4.10 TRAFFIC AND CIRCULATION

The following analysis is partially based on the Traffic Impact Study for the Zone 2 Landslide Moratorium – Portuguese Bend Project, prepared by Linscott, Law and Greenspan, (LLG) Engineers and dated April 12, 2011 and supplemental analysis performed by LLG in August 2012. The full study and the supplemental analysis is contained in Appendix G of the EIR.

4.10.1 Setting

a. Existing Street System. Access to the existing Portuguese Bend community of Rancho Palos Verdes is provided via Narcissa Drive and Peppertree Drive. All streets in the Portuguese Bend community are private, and the community itself is gated. The gates restricting access to the community on Narcissa Drive and Peppertree Drive are set back approximately 190 and 90 feet from Palos Verdes Drive South, respectively. The following lane configurations are provided at the existing access locations for the community:

- Narcissa Drive/Palos Verdes Drive South
  - Eastbound Approach: One left-turn lane and one shared through/right-turn lane
  - Westbound Approach: One left-turn lane, one through lane and one right-turn lane
  - Southbound Approach: One shared left-turn/through lane and one right-turn lane

- Peppertree Drive/Palos Verdes Drive South
  - Eastbound Approach: One left-turn lane and one through lane
  - Westbound Approach: One through lane and one right-turn lane
  - Southbound Approach: One left-turn lane and one right-turn lane

The streets in the vicinity of the project area are divided into several functional classifications. Each type of street provides for a general level of traffic movement through the City. There are four categories in the roadway hierarchy, ranging from freeways with the highest capacity to two-lane undivided roadways with the lowest capacity. Freeways are limited-access and high-speed travel ways that carry regional through-traffic. Access is provided by interchanges with typical spacing of one mile or greater. Arterial roadways carry the majority of traffic entering and traveling through the City and are generally developed as commercial corridors. Arterials are generally designed with two to six travel lanes and their major intersections are signalized. This roadway type is divided into two categories: principal and minor arterials. Principal arterials are typically four-or-more lane roadways that serve both local and regional through-traffic. Minor arterials are typically two-to-four lane streets that service local and commute traffic. Collector roadways are intended to provide for the movement of traffic between arterials and neighborhoods. Collector roadways are typically designed with two through travel lanes that may accommodate on-street parking. Local roadways distribute traffic within a neighborhood, or similar adjacent neighborhoods, and are not intended for use as a through-street or a link between higher capacity facilities such as collector or arterial roadways. Local streets are fronted by residential uses and do not typically serve commercial uses.

The following roadways are located within the project vicinity and are described in detail in the Traffic Impact Study:

- *Palos Verdes Drive South (arterial)*
- *Barkentine Road (local street)*
- *Forrestal Drive (local street)*
- *Hawthorne Boulevard (arterial)*
- *Narcissa Drive (private roadway)*
- *Palos Verdes Drive East (arterial)*
- *Peppertree Drive (private roadway)*
- *Seahill Drive (local street)*
- *Tramonto Drive(local street)*
- *Via Rivera(local street)*

b. Existing Traffic Volumes and Level of Service. Consistent with City of Rancho Palos Verdes guidelines for traffic impact analyses, traffic conditions in the vicinity of the project area were analyzed using intersection capacity-based methodology known as the "Intersection Capacity Utilization Methodology," which is referred to hereinafter as the ICU Methodology.

The efficiency of traffic operations at a location is measured in terms of Level of Service (LOS). Level of service is a description of traffic performance at intersections. The level of service concept is a measure of average operating conditions at intersections during an hour. It is based on volume-to-capacity (V/C) ratio. Levels range from A to F with A representing excellent (free-flow) conditions and F representing extreme congestion. The ICU methodology compares the level of traffic during the peak hours at an intersection (volume) to the amount of traffic that the intersection is able to carry (capacity). Intersections with vehicular volumes that are at or near capacity (V/C≈ 1.0) experience greater congestion and longer vehicle delays.

Analysis of unsignalized intersections is conducted differently from signalized intersections due to different operating characteristics. Stop-controlled intersections are analyzed using the delay-based Highway Capacity Manual (HCM) method of determining level of service, which measures average vehicle delay to affected vehicles.

Table 4.10-1 describes the LOS concept and the operating conditions for signalized intersections and Table 4.10-2 describes the LOS concept and operating conditions for stop-controlled intersections.

A total of seven intersections were chosen for the project's traffic impact analysis. All of the seven study intersections selected for analysis are controlled by stop signs with the stop signs facing the minor street approaches. The study analyzed the following seven intersections:

1. Via Rivera/Hawthorne Boulevard
2. Seahill Drive-Tramando Drive/Palos Verdes Drive South
3. Barkentine Road/Palos Verdes Drive South
4. Narcissa Drive/Palos Verdes Drive South
5. Peppertree Drive/Palos Verdes Drive South
6. Forrestal Drive/Palos Verdes Drive South
7. Palos Verdes Drive East / Palos Verdes Drive South

The intersection of Palos Verdes Drive West/Hawthorne Boulevard/Via Vicente was not selected for analysis as no operational deficiencies are known to exist and based on recent analyses the project would not contribute significantly to the critical movements of the intersection.

Table 4.10-1
Level of Service Definitions for Signalized Intersections (ICU Methodology)

Level of Service (LOS)	Interpretation	Volume to Capacity Ratio
A	Excellent operation - free-flow	0.000 - 0.600
B	Very good operation - stable flow, little or no delays	0.601 - 0.700
C	Good operation - slight delays	0.701 - 0.800
D	Fair operation – noticeable delays, queuing observed	0.801 - 0.900
E	Poor operation - long delays, near or at capacity	0.901 - 1.000
F	Forced flow – congestion	Over 1.000

Source: Highway Capacity Manual, Special Report 209, Transportation Research Board, Washington D.C., 1985 and Interim Materials on Highway Capacity, NCHRP Circular 212, 1982

Table 4.10-2
Level of Service Criteria for Unsignalized Intersections (HCM Methodology)

Level of Service (LOS)	Highway Capacity Manual Delay Value (sec/veh)	Level of Service Description
A	≤ 10.0	Little or no delay
B	> 10.0 and ≤ 15.0	Short traffic delays
C	> 15.0 and ≤ 25.0	Average traffic delays
D	> 25.0 and ≤ 35.0	Long traffic delays
E	> 35.0 and ≤ 50.0	Very long traffic delays
F	> 50.0	Severe congestion

Existing manual counts of vehicular turning movements were conducted in May 2010 at six of the seven existing study intersections and in March 2011 for the remaining study intersection (i.e., Intersection No. 1, Hawthorne Boulevard/Via Rivera) during the weekday morning (AM) and afternoon (PM) commuter periods to determine the peak hour traffic volumes. The manual counts were conducted by traffic count subconsultants at the study intersections from 7:00 to 9:00 AM to determine the weekday AM peak commuter hour, and from 4:00 to 6:00 PM to determine the weekday PM peak commuter hour. Traffic volumes at the seven study

intersections show the weekday morning and afternoon peak periods typically associated with peak hours in the metropolitan area.

The existing weekday AM and PM peak hour LOS at the seven study intersections are summarized in Table 4.10-3. The existing traffic volumes at the study intersections during the weekday AM and PM peak hours are shown in Figures 4.10-1 and 4.10-2, respectively.

Table 4.10-3
Existing Intersection Levels of Service Summary

Key Intersection	Time Period	Control Type	Delay (sec/veh)	V/C Ratio	LOS
1. Via Rivera/Hawthorne Boulevard	AM PM	Two-Way Stop	38.6 29.4	0.572 0.342	E D
2. Seahill Drive-Tramonto Drive/Palos Verdes Drive South	AM PM	Two-Way Stop	27.6 23.6	0.396 0.274	D C
3. Barkentine Road/Palos Verdes Drive South	AM PM	Two-Way Stop	18.9 18.7	0.091 0.067	C C
4. Narcissa Drive/Palos Verdes Drive South	AM PM	Two-Way Stop	17.8 16.1	0.085 0.069	C C
5. Peppertree Drive/Palos Verdes Drive South	AM PM	Two-Way Stop	20.0 18.4	0.068 0.069	C C
6. Forrestal Drive/Palos Verdes Drive South	AM PM	Two-Way Stop	31.3 26.6	0.315 0.251	D D
7. Palos Verdes Drive East / Palos Verdes Drive South	AM PM	Two-Way Stop	17.0 16.3	0.271 0.175	C C

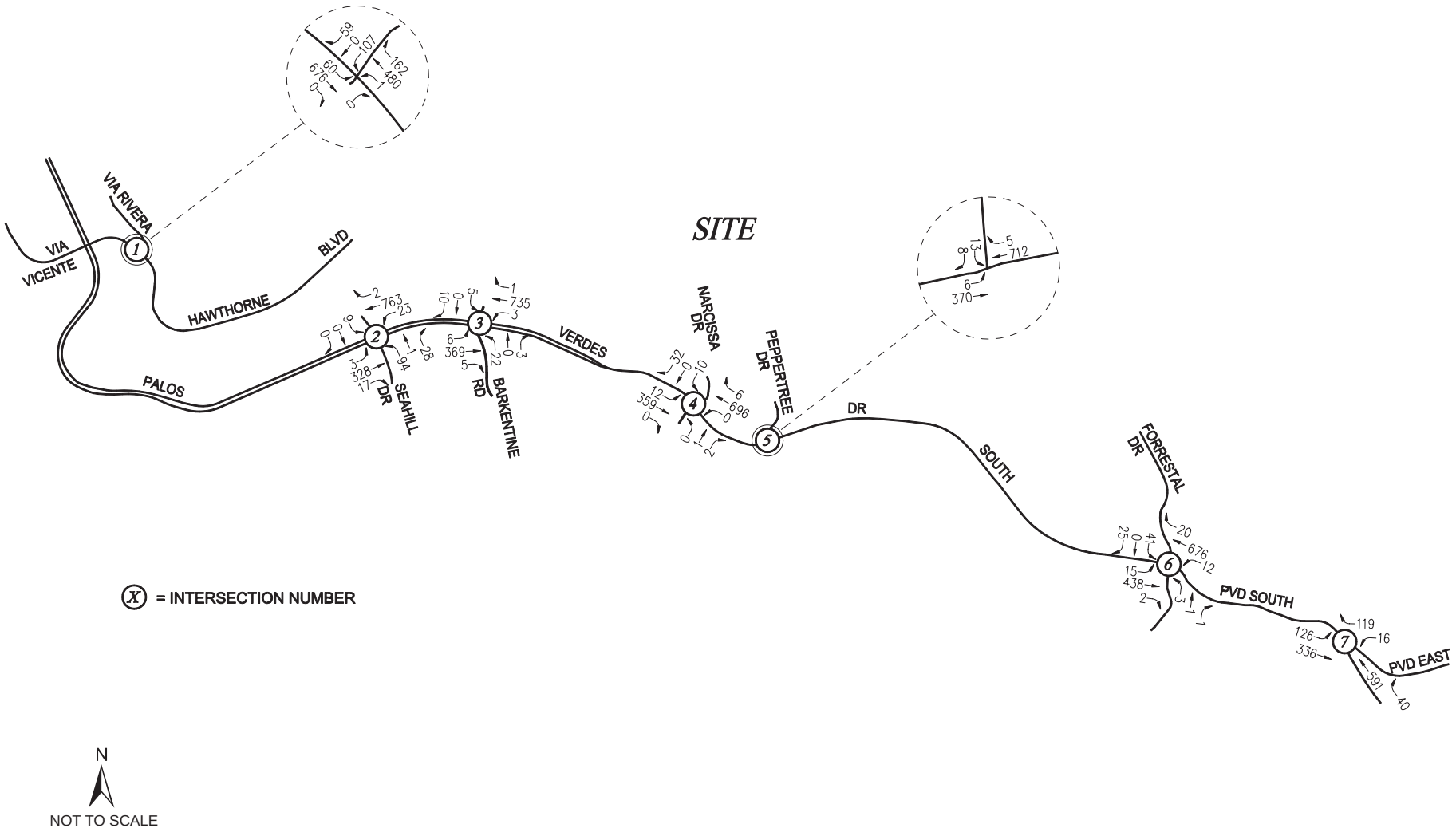
Source: Linscott, Law and Greenspan, 2011

In addition to studying intersections within the project vicinity, the Traffic Impact Study also analyzed the roadway level of service for the following two street segments:

1. Palos Verdes Drive South east of Seacove Drive (between Seacove Drive and the Wayfarer Chapel driveway)
2. Palos Verdes Drive South east of Cherry Hill Lane (between Cherry Hill Lane and Schooner Drive)

Automatic 24-hour machine traffic counts were conducted at the above locations during a mid-week day (i.e., Tuesday, Wednesday, or Thursday) in May 2010. The average weekday AM and PM peak hour volumes were then calculated based on the automatic 24-hour machine traffic counts.

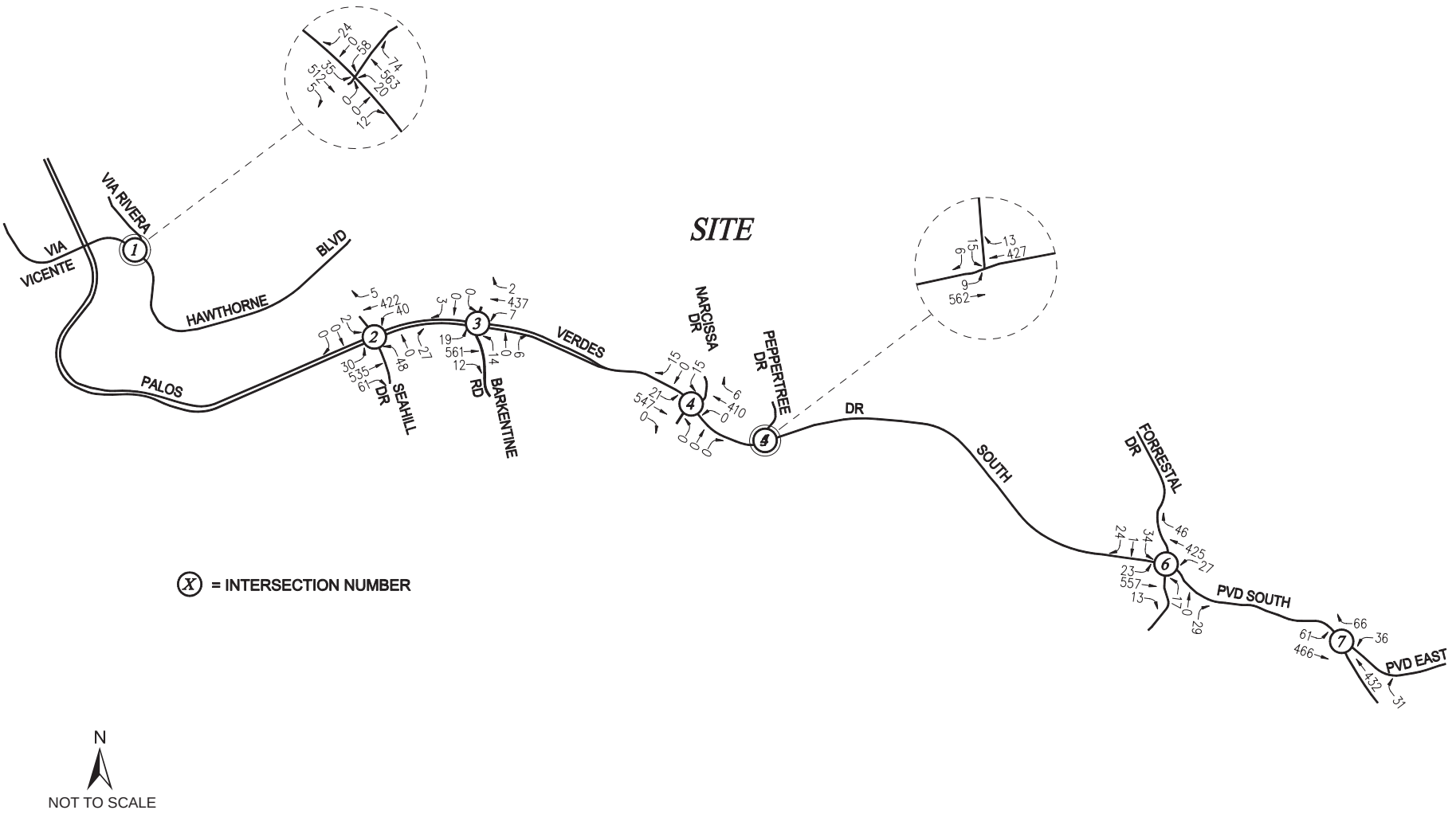
The significance of the potential impacts of traffic generated by buildout under the proposed ordinance revisions ("project") at the study street segments was identified using the two-lane roadway criteria set forth in the *County of Los Angeles Traffic Impact Analysis Report Guidelines* document. According to the County's published traffic impact study guidelines, a transportation impact on a roadway is deemed significant based on a percentage increase in passenger cars per hour (PCPH) by the project. Table 4.10-4 shows the existing traffic conditions on the two analyzed street segments. As shown in the Table both street segments currently operate at LOS A.



Existing Traffic Volumes - AM Peak Hour

Source: Linscott, Law & Greenspon, Engineers, March 2011.

Figure 4.10-1



Existing Traffic Volumes - PM Peak Hour

Figure 4.10-2

Source: Linscott, Law & Greenspon, Engineers, March 2011.

Table 4.10-4
Existing Roadway Traffic Conditions

Roadway Segment	Time Period	Directional Split			Total Capacity (PCPH)	Peak Hour Vol	V/C	LOS
1. Palos Verdes Drive South east of Seacove Drive (between Seacove Drive and Wayfarer Chapel driveway)	AM	70	/	30	2,500	1,122	0.449	A
	PM	60	/	40	2,650	1,023	0.386	A
2. Palos Verdes Drive South east of Cherry Hill Lane (between Cherry Hill Lane and Schooner Drive)	AM	70	/	30	2,500	1,125	0.450	A
	PM	60	/	40	2,650	972	0.367	A

Source: Linscott, Law and Greenspan, 2011.

d. Existing Public Bus Transit Service. Public bus transit service within the Zone 2 project study area is currently provided by the Los Angeles County Metropolitan Transportation Authority, Palos Verdes Peninsula Transit Authority, and the City of Los Angeles Department of Transportation. A summary of the existing transit service, including the transit route, destinations and peak hour headways is presented in Table 4.10-5.

Table 4.10-5
Existing Transit Near Project Site

Route	Destinations	Roadways Near site	No. of Buses During Peak Hour		
			Direction	AM	PM
Metro 344	Rancho Palos Verdes to Harbor Gateway (via Torrance)	Palos Verdes Drive West, Palos Verdes Drive South, Hawthorne Boulevard	NB SB	3 4	3 3
LADOT Commuter Express 448	Downtown Los Angeles to Rancho Palos Verdes (via Lomita, Harbor City, Wilmington, Century Freeway)	Hawthorne Boulevard	NB SB	1 0	0 3
PVPTA Blue Line	Rancho Palos Verdes	Palos Verdes Drive West, Hawthorne Boulevard	EB WB	1 2	1 1
PVPTA Gold Line	Rolling Hills to Rancho Palos Verdes	Palos Verdes Drive West, Palos Verdes Drive South	EB WB	2 2	1 1
PVPTA Orange Line	Rolling Hills to Rancho Palos Verdes	Palos Verdes Drive West, Palos Verdes Drive South	EB WB	0 2	1 0
PVPTA 226	Palos Verdes Estates	Palos Verdes Drive West	NB SB	0 2	1 0

Source: Linscott, Law and Greenspan, 2011.

e. Regulatory Setting

State Highway Analysis**.** The purpose of the Caltrans *Guide for the Preparation of Traffic Impact Studies (State of California Department of Transportation, December 2002)* is to provide a safe and efficient State transportation system, provide consistency and uniformity in the identification of traffic impacts generated by local land use proposals, and consistency and equity in the identification of measures to mitigate the traffic impacts generated by land use proposals. The Caltrans traffic studies guide identifies review of substantial individual projects, which might impact the CMP State Highway transportation system.

County of Los Angeles Congestion Management Program**.** The purpose of the Congestion Management Program (CMP) is to develop a coordinated approach to managing and decreasing traffic congestion by linking the various transportation, land use and air quality planning programs throughout the County. The program is consistent with the Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP) and SCAG's Regional Transportation Improvement Program. The CMP program requires review of substantial individual projects, which might on their own impact the CMP transportation system.

City of Rancho Palos Verdes General Plan**.** The Urban Environment Element of the General Plan provides goals and policies for circulation, noise, visual aspects and public services and infrastructure. The Element describes the City's existing transportation system and future conditions related to transportation, as a result of growth in traffic. The Urban Environment Element policies that are relevant to the proposed project include the following:

- *Design public access into residential areas to control non-local traffic.*
- *Require that all new developments to establish walkway, bikeway and equestrian systems, where appropriate.*
- *Require adequate off-street parking for all existing and future development.*

City of Rancho Palos Verdes Zoning Code. According to the RPV Zoning Map, the Portuguese Bend area is located within the Single Family Residential District, including both RS-1 (one-acre minimum lot size) and RS-2 (20,000 square-foot minimum lot size) zoned lots. The following general standards (Code Section 17.02.030, *Development Standards*) relevant to traffic and circulation apply to the Single Family Residential District:

E. Parking/Driveway Standards.

1. *A minimum of two enclosed parking spaces shall be provided and maintained in a garage, and a minimum of two unenclosed parking spaces shall be provided and maintained as a driveway, on the property of each single-family dwelling unit containing less than five thousand square feet of habitable space, as determined by the director.*

2. *A minimum of three enclosed parking spaces shall be provided and maintained in a garage, and a minimum of three unenclosed parking spaces shall be provided and maintained as a driveway, on the property of each single-family dwelling unit containing five thousand square feet or more of habitable space, as determined by the director.*

3. *A garage with a direct access driveway from the street of access shall not be located less than twenty feet from the front or street-side property line, whichever is the street of access.*

4. *In addition to the parking requirements for the primary single-family residence on a property, parking for city-approved second units shall be provided in accordance with Chapter 17.10 (Second Unit Development Standards).*

5. *An enclosed parking space shall have an unobstructed ground space of no less than nine feet in width by twenty feet in depth, with a minimum of seven feet of vertical clearance over the space. An unenclosed parking space shall have an unobstructed ground space of no less than nine feet in width by twenty feet in depth.*

6. *The following minimum driveway widths and turning radii shall be provided for all driveways leading from the street of access to a garage or other parking area on a residential parcel:*

    a. *A driveway shall be a minimum width of ten feet; and*

    b. *A paved twenty-five-foot turning radius shall be provided between the garage or other parking area and the street of access for driveways which have an average slope of ten percent or more, and which are fifty feet or more in length.*

7. *Driveways shall take into account the driveway standards required by the department of public works for driveway entrances located in the public right-of-way.*

8. *A driveway that is located adjacent to a side property line shall provide a minimum eighteen-inch-wide landscaped area between the side property line and the adjacent driveway, unless such buffer would reduce the minimum width of the driveway to less than ten feet, in which case the width of the landscape buffer may be narrowed or eliminated at the discretion of the director.*

9. *All driveways shall be built and maintained in accordance with the specifications of the Los Angeles County fire department. If there is any inconsistency between the standards imposed by this chapter and the standards imposed by the Los Angeles County fire department, the stricter shall apply.*

10. *Unless otherwise expressly permitted elsewhere in this title, enclosed tandem parking spaces may only be used for parking spaces in excess of the minimum requirements of subsections (1) and (2) of this section, provided that each space meets the minimum dimensions specified in subsection (5) of this section.*

4.8.2 Impact Analysis

a. Methodology and Significance Thresholds. As part of the traffic study prepared for the project by Linscott, Law and Greenspan, existing manual counts of vehicular turning movements were conducted in May 2010 at six of the seven existing study intersections and in March 2011 for the remaining study intersection (i.e., Intersection No. 1, Hawthorne

Boulevard/Via Rivera) during the weekday morning (AM) and afternoon (PM) commuter periods to determine the peak hour traffic volumes. The manual counts were conducted by traffic count subconsultants at the study intersections from 7:00 to 9:00 AM to determine the weekday AM peak commuter hour, and from 4:00 to 6:00 PM to determine the weekday PM peak commuter hour.

The following traffic scenarios were analyzed in the traffic study:

1. ***Existing Conditions*** *– The analysis of existing AM and PM weekday peak hour traffic conditions provides a basis for the assessment of future traffic conditions. The existing conditions analysis includes a description of key area streets and highways, traffic volumes, and current intersection and roadway operating conditions.*

2. ***Existing with Project Conditions—*** *This scenario identifies the incremental impacts of the proposed project on the existing AM and PM weekday peak hour traffic conditions by adding the traffic expected to be generated by the project to the existing traffic forecasts.*

3. ***Year 2020 Future Pre-project Conditions*** *– This scenario projects the future traffic growth and intersection operating conditions that could be expected from regional growth and known related projects in the vicinity of the project site. These analyses provide the future baseline conditions against which project specific impacts are evaluated.*

4. ***Year 2020 Future with Project Conditions*** *– This analysis identifies the incremental impacts of the proposed project on future traffic operating conditions by adding the traffic expected to be generated by the project conditions to the year 2020 pre-project traffic forecasts.*

Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Traffic volumes to be generated by the proposed project were forecast for the weekday AM and PM peak hours, and over a 24-hour period. The resource typically used by traffic engineers (including the City of Rancho Palos Verdes) to forecast trip generation for development projects is the Institute of Transportation Engineers' (ITE) Trip Generation manual. ITE Land Use Code 210 (Single-Family Detached Housing) trip generation average rates were used to forecast traffic volumes for the proposed project.

Intersection Methodology. Existing AM and PM peak hour operating conditions for the 7 key study intersections were evaluated using the Intersection Capacity Utilization (ICU) methodology for signalized intersections and the methodology outlined in Chapter 17 of the *Highway Capacity Manual 2000* (HCM2000) for unsignalized intersections.

Intersection Capacity Utilization Method of Analysis. City of Rancho Palos Verdes and Los Angeles County Congestion Management Program (CMP) requirements, existing weekday AM and PM peak hours operating conditions for signalized study intersections be evaluated using the Intersection Capacity Utilization (ICU) method. The ICU methodology is intended for signalized intersection analyses and estimates the volume-to-capacity (V/C) relationship for

an intersection based on the individual V/C ratios for key conflicting traffic movements. The ICU analysis methodology describes the operation of a signalized intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on corresponding Volume/Capacity (V/C) ratios. It is important to note that none of the study area intersections are currently signalized.

The ICU numerical value represents the percent signal (green) time, and thus capacity, required by existing and/or future traffic. The ICU value translates to a LOS estimate, which is a relative measure of an intersection's performance. The six qualitative categories of Level of Service have been defined along with the corresponding ICU value range and are shown in Table 4.10-6. Pursuant to Los Angeles County CMP requirements, the ICU calculations use a lane capacity of 1,600 vehicles per hour (vph) for left-turn, through, and right-turn lanes, and a dual left-turn capacity of 2,880 vph. Additionally, a clearance adjustment factor of 0.10 was added to each LOS calculation to account for time devoted to the yellow and all-red intervals.

Table 4.10-6
Level of Service Criteria for Signalized Intersections (ICU Methodology)

Level of Service (LOS)	Intersection Capacity Utilization Value (V/C)	Level of Service Description
A	≤ 0.600	EXCELLENT. No vehicle waits longer than one red light, and no approach phase is fully used.
B	0.601 – 0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 – 0.800	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 – 0.900	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 – 1.000	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.000	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Potentially very long delays with continuously increasing queue lengths.

Highway Capacity Manual Method of Analysis (Unsignalized Intersections). The HCM2000 unsignalized methodology for stop-controlled intersections was utilized for the analysis of the unsignalized intersections. This methodology estimates the average control delay for each of the subject movements and determines the level of service for each constrained movement. Average control delay for any particular movement is a function of the capacity of the approach and the degree of saturation. The overall average control delay is measured in seconds per vehicle, and the level of service is then calculated for the entire intersection for a four-way stop controlled intersection. For a two-way stop controlled intersection, it should be noted that although the HCM2000 provides a procedure to calculate a value to reflect the intersection average control delay, it does not define a level of service for the intersection as a whole. Rather, the control delay and level of service for the most constrained

approach are calculated and are reported for the two-way stop controlled intersections. The six qualitative categories of Level of Service have been defined along with the corresponding HCM control delay value range, as shown in Table 4.10-2. The LOS of an unsignalized intersection ranges LOS A (free-flow conditions) to F (severely congested conditions), based on delay experienced per vehicle.

Intersection Operation. The significance of the potential project generated traffic impacts at any signalized intersection is identified using criteria set forth in the Los Angeles County Department of Public Works' *Traffic Impact Analysis Report Guidelines, 1997* which is the standard practice for the City of Rancho Palos Verdes. According to the County's published guidelines, an impact is considered significant if the project-related increase in the v/c ratio equals or exceeds the thresholds presented in Table 4.10-7.

Table 4.10-7
Signalized Intersection Impact Threshold Criteria

Pre-Project ICU	Level of Service	Project Related Increase in ICU
≥ 0.71 - 0.80	C	equal to or greater than 0.04
≥ 0.81 - 0.90	D	equal to or greater than 0.02
≥ 0.91 or more	E/F	equal to or greater than 0.01

Source: Traffic Impact Analysis Report Guidelines, Los Angeles County Department of Public Works, 1997

The City of Rancho Palos Verdes has established the following thresholds of significance for unsignalized intersections:

- *A significant impact would occur at an unsignalized intersection when the addition of project-generated trips causes the peak hour level of service of the intersection to change from acceptable operation (LOS D or better) to deficient operation (LOS E or F); or*
- *A significant impact would occur at an unsignalized intersection if the peak hour level of service of the intersection is LOS E or F and the addition of project-generated trips changes the delay by 2.0 seconds or more.*

Street Segment Analysis. The following two roadway street segments were analyzed:

1. *Palos Verdes Drive South east of Seacove Drive (between Seacove Drive and Wayfarers Chapel driveway)*
2. *Palos Verdes Drive South east of Cherry Hill Lane (between Cherry Hill Lane and Schooner Drive)*

Automatic 24-hour machine traffic counts were conducted at the above locations during a mid-week day (i.e., Tuesday, Wednesday, or Thursday) in May 2010. The average weekday AM and PM peak hour volumes were then calculated based on the automatic 24-hour machine traffic counts. Copies of the 24-hour machine counts are contained in Appendix A of the traffic report.

Potential project-generated traffic at the analyzed street segments was identified using the two-lane roadway criteria set forth in the *County of Los Angeles Traffic Impact Analysis Report Guidelines* document, which is standard practice for the City of Rancho Palos Verdes . According to the County's published traffic impact study guidelines, a transportation impact on a roadway is deemed significant based on a percentage increase in passenger cars per hour (PCPH) by the project as shown in Table 4.10-8.

Future Traffic Volume and Distribution.

Horizon year (Year 2020), background traffic growth estimates have been calculated by using an ambient traffic growth factor. The ambient traffic growth factor is intended to include unknown related projects in the study area, as well as account for typical growth in traffic volumes due to the development of projects outside the study area. The future growth in traffic

Table 4.10-8
Street Segment Impact Threshold Criteria

Two-lane Roadways				
Directional Split	Total Capacity (PCPH)	Percent Increase in Passenger Cars Per Hour (PCPH) by Project		
		Pre-project LOS		
		C	D	E/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

Source: Linscott, Law and Greenspan, 2011

volumes has been calculated at 0.6 percent (0.6%) per year. The ambient growth factor was based on review of the background traffic growth estimates for the Palos Verdes area published in the 2010 Congestion Management Program for Los Angeles County, which indicate that existing traffic volumes would be expected to increase at an annual rate of approximately 0.51 percent (0.51% per year) between years 2010 and 2020. However, in order to provide a conservative analysis, the higher ambient growth factor of 0.60 percent (0.60% per year) contained in the 2004 Congestion Management Program for Los Angeles County was utilized in this analysis. Application of the ambient traffic growth factor to existing traffic volumes results in a 6.0 percent (6.0%) increase in existing traffic volumes to horizon Year 2020.

In order to make a realistic estimate of future on-street conditions prior to adoption of and potential development under the Zone 2 Landslide Moratorium Ordinance Revisions project, the status of other known development projects (related projects) in the area has been researched at the City of Rancho Palos Verdes, City of Rolling Hills

Estates, and City of Los Angeles. With this information, the potential impact of the proposed project can be evaluated within the context of the cumulative impact of all ongoing development. Based on current research, 34 related projects are located in the project vicinity that have either been built, but not yet fully occupied, or are being processed for approval. These 34 related projects have been included as part of the cumulative background setting in Year 2020.

Traffic volumes expected to be generated by the related projects were calculated using rates provided in the ITE Trip Generation manual. The related projects' respective traffic generation for the weekday AM and PM peak hours, as well as on a daily basis for a typical weekday, is summarized in Table 4.10-9.

Table 4.10-9
Year 2020 Future Pre-Project Conditions Summary

#	Key Intersection	Time Period	Future Background Year 2020		
			Delay	V/C	LOS
1	Via Rivera/Hawthorne Boulevard	AM PM	122.8 89.5	0.916 0.698	F F
2	Seahill Drive-Tramonto Drive/Palos Verdes Drive South	AM PM	39.8 43.8	0.577 0.479	E E
3	Barkentine Road/Palos Verdes Drive South	AM PM	24.9 27.6	0.133 0.115	C D
4	Narcissa Drive/Palos Verdes Drive South	AM PM	23.1 23.2	0.111 0.121	C C
5	Peppertree Drive/Palos Verdes Drive South	AM PM	26.7 27.7	0.105 0.122	D D
6	Forrestal Drive/Palos Verdes Drive South	AM PM	65.8 75.6	0.574 0.597	F F
7	Palos Verdes Drive East / Palos Verdes Drive South	AM PM	8.5 6.7	0.366 0.507	A A

Source: Linscott, Law and Greenspan, 2012.

Project Traffic Projections. In order to estimate the traffic impact characteristics of the proposed project, a multi-step process was utilized. The first step is trip generation, which estimates the total arriving and departing traffic volumes on a peak hour and daily basis. The traffic generation potential is forecast by applying the appropriate vehicle trip generation equations or rates to the project development tabulation.

The second step of the forecasting process is trip distribution, which identifies the origins and destinations of inbound and outbound project traffic volumes. These origins and destinations are typically based on demographics and existing/anticipated travel patterns in the study area. The third step is traffic assignment, which involves the allocation of project traffic to study area streets and intersections. Traffic assignment allocates specific volume forecasts to individual roadway links and intersection turning movements throughout the study area.

Project Trip Generation. Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Traffic volumes to be generated by the proposed project were forecast for the weekday AM and PM peak hours. As shown on Table 4.10-10, the proposed project is expected to generate 450 new

daily trips including approximately 35 vehicle trips (9 inbound trips and 26 outbound trips) during the weekday AM peak hour. During the weekday PM peak hour, the proposed project is expected to generate 47 vehicle trips (30 inbound trips and 17 outbound trips).

Project Traffic Distribution. The directional traffic distribution pattern for the proposed project is presented in Figure 4.10-3. Project traffic volumes both entering and exiting the site have been distributed and assigned to the adjacent street system based on the following considerations:

- *The site's proximity to major traffic corridors (i.e., Palos Verdes Drive South),*
- *Expected localized traffic flow patterns based on adjacent roadway channelization and presence of traffic signals,*
- *Existing intersection traffic volumes,*
- *Ingress/egress availability at the project site, and*
- *Input from City staff*

The traffic volume assignments reflect the traffic distribution characteristics shown in Figure 4.10-3 and the project traffic generation forecasts presented in Table 4.10-10.

Table 4.10-10
Project Trip Generation Summary

Land Use	Size	Net New Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
			IN	OUT	TOTAL	IN	OUT	TOTAL
Single Family Housing	47 units	450	9	26	35	30	17	47

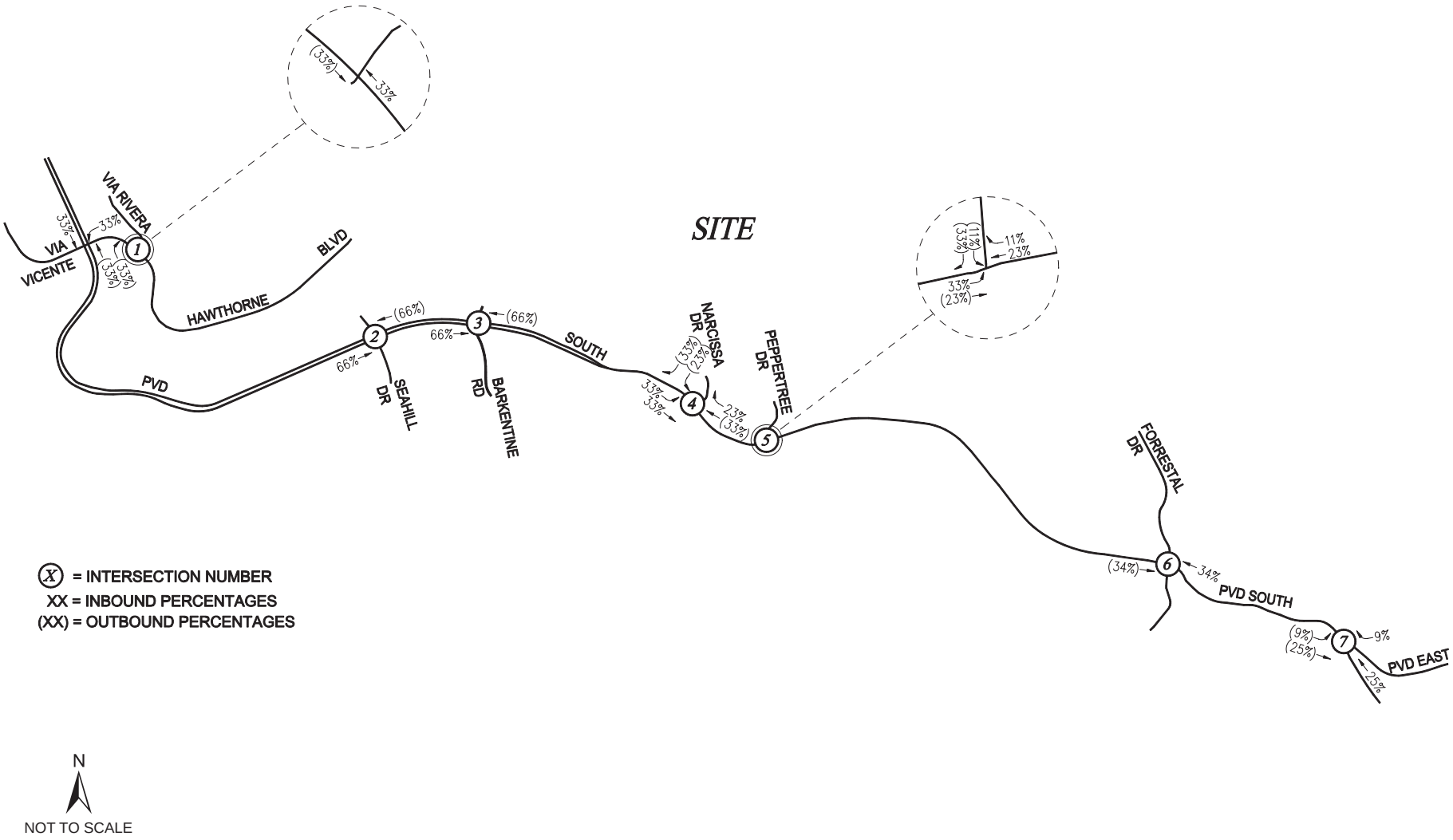
Source: Linscott, Law and Greenspan, 2011
ITE Land Use Code 210 (Single-Family Detached Housing) trip generation average rates.

Congestion Management Plan (CMP) Traffic Impact Criteria. The Congestion Management Program (CMP) is a state-mandated program that was enacted by the State Legislature with the passage of Proposition 111 in 1990. The program is intended to address the impact of local growth on the regional transportation system.

As required by the *2010 Congestion Management Program for Los Angeles County*, a Traffic Impact Assessment (TIA) has been prepared to determine the potential impacts on designated monitoring locations on the CMP highway system. The analysis has been prepared in accordance with procedures outlined in the *2010 Congestion Management Program for Los Angeles County*, County of Los Angeles Metropolitan Transportation Authority, October 2010.

Impacts related to traffic and circulation would be considered significant if the project would:

> *Exceed the capacity of the existing circulation system, based on an applicable measure of effectiveness (as designated in a general plan policy, ordinance, etc.), taking into account all relevant components of the circulation system, including but not limited to:*
>
> - *Intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit*
> - *Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways*



Project Traffic Distribution Pattern

Figure 4.10-3

Source: Linscott, Law & Greenspon, Engineers, March 2011.

- *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*
- *Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment)*
- *Result in inadequate emergency access*
- *Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)*

As discussed in the Initial Study (Appendix A), the project, by its nature as single family residences, would not result in a change in air traffic patterns by increasing traffic levels or a change in location that results in substantial safety risks. Therefore, as discussed in the Initial Study, no impact to air traffic patterns would occur. Therefore, the following discussion will focus on traffic on the street system, level of service standards established by the county congestion management agency, hazards due to design feature, emergency access, and alternative transportation.

b. Project Impacts and Mitigation Measures.

Impact T-1 **The potential increase in vehicles traveling on the surrounding roadway network from buildout under the proposed ordinance revisions would not result in significant impacts at any of the study area intersections under existing plus project conditions. However, the increase in vehicle trips under cumulative conditions would result in significant impacts at three of the study area intersections. Mitigation Measure T-1(a) would reduce impacts to a less than significant level at the intersection of Hawthorne Boulevard/Via Rivera. However, mitigation measures T-1 b through c were found to be infeasible and would not reduce cumulative impacts to a less than significant level at Forrestal Drive/Palos Verdes Drive South and Seahill Drive-Tramonto Drive/Palos Verdes Drive South. Impacts at these two intersections would therefore be Class I, *significant and unavoidable*.**

Table 4.10-11 shows the change in V/C or Delay from existing conditions (see Table 4.10-3) to existing plus project scenario. As shown in the table, the additional traffic as a result of the proposed project would not result in significant impacts at any of the seven study area intersections.

Table 4.10-12 shows the change in V/C or Delay from the Year 2020 Future Pre-project Conditions scenario (see Table 4.10-11) to the Year 2020 Future with Project scenario.

Table 4.10-11
Existing Plus Project Intersection Impacts

#	Intersection	Time Period	Delay	Significant Impact?
1	Via Rivera/Hawthorne Boulevard	AM PM	1.0 0.9	NO NO
2	Seahill Drive-Tramonto Drive/Palos Verdes Drive South	AM PM	0.9 1.1	NO NO
3	Barkentine Road/Palos Verdes Drive South	AM PM	0.4 0.7	NO NO
4	Narcissa Drive/Palos Verdes Drive South	AM PM	1.4 0.5	NO NO
5	Peppertree Drive/Palos Verdes Drive South	AM PM	-0.8 -0.6	NO NO
6	Forrestal Drive/Palos Verdes Drive South	AM PM	0.7 0.8	NO NO
7	Palos Verdes Drive East / Palos Verdes Drive South	AM PM	0.1 0.2	NO NO

Source: Linscott, Law and Greenspan, 2011.

Table 4.10-12
Year 2020 Future With Project Scenario Intersections

#	Key Intersection	Time Period	Change in V/C or Delay	Significant Impact?
1	Via Rivera/Hawthorne Boulevard	AM PM	4.3 4.6	YES YES
2	Seahill Drive-Tramonto Drive/Palos Verdes Drive South	AM PM	1.9 3.0	NO YES
3	Barkentine Road/Palos Verdes Drive South	AM PM	0.6 1.1	NO NO
4	Narcissa Drive/Palos Verdes Drive South	AM PM	2.6 1.1	NO NO
5	Peppertree Drive/Palos Verdes Drive South	AM PM	-1.1 -1.0	NO NO
6	Forrestal Drive/Palos Verdes Drive South	AM PM	2.4 3.7	YES YES
7	Palos Verdes Drive East / Palos Verdes Drive South	AM PM	0.4 0.9	NO NO

Source: Linscott, Law and Greenspan, 2011

As shown in Table 4.10-12, under cumulative conditions in 2020, the proposed project would result in significant impacts at the following three intersections:

- Hawthorne Boulevard/Via Rivera
- Seahill Drive-Tramonto Drive/Palos Verdes Drive South
- Forrestal Drive/Palos Verdes Drive South

Although no intersections would exceed thresholds under the existing plus project scenario, because three intersections would exceed thresholds in the Year 2020 Future With Project scenario as identified in Table 4.10-12, impacts would be potentially significant.

Mitigation Measures. As discussed above, the proposed project would result in potentially significant cumulative impacts at three intersections during future year (2020). Mitigation measures T-1(a-c) were designed to reduce cumulative impacts at the intersections that would be adversely affected by traffic generated by the project, including Hawthorne Boulevard/Via Rivera, Forrestal Drive/Palos Verdes Drive South, and Seahill Drive-Tramonto Drive/Palos Verdes Drive South.

T-1(a) **Hawthorne Boulevard/Via Rivera**. The individual project applicants shall provide a proportionate fair share contribution to the City to restripe the southbound approach of Via Rivera to provide two lanes (a 10-foot wide single left-turn lane and a 12-foot wide optional through-right combination lane) and/or a traffic signal shall be installed at the intersection of Hawthorne Boulevard and Via Rivera in order to improve overall operations and assignment of motorist right-of-way.

T-1(b) **Seahill Drive-Tramonto Drive/Palos Verdes Drive South.** The individual project applicants shall provide a proportionate fair-share contribution towards the modification of the intersection to provide an acceleration lane to better facilitate the northbound left-turn movement (from Seahill Drive) onto westbound Palos Verdes Drive South. *(Note that the City can only require a fair share payment; therefore, implementation of the improvements required in this Mitigation Measure cannot be guaranteed. Impacts at this intersection would be significant and unavoidable. Please see discussion under Significance After Mitigation below for further explanation.)*

T-1(c) **Forrestal Drive/Palos Verdes Drive South.** A traffic signal shall be installed at this intersection in order to improve overall operations and assignment of motorist right-of-way. *(Note that impacts at this intersection have been assumed to be significant and unavoidable. Please see discussion under Significance After Mitigation below for further explanation.)*

Significance After Mitigation. Mitigation measures T-1(a-c) were designed to reduce cumulative impacts. As shown in Table 4.10-13, Mitigation Measure T-1(a) would reduce the potentially significant project-related impact to the intersection of Hawthorne Boulevard/Via Rivera to a less than significant level. However, mitigation measures T-1(b-c) were found to be infeasible. Therefore, as shown in Table 4.10-13, impacts to two intersections would be significant and unavoidable. These intersections include:

- Seahill Drive-Tramonto Drive/Palos Verdes Drive South – PM Peak Hour (Cumulative Impact)
- Forrestal Drive/Palos Verdes Drive South – AM and PM Peak Hours (Project and Cumulative Impact)

Table 4.10-13
Year 2020 Future Background Projects Plus Mitigated Project Intersection LOS

Key Intersection		Time Period	Project Change in V/C or Delay	Significant Impact	Project w/Mitigation Change in V/C or Delay	Significant Impact?
1	Hawthorne Boulevard/ Via Rivera[1]	AM	4.3	**YES**	-39.8	NO
		PM	4.6	**YES**	-9.8	NO
2	Seahill Drive-Tramonto Drive/Palos Verdes Drive South	AM	1.9	**NO**	-20.1	**NO**
		PM	3.0	**YES**	-22.6	**YES**
6	Forrestal Drive/Palos Verdes Drive South	AM	2.4	**YES**	0.139	**YES**
		PM	3.7	**YES**	0.090	**YES**

Source: Linscott, Law and Greenspan, 2010.
[1] The mitigation measure for this intersection consists of restriping the southbound approach of Via Rivera to provide a single left-turn land and an optional through-right combination lane

Each intersection's level of significance after mitigation is discussed below:

- **Hawthorne Boulevard/Via Rivera**. Restriping the southbound approach of Via Rivera to provide two lanes would reduce intersection delay, which would improve operations to 83.0 seconds of delay (LOS F) from 127.1 seconds of delay (LOS F) during the AM peak hour. During the PM peak hour, the improvement is expected to improve operations to 79.7 seconds of delay (LOS F) from 94.1 seconds of delay (LOS F). While this restriping measure does improve overall intersection operations as a whole by reducing the overall southbound approach delay, it should be noted that the southbound left-turn movement delay during the AM and PM peak hours is 113.5 seconds (LOS F) and 107.9 seconds (LOS F), respectively.

- **Seahill Drive-Tramonto Drive/Palos Verdes Drive South.** The mitigation measure that would fully mitigate the project-related impact at this intersection (Mitigation Measure T-1(b)) would require the applicant to provide a proportionate fair-share contribution towards the modification of the intersection to provide an acceleration lane to better facilitate the northbound left-turn movement (from Seahill Drive) onto westbound Palos

Verdes Drive South. However, since the fair share contribution to this mitigation measure would not allow the City to fully implement the measure absent of other funding resources, the mitigation was conservatively deemed infeasible and no feasible mitigation measures were identified that would mitigate project-related impacts at this location. As shown in Table 4.10-13, impacts would be significant and unavoidable.

- **Forrestal Drive/Palos Verdes Drive South.** The mitigation measure that would fully mitigate the project-related impact at this intersection (Mitigation Measure T-1(c)) would require a traffic signal to be installed at this intersection. Although installation of the signal may be technically feasible, there may be other policy reasons for finding the traffic signal inappropriate and infeasible at this time. If the City were to approve signalization of the intersection, the impact would be reduced to less than significant. If, however, the City determines that signalization is not feasible, no other feasible mitigation measures were identified that would mitigate project-related impacts at this location. Therefore, assuming that the City does not authorize signalization of the intersection, as shown in Table 4.10-13, the project's impact at this intersection would be significant and unavoidable.

Impact T-2 The proposed project would increase traffic levels along roadways in the vicinity of the project site. However, the projected increases are below City-adopted thresholds at both studied street segments. Therefore, impacts to these two street segments would be Class III, *less than significant*.

Neighborhood traffic impacts were evaluated in the traffic study on the following two street segments:

1. *Palos Verdes Drive South east of Seacove Drive (between Seacove Drive and Wayfarers Chapel driveway)*
2. *Palos Verdes Drive South east of Cherry Hill Lane (between Cherry Hill Lane and Schooner Drive)*

The significance of the potential impacts of project generated traffic at the analyzed street segments was identified using the two-lane roadway criteria set forth in the *County of Los Angeles Traffic Impact Analysis Report Guidelines* document. According to the County's published traffic impact study guidelines, a transportation impact on a roadway is deemed significant based on a percentage increase in passenger cars per hour (PCPH).

The forecast traffic conditions at the analyzed street segments for existing, year 2020 future pre-project (i.e., existing traffic volumes, ambient traffic growth and related projects traffic volumes) and Year 2020 future with project analysis scenarios are summarized in Table 4.10-14. The

average AM and PM peak hour volumes were utilized to evaluate existing conditions on the roadway. A 0.6 % annual ambient growth rate through the year 2020 as well as related projects traffic volumes were conservatively added to the existing weekday AM and PM peak hour volumes in order to estimate the future pre-project traffic volumes. As shown in Table 4.10-14, the proposed project AM and PM day trips would incrementally affect traffic volumes on the analyzed street segments. However, application of the County's two-lane roadway threshold criteria for street segment analysis indicates that the proposed project is not anticipated to significantly impact the analyzed street segments. Therefore, impacts would be less than significant without mitigation.

Table 4.10-14
Roadway Segments Impacts

#	Roadway Segment	Time Period	Existing Traffic Conditions		Year 2020 Traffic Conditions w/ Future Background Projects		Year 2020 With Project Traffic Conditions			
			V/C	LOS	V/C	LOS	V/C	LOS	Percent Increase	Significant Impact?
1	Palos Verdes Drive South east of Seacove Drive (between Seacove Drive and Wayfarers Chapel driveway)	AM PM	0.449 0.386	A A	0.592 0.569	A A	0.601 0.581	B A	1.6% 2.1%	No No
2	Palos Verdes Drive South east of Cherry Hill Lane (between Cherry Hill Lane and Schooner Drive)	AM PM	0.450 0.367	A A	0.588 0.541	A A	0.593 0.547	A A	0.8% 1.1%	No No

Source: Linscott, Law and Greenspan, 2011.

Mitigation Measures. As impacts would be less than significant, mitigation is not required.

Significance After Mitigation. Impacts would be less than significant without mitigation.

Impact T-3 **Based on Los Angeles County Congestion Management Program (CMP) criteria, impacts to CMP identified freeway monitoring segments and arterial intersections as a result of buildout under the proposed project would be Class III, *less than significant*.**

The 2004 Congestion Management Program (CMP) is a state-mandated program that was enacted by the State Legislature with the passage of Proposition 111 in 1990. The program is intended to address the impact of local growth on the regional transportation system.

Freeway monitoring locations. The CMP Traffic Impact Assessment (TIA) guidelines require that a traffic impact assessment must be prepared if the proposed project adds 150 or more trips (in either direction) during either the AM or PM weekday peak periods. The proposed project would not add 150 or more trips (in either direction) during either the AM or PM weekday peak hours to the CMP freeway monitoring location. Therefore, no further review of potential impacts to CMP freeway monitoring locations is required.

Intersection monitoring locations. The following CMP intersection monitoring locations have been identified in the project vicinity:

CMP Station	Intersection
Int. No. 58	Pacific Coast Highway at Western Avenue
Int. No. 84	Western Avenue at 9th Street
Int. No. 128	Western Avenue at Toscanini Drive
Int. No. 151	Pacific Coast Highway at Crenshaw Boulevard
Int. No. 152	Pacific Coast Highway at Hawthorne Boulevard
Int. No. 153	Pacific Coast Highway at Palos Verdes Boulevard

The CMP TIA guidelines require that intersection monitoring locations must be examined if the proposed project would add 50 or more trips during either the AM or PM weekday peak periods. The proposed project would not add 50 or more trips during the AM or PM peak hours at the CMP monitoring intersection. As such, no further review of potential impacts to intersection monitoring locations that are part of the CMP highway system is required.

Transit Service. As required by the *2010 Congestion Management Program for Los Angeles County*, a review has been made of the CMP transit service. Existing transit service is provided in the vicinity of the proposed project. The project trip generation, as shown in Table 5-2, was adjusted by values set forth in the CMP (i.e., person trips equal 1.4 times vehicle trips, and transit trips equal 3.5 percent of the total person trips) to estimate transit trip generation. Pursuant to the CMP guidelines, the proposed project is forecast to generate demand for two (2) transit trip during the weekday AM peak hour, two (2) transit trips during the weekday PM peak hour, and 22 daily transit trips during the weekday. The calculations are as follows:

- Weekday AM Peak Hour = 35 × 1.4 × 0.035 = 2 Transit Trips
- Weekday PM Peak Hour = 47 × 1.4 × 0.035 = 2 Transit Trips
- Weekday Daily Trips = 450 × 1.4 × 0.035 = 22 Transit Trips

Seven bus transit lines and routes are provided adjacent to or in close proximity to the project site, with two of these transit lines and routes directly serving the Portuguese Bend community. A total of four different bus transit providers provide service within the study area. These seven transit lines provide service for an average (i.e., an average of the directional number of buses during the peak hours) of approximately 20 buses during the AM peak hour and roughly 17 buses during the PM peak hour. Therefore, based on the above calculated peak hour transit trips, this would correspond to less than one transit rider per bus. Given the low number of

generated transit trips per bus, impacts on existing or future transit services in the project area would not be significant.

Mitigation Measures. Mitigation is not required.

Significance After Mitigation. Impacts would be less than significant without mitigation.

Impact T-4 Access to the project site during construction activity and during the operational phase of the project would be provided via Narcissa Drive and Peppertree Drive. Although there would be an increase of traffic during construction activity, construction traffic would not result in any significant impacts. In addition, emergency access during both construction and operational phases would be adequate to serve the Portuguese Bend community. Therefore, impacts relating to site access and circulation would be Class III, *less than significant.*

The Traffic Study provided by LLG Engineers contains two separate memorandums regarding construction traffic and emergency access and evacuation (see Appendix G for "Emergency Evacuation Review" Memo and "Construction Impact Analysis" Memo). The following summarizes the analysis contained in Appendix G regarding these issues.

Vehicular access to the project site during construction, during the operational phase of the project and during an emergency evacuation would be provided via the existing access gates at Narcissa Drive and Peppertree Drive. All streets in the Portuguese Bend community are private, and the community itself is gated. The gates restricting access to the community on Narcissa Drive and Peppertree Drive are set back approximately 190 and 90 feet from Palos Verdes Drive South, respectively. The lane configurations, as described above in the *Setting*, would remain the same as currently exists. The following discussion is based on supplemental analyses prepared by LLG Engineers and included with the Traffic Impact Study in EIR Appendix G.

Construction Traffic. During peak building construction activities (using the highly conservative assumption that all 47 lots would be under construction concurrently), construction worker vehicles and trucks would generate up to approximately 852 vehicle trips per day (426 inbound trips and 426 outbound trips). The inbound and outbound construction worker trips are anticipated to occur primarily outside of the AM and PM commuter peak hours. Haul trucks and delivery trucks would access the site via Palos Verdes Drive South, Peppertree Drive and Narcissa Drive. A total of eight material delivery trucks per hour are anticipated to be generated to/from the project site during peak construction activities. With two gateways on Palos Verdes Drive South (i.e., at Narcissa Drive and Peppertree Drive), this would result in no more than four vehicles at each of the gateway study intersections during either the AM or PM peak hour. As noted in the Traffic Impact Study contained in Appendix G, these intersections are projected to operate at LOS D as a result of the proposed project and as shown above in tables 4.10-12 and 4.10-13 above this temporary increase would not result in any significant impacts based on the City's significance criteria. In addition, this temporary

level of trip generation would not exceed the CMP threshold of 50 or more vehicle trips during either the AM or PM peak hours.

Emergency Access. A total of approximately 165 homes are planned within the Portuguese Bend community, including 111 homes in the project area (i.e., which includes the 47 additional single family homes analyzed as part of the proposed project as well as 64 developed lots within the project area) based on review of available aerial photography records/files. Field observations were conducted by LLG Engineers in order to verify existing signage, traffic control and pavement widths associated with the private roadways within the Portuguese Bend area (see Appendix G for Emergency Access and Evacuation Evaluation Memo). Narcissa Drive has a pavement width of roughly 23 feet north of the existing gate (north of Palos Verdes Drive South) and the pavement width generally varies between 22 feet and 24 feet in width along its length. Peppertree Drive has a pavement width of roughly 22 feet north of the existing gate (north of Palos Verdes Drive South) and the pavement width generally varies between 22 feet and 24 feet in width along its length. The roadways are of sufficient width to allow large vehicles (i.e., fire engine type trucks) to access the Portuguese Bend area. It should also be noted that the majority of the roadways are not fully improved (e.g., with formal curb and gutter); thus, the above widths and measurements reflect the edge of pavement widths. However, additional (i.e., unimproved) width is available along many portions of the roadways.

Evacuation from a wildfire is the primary consideration for public safety during such an emergency. The law enforcement agencies' primary responsibility during a wildland fire is to assist in evacuation of an area. Residents are expected to follow the evacuation routes as communicated and directed by Los Angeles County fire personnel via local roads and onto either Narcissa Drive or Peppertree Drive to exit the area via Palos Verdes Drive South.

A study documenting the number of existing residential units and potential future residential units for the Portuguese Bend area that would utilize either Narcissa Drive or Peppertree Drive to evacuate has been prepared as part of the Traffic Study (see Appendix G). Given an overall gateway distribution of 56 percent via Narcissa Drive and 44 percent via Peppertree Drive associated with the future potential homes (i.e., 26 via Narcissa Drive and 21 via Peppertree Drive), the total number of existing and future homes expected to evacuate via Narcissa Drive totals 86 homes (i.e., 60 existing and up to 26 future homes) and via Peppertree Drive totals 79 homes (i.e., 58 existing and up to 21 future homes). Based on this, during an emergency evacuation approximately 172 vehicles are forecast to exit via Narcissa Drive and 158 vehicles are forecast to exit via Peppertree Drive. The study estimated that the clearing time to evacuate the vehicles traveling south on Narcissa Drive would be approximately 1.1 minutes and the time to evacuate the vehicles traveling south on Peppertree Drive would be approximately 1.1 minutes. This estimated clearing time is within an acceptable range for evacuation purposes (LLG Memo contained in Appendix G).

The study also included an evaluation of the number of access points (exit roads). For a total number of households of between 51 and 300 homes, the minimum number of exit roads is two and the maximum number of households per exit totals 150 homes. Since the Portuguese Bend community has been constructed with two exit roads and a total of 86 and 79 total households are forecast to exit the Narcissa Drive and Peppertree Drive gateways, respectively, the design of the roadway system with respect to number of exit roadways and number of households per

exit is concluded to be adequate for emergency evacuation purposes. Thus, these access points are considered to be adequate for the proposed project. Impacts would not be significant. (It should be noted, however, that based on the field observations conducted along the private roadways, the LLG analysis (see Appendix G) recommends that the City consider posting these access roads with "No Parking – Fire Lane" signs to further improve capacity.) However, the roadway are private streets, thus the association may consider this recommendation.

Construction Traffic Implications During an Evacuation. Accounting for the addition of the construction worker and construction truck trip generation/vehicles (while subtracting the future resident vehicles from the evacuation analysis), the evacuation clearance times discussed above (1.1 minutes for both Narcissa Drive and Peppertree Drive) would increase to 1.4 minutes for Narcissa Drive and 1.3 minutes for Peppertree Drive, respectively. It should also be noted that the provisions for resident evacuation would also apply to construction-related vehicles and personnel. Therefore, it can be concluded that these clearance times would increase by approximately 0.3 minutes (18 seconds) and 0.2 minutes (12 seconds) for the Narcissa Drive and Peppertree Drive access points, respectively. Although clearance times would increase during construction by 18 seconds and 12 seconds, respectively, the times are still within an acceptable range for evacuation purposes. Impacts would not be significant.

Mitigation Measures. Mitigation is not required.

Significance After Mitigation. Impacts would be less than significant without mitigation.

Impact T-5 Development facilitated by the proposed project would not conflict with adopted policies, plans, or programs supporting alternative transportation. Impacts relating to alternative transportation would be *less than significant*.

The proposed Landslide Moratorium Ordinance revisions would facilitate development of up to 47 new residences within the Zone 2 project area. As described in Impact T-3, seven bus transit lines and routes are provided adjacent to or in close proximity to the project site, with two of these transit lines and routes directly serving the Portuguese Bend community. A total of three different bus transit providers provide service within the study area. These seven transit lines provide service for an average (i.e., an average of the directional number of buses during the peak hours) of approximately 20 buses during the AM peak hour and roughly 17 buses during the PM peak hour.

The Portuguese Bend community is a private/gated residential community. The proposed project would allow the owners of existing vacant or underutilized lots to build residential units. As such, no new development types or patterns within Portuguese Bend are proposed. Thus the project would be consistent with the existing pattern of development and would not conflict with policies relating to alternative transportation modes. Impacts relating to alternative transportation would not be significant.

Mitigation Measures. Impacts would be less than significant; therefore, no mitigation is necessary.

Significance after Mitigation. Impacts would be less than significant without mitigation.

c. Cumulative Impacts. The analysis under Impact T-1 considers cumulative growth through the year 2020. As noted under that discussion, cumulative growth would result in cumulative impacts at three of the seven study intersections which are forecast to operate at adverse levels of service (LOS E or worse during either the AM or PM peak hours under Year 2020 Future with Project conditions). Although mitigation measures T-1(a-c) are intended to reduce impacts at these three intersections, two of the mitigation measures (T-1(b-c) have been deemed infeasible. As such cumulative impacts at these two intersections are considered significant and cumulatively considerable.

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