3.12 TRANSPORTATION AND CIRCULATION

3.12.1 INTRODUCTION

This section of the draft environmental impact report (EIR) analyzes potential traffic and circulation impacts of the proposed Updated 2009 Redevelopment Plan. The proposed project also includes land use designation and zone changes to the Sycamore Crossing site and the Hill Town site. The analysis of traffic impacts includes the potential future development of both sites. With respect to the development of the Hill Town site, an Initial Planned Development Plan (IPDP) was approved by the City in 2007, and the level of development for that site analyzed in this EIR reflects that development proposal. With respect to the Sycamore Crossing site, no formal development plan has been received so far. An assumed level of development consistent with the site's proposed land use designation as described in **Section 2.0, Project Description**, has been analyzed for that site. This analysis is based on the traffic impact study (included in **Appendix 3.12**) prepared for the proposed project by PHA Transportation Consultants in December 2008. The study addresses existing conditions, background conditions, post-development scenario conditions, site access, parking, and related issues.

3.12.2 ENVIRONMENTAL SETTING

3.12.2.1 Existing Street System

The primary access route to the Hill Town site would be via John Muir Parkway and San Pablo Avenue and the primary access route to the Sycamore Crossing site would be via Sycamore Avenue and San Pablo Avenue. Other roadways within the traffic study area, which may be utilized by project-related traffic, include Willow Avenue and Bayberry Avenue. A brief description of each of these roadways within the study area follows.

San Pablo Avenue

This north-south arterial has two lanes of travel in each direction and provides primary access to both the Hill Town and Sycamore Crossing sites. San Pablo Avenue is 70 feet wide and parking is prohibited on both sides of the street. Pinole, Rodeo, and other nearby communities utilize San Pablo Avenue as a major traffic corridor for access into the City of Hercules. San Pablo Avenue has signalized intersections at John Muir Parkway, Sycamore Avenue, and Hercules Avenue.

Sycamore Avenue

Sycamore Avenue is a 64-foot, four-lane arterial east of San Pablo Avenue. Sycamore Avenue provides access to large portions of the residential and commercial areas in the City of Hercules. The section west of San Pablo Avenue is newly constructed and is two lanes, which provides access to the Hercules Waterfront District, New Downtown, and a number of newly developed and occupied residential neighborhoods.

Willow Avenue

Willow Avenue is a four-lane roadway between San Pablo Avenue and State Route 4 (SR-4), but transitions to a two-lane roadway between SR-4 and Sycamore Avenue, and provides ramp access Interstate 80 (I-80) and SR-4. Willow Avenue is an east/west street that loops I-80 and connects with I-80 at two points. Willow Avenue is 80 feet wide with a raised landscaped median, which transitions into Bayberry Avenue (a 50-foot-wide two-lane street); Bayberry Avenue again transitions into Willow Avenue, which is 50 feet wide with two lanes of traffic.

Interstate 80

In the Hercules area, I-80 is an eight-lane freeway, which is primarily oriented in a northeast-southwest direction. This roadway is a major regional facility that serves communities along the California coast to the north and the Bay Area to the south. I-80 has a partial loop interchange at Willow Avenue.

State Route 4

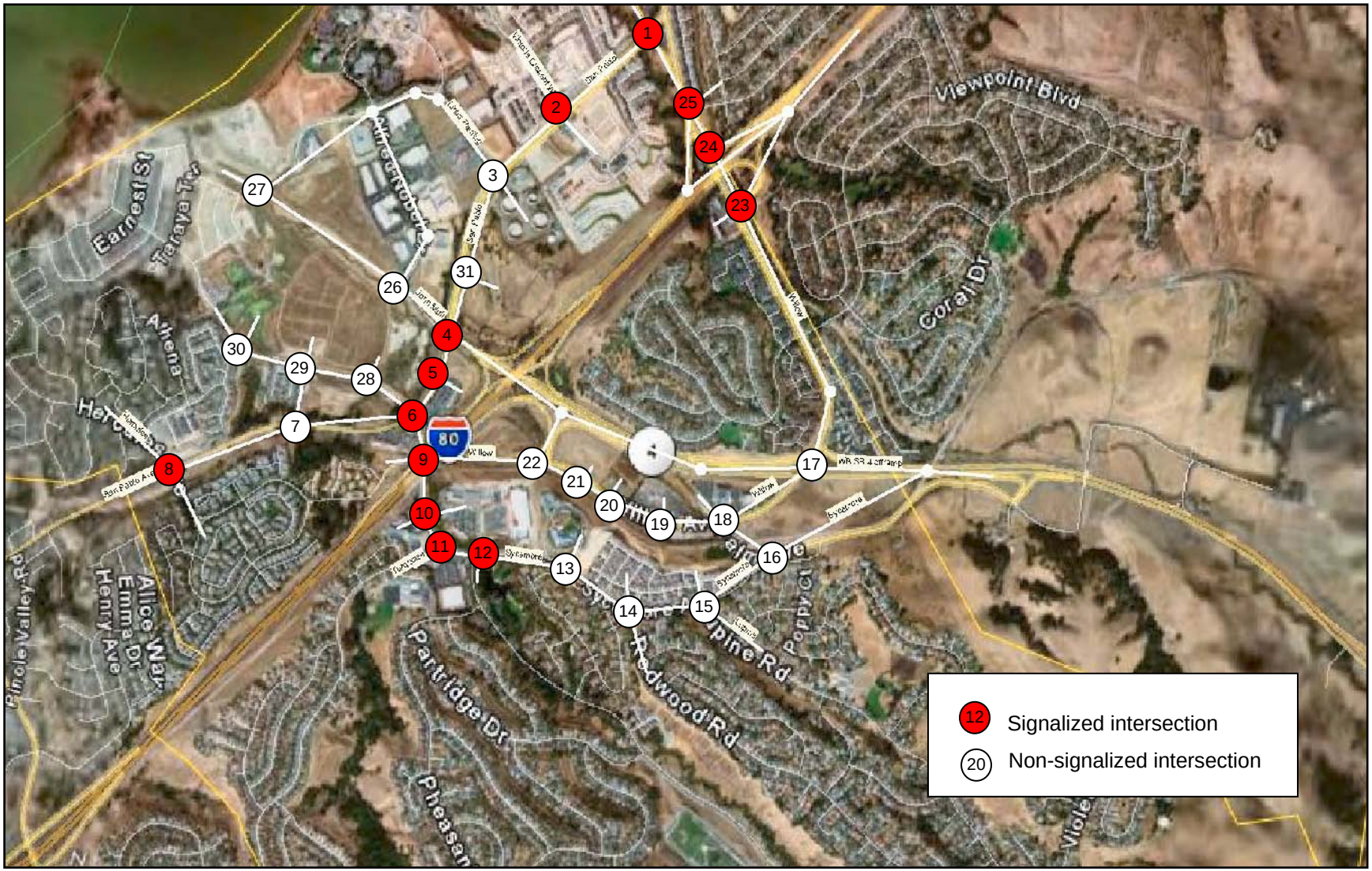
State Route 4 is an east-west freeway that is adjacent to I-80. Within Hercules, SR-4 is a four-lane freeway, which provides regional access to Hercules, Martinez, Concord, Walnut Creek, Pittsburg, and Antioch. West of I-80, SR-4 becomes John Muir Parkway.

3.12.2.2 Existing Traffic Conditions

The following intersections were analyzed during the AM and PM peak hours to establish existing traffic conditions in the study area (see **Figure 3.12-1, Study Intersections**).These intersections were selected because they were considered most likely to be impacted by future development of the Sycamore Crossing and Hill Town sites.

1. San Pablo Avenue/Willow Avenue (Signalized)

2. San Pablo Avenue/Victoria Circle (Signalized)



NOT TO SCALE

SOURCE: PHA Transportation Consultants - December 2008

FIGURE **3.12-1**

Study Intersections

359-011•12/08

3. San Pablo Avenue/Linus Pauling Drive (One-Way Stop Sign Control)

4. San Pablo Avenue/John Muir Parkway (Signalized)

5. San Pablo Avenue/Transit Center (Signalized)

6. San Pablo Avenue/Sycamore Avenue (Signalized)

7. San Pablo Avenue/Tsushima Avenue (One-Way Stop Sign Control)

8. San Pablo Avenue/Hercules Avenue (Signalized)

9. Sycamore Avenue/Willow Avenue (Signalized)

10. Sycamore Avenue/Creekside Center (Signalized)

11. Sycamore Avenue/Turquoise Avenue (Signalized)

12. Sycamore Avenue/Refugio Valley Road (Signalized)

13. Sycamore Avenue/Civic Center Drive (One-Way Stop Sign Control)

14. Sycamore Avenue/Redwood Avenue (All-Way Stop Control)

15. Sycamore Avenue/Lupine Avenue (All-Way Stop Control)

16. Sycamore Avenue/Palm Avenue (All-Way Stop Control)

17. Westbound (WB) SR-4 off-ramp/Willow Avenue (Signalized)

18. Willow Avenue/Palm Avenue (All Way Stop Control)

19. Willow Avenue / BART Replacement Parking E. Driveway (Does Not Exist)

20. Willow Avenue/ BART Replacement Parking C. Driveway (Does Not Exist)

21. Willow Ave/BART Replacement Parking W. Driveway (Does Not Exist)

22. Eastbound (EB) I-80 off-ramp-EB SR-4 on-ramp/Willow Avenue

23. EB I-80 off-ramp/Willow Avenue/Shopping Center Driveway (Signalized)

24. WB I-80 off-ramp/Willow Avenue (All-Way Stop Control)

25. Willow Avenue/Hawthorne Avenue (Signalized)

26. John Muir Parkway/Alfred Nobel Drive (Does Not Exist)

27. John Muir Parkway/Linus Pauling Drive (Does Not Exist)

28. Sycamore Avenue/S. Front Avenue (One-Way Stop Sign Control)

29. Sycamore Avenue/Tsushima Avenue (Two-Way Stop Sign Control)

30. Sycamore Avenue/ N. Front Avenue (One-Way Stop Sign Control)

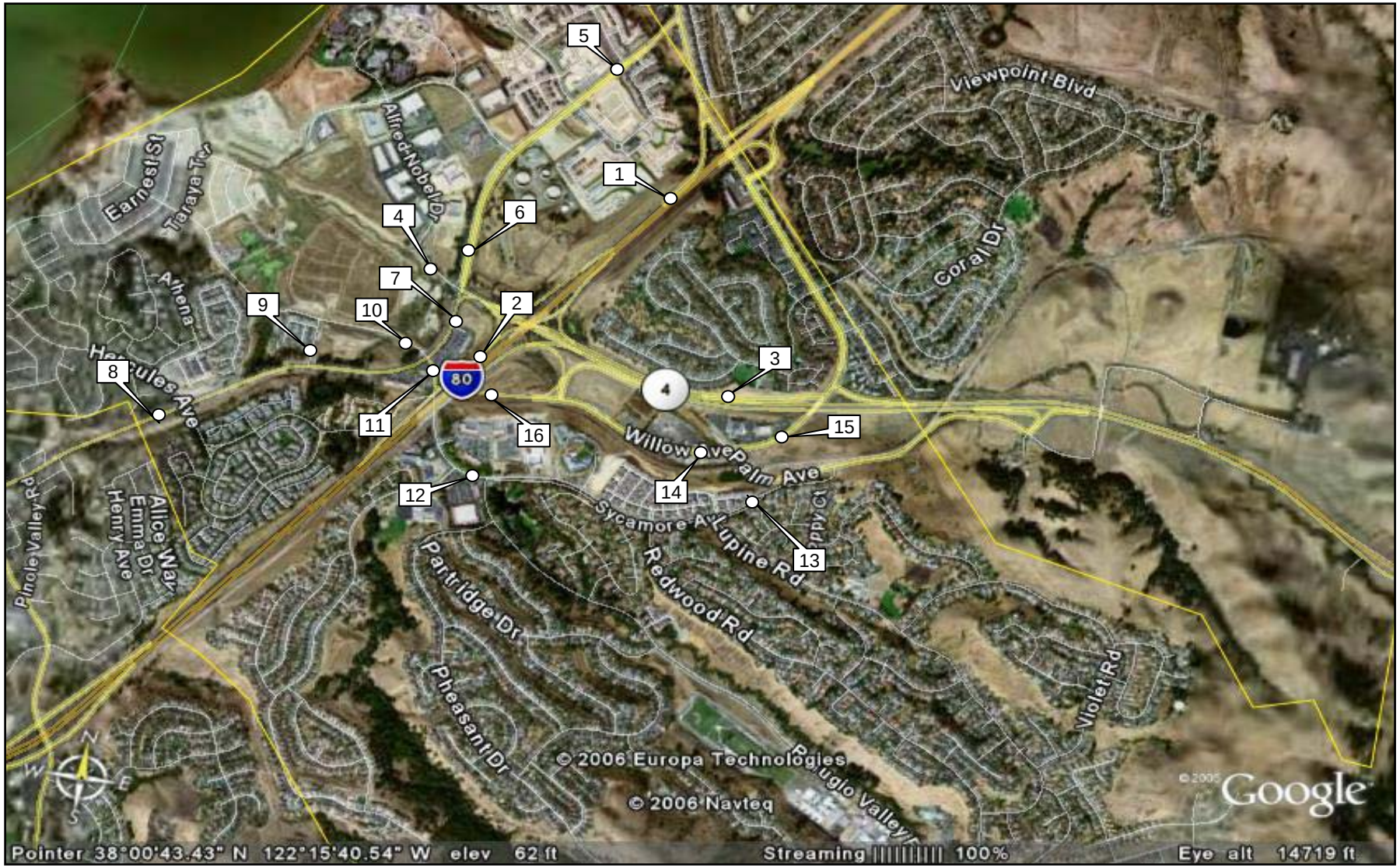
31. San Pablo Avenue/Future Hill Town Driveway (Does Not Exist)

Traffic volumes were counted in May 2006, December 2007, and January 2008. Counts collected in 2006 were adjusted by a growth of 3 percent to reflect 2008 conditions. Freeway volumes were obtained from Caltrans and were collected in 2006. The AM and PM peak hour volumes are shown on **Table 3.12-1, Existing Conditions Average Daily Traffic Volumes** (see **Figure 3.12-2, Daily Traffic Analysis Locations**).

Table 3.12-1
Existing Conditions Average Daily Traffic Volumes

Roadway Segments	No. of Lanes	Existing Volumes (2007)
I-80 Freeway (north of SR-4)	6	141,110
I-80 Freeway (south of SR-4)	8	196,730
SR-4 (east of I-80)	4	49,950
John Muir Parkway (west of I-80)	4	6,555
San Pablo Avenue(s/o Willow Avenue)	4	11,125
San Pablo Avenue (north of John Muir Parkway)	4	13,880
San Pablo Avenue (south of John Muir Parkway)	4	32,245
San Pablo Avenue (south of Hercules Avenue)	4	26,368
Tsushima Avenue (west of San Pablo Avenue)	2	930
Sycamore Avenue (west of San Pablo Avenue)	4	5,010
Sycamore (east of San Pablo Avenue)	5	29,460
Sycamore Avenue (south of Palm Avenue)	4	8,350
Sycamore Avenue (west of Refugio Valley Road)	4	23,910
Willow Avenue (south of Palm Avenue)	2	2,115
Willow Avenue (north of Palm Avenue)	2	3,050
Willow Avenue (east of Sycamore Avenue)	4	13,585

Source: PHA Transportation Traffic Study, January 2009.
Notes:
I-80 freeway and SR-4 volumes are obtained from Caltrans 2008 freeway volumes.
The above counts were collected in May 2006, Dec. 2007, and Jan. 2008. All 2006 counts adjusted by a 3% growth to reflect 2007 estimates.
Driveway vol.(am and pm) from the existing Transit Center were removed from the existing daily traffic volume (ADT) of San Pablo Avenue



NOT TO SCALE

SOURCE: PHA Transportation Consultants - December 2008

FIGURE **3.12-2**

Daily Traffic Analysis Locations

359-011•12/08

3.12.2.3 Existing Intersection Levels of Service

Traffic level of service (LOS) is a measurement of traffic operations and flow characteristics. LOS A represents free flow conditions with little to no delays. LOS E represents the opposite end of the LOS range or conditions at capacity, and LOS F represents over saturation with excessive delays. Two sets of LOS calculation method and computer software were used in the study. The first is for signalized intersections (CCTA-adopted method and computer software), where traffic LOS is determined based on the volume-to-capacity (V/C) ratio for the intersection as a whole. The other is for non-signalized intersections (*Highway Capacity Manual* method) where traffic LOS is determined based on delays for approaches controlled by either by stop signs or yield signs. The criteria for determining LOS are shown in **Table 3.12-2, Levels of Service Criteria**.

The City of Hercules has adopted a Growth Management Element to comply with Contra Costa County Measure C, which includes the adoption of traffic LOS standards. The City's LOS standards are summarized below in **Table 3.12-3, City of Hercules Minimum LOS Standards**.

Traffic levels of service for the study area intersections were evaluated for AM and PM peak hours to determine current the current level of traffic operations. Results indicate that all of the study intersections currently operate within acceptable LOS conditions, as shown in **Table 3.12-4, Existing Conditions Peak Hour LOS**. Field observation, however, indicated that intersections of San Pablo Avenue at Sycamore, John Muir, and Sycamore Avenue at Willow currently experience long vehicle queues and backups during the peak hour periods. This is because these are gateway intersections that most motorists in the project vicinity must travel through to and from work.

Table 3.12-2
Levels of Service Criteria

Signalized Intersections(CCTA LOS Methodology)	
LOS	Sum of Critical V/C
A	0.0–0.60
B	061–0.70
C	0.71–0.80
D	0.81–0.90
E	0.91–1.00
F	> 1.00

Unsignalized Intersections (HCM 2000 Methodology)	
LOS	Control Delay per Vehicle [(1)] (Seconds)
A	0.0–10.0
B	10.1–15.0
C	15.1–25.0
D	25.1–35.0
E	35.1–50.0
F	>50.

Note:
1. Control delay includes acceleration, deceleration, and stop time.
For 4-way intersections, delay and LOS are the average of all approaches. For 2-way intersections, delay and LOS represents only the side street approach with the worst delay and LOS. Main street approaches generally would operate at LOS A as main street traffic would not have to stop to yield.

Table 3.12-3
City of Hercules Minimum LOS Standards

Signalized Intersections	LOS	Maximum V/C
Sycamore Avenue (Between Willow Avenue and San Pablo Avenue)	E	0.94
Willow Avenue (Between I-80 ramps and Sycamore Avenue)	E	0.94
Sycamore Avenue (Between SR-4 and Willow Avenue)	D	0.89
Refugio Valley Road (Between Sycamore Avenue and Redwood/Falcon)	D	0.89
Alfred Nobel Drive	D	0.89
Linus Pauling Drive	D	0.89
James Watson Drive	D	0.89
John Muir Parkway	D	0.89
San Pablo Avenue	E	0.99
All other streets	D	0.84
Non-signalized intersections	**LOS**	**Delay**
General standard, not formally adopted.	E	>50.0 [1]

Source: Hercules General Plan 1998.
[1] Delay in seconds. Hercules does not have a minimum LOS standard for unsignalized intersections. LOS E with a delay more than 50 seconds is generally considered the minimum standard by transportation engineering industry.

Table 3.12-4
Existing Conditions Peak Hour LOS

Study Intersections		AM		PM	
No.	**Signalized**	**V/C [1]**	**LOS [2]**	**V/C**	**LOS**
1.	San Pablo/Willow	0.26	A	0.32	A
2.	San Pablo/Victoria Circle	0.32	A	0.27	A
4.	San Pablo/John Muir	0.74	C	0.75	C
5.	San Pablo/Transit Center	0.41	A	0.45	A
6.	San Pablo/Sycamore	0.64	B	0.69	B
8.	San Pablo/Hercules	0.52	A	0.44	A
9.	Sycamore/Willow	0.73	C	0.78	C
10.	Sycamore/Creekside Center	0.61	B	0.68	B
11.	Sycamore/Turquoise	0.57	A	0.49	A
12.	Sycamore/Refugio Valley	0.55	A	0.56	A
23.	EB I-80 off-ramp/Willow/Shopping Center Driveway	0.31	A	0.45	A
24.	WB I-80 off-ramp/ Willow	0.16	A	0.20	A
25.	Willow/Hawthorne	0.34	A	0.26	A
No.	**Unsignalized**	**Delay [3]**	**LOS**	**Delay**	**LOS**
3.	San Pablo/Linus Pauling	22.9	C	19.4	C
7.	San Pablo/Tsushima	16.9	C	10.8	B
13.	Sycamore/Civic Center	11.2	B	12.7	B
14.	Sycamore/Redwood	10.9	B	10.6	B
15.	Sycamore/Lupine	11.6	B	10.2	B
16.	Sycamore/Palm	9.6	A	10.6	B
17.	WB SR4 off-ramp/Willow	8.3	A	10.4	B
18.	Willow/Palm	11.9	B	11.0	B
19.	Willow/BART E. Driveway	NA	NA	NA	NA
20.	Willow/BART C. Driveway	NA	NA	NA	NA
21.	Willow/BART W. Driveway	NA	NA	NA	NA
22.	EB I-80–SR-4 ramps/Willow	24.4	C	17.9	C
26.	John Muir/Alfred Nobel	NA	NA	NA	NA
27.	John Muir/Linus Pauling	NA	NA	NA	NA
28.	Sycamore/S. Front	10.9	B	10.3	B
29.	Sycamore/Tsushima	10.8	B	10.6	B
30.	Sycamore/N. Front	9.9	A	7.6	A
31.	San Pablo/Hill Town S. Driveway	NA	NA	NA	NA

Source: PHA Transportation Traffic Study, January 2009.
Notes:
For 4-way intersections, delay and LOS are calculated based on the average of all approaches. For 2-way stop intersections, delay and LOS represent only the side street approach with the worst delay and LOS, as main street approaches generally would operate at LOS A because main street traffic would not have to stop or yield.
[1] V/C – Volume-to-capacity ratio.
[2] LOS – Level of service.
[3] Delay- Stop delay per vehicle in seconds.

3.12.2.4 ALTERNATIVE MODES OF TRANSPORTATION

Western Contra Costa County Transit Authority (WestCAT) provides public transit service locally in the City of Hercules and the surrounding areas with local fixed routes 10, 11, 12, 13, 14, 15, and 19. Routes 11 and 19 run along San Pablo Avenue and would directly serve the two Added Area sites. Express bus services are also provided to connect passengers to the Del Norte BART Station at El Cerrito from the Hercules Transit Center. WestCAT provides service between the City of Hercules and the Transbay Terminal in San Francisco through the Lynx line. WestCAT also offers weekday transit services to between Western Contra Costa County and Martinez via the Martinez Link line. Finally, WestCAT operates paratransit services to seniors and people with disabilities throughout the WestCAT service area, which includes the City of Hercules.

The City of Hercules also provides a Class I bikeway along the entire length of Refugio Valley Road between Sycamore Avenue and its terminus east of Hannah Park. Class I bike ways are bike paths that provide separate right-of-way for the exclusive use of bicycles and pedestrians. In addition, Class II bikeways are provided on San Pablo Avenue and Willow Avenue west of Hawthorne Drive. Pedestrian sidewalks are also provided near the two project sites on San Pablo Avenue.

Alternate modes of travel can be utilized to reduce the level of vehicle trips, specifically the use of auto trips for single car drivers. The availability of public transit at San Pablo Avenue and pedestrian and bicycle facilities in the vicinity of the site can also help to reduce auto dependence and traffic congestion.

3.12.3 BACKGROUND TRAFFIC CONDITIONS

3.12.3.1 Background Projects

In order to estimate the background traffic conditions, it was assumed that all of the development approved but not yet constructed, under construction, or subject to pending development applications in the City of Hercules would be built and occupied. These developments are listed in **Table 3.12-5, Background Projects Trip Generation**, and shown in **Figure 3.12-3, Background Project Locations.** They include Sycamore Downtown, the BART Replacement Parking Facility, the Hercules Intermodal Transit Center, and Phase 1 of Hercules New Town Center (Market Town). This scenario, which would contribute a significant amount of new traffic to the study intersections, is considered a conservative assumption, in that it is unlikely that all of the other approved/under construction/proposed projects would be built and occupied prior to development of the Hill Town and Sycamore Crossing project sites.

Figure 3.12-3, Background Project Locations

Estimated peak hour and daily trips for these developments are based on information provided in project-specific traffic studies and data from the ITE's *Trip Generation*, 7th Edition, 2003. A summary of net trip generation for these developments is provided in **Appendix 3.12**. Traffic distribution assumptions and inbound/outbound travel characteristics were used to assign the traffic associated with each development to specific routes within the study area.

Table 3.12-5
Background Projects Trip Generation

Uses	Sizes/units	AM Peak Hour Trips			PM Peak Hour Trips			Daily Trips		
		Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
1. Sycamore Downtown										
Residential	96	7	35	42	33	16	49	281	281	562
Retail	40 ksf	0	0	0	48	61	109	886	88	1772
2. BART Replacement Parking	420 parking stalls	404	333	737	299	553	852	1158	1158	2316
3. New Town Center (Market Town)[1]										
Office	70	95	13	108	18	87	105	385	385	770
Retail	32	0	0	0	38	49	87	709	709	1418
Condos	285	21	104	125	99	49	148	835	835	1670
4. Hercules Intermodal Transit Center	291 parking stalls, 10 drop-off stalls, 10 bus berths, 3,000 sf retail/office	274	42	316	42	274	316	504	504	1008

Source: City of Hercules staff
Notes:
1 New Town Center development proposal at the time the traffic study was initiated. The Market Town development application is currently being processed by the City of Hercules, and its proposed land uses have changed during preparation of the Updated 2009 Redevelopment Plan traffic analysis. However, the trip generation resulting from the current Market Town Final Planned Development Plan proposal would be similar to that used in this analysis, and the associated impacts and mitigation requirements would not change from what is described in this section.
sf = square feet
ksf = thousand square feet

3.12.3.2 Street Network Assumptions

The City is currently studying various options to relocate the existing eastbound I-80 off-ramp/eastbound SR-4 on-ramp at Willow further east closer to church and the SR-4 bridge. Further, the City is adding a new connection between John Muir Parkway and the new Sycamore Avenue via S. Front Street. Both projects are expected to improve traffic circulation in Hercules when complete. City staff indicated that the ramp relocation project is between 8 and 10 years away. The connection (Tsushima Bridge) between the new Sycamore Avenue and John Muir Parkway is complete now but was not included in the existing, background, and project conditions traffic analysis because the bridge was opened after the study had started. The bridge provides a convenient linkage between the employment area north of John Muir Parkway and the residential area near the Sycamore Avenue extension, particularly for pedestrian and bicyclists and will ultimately reduce traffic burden on San Pablo Avenue. For purposes of this study, however, the street network for the Background Project scenario remained unchanged from the Existing Conditions scenario.

3.12.3.3 Traffic (LOS) Operations and Impacts

In order to determine traffic levels with the addition of traffic from background projects, study intersections traffic operations were evaluated as a background traffic scenario. Results indicated that all of the signalized study intersections would operate at acceptable conditions at LOS D or better with V/C ratios below 0.86 (see **Table 3.12-6, Intersection Levels of Service for Existing and Existing + Background Conditions**). Therefore, background projects would not create intersections with LOS that would be considered unacceptable by the City on any of the signalized intersections, as shown in **Table 3.12-3**. For non-signalized intersections, the Willow Avenue intersection at the east driveway of the new transit center (the southbound driveway approach) is expected to operate at LOS E with a delay of 37.3 seconds during the PM peak and is considered unacceptable by the City's LOS standards. **Table 3.12-6** shows study intersection traffic LOS for the background projects condition.

It should be emphasized that while the analysis indicated overall acceptable LOS, in reality, three intersections, San Pablo/Sycamore, San Pablo/John Muir, and Sycamore/Willow currently experience long vehicle queues and backups; conditions at these intersections would worsen with the addition of the traffic from the background projects**.**

Table 3.12-6
Intersection Levels of Service for Existing and Existing + Background Conditions

	Existing				Existing +Background			
	AM		PM		AM		PM	
Study Intersections	**V/C**	**LOS**	**V/C**	**LOS**	**V/C**	**LOS**	**V/C**	**LOS**
Signalized Intersection								
1. San Pablo/Willow	0.26	A	0.32	A	0.30	A	0.34	A
2. San Pablo/Victoria Circle	0.32	A	0.27	A	0.38	A	0.33	A
4. San Pablo/John Muir	0.74	C	0.75	C	0.81	D	0.85	D
5. San Pablo/Transit Center	0.41	A	0.45	A	0.44	A	0.46	A
6. San Pablo/Sycamore	0.64	B	0.69	B	0.77	C	0.84	D
8. San Pablo/Hercules	0.52	A	0.44	A	0.58	A	0.50	A
9. Sycamore/Willow	0.73	C	0.78	C	0.86	D	0.85	D
10. Sycamore/Creekside Center	0.61	B	0.68	B	0.66	B	0.70	B
11. Sycamore/Turquoise	0.57	A	0.49	A	0.63	B	0.55	A
12. Sycamore/Refugio Valley	0.55	A	0.56	A	0.57	A	0.60	A
23. EB I-80 off-ramp/Willow/Shopping Center Driveway	0.31	A	0.45	A	0.35	A	0.49	A
24. WB I-80 off-ramp/Willow	0.16	A	0.20	A	0.18	A	0.23	A
25. Willow/Hawthorne	0.34	A	0.26	A	0.40	A	0.29	A
Unsignalized Intersection	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
3. San Pablo/Linus Pauling	22.9	C	19.4	C	28.8	D	32.4	D
7. San Pablo/Tsushima	16.9	C	10.8	B	14.5	B	11.5	B
13. Sycamore/Civic Center	11.2	B	12.7	B	11.5	B	13.2	B
14. Sycamore/Redwood	10.9	B	10.6	B	12.1	B	12.8	B
15. Sycamore/Lupine	11.6	B	10.2	B	15.1	C	13.4	B
16. Sycamore/Palm	9.6	A	10.6	B	12.5	B	17.3	C
17. WB SR4 off-ramp/Willow	8.3	A	10.4	B	8.9	A	12.9	B
18. Willow/Palm	11.9	B	11.0	B	19.8	C	23.2	C
19. Willow/BART E. Driveway	NA	NA	NA	NA	19.3	C	**37.3**	**E**
20. Willow/BART C. Driveway	NA	NA	NA	NA	12.1	B	14.6	B
21. Willow/BART W. Driveway	NA	NA	NA	NA	13.1	C	20.2	C
22. EB I-80-SR-4 ramps/Willow	24.4	C	17.9	C	22.2	C	20.1	C
26. John Muir/Alfred Nobel	NA	NA	NA	NA	NA	NA	NA	NA

Study Intersections	Existing AM V/C	Existing AM LOS	Existing PM V/C	Existing PM LOS	Existing +Background AM V/C	Existing +Background AM LOS	Existing +Background PM V/C	Existing +Background PM LOS
27. John Muir/Linus Pauling	NA	NA	NA	NA	NA	NA	NA	NA
28. Sycamore/S. Front	10.9	B	10.3	B	12.6	B	12.8	B
29. Sycamore/Tsushima	10.8	B	10.6	B	12.0	B	12.2	B
30. Sycamore/N. Front	9.9	A	7.6	A	10.2	B	10.0	A
31. San Pablo/Hill Town S. Driveway	NA	NA	NA	NA	NA	NA	NA	NA

Source: PHA Transportation Traffic Study, January 2009.

Notes:

For 4-way intersections, delay and LOS is calculated based on the average of all approaches. For 2-way stop intersections, delay and LOS represent only the side street approach with the worst delay and LOS, as main street approaches generally would operate at LOS A as main street traffic would not have to stop to yield.

1 V/C – Volume-to-capacity ratio. 2 LOS – Level of service.

3 Delay- Stop delay per vehicle in second

Highlighted area indicates unacceptable conditions.

NA, not evaluated due to the lack of base traffic data.

3.12.4 REGULATORY FRAMEWORK

3.12.4.1 California Regulations

The Contra Costa County Transportation Authority (CCTA), which is the designated congestion management agency, is responsible for ensuring local government conformance with the Congestion Management Plan (CMP) for Contra Costa County, a program aimed at reducing regional traffic congestion. The CMP requires that each jurisdiction identify existing and future transportation facilities that will operate below an acceptable service level and provide mitigation where future growth degrades that service level below identified thresholds. The CCTA has the responsibility to review proposed development projects that are expected to generate 100 or more additional AM or PM peak hour trips.

The CCTA also reviews the adequacy of California Environmental Quality Act (CEQA) analysis and measures to mitigate impacts. The CCTA maintains a Countywide transportation model and has approval authority for the use of any local or subarea transportation models. Capital improvement programs for transportation projects across County are generally tracked by the CCTA, and allocations of major funding programs are performed under the leadership of this agency.

3.12.4.2 Local Plans and Policies

Measure C (1988) and Measure J (2004)

The current transportation planning approach in Contra Costa County began in 1988 with the passage of Measure C, which established a one-half cent sales tax in Contra Costa County to fund a specified set of transportation improvements. It also included a growth management element that established service standards for the transportation system and mandated that the standards be maintained on certain routes as growth occurs.

Measure C created the CCTA as the agency responsible for implementing its provisions. Since 1998, the CCTA has further refined the Measure C policies and procedures through a series of published documents. Of particular importance to transportation analyses are their review requirements for general plan amendments, which refer to action plans for routes of regional significance that the County and the applicable local agencies have agreed upon.

Measure C was renewed in 2004 with the passage of Measure J, which extends the sales tax for an additional 25 years (through 2034).

Contra Costa County 2007 Congestion Management Plan

Under state law, the Contra Costa Transportation Authority is responsible for preparing and adopting a congestion management program (CMP) and updating it every other year. The most recent update was adopted in 2007. CMPs must contain LOS standards for state highways and major arterials, measures to evaluate system performance, a seven-year capital improvement program, a program to analyze the impacts and costs of local land use decisions on the regional transportation system, and a travel demand element that promotes transportation alternatives to single-occupant vehicles. The CCTA has drawn the CMP performance measures from the traffic service objectives (TSOs) in the Action Plans for Routes of Regional Significance. For roadways in the project vicinity, the CMP uses the TSOs established in the West Contra Costa County Action Plan 2000 Update.

West Contra Costa County Action Plan 2000 Update

Service level standards for routes of regional significance are to be established through a cooperative process among jurisdictions and are to be institutionalized in documents called "action plans." In July 2000, the West Contra Costa County Action Plan 2000 Update was adopted for the jurisdictions in western Contra Costa County. TSOs were established for these facilities. The CCTA's 2007 Congestion

Management Plan updated the TSOs and is used as the basis for evaluating transportation impacts on Routes of Regional Significance.

The following facilities in the project study area are considered routes of regional significance: I-80, SR-4, San Pablo Avenue, and Willow Avenue. The primary TSOs that apply to these facilities, or to the study area in general, are

- maintain LOS D or better at all signalized intersections along Willow Avenue;
- maintain LOS E or better on all roadway segments of San Pablo Avenue and SR-4;
- maintain LOS E or better on all roadway segments of I-80 (during non-peak hours only);
- maintain LOS E or better on all roadway segments of Maintain LOS E or better at all signalized intersections along San Pablo Avenue;
- increase the I-80 high occupancy vehicle (HOV) lane vehicle usage rate by 10 percent;
- achieve a drive alone rate of no more than 75 percent;
- increase transit ridership in West County by 10 percent between 1999 and 2005;
- by 2005, increase the bicycle and pedestrian mode splits to 3 percent for commute trips;
- by 2005, improve bicycle and pedestrian routes to schools;
- increase transit ridership on the I-80 corridor by 10 percent between 1999 and 2005;
- complete the I-80 Bikeway Corridor between the El Cerrito Del Norte BART station and Hercules by 2005; and
- achieve a 2,000 per day ridership on the Capitol and San Joaquin Corridor trains by the year 2005.

In addition to TSOs, the Action Plan contains actions that were cooperatively determined by the cities and the County to support achievement of the TSOs. One of these key actions required them to work with CCTA and MTC to actively pursue funding to expand bus service to/from Pinole, Hercules, Rodeo, and Crockett.

Three primary fee programs are in place to help finance improvements to transportation facilities within the study area. The City of Hercules assesses and collects a development impact fee to support improvements to local transportation facilities. Two additional fee programs, the Hercules-Rodeo-Crockett (HRC) Area of Benefit Fee and the West Contra Costa (WCC) Subregional Transportation Mitigation Fee, are administered by the County. The City of Hercules traffic impact fee supports local

capital improvements. The HRC and WCC fees administered by the County are assessed on new development in the Hercules area of western Contra Costa County.

City of Hercules General Plan

The *Hercules General Plan* Circulation Element includes the following policy discussion relevant to the Redevelopment Plan:

The following are the traffic service standards for Basic Routes (Local Streets) in Hercules:

a. The policy on traffic level of service reflects the "traffic service objectives" defined in the West County Action Plan. The City has adopted a Growth Management Element to comply with Contra Costa County Measure C (1988). This element includes adoption of level of service standards on "basic routes" depending upon the location of the route: CBD (central business district), urban, suburban, semi-rural, and rural.

   As noted in the Growth Management Element of the General Plan, the following are the traffic service standards for Basic Routes (Local Streets) in Hercules:

   LOS "High" D to "Low" E (maximum v/c ratio is 0.94)

   - Sycamore Avenue (from Bayberry to San Pablo Avenue)
   - Bayberry [now known as Willow Avenue] (from I-80 ramps to Sycamore)

   LOS "High" D (maximum v/c ratio is 0.89)

   - Sycamore Avenue (Highway 4 Freeway – Bayberry)
   - Refugio Valley Road (Sycamore – Redwood/Falcon)
   - Alfred Nobel Drive
   - Linus Pauling Drive
   - James Watson Drive
   - John Muir Parkway

   LOS "Low" D – (maximum v/c ratio is 0.84)

   - All other Basic Routes (that is, except Routes of Regional Significance)

   Measure C called for "routes of regional significance" to have a separate "traffic service objective" set cooperatively by all jurisdictions of western Contra Costa County. The routes of Regional

Significance in Hercules are I-80, SR-4, and San Pablo Avenue. The Circulation Draft of the West County [Action Plan for Routes of Regional Significance] was published on July 29, 1994, and recommends a traffic service objective of LOS E at signalized intersections on San Pablo Avenue.

For health, safety, and general welfare, it is the City's policy to provide adequate levels of traffic service throughout the City. Level of Service D or better is the city wide standard for traffic operating conditions during peak hours on residential streets and intersections. Level of Service D for the commercial/industrial development is acceptable under [certain specified] conditions.

1. striving for off-peak uses;
2. providing Living Wage jobs;
3. generating City Revenue; and/or
4. proposing development that is otherwise highly desirable community-wide.

New development shall be required to pay its fair share of the cost of improving regional routes so that compliance with the service standard specified in the Action Plan is maintained.

b. Neighborhood design should discourage through traffic on local streets.

c. Regional streets will be designed in relation to the needed capacity and the adjoining housing patterns.

d. Proposed elements within the view of designated scenic routes in the City should be reviewed in terms of their visual impact.

3.12.5 THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the *State CEQA Guidelines*, the project would have a significant impact with respect to transportation and circulation if it will

- cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections);
- exceed, either individually or cumulatively, a level of service standard established by the County Congestion Management Agency for designated roads or highways;
- result in 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 uses (e.g., farm equipment);

- result in inadequate emergency access;
- result in inadequate parking capacity; or
- conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

The following points are provided to further clarify the thresholds of significance used in this analysis:

- A project is considered to cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system if one or more of the LOS standards described in **Table 3.12-3, City of Hercules Minimum LOS Standards**, have been exceeded.
- The conditions described in **Table 3.12-3** include the level of service standards established by the County Congestion Management Agency in the West Contra Costa County Action Plan 2000 Update.

3.12.5.1 Issues Not Discussed Further

The proposed Updated 2009 Redevelopment Plan (Hill Town and Sycamore Crossing sites) are not located within an airport land use plan or within 2 miles of a private or public use airport. Consequently, the proposed project would not affect any airport facilities and would not cause a change in the directional patterns of aircraft. Therefore, the proposed project would have no impact on air traffic patterns and this issue is not discussed further.

The proposed project would not conflict with any adopted policies, plans, or programs supporting alternative transportation and this issue is not discussed further in this document.

Future development of the Sycamore Crossing and Hill Town sites must comply with all building, fire, and safety codes and specific development plans would be subject to review and approval by the Public Works and the Transportation Departments, and the Building Division and Fire Department. Required review of any development by these departments would ensure that proposed circulation systems for the site would provide adequate emergency access. In addition, the proposed project would not cause any permanent or temporary closures to any roadway. Therefore, there would be no impacts related to inadequate emergency access and this issue is not discussed further.

3.12.5.2 Methodology

The Traffic Study for the proposed project is generally focused on potential roadway impacts that could occur. For purposes of this analysis, the project conditions scenario studied in the traffic study includes potential future buildout of the Updated 2009 Redevelopment Plan Area. This scenario consists of development concepts for Hill Town as reflected in the IPDP and the Sycamore Crossing site as discussed in **Section 2.5.2** of the **Project Description**. However, the project conditions scenario examines likely

development proposals at each site based on potential design plans provided by the project applicants for Hill Town and Sycamore Crossing. The Hill Town site scenario includes 640 attached residential units and 4,000 square feet of retail space. Access to and from the site would be provided via a new signalized intersection on San Pablo Avenue across from Linus Pauling Drive. A right-turn-only driveway would also be considered approximately midway between signalized intersection and John Muir Parkway. The Sycamore Crossing site scenario includes 170 residential (multi-family) units, 140,000 square feet of commercial/retail space, a 180-room hotel, a 25,000-square-foot supermarket, and 170,000 square feet of office space. The Sycamore Crossing conceptual development scenario also includes two parking garages with a total of 1,012 parking spaces. Access to and from the site would be provided via driveways on Sycamore Avenue and Tsushima Way.

Two sub-scenarios were evaluated in the traffic study. Sub-scenario A assumes that the Sycamore Crossing and Hill Town sites will be developed after background projects are complete (existing traffic plus background project traffic plus Hill Town and Sycamore Crossing traffic). Sub-scenario B assumes that the Sycamore Crossing and Hill Town sites will be built before the background projects are completed, and traffic from the background projects is not included (existing traffic plus traffic from Hill Town and Sycamore Crossing sites). As with the background projects scenario, no roadway improvements are assumed in the analysis of project conditions.

3.12.6 IMPACTS AND MITIGATION MEASURES

3.12.6.1 Project Impacts

Impact Traf-1: **Future development of the Updated 2009 Redevelopment Plan is expected to generate 7,513 daily vehicle trips, including 907 trips during the AM peak hour and 1,278 trips during the PM peak hour. These trips would cause the following intersections to operate at an unacceptable LOS: San Pablo Avenue at Sycamore Avenue (Sub-scenario A), San Pablo Avenue at Linus Pauling (both sub-scenarios), Willow Avenue at BART Replacement Parking E. Driveway (Sub-scenario A), and Sycamore at S. Front Street (both sub-scenarios). *(Potentially Significant; Less than Significant with Mitigation)***

Trip Generation and Distribution

Development of the Sycamore Crossing and Hill Town projects, as foreseen in the proposed Updated 2009 Redevelopment Plan, would increase traffic on local roadways as shown in **Table 3.12-7, Weekday Trip Generation.** Traffic distribution patterns for the residential, retail, commercial, and office land uses included in these development scenarios were generated using existing street network, roadway

capacities, existing traffic circulation, and area land use patterns. The development scenario traffic distribution is based on the individual potential land use distributions shown in **Table 3.12-8, Weekday Project Area Trip Distribution**.

As indicated in **Table 3.12-7,** a 10 percent reduction factor for public transit use was applied to the residential trip generation. This reflects the transit-oriented nature of planning for new development in Hercules. Planned or approved transit-enhancing projects include the BART Replacement Parking facility, which will be located adjacent to both the Sycamore Crossing and Hill Town sites, and the proposed Hercules Intermodal Transit Center, which will include ferry, commuter train, and bus service and a new Bay Trail segment and will be linked to the Sycamore Crossing and Hill Town sites by bus and possibly shuttle service. In addition, new development within and near the Updated 2009 Redevelopment Plan Area, including Sycamore Crossing and the Hercules New Town Center, will include mixed-use residential, retail, and commercial uses designed to encourage public transit and pedestrian access. The proposed Sycamore Crossing and Hill Town sites would benefit from these transit-oriented developments. The 10 percent reduction factor is therefore considered conservative, as a significantly higher proportion of Sycamore Crossing and Hill Town residents and occupants could use transit or walk to and from these sites.

The traffic volumes expected to be generated by the development scenario or potential development of the Updated 2009 Redevelopment Plan Area were estimated using the ITE trip generation rates for the proposed land uses (residential, supermarket, hotel, and retail). **Table 3.12-7** lists the quantities of the planned land uses and the estimated weekday daily peak hour trip generation. The two site development scenarios together are expected to generate 907 AM peak hour trips (464 inbound and 443 outbound), and 1,278 PM peak hour trips (624 inbound and 654 outbound).

Intersection Level of Service

The proposed redevelopment project would change the land use and zoning designations of two sites, facilitating future growth, and development of the two sites. As discussed above, the IPDP for the Hill Town site and the Sycamore Crossing development scenario described in **Section 2.5.2** were used to anticipate future potential traffic impacts that could result from the proposed project assuming that the proposed Sycamore Crossing and the Hill Town sites are built out and adding traffic to the study area. The intersection levels of service for the two alternate development sub-scenarios (A and B) are shown in **Table 3.12-9, LOS at Signalized and Unsignalized Intersections (Sub-scenario A)** and **Table 3.12-10, LOS at Signalized and Unsignalized Intersections (Sub-scenario B),** with the calculations provided in **Appendix 3.12**.

Sub-scenario A

Table 3.12-9 shows study intersection LOS analysis for Sub-scenario A, which assumes that both Sycamore Crossing and Hill Town would be completed after completion of the background projects. With the added traffic from Sycamore Crossing and Hill Town (existing traffic plus background projects traffic plus Sycamore Crossing and Hill Town), three of the study intersections would operate at LOS F, which would be considered unacceptable by the LOS standards discussed above. These include

3. San Pablo/Linus Pauling – Unsignalized

6. San Pablo/Sycamore – Signalized

19. Willow/BART Replacement Parking E. Driveway – Unsignalized

28. Sycamore/S. Front Street – Unsignalized

Sub-scenario B

Table 3.12-10 shows study intersection LOS analysis for Sub-scenario B, which assumes that both Sycamore Crossing and Hill Town would be completed before the background projects are operational. With the added traffic from Sycamore Crossing and Hill Town (existing traffic plus Sycamore Crossing and Hill Town), all of the signalized intersections would operate at acceptable conditions at LOS D or better, while two non-signalized intersections would operate at unacceptable conditions at LOS F for minor street approaches. These include

3. San Pablo/Linus Pauling – Non-signalized

28. Sycamore/S. Front Street – Non-signalized

Table 3.12-7
Weekday Trip Generation

		AM Peak Hour Trips					PM Peak Hour Trips					Daily Trips				
	Units/ksf[1]	Rates	%Enter	Trips	%Exit	Trips	Rates	%Enter	Trips	%Exit	Trips	Rates	%Enter	Trips	%Exit	Trips
Sycamore Crossing Site																
Condo/Townhouses (ITE 230)	170	0.44	17%	13	83%	62	0.52	67%	59	33%	29	5.86	50%	498	50%	498
(-) Public transit use 10%						-6			-6		-3			-50		-50
Subtotal				**6**		**56**			**53**		**26**			**448**		**448**
Retail (Specialty Retail ITE-814)	140	0	0%	0	0%	0	2.71	44%	167	56%	212	44.32	50%	3,102	50%	3,102
(-) Pass-by/Internal 20%									-33		-42			-620		-620
Subtotal				**0**		**0**			**134**		**170**			**2,482**		**2,482**
Hotel (ITE 310)	180	0.67	58%	70	42%	51	0.70	49%	62	51%	64	8.17	50%	735	50%	735
Subtotal				**70**		**51**			**62**		**64**			**735**		**735**
Supermarket (ITE 850)	25	3.25	61%	50	39%	32	10.45	51%	133	49%	128	102.3	50%	1,279	50%	1,279
(-) Pass-by/Internal 20%				-10		-6			-27		-26			-256		-256
Subtotal				**40**		**26**			**106**		**102**			**1,023**		**1,023**
Office (ITE 710)	170	1.55	88%	232	12%	32	1.19	17%	34	83%	168	11.01	50%	936	50%	936
Subtotal				**232**		**32**			**34**		**168**			**936**		**936**
Parking Garages[2]	2			NA		NA			NA		NA			NA		NA
Total				**347**		**164**			**390**		**530**			**5,624**		**5,624**

		AM Peak Hour Trips					PM Peak Hour Trips					Daily Trips				
	Units/ksf[1]	Rates	%Enter	Trips	%Exit	Trips	Rates	%Enter	Trips	%Exit	Trips	Rates	%Enter	Trips	%Exit	Trips
Hill Town Site																
Condo/Townhouses (ITE 230)	640	0.44	17%	48	83%	234	0.52	67%	223	33%	110	5.86	50%	1875	50%	1875
(-) Public transit use 10%				-5		-23			-22		-11			-188		-188
Retail (coffee shop-ITE 933 Table 1)	4	73.03	51%	149	49%	143	28.79	58%	67	42%	48	201.5	50%	403	50%	403
(-) Pass-by/Internal 50%				-75		-75			-33		-24			-201		-201
Subtotal				**117**		**279**			**235**		**123**			**1,889**		**1,889**
Total				**464**		**443**			**624**		**654**			**7,513**		**7,513**

Source: PHA Transportation Traffic Study, January 2009.
Note:: ITE Trip Generation Manual, 7th Edition.
1 ksf=thousand square feet
2 The proposed garages are intended to accommodate on-site parking needs only and would not generate additional traffic.

Table 3.12-8
Weekday Project Area Trip Distribution

Sycamore Crossing Site	%	Direction of Travel
Condo/Townhouse	10	North/East via I-80
	15	East via SR-4
	35	South/West via I-80
	25	East via Sycamore, Willow, and RVR
	15	South via San Pablo Avenue
Commercial/Retail	30	North via San Pablo Avenue
	50	East via Sycamore, Willow, and RVR
	10	South via San Pablo Avenue
	10	Northwest/water Front area via new Sycamore Avenue
Hotel	25	North via San Pablo Avenue
	15	North/East via I-80.
	10	East via SR-4.
	10	East via Sycamore Avenue
	40	South/West via I-80
Supermarket	45	North via San Pablo Avenue
	15	East via Sycamore Avenue
	20	South via San Pablo Avenue
	20	West via Sycamore Avenue
Offices	40	North via San Pablo Avenue
	25	East via Sycamore Avenue Willow Avenue
	25	South via San Pablo Avenue
	10	West via Sycamore Avenue
Hill Town Site	**%**	**Direction of Travel**
Condo/Townhouses	10	North/East via I-80.
	10	East via SR-4.
	25	Southeast via San Pablo, Sycamore and Willow, Avenue
	35	South/West via I-80.
	15	South via San Pablo Avenue
	5	West via Linus Pauling Drive

Sycamore Crossing Site	%	Direction of Travel
Retail	20	North via San Pablo Avenue
	10	West via Linus Pauling
	20	Southwest via San Pablo Ave, and John Muir Parkway
	50	Internal to Hill Town site.

Source: PHA Transportation Traffic Study, January 2009.
Note: The above distribution patterns represent general travel direction. Specific travel paths are in the traffic model.

Table 3.12-9
LOS at Signalized and Unsignalized Intersections (Sub-scenario A)

Study Intersections	Existing				Existing + Background				Existing + Background +Project[2]			
	AM		PM		AM		PM		AM		PM	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Signalized Intersection												
1. San Pablo/Willow	0.26	A	0.32	A	0.30	A	0.34	A	0.33	A	0.37	A
2. San Pablo/Victoria Circle	0.32	A	0.27	A	0.38	A	0.33	A	0.45	A	0.40	A
4. San Pablo/John Muir	0.74	C	0.75	C	0.81	D	0.85	D	**0.90**	**E**	**0.92**	**E**
5. San Pablo/Transit Center	0.41	A	0.45	A	0.44	A	0.46	A	0.49	A	0.53	A
6. San Pablo/Sycamore	0.64	B	0.69	B	0.77	C	0.84	D	0.86	D	**1.05**	**F**
8. San Pablo/Hercules	0.52	A	0.44	A	0.58	A	0.50	A	0.63	A	0.55	A
9. Sycamore/Willow	0.73	C	0.78	C	0.86	D	0.85	D	0.88	D	**0.91**	**E**
10. Sycamore/Creekside Center	0.61	B	0.68	B	0.66	B	0.70	B	0.68	B	0.74	C
11. Sycamore/Turquoise	0.57	A	0.49	A	0.63	B	0.55	A	0.65	B	0.60	A
12. Sycamore/Refugio Valley	0.55	A	0.56	A	0.57	A	0.60	A	0.58	A	0.63	B
23. EB I-80 off-ramp/Willow/Shopping Center Driveway	0.31	A	0.45	A	0.35	A	0.49	A	0.46	A	0.61	B
24. WB I-80 off-ramp/Willow	0.16	A	0.20	A	0.18	A	0.23	A	0.18	A	0.23	A
25. Willow/Hawthorne	0.34	A	0.26	A	0.40	A	0.29	A	0.41	A	0.31	A
Unsignalized Intersection	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
3. San Pablo/Linus Pauling	22.9	C	19.4	C	28.8	D	32.4	C	**>180.0**	**F**	**>180.0**	**F**
7. San Pablo/Tsushima	16.9	C	10.8	B	14.5	B	11.5	B	16.9	C	11.9	B
13. Sycamore/Civic Center	11.2	B	12.7	B	11.5	B	13.2	B	11.7	B	14.1	B
14. Sycamore/Redwood	10.9	B	10.6	B	12.1	B	12.8	B	12.7	B	16.0	B
15. Sycamore/Lupine	11.6	B	10.2	B	15.1	C	13.4	B	15.4	C	14.2	B

Study Intersections	Existing				Existing + Background				Existing + Background +Project[2]			
	AM		PM		AM		PM		AM		PM	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
16. Sycamore/Palm	9.6	A	10.6	B	12.5	B	17.3	C	12.5	B	17.3	C
17. WB SR-4 off-ramp/Willow	8.3	A	10.4	B	8.9	A	12.9	B	9.0	A	13.1	B
18. Willow/Palm	11.9	B	11.0	B	19.8	C	23.2	C	20.6	C	25.6	C
19. Willow/BART E. Driveway	NA	NA	NA	NA	19.3	C	**37.3**	**E**	**52.5**	**F**	**>180.0**	**E**
20. Willow/BART C. Driveway	NA	NA	NA	NA	12.1	B	14.6	B	12.7	B	16.3	C
21. Willow/BART W. Driveway	NA	NA	NA	NA	9.9	A	11.4	B	9.9	A	13.6	B
22. EB I-80-SR-4 ramps/Willow	24.4	C	17.9	C	25.4	C	20.1	C	26.6	D	29.6	D
26. John Muir/Alfred Nobel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
27. John Muir/Linus Pauling	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
28. Sycamore/S. Front	10.9	B	10.3	B	12.6	B	12.8	B	**>180.0**	**F**	**>180**	**F**
29. Sycamore/Tsushima	10.8	B	10.6	B	12.0	B	12.2	B	12.7	B	13.7	B
30. Sycamore/N. Front	9.9	A	7.6	A	10.2	B	10.0	B	10.6	B	10.5	B
31. San Pablo/Hill Town S. Driveway	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Source: PHA Transportation Traffic Study, January 2009.

Notes:

[1] V/C – Volume-to-capacity ratio.

[2] LOS – Level-of service.

[3] Delay- Stop delay per vehicle in second

Highlighted area indicates unacceptable conditions.

NA, not evaluated due to the lack of base traffic data.

Table 3.12-10
LOS at Signalized and Unsignalized Intersections (Sub-scenario B)

Study Intersections	Existing				Existing+ Project[2]			
	AM		PM		AM		PM	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Signalized Intersection								
1. San Pablo/Willow	0.26	A	0.32	A	0.28	A	0.35	A
2. San Pablo/Victoria Circle	0.32	A	0.27	A	0.39	A	0.33	A
4. San Pablo/John Muir	0.74	C	0.75	C	0.82	D	0.81	D
5. San Pablo/Transit Center	0.41	A	0.45	A	0.44	A	0.53	A
6. San Pablo/Sycamore	0.64	B	0.69	B	0.77	C	0.90	D
8. San Pablo/Hercules	0.52	A	0.44	A	0.57	A	0.49	A

Study Intersections	Existing AM V/C	Existing AM LOS	Existing PM V/C	Existing PM LOS	Existing+ Project[2] AM V/C	Existing+ Project[2] AM LOS	Existing+ Project[2] PM V/C	Existing+ Project[2] PM LOS
9. Sycamore/Willow	0.73	C	0.78	C	0.76	C	0.84	D
10. Sycamore/Creekside Center	0.61	B	0.68	B	0.63	B	0.71	C
11. Sycamore/Turquoise	0.57	A	0.49	A	0.59	A	0.54	A
12. Sycamore/Refugio Valley	0.55	A	0.56	A	0.56	A	0.58	A
23. EB I-80 off-ramp/Willow/Shopping Center Driveway	0.31	A	0.45	A	0.39	A	0.54	A
24. WB I-80 off-ramp/ Willow	0.16	A	0.20	A	0.16	A	0.21	A
25. Willow/Hawthorne	0.34	A	0.26	A	0.34	A	0.27	A
Unsignalized Intersection	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
3. San Pablo/Linus Pauling	22.9	C	19.4	C	**>180.0**	**F**	**>180.0**	**F**
7. San Pablo/Tsushima	16.9	C	10.8	B	17.5	C	11.1	B
13. Sycamore/Civic Center	11.2	B	12.7	B	11.4	B	13.5	B
14. Sycamore/Redwood	10.9	B	10.6	B	11.6	B	12.4	B
15. Sycamore/Lupine	11.6	B	10.2	B	11.8	B	10.7	B
16. Sycamore/Palm	9.6	A	10.6	B	10.5	A	10.6	B
17. WB SR4 off-ramp/Willow	8.3	A	10.4	B	8.8	A	10.5	B
18. Willow/Palm	11.9	B	11.0	B	11.7	B	11.3	B
19. Willow/HTC E. Driveway	NA	NA	NA	NA	NA	NA	NA	NA
20. Willow/HTC C. Driveway	NA	NA	NA	NA	NA	NA	NA	NA
21. Willow/HTC W. Driveway	NA	NA	NA	NA	NA	NA	NA	NA
22. EB I-80-SR-4 ramps/Willow	24.4	C	17.9	C	31.4	D	31.2	D
26. John Muir/Alfred Nobel	NA	NA	NA	NA	NA	NA	NA	NA
27. John Muir/Linus Pauling	NA	NA	NA	NA	NA	NA	NA	NA
28. Sycamore/S. Front	10.9	B	10.3	B	22.8	C	**>180.0**	**F**
29. Sycamore/Tsushima	10.8	B	10.6	B	11.3	B	11.5	B
30. Sycamore/N. Front	9.9	A	7.6	A	10.3	B	10.1	B
31. San Pablo/Hill Town S. Driveway	NA	NA	NA	NA	NA	NA	NA	NA

Note:
For 4-way intersections, delay and LOS is calculated base on the average of all approaches.
For 2-way stop intersections, delay and LOS represent only the side street approach with the worst delay and LOS
Highlighted area indicates unacceptable conditions.
NA, not evaluated due to the lack of base traffic data.

Average Daily Traffic Volumes

The proposed project and background projects would increase traffic volumes on local roadways, as shown in **Table 3.12-11, Average Daily Traffic Volumes**. The City of Hercules does not have a specific impact threshold related to traffic volume increase.

Table 3.12-11
Average Daily Traffic Volume Analyses – Existing+ Background+ Project

No.	Roadway Segments	Lanes	2007 Vol.	Background Projects	Existing + Background	% Change	Project Vol.	Existing + Background + Project	% Change
1	I-80 Freeway (north of SR-4)	6	141,110	363	141,473	0.3%	685	142,158	0.5%
2	I-80 Freeway (south of SR-4)	8	196,730	858	197,588	0.4%	2,214	199,802	1.1%
3	SR-4 (east of I-80)	4	49,950	412	50,362	0.8%	656	51,018	1.3%
4	John Muir Pkwy (west of I-80)	4	6,555	1,174	7,729	17.9%	300	8,029	3.9%
5	San Pablo Ave.(s/o Willow Ave.)	4	11,125	714	11,839	6.4%	1,414	13,253	11.9%
6	San Pablo Ave. (north of John Muir Pkwy.)	4	13,880	1,642	15,522	11.8%	6,065	21,587	39.1%
7	San Pablo Ave. (south of John Muir Pkwy.)	4	32,245	3,549	35,794	11.0%	6,320	42,114	17.7%
8	San Pablo Ave. (south of Hercules Ave.)	4	26,368	596	26,964	2.3%	1,284	28,248	4.8%
10	Tsushima Ave. (west of San Pablo Ave.)	2	930	0	930	0.0%	0	930	0.0%
11	Sycamore Ave. (west of San Pablo Ave.)	4	5,010	2,904	7,914	58.0%	10,123	18,037	127.9%
12	Sycamore (east of San Pablo Ave.)	5	29,460	2,889	32,349	9.8%	5,615	37,964	17.4%
13	Sycamore Ave. (south of Palm Ave.)	4	8,350	694	9,044	8.3%	0	9,044	0.0%
14	Sycamore Ave. (west of RVR)	4	23,910	1,522	25,432	6.4%	2,900	28,332	11.4%
15	Willow Ave. (south of Palm Ave.)	2	2,115	1,356	3,471	64.1%	342	3,813	9.9%
16	Willow Ave. (north of Palm Ave.)	2	3,050	662	3,712	21.7%	342	4,054	9.2%
17	Willow Ave. (east of Sycamore Ave.)	4	13,585	2,022	15,607	14.9%	2,023	17,630	13.0%

Source: PHA Transportation Traffic Study, January 2009.
Note:
The above volumes were counted in May 2006, December 2007, and January 2008. Counts collected in 2006 were adjusted by a growth of 3% to reflect 2008 conditions. Freeway volumes were obtained from 2006 Caltrans.
No background or project traffic was assigned to Tsushima Ave. in order to test whether the San Pablo/Sycamore intersection would have the ability to handle the potential traffic demand. Under operating conditions, some traffic would use this route, especially if the access driveway to and from the Sycamore Crossing site is located on Tsushima Ave. The San Pablo/Tsushima intersection may have to be signalized and open for left-turn traffic in the future to share the traffic load on the San Pablo/Sycamore intersection and more traffic will use this route as a result.

Traffic Signal Warrants

In addition to the LOS analysis, traffic signal analyses were conducted to determine if any of the currently unsignalized intersections would warrant signalization. The Department of Transportation (Caltrans) has established 11 warrants or justifications for signalization. They include peak hour volume, delays, accident experience, pedestrian volume, school area consideration, etc. The peak-hour-volume warrant generally is considered the most easily satisfied warrant. In most cases, signalization is the first step used to improve unacceptable LOS for non-signalized intersections. **Table 3.12-12, Traffic Signal Warrant Analysis**, shows peak-hour-volume warrant analysis results for the study scenarios. Sub-scenario A (existing traffic plus background-projects traffic plus Sycamore Crossing and Hill Town) was used for the signal warrant analysis because it represents a more conservative or worst-case scenario.

It should be noted that the Sycamore/S. Front Street intersection was evaluated assuming a new driveway to the Sycamore Crossing site is located across from S. Front Street. Traffic signals are not needed if a driveway is not installed at this location.

Table 3.12-12
Traffic Signal Warrant Analysis

No.	Unsignalized Intersection	Existing Conditions	Existing + Background	Existing + Background + Project	2035 Cumulative Conditions
3.	San Pablo/Linus Pauling	No [1]	No	**Yes** [2]	**Yes**
7.	San Pablo/Tsushima	No	No	**Yes** [3]	**Yes** [3]
13.	Sycamore/Civic Center	No	No	No	No
14.	Sycamore/Redwood	No	No	No	**Yes**
15.	Sycamore/Lupine	No	**Yes**	**Yes**	**Yes**
16.	Sycamore/Palm	No	**Yes**	**Yes**	**Yes**
17.	WB SR4 off-ramp/Willow	No	No	No	**Yes**
18.	Willow/Palm	No	**Yes**	**Yes**	**Yes**
19.	Willow/BART E. Driveway	No	**Yes**	**Yes**	**Yes**
20.	Willow/BART C. Driveway	No	No	No	No
21.	Willow/BART W. Driveway	No	No	No	**Yes**
22.	EB I-80-SR-4 ramps/Willow	No	No	No	No
26.	John Muir/Alfred Nobel	No	No	No	No
27.	John Muir/Linus Pauling	No	No	No	No
28.	Sycamore/S. Front	No	No	**Yes**	**Yes**[4]

No.	Unsignalized Intersection	Existing Conditions	Existing + Background	Existing + Background + Project	2035 Cumulative Conditions
29.	Sycamore/Tsushima	No	No	No	No
30.	Sycamore/N. Front	No[4]	No[5]	No[5]	No[5]
31.	San Pablo/Hill Town S. Driveway				

Source: PHA Transportation Traffic Study, January 2009.
Notes:
1. No: Intersection has not satisfied the peak hour volume warrant.
2. Yes: Intersection has satisfied the peak hour volume warrant for signalization
3. Potential yes, depending on whether left turn from Tsushima is permitted..
4. This intersection would need a signal if an access driveway for Sycamore Crossing is located across from S. Front Street.
5. Assuming the Hill Town driveway will be right-turn-only and will have limited traffic volume.

According to the analysis shown above, the following intersections would warrant signalization: San Pablo/Linus Pauling (Existing plus Project Scenario); Sycamore/Lupine (Existing plus Project plus Background Scenario); Sycamore/Palm (Existing plus Project plus Background Scenario); Willow/Palm (Existing plus Project plus Background Scenario); Willow/BART Replacement Parking E. Driveway (Existing plus Project plus Background Scenario); and Sycamore/S. Front (Existing plus Project plus Background Scenario). The installation of traffic signals could successfully reduce unacceptable LOS at the six intersections listed above to a less than significant level.

Mitigation Measure TRAF-1 would require that appropriate intersection improvements be implemented at the project level and that intersection LOS be reduced to acceptable levels for the corresponding intersections listed above. With the incorporation of these mitigation measures, the proposed project would not expose future land uses on the Hill Town site or the Sycamore Crossing site to LOS that would exceed City standards.

MM TRA-1: Contributions to the following intersection improvements shall be required of the proposed Hill Town and Sycamore Crossing developments:

San Pablo/Sycamore: Develop programs to encourage public transit use that will reduce vehicle trips by 10 percent for the intersection. – *Mitigation required under project (Sub-scenario A) conditions.*

San Pablo/Linus Pauling: Install traffic signals. Add left-turn and right-turn lanes into the site. Access driveway should provide two outbound lanes and one inbound lane. - *Mitigation required under project (Sub-scenario A and B) conditions.*

Willow/BART Replacement Parking E. Driveway: Install traffic signal plus widen Willow Avenue and add turn lanes on Willow. Coordinate mitigation with BART

Replacement Parking improvement plan. - *Mitigation required under project (Sub-scenario A) and 2035 conditions.*

Sycamore/S. Front: Install traffic signals. Add a WB left-turn lane if a driveway for Sycamore Crossing is added to the intersection. *Mitigation required under project (Sub-scenarios A and B) and 2035 conditions.*

The project applicants shall be required to pay a fair-share contribution to the cost of these improvements. Prior to approval of a Final Planned Development Plan or Tentative Map, the project proponents for the Hill Town and Sycamore Crossing projects shall retain qualified and licensed traffic engineering professional(s) to determine specific mitigation requirements for each project, mitigation timing, and fair-share allocation of these improvements.

Significance after Mitigation: Table 3.12-13, Intersection LOS with Mitigation, shows the intersections that would operate at unacceptable LOS under project (Sub-scenario A and B) conditions and their respective LOS after mitigation. As shown, all intersections LOS impacts could be reduced to a less than significant level based on City of Hercules standards.

Impact Traf-2: **Future development projects resulting from the proposed project would increase the parking demand. However, such future projects would be required to comply with the City's parking standards. (*Less than Significant*)**

Approval of the proposed Updated 2009 Redevelopment Plan would likely lead to increased development activity within the proposed Redevelopment Plan Area. Such subsequent development would be required to comply with the City's standards for parking, which require that adequate parking be provided for all new development. Compliance with these standards ensures the proposed project would not lead to significant parking impacts. Thus, the proposed Redevelopment Plan's parking impacts would be less than significant.

Table 3.12-13
Intersection LOS with Mitigation

	Existing + Background				Existing + Background + Project (Sub-scenario A)				Existing + Project (Sub-scenario B)			
	AM		PM		AM		PM		AM		PM	
Signalized Intersections	**V/C**	**LOS**	**V/C**	**LOS**	**V/C**	**LOS**	**V/C**	**LOS**	**V/C**	**LOS**	**V/C**	**LOS**
6. San Pablo/Sycamore	X	X	X	X	0.77	C[1]	0.94	E[1]	X	X	X	X
Unsignalized Intersections	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
3. San Pablo/Linus Pauling (2 way-stop)	X	X	X	X	0.50	A	0.47	A	0.44	A	0.40	A
19. Willow/BART E. Driveway	X	X	X	X	0.38	A	0.48	A	X	X	X	X
28. Sycamore/S. Front	X	X	X	X	0.41	A	0.43	A	0.34	A	0.36	A

Source: PHA Transportation Traffic Study, January 2009.
Notes:
For All-way intersections, delay and LOS is calculated base on the average of all approaches.
For 2-way stop intersections, delay and LOS represent only the side street approach with the worst delay and LOS. Main street approaches traffic would operate at LOS A since traffic would not have to stop or yield.
V/C – Volume-to-capacity ratio. [2] LOS – Level-of-service.
Delay- Stop delay per vehicle in second
Highlighted area indicates unacceptable conditions.
X indicates acceptable LOS under project/sub- scenario conditions with no mitigation requires.
[1] As signalized intersection, LOS is evaluated based on a volume-to-capacity ratio (V/C), per CCTA LOS methodology.
[2] Existing eastbound SR-4 ramps at Willow Avenue will be relocated and no mitigation is needed for this location.

Impact Traf-3: **Future development projects resulting from the proposed project have the potential to cause hazards due to design features. However, future projects would be required to comply with the City's design standards and fire codes, which would ensure that hazards would be prevented. (*Less than Significant*)**

Approval of the Updated 2009 Redevelopment Plan would likely lead to increased development activity within the Hill Town and Sycamore Crossing sites. Such subsequent projects would likely include driveways, drive aisles, parking lots, and other vehicular access routes. All future projects would be required to comply with the City's design standards and the design standards in the *Uniform Fire Code*. Required compliance with these existing standards would prevent hazardous design features and would ensure adequate and safe access. The proposed redevelopment plan's impacts would therefore be less than significant.

3.12.7 CUMULATIVE IMPACTS

Impact Traf-5: **Implementation of the proposed the Updated 2009 Redevelopment Plan would add new vehicle trips to the roadway network, which would contribute to a substantial cumulative increase in traffic and impacts to intersection LOS in the project vicinity. *(Potentially Significant; Less than Significant with Mitigation)***

The cumulative traffic operation (LOS) analysis was conducted for future conditions with implementation of the Redevelopment Plan in 2035. (Cumulative projects are shown in **Table 3.0-1** in **Section 3.0, Environmental Setting, Impacts, and Mitigation Measures**.) Cumulative 2035 traffic volumes were obtained from the Fehr & Peers Transportation Consultants traffic study prepared for the Hercules New Town Center (HNTC) Project, which was based on the 2035 Hercules Citywide traffic Model also prepared by Fehr & Peers. The traffic model encompasses all recently approved and proposed projects, including those shown in **Table 3.0-1**, and the relocation of the I-80–SR-4 ramps, and is equivalent to the *Hercules General Plan* buildout traffic model. The model did not have traffic volumes available for all of the study intersections evaluated in the study prepared for the Updated 2009 Redevelopment Plan. Therefore, for locations where traffic volumes were not available, projections were made based on growth rates derived from the HNTC traffic analysis by comparing existing traffic volumes and 2035 traffic volumes. Several growth rates were developed and used in process: one for the area west of San Pablo Avenue, one for intersections along the San Pablo Avenue, one for the Sycamore Avenue corridor, and one for Willow Avenue northeast of SR-4. Subsequently, these growth-rate-projected traffic volumes were adjusted with adjacent intersections to achieve a balanced roadway network.[1] Major roadway assumptions used in the 2035 traffic operation analysis include the following:

1. Existing I-80–SR-4 ramps at Willow Avenue will be relocated farther east.
2. Willow Avenue will be widened to four-lane between Sycamore Avenue and SR-4.
3. The Tsushima Bridge is present.

The results of this analysis are shown below in **Table 3.12-14, LOS at Signalized and Unsignalized Intersections (Cumulative 2035 Conditions)**. As indicated, two of the signalized intersections would operate at unacceptable LOS F (San Pablo/John Muir and San Pablo/Sycamore), while four non-signalized intersections would operate at LOS F (Sycamore/Palm, WB SR-4 off-ramp/Willow Avenue, Willow/Palm, and Willow Avenue/BART Replacement Parking east driveway).

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[1] The roadway network and street geometry for the 2035 conditions were based on information obtained from previous studies and development plans and verified with city staff.

Table 3.12-14
LOS at Signalized and Unsignalized Intersections (Cumulative 2035 Conditions)

Study Intersections	Cumulative 2035 Conditions AM		Cumulative 2035 Conditions PM		Cumulative 2035 Conditions with Mitigation AM		Cumulative 2035 Conditions with Mitigation PM	
Signalized Intersection	**V/C**	**LOS**	**V/C**	**LOS**	**V/C**	**LOS**	**V/C**	**LOS**
1. San Pablo/Willow	0.48	A	0.47	A				
2. San Pablo/Victoria Circle	0.48	A	0.41	A				
4. San Pablo/John Muir	**1.13**	**F**	**1.27**	**F**	0.74	C[2]	**0.99**	**E[2]**
5. San Pablo/Transit Center	0.55	A	0.53	A				
6. San Pablo/Sycamore	**0.96**	**E**	**1.09**	**F**	0.71	C[2]	0.87	D[2]
8. San Pablo/Hercules	0.81	D	0.68	B				
9. Sycamore/Willow	0.84	D	0.84	D				
10. Sycamore/Creekside Center	0.68	B	0.73	C				
11. Sycamore/Turquoise	0.68	B	0.63	B				
12. Sycamore/Refugio Valley	0.65	B	0.71	C				
23. EB I-80 off-ramp/Willow/Shopping Center Driveway	0.38	A	0.86	D				
24. WB I-80 off-ramp/Willow	0.25	A	0.41	A				
25. Willow/Hawthorne	0.40	A	0.44	A				
Unsignalized Intersection	**Delay**	**LOS**	**Delay**	**LOS**				
3. San Pablo/Linus Pauling	**>180.0**	**F**	**>180.0**	**F**	0.54	A	0.49	A
7. San Pablo/Tsushima	23.9	C	18.4	B				
13. Sycamore/Civic Center	11.3	B	18.5	C				
14. Sycamore/Redwood	27.1	D	25.2	D				
15. Sycamore/Lupine	23.9	C	19.2	C				
16. Sycamore/Palm	26.1	D	**157.1**	**F**	0.56	A	0.73	C
17. WB SR4 off-ramp/Willow	23.3	C	**>180.0**	**F**	0.37	A	0.88	D
18. Willow/Palm	**>180.0**	**F**	**>180.0**	**F**	0.56	A	.077	C
19. Willow/BART E. Driveway	**>180.0**	**F**	**>180.0**	**F**	0.40	A	0.47	A
20. Willow/BART C. Driveway	11.6	B	12.3	B				
21. Willow/BART W. Driveway	13.7	B	18.7	C				
22. EB I-80-SR-4 ramps/Willow	To be relocated							
26. John Muir/Alfred Nobel	14.4	B	10.5	B				

Study Intersections	Cumulative 2035 Conditions AM		Cumulative 2035 Conditions PM		Cumulative 2035 Conditions with Mitigation AM		Cumulative 2035 Conditions with Mitigation PM	
27. John Muir/Linus Pauling	9.1	B	10.7	A				
28. Sycamore/S. Front	**79.2**	**F**	**>180.0**	**F**	0.51	A	0.46	A
29. Sycamore/Tsushima	18.6	C	15.8	C				
30. Sycamore/N. Front	13.1	B	11.8	B				
31. San Pablo/Hill Town S. Driveway	10.4	B	13.6	B				

Source: PHA Transportation Traffic Study, January 2009.
Note:
For All-way intersections, delay and LOS is calculated base on the average of all approaches.
For 2-way stop intersections, delay and LOS represent only the side street approach with the worst delay and LOS. Main street approaches traffic would operate at LOS A since traffic would not have to stop or yield.
V/C – Volume-to-capacity ratio.
LOS – Level of service.
Delay- Stop delay per vehicle in second
Highlighted area indicates unacceptable conditions.
NA: Mitigation not available.
[1] As signalized intersection, LOS is evaluated based on a volume –to-capacity ratio (V/C), per CCTA LOS methodology.
[2] Existing eastbound SR-4 ramps at Willow Avenue will be relocated and no mitigation is needed for this location.

Vehicle trips generated under the 2035 cumulative development scenario including other anticipated developments in the region added to the roadway network would result in a number of intersections operating at unacceptable LOS. The intersections that would operate at unacceptable LOS levels under cumulative conditions include: San Pablo Avenue/Linus Pauling; San Pablo Avenue/John Muir Parkway; San Pablo Avenue/Sycamore Drive; Sycamore/Palm; westbound SR-4 off-ramp/Willow; Willow/Palm; Willow/Hercules Transit Center east driveway; and Sycamore/S. Front. The proposed project's contribution to this impact is considerable and, thus, significant.

Average Daily Traffic Volumes

Traffic volumes on local roadways under cumulative conditions are shown in **Table 3.12-15, 2035 Average Daily Traffic Volumes**. As noted above, the City of Hercules does not have a specific impact threshold related to traffic volume increase.

Table 3.12-15
Average Daily Traffic Volume Analyses – Existing + Background + Project

No.	Roadway Segments	Lanes	2007 Vol.	Existing + Background	% Change	Existing + Background + Project	% Change	2035 Cumulative Conditions	% Change
1	I-80 Freeway (north of SR-4)	6	141,110	141,473	0.3%	142,158	0.5%	198,282	39.6%
2	I-80 Freeway (south of SR-4)	8	196,730	197,588	0.4%	199,802	1.1%	267,438	34.1%
3	SR-4 (east of I-80)	4	49,950	50,362	0.8%	51,018	1.3%	80,132	57.5%
4	John Muir Pkwy (west of I-80)	4	6,555	7,729	17.9%	8,029	3.9%	10,619	32.3%
5	San Pablo Ave.(s/o Willow Ave.)	4	11,125	11,839	6.4%	13,253	11.9%	18,023	40.1%
6	San Pablo Ave. (north of John Muir Pkwy.)	4	13,880	15,522	11.8%	21,587	39.1%	22,486	8.3%
7	San Pablo Ave. (south of John Muir Pkwy.)	4	32,245	35,794	11.0%	42,114	17.7%	52,237	27.4%
8	San Pablo Ave. (south of Hercules Ave.)	4	26,368	26,964	2.3%	28,248	4.8%	42,716	52.5%
10	Tsushima Ave. (west of San Pablo Ave.)	2	930	930	0.0%	930	0.0%	1,507	62.0%
11	Sycamore Ave. (west of San Pablo Ave.)	4	5,010	7,914	58.0%	18,037	127.9%	18,222	20.0%
12	Sycamore (east of San Pablo Ave.)	5	29,460	32,349	9.8%	37,964	17.4%	47,725	30.1%
13	Sycamore Ave. (south of Palm Ave.)	4	8,350	9,044	8.3%	9,044	0.0%	13,527	49.6%
14	Sycamore Ave. (west of RVR.)	4	23,910	25,432	6.4%	28,332	11.4%	38,734	40.3%
15	Willow Ave. (south of Palm Ave.)	2	2,115	3,471	64.1%	3,813	9.9%	4019	9.5%
16	Willow Ave. (north of Palm Ave.)	2	3,050	3,712	21.7%	4,054	9.2%	4,941	26.3%
17	Willow Ave. (east of Sycamore Ave.)	4	13,585	15,607	14.9%	17,630	13.0%	22,008	27.5%

Source: PHA Transportation Traffic Study, January 2009.
Note:
The above volumes were counted in May 2006, December 2007, and January 2008. Counts collected in 2006 were adjusted by a growth of 3% to reflect 2008 conditions. Freeway volumes were obtained from 2006 Caltrans traffic count database. Daily volumes for 2035 conditions were estimated based on growth rates derived from the City of Hercules 2035 traffic model (by comparing existing am/pm intersection traffic volumes and 2035 traffic volumes).

Mitigation Measure TRAF-1, which would reduce Redevelopment Plan-related project-level impacts to a less than significant level, would also reduce cumulative impacts at the intersections of San Pablo/Linus Pauling, Sycamore/Palm, Willow/Palm, Willow/BART Replacement Parking E. Driveway, and Sycamore/S. Front. However, the following mitigation measure would also be required to reduce cumulative traffic impacts to less than significant. **Mitigation Measure TRAF-5** would require that appropriate intersection improvements be implemented under cumulative conditions, in order to reduce intersection LOS to acceptable levels for the corresponding eight intersections listed above. With the incorporation of these mitigation measures, the proposed redevelopment plan would not create cumulative traffic impacts to LOS that would exceed City standards.

MM TRAF-5: Contributions to the following intersection improvements shall be required of the proposed Hill Town and Sycamore Crossing developments:

San Pablo/John Muir: Develop programs to encourage public transit use that will reduce vehicle trips by 15 percent for the intersection. Relocate I-80 off-ramp/SR-4 on-ramp further east to shift traffic away from San Pablo Ave. A 30 percent shift is assumed in the mitigation effectiveness analysis. – *Mitigation required under 2035 Conditions.*

San Pablo/Sycamore: Develop programs to encourage public transit use that will reduce 15 percent vehicle trips for the intersection. Relocate I-80 off-ramp/SR-4 on-ramp further east to shift traffic away from San Pablo Ave. A 30 percent shift traffic to and from Sycamore Ave. east of San Pablo is assumed in the mitigation effectiveness analysis. – *Mitigation required under 2035 Conditions.*

San Pablo/Linus Pauling: Install traffic signals. Add left-turn and right-turn lane into the site. Access driveway should provide two outbound lanes and one inbound lane (not required if mitigated under previous scenario). – *Mitigation required under project (Sub-scenarios A and B) and 2035 Conditions.*

Willow/BART Replacement Parking E. Driveway: Install traffic signal plus widen Willow Avenue and add turn lanes on Willow. Coordinate mitigation with BART Replacement Parking improvement plan. – *Mitigation required under project (Sub-scenario A) and 2035 conditions.*

Sycamore/S. Front: Install traffic signals. Add a westbound left-turn lane if a driveway for Sycamore Crossing is added to the intersection. – *Mitigation required under project (Sub-scenarios A and B) and 2035 conditions.*

Sycamore/Palm: Install traffic signals. Coordinate mitigation with SR-4 ramp relocation project. – *Mitigation required under 2035 Conditions*.

WB SR4 off-ramp/Willow: Install traffic signals. Coordinate mitigation with SR-4 ramp relocation project. – *Mitigation required under 2035 Conditions.*

Willow/Palm: Install traffic signals. Widen Willow and Palm approaches to two lanes in each direction. Coordinate mitigation with SR-4 ramp relocation project. – *Mitigation required under 2035 Conditions.*

Sycamore/S. Front: Install traffic signals and add a WB left-turn lane if a driveway for Sycamore Crossing is added to the intersection (not required if mitigated under a previous scenario). – *Mitigation required under 2035 Conditions.*

The project applicants shall be required to pay a fair-share contribution to the cost of these improvements. At the time of each specific project application, the project proponent shall retain qualified and licensed traffic engineering professional(s) to perform additional project-specific traffic analysis for the purpose of determining mitigation timing and fair-share allocation.

The project applicants shall be required to pay a fair-share contribution to the cost of these improvements. Prior to approval of a Final Planned Development Plan or Tentative Map, the project proponents for the Hill Town and Sycamore Crossing projects shall retain qualified and licensed traffic engineering professional(s) to determine specific mitigation requirements for each project, mitigation timing, and fair-share allocation of these improvements.

Significance after Mitigation: Table 3.12-14 shows the intersections that would operate at unacceptable LOS under 2035 conditions and their respective LOS after mitigation. Long-term improvements in traffic infrastructure, including the completion of the John Muir Parkway extension and the relocation of the Willow Avenue off-ramps from I-80/SR-4, would improve operations at congested intersections along San Pablo Avenue in Hercules by creating alternate access gateways to the City. As shown, all intersections LOS impacts could be reduced to a less than significant level based on City of Hercules standards.

Cumulative Impacts to Public Transit

Increased traffic congestion related to future development or redevelopment projects resulting from the proposed project could cause delays to or require increases in local public transit service. This would be a potentially significant impact.

WestCAT provides local, express, and regional service to the cities of Pinole and Hercules and unincorporated communities of Montalvin Manor, Tara Hills, Bayview, Rodeo, Crockett, and Port Costa. In addition, WestCAT operates regional service between Martinez and the El Cerrito del Norte BART station and between the Hercules Transit Center and Contra Costa College. Lynx, its transbay service, runs between the Hercules Transit Center and the San Francisco Transbay Terminal.

The cumulative long-term development and growth of the area will likely affect transit operation in terms of increased travel time as a result of congestion and intersection delay. To evaluate the potential travel time increases, arterial travel time was evaluated using SYNCHRO traffic simulation model for San Pablo Avenue and Sycamore Avenue for current conditions and 2035 conditions. Results indicated vehicle travel time along the two corridors could increase between 18 and 33 percent over the next 25 years. **Table 3.12-16, Corridor Travel Time Analysis**, shows a vehicle travel time comparison between the current and 2035 (cumulative) conditions.

Table 3.12-16
Corridor Travel Time Analysis

Study Corridor		Existing		2035		Change	
		AM	PM	AM	PM	AM	PM
San Pablo Ave.	NB	22.0[1]	16.0	14.9	12.7	32%	21%
(Between Hercules and Willow)	SB	22.0	16.9	14.7	14.0	33%	17%
Average						**33%**	**19%**
Sycamore Ave.	EB	14.4	14.1	10.8	10.6	16%	25%
(Between San Pablo and RVR)	WB	12.2	11.9	7.7	7.2	20%	39%
Average						**18%**	**32%**

Source: PHA Transportation Traffic Study, January 2009.
Note:
Vehicle travel time analysis conducted using SYNCHRO traffic model.
1. Vehicle travel time in mph.

While the above analysis is primarily relevant for vehicle travel, public transit (bus and shuttle service) in the area would also experience similar levels of congestion and delay. To accommodate the future growth

and development, the City of Hercules has developed plans to relocate its eastbound I-80–SR-4 ramps from its current location farther east to a point near Palm Avenue. This move is expected create another gateway access to Hercules to share the traffic load on San Pablo and Sycamore Avenues. In addition, the City plans to widen Willow Avenue between Sycamore Avenue and SR-4 from two lanes to four lanes. When completed, these projects are expected to reduce the overall congestion in the area and improve travel time. Implementation of **Mitigation Measures TRAF-1** and **TRAF-5** would relieve the congested conditions contributing to effects on transit service and would reduce potential impacts to a less than significant level. In addition, providing bus priority signal operation is a widely used strategy that would also improve bus operation and should be considered as part of the City's long-term improvement program.