

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

3.9 TRAFFIC GENERATION AND CIRCULATION

This chapter presents a discussion of the existing roadway and circulation system in the vicinity of the Proposed Project site, and analyzes the potential traffic impacts of the proposed Olive Pit mining and reclamation project on the surrounding circulation system including roadways and affected intersections. This chapter provides the traffic operation methodology, existing traffic conditions, and future traffic volume with and without the Proposed Project. Recommendations for roadway and traffic control improvements are presented within the Mitigation Program. This chapter is based on the *Traffic Impact Analysis* (Urban Crossroads, 2014), the full text of which is provided in **Appendix F** of this EIR.

The purpose of this traffic impact analysis is to evaluate the proposed Olive Pit Mining and Reclamation Project from a traffic circulation standpoint. The proposed project is located north of Los Angeles Street, south of Olive Street, and west of Azusa Canyon Road, in the City of Irwindale.

To satisfy the environmental analysis requirements per the City of Irwindale Policy Guidelines for Traffic Impact Reports, the California Department of Transportation (Caltrans) requirements, the California Environmental Quality Act (CEQA) and the Los Angeles County Congestion Management Program (CMP), the following time frames / scenarios will be evaluated in the traffic analysis:

- Existing (2014) Conditions
- Existing Plus Project Conditions
- Interim Year (2016) Conditions Without and With the Project
- Long Range (2035) Conditions Without and With the Project

3.9.1 PROJECT DESCRIPTION

Figure 3.9-1 shows the site plan of the proposed project. The Project is approximately 190 acres in size and the proposed Project plans involve three components: 1) construction of a new on-site access road; 2) phased extraction of mineral resources; and 3) site reclamation. The first operational phase at the site will include mining the eastern portion of the site, followed by reclamation of this area to create an approximately 32-acre pad suitable for future development. Reclamation will involve filling the extraction void with inert fill materials. The second operational phase will include mining the remainder of the site utilizing both dry and underwater mining processes.

Material excavated in the pit will be transported up the access road to the loading area by conveyor or off-road haul trucks and subsequently placed in overhead hoppers. Over-the-road

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

haul trucks will be loaded at the hoppers through an automated process. Extracted materials will then be transported approximately 3 miles from the pit to the processing plant located at 1245 E Arrow Highway in Irwindale.

United Rock proposes to extract an average of 1 million tons per year during Phase I. This mining activity will typically occur 6 days per week, excluding holidays. This amounts to approximately 306 working days a year (306 days = 52 weeks per year x 6 work days per week, less 6 holidays). The average truck load conveys approximately 25 tons of aggregate material. On an annual basis, 40,000 truck trips are required to transport 1 million tons. The average daily activity equals 131 round trips (40,000 annual trips / 306 working days). This will result in 262 one-way truck trips a day (both entering and exiting truck trips).

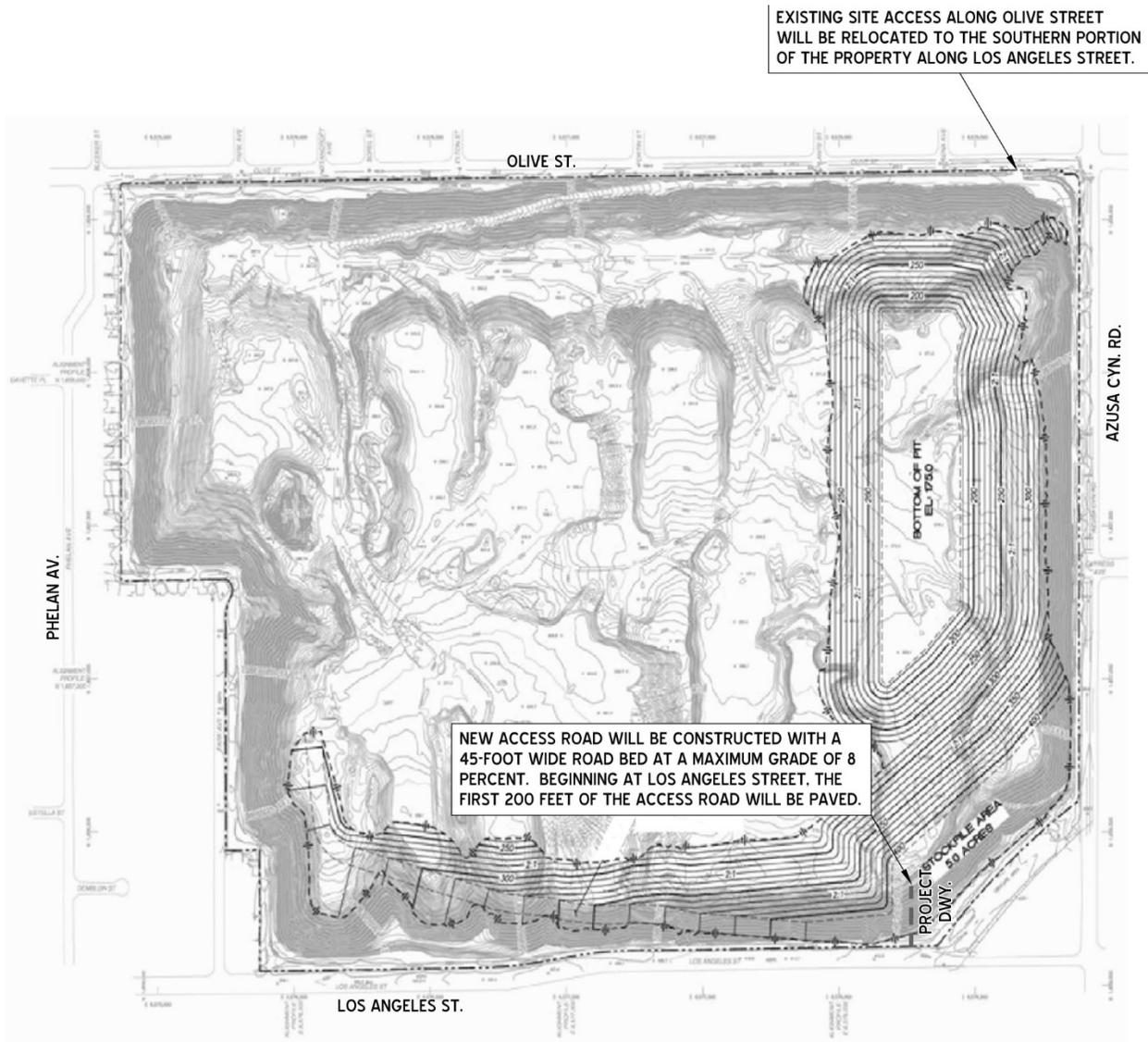
Operational components of the Project include the following:

- A locking gate will be placed at the entrance to the site to prevent unauthorized access during non-business hours.
- An approximate 5-acre area at the entrance to the site will be used as the "loading area." The loading area will allow for storing mined materials and loading of over-the-road haul trucks. Haul trucks will access this location to be loaded with material for transport to the processing area.
- Hours of operation for the extraction of resources will occur between 6:00AM and 6:00PM.
- Transportation to the processing plant will be conducted during the hours of 7:00AM-5:00PM. Trucks leaving the Olive Pit site at or near to 5:00PM will be on the roadway system during the typical evening peak period (4:00PM – 6:00PM).
- All trucks shall be equipped with Diesel Particulate Filters or a resonator to reduce noise by 3 to 6 dBA. In addition, no Jake Brakes will be used.
- All trucks shall be equipped with single exhaust, vertical straight stacks and no turndown. All trucks shall be equipped with automatic transmissions, which eliminate unnecessary engine revving.
- A walking park and landscape screening will be placed along the northern border of the pit to create a visual buffer between residences north of Olive Street and the Olive Pit.

For the purpose of this TIA report, the truck trips have been converted to passenger car equivalents (PCE). The project is anticipated to generate a net total of approximately 866 (PCE) trip-ends per day, with 133 AM peak hour (PCE) trips and 92 PM peak hour (PCE) trips.

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-1 Site Plan



CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

3.9.2 TRAFFIC OPERATIONS ANALYSIS

3.9.2.1 INTERSECTION DELAY ANALYSIS METHODOLOGY

For this study, the technical guide used in the evaluation of traffic operations is the 2010 Highway Capacity Manual (HCM). The HCM defines level of service as a qualitative measure which describes operational conditions within a traffic stream, generally in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. The criteria used to evaluate Level of Service (LOS) conditions vary based on the type of roadway and whether the traffic flow is considered interrupted or uninterrupted.

The definitions of level of service for uninterrupted flow (flow unrestrained by the existence of traffic control devices) are:

- LOS "A" represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.
- LOS "B" is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.
- LOS "C" is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.
- LOS "D" represents high-density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.
- LOS "E" represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.
- LOS "F" is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations.

Uninterrupted flow is generally found only on limited access (freeway) facilities in urban areas. The level of service is based on the HCM, **Table 3.9-7**.

The definitions of level of service for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control.

The level of service is typically dependent on the quality of traffic flow at the intersections along a roadway. The HCM methodology expresses the level of service at an intersection in terms of

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

delay time for the various intersection approaches. The HCM uses different procedures depending on the type of intersection control.

For signalized intersections, average total delay per vehicle for the overall intersection is used to determine level of service. Levels of service at the study intersections have been evaluated using an HCM intersection analysis program (Synchro Version 8). The level of service has been determined at signalized intersections using data collected describing the intersection configuration, traffic signal timing, and traffic volumes to calculate average intersection delay.

The study area intersections which are stop sign controlled with stop-control on the minor street only has been analyzed using the two-way stop-controlled unsignalized intersection analysis methodology of the HCM. For these intersections, the calculation of level of service is dependent on the occurrence of gaps occurring in the traffic flow of the major street. The level of service criteria for this type of intersection analysis is based on total delay per vehicle for the worst minor street movement(s).

The levels of service are defined in terms of average delay for the HCM intersection analysis methodology is as follows:

Table 3.9-1 Level of Service Based On The HCM

Level of Service	Average Total Delay per Vehicle (Seconds)	
	Signalized	Unsignalized
A	0 to 10.00	0 to 10.00
B	10.01 to 20.00	10.01 to 15.00
C	20.01 to 35.00	15.01 to 25.00
D	35.01 to 55.00	25.01 to 35.00
E	55.01 to 80.00	35.01 to 50.00
F	80.01 and up	50.01 and up

Urban segments (i.e., segments on roadways that are generally signalized) do not typically require segment analysis. Segment requirements can normally be determined by the analysis of lane requirements at intersections.

For Existing and Future ‘Without Project’ conditions LOS analysis, the existing signal timing plans (provided by City of Irwindale staff and Caltrans staff) have been utilized for the study area intersections. For ‘With Project’ conditions, the existing signal timing plans in conjunction with potential signal optimization timing opportunities (e.g. – lengthier green times and separate / protected left turn phases, where necessary) were used to calculate ‘With Project’ LOS.

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Pursuant to City or Irwindale Traffic Impact Analysis Policy Guidelines, the current Highway Capacity Manual (HCM) methodology is used to evaluate study area intersections. The HCM 2010 utilizes a saturation flow rate of 1,900 vehicles per hour of green (vphg) per lane in each scenario for intersection delay calculation purposes. In addition, all signalized study area intersections are analyzed using the Intersection Capacity Utilization (ICU) technique. To calculate an ICU, the volume of traffic using the intersection is compared with the capacity of the intersection. ICU is usually expressed as a volume to capacity (V/C) ratio. The V/C represents that portion of the hour required to provide sufficient capacity to accommodate all intersection traffic if all approaches operate at capacity. ICU analysis is performed using the Synchro 8 software.

For CMP intersections, a saturation flow rate of 1,600 vehicles per hour of green (vphg) per lane and 2,880 vehicles per hour of green (vphg) per dual turn lanes will be utilized in each scenario for Intersection Capacity Utilization (ICU) calculation purposes. Per the City of Irwindale 2020 General Plan, the only CMP-designated facilities within the City of Irwindale are the I-605 and I-210 ramps. Therefore, ICU results based on LA CMP parameters are also presented in this report for the signalized intersection of I-605 SB Off-Ramp/Arrow Highway (#9).

For unsignalized study area intersections, explicit ICU volume to capacity ratios cannot be calculated. Per the County of Los Angeles CMP guidelines (page B-5), the V/C ratio for an unsignalized intersection must be converted/extracted from the HCM analysis.

For all study area signalized intersections, ICU analysis has also been performed using the Synchro 8 software. It should be noted that the Synchro v/c output results are discussed in the City of Irwindale Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information. Therefore, consistent with the City's guidelines, both the Synchro v/c ratio (ICU) and delay results are presented in this report. The V/C ratio and corresponding Level of Service (LOS) are as follows:

Table 3.9-2 Level of Service - Critical Volume To Capacity Ratio

Level of Service	Critical Volume To Capacity Ratio
A	0.00 - 0.60
B	0.61 - 0.70
C	0.71 - 0.80
D	0.81 - 0.90
E	0.91 - 1.00
F	>1.00

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

3.9.2.2 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TIA uses the signal warrant criteria presented in the latest edition of the Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices (MUTCD), as amended by the 2012 California MUTCD (CA MUTCD), for all study area intersections.

The signal warrant criteria for Existing (2014) conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. Both the FHWA's MUTCD and the 2012 CA MUTCD indicate that the installation of a traffic signal should be considered if one or more of the signal warrants are met. Specifically, this TIA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for Existing (2014) traffic conditions. Warrant 3 criteria are basically identical for both the FHWA's MUTCD and the 2012 CA MUTCD. For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection.

For future (new) unsignalized intersections, future traffic conditions have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets.

Traffic signal warrant analyses were performed for the following unsignalized study area intersections:

Table 3.9-3 Traffic Signal Warrant Analyses of Unsignalized Intersections

ID	Intersection Location	Traffic Control	Jurisdiction
1	Azusa Canyon Road / Los Angeles Street	Unsignalized	Irwindale and West Covina
8	I-605 NB Ramp-Live Oak Lane /Arrow Hwy.	Unsignalized	Caltrans
12	Avenida Barbosa / URP2 Driveway 2 (Private)	Unsignalized	Irwindale
14	Phelan Avenue / Los Angeles Street	Unsignalized	Baldwin Park
16	Project Driveway / Los Angeles Street	Unsignalized	Irwindale

It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with level of

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

service. An intersection may satisfy a signal warrant condition and operate at or above LOS “D” or operate below LOS “D” and not meet a signal warrant.

3.9.2.3 DEFINITION OF DEFICIENCY AND SIGNIFICANT IMPACT

The following definitions of deficiencies and significant impacts have been developed in accordance with City of Irwindale requirements.

3.9.2.3.1 DEFINITION OF DEFICIENCY

The City of Irwindale requires the following LOS criteria be implemented:

- LOS will not exceed LOS “D” at all intersections (excluding State Highway facilities) on arterial and collector streets.

The City of Baldwin Park General Plan (November 2002) states that the City will maintain level of service “D” at all City intersections. As such, LOS “D” has also been considered acceptable at any intersections within the City of Baldwin Park.

3.9.2.3.2 DEFINITION OF SIGNIFICANT IMPACT

- When a signalized intersection operates at mid-range LOS “D” (45.0 seconds) or better under existing or future baseline conditions, and the addition of project trips degrades the intersection operations to LOS “E” or “F.” The project mitigation should bring the facility to operate at mid-range LOS “D” at minimum.
- When a signalized intersection operates at mid-range LOS “E” (67.5 seconds) for State Highways or better under existing or future baseline conditions, and the addition of project trips degrades the intersection operations to 67.6 seconds (LOS “E”) or worse (LOS “F”). The project mitigation should bring the facility to operate at mid-range LOS “E” at minimum.
- When a signalized intersection operates at LOS “E” for non-state or LOS “F” (for State) under existing or future baseline conditions, and the addition of more than 50 peak hour project trips contributes to the continuing operational failure at the intersection. The project mitigation should bring the facility to pre-project conditions.
- At an unsignalized intersection, when the minor stop-controlled approach operates at LOS “F” and does not have acceptable operation in terms of total control delay, and the addition of project trips increases the total control delay to more than 4.0 vehicle hours for a single lane approach or 5.0 vehicle hours for a multi-lane approach. The project mitigation should bring the facility to operate at LOS “E” (at a minimum) or bring the total control delay to less than 4.0 vehicle-hours for a single lane approach or 5.0 vehicle-hours for a multi-lane approach (at a minimum).

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

- At an unsignalized intersection, when the minor stop controlled approach operates at LOS “F” and does not have an acceptable operation in terms of total control delay, and the addition of more than 50 peak hour project trips contributes to the continuing operational failure at the minor approach. The project mitigation should bring the facility to pre-project conditions.

3.9.2.4 LOS ANGELES COUNTY CONGESTION MANAGEMENT PROGRAM (CMP) CONSISTENCY REQUIREMENTS

The proposed project is located within the jurisdiction of the City of Irwindale in Los Angeles County. Therefore, this traffic study is required to address all CMP requirements of the Los Angeles County Congestion Management Program. The purpose of the Los Angeles County Congestion Management Program (CMP) is to address the impact of local growth on the regional transportation system. The goals of the CMP are summarized below:

- To link local land use decisions with their impacts on regional transportation, and air quality;
- To develop a partnership among transportation decision makers on devising appropriate transportation solutions that include all modes of travel; and
- To provide transportation projects which are eligible to compete for state gas tax funds.

The CMP offers the following mechanisms to meet these goals:

- Tracking and analysis to determine how the regional highway and transit systems are performing;
- Analysis of the impacts of local land use decisions on regional transportation;
- Local implementation of Transportation Demand Management design guidelines that ensure new development includes improvements supportive of transit and TDM;
- Tracking new building activity throughout Los Angeles County, and Implementation of local strategies which benefit the regional transportation system and offset the impact of new development.

3.9.2.5 PRINCIPAL FINDINGS

For Existing (2014) and Existing Plus Project conditions, the following intersections operate at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry:

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-4 Unacceptable Level of Service Existing (2014) and Existing Plus Project Conditions

ID	Intersection Location	Jurisdiction
1	Azusa Canyon Road / Los Angeles Street	Irwindale and West Covina
12	Avenida Barbosa / URP2 Driveway 2 (Private)	Irwindale

Based on the traffic signal warrants for Existing (2014) traffic conditions, the intersections of Azusa Canyon Road / Los Angeles Street (#1) and Phelan Avenue / Los Angeles Street (#14) both appear to warrant a traffic signal.

As mentioned previously, a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should be noted that even though the intersection of Phelan Avenue / Los Angeles Street (#14) appear to warrant a traffic signal, this intersection is expected to continue operate at acceptable level of service “C” or better with an all-way-stop control through 2035 conditions and consequently a project related significant impact is not anticipated at this location. Therefore, installation of a traffic signal at this location is not recommended

For Interim Year (2016) Without and With Project conditions, the intersection of Azusa Canyon Road / Arrow Highway (#4) is projected to operate at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry, in addition to the previously identified locations under Existing and Existing Plus Project Conditions.

For Long Range (2035) Without and With Project conditions, the intersection of I-605 SB Off-Ramp / Arrow Highway (#9) is projected to operate at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry, in addition to the previously identified locations under Interim Year (2016) Conditions.

3.9.2.6 PROJECT FAIR SHARE CALCULATIONS

Per City of Irwindale Guidelines, the project shall pay its fair share of improvements to eliminate any of the significant impacts. Based on the intersection analysis results (see **Table 3.9-22**), the project is anticipated to contribute additional traffic causing significant impacts up to 2035 conditions, fair share calculation is therefore based on 2035 conditions to address all significant impacts caused by the project.

The project fair share percentages (%) towards the required improvements have also been calculated. **Table 3.9-23** summarizes the 2035 With Project fair share percentages for the proposed project. As shown on **Table 3.9-23**, the project contributes approximately 19% of the new traffic at the intersection of Azusa Canyon Road / Arrow Highway (#4) and 17% of the new

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

traffic at the intersection of I-605 SB Off-Ramp / Arrow Highway (#9). In addition, the project will be fully responsible for the intersection improvement at Azusa Canyon Road/Los Angeles Street (#1) to mitigate the project's direct impact to pre-project conditions.

3.9.3 PROJECT DESCRIPTION

3.9.3.1 LOCATION

The proposed project is located on the northwest corner of Azusa Canyon Road and Los Angeles Street in the City of Irwindale, as previously shown on **Figure 3.9-1**.

3.9.3.2 PROJECT ACCESS

Access on-to the site will be relocated from Olive Street to the southern portion of the property along Los Angeles Street. The new access road will be constructed with a combination of on-site materials and inert fill materials from off-site sources. The access road will ascend from the bottom of the pit along the southern edge of the property to the southeastern corner of the site where it will exit at Los Angeles Street. The new access road will be constructed with a 45-foot wide road bed at a maximum grade of 8 percent. Beginning at Los Angeles Street, the first 200 feet of the access road will be paved. The remaining length of the road will be treated with dust palliatives and watered for dust control and soil stabilization. As shown previously, **Figure 3.9-1** illustrates the proposed Access for the project.

3.9.3.3 PROJECT TRIP DISTRIBUTION

Trip distribution is the process of identifying the probable destinations, directions, or traffic routes that will be utilized by Project traffic. Over-the-road haul trucks will proceed approximately 3 miles to United Rock's existing Pit No.2 located at 1245 E Arrow Highway in Irwindale. Trucks will reach this location by exiting the site at Los Angeles Street, turning north onto Azusa Canyon, then proceeding west on Arrow Highway to Pit No.2. From there, a conveyor will move materials to the processing plant (United Rocks Pit No. 4) which is adjacent to Pit No. 2.

The project truck trip outbound distribution pattern is shown on **Figure 3.9-2**. As presented on **Figure 3.9-2**, the outbound route from the Olive Pit mining site involves the following roadway segments:

- Los Angeles Street, eastbound from Project driveway to Azusa Canyon Road.
- Azusa Canyon Road, northbound from Los Angeles Street to Arrow Highway.
- Arrow Highway, westbound from Azusa Canyon Road to URP Pit No. 2 Driveway 1.

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

The project truck trip inbound/return distribution pattern is shown on **Figure 3.9-3**. As presented on **Figure 3.9-3**, the inbound route from the URP Pit No. 2 to the Olive Pit mining site involves the following roadway segments:

- Avenida Barbosa, southbound from URP Pit No. 2 Driveway to Arrow Highway.
- Arrow Highway, eastbound from Avenida Barbosa to Azusa Canyon Road.
- Azusa Canyon Road, southbound from Arrow Highway to Los Angeles Street.
- Los Angeles Street, westbound from Azusa Canyon Road to Olive Pit mining site Project Driveway.

The project's truck route is very specific and will only pass through Los Angeles Street, Azusa Canyon Road, and Arrow Highway as described above.

The project employee/visitor trip distribution is shown on **Figure 3.9-4**.

3.9.3.4 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development.

Anticipated truck traffic will be approximately 262 daily truck trips (131 out bound loads). Transportation to the processing plant will be conducted during the hours of 7:00AM- 5:00PM. Trucks leaving at or near to 7:00am will be on the roadway system during the typical morning peak period (7:00am – 9:00pm). Trucks leaving the Olive Pit site at or near to 5:00PM will be on the roadway system during the typical evening peak period (4:00PM – 6:00PM). Trip Generation estimates for the Project are shown in **Table 3.9-5**. Traffic activity levels for Phase 1 reclamation, Phase 2 extraction, and Phase 2 reclamation will generate traffic at a level commensurate to or less than Phase 1 mining operations described previously.

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-5 Project Trip Generation Estimates

Land Use	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	
Aggregate Trucks ¹	20	19	39	13	13	26	262
Passenger Car Equivalent (PCE = 3.0) ²	60	57	117	39	39	78	786
Net Truck Trips (PCE)	60	57	117	39	39	78	786
Employees/Visitors (Passenger Car) ³	12	4	16	6	8	14	80
TOTAL PROJECT TRIPS (PCE)⁴	72	61	133	45	47	92	866

¹ Daily truck trips are based on the number of trucks estimated for 1 million tons per year.
² Passenger Car Equivalent (PCE) factor of 3.0 is assumed for aggregate trucks.
³ Daily quantities assume 2 trips per employee/visitor. AM and PM peak hour to daily relationships have been based on ITE Land Use Code "140 EMP" (Manufacturing).
⁴ TOTAL PROJECT TRIPS (PCE) = "Net Truck Trips (PCE)" + "Employees/Visitors (Passenger Car)"

As shown on **Table 3.9-5**, the Project is anticipated to generate a net total of approximately 866 passenger car equivalent (PCE) trip-ends per day with 133 PCE AM peak hour trips and 92 PCE PM peak hour trips.

3.9.3.5 PROJECT ONLY VOLUMES

The project only related average daily traffic (ADT) volumes are shown on **Figure 3.9-5**. Similarly, **Figure 3.9-6** and **Figure 3.9-7** present the project only AM and PM peak hour volumes, respectively. As shown on these exhibits, Los Angeles Street (immediately east of Project Driveway), Azusa Canyon Road, and Arrow Highway are projected to carry the most project related traffic with approximately 800 vehicles per day (vpd).

“Project only” peak hour 2-way (link) traffic volumes are presented on **Figure 3.9-8**. As shown on **Figure 3.9-8**, the project is anticipated to generate the most peak hour trips along Los Angeles Street (immediately east of Project Driveway), Azusa Canyon Road, and Arrow Highway. The 117 AM and 78 PM trips along Arrow Highway are reflective of the truck trips traveling to URP2 location. By comparing **Figure 3.9-8** and **Figure 3.9-9** (intersection analysis location map [Study Area]), all major intersections projected to carry 50 (or more) peak hour trips have been evaluated in this traffic study.

3.9.4 EXISTING CONDITIONS

This section of the report summarizes existing roadway and traffic conditions in the study area. All major intersections anticipated to carry 50 (or more) peak hour trips (passenger car equivalents) have been evaluated in this traffic study. The existing number of lanes and traffic control devices for existing intersections are presented, along with existing traffic count data collected for this study. This data was used to analyze existing traffic operations in the study area. Existing plans for roadway improvements are also described in this section.

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

3.9.4.1 EXISTING ROADWAY SYSTEM CIRCULATION NETWORK

The study area includes a total of sixteen (16) existing and future intersections as shown on **Figure 3.9-9**. Of these sixteen (16) intersections, the existing study area circulation network includes fifteen (15) intersections analysis locations shown on **Table 3.9-6**. The last intersection in the study area is future planned intersection (Project driveway) that does not currently exist.

Table 3.9-6 Intersection Analysis Locations

ID	Intersection Location	Traffic Control	Jurisdiction
1	Azusa Canyon Road / Los Angeles Street	Unsignalized	Irwindale and West Covina
2	Azusa Canyon Road / Cypress Street	Signalized	Irwindale
3	Azusa Canyon Road / Olive Street	Signalized	Irwindale
4	Azusa Canyon Road / Arrow Highway	Signalized	Irwindale
5	Maine Avenue / Arrow Highway	Signalized	Irwindale and Baldwin Park
6	Arrow Highway / Live Oak Avenue	Signalized	Irwindale
7	Arrow Highway / Rivergrade Road	Signalized	Irwindale
8	I-605 NB Ramp - Live Oak Lane / Arrow Highway	Unsignalized	Caltrans
9	I-605 SB Off-Ramp / Arrow Highway	Signalized	Caltrans
10	Avenida Barbosa / Arrow Highway	Signalized	Irwindale
11	URP2 Driveway 1 / Arrow Highway	Unsignalized	Irwindale
12	Avenida Barbosa / URP2 Driveway 2 (Private)	Unsignalized	Irwindale
13	Maine Avenue / Los Angeles Street	Signalized	Baldwin Park
14	Phelan Avenue / Los Angeles Street	Unsignalized	Baldwin Park
15	Pedestrian Crossing / Arrow Highway	Signalized	Irwindale
16	Project Driveway / Los Angeles Street - (<i>Future</i>)	Unsignalized	Irwindale

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-2 Truck Trip Distribution (Outbound)



CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-3 Truck Trip Distribution (Inbound)



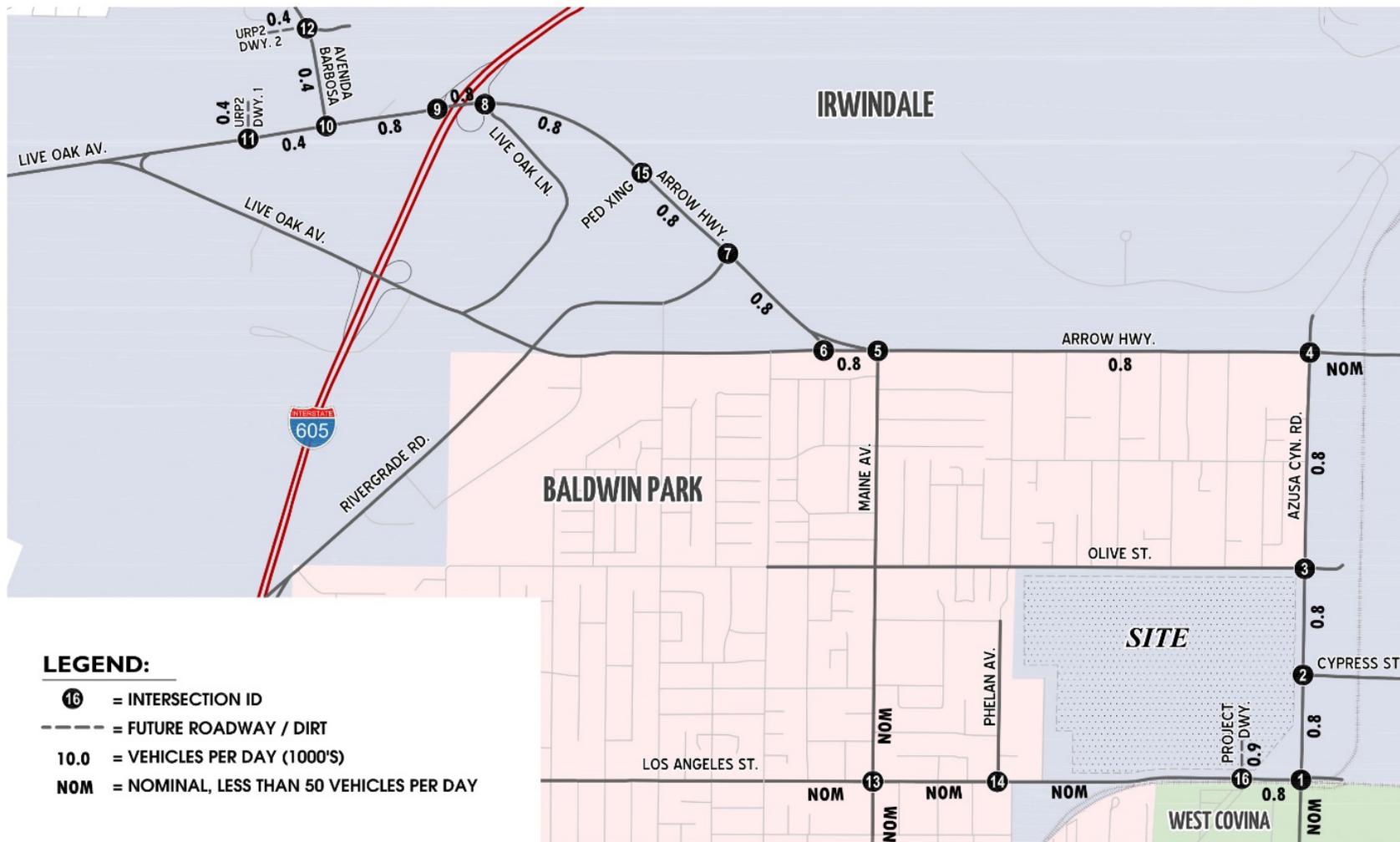
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-4 Employee (Passenger Car) Trip Distribution



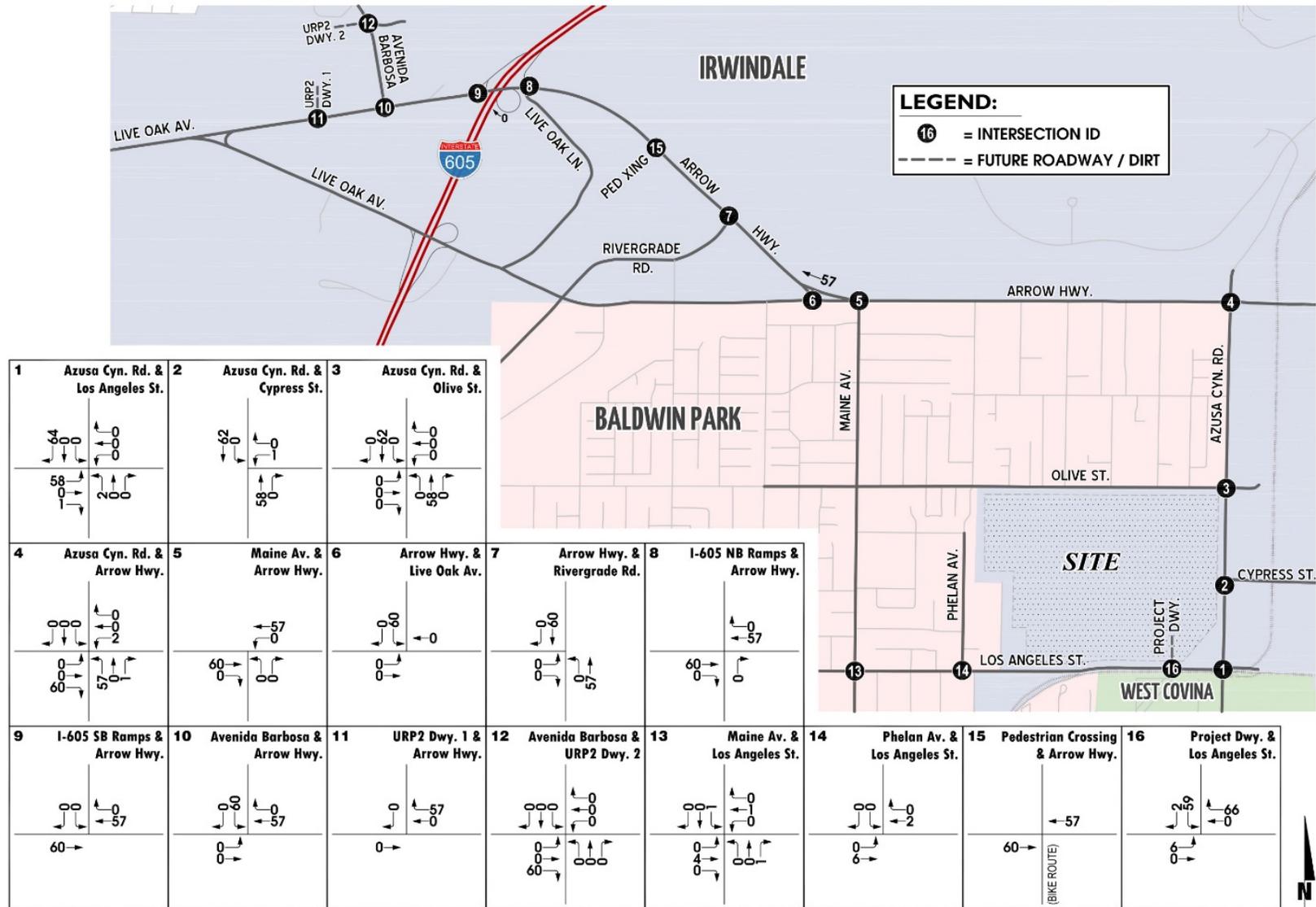
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-5 Project Only Average Daily



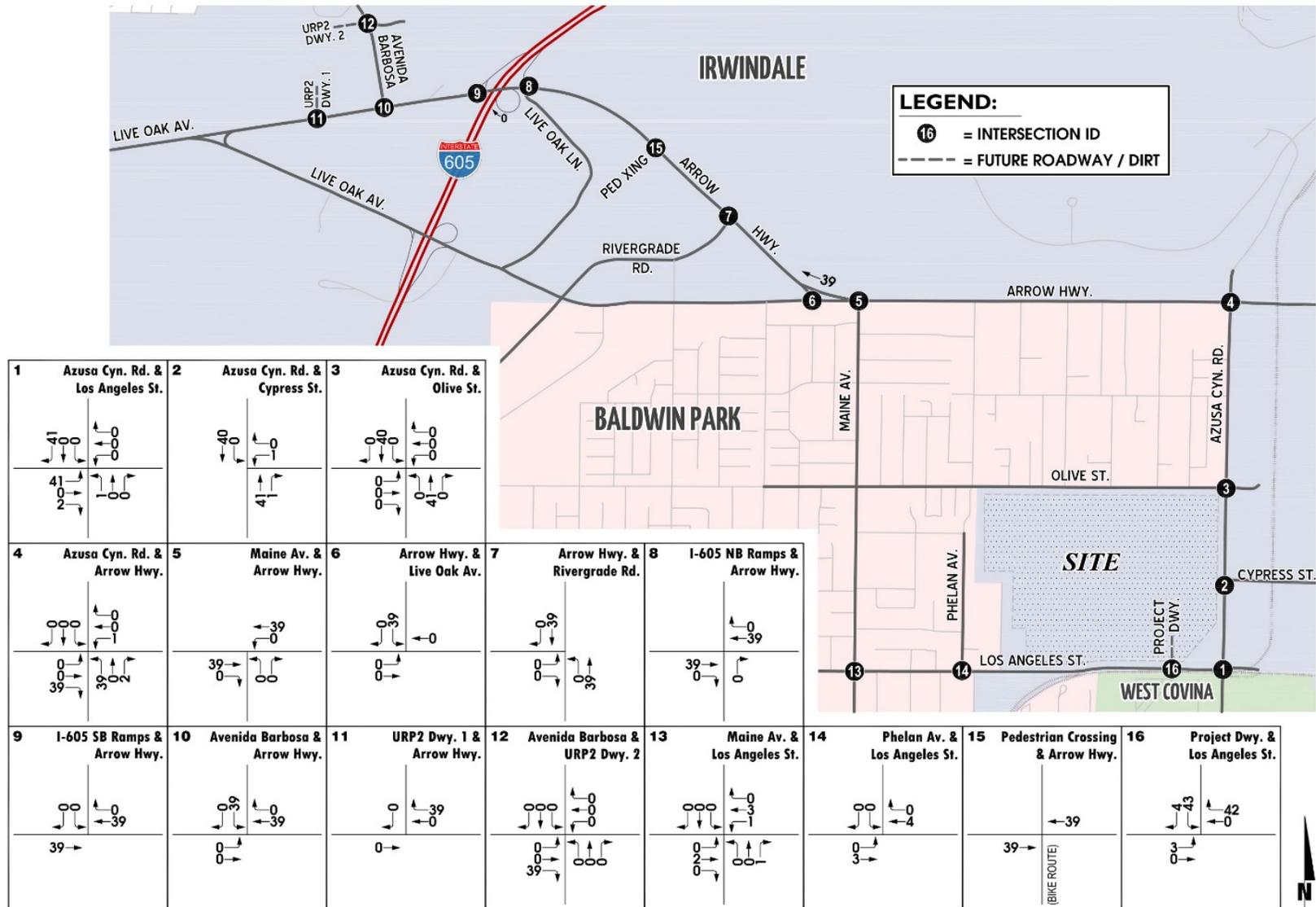
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-6 Project Only AM Peak Hour Intersection Volumes



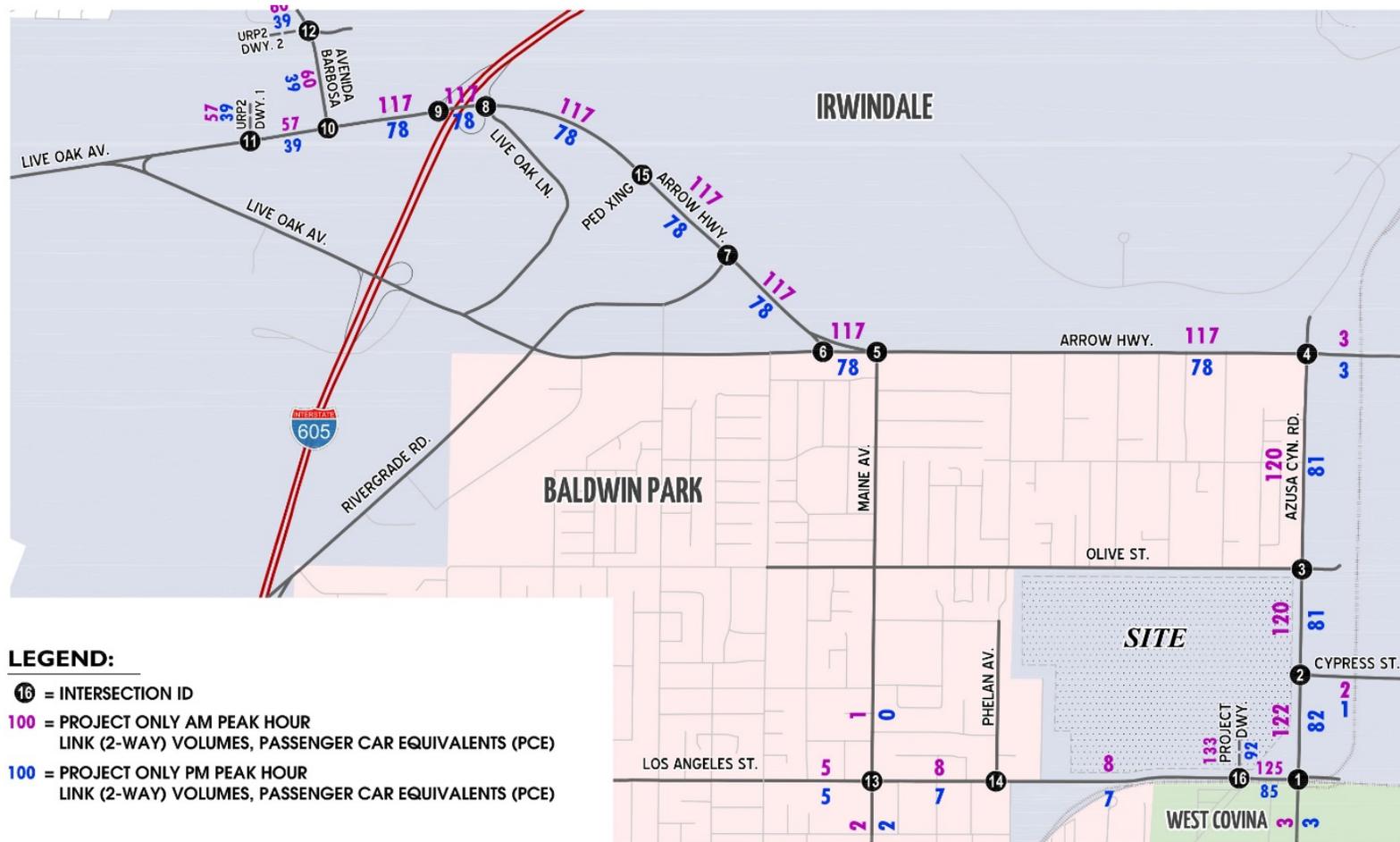
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-7 Project Only PM Peak Hour Intersection Volumes



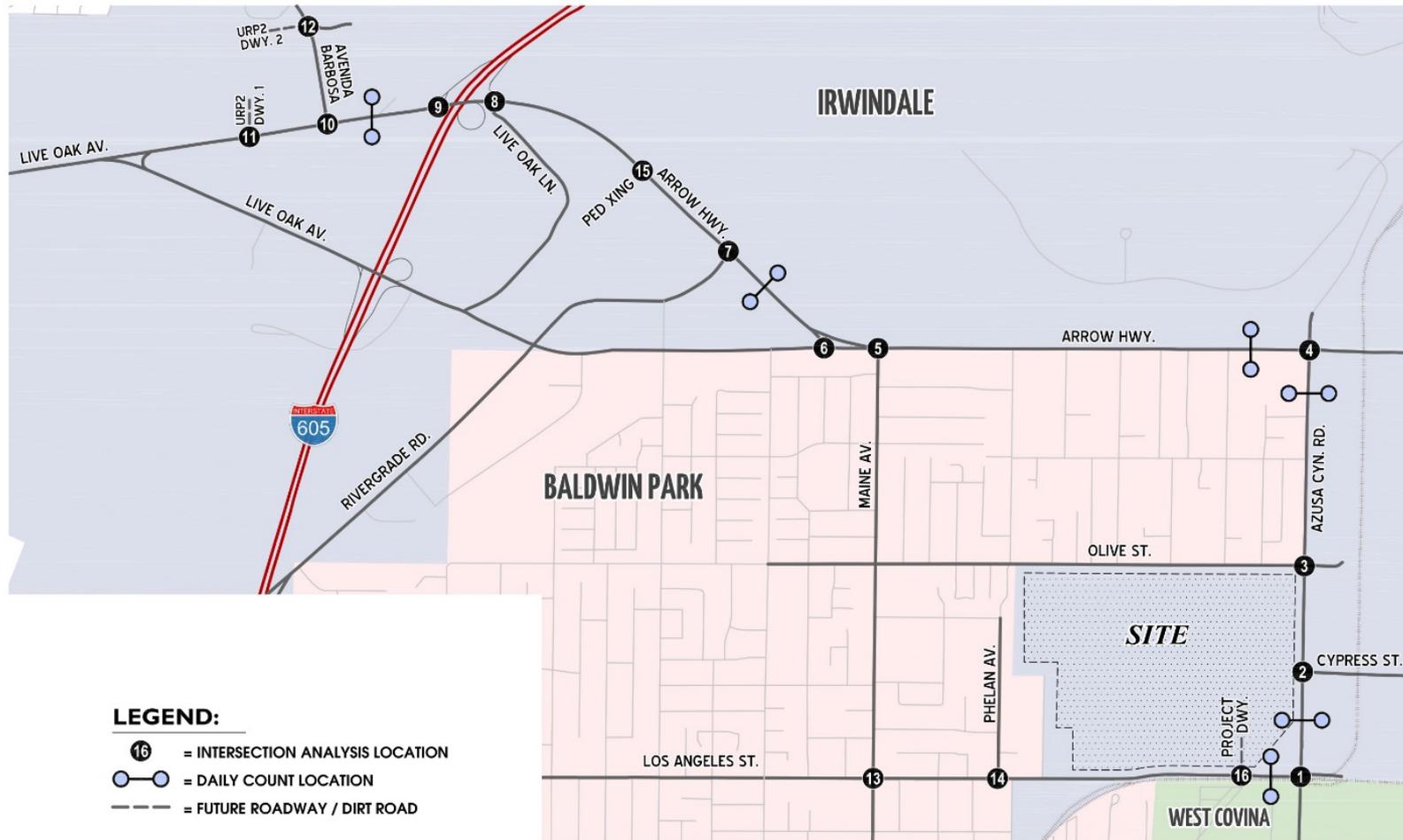
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-8 Project Only Peak Hour Link Volumes



CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-9 Study Area



CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-10 identifies the existing number of through lanes and intersection controls for the study area roadways. As shown on **Figure 3.9-10**, Los Angeles Street (west of Azusa Canyon Road), Azusa Canyon Road (north of Los Angeles Street), and Arrow Highway (between Azusa Canyon Road and I-605 Ramps) exist today as four (4) lane divided roadways. Arrow Highway, east of Azusa Canyon Road, exists as a five (5) lane divided roadway. The speed limit on both Los Angeles Street and Arrow Highway is currently 45 miles per hour (mph), while Azusa Canyon Road speed limit is currently 40 miles per hour (mph). As also shown on **Figure 3.9-10**, most of the existing study area intersections are signalized, with the exception of Azusa Canyon Road/Los Angeles Street (#1), I-605 Freeway Northbound Ramps/Live Oak Lane (private industrial road) and Arrow Highway (#8), URP2 Driveway 1/Arrow Highway (#11), Avenida Barbosa/URP2 Driveway 2 (Private) (#12), and Phelan Avenue/Los Angeles Street (#14).

3.9.4.2 TRANSIT SERVICE

The study area is currently served by the Foothill Transit Agency with bus service along Live Oak Avenue via Route 492 and Arrow Highway via Route 272. Portions of Olive Street and Maine Avenue, within the study area, are also served by the Baldwin Park Transit Agency via Teal Line route.

Figure 3.9-11 illustrates the Foothill Transit Agency bus routes for the study area.

3.9.4.3 EXISTING PEDESTRIAN AND BICYCLE FACILITIES

Existing pedestrian and bicycle facilities (e.g., crosswalks, sidewalks, bike lanes, etc.) within the study area are shown on **Figure 3.9-12**. As shown in **Figure 3.9-12**, the only existing bike path within the study area is located on the riverbed.

3.9.4.4 EXISTING DAILY TRAFFIC VOLUMES

Figure 3.9-13 depicts the current average daily traffic (ADT) volumes in the study area. The existing data shown on **Figure 3.9-13** has been based on May 2014 traffic data. The traffic count data was collected while school was in session.

As shown on **Figure 3.9-13**, the highest daily traffic volumes in the study area occur on Arrow Highway, west of Maine Avenue, which currently carries approximately 43,900 vehicles per day (VPD).

3.9.4.5 EXISTING PEAK HOUR TRAFFIC VOLUMES

Existing intersection level of service calculations are based upon manual AM and PM peak period turning movement counts conducted on May 2014. The AM peak hour traffic volumes were determined by counting the two hour period between 7 - 9 AM in the morning. Similarly, the PM peak hour traffic volumes were identified by counting the two hour period from 4 - 6 PM in the evening. The highest four consecutive 15-minute periods traffic counts have been used for

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

analysis. The count includes the vehicle classification as shown below per the City of Irwindale traffic study guidelines:

- passenger cars
- buses/recreational vehicles
- 3 axle trucks
- 4 or more axle trucks

To represent the impact large trucks, buses and recreational vehicles have on traffic flow; trucks are converted into passenger car equivalents (PCEs). By their size alone, these vehicles occupy the same space as two or more passenger cars. In addition, the time it takes for them to accelerate and decelerate is also much longer than for passenger cars, and varies depending on the type of vehicle and number of axles. For the purpose of this analysis, a PCE factor of 1.5 will be applied to 2-axle trucks, 2.0 for 3-axle trucks and 3.0 for 4+-axle trucks to estimate each turning movement.

The overall existing count volumes illustrated on the exhibits and used for the analysis for the study are calculated passenger car equivalent (PCE) volumes. These raw PCE volumes are then reviewed for flow conservation between closely spaced intersections and adjusted to ensure reasonable flow conservation if necessary was also performed.

The final Existing (2014) AM and PM Peak hour volumes are shown on **Figure 3.9-14** and **Figure 3.9-15**, respectively.

3.9.4.6 EXISTING (2014) TRAFFIC CONDITIONS

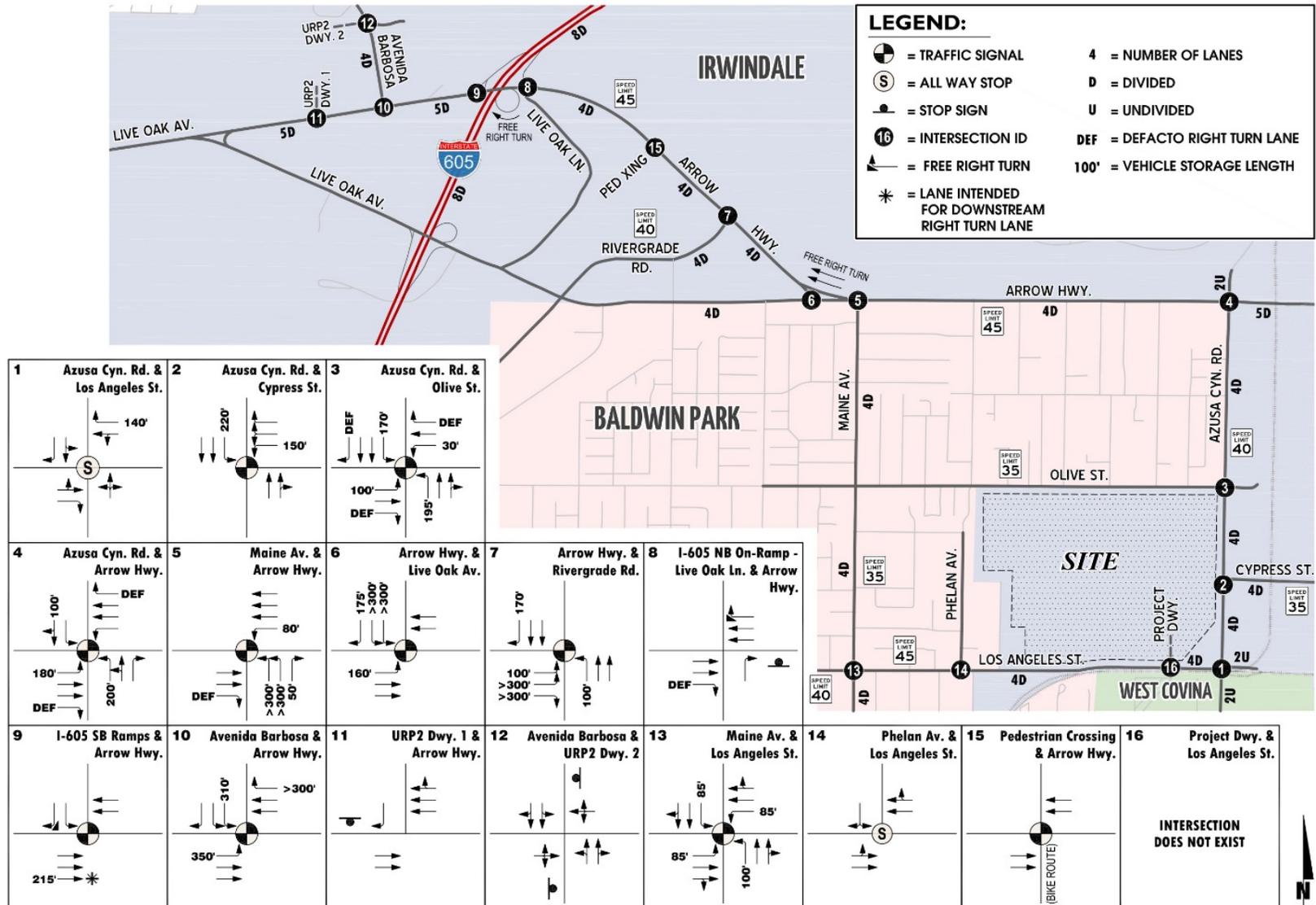
The existing conditions analyses include intersection delay and level of service operations. The analysis methodologies were described previously in Section 1.

3.9.4.6.1 EXISTING INTERSECTION DELAY ANALYSIS

Existing (2014) peak hour traffic operations have been evaluated for study area intersections. The results of this analysis are summarized in **Table 3.9-7**, along with the existing intersection geometrics and traffic control devices at each analysis location.

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-10 Existing Number of Lanes and Intersection Controls



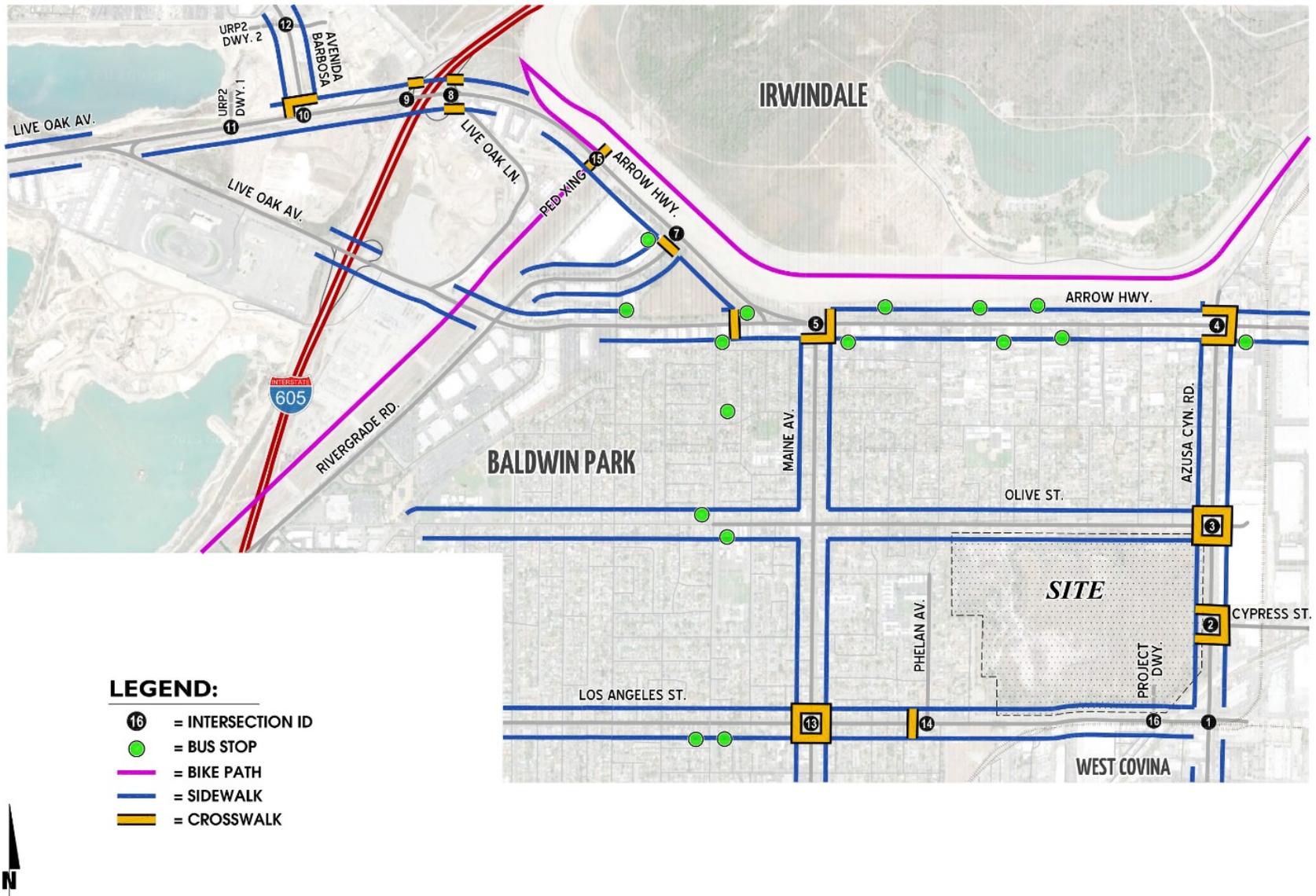
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-11 Existing Transit Services



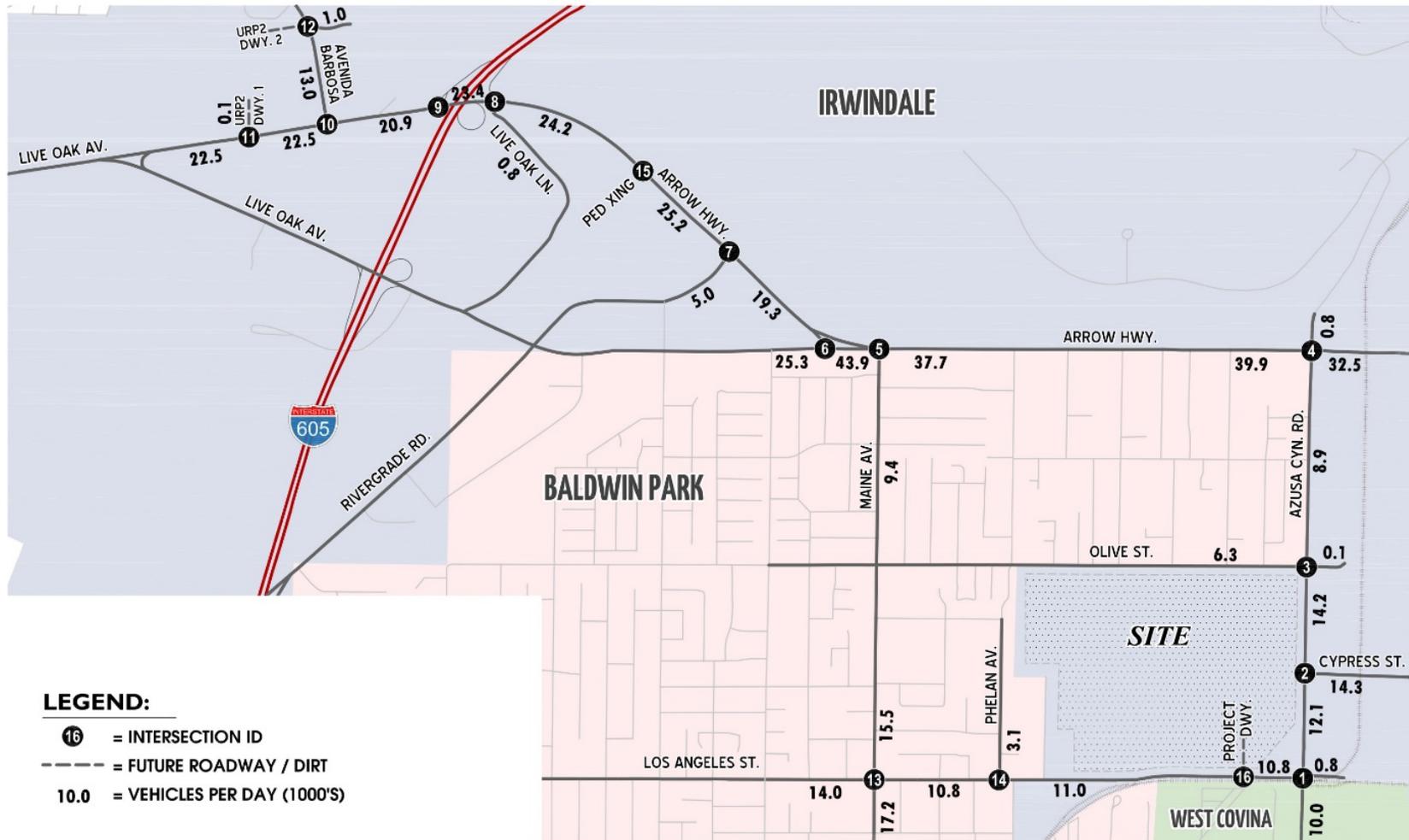
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-12 Existing Pedestrian and Bicycle Facilities



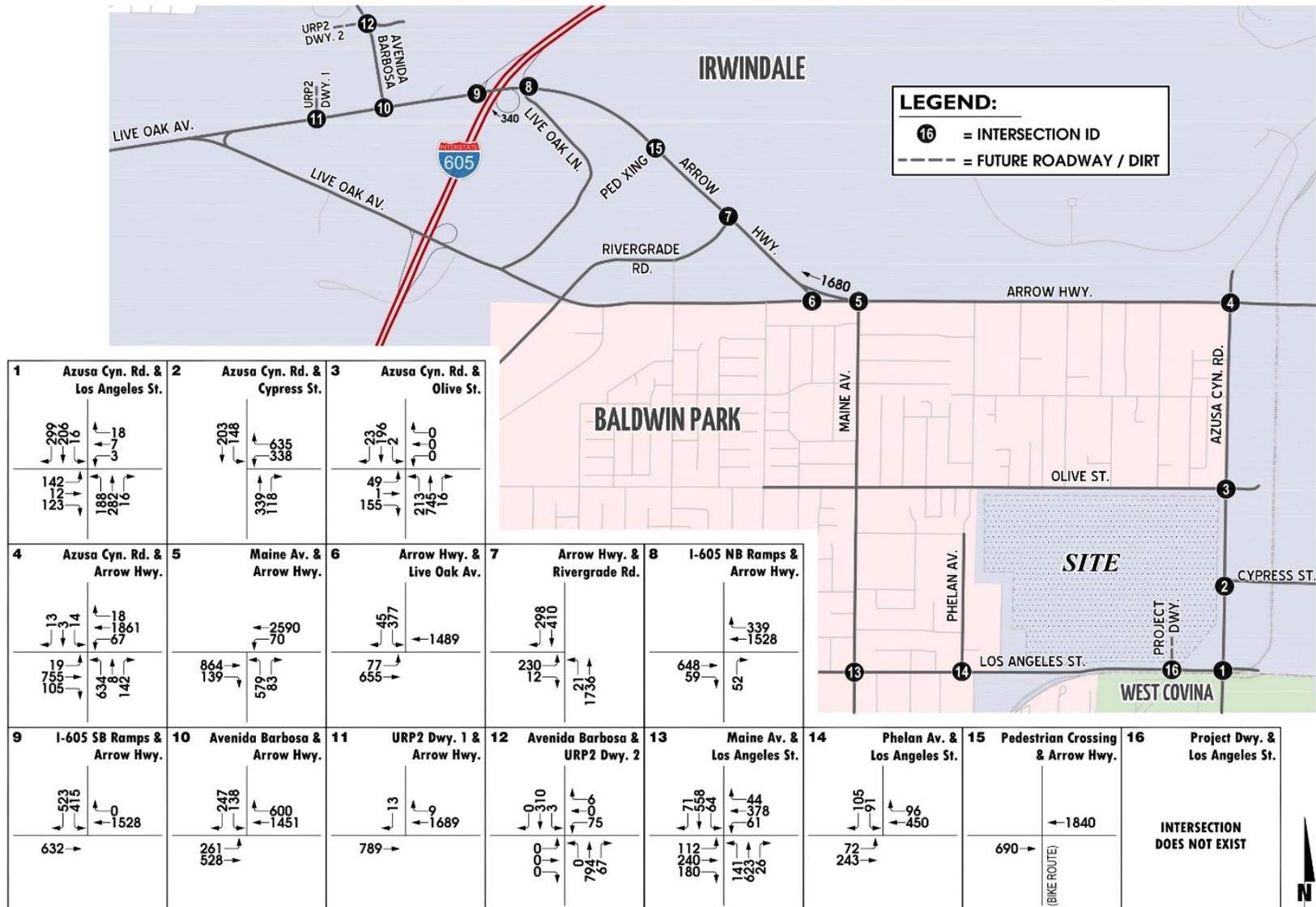
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-13 Existing (2014) PCE Average Daily Traffic



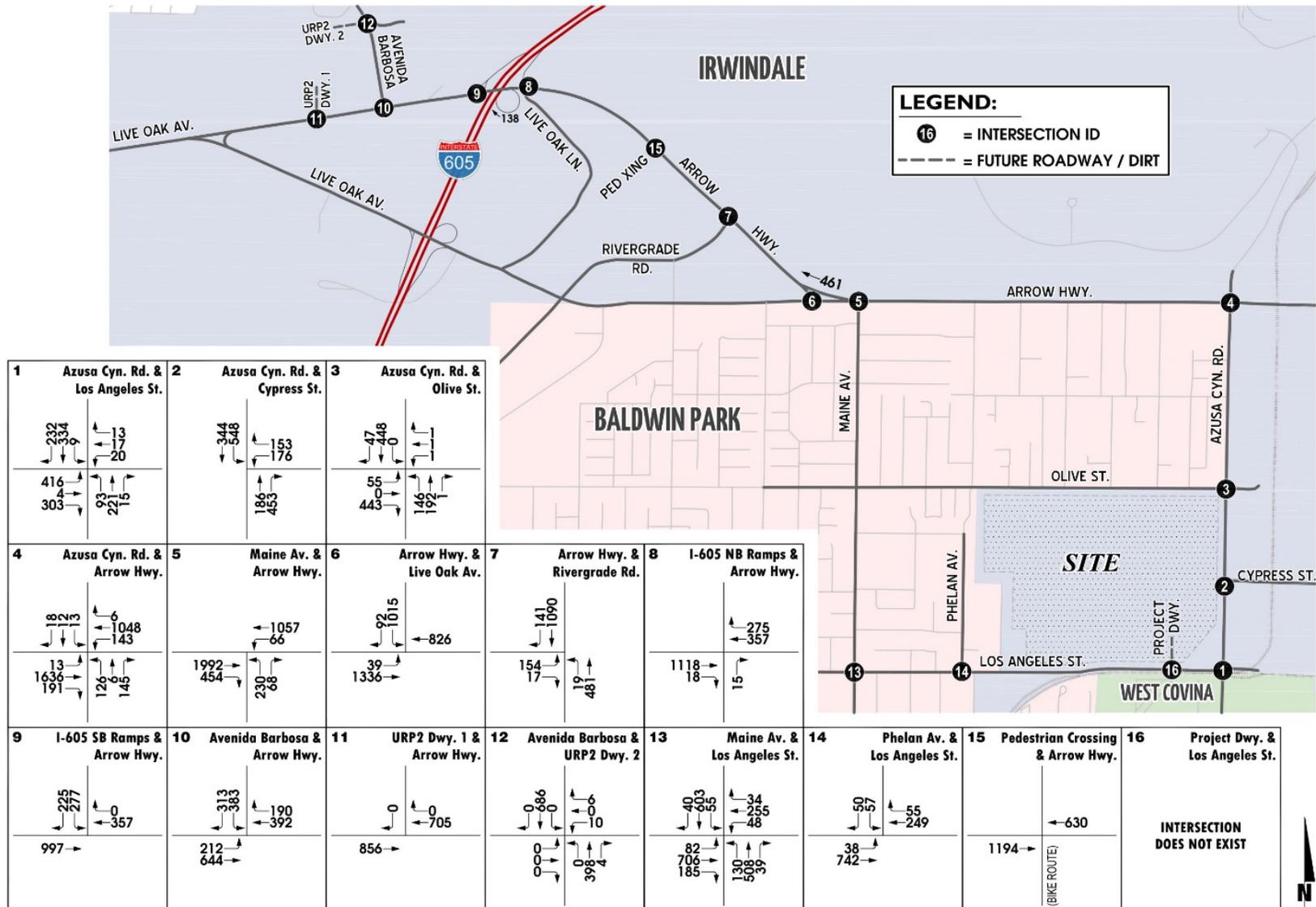
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-14 Existing (2014) PCE AM Peak Hour Intersection Volumes



CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-15 Existing (2014) PCE PM Hour Intersection Volumes



CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-7 Existing (2014) Conditions Intersections Analysis Summary

#	INTERSECTION	TRAFFIC CONTROL ³	INTERSECTION APPROACH LANES ¹												HCM DELAY ² (SECS.)		HCM LEVEL OF SERVICE ²		ICU ⁴ (V/C)		ICU ⁴ LEVEL OF SERVICE	
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND			AM	PM	AM	PM	AM	PM	AM	PM
			L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM
1	Azusa Cyn. Rd. / Los Angeles St.	AWS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	25.6	40.5	D	E	NA	NA	NA	NA
2	Azusa Cyn. Rd. / Cypress St.	TS	0	2	0	1	2	0	0	0	0	1	1!	1	25.6	24.8	C	C	0.43	0.58	A	A
3	Azusa Cyn. Rd. / Olive St.	TS	1	2	0	1	2	d	1	1	d	1	1	d	10.8	19.0	B	B	0.39	0.30	A	A
4	Azusa Cyn. Rd. / Arrow Hwy.	TS	1.5	0.5	1	1	1	0	1	2	d	1	2	d	50.6	48.5	D	D	0.92	0.75	E	C
5	Maine Av. / Arrow Hwy.	TS	2	0	1	0	0	0	0	2	d	1	3	0	16.2	11.4	B	B	0.76	0.80	C	C
6	Arrow Hwy. / Live Oak Av.	TS	0	0	0	2	0	1	1	2	0	0	2	2>>	10.1	22.9	B	C	0.59	0.74	A	C
7	Arrow Hwy. / Rivergrade Rd.	TS	1	2	0	0	2	1	2	0	1	0	0	0	7.3	5.4	A	A	0.65	0.39	B	A
8	I-605 NB Ramp - Live Oak Ln. / Arrow Hwy.	CSS	0	0	1	0	0	0	0	2	d	0	2	1>>	11.0	13.1	B	B	NA	NA	NA	NA
9	I-605 SB Off-Ramp / Arrow Hwy. - LA CMP ICU Results ⁵	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	15.1	7.4	B	A	0.84	0.42	D	A
		TS	0	0	0	1	0	1>>	0	3	0	0	2	0	-	-	-	-	0.84	0.48	D	A
10	Avenida Barbosa / Arrow Hwy.	TS	0	0	0	2	0	1	1	2	0	0	2	1	26.8	22.1	C	C	0.73	0.44	C	A
11	URP2 Dwy. 1 / Arrow Hwy.	CSS	0	0	0	0	0	1	0	2	0	0	3	0	20.2	0.0	C	A	NA	NA	NA	NA
12	Avenida Barbosa / URP2 Dwy. 2 (Private) ⁶ - URP2 Dwy. 2 (eastbound approach) ⁷ - Adjacent Dwy. (westbound approach) ⁷	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	0	1!	0	2.7	0.2	A	A	NA	NA	NA	NA
		CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	0.0	0.0	A	A	NA	NA	NA	NA
		CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	41.0	15.4	E	C	NA	NA	NA	NA
13	Maine Av. / Los Angeles St.	TS	1	2	0	1	2	0	1	2	0	1	2	0	22.5	24.9	C	C	0.52	0.61	A	B
14	Phelan Av. / Los Angeles St.	AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	13.8	15.9	B	C	NA	NA	NA	NA
15	Ped Xing / Arrow Hwy.	TS	0	0	0	0	0	0	0	2	0	0	2	0	0.8	0.5	A	A	0.61	0.38	B	A
16	Project Dwy. / Los Angeles St.	-	DOES NOT EXIST												-	-	-	-	-	-	-	-

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (23') for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; 1>> = Free Right Turn Lane; d = Defacto Right Turn Lane

² Delay and level of service (LOS) is calculated using the following analysis software: Synchro 8. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown. "NA" value is shown for unsignalized ICU values.

³ AWS = All Way Stop; TS = Traffic Signal; CSS = Cross Street Stop.

⁴ The Synchro v/c output results are discussed in the City of Irwindale Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information. It should be noted that the I-605 ramp intersections along Arrow Highway are identified as CMP intersections. Therefore, ICU results based on the LA CMP parameters are also presented for the signalized intersection of I-605 SB ramps / Arrow Highway (#9).

⁵ Volume-to-Capacity ratio (v/c) and level of service (LOS) is calculated based on the LA CMP Intersection Capacity Utilization (ICU) methodology using the following analysis software: Traffix Version 8.0 R1.

⁶ LOS based on average delay (unsignalized intersection).

⁷ LOS based on the minor approach operating condition (unsignalized intersection).

* **BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

For Existing (2014) conditions, the following study area intersection currently operates at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry:

Table 3.9-8 Unacceptable Level of Service for Existing (2014) Conditions

ID	Intersection Location	Jurisdiction
1	Azusa Canyon Road / Los Angeles Street	Irwindale and West Covina
12	Avenida Barbosa / URP2 Driveway 2 (Private)	Irwindale

Even though the ICU results show that intersection of Azusa Canyon Road / Arrow Highway (#4) operates at LOS “E” with 0.92 v/c during the AM peak hour under Existing (2014) conditions, the HCM results show that the intersection operates at acceptable LOS (LOS “D” or better). It should be noted that the City of Irwindale (local lead agency) Policy Guidelines states under Section V-B that the traffic study shall identify and analyze all the impacts to the operational conditions (LOS) of the transportation facilities in the project in accordance with the HCM methodology.

Therefore, the intersection delay based on the HCM methodology is primarily utilized to determine intersection deficiencies and significant impacts. The v/c ratio is included because the City’s Policy Guidelines also indicate that both delay and v/c ratio be presented.

HCM results present a more accurate representation of the intersection operational level. Unlike the ICU methodology, HCM results take into consideration more than just peak hour volumes and lane capacities on intersection approach legs.

HCM data inputs include turning movements volumes, lane geometries, signal phasing, signal timing, lane widths, heavy vehicles, lane utilization, left turns, right turns, and pedestrian activity affecting turn movements.

3.9.4.6.2 EXISTING TRAFFIC SIGNAL WARRANT ANALYSIS

Based on the traffic signal warrants for Existing (2014) traffic conditions, the intersections of Azusa Canyon Road / Los Angeles Street (#1) and Phelan Avenue / Los Angeles Street (#14) both appear to warrant a traffic signal.

A signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should be noted that even though the intersection of Phelan Avenue / Los Angeles Street (#14) appear to warrant a traffic signal, this intersection is expected to continue operate at acceptable level of service “C” or better with an all-way-stop control through 2035 conditions. Therefore, installation of a traffic

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

signal at this location is not recommended. In addition, although the traffic assessment did not indicate that a signal was warranted at the Project driveway intersection with Los Angeles Street, the City Engineer has determined that as a traffic safety measure to account for the large transport trucks moving in and out of the site, a signal will be required at the driveway intersection as mitigation.

3.9.4.7 PLANNED TRANSPORTATION IMPROVEMENTS AND RELATIONSHIPS TO GENERAL PLAN

The City of Irwindale roadway classifications and typical roadway cross-sections are illustrated on **Figure 3.9-16** and **Figure 3.9-17**, respectively. These exhibits show the nature of the roadways in the vicinity of the proposed site and how access will be provided to the surrounding areas.

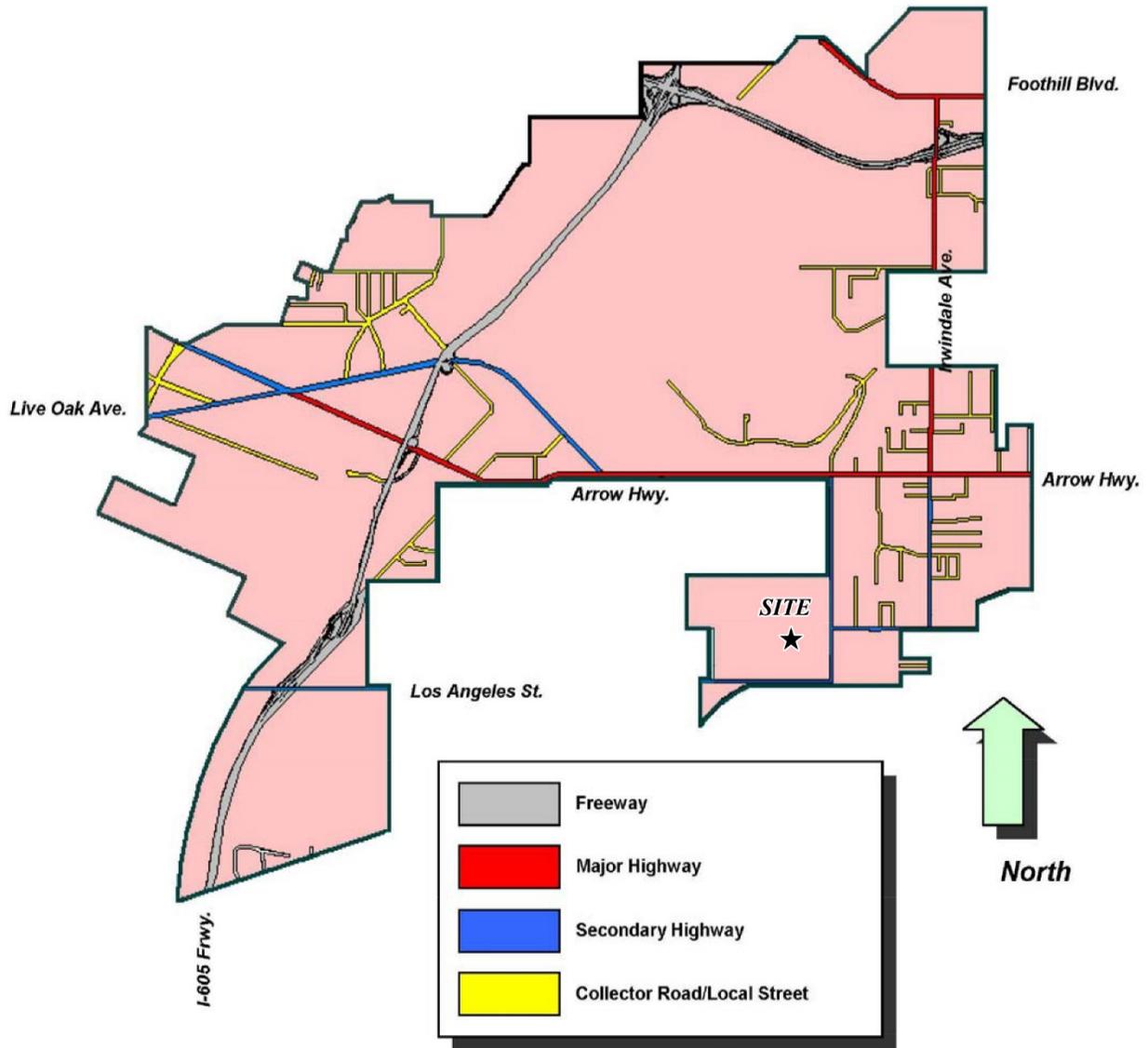
The County of Los Angeles roadway classifications and typical roadway cross-sections are illustrated on **Figure 3.9-18** and **Figure 3.9-19**, respectively.

The City of Baldwin Park roadway classifications and typical roadway cross-sections are illustrated on **Figure 3.9-20** and **Figure 3.9-21**, respectively. As shown on **Figure 3.9-20**, Baldwin Park Boulevard is classified as an Arterial in the study area.

Figure 3.9-22 illustrates the City of Irwindale truck routes. As shown on **Figure 3.9-22**, Arrow Highway, and Live Oak Avenue are designated truck routes, as is Irwindale Avenue. Local truck access is also allowed on Los Angeles Street, Azusa Canyon Road, and the other local streets serving industrial uses in the study area.

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-16 City of Irwindale General Plan Circulation Element



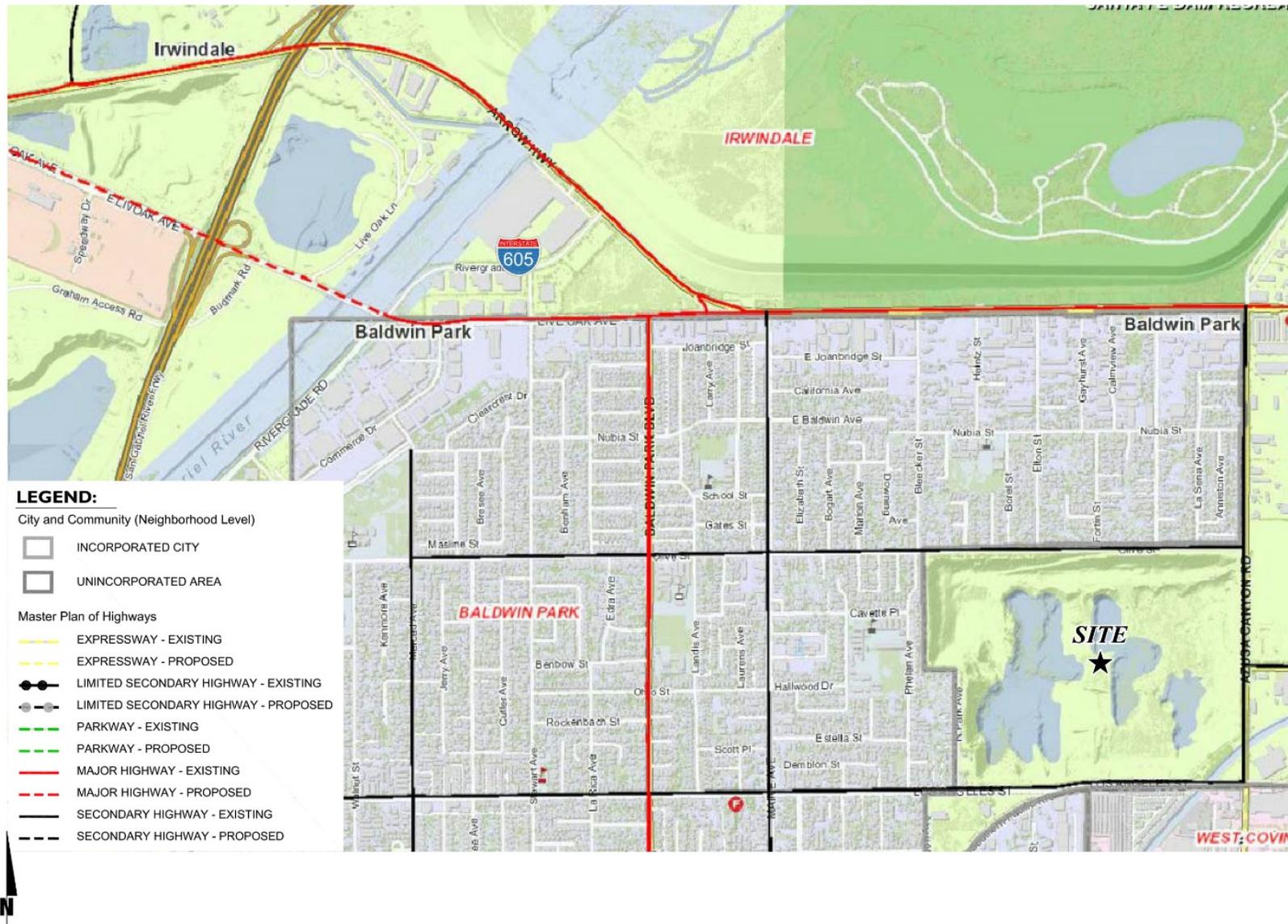
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-17 City of Irwindale General Plan Roadway Cross-Sections

Table 4-10 Roadway Classification Standards				
	Major Highways	Secondary Highways	Collector Roads	Local Streets
Travel Lanes	4-6 (divided)	2-4 lanes (Undivided)	2 lanes	2 lanes
Estimated Daily Capacity	40,400 to 53,000 vehicles/day	10,000 to 30,000 vehicles/day	Up to 10,000 vehicles/day	2,000 or less vehicles/day
ROW width	100 ft.	80 ft.	60 ft.	60 ft.
Pavement Width	84 ft.	64 ft.	40 ft.	40 ft.
Note: Estimated daily capacity for LOS expressed in vehicles/day				

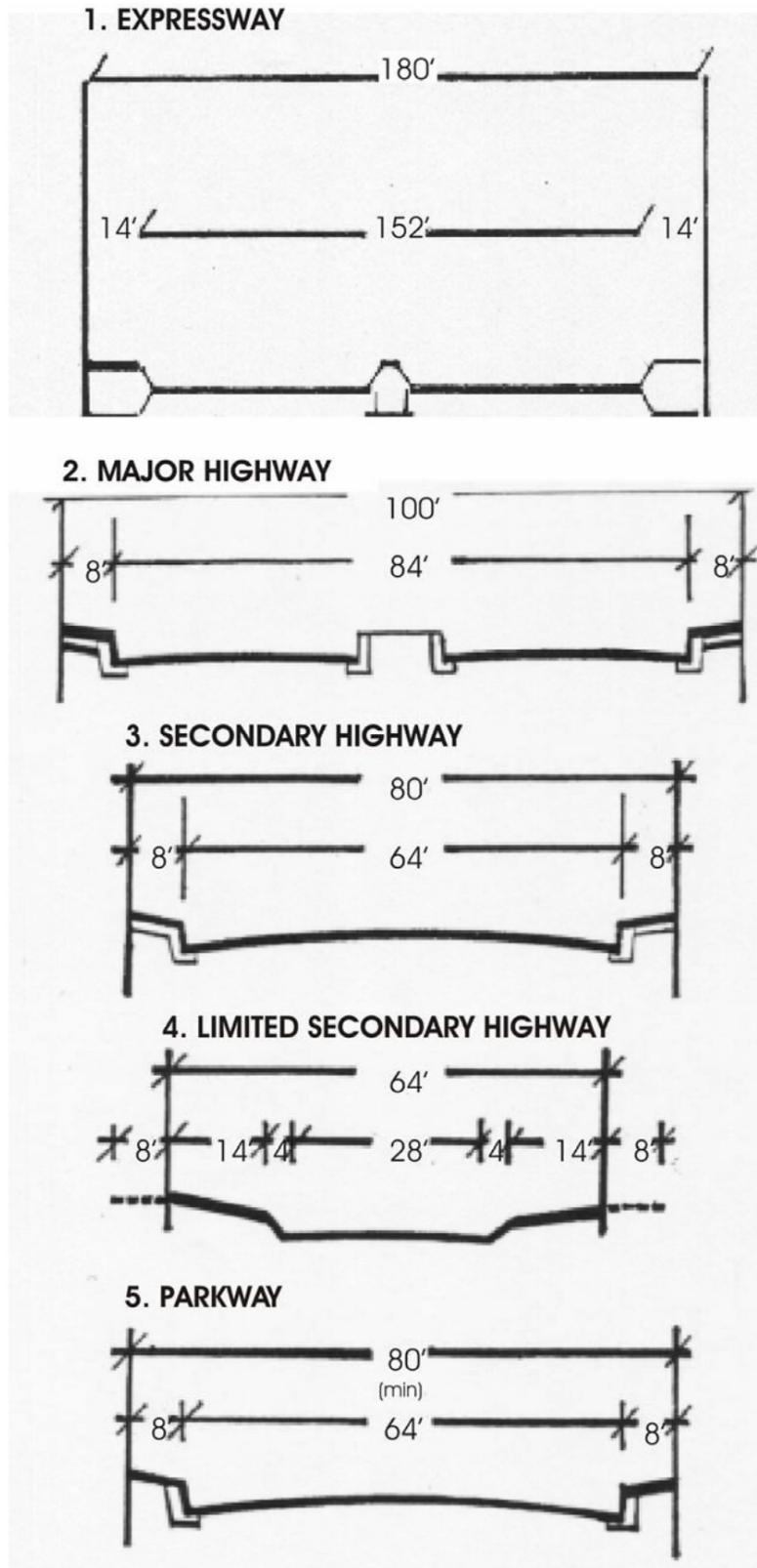
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-18 County of Los Angeles General Plan Circulation Element



CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-19 County of Los Angeles General Plan Roadway Cross-Sections



CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-20 City of Baldwin Park General Plan Circulation Element

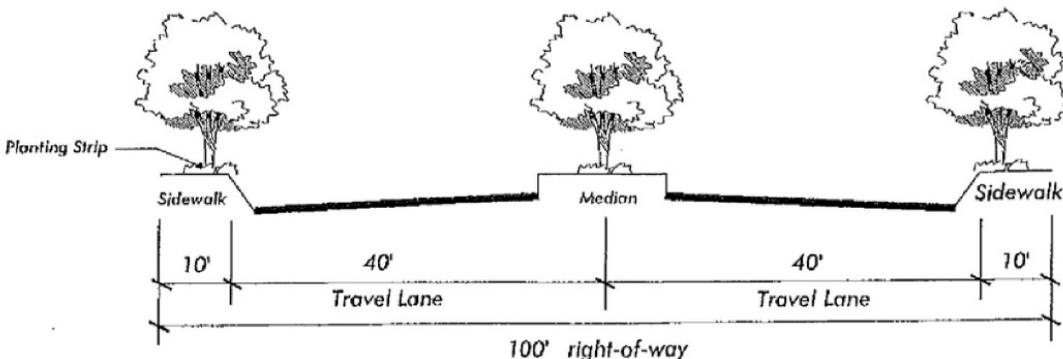


SOURCE: BALDWIN PARK 2020 GENERAL PLAN

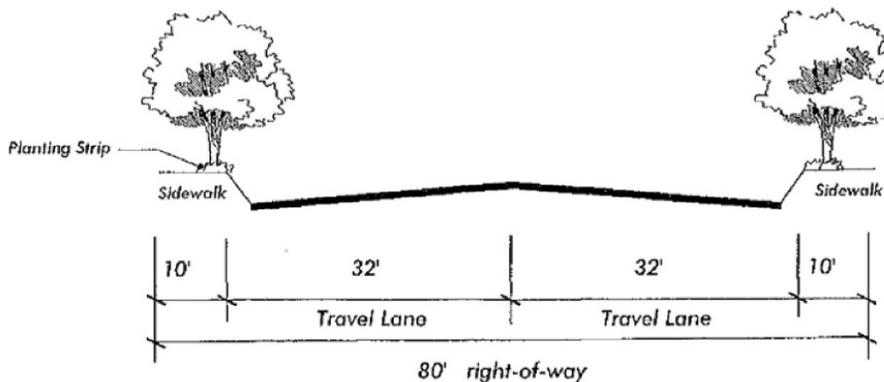
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-21 City of Baldwin Park General Plan Roadway Cross-Sections

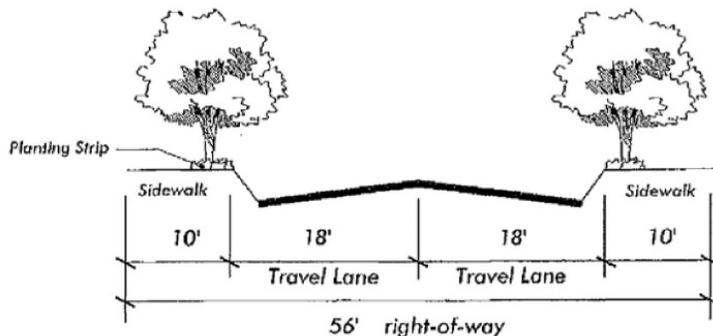
Arterial Street: 100' right-of-way



Collector / Industrial: 80' right-of-way



Residential: 60' right-of-way

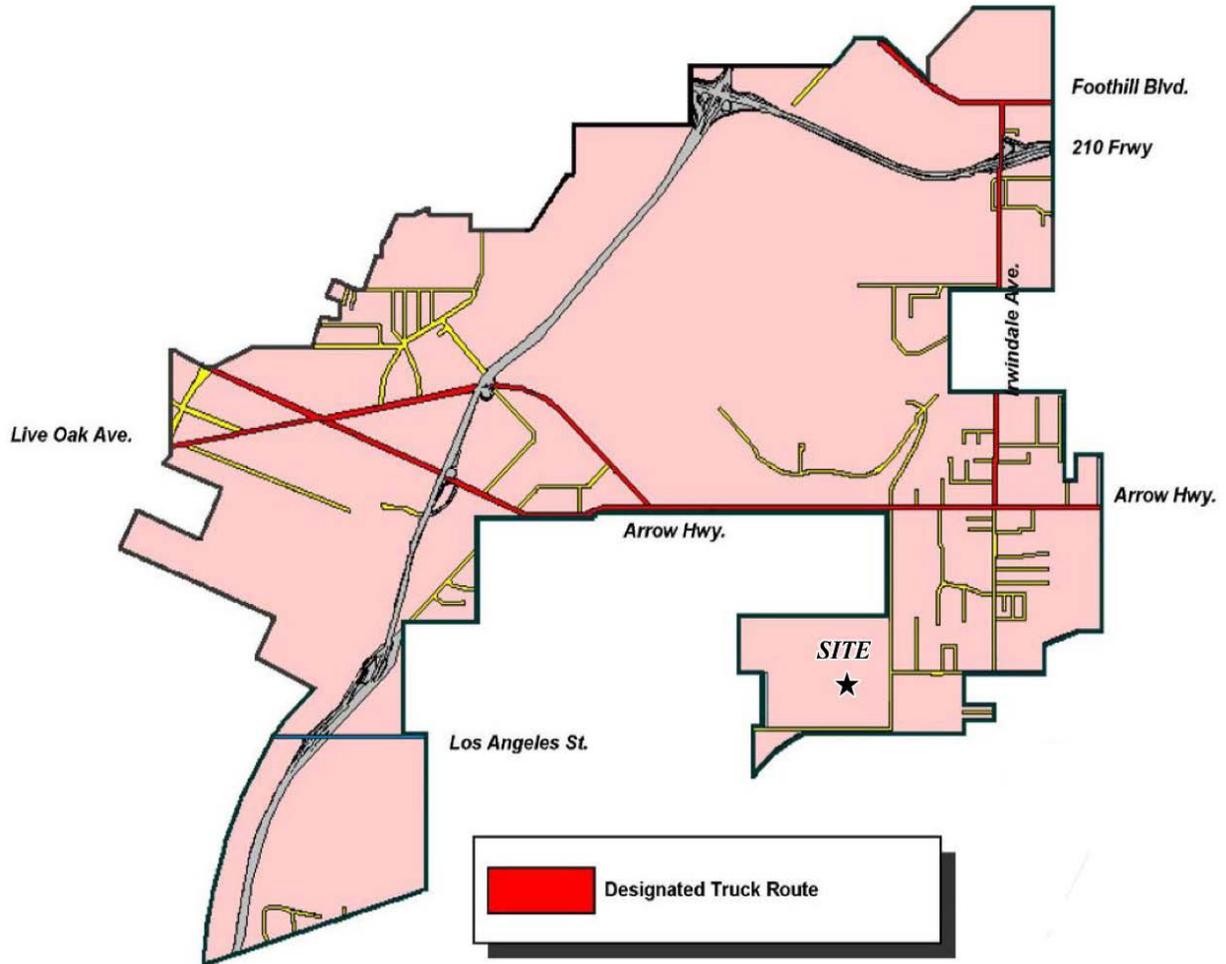


Note: Right-of-way widths represent maximums. City reserves the right to develop narrower streets consistent with land use goals for pedestrian districts and within residential subdivisions.

SOURCE: BALDWIN PARK 2020 GENERAL PLAN

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-22 City of Irwindale Truck Routes



CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

3.9.5 FUTURE TRAFFIC VOLUMES

This section of the report discusses the volume calculation methodology utilized to forecast the future traffic volumes for the following scenarios:

- Existing (2014) Conditions
- Existing Plus Project Conditions
- Interim Year (2016) Conditions Without and With the Project
- Long Range (2035) Conditions Without and With the Project

3.9.5.1 EXISTING PLUS PROJECT

For Existing Plus Project conditions, project only traffic volumes were added to the existing (2013) traffic volumes (presented in Section 3 of this report). **Figure 3.9-23**, **Figure 3.9-24**, and **Figure 3.9-25** present the Existing Plus Project ADT, AM peak hour, and PM peak hour traffic volumes respectively.

3.9.5.2 INTERIM YEAR (2016) WITHOUT PROJECT

For Interim Year (2016) Without Project conditions, an ambient growth rate of 2.0% per year (consistent with City of Irwindale traffic study guidelines) was applied to the existing (2014) for two (2) years (a total background growth of 4.04%) in addition to the cumulative project / other development data. Other cumulative development has been obtained from the City of Irwindale and other nearby cities and grouped into twelve (12) traffic analysis zone (TAZ) locations. The TAZ locations of the anticipated cumulative development projects are shown on **Figure 3.9-26**. The following projects have been identified by the various jurisdictions:

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-9 Projects by Jurisdictions

CITY OF IRWINDALE PROJECTS	
• Kare Youth League/Santa Fe Dam Sports Park	• Hotel - 15744 Arrow Hwy.
• City Infill Housing Project	• Mod 4-06 to CUP 67-6 - 16025 Cypress St.
• Ahern Rentals - 13645 Live Oak Ln.	• Athens-Irwindale MRF and Transfer Station
CITY OF AZUSA PROJECTS	
• Waste Management MRF & Transfer Station	• Mixed Use Project - NEC of Dalton & Foothill
• Downtown Azusa Project 1 - 619/621 N. Azusa	• Block 36 - SEC of Azusa Av. & Foothill Bl.
• Residential Project - 710 S. Azusa Av.	• Target Project - 809 N Azusa Av.
• Gladstone Mixed Use - 890 Gladstone St.	• Azusa Rock Revised CUP & Reclamation Plan
• Residential - 523-531 Arrow Hwy.	• Residential - 9th St. & Alameda Av.
• Monrovia Nursery - Specific Plan	• Commercial - 880 S Azusa Av.
• Azusa Pacific University - Specific Plan	
CITY OF COVINA PROJECTS	
• Taco Bell - 301 N Citrus Av.	• Mixed Use Condominiums - Citrus Av. & Italia St.
• Jack in the Box/CVS - 545 S. Citrus Av.	• Rose Gardens at Santa Teresita
• Lowes - 1348 N Azusa Av.	• Andres Duarte Terrace Phase II
• Condominiums - 615 N 3rd St.	• Huntington Counts Phase III
• Residential - 436 E Cypress St.	• Huntington Counts Phase II
• Condominiums Citrus Av. & Italia St.	• Attalla Ranch (Las Lomas Est.)
CITY OF BALDWIN PARK PROJECTS	
• Residential - 13655 Foster Av.	• Residential - 4143 Hornbrook Av.
• Residential - 3346 Vineland Av.	• Residential - 4455 Park Av.
• Residential - 13732 Monterey Av.	• Residential - 4819 Lante St.
• Residential - 13734 Monterey Av.	• Residential - 4820-28 Fortin Av.
• Residential - 13736 Monterey Av.	• Commercial - 4341 Maine Av.
• Residential - 12723 Bess Av.	• Restaurant - 14622 Dalewood St.
• Residential - 12725 Bess Av.	• Warehouse - 5029 Bleecker St.
• Residential - 12727 Bess Av.	• Office - 4814 Maine Av.
• Residential - 3138 Magum St.	• Office - 3323 Baldwin Park Bl.
• Residential - 4859 Marion Av.	• Office - 13329 Garvey Av.
• Residential - 4861 Marion Av.	• Fueling Facility (Truck Fleet) - 13940 Live Oak Av.
• Residential - 4503 Park Av.	• Inst. Facility w/Parking Structure - 14403 Pacific Av.
CITY OF WEST COVINA PROJECTS	
• Westfield Expansion - 112 Plaza Dr.	• Mixed-Use - 1045-1052 West Grondahl St.
• McIntyre Square Exp. - 2612-1698 E. Garvey	• Medical Imaging Center - 1700 West Covina Pkwy.
• West Covina Senior Villas - 1838 E Workman Av.	• Office - SEC of West Covina Pwy. & W Garvey S.
CITY OF GLENDORA PROJECTS	
• Diamond Ridge	• Glendora Marketplace
• Cataract	• Wildwood Canyon
• JPI Sevilla Project	• Monrovia Nursery
• Glendora Station	• Grand-Foothill
• Tract 46680	• Grand Av. Retail Center
• Tract 46916	• WalMart Expansion
• Tract 45858	• Route 66 Specific Plan

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-10 summarizes the anticipated cumulative development projects' trip generation per TAZ.

Trip distribution assumptions have been obtained from the cumulative project traffic study reports where available, or developed independently for those projects where published information was not available.

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-10 Other Development Trip Generation Summary¹

ID	Project Name/Location	Land Use	Quantity [b]	AM Peak Hour			PM Peak Hour			Daily	Jurisdiction	
				In	Out	Total	In	Out	Total			
1	Kare Youth League/ Santa Fe Dam Sports Park NEC of Arrow Highway & I-605	Youth sports park	17.0 AC	15	13	28	40	40	80	710	City of Irwindale	
2	Ahern Rentals 13645 Live Oak Lane	Replace 23,000 SF bldg. with 29,000 SF building	6 TSF	5	1	6	1	5	6	42	City of Irwindale	
3	Athens-Irwindale MRF & Transfer Station ²	Collection and Roll-Off Trucks	- -	130	143	273	211	170	381	4,450	City of Irwindale	
		Self-Haul Trucks	- -	18	29	47	18	18	36	374		
		Transfer Trucks	- -	89	89	178	33	52	85	2,068		
		Employees	345 EMP	95	35	130	51	65	116	690		
		Convenience Market w/ Pumps	- -	18	18	36	23	23	46	751		
TAZ 3 Subtotal				350	314	664	336	328	664	8,333		
4	Warehouse - 5029 Bleecker St.	Warehouse	8,748 TSF	2	1	3	1	2	3	31	Baldwin Park	
5	Residential - 4859 Marion Av. Residential - 4861 Marion Av. Residential - 4819 Lante St. Residential - 4820-28 Fortin Av.	Single Family Residential	4 DU	0	4	4	4	0	4	40	City of Baldwin Park	
	Office - 4814 Maine Av.	Office	6.3 TSF	9	1	10	0	2	2	69		
	TAZ 5 Subtotal				9	5	14	4	2	6		109
6	Commercial - 4341 Maine Av.	Commercial	4.5 TSF	3	2	5	10	7	17	193	City of Baldwin Park	
7	Residential - 4503 Park Av. & Residential - 4455 Park Av.	Single Family Residential	2 DU	0	2	2	2	0	2	20	City of Baldwin Park	
8	Commercial (Jack in the Box & CVS Pharmacy) 545 S Citrus Avenue	Fast-Food Rest. w/ Drive- Thru	1,188 TSF	30	29	59	21	19	40	589	City of Covina	
		Pharmacy / Drug Store	10,658 TSF	20	14	34	45	45	90	960		
		Subtotal			50	43	93	66	64	130		1,549
	Residential - 13655 Foster Av.	Medium-Density Residential	10 DU	1	4	5	4	2	6	67	City of Baldwin Park	
	Residential 3346 Vineland Av.	Medium-Density Residential	15 DU	2	6	8	6	3	9	100		
	Residential - 13732 Monterey Av. Residential - 13734 Monterey Av. Residential - 13736 Monterey Av. Residential - 12723 Bess Av. Residential - 12725 Bess Av. Residential - 12727 Bess Av. Residential - 3138 Magum St. Residential - 4143 Hornbrook Av.	Single Family Residential	8 DU	0	8	8	8	0	8	80		
	Restaurant - 14622 Dalewood St.	Rest.	15,295 TSF	92	85	177	101	70	171	1,945		
	Office - 3323 Baldwin Park Bl.	Office	4.95 TSF	7	1	8	1	6	7	54		
	13329 Garvey Av.	Office / Warehouse	13.62 TSF	19	3	22	3	17	20	150		
	Institutional Facility with Parking Structure -14403 Pacific Av.	Institution	176.2 TSF	870	166	1,036	66	147	213	12,145		
	Westfield Expansion 112 Plaza Dr.	Shopping Center	32 TSF	20	12	32	73	47	120	1,418		City of West Covina

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-10 Other Development Trip Generation Summary

ID	Project Name/Location	Land Use	Quantity [b]	AM Peak Hour			PM Peak Hour			Daily	Jurisdiction
				In	Out	Total	In	Out	Total		
8	McIntyre Square Expansion 2612-1698 E Garvey Av.	Rest.	4.8 TSF	29	27	56	32	22	54	610	City of West Covina
		Retail	4.8 TSF	3	2	5	11	7	18	206	
		Subtotal		32	29	61	43	29	72	816	
	West Covina Senior Villas 1838 E Workman Av.	High-Density Residential	65 DU	7	27	34	22	12	34	432	
	Medical / Professional Office SEC of W. Covina Pwy. & W Garvey S.	Office	55 TSF	75	10	85	14	68	82	606	City of West Covina
	TAZ 8 Subtotal			1,175	394	1,569	407	465	872	19,362	-
9	Hotel - 15744 Arrow Hwy.	Hotel	120 RM	41	26	67	37	34	71	980	City of Irwindale
10	Mod 4-06 to CUP 67-6 16025 Cypress Street	Our Lady of Guadalupe Church	12.227 TSF	4	3	7	3	4	7	111	City of Irwindale
	Waste Management Materials Recycling Facility & Transfer Station 501 West Gladstone	125,000 sf processing building with offices to receive, process and transfer up to 3,800 tons per day of solid waste.	3800 Tons/Day	224	148	372	400	320	720	4,294	City of Azusa
	Residential - 710 S. Azusa Av.	Residential Condominiums	81 DU	6	30	36	28	14	42	471	
	Gladstone Mixed Use 890 Gladstone Street	Residential Apartments	9 DU	1	4	5	4	2	6	60	
		Retail/Commercial	4.443 TSF	3	2	5	10	6	16	191	
		Subtotal		4	6	10	14	8	22	251	
		Residential - 523-531 Arrow Hwy.	Residential Condominiums	28 DU	2	10	12	10	5	15	
	Commercial - 880 S Azusa Av.	Commercial	47 TSF	29	18	47	107	68	175	2,018	
	Lowe's - 1348 N Azusa Av.	Home Improvement Store	111.348 TSF	80	60	140	127	137	264	3,318	
11	Taco Bell - 301 N Citrus Av.	Fast-Food Rest. w/ Drive-Thru	3.445 TSF	87	83	170	60	55	115	1,709	City of Covina
	Condominiums - 615 N 3rd St.	Condominiums	30 DU	2	11	13	10	5	15	174	
	Residential - 436 E Cypress St.	Single Family Residential	1 DU	0	1	1	1	0	1	10	
	Condominiums - Citrus Av. & Italia St.	Condominiums	37 DU	3	14	17	13	6	19	215	
	Mixed Use Condominiums Citrus Avenue & Italia Street	Retail	4.366 TSF	3	2	5	10	6	16	187	
		Residential Condominiums	4 DU	0	1	1	1	1	2	23	
		Subtotal		3	3	6	11	7	18	210	
Mixed-Use Project 1045-1052 West Grondahl St.	Residential	412 DU	42	168	210	166	89	255	2,740		
	Commercial	20 TSF	12	8	20	46	29	75	859		
	Subtotal		54	176	230	212	118	330	3,599		
	Medical Imaging Center 1700 West Covina Pkwy.	Medical Office	9.3 TSF	13	2	15	2	12	14	102	City of West Covina
	TAZ 11 Subtotal			507	562	1,069	995	755	1,750	16,534	-
	City Infill Housing Project	Single Family Units	7 DU	0	0	0	0	0	0	0	City of Irwindale
12	Downtown Azusa Project 1 619/621 North Azusa Av.	Rest.	3.9 TSF	23	22	45	26	18	44	496	City of Azusa
		Office	1.035 TSF	1	0	1	0	1	2	11	
		Subtotal		24	22	46	26	19	46	507	
	Monrovia Nursery Specific Plan	Single Family Units	752 DU	141	423	564	478	281	759	7,197	
		Residential Condominiums	823 DU	62	301	363	287	141	428	4,782	
		Elementary School	245 STU	61	50	111	18	19	37	316	
Middle School		175 STU	52	43	95	14	14	28	284		
Park		6 AC	0	0	0	0	0	0	9		
	Transit Commercial	50 TSF	31	20	51	114	73	187	2,147		
	Subtotal		347	837	1,184	911	528	1,439	14,735		

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-10 Other Development Trip Generation Summary

ID	Project Name/Location	Land Use	Quantity [b]	AM Peak Hour			PM Peak Hour			Daily	Jurisdiction
				In	Out	Total	In	Out	Total		
	Azusa Pacific University Specific Plan	East Campus	874 STU	147	37	184	55	128	183	2,080	City of Azusa
		West Campus	2,550 STU	428	107	535	161	375	536	6,069	
		Subtotal		575	144	719	216	503	719	8,149	
Mixed Use Project NEC of Dalton Avenue & Foothill Bl.	Residential	73 DU	7	30	37	29	16	45	485		
	Retail	8 TSF	5	3	8	18	12	30	344		
	Subtotal		12	33	45	47	28	75	829		
Block 36 SEC of Azusa Av. & Foothill Bl.	Residential Apartments	110 DU	11	45	56	44	24	68	732		
	Office	29.2 TSF	40	5	45	7	36	43	321		
	Retail/Commercial	30 TSF	18	12	30	68	44	112	1,288		
	Rest.	7.5 TSF	45	41	86	49	34	83	954		
Subtotal		114	103	217	168	138	306	3,295			
Target Project - 809 N Azusa Av.	Retail	150 TSF	92	59	151	341	218	559	6,441		
Azusa Rock Revised CUP & Reclamation Plan [a] Northerly terminus of Encanto Pkwy. & Fish Cyn. Rd.	Mineral Resource - Mining	Revised CUP & Reclamation Plan; Modify operations & reclamation approach		56	56	112	19	19	38	0	
Residential - 9th St. & Alameda Av.	Residential Townhomes	14 DU	1	5	6	5	2	7	81		
Rose Gardens at Santa Teresita 800 Buena Vista Street	Nursing Facility, Assisted Living	229.292 TSF	21	11	32	22	28	50	610	City of Duarte	
Andres Duarte Terrace Phase II 1700 Huntington Drive	High-Density Residential	43 DU	4	18	22	17	9	26	286		
Huntington Counts Phase III 2400 Huntington Drive	Medium-Density Residential	16 DU	2	7	9	6	3	9	106		
Huntington Courts Phase II 2400 Huntington Drive	Residential (Single/Multi-Family)	14 DU	1	6	7	6	3	9	93		
Attalla Ranch (Las Lomas Est.) NEC of Sunnydale & Woodbluff	Single Family Residential	15 DU	3	8	11	10	6	16	144		
Diamond Ridge	Quality Rest.	6.5 TSF	0	0	0	33	16	49	585	City of Glendora	
	Office	30 TSF	41	6	47	8	37	45	330		
	Subtotal		41	6	47	41	53	94	915		
Cataract	Condominiums	17 DU	1	6	7	6	3	9	99		
JPI Sevilla Project	Condomiums	161 DU	12	59	71	56	28	84	935		
	Office	12 TSF	16	2	18	3	15	18	132		
	Subtotal		28	61	89	59	43	102	1,067		
Glendora Station	Residential	87 DU	9	35	44	35	19	54	579		
	Office	5 TSF	7	1	8	1	6	7	55		
	Subtotal		16	36	52	36	25	61	634		
Tract 46680	Single Family Residential	14 DU	3	8	11	9	5	14	134		
Tract 46916	Single Family Residential	16 DU	3	9	12	10	6	16	153		
Tract 45858	Single Family Residential	13 DU	2	7	9	8	5	13	124		
Glendora Marketplace	Retail	50 TSF	31	20	51	114	73	187	2,147		
	Quality Rest.	4.2 TSF	N/A	N/A	0	21	10	31	378		
	Subtotal		31	20	51	135	83	218	2,525		
Wildwood Canyon	Single Family Residential	54 DU	10	30	40	34	20	54	517		
Monrovia Nursery	Single Family Residential	54 DU	10	30	40	34	20	54	517		

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-10 Other Development Trip Generation Summary

ID	Project Name/Location	Land Use	Quantity [b]	AM Peak Hour			PM Peak Hour			Daily	Jurisdiction
				In	Out	Total	In	Out	Total		
12	Grand-Foothill	Townhouses	18 DU	6	30	36	29	14	43	105	City of Glendora
		Condominiums	64 DU	2	12	14	12	6	18	372	
		Subtotal		8	42	50	41	20	61	477	
Grand Avenue Retail Center	General Commercial	14 TSF	9	5	14	32	20	52	601		
	Quality Rest.	4.2 TSF	N/A	N/A	N/A	21	10	31	378		
	Subtotal		9	5	14	53	30	83	979		
WalMart Expansion	Retail/Grocery	20 TSF	14	7	21	50	50	100	1,145		
Route 66 Specific Plan	Office	750 TSF	1,023	140	1,163	190	928	1,118	8,258		
	Commercial	750 TSF	458	293	751	1,706	1,091	2,797	32,205		
	Apartments	225 DU	23	92	115	91	49	140	1,496		
	Subtotal		1,504	525	2,029	1,987	2,068	4,055	41,959		
TAZ 12 Subtotal				2,932	2,101	5,033	4,297	3,935	8,233	86,521	

¹ Source: Transportation Study for the Athens Materials Recovery Facility and Transfer Station (01/2012). Prepared by Gibson Transportation Consulting Inc. *Trip Generation, 8th Edition*, Institute of Transportation Engineers (ITE), 2008. Notes:

[a] Materials processed through conveyor belts, trucks pick up material at Foothill & Irwindale; study intersections not impacted

[b] DU: Dwelling Unit; SF: Square Feet

² Source: Athens-Irwindale Materials Recovery Facility and Transfer Station Traffic Impact Analysis (02/2014). Prepared by Urban Crossroads, Inc.

Based on the identified trip generation and distributions for other developments on arterial highways throughout the study area, other cumulative development project daily traffic volumes and AM and PM peak hour intersection turning movement volumes have been developed and are shown on **Figure 3.9-27**, **Figure 3.9-28**, and **Figure 3.9-29**, respectively.

Figure 3.9-30, **Figure 3.9-31**, and **Figure 3.9-32** present the Interim Year (2016) Without Project ADT, AM peak hour, and PM peak hour traffic volumes, respectively.

3.9.5.3 INTERIM YEAR (2016) WITH PROJECT

For Interim Year (2016) With Project conditions, project only traffic volumes were added to the Interim Year without Project volumes described above. **Figure 3.9-33**, **Figure 3.9-34**, and **Figure 3.9-35** present the Interim Year (2016) With Project ADT, AM peak hour, and PM peak hour traffic volumes, respectively.

3.9.5.4 LONG RANGE (2035) WITHOUT PROJECT

Per Appendix D in the Los Angeles County 2010 CMP, the background traffic growth estimates for Horizon Year must use the generalized growth factor (at a minimum) shown in Exhibit D-1 of the LA CMP. Based on Exhibit D-1 of the LA CMP, a general traffic volume growth factor of 1.106 is used for cities (including Irwindale) within the Regional Statistical Area (RSA) 26 for Horizon Year 2035. Therefore, Long Range baseline volumes were developed by applying a general growth factor of 1.106 to existing volumes to reflect 2035 conditions, as identified in the Los Angeles County CMP, in addition to the cumulative project / other development data.

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

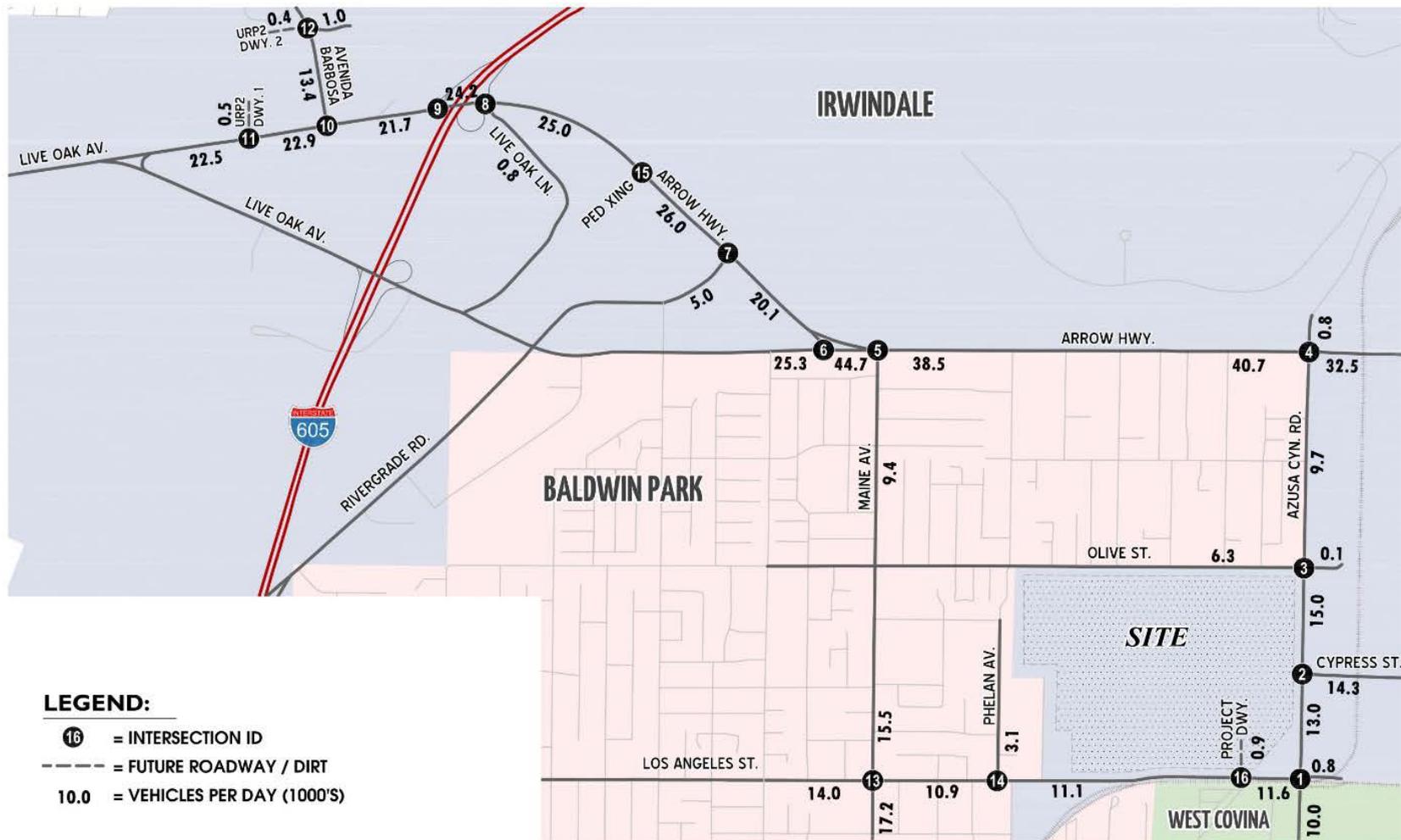
Figure 3.9-36, Figure 3.9-37, and Figure 3.9-38 present the Long Range (2035) Without Project ADT, AM peak hour, and PM peak hour traffic volumes, respectively.

3.9.5.5 LONG RANGE (2035) WITH PROJECT

For Long Range (2035) With Project conditions, “project only” traffic volumes were added to the Long Range (2035) Without Project volumes described above. **Figure 3.9-39, Figure 3.9-40, and Figure 3.9-41** present the Long Range (2035) with Project ADT, AM peak hour, and PM peak hour traffic volumes, respectively.

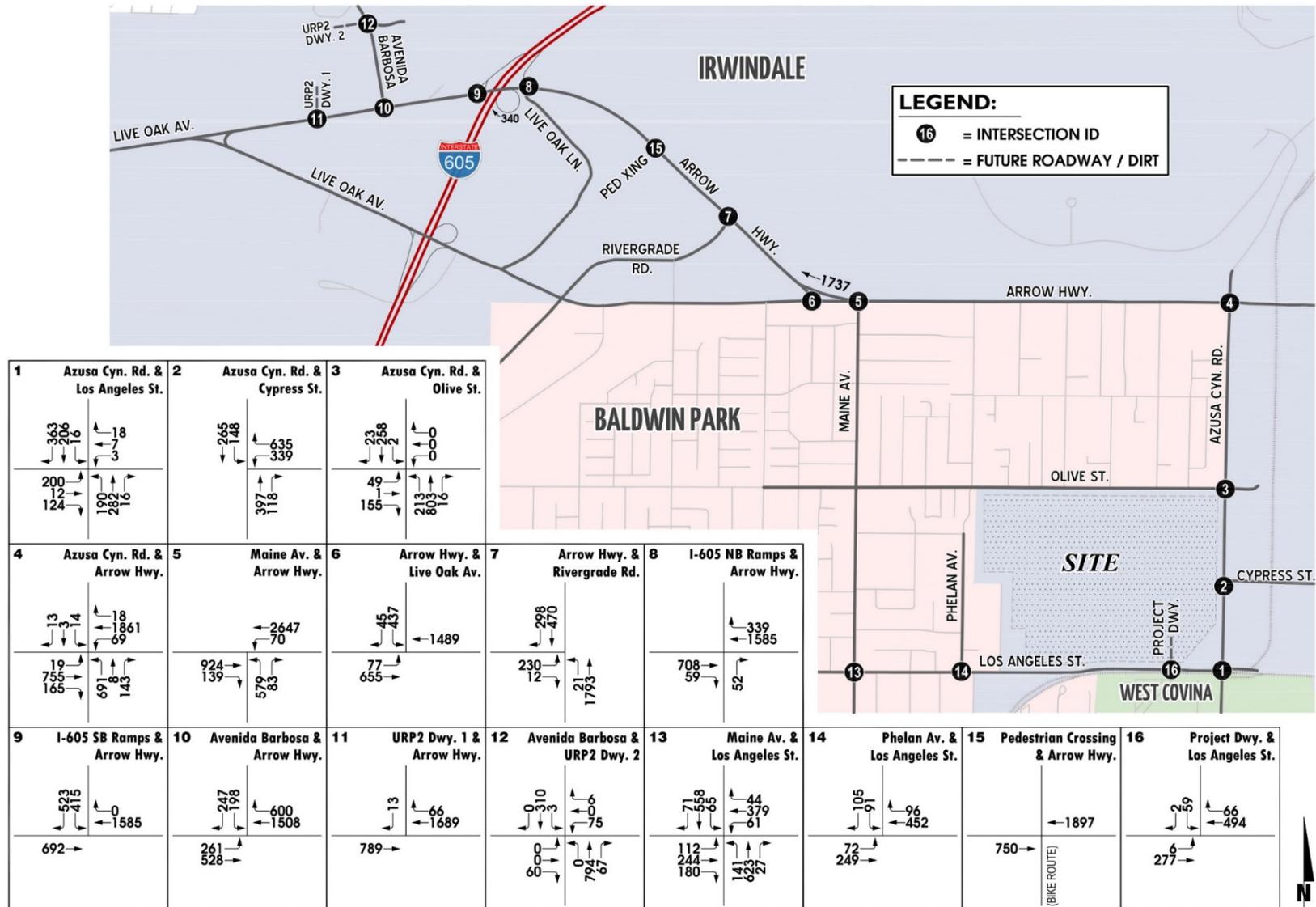
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-23 Existing Plus Project Average Daily Traffic



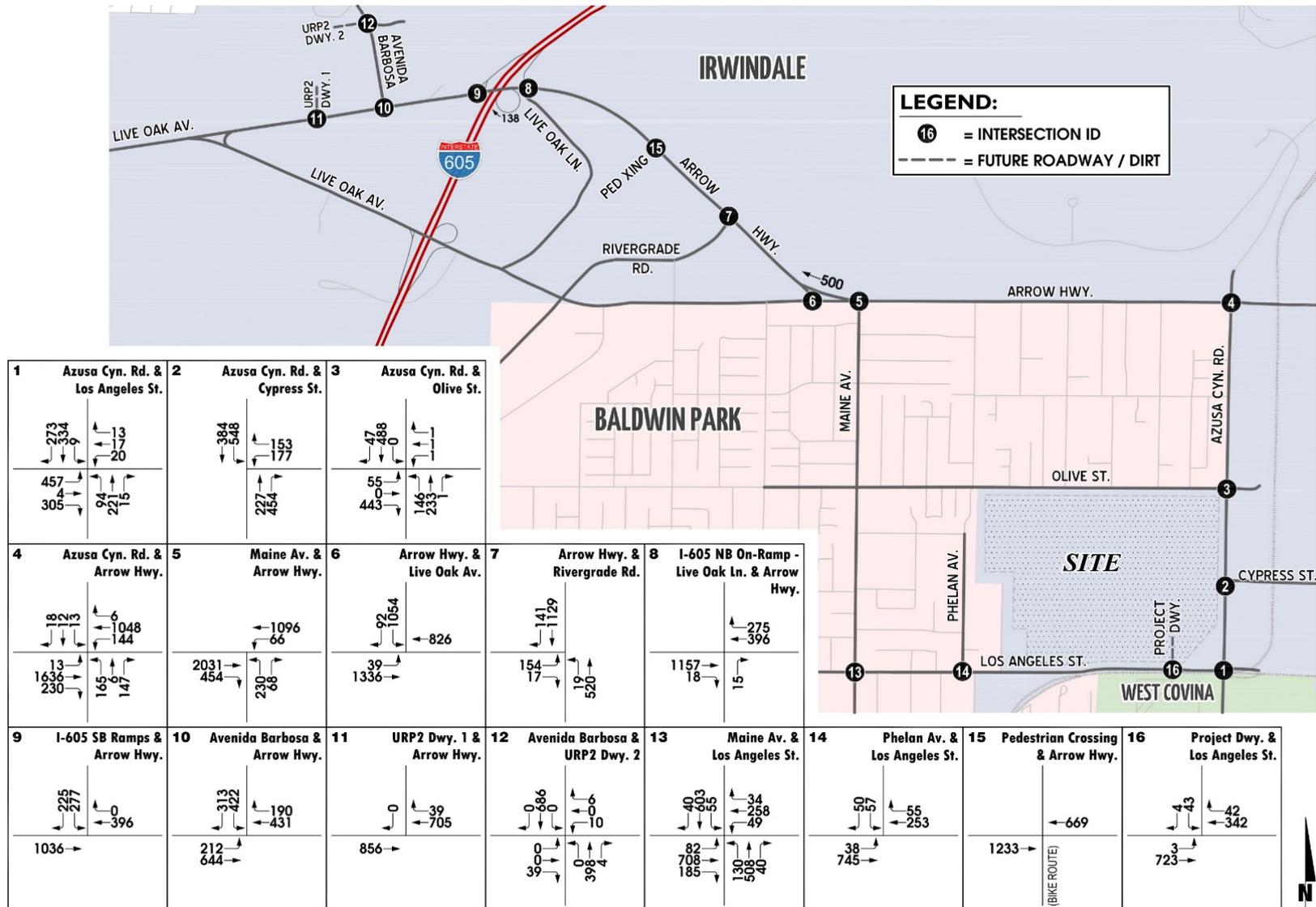
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-24 Existing Plus Project AM Peak Hour Intersection Volumes



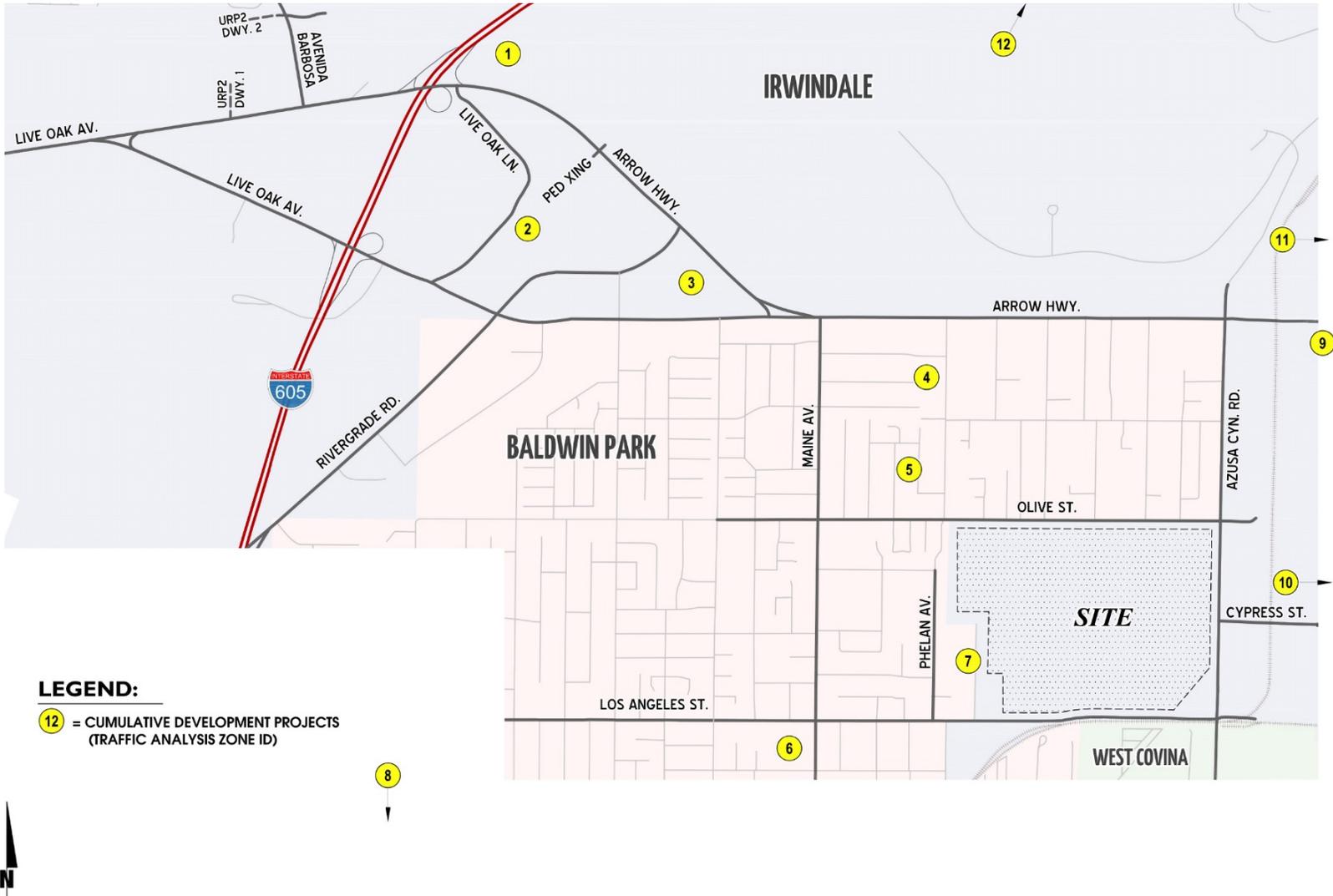
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-25 Existing Plus Project PM Peak Hour Intersection Volumes



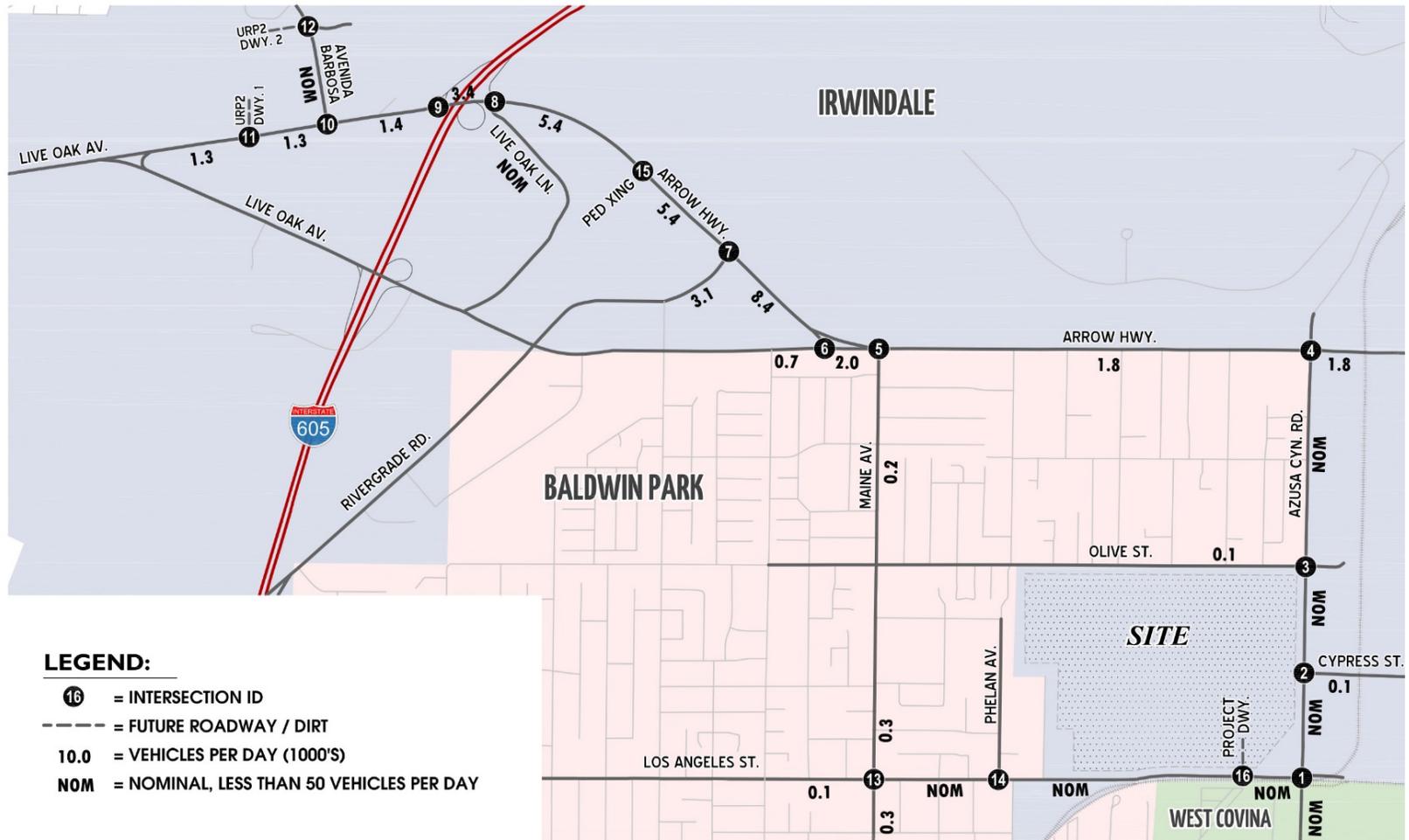
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-26 Cumulative Development Location Map



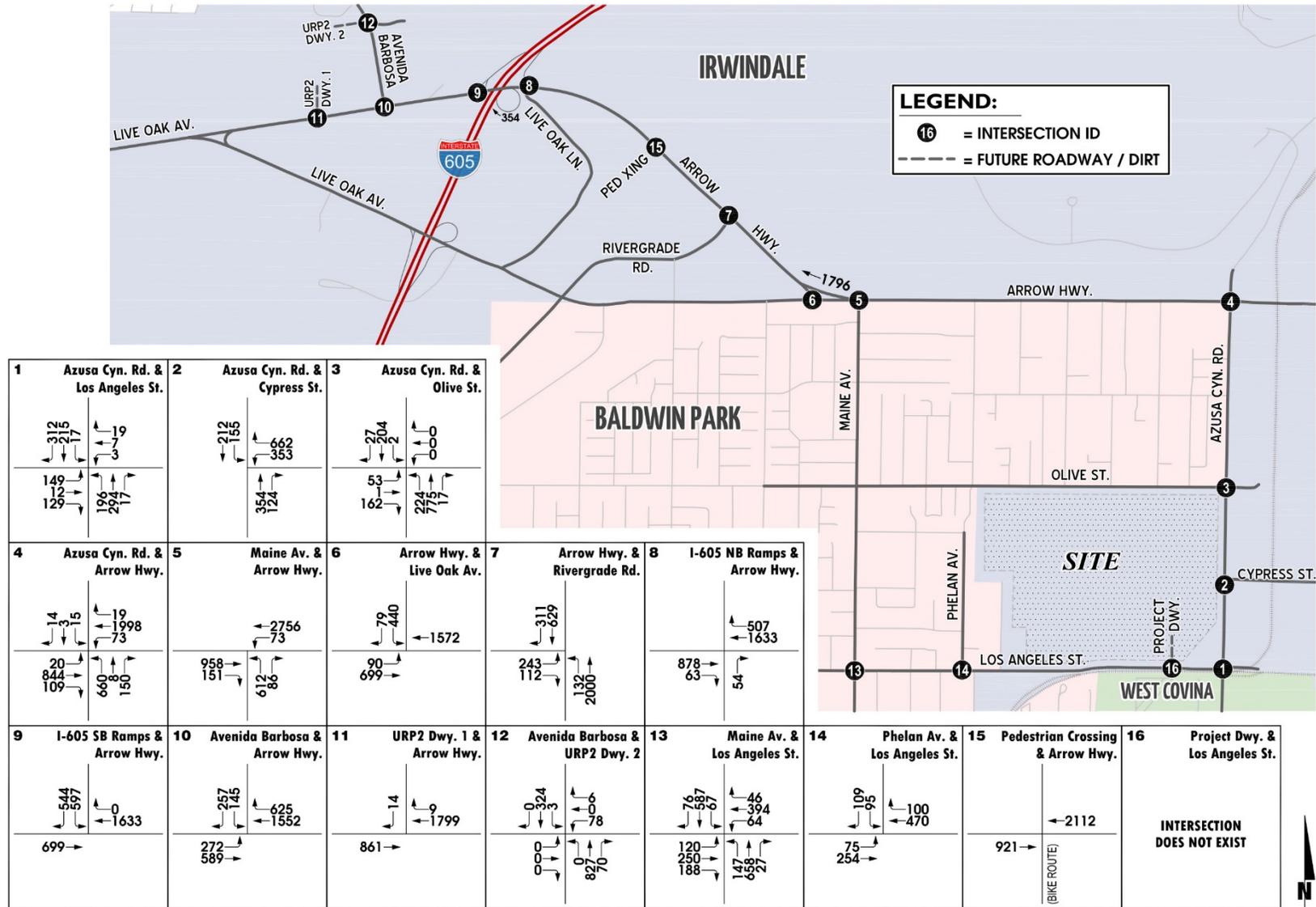
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-27 Cumulative Development Average Daily Time



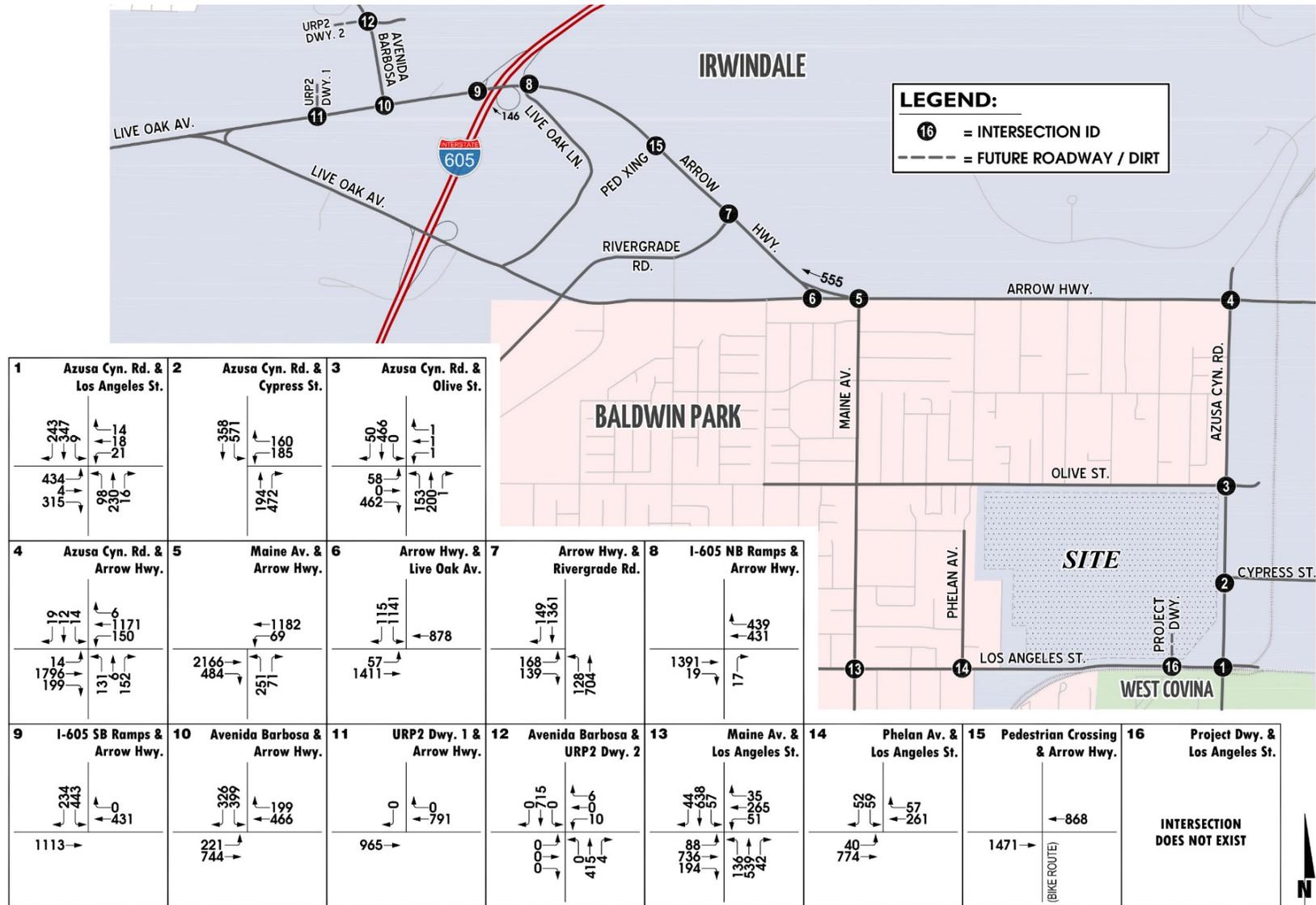
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-28 Cumulative Development AM Peak Hour Intersection Volumes



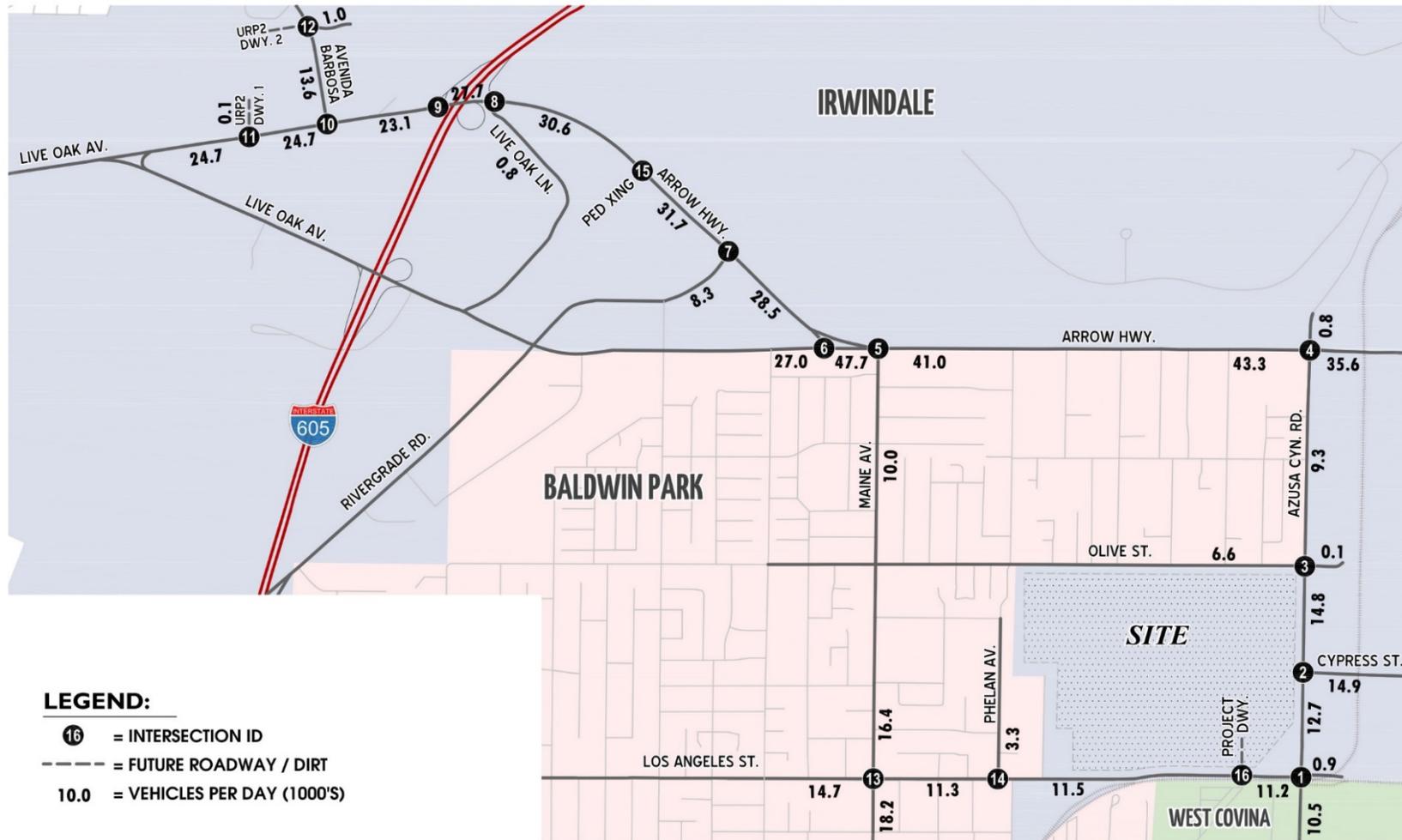
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-29 Cumulative Development PM Peak Hour Intersection Volumes



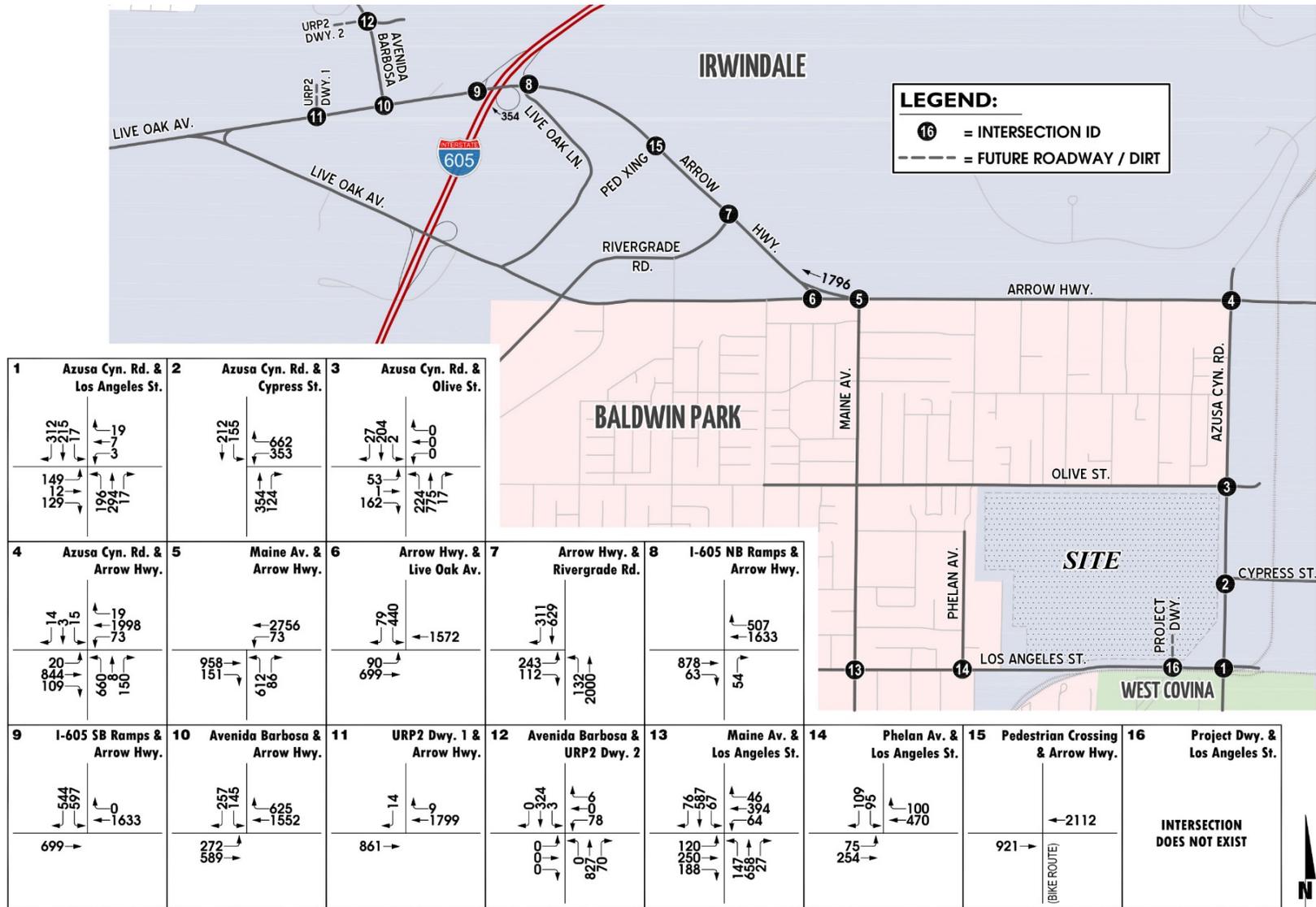
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-30 Interim Year (2016) Without Project Average Daily Time



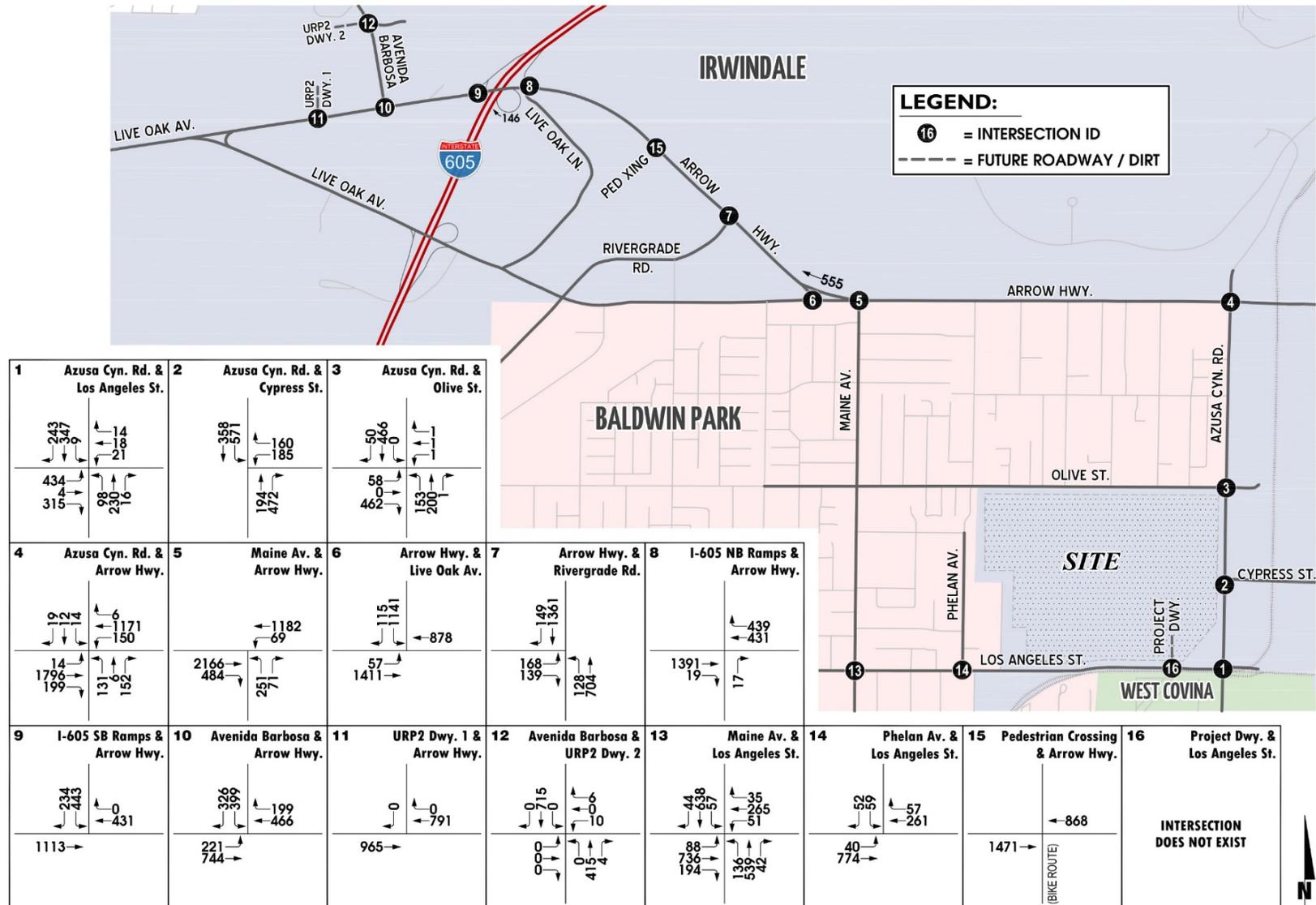
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-31 Interim Year (2016) Without Project AM Peak Hour Intersection Volumes



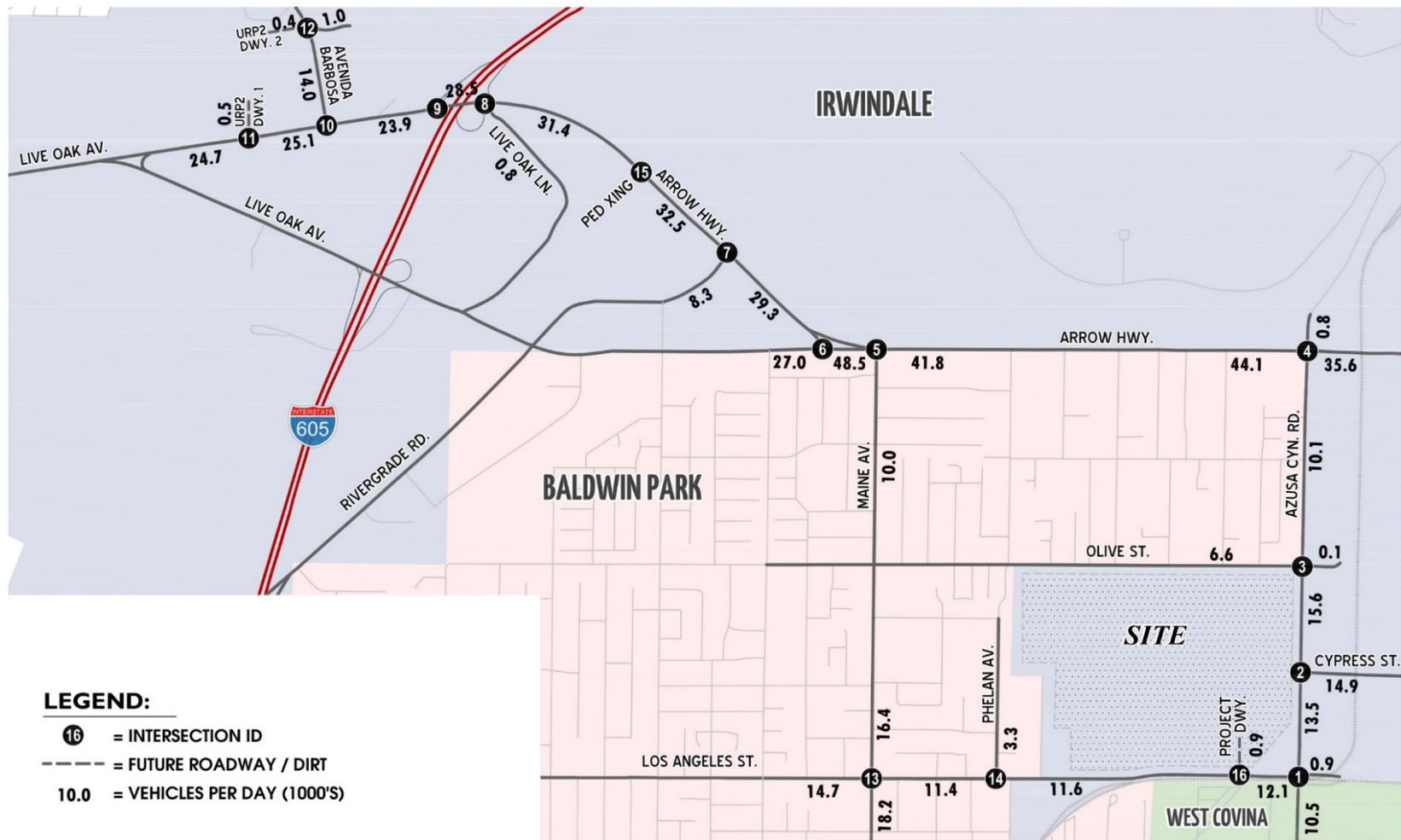
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-32 Interim Year (2016) Without Project PM Peak Hour Intersection Volumes



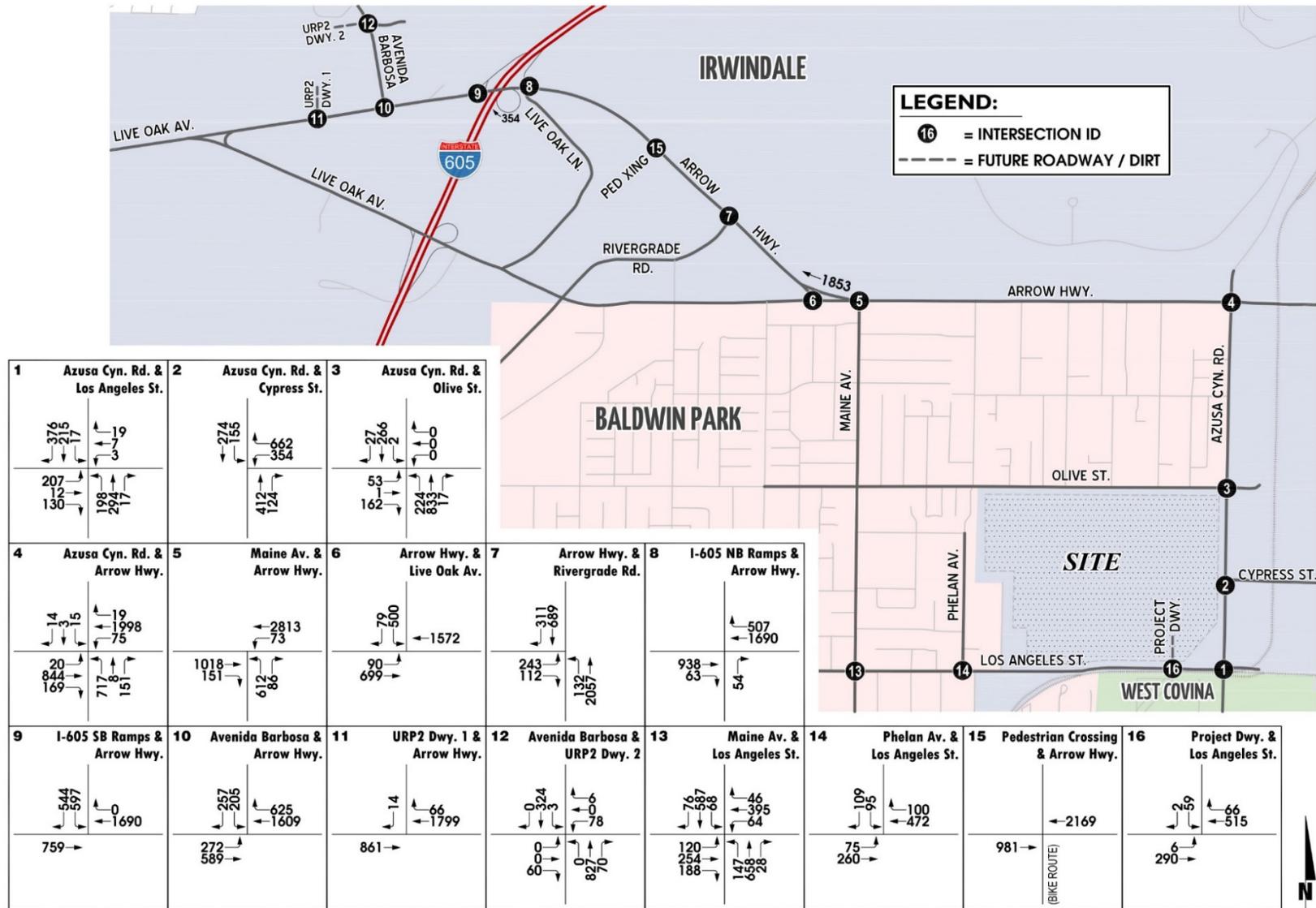
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-33 Interim Year (2016) With Project Average Daily Times



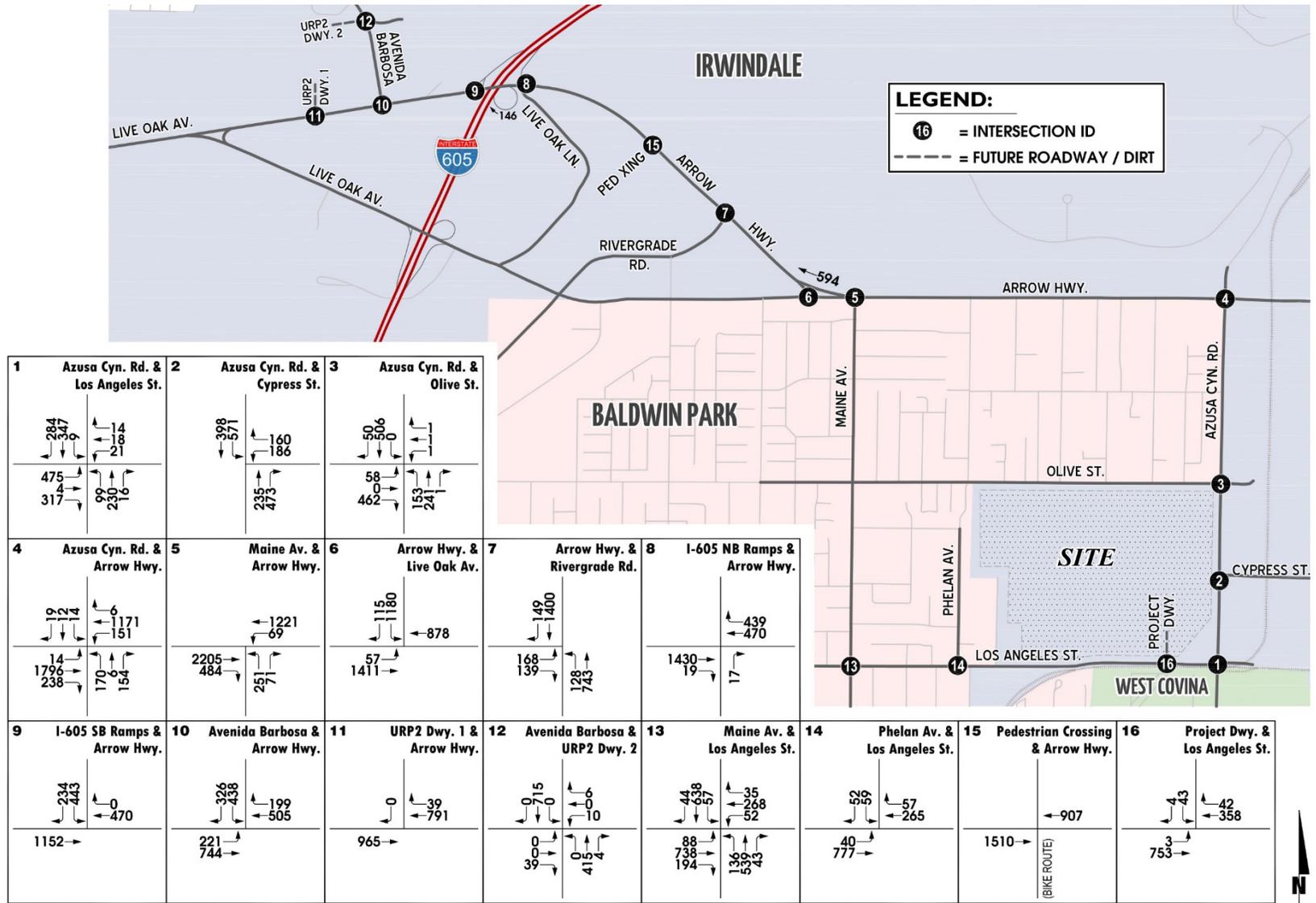
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-34 Interim Year (2016) With Project AM Peak Hour Intersection Volumes



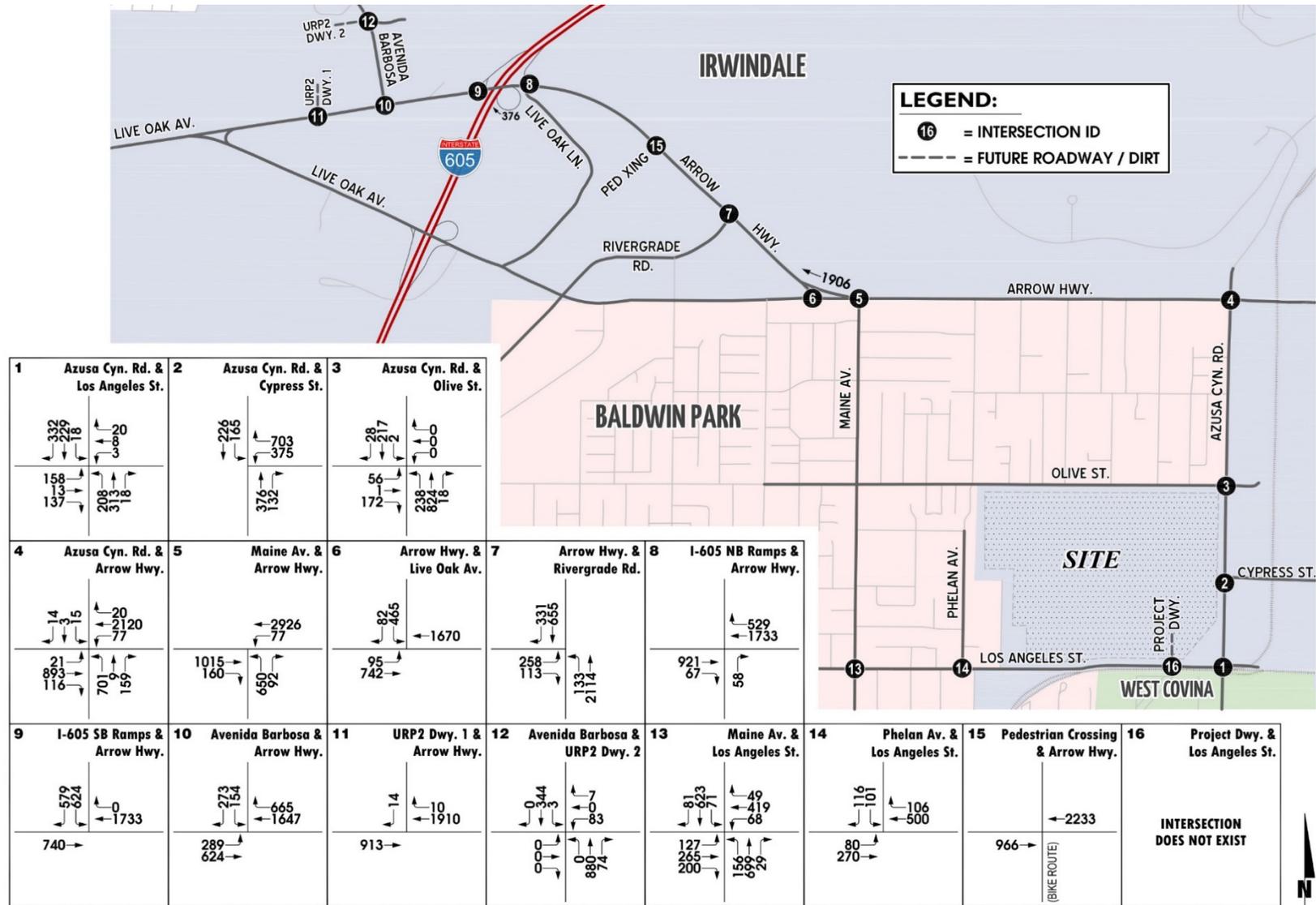
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-35 Interim Year (2016) With Project PM Peak Hour Intersection Volumes



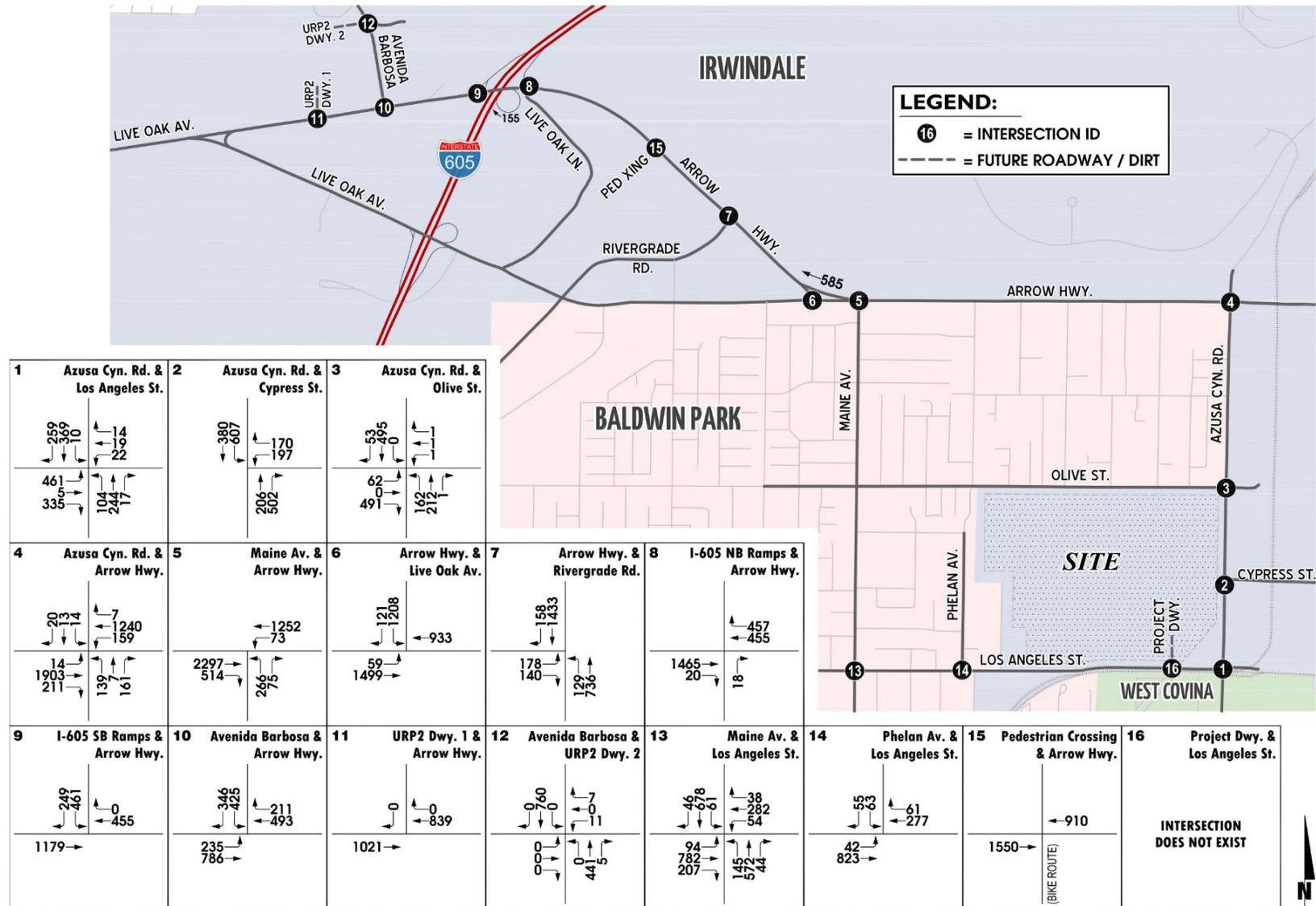
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-37 Long Range (2035) Without Project AM Peak Hour Intersection Volumes



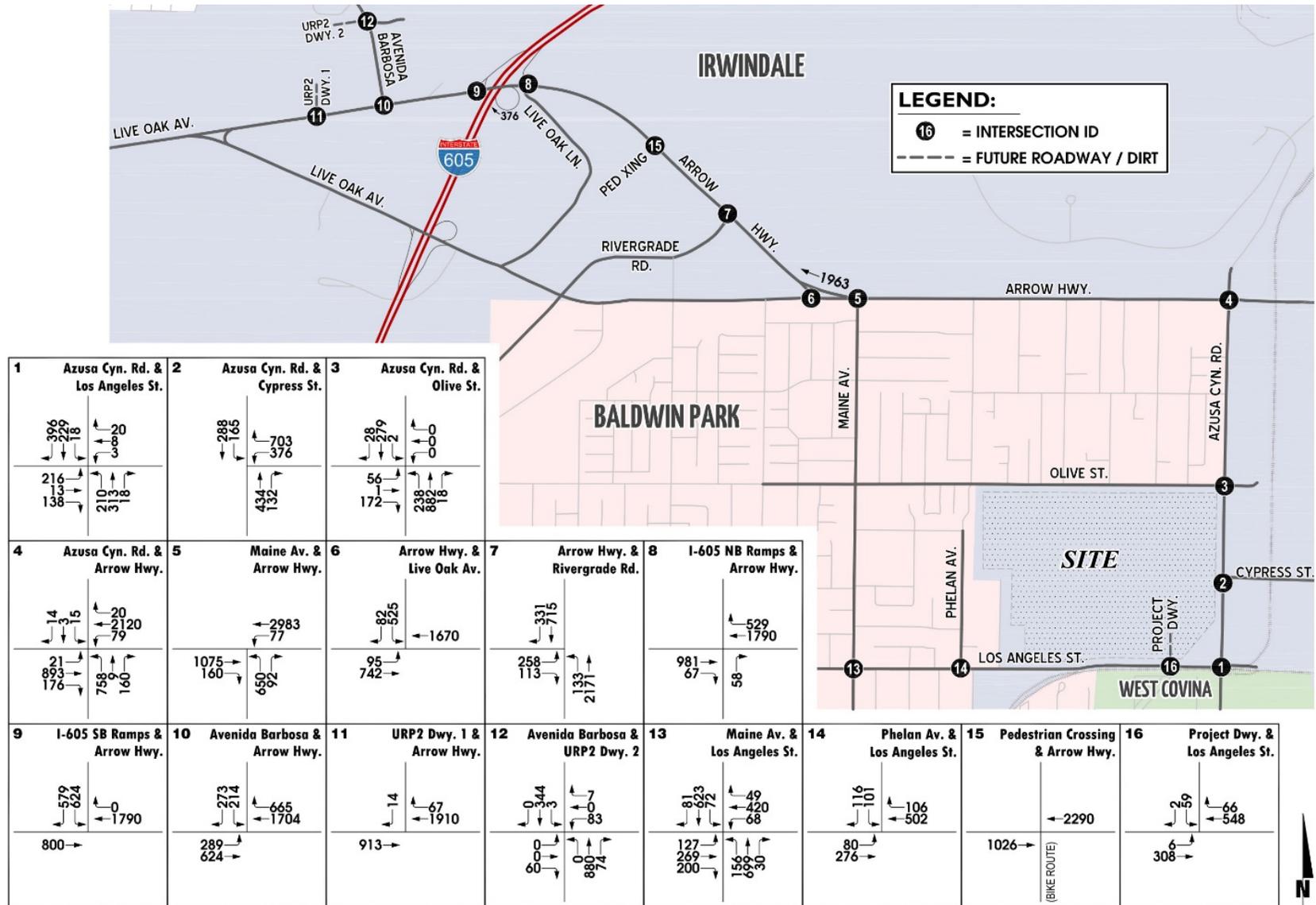
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-38 Long Range (2035) Without Project PM Peak Hour Intersection Volumes



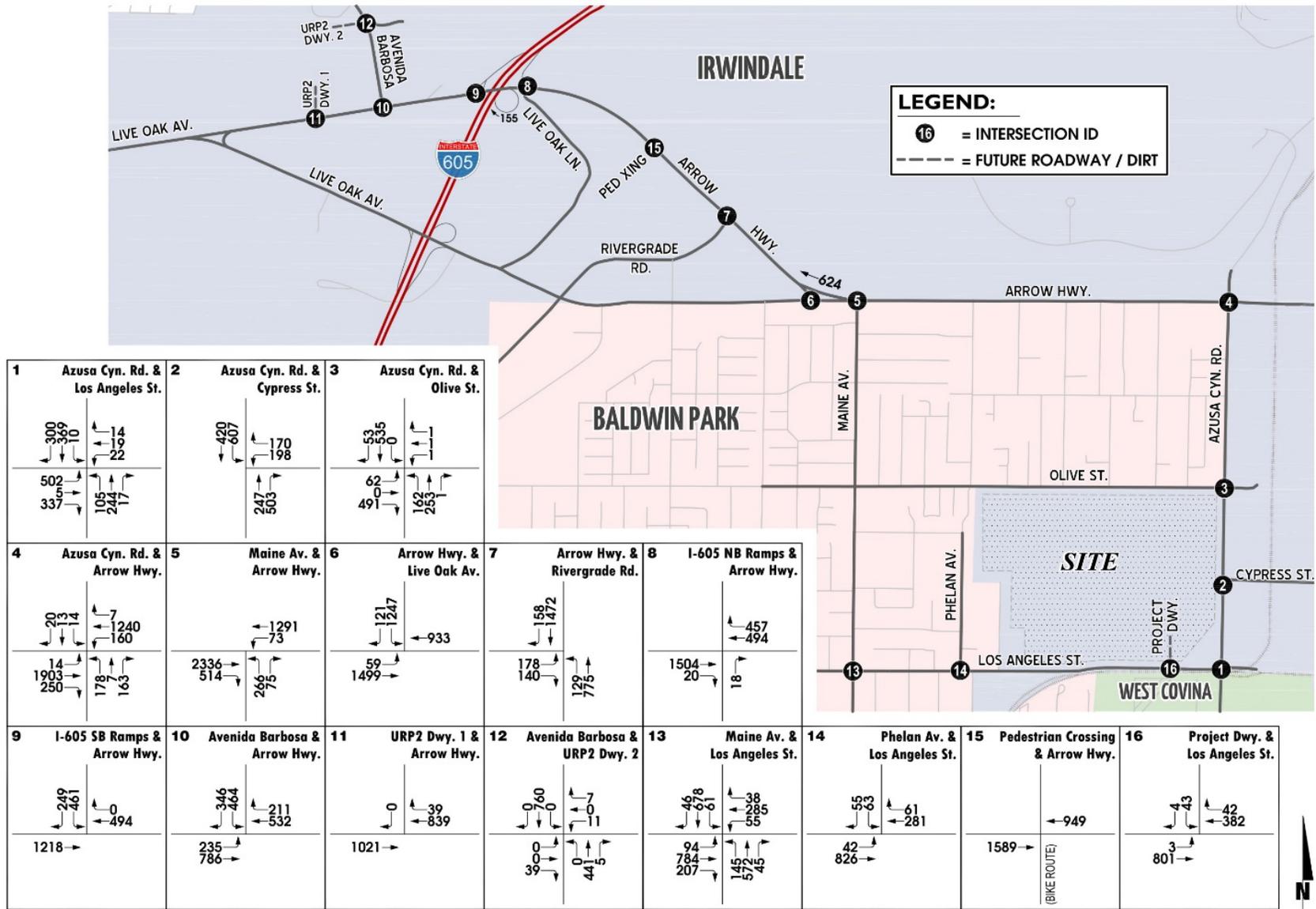
CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-40 Long Range (2035) With Project AM Peak Hour Intersection Volumes



CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Figure 3.9-41 Long Range (2035) With Project PM Peak Hour Intersection Volumes



CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

3.9.6 THRESHOLDS OF SIGNIFICANCE

The significance of potential impacts was determined based on the 2014 State CEQA Guidelines, Appendix G presented below. Using these thresholds, the Proposed Project would be considered to have a significant impact related to traffic generation and circulation if it were to:

- A. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;
- B. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;
- C. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- D. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- E. Result in inadequate emergency access; and/or
- F. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

3.9.7 IMPACT ANALYSIS & MITIGATION PROGRAM

Threshold T-1

Would the Project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Less than Significant Impact

The impacts to the City's policies on LOS (and deficiencies in LOS) are addressed in **Threshold T-2**. The City has no other plans, ordinances or policies that "establish measures of effectiveness for the performance of the circulation system, including related to mass transit and non-motorized travel, such as a pedestrian or bicycle circulation plan, which are applicable to the Proposed Project. The only bike path within the City of Irwindale is located on the River bed and along the top of the Santa Fe Dam in the vicinity of Arrow Highway, and will not be affected by

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

project traffic. Based on the existing uses near the project site, and the project's trip generation characteristics, pedestrian activity is anticipated to be nominal.

Applicable policies from the City of Irwindale's General Plan include:

Issue Area – Traffic and Circulation

The City of Irwindale will strive to improve safe and efficient circulation in the City. Irwindale will continue to develop and enhance the existing streets and intersections in the City.

The Project is consistent with this policy because the recommended project on-site and off-site improvements provide for safe and efficient access conditions, and accommodate the travel activities associated with the Proposed Project.

Infrastructure Element Policy 4

The City of Irwindale will strive to ensure that all new development implements its "fair-share" of infrastructure improvements to offset the potential adverse impacts associated with the additional traffic that will be generated by the new development.

Per the City of Irwindale Traffic Study Guidelines, the Proposed Project shall pay its fair share of improvements to eliminate the significant impacts identified in the Traffic Impact Analysis as discussed below in section 3.9.6.

Caltrans Coordination

The City continues to coordinate efforts with Caltrans to upgrade area freeways and ramp intersection. The purpose of this undertaking is to ensure that the City is fully apprised of roadway and facility improvement efforts in the early stages of planning and design. The City will continue to coordinate with Caltrans and Metro.

The City consulted with Caltrans on the Project and the EIR and received their input and has taken their comments into consideration in preparing the Draft EIR.

Based upon the above, implementation of the Project would not conflict with adopted policies, plans, or programs that would result in a decrease of the performance or safety of public transit, bicycle, or pedestrian facilities. Impacts are considered less than significant and no mitigation measures are required.

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Threshold T-2

Would the Project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Less than Significant with Mitigation Program

Existing Plus Project Conditions

3.9.7.1 DELAY, CAPACITY, LEVEL OF SERVICE, AND IMPROVEMENTS

3.9.7.1.1 EXISTING PLUS PROJECT

HCM delay and ICU calculations for Existing Plus Project conditions are shown in **Table 3.9-12**. **Table 3.9-12** shows the operations analysis at the study area intersections with and without improvements. For Existing Plus Project conditions, the following study area intersections are anticipated to operate at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry:

Table 3.9-11 Unacceptable Level of Service for Existing Plus Project Conditions

ID	Intersection Location	Jurisdiction
1	Azusa Canyon Road / Los Angeles Street	Irwindale and West Covina
12	Avenida Barbosa / URP2 Driveway 2 (Private)	Irwindale

Even though the ICU results show that the intersection of Azusa Canyon Road / Arrow Highway (#4) operates at LOS “E” during the AM peak hour under Existing Plus Project conditions, the HCM results show that the intersection operates at acceptable LOS (LOS “D” or better). The HCM results present a more accurate representation of the intersection operational level as discussed above.

Table 3.9-13 provides a summary comparison of the intersection analysis operations for Existing (2014) and Existing Plus Project conditions. **Table 3.9-13** also identifies any “significant impacts” (as defined in the City of Irwindale traffic study guidelines). As shown on **Table 3.9-13**, a significant impact is projected for the intersection of Azusa Canyon Road / Los Angeles Street (#1), based on the minor approach operating conditions.

It should be noted that the westbound left turn movement (from adjacent Private Driveway) at the intersection of Avenida Barbosa/URP2 Driveway 2 (Private) is the only minor approach anticipated to operate at unacceptable LOS (LOS “E”). Providing physical improvements (such as adding capacity for the westbound left turns) will not solve this problem because of the high northbound through traffic along Avenida Barbosa impede the westbound left turn movements. Installation of a traffic signal at this location is not recommended because traffic volumes do not

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

warrant signal control. Furthermore, the project does not contribute to a traffic volume increase for the westbound left turns at this intersection and the total/average control delay is operating at acceptable LOS. Therefore, the proposed Project does not cause a significant impact at this location, and mitigation improvements are recommended.

As shown in **Table 3.9-12** and **Table 3.9-13**, the following improvements are necessary to reduce the Project's proportionate increase in delay to pre-project levels or better, thus reducing the Project's impact to less-than-significant and resulting in acceptable level of service operations with the addition of project traffic:

Azusa Canyon Road / Los Angeles Street (#1)

- Install a traffic signal

This measure is identified as a required mitigation measure in the Mitigation Program defined below.

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-12 Existing Plus Project Conditions Intersections Analysis Summary

#	INTERSECTION	TRAFFIC CONTROL ³	INTERSECTION APPROACH LANES ¹												HCM DELAY ² (SECS.)		HCM LEVEL OF SERVICE ²		ICU ⁴ (V/C)		ICU ⁴ LEVEL OF SERVICE		
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND			AM	PM	AM	PM	AM	PM	AM	PM	
			L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM
1	Azusa Cyn. Rd. / Los Angeles St.																						
	- Without Improvements	AWS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	31.4	41.3	D	E	NA	NA	NA	NA	
	- With Improvements	TS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	40.7	47.6	D	D	0.63	0.85	B	D	
2	Azusa Cyn. Rd. / Cypress St.	TS	0	2	0	1	2	0	0	0	0	1	1!	1	27.1	25.0	C	C	0.46	0.59	A	A	
3	Azusa Cyn. Rd. / Olive St.	TS	1	2	0	1	2	d	1	1	d	1	1	d	11.6	19.3	B	B	0.39	0.31	A	A	
4	Azusa Cyn. Rd. / Arrow Hwy.	TS	1.5	0.5	1	1	1	0	1	2	d	1	2	d	55.0	51.6	D	D	0.94	0.76	E	C	
5	Maine Av. / Arrow Hwy.	TS	2	0	1	0	0	0	0	2	d	1	3	0	16.4	11.6	B	B	0.78	0.80	C	C	
6	Arrow Hwy. / Live Oak Av.	TS	0	0	0	2	0	1	1	2	0	0	2	2>>	11.3	24.4	B	C	0.61	0.75	B	C	
7	Arrow Hwy. / Rivergrade Rd.	TS	1	2	0	0	2	1	2	0	1	0	0	0	7.3	5.3	A	A	0.67	0.41	B	A	
8	I-605 NB Ramp - Live Oak Ln. / Arrow Hwy.	CSS	0	0	1	0	0	0	0	2	d	0	2	1>>	11.3	13.3	B	B	NA	NA	NA	NA	
9	I-605 SB Off-Ramp / Arrow Hwy.	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	16.1	7.4	B	A	0.86	0.43	D	A	
	- LA CMP ICU Results ⁵	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	-	-	-	-	0.86	0.49	D	A	
10	Avenida Barbosa / Arrow Hwy.	TS	0	0	0	2	0	1	1	2	0	0	2	1	28.2	22.2	C	C	0.77	0.46	C	A	
11	URP2 Dwy. 1 / Arrow Hwy.	CSS	0	0	0	0	0	1	0	2	0	0	3	0	20.9	0.0	C	A	NA	NA	NA	NA	
12	Avenida Barbosa / URP2 Dwy. 2 (Private) ⁶	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	0	1!	0	3.3	0.6	A	A	NA	NA	NA	NA	
	- URP2 Dwy. 2 (eastbound approach) ⁷	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	9.6	11.1	A	B	NA	NA	NA	NA	
	- Adjacent Dwy. (westbound approach) ⁷	CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	46.0	16.0	E	C	NA	NA	NA	NA	
13	Maine Av. / Los Angeles St.	TS	1	2	0	1	2	0	1	2	0	1	2	0	22.6	25.0	C	C	0.52	0.61	A	B	
14	Phelan Av. / Los Angeles St.	AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	13.9	16.1	B	C	NA	NA	NA	NA	
15	Ped Xing / Arrow Hwy.	TS	0	0	0	0	0	0	0	2	0	0	2	0	0.8	0.5	A	A	0.63	0.39	B	A	
16	Project Dwy. / Los Angeles St.	CSS	0	0	0	1	0	1	0	2	0	0	2	d	16.6	17.3	C	C	-	-	-	-	

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (23') for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; 1>> = Free Right Turn Lane; d = Defacto Right Turn Lane; 1 = Improvement

² Delay and level of service (LOS) is calculated using the following analysis software: Synchro 8. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown. "NA" value is shown for unsignalized ICU values.

³ AWS = All Way Stop; TS = Traffic Signal; CSS = Cross Street Stop.

⁴ The Synchro v/c output results are discussed in the City of Irwindale Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information. It should be noted that the I-605 ramp intersections along Arrow Highway are identified as CMP intersections. Therefore, ICU results based on the LA CMP parameters are also presented for the signalized intersection of I-605 SB ramps / Arrow Highway (#9).

⁵ Volume-to-Capacity ratio (v/c) and level of service (LOS) is calculated based on the LA CMP Intersection Capacity Utilization (ICU) methodology using the following analysis software: Traffix Version 8.0 R1.

⁶ LOS based on average delay (unsignalized intersection).

⁷ LOS based on the minor approach operating condition (unsignalized intersection).

* **BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-13 Existing and Existing Plus Project Intersection Analysis Summary Comparison

#	INTERSECTION	TRAFFIC Control ³	INTERSECTION APPROACH LANES ¹								HCM DELAY ² (SECS.)		HCM LEVEL OF SERVICE ²		ICU ⁷ (V/C)		ICU ⁷ LEVEL OF SERVICE		SIGNIFICANT IMPACT? ⁴	Added Project Traffic					
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND		WEST-BOUND		AM	PM	AM	PM	AM	PM		AM	PM	AM	PM		
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM		AM	PM	AM	PM		
1	Azusa Cyn. Rd. / Los Angeles St. Without Improvements • Existing (2014) • Existing + Project With Improvements • Existing + Project	AWS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	25.6	40.5	D	E	NA	NA	NA	NA	YES	125	85
		AWS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	31.4	41.3	D	E	NA	NA	NA	NA			
		TS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	40.7	47.6	D	D	0.63	0.85	B	D			
2	Azusa Cyn. Rd. / Cypress St. • Existing (2014) • Existing + Project	TS	0	2	0	1	2	0	0	0	0	1	1!	1	25.6	24.8	C	C	0.43	0.58	A	A	NO		
		TS	0	2	0	1	2	0	0	0	0	1	1!	1	27.1	25.0	C	C	0.46	0.59	A	A			
3	Azusa Cyn. Rd. / Olive St. • Existing (2014) • Existing + Project	TS	1	2	0	1	2	d	1	1	d	1	1	d	10.8	19.0	B	B	0.39	0.30	A	A	NO		
		TS	1	2	0	1	2	d	1	1	d	1	1	d	11.6	19.3	B	B	0.39	0.31	A	A			
4	Azusa Cyn. Rd. / Arrow Hwy. • Existing (2014) • Existing + Project	TS	1.5	0.5	1	1	1	0	1	2	d	1	2	d	50.6	48.5	D	D	0.92	0.75	E	C	NO		
		TS	1.5	0.5	1	1	1	0	1	2	d	1	2	d	55.0	51.6	D	D	0.94	0.76	E	C			
5	Maine Av. / Arrow Hwy. • Existing (2014) • Existing + Project	TS	2	0	1	0	0	0	0	2	d	1	3	0	16.2	11.4	B	B	0.76	0.80	C	C	NO		
		TS	2	0	1	0	0	0	0	2	d	1	3	0	16.4	11.6	B	B	0.78	0.80	C	C			
6	Arrow Hwy. / Live Oak Av. • Existing (2014) • Existing + Project	TS	0	0	0	2	0	1	1	2	0	0	2	2>>	10.1	22.9	B	C	0.59	0.74	A	C	NO		
		TS	0	0	0	2	0	1	1	2	0	0	2	2>>	11.3	24.4	B	C	0.61	0.75	B	C			
7	Arrow Hwy. / Rivergrade Rd. • Existing (2014) • Existing + Project	TS	1	2	0	0	2	1	2	0	1	0	0	0	7.3	5.4	A	A	0.65	0.39	B	A	NO		
		TS	1	2	0	0	2	1	2	0	1	0	0	0	7.3	5.3	A	A	0.67	0.41	B	A			
8	I-605 NB Ramp - Live Oak Ln. / Arrow Hwy. • Existing (2014) • Existing + Project	CSS	0	0	1	0	0	0	0	2	d	0	2	1>>	11.0	13.1	B	B	NA	NA	NA	NA	NO		
		CSS	0	0	1	0	0	0	0	2	d	0	2	1>>	11.3	13.3	B	B	NA	NA	NA	NA			
9	I-605 SB Off-Ramp / Arrow Hwy. • Existing (2014) - LA CMP ICU Results ⁵ • Existing + Project - LA CMP ICU Results ⁵	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	15.1	7.4	B	A	0.84	0.42	D	A	NO		
		TS	0	0	0	1	0	1>>	0	3	0	0	2	0	-	-	-	-	0.84	0.48	D	A			
		TS	0	0	0	1	0	1>>	0	3	0	0	2	0	16.1	7.4	B	A	0.86	0.43	D	A			
		TS	0	0	0	1	0	1>>	0	3	0	0	2	0	-	-	-	-	0.86	0.49	D	A			

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-13 Existing and Existing Plus Project Intersection Analysis Summary Comparison

#	INTERSECTION	TRAFFIC Control ³	INTERSECTION APPROACH LANES ¹								HCM DELAY ² (SECS.)		HCM LEVEL OF SERVICE ²		ICU ⁷ (V/C)		ICU ⁷ LEVEL OF SERVICE		SIGNIFICANT IMPACT? ⁴	Added Project Traffic					
			NORTH-BOUND		SOUTH-BOUND		EAST-BOUND		WEST-BOUND		AM	PM	AM	PM	AM	PM	AM	PM		AM	PM				
			L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	L		T	R	L	T	R	
10	Avenida Barbosa / Arrow Hwy. • Existing (2014) • Existing + Project	TS	0	0	0	2	0	1	1	2	0	0	2	1	26.8	22.1	C	C	0.73	0.44	C	A			
		TS	0	0	0	2	0	1	1	2	0	0	2	1	28.2	22.2	C	C	0.77	0.46	C	A	NO		
11	URP2 Dwy. 1 / Arrow Hwy. • Existing (2014) • Existing + Project	CSS	0	0	0	0	0	1	0	2	0	0	3	0	20.2	0.0	C	A	NA	NA	NA	NA			
		CSS	0	0	0	0	0	1	0	2	0	0	3	0	20.9	0.0	C	A	NA	NA	NA	NA	NO		
12	Avenida Barbosa / URP2 Dwy. 2 (Private) • Existing (2014) ⁵ • Existing + Project ⁵ - URP2 Dwy. 2 (eastbound approach) ⁶ • Existing (2014) • Existing + Project - Private Dwy. (westbound approach) ⁶ • Existing (2014) • Existing + Project	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	0	1!	0	2.7	0.2	A	A	NA	NA	NA	NA			
		CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	0	1!	0	3.3	0.6	A	A	NA	NA	NA	NA	NO		
		CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	0.0	0.0	A	A	NA	NA	NA	NA			
		CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	9.6	11.1	A	B	NA	NA	NA	NA	NO		
		CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	41.0	15.4	E	C	NA	NA	NA	NA			
		CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	46.0	16.0	E	C	NA	NA	NA	NA	NO	0	0
13	Maine Av. / Los Angeles St. • Existing (2014) • Existing + Project	TS	1	2	0	1	2	0	1	2	0	1	2	0	22.5	24.9	C	C	0.52	0.61	A	B			
		TS	1	2	0	1	2	0	1	2	0	1	2	0	22.6	25.0	C	C	0.52	0.61	A	B	NO		
14	Phelan Av. / Los Angeles St. • Existing (2014) • Existing + Project	AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	13.8	15.9	B	C	NA	NA	NA	NA			
		AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	13.9	16.1	B	C	NA	NA	NA	NA	NO		
15	Ped Xing / Arrow Hwy. • Existing (2014) • Existing + Project	TS	0	0	0	0	0	0	0	2	0	0	2	0	0.8	0.5	A	A	0.61	0.38	B	A			
		TS	0	0	0	0	0	0	0	2	0	0	2	0	0.8	0.5	A	A	0.63	0.39	B	A	NO		

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (23') for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; 1> = Free Right Turn Lane; d = Defacto Right Turn Lane; 1 = Improvement

² Delay and level of service (LOS) is calculated using the following analysis software: Synchro 8. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown. "NA" value is shown for unsignalized ICU values.

³ AWS = All Way Stop; TS = Traffic Signal; CSS = Cross Street Stop.

⁴ Per City of Irwindale traffic study guidelines, a significant impact is identified if one of the following criteria are met:

- For Signalized Intersections
 - When an intersection operates at acceptable LOS ("D" or better) for baseline conditions and the addition of project results in unacceptable LOS ("E" or "F").
 - When a State Highway intersection operates at acceptable LOS ("E" or better) for baseline conditions and the addition of project results in unacceptable LOS "F".
 - When an intersection operates at LOS "F" for baseline conditions and the project adds more than 50 peak hour project trips.
- For Unsignalized Intersections
 - When the minor stop-controlled approach operates at LOS "F" and does not have acceptable LOS in terms of total control delay, and the addition of project increases the total control delay to more than 4.0 hours for single lane approach and 5.0 hours for multilane approach.
 - When the minor stop-controlled approach operates at LOS "F" and does not have acceptable LOS in terms of total control delay, and the addition of project of more than 50 peak-hour project trips contributes to the continuing operational failure at the minor approach.

⁵ LOS based on average delay (unsignalized intersection).

⁶ LOS based on minor approach operating condition (unsignalized intersection).

⁷ The Synchro v/c output results are discussed in the City of Irwindale Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information.

LOS = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

3.9.7.1.2 INTERIM YEAR (2016) WITHOUT PROJECT

HCM delay and ICU calculations for Interim Year (2016) Without Project conditions are shown in **Table 3.9-16**. **Table 3.9-16** shows the operations analysis at the study area intersections with and without improvements. For Interim Year (2016) Without Project conditions, the following study area intersection is projected to operate at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry:

Table 3.9-14 Projected To Operate At Unacceptable Level of Service for Interim Year (2016) Without Project Conditions

ID	Intersection Location	Jurisdiction
1	Azusa Canyon Road / Los Angeles Street	Irwindale and West Covina
4	Azusa Canyon Road / Arrow Highway	Irwindale
12	Avenida Barbosa / URP2 Driveway 2 (Private)	Irwindale

Even though the ICU results show that intersection of I-605 SB Off-Ramp / Arrow Highway (#9) operates at LOS “E” during the AM peak hour under Interim Year (2016) Without Project conditions, the HCM results show that the intersection operates at acceptable LOS (LOS “D” or better). The HCM results present a more accurate representation of the intersection operational level as discussed above.

3.9.7.1.3 INTERIM YEAR (2016) WITH PROJECT

HCM delay and ICU calculations for Interim Year (2016) With Project conditions are shown in **Table 3.9-17**. **Table 3.9-17** shows the operations analysis at the study area intersections with and without improvements. For Interim (2016) With Project conditions, no additional intersection is projected to operate at unacceptable level of service compared to Interim Year (2016) Without Project conditions.

Even though the ICU results show that intersection of I-605 SB Off-Ramp / Arrow Highway (#9) operates at LOS “E” during the AM peak hour under Interim Year (2016) With Project conditions, the HCM results show that the intersection operates at acceptable LOS (LOS “D” or better). The HCM results present a more accurate representation of the intersection operational level.

Table 3.9-18 summarizes the intersection analysis operations for Interim Year (2016) Without Project and Interim Year with Project conditions. **Table 3.9-18** also identifies any “significant impacts” (as defined in the City of Irwindale traffic study guidelines).

A significant impact is not anticipated at the intersection Avenida Barbosa / URP2 Driveway 2 (Private) since the project does not contribute to a traffic volume increase for the westbound left

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

turns (deficient movement) at this intersection and the total/average control delay is operating at acceptable LOS.

As shown on **Table 3.9-18**, traffic conditions at the intersection of Azusa Canyon Road / Los Angeles Street (#1) and Azusa Canyon Road / Arrow Highway (#4) do represent a significant adverse impact of proposed Project traffic. As shown in **Table 3.9-17** and **Table 3.9-18**, the following improvements are necessary to reduce the Project's proportionate increase in delay to pre-project levels or better, thus reducing the Project's impact to less-than-significant levels, and resulting in acceptable level of service operations with the addition of project traffic:

Azusa Canyon Road / Los Angeles Street (#1)

- Install a traffic signal

Azusa Canyon Road / Arrow Highway (#4)

- Modify striping to provide a 3rd eastbound through lane.
- Modify striping to provide a 3rd westbound through lane and 3rd westbound receiving lane.

This measure is identified as a required mitigation measure in the Mitigation Program defined below.

3.9.7.1.4 LONG RANGE (2035) WITHOUT PROJECT

HCM delay and ICU calculations for Long Range (2035) Without Project conditions are shown in **Table 3.9-19**. **Table 3.9-19** shows the operations analysis at the study area intersections with and without improvements. For Long Range (2035) Without Project conditions, the following study area intersection is projected to operate at unacceptable level of service (LOS "E" or worse) during the peak hours, with existing geometry:

Table 3.9-15 Unacceptable Level of Service for Long Range (2035) Without Project Conditions

ID	Intersection Location	Jurisdiction
1	Azusa Canyon Road / Los Angeles Street	Irwindale and West Covina
4	Azusa Canyon Road / Arrow Highway	Irwindale
9	I-605 SB Off-Ramp / Arrow Highway	Caltrans
12	Avenida Barbosa / URP2 Driveway 2 (Private)	Irwindale

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-16 Interim Year (2016) Without Project Conditions Intersections Analysis Summary

#	INTERSECTION	TRAFFIC CONTROL ³	INTERSECTION APPROACH LANES ¹								HCM DELAY ² (SECS.)		HCM LEVEL OF SERVICE ²		ICU ⁴ (V/C)		ICU ⁴ LEVEL OF SERVICE					
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND		WEST-BOUND		AM	PM	AM	PM	AM	PM	AM	PM		
			L	T	R	L	T	R	L	T	R	L									T	R
1	Azusa Cyn. Rd. / Los Angeles St.																					
	- Without Improvements	AWS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	30.3	43.6	D	E	NA	NA	NA	NA
	- With Improvements	TS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	31.7	49.7	C	D	0.61	0.86	B	D
2	Azusa Cyn. Rd. / Cypress St.	TS	0	2	0	1	2	0	0	0	0	1	1!	1	26.1	25.8	C	C	0.46	0.60	A	A
3	Azusa Cyn. Rd. / Olive St.	TS	1	2	0	1	2	d	1	1	d	1	1	d	10.8	19.9	B	B	0.41	0.32	A	A
4	Azusa Cyn. Rd. / Arrow Hwy.																					
	- Without Improvements	TS	1.5	0.5	1	1	1	0	1	2	d	1	2	d	67.3	69.4	E	E	0.98	0.81	E	D
	- With Improvements	TS	1.5	0.5	1	1	1	0	1	<u>3</u>	0	1	<u>3</u>	0	32.8	34.4	C	C	0.77	0.67	C	B
5	Maine Av. / Arrow Hwy.	TS	2	0	1	0	0	0	0	2	d	1	3	0	17.4	13.0	B	B	0.81	0.84	D	D
6	Arrow Hwy. / Live Oak Av.	TS	0	0	0	2	0	1	1	2	0	0	2	2>>	11.8	30.1	B	C	0.64	0.80	B	C
7	Arrow Hwy. / Rivergrade Rd.	TS	1	2	0	0	2	1	2	0	1	0	0	0	9.0	8.1	A	A	0.74	0.51	C	A
8	I-605 NB Ramp - Live Oak Ln. / Arrow Hwy.	CSS	0	0	1	0	0	0	0	2	d	0	2	1>>	12.4	15.1	B	C	NA	NA	NA	NA
9	I-605 SB Off-Ramp / Arrow Hwy.																					
	- LA CMP ICU Results ⁵	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	40.6	10.4	D	B	1.00	0.56	E	A
		TS	0	0	0	1	0	1>>	0	3	0	0	2	0	-	-	-	-	0.98	0.61	E	B
10	Avenida Barbosa / Arrow Hwy.	TS	0	0	0	2	0	1	1	2	0	0	2	1	30.9	22.4	C	C	0.78	0.48	C	A
11	URP2 Dwy. 1 / Arrow Hwy.	CSS	0	0	0	0	0	1	0	2	0	0	3	0	21.7	0.0	C	A	NA	NA	NA	NA
12	Avenida Barbosa / URP2 Dwy. 2 (Private) ⁸																					
	- URP2 Dwy. 2 (eastbound approach) ⁷	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	0	1!	0	3.1	0.2	A	A	NA	NA	NA	NA
	- Adjacent Dwy. (westbound approach) ⁷	CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	47.9	15.9	E	C	NA	NA	NA	NA
13	Maine Av. / Los Angeles St.	TS	1	2	0	1	2	0	1	2	0	1	2	0	23.2	25.9	C	C	0.55	0.64	A	B
14	Phelan Av. / Los Angeles St.	AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	14.7	17.3	B	C	NA	NA	NA	NA
15	Ped Xing / Arrow Hwy.	TS	0	0	0	0	0	0	0	2	0	0	2	0	1.0	0.6	A	A	0.70	0.46	B	A
16	Project Dwy. / Los Angeles St.	-	DOES NOT EXIST								-	-	-	-	-	-	-	-	-	-	-	-

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (23') for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; 1>> = Free Right Turn Lane; d = De facto Right Turn Lane; 1 = Improvement

² Delay and level of service (LOS) is calculated using the following analysis software: Synchro 8. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown. "NA" value is shown for unsignalized ICU values.

³ AWS = All Way Stop; TS = Traffic Signal; CSS = Cross Street Stop.

⁴ The Synchro v/c output results are discussed in the City of Irwindale Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information. It should be noted that the I-605 ramp intersections along Arrow Highway are identified as CMP intersections. Therefore, ICU results based on the LA CMP parameters are also presented for the signalized intersection of I-605 SB ramps / Arrow Highway (#9).

⁵ Volume-to-Capacity ratio (v/c) and level of service (LOS) is calculated based on the LA CMP Intersection Capacity Utilization (ICU) methodology using the following analysis software: Traffix Version 8.0 R1.

⁶ LOS based on average delay (unsignalized intersection).

⁷ LOS based on the minor approach operating condition (unsignalized intersection).

⁸ **BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-17 Interim Year (2016) With Project Conditions Intersections Analysis Summary

#	INTERSECTION	TRAFFIC CONTROL ³	INTERSECTION APPROACH LANES ¹												HCM DELAY ² (SECS.)		HCM LEVEL OF SERVICE ²		ICU ⁴ (V/C)		ICU ⁴ LEVEL OF SERVICE	
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND			AM	PM	AM	PM	AM	PM	AM	PM
			L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM
1	Azusa Cyn. Rd. / Los Angeles St. - Without Improvements - With Improvements	AWS IS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	34.3	44.6	D	E	NA	NA	NA	NA
2	Azusa Cyn. Rd. / Cypress St.	TS	0	2	0	1	2	0	0	0	0	1	1!	1	27.7	26.1	C	C	0.48	0.62	A	B
3	Azusa Cyn. Rd. / Olive St.	TS	1	2	0	1	2	d	1	1	d	1	1	d	11.7	23.3	B	C	0.41	0.33	A	A
4	Azusa Cyn. Rd. / Arrow Hwy. - Without Improvements - With Improvements	TS TS	1.5	0.5	1	1	1	0	1	2	d	1	2	d	72.0	70.2	E	E	1.00	0.83	E	D
5	Maine Av. / Arrow Hwy.	TS	2	0	1	0	0	0	0	2	d	1	3	0	17.8	13.4	B	B	0.82	0.84	D	D
6	Arrow Hwy. / Live Oak Av.	TS	0	0	0	2	0	1	1	2	0	0	2	2>>	13.2	33.8	B	C	0.68	0.81	B	D
7	Arrow Hwy. / Rivergrade Rd.	TS	1	2	0	0	2	1	2	0	1	0	0	0	9.1	8.1	A	A	0.76	0.54	C	A
8	I-605 NB Ramp - Live Oak Ln. / Arrow Hwy.	CSS	0	0	1	0	0	0	0	2	d	0	2	1>>	12.8	15.5	B	C	NA	NA	NA	NA
9	I-605 SB Off-Ramp / Arrow Hwy. - LA CMP ICU Results ⁵	TS TS	0	0	0	1	0	1>>	0	3	0	0	2	0	47.7	10.4	D	B	1.02	0.57	F	A
10	Avenida Barbosa / Arrow Hwy.	TS	0	0	0	2	0	1	1	2	0	0	2	1	35.3	22.5	D	C	0.82	0.49	D	A
11	URP2 Dwy. 1 / Arrow Hwy.	CSS	0	0	0	0	0	1	0	2	0	0	3	0	22.5	0.0	C	A	NA	NA	NA	NA
12	Avenida Barbosa / URP2 Dwy. 2 (Private) ⁶ - URP2 Dwy. 2 (eastbound approach) ⁷ - Adjacent Dwy. (westbound approach) ⁷	CSS CSS CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	0	1!	0	3.8	0.6	A	A	NA	NA	NA	NA
13	Maine Av. / Los Angeles St.	TS	1	2	0	1	2	0	1	2	0	1	2	0	23.3	25.9	C	C	0.55	0.64	A	B
14	Phelan Av. / Los Angeles St.	AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	14.7	17.6	B	C	NA	NA	NA	NA
15	Ped Xing / Arrow Hwy.	TS	0	0	0	0	0	0	0	2	0	0	2	0	1.0	0.6	A	A	0.72	0.48	C	A
16	Project Dwy. / Los Angeles St.	CSS	0	0	0	1	0	1	0	2	0	0	2	d	17.2	18.1	C	C	-	-	-	-

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (23') for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; 1>> = Free Right Turn Lane; d = Defacto Right Turn Lane; 1 = Improvement

² Delay and level of service (LOS) is calculated using the following analysis software: Synchro 8. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown. "NA" value is shown for unsignalized ICU values.

³ AWS = All Way Stop; TS = Traffic Signal; CSS = Cross Street Stop.

⁴ The Synchro v/c output results are discussed in the City of Irwindale Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information. It should be noted that the I-605 ramp intersections along Arrow Highway are identified as CMP intersections. Therefore, ICU results based on the LA CMP parameters are also presented for the signalized intersection of I-605 SB ramps / Arrow Highway (#9).

⁵ Volume-to-Capacity ratio (v/c) and level of service (LOS) is calculated based on the LA CMP Intersection Capacity Utilization (ICU) methodology using the following analysis software: Traffix Version 8.0 R1.

⁶ LOS based on average delay (unsignalized intersection).

⁷ LOS based on the minor approach operating condition (unsignalized intersection).

⁸ **BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-18 Interim Year (2016) Intersection Analysis Summary Comparison

#	INTERSECTION	TRAFFIC Control ³	INTERSECTION APPROACH LANES ¹								HCM DELAY ²		HCM LEVEL OF SERVICE ²		ICU ⁷ (V/C)		ICU ⁷ LEVEL OF SERVICE		SIGNIFICANT IMPACT? ⁴	Added Project Traffic	
			NORTH-BOUND		SOUTH-BOUND		EAST-BOUND		WEST-BOUND		AM	PM	AM	PM	AM	PM	AM	PM		AM	PM
			L	T R	L	T R	L	T R	L	T R											
1	Azusa Cyn. Rd. / Los Angeles St.																				
	Without Improvements																				
	• 2016 Without Project • 2016 With Project	AWS AWS	0 1! 0	1 1 1	1 1 1	1 1 1	30.3 43.6	D E	NA NA	NA NA	NA NA	NA NA	YES	125	85						
With Improvements	• 2016 With Project	TS	0 1! 0	1 1 1	1 1 1	40.2 52.4	D D	0.65 0.89	B D			NO									
	• 2016 Without Project	TS	0 2 0	1 2 0	0 0 0	26.1 25.8	C C	0.46 0.60	A A			NO									
	• 2016 With Project	TS	0 2 0	1 2 0	0 0 0	27.7 26.1	C C	0.48 0.62	A B			NO									
3	Azusa Cyn. Rd. / Olive St.																				
	• 2016 Without Project	TS	1 2 0	1 2 d	1 1 d	10.8 19.9	B B	0.41 0.32	A A			NO									
	• 2016 With Project	TS	1 2 0	1 2 d	1 1 d	11.7 23.3	B C	0.41 0.33	A A			NO									
4	Azusa Cyn. Rd. / Arrow Hwy.																				
	Without Improvements																				
	• 2016 Without Project	TS	2 1 1	1 1 0	1 2 d	67.3 69.4	E E	0.98 0.81	E D			YES	120	81							
	• 2016 With Project	TS	2 1 1	1 1 0	1 2 d	72.0 70.2	E E	1.00 0.83	E D			NO									
	With Improvements																				
• 2016 Without Project	TS	2 1 1	1 1 0	1 3 0	32.8 34.4	C C	0.77 0.67	C B			NO										
• 2016 With Project	TS	2 1 1	1 1 0	1 3 0	35.9 41.2	D D	0.79 0.70	C B			NO										
5	Maine Av. / Arrow Hwy.																				
	• 2016 Without Project	TS	2 0 1	0 0 0	0 2 d	17.4 13.0	B B	0.81 0.84	D D			NO									
	• 2016 With Project	TS	2 0 1	0 0 0	0 2 d	17.8 13.4	B B	0.82 0.84	D D			NO									
6	Arrow Hwy. / Live Oak Av.																				
	• 2016 Without Project	TS	0 0 0	2 0 1	1 2 0	11.8 30.1	B C	0.64 0.80	B C			NO									
	• 2016 With Project	TS	0 0 0	2 0 1	1 2 0	13.2 33.8	B C	0.68 0.81	B D			NO									
7	Arrow Hwy. / Rivergrade Rd.																				
	• 2016 Without Project	TS	1 2 0	0 2 1	2 0 1	9.0 8.1	A A	0.74 0.51	C A			NO									
	• 2016 With Project	TS	1 2 0	0 2 1	2 0 1	9.1 8.1	A A	0.76 0.54	C A			NO									
8	I-605 NB Ramp - Live Oak Ln. / Arrow Hwy.																				
	• 2016 Without Project	CSS	0 0 1	0 0 0	0 2 d	12.4 15.1	B C	NA NA	NA NA			NO									
	• 2016 With Project	CSS	0 0 1	0 0 0	0 2 d	12.8 15.5	B C	NA NA	NA NA			NO									
9	I-605 SB Off-Ramp / Arrow Hwy.																				
	• 2016 Without Project	TS	0 0 0	1 0 1>>	0 3 0	40.6 10.4	D B	1.00 0.56	E A			NO									
	- LA CMP ICU Results ⁵	TS	0 0 0	1 0 1>>	0 3 0	- -	- -	0.98 0.61	E B			NO									
	• 2016 With Project	TS	0 0 0	1 0 1>>	0 3 0	47.7 10.4	D B	1.02 0.57	F A			NO									
	- LA CMP ICU Results ⁵	TS	0 0 0	1 0 1>>	0 3 0	- -	- -	1.00 0.62	F B			NO									

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-18 Interim Year (2016) Intersection Analysis Summary Comparison

#	INTERSECTION	TRAFFIC Control ³	INTERSECTION APPROACH LANES ¹												HCM DELAY ² (SECS.)		HCM LEVEL OF SERVICE ²		ICU ⁷ (V/C)		ICU ⁷ LEVEL OF SERVICE		SIGNIFICANT IMPACT? ⁴	Added Project Traffic		
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND			AM	PM	AM	PM	AM	PM	AM	PM		AM	PM	
			L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM		PM	AM	PM
10	Avenida Barbosa / Arrow Hwy. • 2016 Without Project • 2016 With Project	TS	0	0	0	2	0	1	1	2	0	0	2	1	30.9	22.4	C	C	0.78	0.48	C	A				
		TS	0	0	0	2	0	1	1	2	0	0	2	1	35.3	22.5	D	C	0.82	0.49	D	A	NO			
11	URP2 Dwy. 1 / Arrow Hwy. • 2016 Without Project • 2016 With Project	CSS	0	0	0	0	0	1	0	2	0	0	3	0	21.7	0.0	C	A	NA	NA	NA	NA				
		CSS	0	0	0	0	0	1	0	2	0	0	3	0	22.5	0.0	C	A	NA	NA	NA	NA	NO			
12	Avenida Barbosa / URP2 Dwy. 2 (Private) • 2016 Without Project ⁵ • 2016 With Project ⁵ - URP2 Dwy. 2 (eastbound approach) ⁶ • 2016 Without Project • 2016 With Project - Private Dwy. (westbound approach) ⁶ • 2016 Without Project • 2016 With Project	CSS	1	2	0	1	2	0	0	1!	0	0	1!	0	3.1	0.2	A	A	NA	NA	NA	NA				
		CSS	1	2	0	1	2	0	0	1!	0	0	1!	0	3.8	0.6	A	A	NA	NA	NA	NA	NO			
		CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	0.0	0.0	A	A	NA	NA	NA	NA				
		CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	9.6	11.3	A	B	NA	NA	NA	NA	NO			
		CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	47.9	15.9	E	C	NA	NA	NA	NA			0	0
		CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	54.4	16.6	F	C	NA	NA	NA	NA	NO	0	0	
13	Maine Av. / Los Angeles St. • 2016 Without Project • 2016 With Project	TS	1	2	0	1	2	0	1	2	0	1	2	0	23.2	25.9	C	C	0.55	0.64	A	B				
		TS	1	2	0	1	2	0	1	2	0	1	2	0	23.3	25.9	C	C	0.55	0.64	A	B	NO			
14	Phelan Av. / Los Angeles St. • 2016 Without Project • 2016 With Project	AWS	0	0	0	0	1!	0	1	2	0	0	2	0	14.7	17.3	B	C	NA	NA	NA	NA				
		AWS	0	0	0	0	1!	0	1	2	0	0	2	0	14.7	17.6	B	C	NA	NA	NA	NA	NO			
15	Ped Xing / Arrow Hwy. • 2016 Without Project • 2016 With Project	TS	0	0	0	0	0	0	0	2	0	0	2	0	1.0	0.6	A	A	0.70	0.46	B	A				
		TS	0	0	0	0	0	0	0	2	0	0	2	0	1.0	0.6	A	A	0.72	0.48	C	A	NO			

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (23') for right turning vehicles to travel outside the through lane
L = Left; T = Through; R = Right; 1>> = Free Right Turn Lane; d = Defacto Right Turn Lane; I = Improvement

² Delay and level of service (LOS) is calculated using the following analysis software: Synchro 8. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with I signal or all way stop control. For intersections with cross street stop control, the delay and level of service for most individual movement (or movements sharing a single lane) are shown. "NA" value is shown for unsignalized ICU v/c

³ AWS = All Way Stop; TS = Traffic Signal; CSS = Cross Street Stop

⁴ Per City of Irwindale traffic study guidelines, a significant impact is identified if one of the following criteria are met

- For Signalized Intersections:
 - When an intersection operates at acceptable LOS ('D' or better) for baseline conditions and the addition of project results in unacceptable LOS ('E' or 'F')
 - When a State Highway intersection operates at acceptable LOS ('E' or better) for baseline conditions and the addition of project results in unacceptable LOS 'F'
 - When an intersection operates at LOS 'F' for baseline conditions and the project adds more than 50 peak hour project trips
- For Unsignalized Intersections:
 - When the minor stop-controlled approach operates at LOS 'F' and does not have acceptable LOS in terms of total control delay, and the addition of project increases the total control delay to more than 4.0 hours for single lane approach and 5.0 hours for multilane approach
 - When the minor stop-controlled approach operates at LOS 'F' and does not have acceptable LOS in terms of total control delay, and the addition of project of more than 50 peak-hour project trips contributes to the continuing operational failure at the minor approach

⁵ LOS based on average delay (unsignalized intersection)

⁶ LOS based on minor approach operating condition (unsignalized intersection)

⁷ The Synchro v/c output results are discussed in the City of Irwindale Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-19 Long Range (2035) Without Project Conditions Intersections Analysis Summary

#	INTERSECTION	TRAFFIC CONTROL ³	INTERSECTION APPROACH LANES ¹								HCM DELAY ² (SECS.)		HCM LEVEL OF SERVICE ²		ICU ⁴ (V/C)		ICU ⁴ LEVEL OF SERVICE					
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND		WEST-BOUND		AM	PM	AM	PM	AM	PM	AM	PM		
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM		
1	Azusa Cyn. Rd. / Los Angeles St.	AWS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	33.5	45.0	D	E	NA	NA	NA	NA
	- Without Improvements	IS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	33.8	48.6	C	D	0.65	0.87	B	D
2	Azusa Cyn. Rd. / Cypress St.	TS	0	2	0	1	2	0	0	0	0	1	1!	1	26.8	28.3	C	C	0.49	0.65	A	B
3	Azusa Cyn. Rd. / Olive St.	TS	1	2	0	1	2	d	1	1	d	1	1	d	10.8	21.3	B	C	0.43	0.37	A	A
4	Azusa Cyn. Rd. / Arrow Hwy.	TS	1.5	0.5	1	1	1	0	1	2	d	1	2	d	86.1	84.8	F	F	1.04	0.86	F	D
	- Without Improvements	TS	1.5	0.5	1	1	1	0	1	<u>3</u>	0	1	<u>3</u>	0	36.6	41.9	D	D	0.81	0.71	D	C
5	Maine Av. / Arrow Hwy.	TS	2	0	1	0	0	0	0	2	d	1	3	0	19.3	15.0	B	B	0.86	0.89	D	D
6	Arrow Hwy. / Live Oak Av.	TS	0	0	0	2	0	1	1	2	0	0	2	2>>	12.5	36.5	B	D	0.78	0.85	C	D
7	Arrow Hwy. / Rivergrade Rd.	TS	1	2	0	0	2	1	2	0	1	0	0	0	9.7	8.3	A	A	0.78	0.57	C	A
8	I-605 NB Ramp - Live Oak Ln. / Arrow Hwy.	CSS	0	0	1	0	0	0	0	2	d	0	2	1>>	12.8	15.8	B	C	NA	NA	NA	NA
9	I-605 SB Off-Ramp / Arrow Hwy.	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	57.3	10.8	E	B	1.06	0.59	F	A
	- Without Improvements	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	-	-	-	-	1.03	0.63	F	B
	- LA CMP ICU Results ⁵	TS	0	0	0	<u>2</u>	0	1>>	0	3	0	0	2	0	16.7	7.8	B	A	0.84	0.44	D	A
	- With Improvements	TS	0	0	0	<u>2</u>	0	1>>	0	3	0	0	2	0	-	-	-	-	0.86	0.51	D	A
- LA CMP ICU Results ⁵	TS	0	0	0	<u>2</u>	0	1>>	0	3	0	0	2	0	-	-	-	-	0.86	0.51	D	A	
10	Avenida Barbosa / Arrow Hwy.	TS	0	0	0	2	0	1	1	2	0	0	2	1	49.0	23.6	D	C	0.83	0.50	D	A
11	URP2 Dwy. 1 / Arrow Hwy.	CSS	0	0	0	0	0	1	0	2	0	0	3	0	23.4	0.0	C	A	NA	NA	NA	NA
12	Avenida Barbosa / URP2 Dwy. 2 ⁶	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	0	1!	0	4.2	0.2	A	A	NA	NA	NA	NA
	- URP2 Dwy. 2 (eastbound approach) ⁷	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	0.0	0.0	A	A	NA	NA	NA	NA
	- Adjacent Dwy. (westbound approach) ⁷	CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	63.8	16.7	F	C	NA	NA	NA	NA
13	Maine Av. / Los Angeles St.	TS	1	2	0	1	2	0	1	2	0	1	2	0	24.2	27.3	C	C	0.60	0.68	A	B
14	Phelan Av. / Los Angeles St.	AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	13.4	20.4	B	C	NA	NA	NA	NA
15	Ped Xing / Arrow Hwy.	TS	0	0	0	0	0	0	0	2	0	0	2	0	1.0	0.7	A	A	0.73	0.49	C	A
16	Project Dwy. / Los Angeles St.	-	DOES NOT EXIST								-	-	-	-	-	-	-	-	-	-	-	-

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (23') for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; 1>> = Free Right Turn Lane; d = DeFacto Right Turn Lane

² Delay and level of service (LOS) is calculated using the following analysis software: Synchro 8. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown. "NA" value is shown for unsignalized ICU values.

³ AWS = All Way Stop; TS = Traffic Signal; CSS = Cross Street Stop.

⁴ The Synchro v/c output results are discussed in the City of Irwindale Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information. It should be noted that the I-605 ramp intersections along Arrow Highway are identified as CMP intersection. Therefore, ICU results based on the LA CMP parameters are also presented for the intersection of I-605 SB ramps / Arrow Highway (#9).

⁵ Volume-to-Capacity ratio (v/c) and level of service (LOS) is calculated based on the LA CMP Intersection Capacity Utilization (ICU) methodology using the following analysis software: Traffix Version 8.0 R1.

⁶ LOS based on the minor approach operating condition (unsignalized intersection).

* **BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

3.9.7.1.5 LONG RANGE (2035) WITH PROJECT

HCM delay and ICU calculations for Long Range (2035) With Project Buildout conditions are shown in **Table 3.9-21**. **Table 3.9-21** shows the operations analysis at the study area intersections with and without improvements. For Long Range (2035) With Project conditions, no additional intersection is projected to operate at unacceptable level of service compared to Long Range (2035) Without Project conditions.

Table 3.9-22 summarizes the intersection analysis operations for Long Range (2035) Without Project and Long Range (2035) With Project Buildout conditions. **Table 3.9-22** also identifies any “significant impacts” (as defined in the City of Irwindale traffic study guidelines). As shown on **Table 3.9-22**, significant impacts are projected for the following locations:

Table 3.9-20 Projected Significant Impacts

ID	Intersection Location	Jurisdiction
1	Azusa Canyon Road / Los Angeles Street	Irwindale and West Covina
4	Azusa Canyon Road / Arrow Highway	Irwindale
9	I-605 SB Off-Ramp / Arrow Highway	Caltrans

A significant impact is not anticipated at the intersection Avenida Barbosa / URP2 Driveway 2 (Private) since the project does not contribute to a traffic volume increase for the westbound left turns (deficient movement) at this intersection and the total/average control delay is operating at acceptable LOS.

As shown in **Table 3.9-19** and **Table 3.9-21**, the following improvements are necessary to reduce the Project’s proportionate increase in delay to pre-project levels or better, thus reducing the Project’s impact to less-than-significant and result in acceptable level of service operations with the addition of project traffic:

Azusa Canyon Road / Los Angeles Street (#1)

- Install a traffic signal

Azusa Canyon Road / Arrow Highway (#4)

- Modify striping to provide a 3rd eastbound through lane.
- Modify striping to provide a 3rd westbound through lane and 3rd westbound receiving lane.

I-605 SB Off-Ramp / Arrow Highway (#9)

- Construct a 2nd southbound left turn lane.

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

- It should be noted that this improvement is consistent with the Traffic/Circulation Study Draft for 1-605 Northbound Off-Ramp/Live Oak Avenue Interchange Improvements (November 2013) prepared by AECOM.

These measures are identified as required mitigation measures in the Mitigation Program defined below.

Table 3.9-21 Long Range (2035) With Project Conditions Intersections Analysis Summary

#	INTERSECTION	TRAFFIC CONTROL ³	INTERSECTION APPROACH LANES ¹								HCM DELAY ² (SECS.)		HCM LEVEL OF SERVICE ²		ICU ⁴ (V/C)		ICU ⁴ LEVEL OF SERVICE					
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND		WEST-BOUND		AM	PM	AM	PM	AM	PM	AM	PM		
			L	T	R	L	T	R	L	T	R	L									T	R
1	Azusa Cyn. Rd. / Los Angeles St. - Without Improvements	AWS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	35.5	45.8	E	E	NA	NA	NA	NA
	- With Improvements	TS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	52.0	52.6	D	D	0.69	0.90	B	D
2	Azusa Cyn. Rd. / Cypress St.	TS	0	2	0	1	2	0	0	0	0	1	1!	1	28.6	28.6	C	C	0.51	0.67	A	B
3	Azusa Cyn. Rd. / Olive St.	TS	1	2	0	1	2	d	1	1	d	1	1	d	11.8	26.5	B	C	0.43	0.35	A	A
4	Azusa Cyn. Rd. / Arrow Hwy. - Without Improvements	TS	1.5	0.5	1	1	1	0	1	2	d	1	2	d	91.3	85.6	F	F	1.06	0.88	F	D
	- With Improvements	TS	1.5	0.5	1	1	1	0	1	<u>3</u>	0	1	<u>3</u>	0	39.1	44.8	D	D	0.83	0.74	D	C
5	Maine Av. / Arrow Hwy.	TS	2	0	1	0	0	0	0	2	d	1	3	0	19.9	15.7	B	B	0.88	0.89	D	D
6	Arrow Hwy. / Live Oak Av.	TS	0	0	0	2	0	1	1	2	0	0	2	2>>	14.1	41.2	B	D	0.83	0.86	D	D
7	Arrow Hwy. / Rivergrade Rd.	TS	1	2	0	0	2	1	2	0	1	0	0	0	10.0	8.3	A	A	0.80	0.60	C	A
8	I-605 NB Ramp - Live Oak Ln. / Arrow Hwy.	CSS	0	0	1	0	0	0	0	2	d	0	2	1>>	13.2	16.2	B	C	NA	NA	NA	NA
9	I-605 SB Off-Ramp / Arrow Hwy. - Without Improvements	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	65.5	10.8	E	B	1.08	0.60	F	A
	- LA CMP ICU Results ⁵	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	-	-	-	-	1.05	0.64	F	B
	- With Improvements	TS	0	0	0	<u>2</u>	0	1>>	0	3	0	0	2	0	19.0	7.8	B	A	0.86	0.45	D	A
	- LA CMP ICU Results ⁵	TS	0	0	0	<u>2</u>	0	1>>	0	3	0	0	2	0	-	-	-	-	0.88	0.51	D	A
10	Avenida Barbosa / Arrow Hwy.	TS	0	0	0	2	0	1	1	2	0	0	2	1	51.9	23.8	D	C	0.87	0.52	D	A
11	URP2 Dwy. 1 / Arrow Hwy.	CSS	0	0	0	0	0	1	0	2	0	0	3	0	24.3	0.0	C	A	NA	NA	NA	NA
12	Avenida Barbosa / URP2 Dwy. 2 ⁶ - URP2 Dwy. 2 (eastbound approach) ⁷	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	0	1!	0	5.0	0.6	A	A	NA	NA	NA	NA
	- URP2 Dwy. 2 (eastbound approach) ⁷	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	9.7	11.5	A	B	NA	NA	NA	NA
	- Adjacent Dwy. (westbound approach) ⁷	CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	74.4	17.5	F	C	NA	NA	NA	NA
13	Maine Av. / Los Angeles St.	TS	1	2	0	1	2	0	1	2	0	1	2	0	24.2	27.3	C	C	0.60	0.68	A	B
14	Phelan Av. / Los Angeles St.	AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	13.6	20.7	B	C	NA	NA	NA	NA
15	Ped Xing / Arrow Hwy.	TS	0	0	0	0	0	0	0	2	0	0	2	0	1.0	0.7	A	A	0.75	0.50	C	A
16	Project Dwy. / Los Angeles St.	CSS	0	0	0	<u>1</u>	0	<u>1</u>	0	2	0	0	2	d	18.3	19.3	C	C	-	-	-	-

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (23') for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; 1>> = Free Right Turn Lane; d = Defacto Right Turn Lane

² Delay and level of service (LOS) is calculated using the following analysis software: Synchro 8. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown. "NA" value is shown for unsignalized ICU values.

³ AWS = All Way Stop; TS = Traffic Signal; CSS = Cross Street Stop.

⁴ The Synchro v/c output results are discussed in the City of Irwindale Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information. It should be noted that the I-605 ramp intersections along Arrow Highway are identified as CMP intersection. Therefore, ICU results based on the LA CMP parameters are also presented for the intersection of I-605 SB ramps / Arrow Highway (#9).

⁵ Volume-to-Capacity ratio (v/c) and level of service (LOS) is calculated based on the LA CMP Intersection Capacity Utilization (ICU) methodology using the following analysis software: Traffix Version 8.0 R1.

⁶ LOS based on the minor approach operating condition (unsignalized intersection).

* **BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-22 Long Range (2035) Intersection Analysis Summary Comparison

#	INTERSECTION	TRAFFIC Control ³	INTERSECTION APPROACH LANES ¹								HCM DELAY ² (SECS.)		HCM LEVEL OF SERVICE ²		ICU ⁷ (V/C)		ICU ⁷ LEVEL OF SERVICE		SIGNIFICANT IMPACT? ⁴	Added Project Traffic					
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND		WEST-BOUND		AM	PM	AM	PM	AM	PM		AM	PM				
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM		AM	PM	AM	PM		
1	Azusa Cyn. Rd. / Los Angeles St.																								
	Without Improvements																								
	• 2035 Without Project	AWS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	33.5	45.0	D	E	NA	NA	NA	NA			
• 2035 With Project	AWS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	35.5	45.8	E	E	NA	NA	NA	NA	YES	125	85	
With Improvements																									
• 2035 With Project	TS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	52.0	52.6	D	D	0.69	0.90	B	D	NO			
2	Azusa Cyn. Rd. / Cypress St.																								
	Without Improvements																								
	• 2035 Without Project	TS	0	2	0	1	2	0	0	0	0	1	1!	1	26.8	28.3	C	C	0.49	0.65	A	B			
• 2035 With Project	TS	0	2	0	1	2	0	0	0	0	1	1!	1	28.6	28.6	C	C	0.51	0.67	A	B	NO			
3	Azusa Cyn. Rd. / Olive St.																								
	Without Improvements																								
	• 2035 Without Project	TS	1	2	0	1	2	d	1	1	d	1	1	d	10.8	21.3	B	C	0.43	0.37	A	A			
• 2035 With Project	TS	1	2	0	1	2	d	1	1	d	1	1	d	11.8	26.5	B	C	0.43	0.35	A	A	NO			
4	Azusa Cyn. Rd. / Arrow Hwy.																								
	Without Improvements																								
	• 2035 Without Project	TS	1.5	0.5	1	1	1	0	1	2	d	1	2	d	86.1	84.8	F	F	1.04	0.86	F	D			
	• 2035 With Project	TS	1.5	0.5	1	1	1	0	1	2	d	1	2	d	91.3	85.6	F	F	1.06	0.88	F	D	YES	120	81
	With Improvements																								
• 2035 Without Project	TS	1.5	0.5	1	1	1	0	1	3	0	1	3	0	36.6	41.9	D	D	0.81	0.71	D	C				
• 2035 With Project	TS	1.5	0.5	1	1	1	0	1	3	0	1	3	0	39.1	44.8	D	D	0.83	0.74	D	C	NO			
5	Maine Av. / Arrow Hwy.																								
	Without Improvements																								
	• 2035 Without Project	TS	2	0	1	0	0	0	0	2	d	1	3	0	19.3	15.0	B	B	0.86	0.89	D	D			
• 2035 With Project	TS	2	0	1	0	0	0	0	2	d	1	3	0	19.9	15.7	B	B	0.88	0.89	D	D	NO			
6	Arrow Hwy. / Live Oak Av.																								
	Without Improvements																								
	• 2035 Without Project	TS	0	0	0	2	0	1	1	2	0	0	2	2>>	12.5	36.5	B	D	0.78	0.85	C	D			
• 2035 With Project	TS	0	0	0	2	0	1	1	2	0	0	2	2>>	14.1	41.2	B	D	0.83	0.86	D	D	NO			
7	Arrow Hwy. / Rivergrade Rd.																								
	Without Improvements																								
	• 2035 Without Project	TS	1	2	0	0	2	1	2	0	1	0	0	0	9.7	8.3	A	A	0.78	0.57	C	A			
• 2035 With Project	TS	1	2	0	0	2	1	2	0	1	0	0	0	10.0	8.3	A	A	0.80	0.60	C	A	NO			
8	I-605 NB Ramp - Live Oak Ln. / Arrow Hwy.																								
	Without Improvements																								
	• 2035 Without Project	CSS	0	0	1	0	0	0	0	2	d	0	2	1>>	12.8	15.8	B	C	NA	NA	NA	NA			
• 2035 With Project	CSS	0	0	1	0	0	0	0	2	d	0	2	1>>	13.2	16.2	B	C	NA	NA	NA	NA	NO			

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-22 Long Range (2035) Intersection Analysis Summary Comparison

#	INTERSECTION	TRAFFIC Control ³	INTERSECTION APPROACH LANES ¹								HCM DELAY ² (SECS.)		HCM LEVEL OF SERVICE ²		ICU ⁷ (V/C)		ICU ⁷ LEVEL OF SERVICE		SIGNIFICANT IMPACT? ⁴	Added Project Traffic					
			NORTH-BOUND		SOUTH-BOUND		EAST-BOUND		WEST-BOUND		AM	PM	AM	PM	AM	PM	AM	PM		AM	PM				
			L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	L		T	R	L	T	R	
9	I-605 SB Off-Ramp / Arrow Hwy. Without Improvements • 2035 Without Project - LA CMP ICU Results ⁵ • 2035 With Project - LA CMP ICU Results ⁵ With Improvements • 2035 Without Project - LA CMP ICU Results ⁵ • 2035 With Project - LA CMP ICU Results ⁵	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	57.3	10.8	E	B	1.06	0.59	F	A	YES	117	78
		TS	0	0	0	1	0	1>>	0	3	0	0	2	0	-	-	-	-	1.03	0.63	F	B			
		TS	0	0	0	1	0	1>>	0	3	0	0	2	0	65.5	10.8	E	B	1.08	0.60	F	A			
		TS	0	0	0	1	0	1>>	0	3	0	0	2	0	-	-	-	-	1.05	0.64	F	B			
		TS	0	0	0	2	0	1>>	0	3	0	0	2	0	16.7	7.8	B	A	0.84	0.44	D	A	NO		
		TS	0	0	0	2	0	1>>	0	3	0	0	2	0	-	-	-	-	0.86	0.51	D	A			
		TS	0	0	0	2	0	1>>	0	3	0	0	2	0	19.0	7.8	B	A	0.86	0.45	D	A			
		TS	0	0	0	2	0	1>>	0	3	0	0	2	0	-	-	-	-	0.88	0.51	D	A			
10	Avenida Barbosa / Arrow Hwy. • 2035 Without Project • 2035 With Project	TS	0	0	0	2	0	1	1	2	0	0	2	1	49.0	23.6	D	C	0.83	0.50	D	A	NO		
		TS	0	0	0	2	0	1	1	2	0	0	2	1	51.9	23.8	D	C	0.87	0.52	D	A			
11	URP2 Dwy. 1 / Arrow Hwy. • 2035 Without Project • 2035 With Project	CSS	0	0	0	0	0	1	0	2	0	0	3	0	23.4	0.0	C	A	NA	NA	NA	NA	NO		
		CSS	0	0	0	0	0	1	0	2	0	0	3	0	24.3	0.0	C	A	NA	NA	NA	NA			
12	Avenida Barbosa / URP2 Dwy. 2 (Private) • 2035 Without Project 5 • 2035 With Project 5 - URP2 Dwy. 2 (eastbound approach) ⁶ • 2035 Without Project • 2035 With Project - Private Dwy. (westbound approach) ⁶ • 2035 Without Project • 2035 With Project	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	0	1!	0	4.2	0.2	A	A	NA	NA	NA	NA	NO		
		CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	0	1!	0	5	0.6	A	A	NA	NA	NA	NA			
		CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	0.0	0.0	A	A	NA	NA	NA	NA	NO		
		CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	9.7	11.5	A	B	NA	NA	NA	NA			
		CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	63.8	16.7	F	C	NA	NA	NA	NA	NO	0	0
		CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	74.4	17.5	F	C	NA	NA	NA	NA			
13	Maine Av. / Los Angeles St. • 2035 Without Project • 2035 With Project	TS	1	2	0	1	2	0	1	2	0	1	2	0	24.2	27.3	C	C	0.60	0.68	A	B	NO		
		TS	1	2	0	1	2	0	1	2	0	1	2	0	24.2	27.3	C	C	0.60	0.68	A	B			
14	Phelan Av. / Los Angeles St. • 2035 Without Project • 2035 With Project	AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	13.4	20.4	B	C	NA	NA	NA	NA	NO		
		AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	13.6	20.7	B	C	NA	NA	NA	NA			

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-22 Long Range (2035) Intersection Analysis Summary Comparison

#	INTERSECTION	TRAFFIC Control ³	INTERSECTION APPROACH LANES ¹												HCM DELAY ² (SECS.)		HCM LEVEL OF SERVICE ²		ICU ⁷ (V/C)		ICU ⁷ LEVEL OF SERVICE		SIGNIFICANT IMPACT? ⁴	Added Project Traffic								
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND			AM	PM	AM	PM	AM	PM	AM	PM										
			L	T	R	L	T	R	L	T	R	L	T	R																		
15	Ped Xing / Arrow Hwy. • 2035 Without Project • 2035 With Project	TS TS	0	0	0	0	0	0	0	2	0	0	2	0	1.0	0.7	A	A	0.73	0.49	C	A										
			0	0	0	0	0	0	0	2	0	0	2	0	1.0	0.7	A	A	0.75	0.50	C	A	NO									

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (23') for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; 1>> = Free Right Turn Lane; d = Defacto Right Turn Lane; 1 = Improvement

² Delay and level of service (LOS) is calculated using the following analysis software: Synchro 8. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown. "NA" value is shown for unsignalized ICU values.

³ AWS = All Way Stop; TS = Traffic Signal; CSS = Cross Street Stop.

⁴ Per City of Inwindale traffic study guidelines, a significant impact is identified if one of the following criteria are met:

- For Signalized Intersections
 - When an intersection operates at acceptable LOS ("D" or better) for baseline conditions and the addition of project results in unacceptable LOS ("E" or "F").
 - When a State Highway intersection operates at acceptable LOS ("E" or better) for baseline conditions and the addition of project results in unacceptable LOS "F".
 - When an intersection operates at LOS "F" for baseline conditions and the project adds more than 50 peak hour project trips.
- For Unsignalized Intersections
 - When the minor stop-controlled approach operates at LOS "F" and does not have acceptable LOS in terms of total control delay, and the addition of project increases the total control delay to more than 4.0 hours for single lane approach and 5.0 hours for multilane approach.
 - When the minor stop-controlled approach operates at LOS "F" and does not have acceptable LOS in terms of total control delay, and the addition of project of more than 50 peak-hour project trips contributes to the continuing operational failure at the minor approach.

⁵ LOS based on average delay (unsignalized intersection).

⁶ LOS based on minor approach operating condition (unsignalized intersection).

⁷ The Synchro v/c output results are discussed in the City of Inwindale Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information.

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

3.9.8 IMPROVEMENTS AND PROJECT FAIR SHARE CONTRIBUTION

This section of the report summarizes the off-site improvements and fair share percentages required to meet level of service requirements at each of the analysis locations where improvements are required to address potentially significant adverse effects. Improvements which will eliminate all anticipated roadway operational deficiencies throughout the study area have been identified for Long Range (2035) With Project Buildout traffic conditions. The improvements were determined through the operations analysis sections of this traffic study. Per City of Irwindale guidelines, the project shall pay its fair share of improvements to address the significant impacts identified in the analysis chapters of this report.

3.9.8.1 OFF-SITE RECOMMENDED IMPROVEMENTS

For Existing plus Project conditions, the project will be required to construct the following improvement to mitigate the project's direct significant impact:

Azusa Canyon Road / Los Angeles Street (#1)

- Install a traffic signal

For Interim Year (2016) conditions, the project shall pay its fair share for the following improvements to mitigate the project's cumulative significant impact:

Azusa Canyon Road / Arrow Highway (#4)

- Modify striping to provide a 3rd eastbound through lane.
- Modify striping to provide a 3rd westbound through lane and 3rd westbound receiving lane.

Long Range (2035) conditions, the project shall pay its fair share for the following improvement to mitigate the project's cumulative significant impact:

I-605 SB Off-Ramp / Arrow Highway (#9)

- Construct a 2nd southbound left turn lane.
 - It should be noted that this improvement is consistent with the Traffic/Circulation Study Draft for 1-605 Northbound Off-Ramp/Live Oak Avenue Interchange Improvements (November 2013) prepared by AECOM.

Although the City will require the Project to pay its fair share, the City does not at this time have a fee program for traffic improvements. s. Additionally, Caltrans does not have a fee program or other program that will ensure improvements will get completed before project impacts occur. The City intends to continue to work with developers, Caltrans and other agencies to get necessary improvements to local and regional roads and highways. However, because there are no adopted fee programs, the City cannot find with certainty that necessary improvements will

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

get constructed before impacts will occur. Therefore, the City finds that impacts from the Project to these facilities will remain significant and unavoidable.

3.9.8.2 2035 WITH PROJECT FAIR SHARE PERCENTAGE

Per City of Irwindale Guidelines, the project shall pay its fair share of improvements to eliminate any of the significant impacts. Based on the intersection analysis results, the project is anticipated to contribute additional traffic causing significant impacts up to 2035 conditions; fair share calculation is therefore based on 2035 conditions to address all significant impacts caused by the project.

The Project will be fully responsible for the intersection improvement at Azusa Canyon Road/Los Angeles Street (#1) to mitigate the project's direct impact to pre-project conditions.

The project fair share percentages (%) towards the required improvements have also been calculated. **Table 3.9-23** summarizes the 2035 With Project fair share percentages for the proposed project. As shown on **Table 3.9-23**, the project contributes approximately 19% of the new traffic at the intersection of Azusa Canyon Road / Arrow Highway (#4) and 17% of the new traffic at the intersection of I-605 SB Off-Ramp / Arrow Highway (#9).

Although the City will require the Project to pay its fair share, the City does not at this time have a fee program for traffic improvements. s. Additionally, Caltrans does not have a fee program or other program that will ensure improvements will get completed before project impacts occur. The City intends to continue to work with developers, Caltrans and other agencies to get necessary improvements to local and regional roads and highways. However, because there are no adopted fee programs, the City cannot find with certainty that necessary improvements will get constructed before impacts will occur. Therefore, the City finds that impacts from the Project to these facilities will remain significant and unavoidable.

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

Table 3.9-23 2035 with Project Buildout Fair Share Percentages for Off-Site Improvements

ID	INTERSECTION	EXISTING TRAFFIC	2035 WITHOUT PROJECT	2035 WITH PROJECT TRAFFIC	2035 PROJECT ONLY TRAFFIC	TOTAL NEW TRAFFIC ¹	PROJECT % OF NEW TRAFFIC ²
1	Azusa Cyn. Rd. / Los Angeles St. • AM Peak Hour • PM Peak Hour	1,312	1,457	1,582	125	270	100% ³
		1,677	1,859	1,944	85	267	100% ³
4	Azusa Cyn. Rd. / Arrow Hwy. • AM Peak Hour • PM Peak Hour	3,639	4,148	4,268	120	629	19%
		3,357	3,888	3,969	81	612	13%
9	I-605 SB Off-Ramp (NS) / Live Oak Av. (EW) • AM Peak Hour • PM Peak Hour	3,098	3,676	3,793	117	695	17%
		1,856	2,344	2,422	78	566	14%

¹ Total New Traffic = (2035 With Project Traffic - Existing Traffic)

² Project % of New Traffic = (2035 Project Only Traffic / Total New Traffic)

³ Project is responsible for the recommended improvement at the intersection of Azusa Cyn. Rd./Los Angeles St.

Threshold T-3

Would the Project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No Impact

There are no airports in the vicinity of the Project. Implementation of the Proposed Project would not be expected to have any effect on existing air traffic travel patterns, air traffic levels, or airport facilities; and therefore no mitigation is required.

Threshold T-4

Would the Project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact with Mitigation

The recommended project on-site and off-site roadway improvements provide for safe and efficient access conditions, and accommodate the travel activities associated with the Proposed Project within capacities and Level of Service policies as discussed above. Any development on city streets will be subject to review by public works, city engineer to meet all applicable street standards.

The City Engineer has determined that without proper design, based on the types of vehicles coming onto and leaving the Project Site, there could be hazardous conditions created at the Project Driveway at Los Angeles Street. Therefore, there is a potential significant impact.

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

To mitigate this impact, the City is imposing the following mitigation measure:

MM T-5 The project shall be required to install a signal at the driveway and construct the intersection with the following geometrics prior to commencement of operations:

- Northbound Approach: N/A
- Southbound Approach: One left turn lane and one right turn lane.
- Eastbound Approach: One shared left-through lane and 2nd through lane.
- Westbound Approach: Two through lanes and one defacto right turn lane.

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the Project site.

Based upon the above, with imposition of MM T-5 it is not reasonably foreseeable that implementation of the Proposed Project would involve any potentially dangerous traffic or transportation hazards or propose any incompatible uses that could affect existing traffic or circulation in the Project area.

Threshold T-5

Would the Project result in inadequate emergency access?

Less than Significant

Emergency site access to the Proposed Project is available the fire department access driveway (refer to Site Plan). This driveway is designed to provide adequate emergency access to the site for use by emergency vehicles only. The location of this driveway is along Live Oak Avenue, at the southwestern corner of the site. The design of the site access for emergency vehicles complies with the California Fire Code as adopted and implemented in the City and construction will be required to meet Fire Code standards. As such, there are no reasonably foreseeable impacts from inadequate emergency access. No mitigation is required.

Threshold T-6

Would the Project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

No Impact

The Proposed Project does not conflict with any adopted policies, plans, or programs supporting alternative transportation modes. The City has no other plans, ordinances, or policies, that “establish measures of effectiveness for the performance of the circulation system,” including related to mass transit and non-motorized travel, such as a pedestrian or bicycle circulation plan, which are applicable to the Proposed Project. The only bike path within the City of Irwindale is

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

located on the west levee of the San Gabriel River near the site, and extending across the top of the Santa Fe Dam. Based on the existing uses near the project site, and the project's trip generation characteristics, pedestrian activity is anticipated to be nominal. No mitigation is required.

3.9.9 MITIGATION PROGRAM AND PROJECT DESIGN FEATURE

The Mitigation Program was analyzed on the ability to reduce or offset the potential impact based on CEQA thresholds. Recommended on-and off-site improvements designed to eliminate all anticipated roadway operational deficiencies throughout the study area have been identified within the *Traffic Impact Analysis* for near term and long term Project Buildout traffic conditions. The improvements were determined through the operations analysis sections of the *Traffic Impact Analysis*.

Per the City of Irwindale *Traffic Study Guidelines*, the Proposed Project shall pay its fair share of improvements to eliminate the significant impacts identified in the *Traffic Impact Analysis*. The Fair Share Contribution towards the required 2035 improvements at the Arrow Highway intersection with the I-605 off ramp is based on the Proposed Project's percentage of new traffic for Long Range with Project (2035) conditions.

3.9.9.1 MITIGATION PROGRAM

Mitigation T-1: The Applicant shall install a traffic signal at the intersection of Azusa Canyon Road / Los Angeles Street.

Mitigation T-2: The Applicant shall pay its fair share for the following improvements to mitigate the project's cumulative impact at the intersection of Azusa Canyon Road / Arrow Highway:

- Modify striping to provide a 3rd eastbound through lane.
- Modify striping to provide a 3rd westbound through lane and 3rd westbound receiving lane.

Mitigation T-3: The Applicant shall pay its fair share for the following improvement to mitigate the project's cumulative impact at the I-605 SB Off-Ramp /Arrow Highway:

- Construct a 2nd southbound left turn lane.

Mitigation T-4: The Applicant shall be required to install a traffic signal at the Project Driveway on Los Angeles Street to regulate all ingress and egress movements to and from the site. Final design and operation of the traffic signal is subject to review and approval of the City's Public Works Director. In addition, the applicant shall construct the Project Driveway / Los Angeles Street intersection with the following geometrics prior to commencement of operations:

CHAPTER 3.9 TRAFFIC GENERATION AND CIRCULATION

- Southbound Approach: One left turn lane and one right turn lane.
- Eastbound Approach: One shared left-through lane and 2nd through lane.
- Westbound Approach: Two through lanes and one defacto right turn lane.

Based on the fact, neither the City nor Caltrans have adopted fee programs, the City finds that even with mitigation imposed, there will still be significant and unavoidable impacts to traffic at the following facilities:

- Azusa Canyon Road / Arrow Highway
- I-605 SB Off-Ramp /Arrow Highway

3.9.10 CUMULATIVE IMPACTS

A list of all cumulative projects is provided in Chapter 3.0, *Environmental Setting and Impact Analysis*, above.

Would the Proposed Project, combined with other related cumulative projects, have a substantial adverse impact on traffic transportation or circulation?

Yes.

Cumulative effects are assessed and described above in the Long Range project scenarios. The Proposed Project does contribute to cumulative impacts at the intersection of Arrow Highway and the I-605 off-ramp. This cumulative impact is addressed in mitigation measure T-3, and with implementation of this measure, potential cumulative impacts could be reduced to less than significant. However, neither Caltrans nor the State has adopted a fee program that can ensure that locally-contributed impact fees will be tied to these improvements, and only Caltrans has the jurisdiction over implementation of these improvements. Because Caltrans has exclusive control over these freeway ramp improvements, ensuring that fair share contributions to improvements are actually part of a program tied to implementation of mitigation is within the jurisdiction of Caltrans. Based upon this, cumulative impacts are expected to be significant and unavoidable.