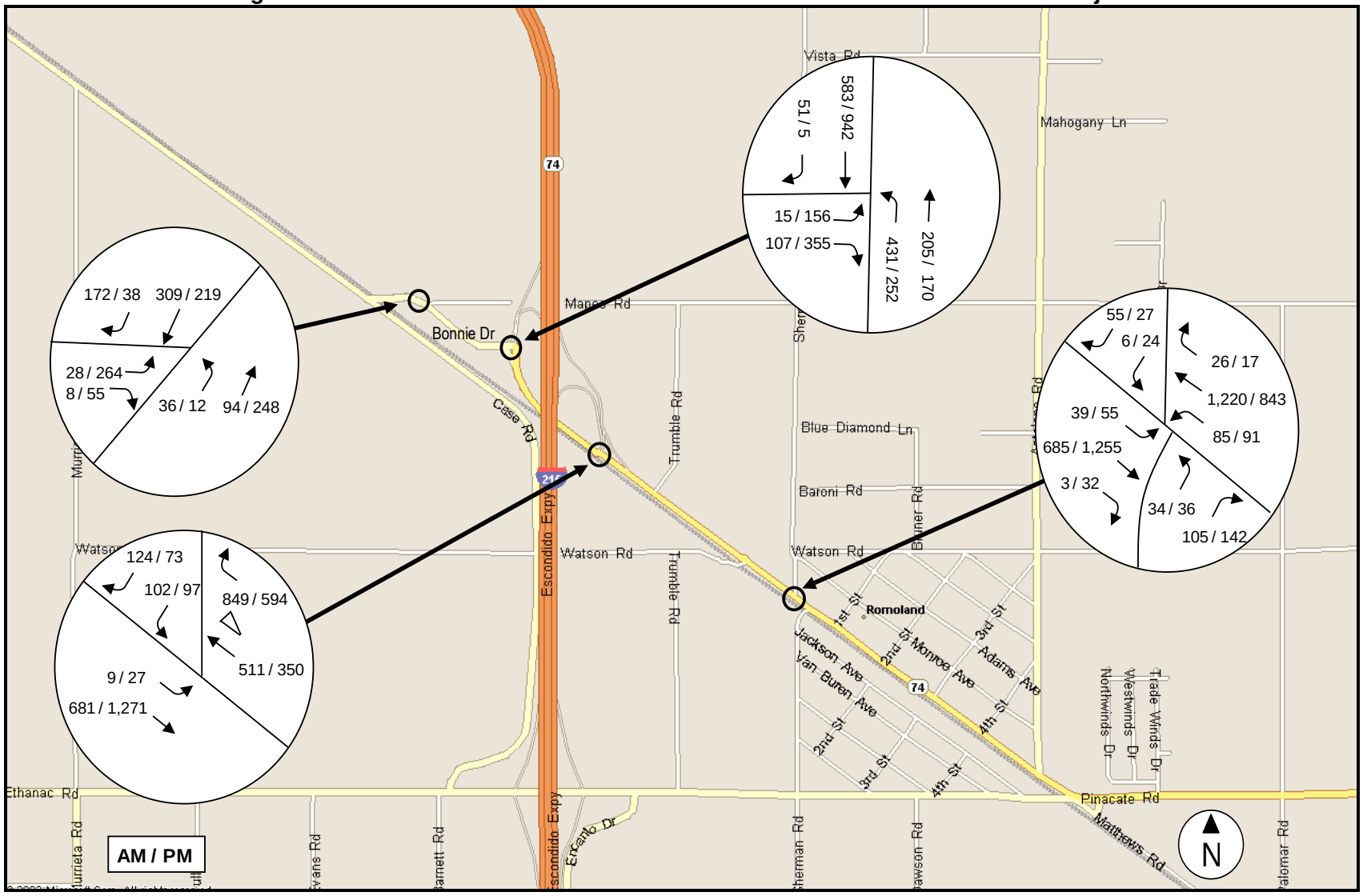


Figure 28: South Perris Station Area 2012 Future Traffic Volumes with the Project



Significant Impact Criteria

The identification of potential significant traffic impacts was based on the guidelines for the City and County guidelines. A deterioration from LOS A, B, C, or D conditions without the project to LOS E or F conditions with the project is considered a significant impact. For LOS E or F conditions without the project, an increase of two or more seconds of delay as a result of the project is also considered significant.

The level-of-service analyses for the 2012 Future Conditions with the Project indicated that the majority of the study intersections would continue to operate at the same levels of service as the 2012 conditions without the PVL. However, significant traffic impacts would be expected at a number of study area intersections as a result of the increase in traffic volumes (due to new vehicular trips generated by the project) (see Table 7).

Hunter Park Station
No impacts would be expected at the study intersections in the vicinity of the Hunter Park Station for any of the three alternative station locations.

Moreno Valley/March Field Station
Westbound Cactus Avenue's through movement at Old 215 would experience a significant impact by incurring just over two seconds of delay within LOS F during the PM analysis hour (Mitigation Measure TT-1).

Downtown Perris Station
Significant impacts would be expected at two study intersections during the PM analysis hour:

- At the intersection of SR-74 (4th Street) and D Street, north and southbound D Street's through/left-turn movements would incur approximately ten and 20 seconds of additional delay within LOS F, respectively (Mitigation Measure TT-2).
- At San Jacinto Avenue and Redlands Avenue, westbound San Jacinto Avenue's through/left-turn movements and northbound Redlands Avenue would incur four to eight seconds of additional delay within LOS F ~~(TT-3)~~.

South Perris Station
Significant impacts would be expected at all three study intersections:

- Eastbound Bonnie Drive's left-turn movement at southbound I-215 ramps would deteriorate from LOS D to F during the AM and PM analysis hours, and the right-turn movement would worsen within LOS F by incurring approximately 240 seconds of additional delay during the PM analysis hour (Mitigation Measure TT-~~4~~3).
- SR-74 at northbound I-215 off-ramp would deteriorate from LOS D to E during the AM and PM analysis hours ~~(TT-5)~~.
- Northbound Sherman Road's left-turn movement onto SR-74 would incur approximately 110 and 290 seconds of additional delay within LOS F during the respective AM and PM analysis hours. Southbound Sherman Road would deteriorate from LOS E to F during the AM, and worsen within LOS F by incurring 160 seconds of additional delay during the PM analysis hours ~~(TT-6)~~.

Table 7: 2012 Future Levels of Service with the Project

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Hunter Park Station - Palmyrita Option								
Signalized								
Center Street at Iowa Avenue								
Center Street	EB	LTR	0.63	40.7	D	0.95	51.1	D
	WB	L	0.25	31.2	C	0.43	32.3	C
		T	0.52	34.5	C	0.83	52.8	D
		R	0.07	29.6	C	0.20	30.4	C
Iowa Avenue	NB	L	0.31	43.9	D	0.38	32.0	C
		T	0.56	36.6	D	1.21	134.7	F
		R	0.10	31.7	C	0.15	23.1	C
	SB	L	0.12	42.1	D	0.39	38.7	D
		T	0.55	36.2	D	0.60	28.7	C
		R	0.05	31.3	C	0.05	23.8	C
Overall Intersection		-		**36.7**	**D**		**76.3**	**E**
Palmyrita Avenue at Iowa Avenue								
Palmyrita Avenue	EB	LT	0.13	11.6	B	0.09	13.6	B
		R	0.02	10.9	B	0.06	13.4	B
	WB	L	0.46	14.2	B	0.90	39.4	D
		TR	0.07	11.2	B	0.44	15.8	B
Iowa Avenue	NB	L	0.16	32.0	C	0.09	24.7	C
		T	0.33	19.9	B	0.80	21.0	C
		R	0.11	18.6	B	0.26	13.9	B
	SB	L	0.84	52.8	D	0.46	27.8	C
		T	0.46	19.5	B	0.62	16.8	B
		R	0.01	16.5	B	0.01	12.5	B
Overall Intersection		-		**21.8**	**C**		**21.6**	**C**
Columbia Avenue at Iowa Avenue								
Columbia Avenue	EB	L	0.22	42.0	D	0.43	32.2	C
		T	0.46	33.6	C	0.22	28.7	C
		R	0.16	30.4	C	0.43	30.6	C
	WB	L	0.26	42.4	D	0.75	43.3	D
		T	0.10	29.8	C	0.45	30.4	C
		R	0.04	29.3	C	0.14	28.2	C
Iowa Avenue	NB	L	0.44	42.4	D	0.71	41.5	D
		T	0.47	29.9	C	0.89	36.4	D
		R	0.22	27.5	C	0.08	20.4	C
	SB	L	0.28	40.9	D	0.07	35.3	D
		T	0.59	31.8	C	0.89	37.8	D
		R	0.08	26.1	C	0.11	22.0	C
Overall Intersection		-		**32.4**	**C**		**36.0**	**D**

Table 7: 2012 Future Levels of Service with the Project (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Marlborough Avenue at Iowa Avenue								
Marlborough Avenue	EB	L	0.32	27.5	C	0.45	28.6	C
		TR	0.43	30.4	C	0.30	30.8	C
	WB	L	0.19	26.5	C	0.60	31.7	C
		T	0.05	27.5	C	0.29	30.7	C
		R	0.19	28.3	C	0.44	32.1	C
Iowa Avenue	NB	L	0.16	26.3	C	0.15	32.6	C
		T	0.54	17.1	B	0.68	18.8	B
		R	0.06	13.7	B	0.02	12.8	B
	SB	L	0.26	22.0	C	0.18	32.8	C
		T	0.44	14.9	B	0.90	28.0	C
		R	0.04	12.4	B	0.03	12.8	B
Overall Intersection		-		**18.0**	**B**		**25.2**	**C**
Palmyrita Avenue at Station Access Road								
Palmyrita Avenue	EB	TR	0.27	5.9	A	0.37	6.5	A
	WB	LT	0.34	6.3	A	0.36	6.4	A
Station Access Road	NB	L	0.12	19.9	B	0.28	20.9	C
		R	0.04	19.5	B	0.14	20.0	C
Overall Intersection		-		**7.5**	**A**		**8.8**	**A**
Columbia Avenue at Station Access Road								
Columbia Avenue	EB	L	0.20	5.6	A	0.06	5.0	A
		T	0.17	5.5	A	0.08	5.1	A
	WB	TR	0.10	5.1	A	0.13	5.3	A
Station Access Road	SB	L	0.02	19.3	B	0.04	19.4	B
		R	0.10	19.8	B	0.26	20.8	C
Overall Intersection		-		**7.0**	**A**		**10.0**	**A**
Unsignalized								
Palmyrita Avenue at Northgate Street								
Palmyrita Avenue	EB	L	0.06	7.7	A	0.24	9.4	A
Northgate Street	SB	L	0.16	12.4	B	0.33	32.8	D
		R	0.24	9.7	A	0.17	10.4	B
Columbia Avenue at Northgate Street								
Columbia Avenue	EB	T	0.12	8.8	A	0.06	8.9	A
		TR	0.15	8.8	A	0.08	8.8	A
	WB	L	0.14	9.6	A	0.56	14.9	B
		T	0.10	8.7	A	0.20	8.9	A
Northgate Street	NB	L	0.04	8.2	A	0.02	8.6	A
		R	0.26	8.7	A	0.15	8.5	A
Overall Intersection		-		**8.8**	A		**11.8**	B

Table 7: 2012 Future Levels of Service with the Project (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Marlborough Avenue at Northgate Street								
Marlborough Avenue	EB	LT	0.20	7.8	A	0.08	7.5	A
Northgate Street	SB	LR	0.12	9.8	A	0.34	10.4	B
Marlborough Avenue at Rustin Avenue								
Marlborough Avenue	WB	L	0.03	7.8	A	0.18	8.1	A
Rustin Avenue	NB	LR	0.36	12.3	B	0.31	16.0	C
Hunter Park Station - Columbia Option								
Signalized								
Center Street at Iowa Avenue								
Center Street	EB	LTR	0.63	40.7	D	0.95	51.1	D
	WB	L	0.25	31.2	C	0.43	32.3	C
		T	0.52	34.5	C	0.83	52.8	D
		R	0.07	29.6	C	0.20	30.4	C
Iowa Avenue	NB	L	0.31	43.9	D	0.38	32.0	C
		T	0.56	36.6	D	1.21	134.7	F
		R	0.10	31.7	C	0.15	23.1	C
	SB	L	0.12	42.1	D	0.39	38.7	D
		T	0.55	36.2	D	0.60	28.7	C
		R	0.05	31.3	C	0.05	23.8	C
Overall Intersection		-		**36.7**	**D**		**76.3**	**E**
Palmyrita Avenue at Iowa Avenue								
Palmyrita Avenue	EB	LT	0.13	11.6	B	0.09	13.6	B
		R	0.02	10.9	B	0.06	13.4	B
	WB	L	0.46	14.1	B	0.89	38.6	D
		TR	0.03	11.0	B	0.30	14.8	B
Iowa Avenue	NB	L	0.16	32.0	C	0.09	24.7	C
		T	0.36	20.1	C	0.86	23.5	C
		R	0.11	18.6	B	0.26	13.9	B
	SB	L	0.43	28.4	C	0.32	26.3	C
		T	0.54	20.3	C	0.64	17.1	B
		R	0.01	16.5	B	0.01	12.5	B
Overall Intersection		-		**18.9**	**B**		**22.6**	**C**
Columbia Avenue at Iowa Avenue								
Columbia Avenue	EB	L	0.22	42.0	D	0.43	32.2	C
		T	0.46	33.6	C	0.22	28.7	C
		R	0.16	30.4	C	0.43	30.6	C
	WB	L	0.27	42.5	D	0.75	43.5	D
		T	0.10	29.8	C	0.45	30.4	C
		R	0.12	30.0	C	0.39	30.4	C
Iowa Avenue	NB	L	0.44	42.4	D	0.71	41.5	D
		T	0.47	29.9	C	0.89	36.4	D
		R	0.22	27.5	C	0.08	20.4	C
	SB	L	0.66	49.2	D	0.18	36.0	D
		T	0.58	31.7	C	0.89	37.8	D
		R	0.08	26.1	C	0.11	22.0	C
Overall Intersection		-		**33.4**	**C**		**35.9**	**D**

Table 7: 2012 Future Levels of Service with the Project (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Marlborough Avenue at Iowa Avenue								
Marlborough Avenue	EB	L	0.32	27.5	C	0.45	28.6	C
		TR	0.43	30.4	C	0.30	30.8	C
	WB	L	0.19	26.5	C	0.60	31.7	C
		T	0.05	27.5	C	0.29	30.7	C
		R	0.19	28.3	C	0.44	32.1	C
Iowa Avenue	NB	L	0.16	26.3	C	0.15	32.6	C
		T	0.54	17.1	B	0.68	18.8	B
		R	0.06	13.7	B	0.02	12.8	B
	SB	L	0.26	22.0	C	0.18	32.8	C
		T	0.44	14.9	B	0.90	27.9	C
		R	0.04	12.4	B	0.03	12.8	B
Overall Intersection		-		**18.0**	**B**		**25.2**	**C**
Columbia Avenue at Station Access Road								
Columbia Avenue	EB	L	0.38	6.7	A	0.09	5.2	A
		T	0.17	5.5	A	0.08	5.1	A
	WB	TR	0.16	5.4	A	0.15	5.3	A
Station Access Road	SB	L	0.07	19.6	B	0.19	20.3	C
		R	0.22	20.5	C	0.53	23.1	C
Overall Intersection		-		**8.3**	**A**		**13.5**	**B**
Unsignalized								
Palmyrita Avenue at Northgate Street								
Palmyrita Avenue	EB	L	0.06	7.6	A	0.22	9.4	A
Northgate Street	SB	L	0.21	12.4	B	0.32	29.8	D
		R	0.20	9.5	A	0.17	10.5	B
Columbia Avenue at Northgate Street								
Columbia Avenue	EB	T	0.13	9.1	A	0.09	9.1	A
		TR	0.16	9.1	A	0.12	9.1	A
	WB	L	0.15	9.7	A	0.56	15.1	C
		T	0.24	9.9	A	0.23	9.2	A
Northgate Street	NB	L	0.05	8.5	A	0.02	8.7	A
		R	0.28	9.1	A	0.16	8.7	A
Overall Intersection		-		**9.3**	**A**		**11.9**	**B**
Marlborough Avenue at Northgate Street								
Marlborough Avenue	EB	LT	0.20	7.8	A	0.08	7.5	A
Northgate Street	SB	LR	0.12	9.8	A	0.34	10.4	B
Marlborough Avenue at Rustin Avenue								
Marlborough Avenue	WB	L	0.03	7.8	A	0.18	8.1	A
Rustin Avenue	NB	LR	0.36	12.3	B	0.31	16.0	C

Table 7: 2012 Future Levels of Service with the Project (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Hunter Park Station - Marlborough Option								
Signalized								
Center Street at Iowa Avenue								
Center Street	EB	LTR	0.63	40.7	D	0.95	51.1	D
	WB	L	0.25	31.2	C	0.43	32.3	C
		T	0.52	34.5	C	0.83	52.8	D
		R	0.07	29.6	C	0.20	30.4	C
Iowa Avenue	NB	L	0.31	43.9	D	0.38	32.0	C
		T	0.56	36.6	D	1.21	134.7	F
		R	0.10	31.7	C	0.15	23.1	C
	SB	L	0.12	42.1	D	0.39	38.7	D
		T	0.55	36.2	D	0.60	28.7	C
		R	0.05	31.3	C	0.05	23.8	C
Overall Intersection		-		**36.7**	**D**		**76.3**	**E**
Palmyrita Avenue at Iowa Avenue								
Palmyrita Avenue	EB	LT	0.13	11.6	B	0.09	13.6	B
		R	0.02	10.9	B	0.06	13.4	B
	WB	L	0.46	14.1	B	0.89	38.6	D
		TR	0.03	11.0	B	0.30	14.8	B
Iowa Avenue	NB	L	0.16	32.0	C	0.09	24.7	C
		T	0.36	20.1	C	0.86	23.5	C
		R	0.11	18.6	B	0.26	13.9	B
	SB	L	0.43	28.4	C	0.32	26.3	C
		T	0.54	20.3	C	0.64	17.1	B
		R	0.01	16.5	B	0.01	12.5	B
Overall Intersection		-		**18.9**	**B**		**22.6**	**C**
Columbia Avenue at Iowa Avenue								
Columbia Avenue	EB	L	0.22	42.0	D	0.44	32.8	C
		T	0.34	32.2	C	0.18	28.9	C
		R	0.29	31.7	C	0.48	31.7	C
	WB	L	0.19	41.8	D	0.63	37.1	D
		T	0.07	29.6	C	0.39	30.3	C
		R	0.04	29.3	C	0.14	28.7	C
Iowa Avenue	NB	L	0.50	43.2	D	0.81	49.3	D
		T	0.49	30.2	C	0.92	39.6	D
		R	0.11	26.4	C	0.05	19.9	B
	SB	L	0.28	40.9	D	0.07	35.8	D
		T	0.67	33.6	C	0.91	41.3	D
		R	0.08	26.1	C	0.11	22.4	C
Overall Intersection		-		**33.1**	**C**		**38.6**	**D**

Table 7: 2012 Future Levels of Service with the Project (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Marlborough Avenue at Iowa Avenue								
Marlborough Avenue	EB	L	0.32	27.5	C	0.45	28.6	C
		TR	0.43	30.4	C	0.30	30.8	C
	WB	L	0.27	27.1	C	0.75	39.9	D
		T	0.06	27.6	C	0.29	30.7	C
		R	0.52	31.8	C	0.80	52.8	D
Iowa Avenue	NB	L	0.16	26.3	C	0.15	32.6	C
		T	0.51	16.7	B	0.67	18.7	B
		R	0.15	14.2	B	0.04	12.9	B
	SB	L	0.65	27.7	C	0.45	35.3	D
		T	0.43	14.8	B	0.87	26.1	C
		R	0.04	12.4	B	0.03	12.8	B
Overall Intersection		-		**19.3**	**B**		**26.3**	**C**
Columbia Avenue at Station Access Road								
Columbia Avenue	EB	L	0.40	6.8	A	0.10	5.2	A
		T	0.19	5.5	A	0.14	5.3	A
	WB	TR	0.19	5.5	A	0.21	5.6	A
Station Access Road	SB	L	0.07	19.6	B	0.19	20.3	C
		R	0.22	20.5	C	0.53	23.1	C
Overall Intersection		-		**8.2**	**A**		**12.1**	**B**
Unsignalized								
Palmyrita Avenue at Northgate Street								
Palmyrita Avenue	EB	L	0.06	7.6	A	0.22	9.4	A
Northgate Street	SB	L	0.22	12.5	B	0.32	29.8	D
		R	0.20	9.5	A	0.17	10.5	B
Columbia Avenue at Northgate Street								
Columbia Avenue	EB	T	0.12	9.1	A	0.05	9.0	A
		TR	0.15	9.1	A	0.08	8.9	A
	WB	L	0.30	11.2	B	0.60	16.2	C
		T	0.10	8.8	A	0.21	9.1	A
Northgate Street	NB	L	0.05	8.5	A	0.02	8.6	A
		R	0.31	9.4	A	0.21	9.0	A
Overall Intersection		-		**9.7**	**A**		**12.5**	**B**
Marlborough Avenue at Northgate Street								
Marlborough Avenue	EB	LT	0.22	7.9	A	0.11	7.6	A
Northgate Street	SB	LR	0.20	9.9	A	0.35	10.5	B
Marlborough Avenue at Rustin Avenue								
Marlborough Avenue	WB	L	0.03	7.9	A	0.19	8.3	A
Rustin Avenue	NB	LR	0.38	13.1	B	0.34	17.9	C

Table 7: 2012 Future Levels of Service with the Project (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Moreno Valley/March Field Station								
Signalized								
Cactus Avenue at Southbound I-215 Ramps								
Cactus Avenue	EB	T	0.21	13.0	B	0.82	22.8	C
	WB	L	0.94	35.1	D	1.73	349.1	F
		T	0.18	0.0	A	0.09	0.0	A
Overall Intersection		-		**18.7**	**B**		**196.9**	**F**
Cactus Avenue at Old 215								
Cactus Avenue	EB	L	0.34	14.9	B	0.49	17.1	B
		TR	0.41	13.5	B	0.72	16.4	B
	WB	T	1.01	46.0	D	1.48	239.9	F
		R	0.11	11.4	B	0.16	10.4	B
Old 215	NB	L	0.38	16.0	B	0.26	20.0	B
		TR	0.13	13.9	B	0.09	18.5	B
	SB	L	0.06	13.5	B	0.21	19.4	B
		TR	0.16	14.1	B	0.31	20.3	C
Overall Intersection		-		**32.2**	**C**		**146.3**	**F**
Alessandro Boulevard at Old 215								
Alessandro Boulevard	EB	L	0.33	29.1	C	0.51	38.4	D
		T	0.58	20.1	C	0.93	36.9	D
	WB	L	0.14	28.1	C	0.10	35.7	D
		T	0.77	24.4	C	0.77	26.1	C
Old 215	NB	L	0.49	32.8	C	0.63	40.9	D
		T	0.25	30.3	C	0.12	33.9	C
	SB	L	0.04	29.2	C	0.19	33.8	C
		T	0.03	29.2	C	0.11	33.9	C
Overall Intersection		-		**24.1**	**C**		**33.0**	**C**
Alessandro Boulevard at Mission Grove Parkway								
Alessandro Boulevard	EB	L	0.18	44.3	D	0.38	53.4	D
		T	0.40	17.9	B	0.99	41.7	D
		R	0.03	14.6	B	0.16	15.1	B
	WB	L	0.36	45.2	D	0.72	59.6	E
		T	0.88	28.8	C	0.76	23.1	C
		R	0.08	15.0	B	0.11	14.7	B
Mission Grove Parkway	NB	L	0.39	45.5	D	0.35	50.9	D
		T	0.76	54.4	D	0.38	46.8	D
		R	0.46	41.9	D	0.49	48.2	D
	SB	L	0.56	50.1	D	0.83	78.2	E
		TR	0.34	40.2	D	0.32	45.9	D
Overall Intersection		-		**29.7**	**C**		**37.2**	**D**

[NS6]

Table 7: 2012 Future Levels of Service with the Project (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Downtown Perris Station								
Signalized								
SR-74 at Navajo Road								
SR-74	EB	L	0.13	26.9	C	0.23	30.5	C
		T	0.28	4.8	A	0.52	5.3	A
	WB	TR	0.39	10.9	B	1.04	52.5	D
Navajo Road	SB	L	0.27	19.3	B	0.71	31.6	C
		R	0.01	17.9	B	0.03	24.2	C
	Overall Intersection	-		**9.8**	**A**		**32.8**	**C**
SR-74 at C Street								
SR-74	EB	L	0.61	21.3	C	0.92	50.4	D
		TR	0.51	9.8	A	0.76	16.2	B
	WB	L	0.04	24.2	C	0.09	23.9	C
		TR	0.80	25.9	C	0.97	41.5	D
C Street	NB	L	0.00	24.0	C	0.00	23.5	C
		TR	0.07	20.0	B	0.12	19.8	B
	SB	L	0.08	24.4	C	0.09	23.9	C
		TR	0.32	21.5	C	0.80	35.4	D
	Overall Intersection	-		**17.8**	**B**		**31.5**	**C**
SR-74 at D Street								
SR-74	EB	L	0.62	32.6	C	0.62	32.5	C
		TR	0.65	24.2	C	1.06	71.9	E
	WB	L	0.07	25.9	C	0.16	26.5	C
		TR	0.46	21.5	C	0.75	26.9	C
D Street	NB	LT	0.43	21.5	C	1.32	192.7	F
		R	0.02	18.1	B	0.09	18.6	B
	SB	LT	0.26	19.9	B	1.37	216.9	F
		R	0.08	18.5	B	0.16	19.1	B
	Overall Intersection	-		**23.6**	**C**		**86.8**	**F**
SR-74 at Perris Boulevard								
SR-74	EB	L	0.60	30.2	C	0.84	49.7	D
		TR	0.44	17.1	B	0.70	20.6	C
	WB	L	0.18	25.0	C	0.56	36.4	D
		TR	0.35	16.4	B	0.59	22.5	C
Perris Boulevard	NB	L	0.11	18.3	B	0.76	39.0	D
		T	0.32	19.7	B	0.76	30.2	C
		R	0.06	18.0	B	0.19	20.0	C
	SB	L	0.15	18.7	B	1.24	186.8	F
		T	0.25	19.2	B	0.63	25.6	C
		R	0.08	18.1	B	0.17	19.9	B
	Overall Intersection	-		**19.1**	**B**		**34.2**	**C**

Table 7: 2012 Future Levels of Service with the Project (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
San Jacinto Avenue at D Street								
San Jacinto Avenue	EB	L	0.65	27.4	C	0.88	45.0	D
		T	0.00	13.8	B	0.03	15.4	B
		R	0.01	13.9	B	0.01	15.3	B
	WB	L	0.36	31.5	C	0.41	37.2	D
		TR	0.29	26.0	C	0.64	37.5	D
D Street	NB	L	0.06	29.0	C	0.11	34.6	C
		TR	0.67	23.8	C	0.85	40.7	D
	SB	L	0.52	33.7	C	0.61	37.0	D
		T	0.45	19.6	B	0.67	22.4	C
		R	0.19	17.7	B	0.47	18.6	B
Overall Intersection		-		**24.2**	**C**		**32.7**	**C**
San Jacinto Avenue at Perris Boulevard								
San Jacinto Avenue	EB	L	0.18	30.0	C	0.71	48.4	D
		TR	0.27	30.7	C	0.29	27.0	C
	WB	L	0.06	29.3	C	0.08	34.8	C
		T	0.14	29.8	C	0.18	26.1	C
		R	0.17	30.1	C	0.28	27.0	C
Perris Boulevard	NB	L	0.45	35.8	D	0.45	41.6	D
		TR	0.36	11.7	B	0.90	44.1	D
	SB	L	0.14	32.6	C	0.47	41.8	D
		TR	0.32	11.4	B	0.95	52.7	D
Overall Intersection		-		**16.3**	**B**		**44.1**	**D**
Nuevo Road at Perris Boulevard								
Nuevo Road	EB	L	0.37	34.2	C	1.39	214.1	F
		T	0.31	27.0	C	0.83	32.9	C
		R	0.08	25.1	C	0.25	22.3	C
	WB	L	0.30	33.6	C	0.57	32.9	C
		TR	0.25	26.4	C	0.47	26.5	C
		R	0.05	24.9	C	0.31	25.8	C
Perris Boulevard	NB	L	0.40	34.0	C	0.88	52.2	D
		T	0.17	28.0	C	0.57	25.5	C
		R	0.10	27.5	C	0.28	23.3	C
	SB	L	0.22	38.7	D	0.95	66.0	E
		T	0.19	31.1	C	0.82	32.8	C
		R	0.05	15.3	B	0.52	16.7	B
Overall Intersection		-		**29.4**	**C**		**65.7**	**E**
Unsignalized								
San Jacinto Avenue at Redlands Avenue								
San Jacinto Avenue	EB	L	0.14	10.8	B	0.26	16.5	C
		TR	0.12	9.3	A	0.41	18.8	C
	WB	LT	0.37	13.3	B	1.68	338.3	F
		R	0.07	8.6	A	0.58	21.6	C
Redlands Avenue	NB	LT	0.29	11.4	B	1.36	200.0	F
		R	0.15	9.1	A	1.58	292.8	F
	SB	L	0.04	9.6	A	0.87	51.3	F
		TR	0.41	12.8	B	0.44	18.2	C
Overall Intersection		-		**11.6**	**B**		**194.7**	**F**

Table 7: 2012 Future Levels of Service with the Project (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
San Jacinto Avenue at C Street								
San Jacinto Avenue	EB	LTR	0.00	7.3	A	0.00	7.2	A
	WB	LT	0.08	7.5	A	0.33	8.4	A
C Street	NB	L	0.00	10.7	B	0.00	30.4	D
		TR	0.24	9.4	A	0.23	8.0	A
	SB	LTR	0.01	14.2	B	0.15	33.8	D
6th Street at C Street								
6th Street	EB	LTR	0.01	7.2	A	0.01	7.2	A
C Street	NB	LT	0.00	8.8	A	0.03	9.3	A
	SB	TR	0.02	9.4	A	0.05	9.3	A
6th Street at D Street								
6th Street	WB	LR	0.01	10.6	B	0.06	11.3	B
D Street	SB	LT	0.00	7.8	A	0.01	7.8	A
7th Street at C Street								
7th Street	EB	LTR	0.00	7.3	A	0.00	7.4	A
	WB	LTR	0.00	7.3	A	0.02	7.3	A
C Street	NB	LTR	0.01	8.7	A	0.02	8.8	A
	SB	LTR	0.03	9.1	A	0.08	10.3	B
7th Street at D Street								
7th Street	EB	LTR	0.08	11.5	B	0.24	17.8	C
	WB	LTR	0.02	11.7	B	0.16	18.5	C
D Street	NB	LTR	0.00	7.5	A	0.03	8.0	A
	SB	LTR	0.00	7.8	A	0.01	7.9	A
7th Street at Perris Boulevard								
7th Street	EB	LTR	0.07	11.8	B	0.27	22.8	C
	WB	LTR	0.01	11.2	B	0.19	18.0	C
Perris Boulevard	NB	LTR	0.00	7.7	A	0.00	8.3	A
	SB	LTR	0.00	7.9	A	0.01	8.2	A
South Perris Station								
Signalized								
Relocated Mapes Road at Station Access Road								
Relocated Mapes Road	EB	L	0.13	5.8	A	0.03	7.6	A
		T	0.08	5.5	A	0.20	8.4	A
	WB	TR	0.33	6.6	A	0.18	8.3	A
Station Access Road	SB	L	0.14	17.6	B	0.92	38.8	D
		R	0.04	17.1	B	0.19	14.4	B
Overall Intersection		-		**7.3**	**A**		**21.4**	**C**

[NS7]

Table 7: 2012 Future Levels of Service with the Project (continued)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Unsignalized								
Bonnie Drive at Southbound I-215 Ramps								
Bonnie Drive	EB	L	0.30	78.5	F	1.51	320.2	F
		R	0.36	18.7	C	1.78	397.2	F
Southbound I-215 Ramps	NB	L	0.63	15.9	C	0.47	15.5	C
SR-74 at Northbound I-215 Off Ramp								
SR-74	EB	L	0.01	8.7	A	0.03	8.3	A
Northbound I-215 Off-Ramp	SB	LR	0.80	43.9	E	0.69	42.5	E
SR-74 at Sherman Road								
SR-74	EB	L	0.09	13.4	B	0.08	10.5	B
	WB	L	0.11	10.1	B	0.21	14.5	B
Sherman Road	NB	L	1.02	304.4	F	2.00	854.1	F
		R	0.21	12.6	B	0.42	20.6	C
	SB	LR	0.53	52.3	F	1.71	592.9	F

Station Parking

In general, auto-trip generation listed in Table 6 indicates the parking demand during the AM and PM peak ridership hours, which in general, represents about half of the daily total demand that would park at each PVL station. Thus, doubling the high auto park-and-ride volumes in this table to account for the parking demand during the non-peak periods would yield a daily demand of between approximately 230 and 540 spaces. The station designs would provide between approximately 440 and 880 spaces to satisfy station auto demands, as follows:

- Hunter Park – approximately 480 spaces provided; demand for approximately 300 spaces (63% utilization)
- Moreno Valley/March Field – approximately 445 spaces provided; demand for approximately 260 spaces (59%)
- Downtown Perris – approximately 441 spaces provided; demand for approximately 230 spaces (52%)
- South Perris – approximately 880 spaces provided; demand for approximately 540 spaces (61%)

E. PROPOSED MITIGATION MEASURES

Significant traffic impacts would be expected at six study intersections in total, Cactus Avenue at Old 215, SR-74 at D Street, San Jacinto Avenue at Redlands Avenue, Bonnie Drive at southbound I-215 ramps, SR-74 at northbound I-215 off-ramp, and SR-74 at Sherman Road. However, these impacts could be mitigated as follows:

TT-1: *Cactus Avenue at Old 215 (for Moreno Valley/March Field Station)*
Reduce north/southbound Old 215's maximum green time to 15 seconds during the PM (5-6 PM) analysis hour. This will reduce delays for westbound Cactus Avenue's through movement from ~~244~~240 ~~and~~ to ~~119~~116 seconds and improve the overall intersection LOS from F with ~~152~~146 seconds of delay to E with ~~76~~72 seconds of delay, while maintaining LOS C for Old 215.

TT-2: *SR-74 (4th Street) at D Street (for Downtown Perris Station)*
Reduce the maximum green time for the east/westbound SR-74 left-turn phase to 14 seconds during the PM (5-6 PM) analysis hour. ~~Restripe north/southbound D Street approaches to provide one left-turn and one through/right-turn shared lane.~~ The levels of service for north and southbound D Street's through/left-turn movements and the overall intersection will be improved beyond future levels of service without the project during the PM analysis hour with this mitigation measure.

~~TT-3: *San Jacinto Avenue at Redlands Avenue (for Downtown Perris Station)*~~
~~Install a new traffic signal (see Appendix F for signal warrant analysis). Westbound San Jacinto Avenue and northbound Redlands Avenue through/left-turn movements and southbound Redlands Avenue left-turn movement would be improved from LOS F to D during the PM analysis hour by this measure.~~

TT-~~3~~4: *Bonnie Drive at southbound I-215 ramps (for South Perris Station)*
Install a new traffic signal (see Appendix F for signal warrant analysis). This will improve eastbound Bonnie Drive's right-turn movement from LOS F to B during the PM (5-6 PM) analysis hour and left-turn movement from LOS F to C during the AM (6-7 AM) and PM analysis hours.

~~TT-5: *SR-74 at I-215 Off-Ramp (for South Perris Station)*~~
~~Install a new traffic signal (see Appendix F for signal warrant analysis). This would reduce the delays on I-215 off-ramp from 44 to 32 seconds during the AM, from 43 to 21 seconds during the PM, and improve the LOS from E to C during both analysis hours.~~

~~TT-6: *SR-74 at Sherman Road (for South Perris Station)*~~
~~Install a new traffic signal (see Appendix F for signal warrant analysis). All movements would operate within LOS C during both the AM and PM analysis hours with this mitigation measure.~~

~~Provision of traffic signals at the four unsignalized locations (listed above) is not warranted solely based on the traffic volume increases as a result of the proposed Perris Valley Line. The future traffic volumes without the proposed project would also require signalization at all four locations.~~

RCTC shall design ~~prepare civil engineering drawings for~~ the above-proposed improvements, and execute agreements with the affected jurisdictions to provide funding for the installation of the signals or to install the signals in conjunction with the development of the project. With these mitigation measures in place, the significant impacts of the proposed project at the three above-mentioned intersections will be eliminated (out of the six locations where significant impacts are expected, as shown in Table 8). At the remaining three locations where significant impacts are expected (San Jacinto at Redlands Avenues, SR-74 at northbound I-215 off-ramp, and SR-74 at Sherman Road), traffic signals are planned to be installed by other projects (unrelated to the PVL) as part of the future conditions without the project. Therefore, no mitigation measures will need to be implemented by the proposed PVL project at these

intersections. However, in the event that the signalization of these three locations by other projects (unrelated to the PVL) does not occur prior to the 2012 opening year of the PVL, the installation of traffic signals at these additional locations will be incorporated as PVL project features~~the above mentioned intersections would be eliminated~~. Comparison of future levels of service with and without the project, and with mitigation, is provided in Table 8.

TT-4: RCTC shall develop a traffic management plan in consultation with local jurisdictions to minimize impacts to existing traffic levels of service. At a minimum, the traffic management plan will address: detours; coordination with other construction projects (if applicable); length and timing of any street closures; length and timing of any grade crossing closures; coordination with police and fire departments regarding changes in emergency access routes; temporary access routes and signage if any commercial properties are affected; and contact information for RCTC and its contractors. With this measure in place, traffic will operate at acceptable levels.

Table 8: 2012 Future Levels of Service and Mitigation Measures[1]

INTERSECTION & APPROACH		Mvt.	Without Project			With Project			Mvt.	Mitigated With Project			Mitigation Measures	Significance After Mitigation
			V/C	Control Delay	LOS	V/C	Control Delay	LOS		V/C	Control Delay	LOS		
Moreno Valley/March Field Station														
PM Peak														
Cactus Avenue at Old 215														
Cactus Avenue	EB	L	036	14.1	B	0.49	17.1	B	L	0.41	8.6	A	**TP-1:**	**Less than significant.**
		TR	0.69	15.8	B	0.70	16.0	B	TR	0.57	7.4	A	Reduce north/southbound Old 215's maximum green time to 15 seconds.	
	WB	T	1.49	241.5	F	1.49	244.0	F	T	1.23	119.0	F		
		R	0.07	9.8	A	0.07	9.8	A	R	0.06	4.7	A		
Old 215	NB	L	0.25	19.8	B	0.26	20.0	B	L	0.47	25.6	C		
		TR	0.09	18.5	B	0.09	18.5	B	TR	0.15	22.5	C		
	SB	L	0,21	19.4	B	0.21	19.4	B	L	0.34	24.1	C		
		TR	0.30	20.2	C	0.31	20.3	C	TR	0.52	25.5	C		
Overall Intersection		-		**151.4**	**F**		**152.1**	**F**			**75.5**	**E**		
Downtown Perris Station														
PM Peak														
SR-74 at D Street													**TP-2:**	
SR-74	EB	L	0.57	31.0	C	0.62	32.5	C	L	0,62	325	C	Restripe north/ southbound D Street to provide one left-turn and one shared through/ right-turn lane.	**Less than significant.**
		TR	1.06	71.9	E	1.06	71.9	E	TR	1.06	71.9	E		
	WB	L	0.16	26.5	C	0.16	26.5	C	L	0.16	26.5	C		
		TR	0.76	27.0	C	0.75	26.9	C	TR	0.75	26.9	C		
D Street	NB	LT	1.30	183.1	F	1.32	192.7	F	L	0.55	24.5	C		
		R	0.09	18.6	B	0.09	18.6	B	TR	0.58	23.6	C		
	SB	LT	1.32	194.2	F	1.37	216.9	F	L	0.46	22.6	C		
		R	0.17	19.2	B	0.16	19.1	B	TR	0.60	24.1	C		
Overall Intersection		-		**82.8**	**F**		**86.8**	**F**	-		**42.8**	**B**		
San Jacinto Avenue at Redlands Avenue				Unsignalized			Unsignalized				Signalized		**TP-3:**	**Less than significant.**
San Jacinto Avenue	EB	L	0.26	16.5	C	0.26	16.5	C	L	0.68	40.3	D	Install new traffic signal.	
		TR	0.41	18.8	C	0.41	18.8	C	TR	0.56	30.2	C		
	WB	LT	1.67	333.9	F	1.68	338.3	F	L	0.94	44.0	D		
		R	0.58	21.6	C	0.58	21.6	C	TR	0.57	18.2	B		

[1] As presented herein, a few individual turning movements would continue to operate below acceptable levels of service with mitigation measures. However, these would not be considered impacts of the project per impact criteria, as the future conditions without the project would already be at unacceptable levels.

Table 8: 2012 Future Levels of Service and Mitigation Measures (continued)

INTERSECTION & APPROACH		Mvt.	Without Project V/C	Without Project Control Delay	Without Project LOS	With Project V/C	With Project Control Delay	With Project LOS	Mvt.	Mitigated With Project V/C	Mitigated With Project Control Delay	Mitigated With Project LOS	Mitigation Measures	Significance After Mitigation
Downtown Perris Station (Continued)														
Redlands Avenue	NB	LT	134	193.1	F	1.36	200.0	F	L	0.66	36.7	D		
		R	1.56	284.2	F	1.58	292.8	F	T	0.90	40.6	D		
		-	-	-	-	-	-	-	R	0.66	6.6	A		
	SB	L	0.87	51.3	F	0.87	51.3	F	L	0.92	39.8	D		
		TR	0.44	18.2	C	0.44	18.2	C	TR	0.32	16.0	B		
Overall Intersection		-		**189.9**	**F**		**194.7**	**F**	-		**27.9**	**C**		
South Perris Station														
AM Peak														
Bonnie Drive at Southbound I-215 Ramps				Unsignalized			Unsignalized				Signalized			
Bonnie Drive	EB	L	0.03	27.8	D	0.30	78.5	F	-	0.07	25.9	C	**TP-4:** Install new traffic signal.	**Less than significant.**
		R	0.30	17.5	C	0.36	18.7	C	-	0.54	30.5	C		
	NB	L	0.38	11.7	B	0.63	15.9	C	-	0.91	36.5	D		
		T	N/A	N/A	-	N/A	N/A	-	-	0.20	3.6	A		
Southbound I-215 Ramps	SB	T	N/A	N/A	-	N/A	N/A	-	-	0.89	32.0	C		
		R	N/A	N/A	-	N/A	N/A	-	-	0.08	13.2	B		
Overall Intersection				**N/A**	-		**N/A**	-	-		**28.4**	**C**		
SR-74 at Northbound I-215 Off-Ramp				Unsignalized			Unsignalized				Signalized			
SR-74	EB	L	0.01	8.5	A	0.01	8.7	A	-	0.02	4.5	A	**TP-5:** Install new traffic signal.	**Less than significant.**
		T	N/A	N/A	-	N/A	N/A	-	-	0.52	11.9	B		
	WB	T	N/A	N/A	-	N/A	N/A	-	-	0.31	10.3	B		
Northbound I-215 Off-Ramp	SB	LR	0.54	28.9	D	0.80	43.9	E	-	0.77	32.2	C		
Overall Intersection		-		**N/A**	-		**N/A**	-	-		**14.9**	**B**		
SR-74 at Sherman Road				Unsignalized			Unsignalized				Signalized			
SR-74	EB	L	0.09	12.8	B	0.09	13.4	B	-	0.19	8.6	A	**TP-6:** Install new traffic signal.	**Less than significant.**
		TR	N/A	N/A	-	N/A	N/A	-	-	0.53	11.9	B		
	WB	L	0.11	10.0	A	0.11	10.1	B	-	0.24	5.7	A		
		TR	N/A	N/A	-	N/A	N/A	-	-	0.83	17.9	B		
Sherman Road	NB	L	0.71	192.7	F	1.02	304.4	F	-	0.11	18.9	B		
		R	0.21	12.5	B	0.21	12.6	B	-	0.35	20.5	C		
	SB	LR	0.46	43.4	E	0.53	52.3	F	-	0.19	19.4	B		
Overall Intersection		-		**N/A**	-		**N/A**	-	-		**15.6**	**B**		

Table 8: 2012 Future Levels of Service and Mitigation Measures (continued)

INTERSECTION & APPROACH		Mvt.	Without Project V/C	Without Project Control Delay	Without Project LOS	With Project V/C	With Project Control Delay	With Project LOS	Mvt.	Mitigated With Project V/C	Mitigated With Project Control Delay	Mitigated With Project LOS	Mitigation Measures	Significance After Mitigation
South Perris Station (Continued)														
PM Peak														
Bonnie Drive at Southbound I-215 Ramps				Unsignalized			Unsignalized				Signalized			
Bonnie Drive	EB	L	0.06	28.4	D	1.51	320.2	F	-	0.52	22.2	C	**TP-4:**	**Less than significant.**
		R	1.20	159.4	F	1.78	397.2	F	-	0.68	17.2	B		
Southbound I-215 Ramps	NB	L	0.40	14.3	B	0.47	15.5	C	-	0.86	35.3	D	Install new traffic signal.	
		T	N/A	N/A	-	N/A	N/A	-	-	0.17	4.3	A		
	SB	T	N/A	N/A	-	N/A	N/A	-	-	1.00	40.8	D		
		R	N/A	N/A	-	N/A	N/A	-	-	0.01	7.1	A		
Overall Intersection		-		**N/A**	-		**N/A**	-	-		**30.2**	**C**		
SR-74 at Northbound I-215 Off-Ramp				Unsignalized			Unsignalized				Signalized			
SR-74	EB	L	0.02	8.2	A	0.03	8.3	A	-	0.05	4.5	A	**TP-5:**	**Less than significant.**
		T	N/A	N/A	-	N/A	N/A	-	-	0.82	17.7	B		
	WB	T	N/A	N/A	-	N/A	N/A	-	-	0.27	10.0	A	Install new traffic signal.	
Northbound I-215 Off-Ramp	SB	LR	0.59	32.9	D	0.69	42.5	E	-	0.46	21.4	C		
Overall Intersection		-		**N/A**	-		**N/A**	-	-		**16.2**	**B**		
SR-74 at Sherman Road				Unsignalized			Unsignalized				Signalized			
SR-74	EB	L	0.07	10.4	B	0.08	10.5	B	-	0.18	6.0	A	**TP-6:**	**Less than significant.**
		TR	N/A	N/A	-	N/A	N/A	-	-	0.82	17.8	B		
	WB	L	0.19	13.4	B	0.21	14.5	B	-	0.41	10.1	B	Install new traffic signal.	
		TR	N/A	N/A	-	N/A	N/A	-	-	0.60	12.8	B		
Sherman Road	NB	L	1.48	563.9	F	2.00	854.1	F	-	0.12	18.9	B		
		R	0.39	18.6	C	0.42	20.6	C	-	0.46	21.6	C		
	SB	LR	1.40	431.7	F	1.71	529.9	F	-	0.19	19.2	B		
Overall Intersection		-		**N/A**	-		N/A	-	-		**15.8**	**B**		

Table 8: 2012 Future Levels of Service and Mitigation Measures[1]

INTERSECTION & APPROACH		Mvt.	Without Project V/C	Without Project Control Delay	Without Project LOS	With Project V/C	With Project Control Delay	With Project LOS	Mvt.	Mitigated With Project V/C	Mitigated With Project Control Delay	Mitigated With Project LOS	Mitigation Measures	Notes
Moreno Valley/March Field Station														
PM Peak														
Cactus Avenue at Old 215													**TT-1:** Reduce north/southbound Old 215's maximum green time to 15 seconds. Less than significant after mitigation.	
Cactus Avenue	EB	L	0.36	14.1	B	0.49	17.1	B	L	0.41	8.6	A		
		TR	0.71	16.2	B	0.72	16.4	B	TR	0.59	7.6	A		
	WB	T	1.48	237.4	F	1.48	239.9	F	T	1.22	115.7	F		
		R	0.16	10.4	B	0.16	10.4	B	R	0.13	4.9	A		
Old 215	NB	L	0.25	19.8	B	0.26	20.0	B	L	0.47	25.6	C		
		TR	0.09	18.5	B	0.09	18.5	B	TR	0.15	22.5	C		
	SB	L	0.21	19.4	B	0.21	19.4	B	L	0.34	24.1	C		
		TR	0.30	20.2	C	0.31	20.3	C	TR	0.52	25.5	C		
Overall Intersection		-		**145.6**	**F**		**146.3**	**F**			**71.8**	**E**		
Downtown Perris Station														
PM Peak														
SR-74 at D Street													**TT-2:** Reduce the maximum green time for the east/westbound SR-74 left-turn phase to 14 seconds. Less than significant after mitigation.	
SR-74	EB	L	0.57	31.0	C	0.62	32.5	C	L	0.66	34.3	C		
		TR	1.06	71.9	E	1.06	71.9	E	TR	1.05	67.0	E		
	WB	L	0.16	26.5	C	0.16	26.5	C	L	0.17	26.9	C		
		TR	0.76	27.0	C	0.75	26.9	C	TR	0.74	26.0	C		
D Street	NB	LT	1.30	183.1	F	1.32	192.7	F	LT	1.29	176.5	F		
		R	0.09	18.6	B	0.09	18.6	B	R	0.09	18.2	B		
	SB	LT	1.32	194.2	F	1.37	216.9	F	LT	1.32	193.7	F		
		R	0.17	19.2	B	0.16	19.1	B	R	0.16	18.7	B		
Overall Intersection		-		**82.8**	**F**		**86.8**	**F**	-	-	**80.2**	**F**		
San Jacinto Avenue at Redlands Avenue				Unsignalized			Unsignalized				Signalized			Installation of a new traffic signal to be completed by a private developer as part of an unrelated development
San Jacinto Avenue	EB	L	0.26	16.5	C	0.26	16.5	C	L	0.68	40.3	D		
		TR	0.41	18.8	C	0.41	18.8	C	TR	0.56	30.2	C		
	WB	LT	1.67	333.9	F	1.68	338.3	F	L	0.94	44.0	D		
		R	0.58	21.6	C	0.58	21.6	C	TR	0.57	18.2	B		
Redlands Avenue	NB	LT	1.34	193.1	F	1.36	200.0	F	L	0.66	36.7	D		
		R	1.56	284.2	F	1.58	292.8	F	T	0.90	40.6	D		
		-	-	-	-	-	-	-	R	0.66	6.6	A		
	SB	L	0.87	51.3	F	0.87	51.3	F	L	0.92	39.8	D		
		TR	0.44	18.2	C	0.44	18.2	C	TR	0.32	16.0	B		
Overall Intersection		-		**189.9**	**F**		**194.7**	**F**	-		**27.9**	**C**		

Table 8: 2012 Future Levels of Service and Mitigation Measures (continued)

INTERSECTION & APPROACH		Mvt.	Without Project V/C	Without Project Control Delay	Without Project LOS	With Project V/C	With Project Control Delay	With Project LOS	Mvt.	Mitigated With Project V/C	Mitigated With Project Control Delay	Mitigated With Project LOS	Mitigation Measures	Notes
South Perris Station														
AM Peak														
Bonnie Drive at Southbound I-215 Ramps				Unsignalized			Unsignalized				Signalized		**TT-3:** Install new traffic signal. Less than significant after mitigation.	
Bonnie Drive	EB	L	0.03	27.8	D	0.30	78.5	F	L	0.07	25.9	C		
		R	0.30	17.5	C	0.36	18.7	C	R	0.54	30.5	C		
Southbound I-215 Ramps	NB	L	0.38	11.7	B	0.63	15.9	C	L	0.91	36.5	D		
		T	N/A	N/A	-	N/A	N/A	-	T	0.20	3.6	A		
	SB	T	N/A	N/A	-	N/A	N/A	-	T	0.89	32.0	C		
		R	N/A	N/A	-	N/A	N/A	-	R	0.08	13.2	B		
Overall Intersection		-		**N/A**	-		**N/A**	-	-		**28.4**	**C**		
SR-74 at Northbound I-215 Off-Ramp				Unsignalized			Unsignalized				Signalized			Installation of a new traffic signal to be completed by Caltrans as part of another program. The signal will be in operation for the 2012 opening year.
SR-74	EB	L	0.01	8.5	A	0.01	8.7	A	L	0.02	4.5	A		
		T	N/A	N/A	-	N/A	N/A	-	T	0.52	11.9	B		
	WB	T	N/A	N/A	-	N/A	N/A	-	T	0.31	10.3	B		
Northbound I-215 Off-Ramp	SB	LR	0.54	28.9	D	0.80	43.9	E	LR	0.77	32.2	C		
Overall Intersection		-		**N/A**	-		**N/A**	-	-		**14.9**	**B**		
SR-74 at Sherman Road				Unsignalized			Unsignalized				Signalized			Installation of a new traffic signal to be completed by Caltrans as part of another program. The signal will be in operation for the 2012 opening year.
SR-74	EB	L	0.09	12.8	B	0.09	13.4	B	L	0.19	8.6	A		
		TR	N/A	N/A	-	N/A	N/A	-	TR	0.53	11.9	B		
	WB	L	0.11	10.0	A	0.11	10.1	B	L	0.24	5.7	A		
		TR	N/A	N/A	-	N/A	N/A	-	TR	0.83	17.9	B		
Sherman Road	NB	L	0.71	192.7	F	1.02	304.4	F	L	0.11	18.9	B		
		R	0.21	12.5	B	0.21	12.6	B	R	0.35	20.5	C		
	SB	LR	0.46	43.4	E	0.53	52.3	F	LR	0.19	19.4	B		
Overall Intersection		-		**N/A**	-		**N/A**	-	-		**15.6**	**B**		

Table 8: 2012 Future Levels of Service and Mitigation Measures (continued)

INTERSECTION & APPROACH		Mvt.	Without Project V/C	Without Project Control Delay	Without Project LOS	With Project V/C	With Project Control Delay	With Project LOS	Mvt.	Mitigated With Project V/C	Mitigated With Project Control Delay	Mitigated With Project LOS	Mitigation Measures	Notes
South Perris Station (Continued)														
PM Peak														
Bonnie Drive at Southbound I-215 Ramps				Unsignalized			Unsignalized				Signalized		**TT-3:** Install new traffic signal. Less than significant after mitigation	
Bonnie Drive	EB	L	0.06	28.4	D	1.51	320.2	F	L	0.52	22.2	C		
		R	1.20	159.4	F	1.78	397.2	F	R	0.68	17.2	B		
Southbound I-215 Ramps	NB	L	0.40	14.3	B	0.47	15.5	C	L	0.86	35.3	D		
		T	N/A	N/A	-	N/A	N/A	-	T	0.17	4.3	A		
	SB	T	N/A	N/A	-	N/A	N/A	-	T	1.00	40.8	D		
		R	N/A	N/A	-	N/A	N/A	-	R	0.01	7.1	A		
Overall Intersection		-		**N/A**	-		**N/A**	-	-		**30.2**	**C**		
SR-74 at Northbound I-215 Off-Ramp				Unsignalized			Unsignalized				Signalized			Installation of a new traffic signal to be completed by Caltrans as part of another program. The signal will be in operation for the 2012 opening year.
SR-74	EB	L	0.02	8.2	A	0.03	8.3	A	L	0.05	4.5	A		
		T	N/A	N/A	-	N/A	N/A	-	T	0.82	17.7	B		
	WB	T	N/A	N/A	-	N/A	N/A	-	T	0.27	10.0	A		
Northbound I-215 Off-Ramp	SB	LR	0.59	32.9	D	0.69	42.5	E	LR	0.46	21.4	C		
Overall Intersection		-		**N/A**	-		**N/A**	-	-		**16.2**	**B**		
SR-74 at Sherman Road				Unsignalized			Unsignalized				Signalized			Installation of a new traffic signal to be completed by Caltrans as part of another program. The signal will be in operation for the 2012 opening year.
SR-74	EB	L	0.07	10.4	B	0.08	10.5	B	L	0.18	6.0	A		
		TR	N/A	N/A	-	N/A	N/A	-	TR	0.82	17.8	B		
	WB	L	0.19	13.4	B	0.21	14.5	B	L	0.41	10.1	B		
		TR	N/A	N/A	-	N/A	N/A	-	TR	0.60	12.8	B		
Sherman Road	NB	L	1.48	563.9	F	2.00	854.1	F	L	0.12	18.9	B		
		R	0.39	18.6	C	0.42	20.6	C	R	0.46	21.6	C		
	SB	LR	1.40	431.7	F	1.71	529.9	F	LR	0.19	19.2	B		
Overall Intersection		-		**N/A**	-		**N/A**	-	-		**15.8**	**B**		

Notes: As presented herein, a few individual turning movements would continue to operate below acceptable levels of service with mitigation measures. However, these would not be considered impacts of the project per impact criteria, as the future conditions without the project would already be at unacceptable levels.

F. CONSTRUCTION PERIOD IMPACTS

The construction activities for the proposed PVL would result in an increase of auto and truck trips generated by construction crews and the delivery/removal of materials to and from the construction sites. It should be noted that the delivery of construction materials and equipment, such as the rail, rail ties, ballast, and specialized track equipment, would be accomplished using the existing rail, as opposed to being delivered by truck. The volume of construction traffic would be expected to be modest (less than 50 vehicles per hour) given that no significant excavation is expected, and most construction-related materials deliveries would likely occur during non-peak hours so as to limit congestion along adjacent roads. In addition, traffic diversions would occur during partial and complete roadway and grade crossing closures. As a result, the construction activities could potentially create short-termtemporary significant traffic impacts although, due to their temporary nature, such impacts may be tolerated and the thresholds of significance during construction periods may be redefined by reviewing agencies (Mitigation Measure TT-74). RCTC will develop a traffic management plan in consultation with local jurisdictions to determine detours, length and timing of any closures, temporary access routes, and signage that will contain measures proven to improve traffic levels of service andto mitigate significantthese potential impacts to acceptable levels. RCTC will be responsible for the development and enforcement of this measure.

In terms of estimated truck volumes, the cut/fill estimates were examined to identify volumes of earth that would potentially be moved off site. A conservative approach estimated truck volumes using an average number of tons of material in a cubic yard of earth (1.35 tons/cubic yards) and the typical weight capacity of a dump truck (15 tons/truck). Also, a single work shift was included, though two work shifts per day would be more likely. The estimate yields 30 empty trucks in and 30 filled truck trips out. Again, using a single work shift, this would indicate on average four “ins” and four “outs” each hour, which is a low figure not likely to generate any significant traffic impact. Moreover, the cut/fill estimates were calculated for the entire corridor, so it is unlikely that any volume of truck trips would be concentrated in any particular area or through any one intersection.

G. FUTURE CONDITION

In the future, it would be expected that the PVL would experience an increase in ridership to a total of 7,054 passengers during each of the AM and PM peak periods based on ridership projections.[6] RCTC also expects to identify additional funding to support the completion of the PVL full build out. Thus, when ridership increases and additional funding is identified, RCTC would construct two additional stations in the future, Ramona Station and UC Riverside Station, in addition to the four stations that would be completed by the opening year of 2012 (Hunter Park, Moreno Valley/March Field, Downtown Perris and South Perris stations).

The proposed UCR Station would be located north of Watkins Drive between Blaine Street and Mount Vernon Avenue. This station would not include a parking area. The proposed Ramona Station would be located south of Cajalco Expressway and east of Harvill Avenue; this station would have an associated parking area with a capacity of approximately 500 vehicles. It is also expected that the parking lots of the four opening year stations would be enlarged to accommodate projected increases in ridership, as summarized in Table 9 below.

[6] Parsons Brinckerhoff, 2009

Table 9: Station Parking Lot Capacities

Station	2012 Opening Year	Future Condition
Hunter Park	480	570
UC Riverside	0	0
Moreno Valley/March Field	445	660
Ramona	0	500
Downtown Perris	440	740
South Perris	880	1,390

As the new stations and parking lot expansions are promulgated by RCTC as a result of increased ridership and the availability of funding, RCTC will prepare supplemental analyses for the purpose of identifying impacts and appropriate mitigation. The opening year stations would not be expanded, and additional stations would not be built unless RCTC identifies a need for and then, additional sources of funding. Therefore, when these conditions are met, RCTC will commit to preparation of new reviews under CEQA, and developing mitigation appropriate to future conditions. In this manner, RCTC can be responsive, and committed to undertaking its fair proportion of traffic mitigation measures related to the PVL.