

4.7 Transportation and Circulation

This report documents the results of a study of the potential traffic impacts created by the Whittier Main Oil Field Development Project. The study is included as Appendix E of the EIR. In several phases, the Project would develop wells, oil processing, gas plant, oil and gas pipelines, and an oil truck loading facility. The phases are (1) Drilling and Testing, (2) Design and Construction, and (3) Operations and Maintenance. Each of these phases has been evaluated for potential traffic impacts.

The Project Site is within the 1,290-acre Whittier Main Oil Field, owned by the City of Whittier, which is currently part of the Puente Hills Habitat Authority Preserve, a joint powers agency. The oil and gas production and processing facilities would be comprised of a Project Site. The site would be north of Mar Vista Street and west of Colima Road. There would be two points of vehicular access: Catalina Avenue north of Mar Vista Street and the North Access Road that would pass through the Savage Canyon Landfill before connecting to Penn Street.

The traffic impact analyses in this traffic study were conducted using procedures adopted by the City of Whittier Public Works Department to analyze the potential traffic impact of new development projects. Both intersections and street segments were examined to determine impacts.

The intersections were evaluated using the City of Whittier Intersection Capacity Utilization (ICU) method. The ICU method calculates the operating conditions of each individual study intersection using a ratio of peak hour traffic volume to the intersection's capacity. This analysis method can quantify any change to the intersection's peak hour operating condition caused by an increase or decrease in traffic volume (i.e., traffic impact).

Impacts to street segments were analyzed based on procedures detailed in the Highway Capacity Manual for levels of service related to roadways.

Potential traffic impacts caused by a development project that exceed limits established by the City of Whittier (as specified in the Public Works Department Traffic Impact Study) would be considered significant. The California Department of Transportation (CalTrans) also specifies limits for intersections within its jurisdiction. Any significantly impacted intersections were then evaluated for possible traffic mitigation measures.

Pursuant to the City of Whittier traffic impact guidelines, the following data were evaluated to develop the future traffic volume estimate:

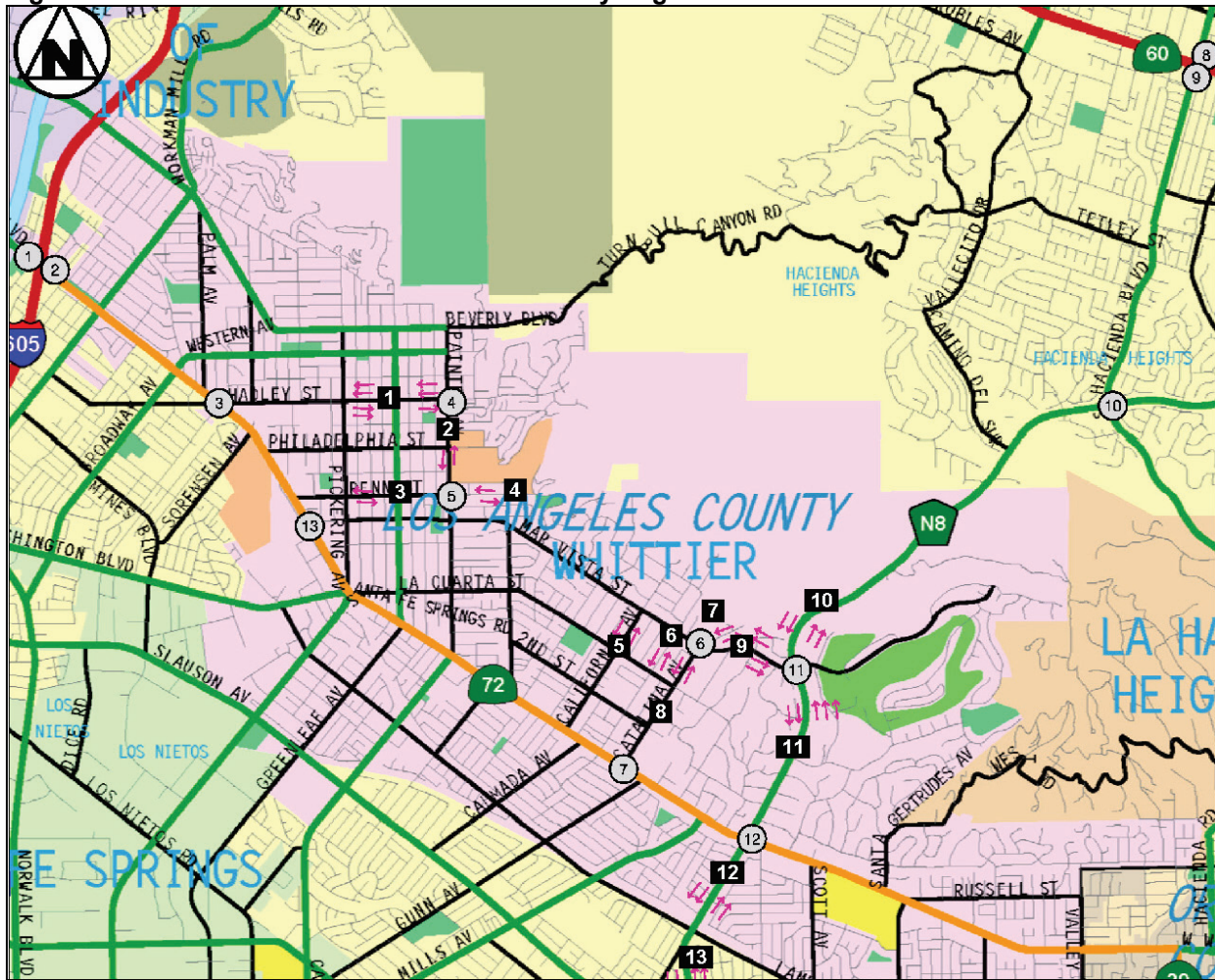
- Existing (base year) 2010 traffic counts;
- Base year 2010 traffic levels plus ambient growth to 2015, 2020, and 2025 (1 percent growth per year for each of the three scenarios);
- Base year traffic levels plus the proposed Project Phase 1, Phase 2, and Phase 3 traffic (existing plus project scenario);
- Base year traffic plus recommended traffic mitigation, if necessary;
- Project traffic impacts plus cumulative projects (future “with Project Phase 1, Phase 2 and Phase 2” scenario); and
- Impacts of recommended traffic mitigation, if necessary.

An analysis of the existing and future traffic conditions was completed at those intersections and roadway segments expected to have the highest potential for significant traffic impacts due to the proposed Project or alternatives. Morning and afternoon peak hour conditions were evaluated at 12 key intersections and 13 street segments approved by the City of Whittier Public Works Department. Figure 4.7-1 shows the location of all intersections and segments analyzed in this EIR.

This study analyzed these intersections (parentheses denote the intersection’s jurisdiction):

1. Interstate 605 Southbound Off Ramp/Esperanza Avenue and Whittier Boulevard (CalTrans, City of Whittier and West Whittier (Los Angeles County));
2. Interstate 605 Northbound Off Ramp and Whittier Boulevard (CalTrans and West Whittier (Los Angeles County));
3. Hadley Street and Whittier Boulevard (City of Whittier);
4. Hadley Street and Painter Avenue (City of Whittier)
5. Painter Avenue and Penn Street (City of Whittier)
6. Catalina Avenue and Mar Vista Street (City of Whittier);
7. Catalina Avenue and Whittier Boulevard (City of Whittier);
8. State Route 60 Westbound Off Ramp and Hacienda Boulevard (CalTrans and Hacienda Heights);
9. Three Palms Drive and Hacienda Boulevard (Hacienda Heights);
10. Colima Road and Hacienda Boulevard (Hacienda Heights);
11. Colima Road and Mar Vista Street (City of Whittier);
12. Colima Road and Whittier Boulevard (City of Whittier); and
13. Mar Vista Street and Whittier Blvd (City of Whittier).

Figure 4.7-1 Traffic Intersections and Roadway Segment Locations



Notes: Street segments shown as black boxes; intersections shown as white circles. See Appendix E.

This study analyzed these street segments:

1. Hadley Street east of Pickering Avenue (City of Whittier);
2. Painter Avenue north of Penn Street (City of Whittier);
3. Penn Street east of Pickering Avenue (City of Whittier);
4. Penn Street east of Painter Avenue (City of Whittier);
5. California Avenue south of Mar Vista Street (City of Whittier);
6. Ocean View Avenue south of Mar Vista Street (City of Whittier);
7. Catalina Avenue north of Mar Vista Street (City of Whittier);
8. Catalina Avenue south of Mar Vista Street (City of Whittier);
9. Mar Vista Street west of Colima Road (City of Whittier);

10. Colima Road north of Mar Vista Street (City of Whittier);
11. Colima Road south of Mar Vista Street (City of Whittier);
12. Colima Road south of Whittier Boulevard (City of Whittier); and
13. La Mirada Boulevard south of Lambert Road (County of Los Angeles).

In addition, the intersections of Catalina Avenue at Mar Vista Street and Catalina Avenue at Whittier Boulevard were evaluated to determine if a traffic signal would be necessary to control right-of-way with the addition of Project-related traffic.

The Project is in the City of Whittier, which is in Los Angeles County and surrounded by several other cities. Therefore, additional traffic created by this Project has the potential to create significant impacts in several jurisdictions. Future traffic conditions include the potential construction of other development projects in the general vicinity of the Project Site.

4.7.1 Environmental Setting

4.7.1.1 Land Use

The Project is located in the City of Whittier, which is within Los Angeles County and is surrounded by several other jurisdictions. North of Whittier is the City of Industry and Hacienda Heights. To the east are La Habra Heights and La Habra (in Orange County), and south of Whittier are South Whittier and Santa Fe Springs. To the west are Los Nietos (West Whittier), Pico Rivera, and the City of Industry.

The City of Whittier was incorporated in 1898. The City covers approximately 14.8 square miles with an estimated population of 87,190. According to the City, there are 443 professional services, 539 retail stores, 186 family-type restaurants, 46 manufacturing plants, 10 hotels and motels, 8 automobile dealerships, and more than 276 specialty shops and boutiques within the City (City of Whittier 2010). The quantities of these venues may have changed with time, but they provide a reference for the City environment. The City of Whittier land use map for the study area is included in the full traffic study in Appendix E.

4.7.1.2 Transportation Facilities

The nearest regional facilities serving the site are the Pomona Freeway (SR-60) and the San Gabriel River Freeway (I-605). Field surveys were conducted to collect traffic volume data and to determine the roadway and intersection geometry and traffic signal operations.

I-605 is approximately 4.5 miles west of the Project Site. This north-south freeway is five lanes in each direction plus accessory lanes for the ramps in the vicinity of Whittier Boulevard. The nearest access ramps to the freeway are at Whittier Boulevard and at Beverly Boulevard. Average daily traffic freeway volumes in this area of I-605 are approximately 17,200 vehicles per hour (vph) during peak hours and 252,000 vehicles per day (vpd).

SR-60 is located approximately 4 miles north of the Project Site. This east-west freeway is three lanes in each direction plus accessory lanes for the ramps in the Project vicinity. Freeway access in the vicinity of the Project Site is provided from Hacienda Boulevard and Three Palms Drive.

Freeway volumes in the Project vicinity of SR-60 are approximately 14,000 vph during peak hours and 228,000 vpd.

Three Palms Drive spans from west of Hacienda Boulevard to east of Hacienda Boulevard in the Project vicinity. This short stretch of roadway provides SR-60 ramp access to Hacienda Boulevard. The road is within the Hacienda Heights portion of unincorporated Los Angeles County north of the Project Site. The roadway is designated as a major roadway and provides three lanes of travel in the Project vicinity.

Catalina Avenue is a local roadway providing one lane of travel each in the north and south directions. Catalina Avenue currently provides and would continue to provide access to and from the Project Site location. This roadway spans from north of Mar Vista Street to Whittier Boulevard.

Colima Road is a north-south roadway that turns east-west along SR-60 and spans west from the City of Diamond Bar to Leffingwell Road south of the Project area. This roadway is designated as a Minor Arterial by the City of Whittier with two lanes in each direction in vicinity. The City of Whittier defines a minor arterial as a roadway with four lanes and this roadway complies with the standard.

Esperanza Avenue is a short segment roadway from Whittier Boulevard to north of Whittier Boulevard. The roadway provides local access immediately west of I-605 connecting to the southbound off-ramp at Whittier Boulevard.

Hacienda Boulevard is a major roadway with two to three lanes in each direction in the Project vicinity. It extends from Whittier Boulevard north to Valinda, California where it changes names to Glendora Avenue and continues north to the City of West Covina.

Hadley Street is designated as a minor arterial with one to two lanes in each direction that operates east-west from east of Painter Avenue. Bike lanes are provided in both directions in the vicinity of Painter Avenue.

La Cuarta Street is an approximately 2-mile roadway that initiates east of Washington Boulevard at Whittier Boulevard and continues east of Catalina Avenue. La Cuarta Street essentially runs east-west as a local street and provides parking with one lane in each direction. La Cuarta Street is designated as a collector roadway by the City of Whittier.

La Mirada Boulevard is within the Los Angeles County region of South Whittier and is designated as a major arterial and provides two to three lanes in each direction. A Major Arterial is defined as a roadway with six lanes by the City of Whittier. La Mirada Boulevard essentially runs north-south and changes names to Colima Road at Lambert Road and continues as such traveling north.

Mar Vista Street is an east-west roadway designated as a secondary road between Whittier Boulevard and Painter Avenue. It is designated as a collector from Painter Avenue easterly to the city limit. This roadway provides east-west access from Whittier Boulevard to Aurora Crest. In the Project vicinity, one to two lanes in each direction are provided. Mar Vista Street intersects with both Colima Road and Whittier Boulevard.

Ocean View Avenue is a local north-south roadway that spans south from Mar Vista Street to south of Whittier Boulevard. The street provides one lane in each direction with parking on both sides of the street.

Painter Avenue is a north-south roadway designated as a minor arterial. Currently, one lane in each direction is provided. Painter Avenue spans south from Beverly Boulevard to Whittier Boulevard where it changes names to Carmenita Avenue.

Penn Street is an east-west collector that provides one lane in each direction. The roadway spans from east of Canyon Drive west to Whittier Boulevard.

Pickering Avenue is a north-south street designated as an augmented secondary street by the City of Whittier. One lane in each direction is provided. Pickering Avenue spans south from Beverly Boulevard to Los Nietos Road where it changes names to Santa Fe Springs Road and continues south.

Santa Fe Springs Road is essentially a north-south secondary highway operating from the Whittier Boulevard/Washington Boulevard intersection in Whittier south to Telegraph Road in Santa Fe Springs where it changes names to Bloomfield Avenue. Two lanes in each direction are provided in the Project vicinity. Santa Fe Springs Road is designated as a minor arterial by the City of Whittier.

Washington Boulevard is an east-west minor arterial in the City of Whittier. The roadway provides access from the Pacific coastline through multiple communities, including Venice, Culver City, Los Angeles, Vernon, and continuing east to the City of Whittier where it terminates at Whittier Boulevard. Two lanes in each direction are provided in the Project vicinity.

Whittier Boulevard (State Highway 72), under CalTrans jurisdiction, is an essentially east-west major arterial roadway providing two lanes in each direction. The roadway spans west from Puente Street in the City of Brea through La Habra, Whittier, Pico Rivera, Montebello, East Los Angeles, Boyle Heights, and downtown Los Angeles, where it changes names to 6th Street on the west side of the Los Angeles River.

4.7.1.3 Existing Conditions

Traffic volume data used in the peak hour intersectional analysis were based on traffic counts by National Data Systems, an independent traffic data collection company. Traffic counts were conducted in May 2011 on a typical non-holiday weekday. Whittier College was in session, but classes had just ended and final examinations had not yet started. Data collection worksheets for the peak hour counts are in the traffic study in Appendix E.

Roadway segment counts were conducted along with the intersection counts. Table 4.7-1 indicates the existing traffic volumes on these roadways over a 24-hour time period.

Roadway and intersection counts near Whittier College could vary substantially due to events at Whittier College or William Penn Park. The College issues approximately 7,000 parking permits annually for parking at the College and hosts about 25-35 events per year of varying

sizes. The College reportedly hosts three to four concerts per month at the 478-seat Ruth B. Shannon Center for the Performing Arts. Events at the Whittier College Memorial Stadium occasionally generate traffic, including college football games, track meets, and semi-pro football games. The Whittier College football team plays approximately four games each year at the 7,000-seat Memorial Stadium. In addition, William Penn Park occasionally hosts weddings and parties. However, most of these events would be expected to impact traffic levels during weekends and evenings. Since Project traffic would be expected to contribute to morning and afternoon/evening weekday traffic, it is expected that Project traffic would only overlap with event traffic on occasional weekday evenings.

Table 4.7-1 Roadway Segment Volumes - Existing 2010 - 24 Hours

Number	Roadway Segment	Traffic Volume
1	Hadley Street east of Pickering Avenue	15,775
3	Painter Avenue north of Penn Street	25,591
3	Penn Street east of Pickering Avenue	4,327
4	Penn Street east of Painter Avenue	2,733
5	California Avenue south of Mar Vista Street	613
6	Ocean View Avenue south of Mar Vista Street	2,461
7	Catalina Avenue north of Mar Vista Street	101
8	Catalina Avenue south of Mar Vista Street	1,017
9	Mar Vista Street west of Colima Road	14,875
10	Colima Road north of Mar Vista Street	35,704
11	Colima Road south of Mar Vista Street	32,179
12	Colima Road south of Whittier Boulevard	26,497
13	La Mirada Boulevard south of Lambert Road	14,727

Source: Traffic Study, May 2011, counts taken May 19, 2010

In addition to the analysis of the potentially affected intersections and roadway segments, the closest freeway intersections were also evaluated. Table 4.7-2 indicates the existing freeway volumes on I-605 (San Gabriel River Freeway) and SR-60 (Pomona Freeway).

Table 4.7-2 Freeway Volumes - Existing 2010

Number	Roadway Segment	Traffic Volume
1	I-605 (San Gabriel River Freeway) at Whittier Blvd	14,400 vph
		252,000 vpd
2	SR-60 (Pomona Freeway) east of I-605	14,000 vph
		228,000 vpd

Notes: vph = vehicles per hour during peak, vpd = vehicles per day (24 hours)

Source: Traffic Study, May 2011

4.7.1.4 Analysis of Existing Traffic Conditions

The traffic conditions analysis was conducted using the ICU method for the signalized intersections and Highway Capacity Manual (HCM) for two-way and four-way stopped intersections method (delay) for the unsignalized intersections and the HCM for roadway segments.

The study intersections were evaluated using these methodologies pursuant to the criteria established by the City of Whittier. The baseline peak hour traffic counts were used along with intersection lane configurations and traffic controls to determine the intersection's operating condition.

The peak hour traffic counts were used along with current intersection lane configurations to determine the intersection's operating condition. The available capacity for key intersection movements is directly related to traffic demand. The capacity per hour of green time for each approach is calculated based upon ICU methodology at signalized locations. A lane capacity of 1,600 vehicles per hour per lane (2,880 vehicles per hour for dual left turn lanes) and 10 percent yellow clearance time were used. To calculate capacity, the proportion of total signal time needed by key traffic movement is determined and compared to the total available time. The key movements are the opposing movements whose combined green time demands are the greatest, and the conflicting key movements are added and expressed as a decimal fraction. The resulting ICU displays the proportion of the total hour required to meet the intersection demand volumes in the key conflicting traffic movements.

The HCM methodology for two-way and four-way stopped intersections evaluates the amount of delay based upon the intersection traffic volumes. The minor streets and driveways typically provide access to residential or business areas. The major road traffic is typically operating free-flow with the exception of the right and left turns. Operation performance (delay) is measured at the minor roadways based upon the traffic volumes.

Once the ICU/HCM value has been calculated, operating characteristics are assigned a level of service grade (A through F) to estimate the level of congestion and stability of the traffic flow. The term level of service (LOS) is used by traffic engineers to describe the quality of traffic flow. Table 4.7-3 shows definitions of the LOS grades for signalized locations and Table 4.7-4 shows unsignalized locations.

The LOS definitions for roadway and freeway segments differ slightly from the ICU methodology as it is termed as a demand to capacity ratio (D/C) with a different breakdown of the LOS than the ICU volume to capacity definitions. Table 4.7-5 shows the definitions of the LOS grades for freeway locations.

Table 4.7-3 Level of Service Definitions for Signalized Locations

Level of Service	Description of Operating Condition	ICU Value
A	No loaded cycles and few are even close. No approach is fully utilized with no delay.	0.00 - 0.60
B	A stable flow of traffic.	0.61 - 0.70
C	Stable operation continues. Loading is intermittent. Occasionally drivers may have to wait more on red signal and backups may develop behind turning vehicles.	0.71 - 0.80
D	Approaching instability. Delays may be lengthy during short times within the peak hour. Vehicles may be required to wait through more than one cycle.	0.81 - 0.90
E	At or near capacity with possible long queues for left-turning vehicles. Full utilization of every signal cycle is seldom attained.	0.91 - 1.00
F	Gridlock conditions with stoppages of long duration.	>1.00

Notes: ICU = Intersection Capacity Utilization

Source: Traffic Study, May 2011

Table 4.7-4 Level of Service Definitions for Unsignalized Locations

Level of Service	Delay (seconds)
A	Less than or equal to 10
B	10 - 15
C	16 - 25
D	26 - 35
E	36 - 50
F	Greater than 50

Source: Traffic Study, May 2011

By applying these procedures to the intersection data, the ICU/HCM values and the corresponding LOS for existing traffic conditions were determined for each intersection.

Table 4.7-5 Level of Service Definitions for Freeway Segments

Level of Service	D/C	Congestion or Delay
A	<.34	Free Flow
B	0.35 - 0.52	Free to Stable Flow
C	0.53 - 0.69	Stable Flow
D	0.70 - 0.92	Approaches Unstable Flow
E	0.93 - 1.00	Extremely Unstable Flow
F (0)	1.01 - 1.25	Forced Flow
F (1)	1.26 - 1.35	Heavy Congestion
F (2)	1.36 - 1.45	Extremely Heavy Congestion
F (3)	>1.46	Gridlock

Source: Traffic Study, May 2011

The existing ICU/HCM and LOS values are summarized in Table 4.7-6. Supporting capacity worksheets are contained in the traffic study in Appendix E.

Table 4.7-6 Existing 2010 Traffic Conditions - Intersections

#	Intersection	Peak Hour	ICU/Delay	LOS
1	Interstate 605 Off Ramp/Esperanza Avenue and Whittier Boulevard	a.m.	0.799	C
		p.m.	0.783	C
2	Interstate 605 Off Ramp and Whittier Boulevard	a.m.	0.739	C
		p.m.	0.653	B
3	Hadley Street and Whittier Boulevard	a.m.	0.893	D
		p.m.	0.764	C
4	Hadley Street and Painter Avenue	a.m.	0.769	C
		p.m.	0.704	C
5	Painter Avenue and Penn Street	a.m.	0.510	A
		p.m.	0.588	A
6	Catalina Avenue and Mar Vista Street	a.m.	SB – 20.5 NB – 13.1	C B
		p.m.	SB – 11.0 NB – 14.2	B B
7	Catalina Avenue and Whittier Boulevard	a.m.	SB - 18.4	C
		p.m.	SB - 15.0	B
8	State Route 60 Westbound Off Ramp and Hacienda Boulevard	a.m.	0.772	C
		p.m.	0.824	D
9	Three Palms Drive and Hacienda Boulevard	a.m.	0.874	D
		p.m.	0.755	E
10	Colima Road and Hacienda Boulevard	a.m.	0.700	C
		p.m.	0.743	C
11	Colima Road and Mar Vista Street	a.m.	0.784	C
		p.m.	0.834	D
12	Colima Road and Whittier Boulevard	a.m.	0.909	E
		p.m.	0.886	D
13	Mar Vista Street and Whittier Blvd	a.m.	0.760	C
		p.m.	0.665	B

Notes: ICU = Intersection Capacity Utilization calculated in Volume/Capacity (V/C), Delay = seconds
Intersections 1 - 5 & 8 - 12 evaluated as ICU, 6 & 7 as delay

Source: Traffic Study, May 2011

Roadway segment conditions analysis was conducted by determining the traffic volume. This traffic volume was divided by the roadway capacity (based on designation) to determine a volume to capacity ratio and LOS. Table 4.7-7 displays the existing roadway conditions.

Table 4.7-7 Existing 2010 Traffic Conditions - Roadway Segments

#	Roadway Segment	Peak Hour	Capacity	Existing Volume	V/C	LOS
1	Hadley Street east of Pickering Avenue	a.m.	2,800	1251	0.447	A
		p.m.	2,800	1302	0.465	A
		Daily	50,000	15775	0.316	A
2	Painter Avenue north of Penn Street	a.m.	2,800	2005	0.716	C
		p.m.	2,800	2083	0.744	C
		Daily	50,000	25991	0.512	A
3	Penn Street East of Pickering Avenue	a.m.	1,200	315	0.263	A
		p.m.	1,200	392	0.327	A
		Daily	10,000	4327	0.433	A
4	Penn Street east of Painter Avenue	a.m.	1,200	206	0.172	A
		p.m.	1,200	261	0.218	A
		Daily	10,000	2733	0.273	A
5	California Avenue south of Mar Vista Street	a.m.	1,000	86	0.086	A
		p.m.	1,000	68	0.068	A
		Daily	5,000	613	0.123	A
6	Ocean View south of Mar Vista Street	a.m.	1,000	293	0.293	A
		p.m.	1,000	260	0.260	A
		Daily	5,000	2461	0.492	A
7	Catalina Avenue north of Mar Vista Street	a.m.	1,000	10	0.010	A
		p.m.	1,000	11	0.011	A
		Daily	5,000	101	0.020	A
8	Catalina Avenue south of Mar Vista Street	a.m.	1,000	159	0.159	A
		p.m.	1,000	81	0.081	A
		Daily	5,000	1017	0.203	A
9	Mar Vista Street west of Colima Road	a.m.	1,200	1216	1.013	F
		p.m.	1,200	1255	1.046	F
		Daily	10,000	14875	1.488	F
10	Colima Road north of Mar Vista Street	a.m.	3,600	2999	0.833	D
		p.m.	3,600	3136	0.871	D
		Daily	50,000	25704	0.714	C
11	Colima Road south of Mar Vista Street	a.m.	3,600	2721	0.756	C
		p.m.	3,600	2650	0.736	C
		Daily	50,000	32179	0.644	B
12	Colima Road south of Whittier Boulevard	a.m.	3,600	2199	0.611	B
		p.m.	3,600	2112	0.587	A
		Daily	50,000	26497	0.530	A
13	La Mirada Boulevard south of Lambert Road	a.m.	4,800	1486	0.310	A
		p.m.	4,800	1161	0.242	A
		Daily	50,000+	14727	0.295	A

Source: Traffic Study, May 2011

Freeway segment conditions analysis was conducted by determining the traffic volume. This traffic volume was divided by the freeway capacity (based on number of lanes with 2,000 vehicles per hour per lane) to determine the volume to capacity ratio and LOS. Table 4.7-8 displays the existing freeway conditions.

Table 4.7-8 Existing 2010 Traffic Conditions - Freeways

#	Location	Time Period	Capacity	Volume	D/C	LOS
1	Interstate 605 at Whittier Blvd	Daily		251,000		
		Peak Hour	20,000	14,400	0.720	D
2	State Route 60 east of Interstate 605	Daily		228,000		
		Peak Hour	12,000	14,000	1.167	F(0)

Notes: D/C = Demand/Capacity
 Source: Traffic Study, May 2011

4.7.1.5 Transit Information

Public transportation in the study area is provided by the Metropolitan Transportation Authority (Metro), Norwalk Transit (N) and Montebello Transit (M). Workers for the Oil Field project during construction and operations can make use of these transit services.

Metro Green Line operates to a station in Norwalk. Metro Line 270 operates between Norwalk and Monrovia via Workman Mill Road & Peck Avenue with wait times of approximately one half hour during peaks that expand to an hour during off peaks. Metro 270 operates along Painter Avenue between Penn Street and Hadley Street in the project vicinity.

Metro Line 577X provides services between Long Beach and El Monte and operates along the 605 Freeway in the project vicinity. This bus stops at the Metro Green Line station in Norwalk on the south side of Imperial Highway at Civic Center Drive.

Norwalk Transit provides route N3 and N8 along Greenleaf Avenue and route N7 along Hadley Street in the Project vicinity.

Montebello Transit provides route M10 along Whittier Boulevard, Painter Avenue and Philadelphia Street in the Project vicinity. M50 operates along Pickering Avenue, Washington Boulevard and Hadley Street in the project vicinity.

Transit maps are illustrated in Appendix E.

4.7.2 Regulatory Setting

This section discusses regional plans and their applicability to traffic and circulation.

4.7.2.1 City Circulation Element

The Circulation Element of the City’s General Plan is a comprehensive plan for vehicular and non-vehicular circulation and transportation within the city and the planning area. The

Government Code (Section No. 65302(b)) requires the Circulation Element of the General Plan and states:

...the General Plan shall have a circulation element consisting of the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other public local utilities and facilities, all correlated with the land use element of the General Plan.

The Circulation Element's Master Plan of Arterial Highways identifies the necessity of providing added capacity on several existing major roadways in Whittier. According to the Master Plan, the expansion of Whittier Boulevard from a four-lane to six-lane major arterial road is the only planned project in the study area.

4.7.2.2 Metropolitan Transportation Authority, Congestion Management Program

The Metropolitan Transportation Authority is the state-designated planning and programming agency for Los Angeles County. In addition, as the Congestion Management Agency, the Metropolitan Transportation Authority is responsible for implementing the Congestion Management Program for Los Angeles County.

The Congestion Management Program is based on level-of-service analysis of all major intersections and routes in the county. The program attempts to address the impacts of local growth on the regional transportation network. Relevant intersections in the Project area include Colima Road and Whittier Boulevard.

4.7.3 Significance Criteria

The relative impacts of traffic during the morning and evening peak travel periods were evaluated for the different study intersections for existing conditions and those associated with the proposed Project. The analysis compared the intersection level of service to scenarios with and without the Project. Table 4.7-9 shows the City of Whittier's established criteria for determining if a new project causes a significant impact.

Table 4.7-9 City of Whittier Intersection Impact Threshold Criteria

Level of Service	Volume to Capacity Ratio	Allowable Increase
C	0.71 – 0.80	0.04
D	0.81 – 0.90	0.02
E/F	0.91 or more	0.01

The City of Whittier requires mitigation of traffic impacts whenever traffic generated by a proposed project would increase the volume to capacity ratio of an analyzed intersection by an amount equal to or greater than their thresholds, shown in Table 4.7-9.

The two intersections on Whittier Boulevard with the northbound and southbound ramps to I-605 are within CalTrans jurisdiction. Traffic impacts at those intersections would be significant if the level of service reaches level E, which means the average delay at the intersection would be greater than or equal to 55 seconds with a 1 percent increase in traffic.

The City of Whittier has not identified significant impact criteria for two-lane roadways. However, Los Angeles County has developed and published roadway segment significant impact criteria for roadways as displayed in table 4.7-10.

Table 4.7-10 Significant Impact Criteria for Two-Lane Roadways - County of Los Angeles

Directional Split	Total Capacity (pcph)	Percentage Increase in pcph by the Project		
		Pre-Project LOS		
		C	D	E or F
50/50	2,800	4	2	1
60/40	2,650	4	2	1
70/30	2,500	4	2	1
80/20	2,300	4	2	1
90/10	2,100	4	2	1
100/0	2,000	4	2	1

Notes: pcph= passenger cars per hour
 Source: Traffic Study, May 2011

The significant impact criteria identified by the County of Los Angeles for intersections is the same as the significant impact criteria identified by the City of Whittier.

The County of Los Angeles does not specifically identify impact criteria for roadways with more than two lanes. Roadway segments included in this analysis were identified as creating significant impacts if the project created or exacerbated an existing condition in which the roadway exceeded the design volume of that roadway. The design volumes are based upon the Highway Capacity Manual, American Association of State Highway and Transportation guidelines, and other local nearby local jurisdiction design volumes (see Table 4.7-11).

Table 4.7-11 Roadway Design Volumes

Roadway Designation	Full Design Number of Lanes	Peak Hour Volume Capacity	Daily Capacity
Major Arterial	6	4800	50,000
Minor Arterial	4	3600	30,000
Secondary Street - Augmented	2 - 4	2800	30,000
Secondary Street	2 - 4	2800	20,000
Collector Street	2	1200	10,000
Local Street	2	1000	5,000

Source: Traffic Study, May 2011

Los Angeles County Congestion Management Program (CMP) identifies a significant impact at a CMP intersection or CMP freeway segment as an increase of 2 percent or more.

The City of Whittier, County of Los Angeles, and CMP programs have not identified impact criteria for transit services.

4.7.4 Project Impacts and Mitigation Measures

The proposed Project would provide for oil and gas production and processing facilities located at a single site within the Whittier Main Oil Field. In addition, roads, pipelines, electrical conduit corridors would be constructed to connect and manage the site locations. Connections to existing pipeline facilities would be established.

The proposed Project would be developed in three phases. These include the Drilling and Testing Phase (1), the Design and Construction Phase (2), and the Operations and Maintenance Phase (3). Phase 1 would include some clearing of portions of the Project Site area, drilling of three test wells, and improved access roads to provide access. The information obtained from the test wells would assist in determining economic viability and whether the Project should be continued.

If viable, Phase 2 would include the design and construction of the production and processing facilities, grading of the well pad site, construction of underground well cellars, oil and gas pipelines, the truck loading facility, and an improved access road from Penn Street to the Project Site. Phase 2 would generate the greatest number of vehicle trips associated with the Project.

Once design and construction are complete the project would move to the final and ongoing phase of the project, the Operation and Maintenance Phase. This would include maintaining a field office onsite, operations of the oil and gas plant, drilling of up to 57 wells, periodic well service, and non routine periodic service. The level of vehicle activity onsite, as well as to and from the site would be relatively steady throughout the life of the Project.

The Project would be located west of Colima Road and north of Mar Vista Street. Parking for the Project would be at the Project Site near the office. Sufficient parking would be provided to accommodate the vehicles onsite during testing, drilling, construction, operations and maintenance. No parking within the communities surrounding the Project Site would be required.

4.7.4.1 Project Trip Generation

Traffic-generating characteristics of many land uses have been surveyed by the Institute of Transportation Engineers (ITE). The results of the traffic generation studies have been published in a handbook titled Trip Generation, 8th Edition. This publication of traffic generation data has become the industry standard for estimating traffic generation for different land uses. However, the land use of this Project is unique in nature and was not evaluated for this publication. Therefore, operation specifics during Phases 1, 2, and 3 have been developed to determine potential trip generation. Each phase has been evaluated to determine both vehicle and truck trips to and from the site during a 24-hour daily period, and the peak hours of the roadway network from 7 to 9 a.m. and 4 to 6 p.m. Due to the additional space and time for turning movements and start up that trucks take, all truck trips were doubled to simulate this extra space and time. This is referred to as the Passenger Car Equivalent (PCE). Vehicle work trips were based upon maximum personnel needs during the time periods for each phase for conservative estimates on potential traffic impacts, as presented in Section 2.0, Project Description. In addition, no reductions were incorporated for potential ridesharing and transit usage by the employees upon arrival and departure to the facilities.

Table 4.7-12 provides Project trip generation rates for each of the phases.

Table 4.7-12 Project Trip Generation Rates

Item	Daily Trips	a.m. Peak Hour			p.m. Peak Hour		
	Total	Total	In	Out	Total	In	Out
Phase 1							
Workers	2 x # of vehicles	20% of daily	95%	5%	20% of daily	50%	50%
Trucks							
Pad Clearing/Utilities	2 x # of vehicles x 2PCE	10% of daily	50%	50%	10% of daily	10%	10%
Drilling/Testing	2 x # of vehicles x 2PCE	10% of daily	80%	20%	10% of daily	80%	20%
Phase 2							
Workers	2 x # of vehicles	20% of daily	95%	5%	20% of daily	50%	50%
Trucks	2 x # of vehicles x 2PCE	10% of daily	50%	50%	10% of daily	10%	10%
Phase 3							
Workers							
Day Shift	2 x # of vehicles	20% of daily	95%	5%	20% of daily	5%	95%
Night Shift	2 x # of vehicles	20% of daily	5%	5%	20% of daily	50%	50%
Trucks	2 x # of vehicles x 2PCE	10% of daily	5%	95%	10% of daily	95%	5%

Source: Traffic Study, May 2011 and Section 2.0, Project Description

Tables 4.7-13, 4.7-14, and 4.7-15 estimate the Project traffic for each of the Project phases. Work items that would be conducted simultaneously were added and each component of each phase was compared to determine the highest amount of trips generated during each phase.

It is estimated that the Project during Phase 1 would generate a maximum of 120 daily PCE one-way trips with 16 trips during the morning peak hour and 16 trips during the afternoon and evening peak hour.

It is estimated that the Project during Phase 2 would generate a maximum of 396 daily PCE one-way trips with up to 48 trips during the morning and 46 trips evening peak hour.

It is estimated that the Project during Phase 3 would generate 68 daily PCE one-way trips with 11 trips during the morning peak hour and evening peak hour.

Table 4.7-13 Project Trip Generation - Phase 1

Item	Daily Trips		a.m. Peak Hour			p.m. Peak Hour		
	Vehicles	Trips	Total	In	Out	Total	In	Out
Pad Clearing & Testing								
Peak Personnel	15	30	6	6	0	6	3	3
Peak Trucks	8	32	3	2	1	3	2	1
Subtotal	23	62	9	8	1	9	5	4
Drilling								
Peak Personnel	20	40	8	8	0	8	4	4
Peak Trucks	20	80	8	6	2	8	2	6
Subtotal*	40	120	16	14	2	16	6	10
Pad Testing								
Peak Personnel	5	10	2	2	0	2	1	1
Peak Trucks	7	28	3	2	1	3	1	2
Subtotal	12	38	5	4	1	5	2	3
MAX PHASE 1 TRIPS	40	120	16	14	2	16	6	10

Note: * Peak trips for Phase 1 would occur only on only the initial and final day of drilling activity.

Source: Traffic Study, May 2011

Table 4.7-14 Project Trip Generation - Phase 2

Item	Daily Trips		a.m. Peak Hour			p.m. Peak Hour		
	Vehicles	Trips	Total	In	Out	Total	In	Out
North Access Road Construction								
Peak Personnel	10	20	4	4	0	4	2	2
Peak Trucks	20	80	8	4	4	8	4	4
Subtotal	30	100	12	8	4	12	6	6
Pad Grading – excluding soil export								
Peak Personnel	5	10	2	2	0	2	1	1
Peak Trucks	1	4	0	0	0	0	0	0
Subtotal	6	14	2	2	0	2	1	1
Pad Grading –soil export only								
Peak Personnel	0	0	0	0	0	0	0	0
Peak Trucks	78	312	32	16	16	30	15	15
Subtotal	78	312	32	16	16	30	15	15
Facility Construction								
Peak Personnel	40	80	16	15	1	16	8	8
Peak Trucks	29	116	12	6	6	12	6	6
Subtotal	69	196	28	21	7	28	14	14
Pipeline Construction								
Peak Personnel	15	30	6	6	0	6	3	3
Peak Trucks	13	52	6	3	3	6	3	3
Subtotal	28	82	12	9	3	12	6	6
MAX PHASE 2 TRIPS	119	396	48	31	17	46	23	23

Source: Traffic Study, May 2011

Table 4.7-15 Project Trip Generation - Phase 3

Item	Daily Trips		a.m. Peak Hour			p.m. Peak Hour		
	Vehicles	Trips	Total	In	Out	Total	In	Out
Production								
Workers Day Shift	20	40	8	8	0	8	0	8
Workers Night Shift	2	4	1	0	1	1	1	0
Peak Trucks	6	24	2	0	2	2	2	0
MAX PHASE 3 TRIPS	28	68	11	8	3	11	3	8

Source: Traffic Study, May 2011

4.7.4.2 Distribution and Assignment of Project Traffic

The spatial distribution of employee residences and destination and origin points for trucks visiting the Project Site are primary factor affecting trip generation. The estimated Project trip distribution is also based on the study area roadway network, likely truck routes, traffic flow patterns in and out of the area of the City of Whittier and County of Los Angeles, Los Angeles County Congestion Management Program references, and consistency with previously approved studies in this area. The access locations for the trucks would change between Phase 1 and Phase 2. The first phase would improve internal roadways but would utilize Catalina Road since the North Access Road connecting to Penn Street would not be improved yet. Therefore, employees and trucks would use Catalina Avenue north of Mar Vista Street for the first phase of the Project. The initial portion of Phase 2 would be to improve the North Access Road.

The application of the trip distribution percentages to the maximum number of trips determines the number of Project trips along each roadway segment and intersection for each phase.

4.7.4.3 Parking Access and Circulation

Vehicular access to and from the site currently exists at the terminus of Catalina Avenue north of Mar Vista Street. A second access is proposed to utilize an existing roadway within the Preserve to access the Savage Canyon Landfill to the north and then Penn Street (the North Access Road). The Catalina Avenue access exists as a dirt/partially paved roadway and is gated. During Phase 1, both employees and trucks would access the site from Catalina Avenue. At initiation of Phase 2, if the Project is to move forward, the North Access roadway from the Project Site to Penn Street would be improved to accommodate all large truck access to and from the site. Currently, Mar Vista Street has large truck prohibitions posted. During Phase 1, this restriction would need to be exempted for trucks associated with the Project. This would be a temporary situation that would last approximately one year from the start of Phase 1. During Phase 1, when trucks are accessing the site, they should be restricted to right turns in and left turns out to ensure that trucks would not traverse Mar Vista Street west of Catalina Avenue. However, left turns out would be conducted without traffic signal assistance.

Based on national standards, current and projected traffic volumes do not indicate a need for installation of a new traffic signal. Therefore, it is recommended that flag person assistance be provided as necessary. These trucks would use the Catalina Avenue entrance only during Phase 1.

Employees would access the site in passenger cars and small trucks from the Catalina Avenue entrance. This access would be maintained throughout the life of the Project.

Penn Street would be utilized by traffic using the North Access Road. Penn Street is a residential, tree lined street that is currently used to access the Savage Canyon Landfill as well as Whittier College and William Penn Park as well as residences in the area. Events at Whittier College and William Penn park reportedly cause short-duration increases in traffic and restrictions in parking along Penn Street. Residences along Penn Street access Penn Street directly from driveways.

4.7.4.4 Analysis of Current Traffic Conditions with the Project

To assess impacts associated with current plus project conditions, Project impacts were analyzed as if the Project were constructed and operated today. This analysis does not include any assumptions of growth or change in current traffic levels in the area. See Appendix E for more details on the analysis.

Impacts associated with current conditions and Project traffic levels would generate significant impacts at the following locations:

- Impacts at the Catalina Avenue and Mar Vista Street intersection for Phases 1 only; and
- Impacts at the Mar Vista Street segment during Phase 1.

4.7.4.5 Analysis of Future Traffic Conditions with the Project

Additional analysis examined the impacts of the Project in the timeframe when it may actually be constructed and operational. During this timeframe in the future, traffic levels may be greater and Project-related traffic could produce a greater impact on roadway segments and intersections. This analysis includes intersection, roadway, and freeway segments.

Intersection Analysis

Future traffic volume projections have been developed to analyze the traffic conditions after incorporation of ambient growth at a conservative 1 percent per year for each of the phases of the Project. Future year 2015 with ambient growth (existing + 1 percent per year) was compared with future year 2015 with ambient growth and Phase 1 of the Project during the highest trip generation period to determine if the significant impact thresholds were exceeded. The results of this analysis are displayed in Table 4.7-16 showing those intersections that would exceed the significance criteria.

Future year 2020 with ambient growth (existing + 1 percent per year) was compared with future year 2020 with ambient growth and Phase 2 of the Project during the highest trip generation period to determine if the significant impact thresholds were exceeded. The results of this analysis are displayed in Table 4.7-16.

Future year 2025 with ambient growth (existing + 1 percent per year) was compared with future year 2025 with ambient growth and Phase 3 of the Project during the highest trip generation period to determine if the significant impact thresholds were exceeded. The results of this analysis are displayed in Table 4.7-16.

Roadway Segment Analysis

Roadway segments were analyzed in a similar manner as the intersections. The existing roadway traffic volumes were increased by 1 percent per year for ambient growth and Project traffic was added to this future volume. Future volumes without and future volumes with Project volumes were compared to the impact criteria to determine if impacts would be significant. Tables 4.7-17 display the results of this analysis.

Freeway Analysis

Freeway monitoring locations analysis was conducted by increasing existing traffic volumes by 1 percent per year for ambient growth. The resultant D/C was then compared to the existing plus ambient plus Project volumes to determine whether significance thresholds would be exceeded. Results indicate that there would not be significant impacts on freeways (see Appendix E).

Most intersections and roadway segments identified for study would experience less than significant impacts associated with the project. The Penn Street roadway segment, for example currently operates at a LOS of A and during both the am and pm peaks and on a daily basis. The intersection of Penn Street and Painter currently operates at an LOS of A for both the am and pm peak periods, with LOS dropping to an LOS of B by 2015 during the pm period. Project traffic levels would not produce significant impacts, even during the construction period if trucks moving soil are required to use Penn Street.

Table 4.7-16 Intersections Future Traffic Conditions With and Without Project Traffic - Significant Impacts Only

#	Intersection	Peak Hour	Future Existing + Ambient		Future Existing + Ambient + Phase 1 of the Project			Significant Impact?
			ICU/Delay	LOS	ICU/Delay	LOS	Impact	
Phase 1 – year 2015								
6A	Catalina Ave (W Leg) & Mar Vista - SB	AM	21.8	C	22.9	C	+ 1.1 (4.8%)	YES
		PM	11.1	B	17.7	C	+ 6.6 (37.3%)	YES
Phase 2 – year 2020								
3	Hadley Street & Whittier Blvd	AM	0.973	E	0.985	E	+ 0.012	YES
6A	Catalina Ave (W Leg) & Mar Vista - SB	PM	11.3	B	15.9	C	+4.6 (28.9%)	YES
Phase 3 – year 2025								
6A	Catalina Ave (W Leg) & Mar Vista - SB	PM	11.5	B	16.5	C	+ 5.0 (30.3%)	YES

Source: Traffic Study, May 2011. See Appendix E for more detailed results

Table 4.7-17 Roadway Future Segments With and without Project Traffic Conditions - - Significant Impacts Only

#	Roadway Segment	Time	Capacity	Existing+ Ambient	V/C	LOS	Existing + Ambient + Project	V/C	LOS	% Impact	Significant?
Phase 1 – year 2015											
9	Mar Vista Street west of Colima Road	a.m.	1,200	1277	1.064	F	1292	1.076	F	1.1	YES
		p.m.	1,200	1318	1.098	F	1331	1.109	F	1.0	YES
		Daily	10,000	15619	1.562	F	15723	1.572	F	0.7	No
Phase 2 – year 2020											
No significant impacts associated with Phase 2 on any roadways											
Phase 3 – year 2025											
No significant impacts associated with Phase 2 on any roadways											

Notes: Capac = Capacity, V/C = , LOS = level of service, Source: Traffic Study, May 2011. See Appendix E for more detailed results

4.7.4.6 Project Impacts Mitigation Measures

Impacts would be associated with intersections near the Project Site.

Impact #	Impact Description	Phase	Residual Impact
T.1	Potential test drilling, Construction, and Operations and Drilling at the Whittier Mail Oil Field would increase traffic in the area	Test Drilling Construction Operations	Less Than Significant With Mitigation

Under worst-case conditions, significant impacts would occur at the intersection of Catalina Avenue and Mar Vista Street, during Phase 1, 2 and 3 and at Hadley Street and Whittier Blvd during Phase 2 only. A significant impact would also occur along one street segment, Mar Vista west of Colima Road during Phase 1 only. These impacts would be significant.

Impacts along Penn Street could occur if peak Project-related traffic during construction coincides with large events at Whittier College or William Penn Park. This would be considered a significant impact.

Mitigation Measures

- T-1a During all phases at Intersection 6 - Catalina Avenue and Mar Vista Street, provide striping enhancements for southbound lanes to convert the existing single lanes to a left and right lane. Parking shall be restricted immediately north and south of the intersections, according to city engineer recommendations.*
- T-1b A worker carpooling program shall be instituted offsite and away from congested areas to reduce Project traffic through congested areas during all Project phases.*
- T-1c During all phases, limit truck and employee access via Catalina Avenue and Mar Vista Street to no more than 40 daily round-trips and a peak hour of 12 one-way trips. No trucks shall be allowed on Catalina Avenue during Phase 2 or Phase 3.*
- T-1d Implement safety and access improvements, including:*
- (1) During Phase 1, provide a wider turning radius at the northeast corner of Catalina Avenue to improve right turn movements;*
 - (2) Prohibit parking on the east side of Catalina Avenue north of Mar Vista Street to provide additional capacity for trucks during Phase 1, according to city engineer recommendations;*
 - (3) Provide flagmen for truck access on Mar Vista Street during Phase 1;*
 - (4) Applicant shall maintain a record of vehicular traffic moving in and out of the Catalina Avenue Gate;*
 - (5) Implement a pavement monitoring program to ensure Mar Vista Street and Catalina Avenue are maintained and damage from truck traffic is appropriately repaired, under direction of city engineers; and*
 - (6) Clearly posted speed limit signs on Catalina Avenue.*

- T-1e During Phase 2 soil export, if it is not deposited at the Savage Canyon Landfill, restrict truck traffic to non-am peak hours at the intersection of Hadley Street and Whittier Blvd.*
- T-1f Implement a Penn Street Traffic Program, in coordination with the City, evaluating:*
- (1) Traffic levels and periods of heavy traffic along Penn Street;*
 - (2) Longer-term traffic monitoring to capture events and variation in traffic flow due to student populations and event traffic;*
 - (3) Construction truck traffic impacts on roadway capacity due to parking limitations and event activities;*
 - (4) Coordination with Whittier College to reduce impacts of events and parking issues along Penn Street;*
 - (5) Alternative parking locations and routes for Whittier College events;*
 - (6) Implementing safety improvements, including enhanced pedestrian crosswalks and signage;*
 - (7) Identifying sources of landfill traffic and ensuring the proposed Project truck traffic does not increase truck traffic levels on Penn Street;*
 - (8) Limited hours for proposed Project truck traffic on Penn Street to avoid congested or impacted periods (e.g., limit truck traffic to periods when the landfill is open);*
 - (9) Coordinate periods of heavy traffic flow on Penn Street due to events and prevent use of Penn Street for proposed Project-related construction truck traffic during these events.*

Residual Impacts

The intersection of Catalina Avenue and Mar Vista Street (Intersection 6) would experience impacts during the a.m. and p.m. peak hours of Phase 1 and the p.m. peak hours of Phase 2 and 3. Currently, Catalina Avenue north of Mar Vista Street has very low traffic volumes. Mitigation measure T-1a and T-1b would reduce the significant impacts to less than significant by improving traffic flow and reducing Project-related traffic. To ensure traffic levels do not produce significant impacts, mitigation measure T-1c limits the traffic levels on Catalina during all phases of the project to levels that would not produce significant impacts. This would reduce impacts associated with Intersection 6 to less than significant.

Traffic utilizing Catalina would also produce impacts along Mar Vista Street (Segment 9) during Phase 1. Unless temporary measures, such as removal of traffic calming bulge-outs, are implemented along Mar Vista Street west of Colima Road, the roadway would experience significant impacts during peak hours of Phase 1 of the Project. Temporary elimination of the bulge-outs was determined to be infeasible. These impacts could be reduced to less than significant by limiting employee traffic along Catalina Avenue and Mar Vista Street (mitigation measure T-1c) during Phase 1. This could be achieved by establishing offsite parking and car-pooling to the site (mitigation measure T-1b). With these mitigation measures, impacts would be less than significant with mitigation by reducing Project-related traffic.

Safety and access improvements are also included in mitigation measure T-1d. These are related to safe access to Catalina Avenue off of Mar Vista Street. Impacts would be less than significant with mitigation.

Impacts at Hadley Street and Whittier Blvd could be eliminated by limiting project traffic to non-a.m. peak periods, thereby avoiding periods when significant impacts could occur.

The development and implementation of the Penn Street Traffic Program (mitigation measure T-1f) would reduce the potential for the impacts related to peak Project construction traffic coinciding with large events that impact Penn Street to less than significant with mitigation.

Impact #	Impact Description	Phase	Residual Impact
T.2	Construction of the pipeline along area streets could cause significant impacts	Construction	Less Than Significant With Mitigation

Pipeline construction along Colima Road and La Mirada Boulevard could potentially cause traffic impacts that temporarily reduce the capacity of the street system, resulting in substantial increase in the v/c ratio on roads and LOS, or congestion at intersections; inhibit emergency response by paramedic, fire, ambulance, and police vehicles; affect existing roadside parking; and inhibit access to private and commercial driveways.

Mitigation Measures

- T-2 A Traffic Management Plan shall be submitted to the City and County of Los Angeles Traffic Engineers for approval, as required, prior to issuance of encroachment permits. The Plan could include the following measures: provide methods to safeguard traffic flow; identify detours (if necessary); identify the placement of traffic control devices (e.g. signs, traffic cones) and flaggers (if needed); and provide other appropriate traffic control measures. Additional measures shall include:*
- (1) One travel lane shall be left open in each direction (delineated by temporary traffic cones/barricades) along roadways during construction (i.e. roads will not be closed). Any temporary street closures shall occur in coordination with city staffs.*
 - (2) Construction on major roadways through major signalized intersections will not be conducted during peak periods (6 to 9 a.m. and 3 to 6 p.m.), except where requested by the city to alleviate traffic impacts.*
 - (3) All trenches in areas without safety fencing shall be metal plated during non-construction hours. All trenches that interfere with access to residential and business driveways shall be metal plated to provide access.*
 - (4) Edges of steel plates shall be made safe for cyclists.*
 - (5) All county and municipal fire, police, and paramedic departments shall be notified of schedule and duration of construction activities.*
 - (6) As required, alternative routes shall be identified for emergency vehicles to avoid construction areas.*
 - (7) Coordination shall be undertaken with appropriate transit authorities to ensure uninterrupted service along bus or train routes, which shall be crossed or paralleled by the pipeline construction.*
 - (8) Alternative pedestrian and bicycle routes shall be identified to avoid construction areas if existing routes are obstructed by pipeline construction activities.*

- (9) Transit stops shall be relocated as necessary to provide access during construction.*
- (10) Staging areas for construction equipment and service truck traffic shall be located off the roadway.*
- (11) Provision shall be made for off-street parking for worker vehicles in areas where parking is limited.*
- (12) Advance notifications shall be made to affected residents and businesses through public information, such as a web site or mailings, and shall include construction scheduling and identify the pipeline as a natural gas pipeline.*
- (13) Scheduling construction adjacent to critical land uses so that at least one driveway is left unblocked at all hours or during business hours and ensuring resident and business access during trenching/construction.*
- (14) Ensure that damaged roads are restored to at least their pre-construction condition and to the satisfaction of the responsible agency.*

Residual Impacts

With the application of the above mitigation, impacts would be reduced to less than significant with mitigation. It should be noted, that all of the potential impacts are only associated with the pipeline construction; the operation of the pipeline will have no impact on transportation/traffic.

4.7.4.7 Other Issue Area Mitigation Measure Impacts

Mitigation measures proposed for other issues areas could increase impacts to transportation and circulation if they are implemented. This section discusses those potential mitigation measure impacts. Some mitigation measures could increase construction requirements associated with the Project, which could increase construction traffic including fuel modification requirements for fire protection (FP-1e), installing sound walls (N-2a), increased structural construction requirements (GR-3c, GR-3d, GR-4a, GR-4b, and GR-5b through GR-5d), and restoration of habitat areas (BIO-1a, BIO-2a). However, none of these mitigation measures would change the peak day traffic levels defined in Section 2.0, Project Description. Therefore, the mitigation measures would not result in additional significant traffic impacts, and additional analysis or mitigation is not required.

4.7.5 Cumulative Impacts and Mitigation Measures

Future conditions and other projects in the area, ambient growth, and all three phases of the Project were evaluated for cumulative impacts. To evaluate future traffic conditions with the related projects, daily and peak hour traffic were estimated using standard ITE rates for other projects. Figure 4.7-2 shows the locations of the cumulative projects. Table 4.7-18 shows a summary of the cumulative significant impacts identified in Appendix E.

Intersection Analysis

The traffic volumes for the other (cumulative) projects in the area were added to the future existing with ambient growth and Project volumes to determine if significant impact thresholds were exceeded. If these thresholds are exceeded, the percent of Project impact is identified for

the intersection and time period. See Appendix E Tables for 2015, 2020, and 2025 projections, respectively.

Roadway Segment Analysis

Roadway segments were analyzed in a similar manner at the intersections for cumulative projects. The existing roadway traffic volumes were increased by 1 percent per year for ambient growth and Project traffic was added to this future volume along with the cumulative projects. A comparison of the future without and future with Project volumes was conducted and compared to the impact criteria to determine if significant impacts occur. Appendix E Tables which display the results of this analysis. If an impact is deemed significant, the percent of Project traffic that contributes to the impact is identified.

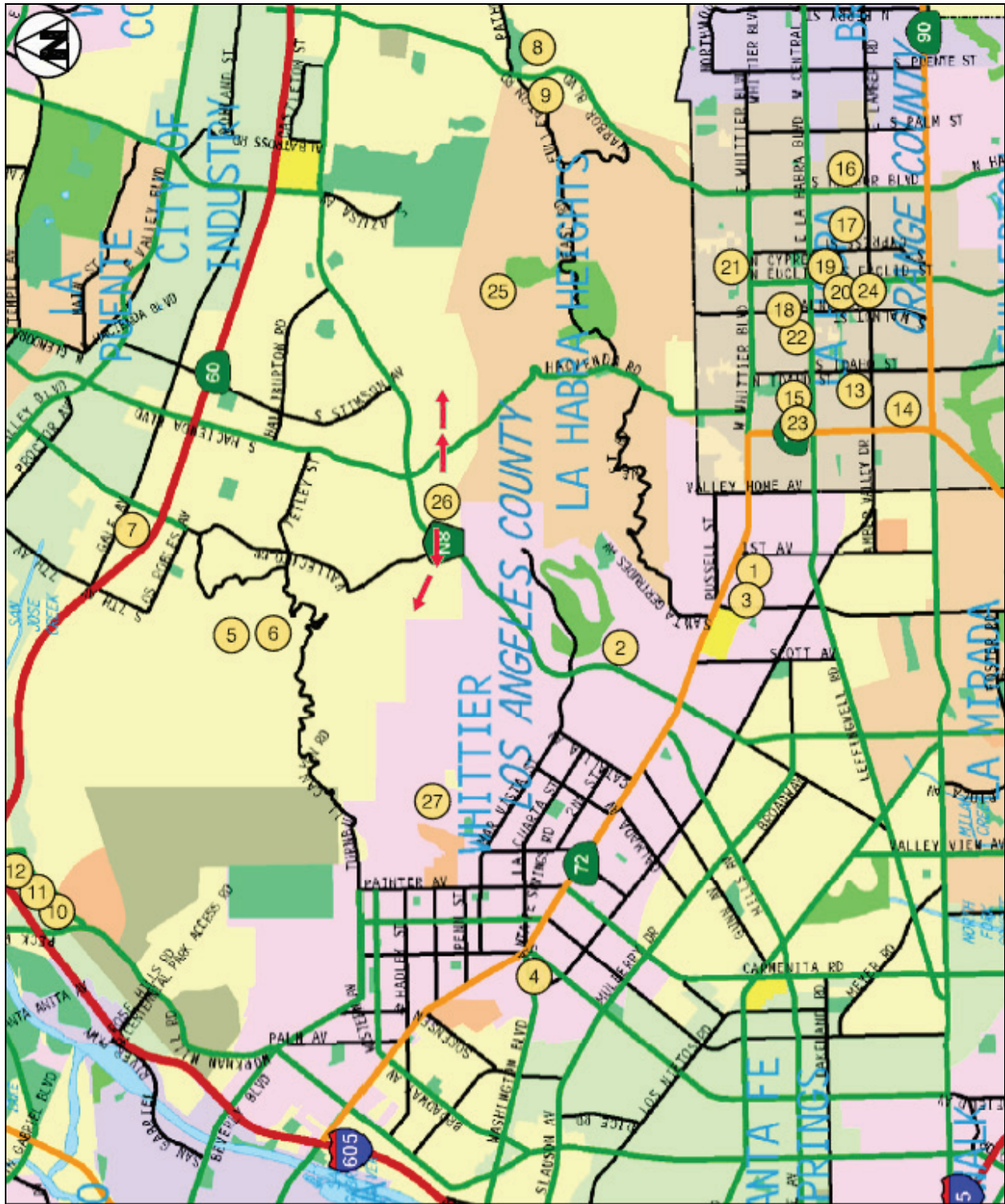
Freeway Analysis

Freeway cumulative impacts are evaluated in the same manner as the intersections and roadway segments. Appendix E displays the results of the analysis.

Whittier Community Church Project

The proposed project access road to be constructed during Phase 2 project off of Colima Road would intersect with Colima Road approximately 1,200 feet north of Mar Vista Street. This new driveway would align with the new Whittier Community Church driveway and make use of the new traffic signal associated with the church's 34,000 square foot expansion. The new driveway was evaluated for potential traffic impacts along Colima Road using the same approach as the intersections in the analysis. The bulk of the church traffic would be generated during the weekend. The project would have little to no traffic during the weekend. The new signal was evaluated using peak traffic volumes on a weekday during the AM and PM peak hour and church traffic levels utilized the Traffic Impact Analysis conducted for the church expansion project (AGA 2007). The results of the analysis indicate that impacts would be less than significant for all phases of the project including with the addition of cumulative projects. Please see Appendix E for more information.

Figure 4.7-2 Cumulative Traffic Project Locations



Source: Traffic Study, May 2011

4.7.5.1 Cumulative Impacts and Mitigation Measures

Impacts from the proposed Project and cumulative projects would be significant at several intersections and a single roadway segment in the area. The following table lists these intersections and roadway segments and the cumulative impacts.

Table 4.7-18 Summary of Cumulative Project Impacts

Impact Description	Phase and Period	Residual Impact
Intersections		
Intersection #3 - Hadley Street & Whittier Boulevard	2 - a.m. Peak Hour	Project Fair Share: Potential until full improvement installed
Intersection #6A - Catalina Avenue & Mar Vista Street (north of Mar Vista)	1 - a.m. Peak SB & p.m. Peak SB 2 - p.m. Peak SB 3 - p.m. Peak SB	1 - none 2 - none 3 - none
Intersection #12 - Colima Road & Whittier Boulevard	1 - a.m. & p.m. Peak Hour 2 - a.m. & p.m. Peak Hour 3 - a.m. & p.m. Peak Hour	Project Fair Share: Potential until full improvement installed
Roadway Segments		
Segment #9 - Mar Vista Street west of Colima Road	1 - a.m. & p.m. Peak Hour 2 - a.m. & p.m. Peak Hour	1 - none 2 - none
Freeway Segments		
There were no significant cumulative impacts associated with freeways		

Notes: SB = southbound, NB = northbound

Source: Traffic Study, May 2011

Improvements could be implemented at intersections to mitigate the significant cumulative impacts. These improvements would be implemented through a fair-share cost sharing program with the cumulative projects. However, implementing mitigation measures T-1a through T-1d would also reduce the cumulative impacts to less than significant.

Improvement projects at the impacted intersections through a fair share agreement system could reduce the cumulative impacts. The proposed Projects contribution to these mitigation measures would need to be evaluated through a fair-share analysis by the City or applicable authority.

In addition to mitigation measures T-1d, additional mitigation would include:

- Intersection #12 - Colima Road and Whittier Boulevard: Phase 1, 2, 3. Fair share contribution towards widening and improving the south leg of the intersection to provide a dual northbound left turn lane. Provide signal and striping improvements.
- Segment #9 - Mar Vista Street west of Colima Road: Phase 1, 2. The intersection of Colima Road and Mar Vista Street has adequate eastbound approach with a wider roadway and additional lanes. However, west of Colima Road to Catalina Avenue the roadway features bump outs at some corners and landscaped medians. These measures assist in reducing speed and creating an aesthetically pleasing environment. They also reduce roadway

capacity. In order to address potential future cumulative impacts, this segment would need to remove the roadway enhancements.

- Intersection #3 - Hadley Street and Whittier Boulevard: Phase 2. Fair share contribution towards widening and improving the east and north leg of Whittier Boulevard at Hadley Street. Alter the existing striping to provide two southbound left turn lanes and a dedicated westbound right turn lane. These improvements are not likely to be accommodated within the existing right-of-way and additional right-of-way may need to be acquired.

Impacts associated with the Matrix City of La Habra Heights project, a proposed oil development project 1.6 miles south of the Preserve in the City of La Habra Heights, would also not produce cumulative impacts. Although Matrix has no defined the traffic route from this development, these traffic routes would likely require vehicles travelling south and east through the City of La Habra Heights, most likely along Las Palomas Drive to Hacienda Road or Santa Gertrudes Avenue towards Whittier Boulevard. There is no connection from the La Habra Heights site to Mar Vista Street and Colima Road.

With the recommended mitigation measures, cumulative impacts would be reduced to less than significant by improving intersections through a fair share program and implementing limits on the Project-related traffic and avoiding impacted areas.

4.7.6 Mitigation Monitoring Plan

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
T-1a During all phases at Intersection 6 - Catalina Avenue and Mar Vista Street, provide striping enhancements for southbound lanes to convert the existing single lanes to a left and right lane. Parking shall be restricted immediately north and south of the intersections, according to city engineer recommendations.	Enhancements to intersection of Catalina Avenue and Mar Vista Street	Inspection of striping and parking limitations	Before test drilling	City of Whittier
T-1b A worker carpooling program shall be instituted offsite and away from congested areas to reduce Project traffic through congested areas during all Project phases.	Offsite carpooling	Inspection of carpooling areas and records of trips	Before construction	City of Whittier
T-1c During all phases, limit truck and employee access via Catalina Avenue and Mar Vista Street to no more than 40 daily round-trips and a peak hour of 12 one-way trips. No trucks shall be allowed on Catalina Avenue during Phase 2 or Phase 3.	Monitor Project traffic along Catalina Avenue and Mar Vista Street	Applicant required to maintain records of traffic into and out of Catalina Avenue gate, and subsequent records inspection	Before drilling or construction	City of Whittier
T-1d Implement safety and access	Limits on peak hour	Inspection of	Before test	City of

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
<p>improvements, including:</p> <p>(1) During Phase 1, provide a wider turning radius at the northeast corner of Catalina Avenue to improve right turn movements;</p> <p>(2) Prohibit parking on the east side of Catalina Avenue north of Mar Vista Street to provide additional capacity for trucks during Phase 1, according to city engineer recommendations;</p> <p>(3) Provide flagmen for truck access on Mar Vista Street during Phase 1;</p> <p>(4) Applicant shall maintain a record of vehicular traffic moving in and out of the Catalina Avenue Gate;</p> <p>(5) Implement a pavement monitoring program to ensure Mar Vista Street and Catalina Avenue are maintained and damage from truck traffic is appropriately repaired, under direction of city engineers; and</p> <p>(6) Clearly posted speed limit signs on Catalina Avenue.</p>	traffic	contracts and design plans	drilling	Whittier
<p>T-1e During Phase 2 soil export, if it is not deposited at the Savage Canyon Landfill, restrict truck traffic to non-am peak hours at the intersection of Hadley Street and Whittier Blvd.</p>	Limits on peak hour traffic	Inspection of contracts and design plans	Before construction	City of Whittier
<p>T-1f Implement a Penn Street Traffic Program, in coordination with the City, evaluating:</p> <p>(1) Traffic levels and periods of heavy traffic along Penn Street;</p> <p>(2) Longer-term traffic monitoring to capture events and variation in traffic flow due to student populations and event traffic;</p> <p>(3) Construction truck traffic impacts on roadway capacity due to parking limitations and event activities;</p> <p>(4) Coordination with Whittier College to reduce impacts of events and parking issues along Penn Street;</p> <p>(5) Alternative parking locations and routes for Whittier College events;</p> <p>(6) Implementing safety improvements, including enhanced pedestrian crosswalks and signage;</p> <p>(7) Identifying sources of landfill traffic and ensuring the proposed</p>	Limits on peak construction traffic, Potential Penn Street improvements	Studies of Penn Street capacity related to events	Before construction	City of Whittier Whittier College

4.7 Transportation and Circulation

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
<p>Project truck traffic does not increase truck traffic levels on Penn Street;</p> <p>(8) Limited hours for proposed Project truck traffic on Penn Street to avoid congested or impacted periods (e.g., limit truck traffic to periods when the landfill is open);</p> <p>(9) Coordinate periods of heavy traffic flow on Penn Street due to events and prevent use of Penn Street for proposed Project-related construction truck traffic during these events.</p>				
<p>T-2 A Traffic Management Plan shall be submitted to the City and County of Los Angeles Traffic Engineers for approval, as required, prior to issuance of encroachment permits. The Plan could include the following measures: provide methods to safeguard traffic flow; identify detours (if necessary); identify the placement of traffic control devices (e.g. signs, traffic cones, etc.) and flaggers (if needed); and provide other appropriate traffic control measures. Additional measures shall include:</p> <p>(1) One travel lane shall be left open in each direction (delineated by temporary traffic cones/barricades) along roadways during construction (i.e. roads will not be closed). Any temporary street closures shall occur in coordination with city staffs.</p> <p>(2) Construction on major roadways through major signalized intersections will not be conducted during peak periods (6 to 9 a.m. and 3 to 6 p.m.), except where requested by the city to alleviate traffic impacts.</p> <p>(3) All trenches in areas without safety fencing shall be metal plated during non-construction hours. All trenches that interfere with access to residential and business driveways shall be metal plated to provide access.</p> <p>(4) Edges of steel plates shall be made safe for cyclists.</p> <p>(5) All county and municipal fire, police, and paramedic departments shall be notified of schedule and duration of construction activities.</p>	Traffic Management Plan	Inspection and approval of plan	Before construction	City of Whittier

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
<p>(6) As required, alternative routes shall be identified for emergency vehicles to avoid construction areas.</p> <p>(7) Coordination shall be undertaken with appropriate transit authorities to ensure uninterrupted service along bus or train routes, which shall be crossed or paralleled by the pipeline construction.</p> <p>(8) Alternative pedestrian and bicycle routes shall be identified to avoid construction areas if existing routes are obstructed by pipeline construction activities.</p> <p>(9) Transit stops shall be relocated as necessary to provide access during construction.</p> <p>(10) Staging areas for construction equipment and service truck traffic shall be located off the roadway.</p> <p>(11) Provision shall be made for off-street parking for worker vehicles in areas where parking is limited.</p> <p>(12) Advance notifications shall be made to affected residents and businesses through public information, such as a web site or mailings, and shall include construction scheduling and identify the pipeline as a natural gas pipeline.</p> <p>(13) Scheduling construction adjacent to critical land uses so that at least one driveway is left unblocked at all hours or during business hours and ensuring resident and business access during trenching/construction.</p> <p>(14) Ensure that damaged roads are restored to at least their pre-construction condition and to the satisfaction of the responsible agency.</p>				