4.9 TRANSPORTATION, TRAFFIC, AND CIRCULATION

INTRODUCTION

The Transportation, Traffic, and Circulation chapter of the Draft EIR addresses the existing and cumulative transportation and circulation conditions associated with the development of the Tuscany Meadows project (proposed project). The analysis includes consideration of automobile traffic impacts on roadway capacity, transit impacts, bicycle impacts, and pedestrian impacts.

The information contained within this chapter is based on the *Transportation Impact Analysis*[1] for the Tuscany Meadows Residential Project prepared by Abrams Associates Traffic Engineering, Inc. All technical calculations are included as an appendix to the Transportation Impact Analysis (TIA), which can be found in Appendix L to this EIR.

In addition, the TIA found in Appendix L to this EIR presents additional analysis not required by CEQA, and intended for informational purposes for the City. The additional analysis includes the Cumulative Plus Project Conditions without the James Donlon Boulevard Extension (JDE), LOS Conditions with and without Standard Oil Road, LOS Conditions and Queuing with and without the AM Peak Hour Control Point Metering on Buchanan Road, and Tuscany Meadows TIA LOS Calculations using the previously adopted Contra Costa Transportation Authority Level of Service (CCTALOS) Methodology compared to the 2010 Highway Capacity Manual (HCM) Methodology.

EXISTING ENVIRONMENTAL SETTING

The section below describes the transportation, traffic, and circulation study area and the physical and operational characteristics of the existing transportation system within the study area, including the surrounding roadway network, transit, bicycle and pedestrian facilities.

Roadway Network

Routes of Regional Significance (RRS) are major roadway and freeway corridors that serve regional traffic. RRS are identified in action plans adopted by the Contra Costa Transportation Authority (CCTA) under the countywide Measure J program.

The following RRS that could be affected by the project include:

- *State Route 4 (SR 4)/SR 4 Bypass* – SR 4 is the primary east-west corridor in Contra Costa County (CCC), and connects Interstate 80 in the city of Hercules to the west with State Route 160 (SR 160) and the cities of Oakley and Brentwood to the east. SR 4 is currently a two-lane roadway through Oakley and Brentwood and is a divided freeway from Interstate 680 east through Concord, Pittsburg, and Antioch. It should be noted that

the SR 4 Bypass has been completed in Antioch and Brentwood providing an alternative to SR 4 in these cities. Interchanges along SR 4 within the study area include Railroad Avenue, Loveridge Road, and Somersville Road.

- *Kirker Pass Road/Ygnacio Valley Road* – Kirker Pass Road is a north-south roadway that runs between Buchanan Road in Pittsburg and Clayton Road in Concord. In the Pittsburg 2020 General Plan, Kirker Pass Road is identified as a major arterial, has four lanes with a 55 miles per hour (mph) speed limit, and is divided by medians and barrier. In the City of Concord, Kirker Pass Road transitions into a six lane roadway with a 45 mph speed limit and turns into Ygnacio Valley Road at Clayton Road.

- *Railroad Avenue* is a north-south roadway with a 20 to 35 mph speed limit that starts at 3rd Street and ends at Buchanan Road and turns into Kirker Pass Road. Railroad Avenue is two lanes north of W. 10th Street and becomes a four-lane major arterial south of W. 10th Street, as identified in the Pittsburg 2020 General Plan.

- *East Leland Road/Delta Fair Boulevard* - East Leland Road is an east-west roadway with a 30 to 40 mph speed limit that runs between Century Boulevard and turns into West Leland Road at Railroad Avenue. To the east of Century Boulevard, the roadway changes names to Delta Fair Boulevard and then terminates to the east at Buchanan Road. Within the study area, East Leland Road is a four-lane major arterial with a bike lane in each direction and a raised median.

- *Buchanan Road* is an east-west roadway with a 35 to 45 mph speed limit that runs between Railroad Avenue and Contra Loma Boulevard. In the vicinity of the project area, Buchanan Road has two-lanes and a bike lane on both sides. In the Pittsburg 2020 General Plan Buchanan Road is identified as a major arterial in the roadway system.

- *Somersville Road/Auto Center Drive* – Somersville Road is a north-south roadway with a 35 mph speed limit that runs from Century Boulevard south to Black Diamond Mines Regional Park. Auto Center Drive extends north from Century Boulevard to W. 10th Street. From Century Boulevard to James Donlon Boulevard, Somersville Road is identified as a Major Arterial in the Pittsburg 2020 General Plan with four lanes between Century Boulevard and the Contra Costa Canal and two lanes between the Contra Costa Canal and James Donlon Boulevard. The two lane section is planned to be expanded to four lanes in the future along with a new traffic signal at James Donlon Boulevard and Somersville Road. South of James Donlon Boulevard, Somersville Road provides access to the Black Diamond Mines Regional Park.

- *James Donlon Boulevard* is an east-west roadway with a 40 mph speed limit that begins west of Somersville Road and ends at Lone Tree Way. James Donlon Boulevard is a four-lane arterial divided by raised medians, and is currently planned to be extended west to Kirker Pass Road under cumulative build-out conditions.

- *Lone Tree Way* is major arterial that extends south from SR 4 and has speed limits ranging from 30 mph to 45 mph. Lone Tree Way is a four to six-lane arterial divided by medians and left turn pockets with sidewalks on both sides along most of its length. Lone Tree Way extends east to Brentwood Boulevard, providing linkages to the significant regional shopping destinations along these roadways in Antioch and Brentwood, and connecting to SR 4 and the SR 4 Bypass.

The following local roadways were also included in the analysis:

- *Harbor Street* is a north-south roadway with a 25 to 35 mph speed limit that runs from 3rd Street to Buchanan Road. Within the study area, Harbor Street has two travel lanes with left turn pockets and is identified as a Minor Arterial in the Pittsburg 2020 General Plan.

- *Loveridge Road* is a north-south roadway with a 35 mph speed limit that runs between Waterfront Road and Buchanan Road. Within the study area, Loveridge Road is a four-lane Major Arterial with raised medians, bike lanes, and sidewalks, as identified in the Pittsburg 2020 General Plan.

- *Ventura Drive* is a two-lane residential roadway with a 25 mph speed limit that runs west from Harbor Street and terminates south of Buchanan Road in the vicinity of the future James Donlon Boulevard Extension.

- *Fairview Drive* is a two-lane commercial collector road with a 30 mph speed limit that runs along the back of the Somersville Towne Center between Delta Fair Boulevard and Somersville Road.

- *Century Boulevard* is an east-west roadway that begins west of Auto Center Drive and ends at Lone Tree Way. Century Boulevard is a four-lane arterial divided by medians and left turn pockets with sidewalks on both sides except at the western end where the roadway becomes two lanes.

Study Intersections

Based on the project's trip generation and the potential for traffic impacts in coordination with the cities of Pittsburg and Antioch, the following 34 study intersections were selected to be included in the study area (see Figure 4.9-1):

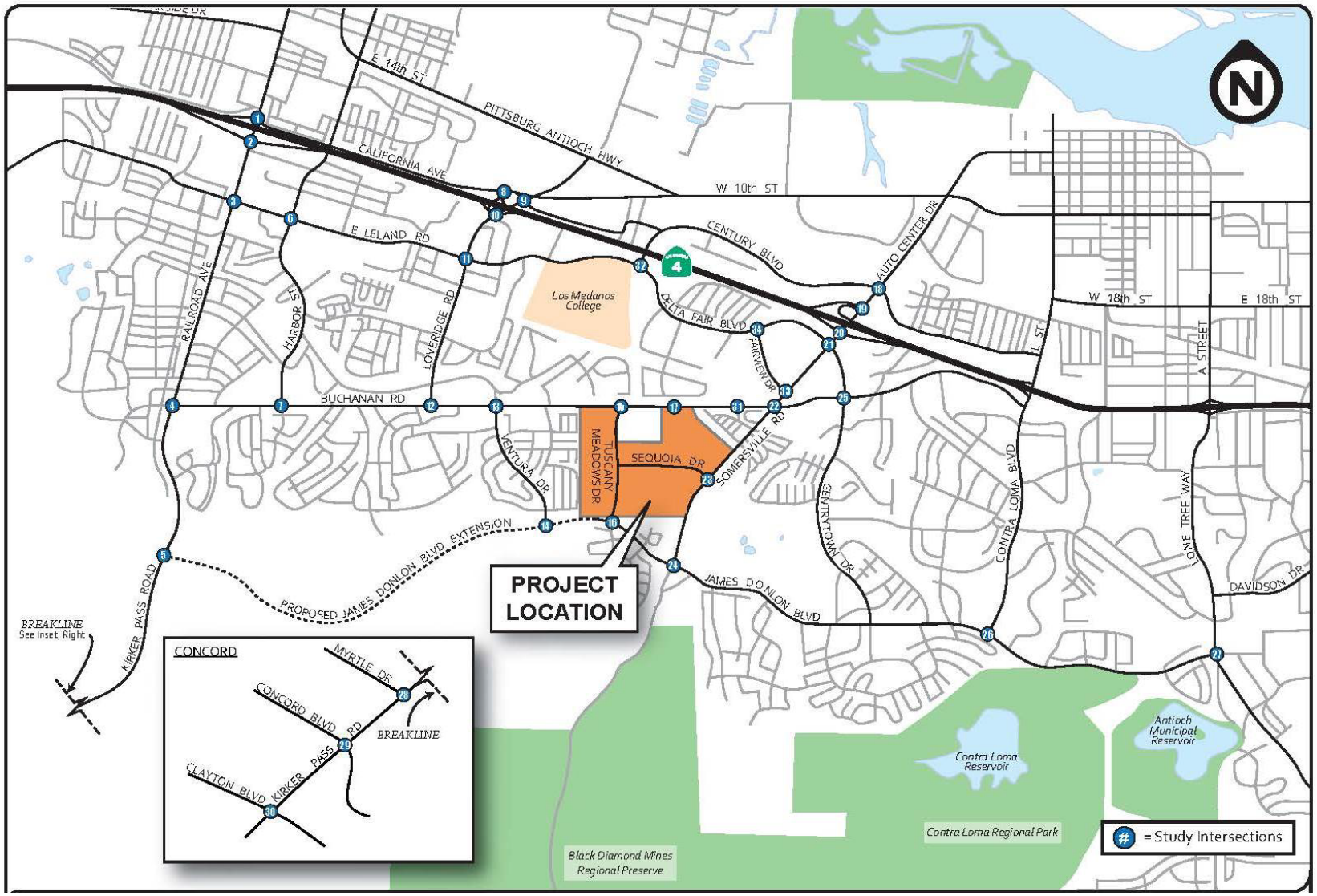
1. Railroad Avenue & SR-4 WB Ramps
2. Railroad Avenue & SR-4 EB Ramps
3. Railroad Avenue & E. Leland Road
4. Railroad Avenue & Buchanan Road
5. Kirker Pass Road & James Donlon Boulevard (extended)*
6. Harbor Street & E. Leland Road
7. Harbor Street & Buchanan Road
8. California Avenue & SR-4 WB ramps (Loveridge)

9. Loveridge Road & California Avenue
10. Loveridge Road & SR-4 EB ramps
11. Loveridge Road & E. Leland Road
12. Loveridge Road & Buchanan Road
13. Buchanan Road & Ventura Drive
14. Ventura Drive & James Donlon Boulevard*
15. Buchanan Road & Tuscany Meadows Drive*
16. Metcalf St/Tuscany Meadows Drive & James Donlon Boulevard
17. Buchanan Road & Tuscany Meadows Apartments*
18. Auto Center Drive & Century Boulevard
19. Somersville Road & SR-4 WB ramps
20. Somersville Road & SR-4 EB ramps
21. Somersville Road & Delta Fair Boulevard
22. Somersville Road & Buchanan Road
23. Somersville Road & Sequoia Drive*
24. Somersville Road & James Donlon Boulevard
25. Buchanan Road & Delta Fair Boulevard
26. James Donlon Boulevard & Contra Loma Boulevard
27. James Donlon Boulevard & Lone Tree Way
28. Kirker Pass & Myrtle Drive
29. Ygnacio Valley Road & Concord Boulevard
30. Ygnacio Valley Road & Clayton Boulevard
31. Buchanan Road & Chateau Mobile Park
32. Delta Fair Boulevard & Century Boulevard
33. Somersville Road & Fairview Drive
34. Delta Fair Boulevard & Fairview Drive

** future intersections*

It should be noted that some intersections along Ygnacio Valley Road where over 50 peak hour trips could be added were not included in the analysis because the City Traffic Engineer determined the critical movements would not be significantly impacted. The determination was based on the CCTA technical procedures which state the following: "*Please note the CCTA Engineering judgment may be used to eliminate intersections from the analysis that are not controlling intersections or where critical movements are not affected as the project only adds through movements. The elimination of study intersections where 50 or more trips are projected to be added by the project should be done in consultation with the city engineer or transportation engineer for the local jurisdiction in which the affected intersection is located.*"[2]

Figure 4.9-1
Study Intersections



Source: Abrams Associates, 2014.

Common Traffic Analysis Terms

LOS is a qualitative measure of traffic operating conditions, whereby a letter grade, from A to F is assigned, based on quantitative measurements of delay per vehicle. The grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. In general, LOS A represents free-flow conditions, and LOS F represents severe delay under stop-and-go conditions.

Tables 4.9-1 and 4.9-2 summarizes the relationship between delay and LOS for signalized and unsignalized intersections. The delay ranges for unsignalized intersections are lower than for signalized intersections as drivers expect less delay at unsignalized intersections.

Table 4.9-1
Signalized Intersection LOS Definitions

Level of Service	Description of Operations	Average Delay (sec/veh)	Volume to Capacity Ratio (v/c)
A	Insignificant Delays: No approach phase is fully used and no vehicle waits longer than one red indication.	≤ 10	≤ .60
B	Minimal Delays: An occasional approach phase is fully used. Drivers begin to feel restricted.	> 10 to 20	> 0.61 to 0.70
C	Acceptable Delays: Major approach phase may become fully used. Most drivers feel somewhat restricted.	> 20 to 35	> 0.71 to 0.80
D	Tolerable Delays: Drivers may wait through no more than one red indication. Queues may develop but dissipate rapidly without excessive delays.	> 35 to 55	> 0.81 to 0.90
E	Significant Delays: Volumes approaching capacity. Vehicles may wait through several signal cycles and long vehicle queues from upstream.	> 55 to 80	> 0.91 to 1.0
F	Excessive Delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80	> 1.0

Note: sec/veh = Seconds per vehicle

Sources:
Highway Capacity Manual (Transportation Research Board 2010).
Technical Procedures Update. Contra Costa Transportation Authority, January 16, 2013.

Table 4-9-2 Unsignalized Intersection LOS Definitions		
Level of Service	**Description of Operations**	**Average Delay (sec/veh)**
A	No delay for stop-controlled approaches.	≤ 0 to 10
B	Operations with minor delays.	> 10 to 15
C	Operations with moderate delays.	> 15 to 25
D	Operations with some delays.	> 25 to 35
E	Operations with high delays and long queues.	> 35 to 50
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers.	> 50
Note: sec/veh = Seconds per vehicle *Source: Highway Capacity Manual (Transportation Research Board 2010).*		

Existing Intersection Conditions

The primary basis of the analysis is the peak hour level of service for the key intersections. The hours identified as the "peak" hours are generally between 7:15 AM and 8:15 AM and 4:45 PM and 5:45 PM for all of the transportation facilities described. Throughout this report, the peak hours are identified as the AM and PM peak hours, respectively. Table 4.9-3 shows the existing delay and LOS results at the study intersections for weekday AM and PM peak hour conditions. Traffic counts at the study intersections were conducted between May 2012 and March 2014 at times when local schools were in session.

Table 4.9-3 Intersection LOS – Existing Conditions					
Intersection	**Control**	**AM Peak Hour**		**PM Peak Hour**	
		Delay[1]	**LOS**	**Delay[1]**	**LOS**
1. Railroad Ave & SR-4 WB Ramps	Traffic Signal	32.9	C	19.7	B
2. Railroad Ave & SR-4 EB Ramps	Traffic Signal	28.3	C	25.3	C
3. Railroad Ave & E. Leland Rd	Traffic Signal	36.6	D	51.2	D
4. Railroad Ave & Buchanan Rd	Traffic Signal	15.9	B	37.9	D
5. Kirker Pass Rd & Montreux Entrance	Traffic Signal	N/A	N/A	N/A	N/A
6. Harbor St & E Leland Rd	Traffic Signal	24.9	C	37.3	D

(Continued on next page)

Table 4.9-3
Intersection LOS – Existing Conditions

Intersection	Control	AM Peak Hour		PM Peak Hour	
		Delay[1]	LOS	Delay[1]	LOS
7. Harbor St & Buchanan Rd	Traffic Signal	38.5	D	23.6	C
8. California Ave & SR-4 WB Ramps (Loveridge)	Traffic Signal	18.4	B	28.0	C
9. Loveridge Rd & California Ave	Traffic Signal	34.4	C	23.2	C
10. Loveridge Rd & SR-4 EB Ramps	Traffic Signal	22.3	C	26.2	C
11. Loveridge Rd & E. Leland Rd	Traffic Signal	23.5	C	29.8	C
12. Loveridge Rd & Buchanan Rd	Traffic Signal	38.8	D	25.4	C
13. Buchanan Rd & Ventura Dr	Traffic Signal	15.3	B	22.2	C
14. Ventura Dr & James Donlon Blvd	Traffic Signal	N/A	N/A	N/A	N/A
15. Buchanan Rd & Tuscany Meadows Dr	Traffic Signal	N/A	N/A	N/A	N/A
16. Metcalf St & James Donlon Blvd	Side Street Stop[2]	N/A	N/A	N/A	N/A
17. Buchanan Rd & Tuscany Meadows Apartments	Traffic Signal	N/A	N/A	N/A	N/A
18. Auto Center Dr & Century Blvd	Traffic Signal	17.1	B	21.1	C
19. Somersville Rd & SR-4 WB Ramps	Traffic Signal	24.3	C	22.9	C
20. Somersville Rd & SR-4 EB Ramps	Traffic Signal	12.2	B	20.8	C
21. Somersville Rd & Delta Fair Blvd	Traffic Signal	19.3	B	19.8	B
22. Somersville Rd & Buchanan Rd	Traffic Signal	33.5	C	29.6	C
23. Somersville Rd & Tuscany Meadows	Traffic Signal	N/A	N/A	N/A	N/A
24. Somersville Rd & James Donlon Blvd	Traffic Signal	9.9	A	8.5	A
25. Buchanan Rd & Delta Fair Blvd	Traffic Signal	9.8	A	12.0	B
26. James Donlon Blvd & Contra Loma Blvd	Traffic Signal	17.8	B	13.1	B
27. James Donlon Blvd & Lone Tree Way	Traffic Signal	19.2	B	23.2	C
28. Kirker Pass Rd & Myrtle Dr	Traffic Signal	6.7	A	4.6	A

(Continued on next page)

Table 4.9-3
Intersection LOS – Existing Conditions

Intersection	Control	AM Peak Hour		PM Peak Hour	
		Delay[1]	LOS	Delay[1]	LOS
29. Ygnacio Valley Rd & Concord Blvd	Traffic Signal	34.1	C	30.0	C
30. Ygnacio Valley Rd & Clayton Blvd	Traffic Signal	35.9	D	36.5	D
31. Buchanan Rd & Chateau Mobile Park	Side Street Stop[2]	11.9	B	21.3	C
32. Delta Fair Blvd & Century Blvd	Traffic Signal	12.9	B	15.8	B
33. Somersville Rd & Fairview Dr	Traffic Signal	16.7	B	32.3	C
34. Delta Fair Blvd & Fairview Dr	Traffic Signal	17.5	B	20.1	C

Notes:
1. For signalized and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection.
2. For stop controlled intersections the results for the worst side street approach are presented.

Source: Abrams Associates, 2014.

Transit System

Three major public mass transit operators provide service within or adjacent to the study area, including Bay Area Rapid Transit (BART), the Eastern Contra Costa Transit Authority (or Tri Delta Transit), and the County Connection.

BART

BART is a rapid mass transit system which provides regional transportation connections to much of the Bay Area. BART runs from the North Bay Area in Richmond to the South Bay Area in Fremont. In the east-west direction BART runs from Pittsburg to the San Francisco Airport and Milbrae with several connections in Oakland. The Pittsburg/Bay Point BART station, which is closest to the proposed project, serves all of Pittsburg, Bay Point, Antioch, and all other surrounding cities and runs from 4:00 AM to 12:00 AM daily, with a weekday frequency of 15 minutes. A future E-BART extension to Hillcrest Avenue in Antioch is currently under construction. The E-BART service will connect with BART at the Bay Point BART station. It should be noted that an additional E-BART Station is also planned at Railroad Avenue and the widening of SR 4 is currently underway to accommodate the planned station.

Tri Delta Transit

Tri Delta Transit serves the East County including Brentwood, Oakley, Pittsburg, Antioch, Bay Point and unincorporated areas of East County. Tri Delta Transit operates fourteen local bus routes from Monday to Friday, including three express services, and three local bus routes during weekends and holidays. The Tri Delta Transit routes that run closest to the proposed project are

routes 380, 390, and 394. Route 390 has bus stops approximately 1,500 feet from the project near Buchanan Road and Somersville Road.

County Connection Transit

The County Connection currently operates a total of 31 fixed-route bus routes on weekdays throughout Central CCC with limited service to the East County area. The route that serves the East County area is route 93X. Route 93X is an express route that runs from the Hillcrest Park 'N Ride in Antioch, along Kirker Pass Road, along Ygnacio Valley Road, and ends at the Walnut Creek BART station. Route 93X has a frequency of 30 minutes and runs from 5:07 AM to 7:41 PM during the weekdays. Currently, the bus stop for route 93X nearest to the proposed project is approximately 1,500 feet from the project at Buchanan Road and Somersville Road.

Bicycle and Pedestrian System

Bicycle paths, lanes and routes are typical examples of bicycle transportation facilities, which are defined by Caltrans as being in one of the following three classes:

Class I

Provides a completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.

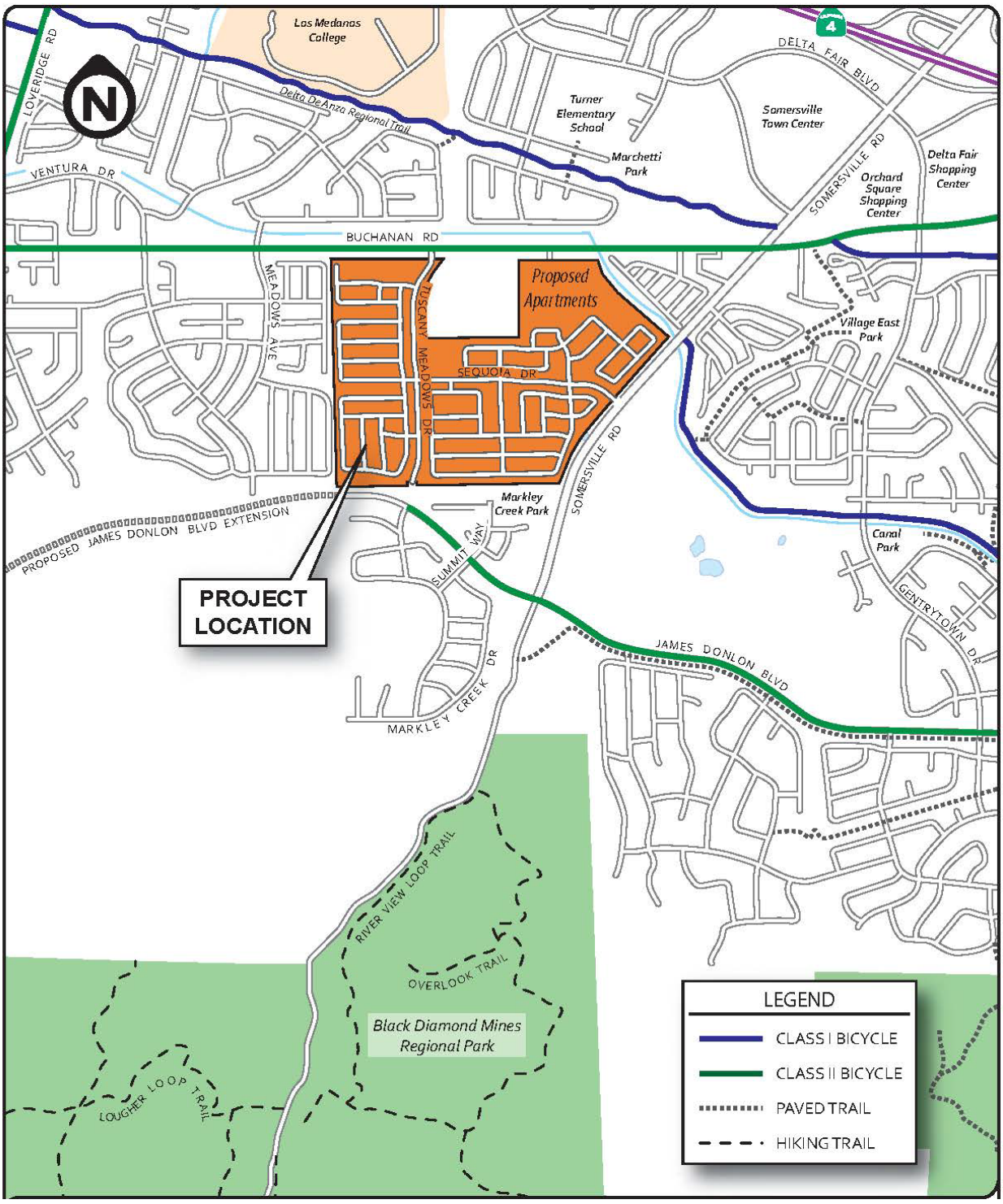
Class II

Provides a restricted right-of-way designated lane for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and cross-flows by pedestrians and motorists permitted.

Class III

Provides a route designated by signs or permanent markings and shared with pedestrians and motorists. The project area has two major multi-use trails (i.e. Class I trails) including the Delta De Anza Trail and the Mokelumne Trail. Figure 4.9-2 shows the existing pedestrian and bicycle facilities in the vicinity of the proposed project. It should be noted that the project area includes existing Class II bicycle lanes on Buchanan Road, James Donlon Boulevard, E. Leland Road, and Loveridge Road and also numerous paved trails and hiking trails.

Figure 4.9-2
Existing Bicycle and Pedestrian System



Source: Abrams Associates, 2014.

REGULATORY CONTEXT

Existing transportation policies, laws, and regulations that would apply to the proposed project are summarized below and provide a context for the impact discussion related to the project's consistency with the applicable regulatory conditions.

Federal Regulations

Federal plans, policies, regulations, or laws related to transportation and circulation do not apply to the proposed project.

State Regulations

The California Department of Transportation (Caltrans) has jurisdiction over State highways. Therefore, Caltrans controls all construction, modification, and maintenance of State highways, such as SR 4. Any improvements to these roadways would require Caltrans' approval.

Guide for the Preparation of Traffic Impact Studies

Caltrans' *Guide for the Preparation of Traffic Impact Studies* (December 2002) provides guidance for Caltrans staff who review local development and land use change proposals. The Guide also informs local agencies about the information needed for Caltrans to analyze the traffic impacts to state highway facilities which include freeway segments, on- or off-ramps, and signalized intersections.

Local Regulations

Contra Costa Countywide Comprehensive Transportation Plan Update (2009)

The transportation policies that are currently applicable within CCC are based on the Contra Costa County Comprehensive Transportation Plan. The Plan identifies the criteria for analyzing transportation impacts and sets forth plans for future roadway improvements in the County.

City of Pittsburg General Plan

The following are applicable policies related to transportation, traffic, and circulation from the Transportation and Circulation Element of the Pittsburg General Plan.

Goal 7-G-1 Achieve service level standards for roadway intersections that are based on the roadway's classification and location shown in Figure 7-2 of the Pittsburg General Plan.

Goal 7-G-3 Coordinate circulation system plans with other jurisdictions' and agencies' plans, including Antioch and Concord, the CCTA, and Caltrans.

Goal 7-G-4 Work with the CCTA to manage morning commute traffic from East to Central CCC by studying and implementing arterial metering management plans.

Goal 7-G-5 Provide adequate capacity on arterial roadways to meet LOS standards and to avoid traffic diversion to local roadways or the freeway.

As congestion increases on SR 4, monitor and evaluate the need to implement neighborhood traffic management controls on local streets to eliminate or minimize the impact of diverted traffic.

Goal 7-G-6 Locate high traffic-generating uses so that they have direct access or immediate secondary access to arterial roadways.

Goal 7-G-7 Complete arterial roadway improvements required to mitigate traffic impacts of an approved project before the project is fully occupied. Arterial improvements should be completed by creating funding sources, which include but are not limited to Traffic Mitigation Fees, Development Agreements, and Assessment Districts.

Policy 7-P-1 Require mitigation for development proposals that are not part of the Traffic Mitigation Fee program which contribute more than one percent of the volume to an existing roadway or intersections with inadequate capacity to meet cumulative demand.

Development projects that contribute to future traffic congestion on existing roadways shall provide mitigation to ensure adequate future capacities. Traffic analysis of development plans will determine the proportion of cumulative impact each project is creating.

Policy 7-P-2 Use the adopted Regional and Local Transportation Impact Mitigation Fee ordinances to ensure that all new development pays an equitable pro-rata share of the cost of transportation improvements. Review the Traffic Impact Mitigation Fee schedule annually and update every five years at a minimum.

Policy 7-P-3 Review and update the City's Engineering Design Standards for each functional roadway classification, according to Table 7-1 of the Pittsburg General Plan.

Roadway standards are illustrated in the City's Engineering Design Standards for typical midblock applications. Additional right-of-way may be needed for turn lanes at some intersection approaches.

Policy 7-P-4 Require that all traffic studies be conducted by professional transportation consultants selected by the Planning and Building

and Engineering Departments, with the City acting as the lead agency. Ensure that all costs associated with the traffic study are paid by the applicant.

Policy 7-P-5 Apply for federal Congestion Mitigation Air Quality grant funding, designed to improve air quality through roadway improvement projects.

Policy 7-P-6 Ensure that all Regional Routes of Significance within the City maintain the following traffic levels of service (LOS) standards (applicable to non-freeway routes and routes not subject to a Traffic Management Program):

- LOS mid D (peak hour volume to capacity ratio less than or equal to 0.85) at intersections along major arterials, except for intersections along Bailey Road;
- LOS high E (peak hour volume to capacity ratio less than or equal to 0.99) at intersections along Bailey Road between West Leland Road and SR 4; and
- LOS mid E (peak hour volume to capacity ratio less than or equal to 0.95) at intersections on Kirker Pass Road.

Policy 7-P-7 Endeavor to implement Transportation Element improvements prior to deterioration in levels of service below those set forth in Goal 7-G-1.

Development approvals should require reasonable demonstration that traffic improvements necessary to serve the development will be in place in time to accommodate trips generated by the project.

Policy 7-P-8 Ensure that all non-Regional Routes within the City (not designated as RRS in Figure 7-2 of the Pittsburg General Plan) maintain the following traffic levels of service (LOS) standards based on their location in rural, semi-rural, suburban, urban or downtown areas, as designated in Figure 7-2 of the Pittsburg General Plan:

- Rural – LOS low C (peak hour volume to capacity ratio less than or equal to 0.74)
- Semi-rural – LOS high C (peak hour volume to capacity ratio less than or equal to 0.79)
- Suburban – LOS low D (peak hour volume to capacity ratio less than or equal to 0.84)
- Urban – LOS high D (peak hour volume to capacity ratio less than or equal to 0.89)

- Downtown – LOS high D (peak hour volume to capacity ratio less than or equal to 0.89)

Specific improvements should be identified and implemented on the basis of detailed traffic studies or Environmental Impact Reports. Improvements may include intersection approach lane expansion, related channelization improvements and traffic signal installations.

Policy 7-P-9 Implement the intersection improvements (including signalization and additional or reallocated lanes) as illustrated in Appendix A of the Pittsburg General Plan.

Policy 7-P-10 Require mitigation for development proposals which result in projected parking demand that would exceed the proposed parking supply on a regular and frequent basis.

Policy 7-P-11 Maximize the carrying capacity of arterial roadways by controlling the number of intersections and driveways, minimizing residential access, implementing Transportation Systems Management (TSM) measures, and requiring sufficient on-site parking to meet the needs of each project (see also Table 7-1 of the Pittsburg General Plan).

Additional guidelines for arterial access include providing smooth ingress/egress to development. This includes designing parking areas so that traffic turning into the parking areas does not stack up on the arterial roadway; combining driveways to serve small parcels; and maintaining adequate distance between driveways and intersections to permit efficient traffic merges. In the built environment, roadway right-of-way may not be available to increase arterial capacity. Therefore, improving the efficiency of existing arterials through TSM measures should be one of the first considerations to meet level of service standards. TSM measures include signal coordination, channelization and signal improvements at intersections, and implementation of new traffic control technology.

Policy 7-P-12 Continue to collect fees, plan and design for the future construction of Buchanan Bypass. Ensure preparation of a feasibility and environmental impact study to determine the precise alignment, costs, mitigation measures, and impacts on adjacent uses.

Policy 7-P-13 Upgrade or extend the hillside access routes from Bailey Road, Buchanan Road, Kirker Pass Road, and proposed San Marco Boulevard, as development potential warrants.

Policy 7-P-14 Increase access to alternative north-south routes providing connection to SR 4, other than Railroad Avenue.

Policy 7-P-15 Support Caltrans' planned improvements to the Railroad Avenue and Loveridge Road interchanges in conjunction with SR 4 widening projects. Work with Federal, State and regional authorities to ensure timely completion of these projects needed to adequately serve local circulation needs.

Policy 7-P-16 Continue to collect fees for the extension of West Leland Road to Willow Pass Road, subject to the Traffic Mitigation Fee program. As established by nexus, require new development adjacent to the extension to dedicate right-of-way and construct or fund new intersections and frontage improvements.

Policy 7-P-21 Design local residential streets and implement traffic-control measures to keep traffic below 5,000 vehicles per day.

Policy 7-P-22 Avoid adding traffic roadways carrying volumes above the standards, and consider traffic control measures where perceived nuisance is severe.

Goal 7-G-8 Cooperate with public agencies and other jurisdictions to promote local regional public transit serving Pittsburg and provide an express bus system between Pittsburg, Brentwood, Oakley, Antioch, and the Pittsburg/Bay Point BART Station.

The City should encourage transit development, expansion, coordination and aggressive marketing throughout eastern CCC to serve a broader range of local and regional transportation needs including commuter and express service.

Policy 7-P-26 Require mitigation for development proposals which increase transit demand above the service levels provided by public transit operators and agencies.

Policy 7-P-27 Support the expansion of the existing transit service area and an increase in the service levels of existing transit. Support increased Tri- Delta and County Connection express bus service to the Pittsburg/Bay Point BART Station to reduce traffic demand on SR 4.

Policy 7-P-28 Encourage the extension of BART to Railroad Avenue within the median of SR 4. Cooperate with BART and regional agencies to develop station area plans and transit-oriented development patterns.

Policy 7-P-29 Preserve options for future transit use when designing improvements for roadways. Ensure that developers provide bus turnouts and/or shelters, where appropriate, as part of projects.

Policy 7-P-30 Work with Tri-Delta and planning area residents to plan for local bus routes that more effectively serve potential riders within local neighborhoods.

Goal 7-G-10 Study the feasibility of a comprehensive network of on- and off-road bike routes to encourage the use of bikes for commute, recreational and other trips.

A continuous network of safe and convenient bikeways has the potential to connect neighborhoods with major activity centers, parks, schools, employment centers, civic uses, the waterfront, and the County bicycle system.

Goal 7-G-11 Coordinate with neighboring communities and regional agencies to establish a continuous regional system of bicycle and pedestrian facilities.

Goal 7-G-14 Develop urban design and streetscape standards and guidelines to improve pedestrian environments and accessibility in new development projects and in Downtown.

Goal 7-G-15 Encourage walking as a regular means of transportation for people who live within a half-mile walk of school, work, or routine shopping destinations.

Goal 7-G-16 Ensure that current bicycle-friendly roadways, featuring wide shoulders or marked bicycle lanes, are not redesigned to improve traffic LOS, unless all other alternative roadways possible to alleviate congestion are exhausted.

Policy 7-P-33 Require mitigation for development proposals which result in potential conflicts, or fail to provide adequate access, for pedestrians and bicycles.

Policy 7-P-34 As part of development approval, ensure that safe and contiguous routes for pedestrians and bicyclists are provided within new development projects and on any roadways that are impacted as a result of new development.

Policy 7-P-36 Ensure continued compliance with Title 24 of the Uniform Building Code, requiring removal of all barriers to disabled persons on arterial and collector streets.

Policy 7-P-38 Develop a series of continuous pedestrian systems within Downtown and residential neighborhoods, connecting major activity centers and trails with City and County open space areas.

Sidewalks should be creatively designed to invite safe use by pedestrians, and be free of obstacles, such as newspaper racks, bus benches, utility poles, and fire hydrants.

Policy 7-P-39 Ensure that residential and commercial developments provide pedestrian pathways between lots for direct routes to commercial centers, schools, and transit facilities.

Policy 7-P-40 Ensure provision of sufficiently wide sidewalks and pedestrian paths in all new residential development.

Policy 7-P-41 Ensure the provision of multi-use trails or trailheads within new hillside developments, preferably connecting to the regional trail network.

Policy 7-P-42 Improve pedestrian crossing safety at heavily used intersections by installing crossing controls that provide adequate time for pedestrians to cross the street.

Policy 7-P-43 Provide adequate roadway width dedications for bicycle lanes, paths, and routes as designated in Figure 7-4 of the Pittsburg General Plan.

Policy 7-P-45 During review of development projects, encourage secure bicycle facilities and other alternative transportation facilities at employment sites, public facilities, and multi-family residential complexes.

Policy 7-P-46 Construction or expansion of roadways and intersections within the City shall not result in the severance of an existing bicycle route, unless an alternative exists or is provided.

Policy 7-P-48 Ensure that construction of bulb-outs and curb extensions at intersections for pedestrian safety does not endanger bicyclists by forcing them into traffic lanes.

Policy 7-P-52 Require that new arterial and collector streets accommodate bicyclists.

Policy 7-P-53 Require that any grind and overlay of existing arterial and collector streets consider the needs of bicyclists.

Policy 7-P-54 Amend engineering standards to require the use of bicycle grates on all new catch basins and storm drain inlet replacements on streets.

IMPACTS AND MITIGATION MEASURES

The standards of significance to be used in identifying project-specific and cumulative impacts are presented. The standards are based on policies of the City of Pittsburg and other responsible agencies. In addition, the methods used to analyze the impacts of the project on the roadway, bicycle, pedestrian, and transit systems are provided in this section.

Standards of Significance

According to CEQA guidelines, a significant impact would occur if the proposed project would result in the following:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths and mass transit.
- 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 a county congestion management agency for designated roadways.
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.
- Result in a projected future over-capacity freeway condition where current long-range planning studies show an under-capacity condition.
- Result in an internal circulation system design that does not meet City standards.

The goal of the City of Pittsburg is to maintain a mid-Level of Service, LOS D during the peak hours (volume to capacity [v/c] ratio less than or equal to 0.85) with mid LOS E permissible at intersections along Kirker Pass Road, according to the City of Pittsburg General Plan. However, the analysis also includes intersections under the jurisdiction of the Cities of Antioch and Concord, CCC, and Caltrans. It should be noted that for the Caltrans freeway facilities being studied the operational standards and significance criteria are established by the CCTA acting as the designated Congestion Management Agency (CMA) representing the jurisdictions of CCC. As the acting CMA, CCTA establishes the traffic LOS standards for all state highway facilities in CCC, which supersede the general Caltrans operational standard for all state highways.[3]

Table 4.9-4 summarizes the applicable LOS standards at each of the project study intersections. The older CCTALOS and currently adopted HCM standards are provided in Table 4.9-4. CCTA Technical Procedures specify that the HCM methodology shall be used; however, the CCTALOS method may be used if the HCM is being compared to a standard that was established using the previously adopted methodology. The analysis performed for the proposed project and included in this chapter used the HCM methodology and Standards. However, the analysis was also performed using the older CCTTALOS methods and standards (included in the Appendix of the TIA, which is included as Appendix L of this EIR) in order to ensure the conclusions are consistent with the City's General Plan Policies and Standards.

Table 4.9-4
Intersection LOS Significance Criteria

Intersection	Control	CCTALOS Standards[1]		HCM Standards[2]	
		v/c[3]	LOS	Delay[4]	LOS
1. Railroad Ave & SR-4 WB Ramps	Traffic Signal	< 0.85	mid D	< 45	mid D
2. Railroad Ave & SR-4 EB Ramps	Traffic Signal	< 0.85	mid D	< 45	mid D
3. Railroad Ave & E. Leland Rd	Traffic Signal	< 1.0	E	< 80	E
4. Railroad Ave & Buchanan Rd	Traffic Signal	< 0.95	mid E	< 65	mid E
5. Kirker Pass Rd & Montreux Entrance	Traffic Signal	< 0.95	mid E	< 65	mid E
6. Harbor St & E. Leland Rd	Traffic Signal	< 0.85	mid D	< 45	mid D
7. Harbor St & Buchanan Rd	Traffic Signal	< 0.85	mid D	< 45	mid D
8. California Ave & SR-4 WB Ramps (Loveridge)	Traffic Signal	< 0.90	D	< 55	D
9. Loveridge Rd & California Ave	Traffic Signal	< 0.90	D	< 55	D
10. Loveridge Rd & SR-4 EB Ramps	Traffic Signal	< 0.90	D	< 55	D
11. Loveridge Rd & E. Leland Rd	Traffic Signal	< 0.85	mid D	< 45	mid D
12. Loveridge Rd & Buchanan Rd	Traffic Signal	< 0.85	mid D	< 45	mid D
13. Buchanan Rd & Ventura Dr	Traffic Signal	< 0.85	mid D	< 45	mid D
14. Ventura Dr & James Donlon Blvd	Traffic Signal	< 0.85	mid D	< 45	mid D
15. Buchanan Rd & Tuscany Meadows Dr	Traffic Signal	< 0.85	mid D	< 45	mid D
16. Tuscany Meadows Dr[5] & James Donlon Blvd	Traffic Signal[6]	< 0.85	mid D	< 45	mid D
17. Buchanan Rd & Tuscany Meadows Apartments	Traffic Signal	< 0.85	mid D	< 45	mid D
18. Auto Center Dr & Century Blvd	Traffic Signal	< 0.85	mid D	< 45	mid D
19. Somersville Rd & SR-4 WB Ramps	Traffic Signal	< 0.85	mid D	< 45	mid D
20. Somersville Rd & SR-4 EB Ramps	Traffic Signal	< 0.85	mid D	< 45	mid D
21. Somersville Rd & Delta Fair Blvd	Traffic Signal	< 0.85	mid D	< 45	mid D

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Table 4.9-4
Intersection LOS Significance Criteria

Intersection	Control	CCTALOS Standards[1]		HCM Standards[2]	
		v/c[3]	LOS	Delay[4]	LOS
22. Somersville Rd & Buchanan Rd	Traffic Signal	< 0.85	mid D	< 45	mid D
23. Somersville Rd & Tuscany Meadows	Traffic Signal	< 0.85	mid D	< 45	mid D
24. Somersville Rd & James Donlon Blvd	Traffic Signal	< 0.85	mid D	< 45	mid D
25. Buchanan Rd & Delta Fair Blvd	Traffic Signal	< 0.85	mid D	< 45	mid D
26. James Donlon Blvd & Contra Loma Blvd	Traffic Signal	< 0.85	mid D	< 45	mid D
27. James Donlon Blvd & Lone Tree Way	Traffic Signal	< 0.85	mid D	< 45	mid D
28. Kirker Pass Rd & Myrtle Dr	Traffic Signal	< 0.90	D	< 55	D
29. Ygnacio Valley Rd & Concord Blvd	Traffic Signal	< 0.90	D	< 55	D
30. Ygnacio Valley Rd & Clayton Blvd	Traffic Signal	< 1.0	E	< 80	E
31. Buchanan Rd & Chateau Mobile Park	Traffic Signal[7]	< 0.85	mid D	< 45	mid D
32. Delta Fair Blvd & Century Blvd	Traffic Signal	< 0.85	mid D	< 45	mid D
33. Somersville Rd & Fairview Dr	Traffic Signal	< 0.85	mid D	< 45	mid D
34. Delta Fair Blvd & Fairview Dr	Traffic Signal	< 0.85	mid D	< 45	mid D

Notes:
1. Previously adopted CCTA standards based on the CCTALOS methodology.
2. Currently adopted CCTA standards based on the 2010 HCM methodology.
3. v/c = volume to capacity ratio
4. For signalized and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection.
5. With project implementation, intersection Metcalf St & James Donlon Blvd would become Tuscany Meadows Dr & James Donlon Blvd.
6. Implementation of Traffic Signal is part of the JDE.
7. Implementation of Traffic Signal is part of the City of Antioch's Buchanan Crossings Shopping Center improvement.

Source: Abrams Associates, 2014.

As the designated CMA representing the jurisdictions of CCC, CCTA is responsible for preparing and adopting a Congestion Management Program (CMP). Consistent with the CMP legislation, the CCTA has established a level-of-service standard of LOS E for all parts of the CMP network except those that were already operating at worse levels of service in 1991.

Signalized Intersections

Project-related operational impacts on the signalized study intersections in the City of Pittsburg and Antioch are considered significant if project-related traffic causes the LOS rating to deteriorate from mid LOS D (v/c of 0.85) or better to high LOS D, LOS E or F, or from LOS E to LOS F. In the City of Concord the Kirker Pass Road and Ygnacio Valley Road intersections are considered to have significant impacts if project-related traffic causes the LOS rating to deteriorate from LOS D or better to LOS E, LOS F, or from LOS E to LOS F.

Unsignalized Intersections

Project-related operational impacts on unsignalized intersections are considered significant if project generated traffic causes the worst-case movement (or average of all movements for all-way stop-controlled intersections and roundabouts) to deteriorate from LOS D or better to LOS E or F.

Freeway Facilities

Project-related operational impacts on freeway facilities are considered significant if project generated traffic causes the maximum delay index for SR 4 to exceed 2.5, as specified in the East County Action Plan. It should be noted that achievement of the multi-modal traffic service objectives (MTSO) delay index and average speed is measured over the length of SR 4 from Willow Pass Grade to SR 160. The Delay Index threshold is applied to freeway facilities only.

Method of Analysis

The analysis methodology provided in the TIA prepared for the proposed project by Abrams Associates Traffic Engineering, Inc. is discussed below.

Analysis Scenarios

The following analysis scenarios are included in this chapter:

- **Existing Conditions:** Level of Service (LOS) based on existing peak hour volumes and existing intersection configurations.
- **Existing Plus Project:** Existing traffic volumes plus trips from the proposed project without the proposed JDE.
- **Baseline Conditions:** This scenario is based on the existing volumes plus growth in background traffic (for five years) plus the traffic from all reasonably foreseeable developments that could substantially affect the volumes at the project study intersections. This scenario does not include the JDE.
- **Baseline Plus Project Conditions:** This scenario is based on the baseline traffic volumes plus the trips from the proposed project. This scenario does not include the JDE.
- **Cumulative Conditions:** This scenario includes year 2035 cumulative volumes based on planned and approved projects and the most recent (March, 2013) release of the Countywide Travel Demand Model. This scenario assumes completion of JDE.

- **Cumulative Plus Project Conditions:** This scenario includes year 2035 cumulative volumes based on the most recent release of the Countywide Travel Demand Model plus the trips from the proposed project. This scenario assumes completion of JDE.

JDE is a planned and partially funded project included in the County's Regional Transportation Plan as reflected in the traffic model for the region, and is therefore assumed to be in place under the Cumulative and Cumulative Plus Project Conditions.

Intersections

Existing operational conditions at the thirty four (34) study intersections have been evaluated according to the requirements set forth by the CCTA using the methodology set forth in the Final Technical Procedures Update (dated July 19, 2006). Analysis of traffic operations was conducted using the 2010 HCM LOS methodology with Synchro software.[4] LOS is an expression, in the form of a scale, of the relationship between the capacity of an intersection (or roadway segment) to accommodate the volume of traffic moving through it at any given time. The level of service scale describes traffic flow with six ratings ranging from A to F, with "A" indicating relatively free flow of traffic and "F" indicating stop-and-go traffic characterized by traffic jams.

Signalized Intersections

The HCM methodology determines the capacity of each lane group approaching the intersection. The LOS is then based on average control delay (in seconds per vehicle) for the various movements within the intersection. A combined weighted average control delay and LOS are presented for the intersection. A summary of the HCM results and copies of the detailed HCM LOS calculations are included in the Appendix of Appendix L.

Unsignalized Intersections

The HCM describes the method for evaluating LOS and delay at unsignalized (all-way stop controlled and two-way stop controlled) intersections. LOS at unsignalized intersections is also defined by the average control delay per vehicle (measured in seconds). The control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. The average delay for the overall intersection is reported for all-way stop controlled intersections. The delay ranges for unsignalized intersections are lower than for signalized intersections as drivers expect less delay at unsignalized intersections.

Delay Index of SR 4

The delay index measures travel congestion and is expressed as the ratio of the time required to travel between two points during the peak hour (the congested travel time) and the time required during un-congested off-peak times. A delay index of 2.0 means that congested travel time is twice as long as during an off-peak travel time. The following shows the formula for calculating delay indices:

Delay Index = Free Flow Travel Time / Measured Peak Hour Travel Time

The denominator of the delay index formula, measured peak hour travel time, was measured by conducting speed runs along SR 4 during the AM and PM peak hours in March, 2014. The numerator of the delay index formula, the free flow travel time is defined as "the time it takes to traverse a roadway segment at the speed limit including the average uncongested delay experienced at traffic signals." As stated above, the achievement of the MTSO delay index and average speed is measured over the length of SR 4 from Willow Pass Grade to SR 160.

Project Trip Generation

The proposed project would consist of 917 single family residential units and 375 apartment units. The trip generation calculations are shown in Table 4.9-5. They are based on the fitted curve equations for Single-Family Detached Housing (Land Use Code 210) and for Apartments (Land Use Code 220) from the Institute of Transportation Engineer's (ITE) Trip Generation Manual, 9th Edition.

Table 4.9-5
Project Trip Generation

Land Use	Size	ADT	Am Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Single-Family	917 units	8,070	163	488	651	485	287	772
Apartments	375 units	2,393	38	150	188	146	79	225
Transit/Bicycle reduction 5%		523	10	32	42	32	18	50
Net New project Trips	**1,292 units**	**9,940**	**190**	**607**	**797**	**599**	**348**	**947**

Source: Abrams Associates, 2014

The total trip generation reflects all vehicle trips that would be counted at the project driveways, both inbound and outbound. Adjustments were not applied to trip generation to account for pass-by or internal trips because the project is residential. However, based on the potential for transit and bicycle use a 5 percent reduction has been applied to the project trip generation. The reduction is based on information provided by ITE on trip reductions for developments located adjacent to bicycle lanes and/or bus transit corridors.[5] The project is forecast to generate approximately 797 vehicle trips during the AM peak hour and 947 trips during the PM peak hour.

Under cumulative conditions, per ITE guidelines, additional internal trips were assumed between Tuscany Meadows and the adjacent subdivisions in the Cumulative Plus Project scenario (with the connection of Tuscany Meadows Drive to James Donlon Boulevard). This connection resulted in a reduction of an additional 5 percent (about 50 peak hour trips) to the external trips generated by the project, and was only accounted for in the analysis of Cumulative impacts.

Project Trip Distribution

The trip distribution assumptions have been based on the project's proximity to freeway interchanges, the existing directional split at nearby residential neighborhoods and local

intersections, and the overall land use patterns in the area as determined from the most recent (January 2013) update to the Countywide Travel Demand Model.

Additional research was conducted to verify the project trip distribution and the percent of project traffic assigned to use Kirker Pass Road and Ygnacio Valley Road. Based on the existing traffic volume data Kirker Pass Road carries a PM peak hour volume of approximately 2,400 vehicles per hour west of the City of Pittsburg (total of both directions). Based on Caltrans traffic data SR 4 carries a total PM peak volume of approximately 8,600 vehicles per hour. The Countywide Travel Demand Model indicates that up to 45 percent of PM peak hour trips could be to and from destinations to the west, therefore approximately 10 percent of the proposed project's traffic would use Kirker Pass Road and 35 percent would use SR 4.

However, based on the project's location and traffic counts taken at other nearby residential projects, up to 20 percent of the proposed project's traffic would head west over Kirker Pass Road. That traffic was then proportionally distributed to Ygnacio Valley Road, Clayton Road, and Concord Boulevard based on the relative volume of traffic on each roadway and the intersection turning movement counts. This assumption resulted in the conclusion that 11 percent of the total proposed project's traffic would travel to and from the west on Ygnacio Valley Road.

Baseline Scenario

The baseline scenarios include Baseline (No Project) Conditions and Baseline Plus Project Conditions. The baseline scenarios are based on the existing volumes plus growth in background traffic (for five years) plus the traffic from all reasonably foreseeable developments that could substantially affect the volumes at the project study intersections, including the approved Black Diamond and Sky Ranch projects and the proposed Montreux development. It should be noted, the baseline scenarios do not include the JDE.

Additional Analysis Not Required by CEQA

The TIA prepared for the proposed project by Abrams Associates found in Appendix L to this EIR presents additional analysis not required by CEQA, and intended for informational purposes for the City.

Cumulative Plus Project Conditions without the JDE

The JDE is currently a project in the Countywide Traffic Model and is included on the regional traffic mitigation fee list with identified funding sources. It was assumed to be in place under Cumulative Plus Project Conditions; however, Abrams Associates conducted additional analysis of the project's future traffic operations without the planned JDE for informational purposes because there is not a timeframe for project completion.

LOS Conditions with and without Standard Oil Road

The planned Standard Oil Road is currently not a project in any nexus fee study nor has a source of funding been identified for the construction. Therefore, under the cumulative buildout

conditions included in this EIR, construction of the Standard Oil Road is not assumed. However, pursuant to the NOP comment letter from the City of Antioch, Abrams Associates conducted additional analysis of the project's future traffic operations with the construction of Standard Oil Road intended for informational purposes for the City.

LOS and Queuing with and without the AM Peak Hour Control Point Metering on Buchanan Rd

Some of the existing queuing and delay that occurs on Buchanan Road is affected by control point metering at the Meadows Avenue traffic signal which limits the amount of traffic that can pass through the intersection during peak periods. The control point metering strategy was based on recommendations in the East Central Traffic Management Study. The report's recommendations were ultimately adopted by CCC and the surrounding cities. As a result, downstream traffic congestion during the AM peak hour often results in westbound queues that limit the volume of traffic that can travel through intersections further to the west. In other words, the resulting LOS calculations do not always provide a complete portrayal of the traffic operations because the volumes are restricted by the queuing problems that occur on Buchanan Road. Therefore, Abrams Associates provide a comparison of the project's traffic operations both with and without the current AM peak period control point metering.

Previously Adopted CCTALOS Methodology

The TIA found in Appendix L of this EIR, includes a complete set of LOS calculations using the previous CCTALOS methodology to allow a direct comparison of the results to the v/c thresholds that are established in the City's General Plan. The General Plan specifies a goal of maintaining a volume to capacity ratio less than or equal to 0.85 (with 0.95 permissible at intersections along Kirker Pass Road). The CCTALOS results are included in the technical appendix to allow verification that the conclusions do not change when CCTALOS methodology is used instead of the HCM methodology adopted by the CCTA in January of 2013.

Project-Specific Impacts and Mitigation Measures

The proposed project impacts on the transportation system are evaluated in this section based on the thresholds of significance and methodology described above. Each impact is followed by recommended mitigation to reduce the identified impacts, if needed.

4.9-1 Traffic related to construction activities. Based on the analysis below, the impact is *less than significant.*

The increase in traffic as a result of demolition and construction activities associated with the proposed project has been quantified assuming a worst-case single phase construction period of 24 months.

Heavy Equipment

Approximately eight pieces of heavy equipment are estimated to be transported on and off the site each month throughout the demolition and construction of the proposed

project. Heavy equipment transport to and from the site could cause traffic impacts in the vicinity of the project site during construction. Prior to issuance of grading and building permits, the project applicant would be required to submit a Traffic Control Plan.

The requirements within the Traffic Control Plan include, but are not limited to, the following: truck drivers would be notified of and required to use the most direct route between the site and SR 4, as determined by the City Engineering Department; all site ingress and egress would occur only at the main driveways to the project site and construction activities may require installation of temporary (or ultimate) traffic signals as determined by the City Engineer; specifically designated travel routes for large vehicles would be monitored and controlled by flaggers for large construction vehicle ingress and egress; warning signs indicating frequent truck entry and exit would be posted on Somersville and Buchanan Roads; and any debris and mud on nearby streets caused by trucks would be monitored daily and may require instituting a street cleaning program. In addition, eight loads of heavy equipment being hauled to and from the site each month would be short-term.

Employees

The weekday work is expected to begin around 7:00 AM and end around 4:00 PM (noise producing activities are restricted between 8:00 AM and 5:00 PM). The construction worker arrival peak would occur between 6:30 AM and 7:30 AM, and the departure peak would occur between 4:00 PM and 5:00 PM. The construction worker peak hours are slightly before the citywide commute peaks. It should be noted that the number of trips generated during construction would not only be short-term, but would also be substantially less than the proposed project at buildout. Based on past construction of similar projects, construction workers could require parking for up to 250 vehicles during the peak construction period. Additionally, deliveries, visits, and other activities may generate peak non-worker parking demand of 10 to 15 trucks and automobiles per day. Therefore, up to 265 vehicle parking spaces may be required during the peak construction period for the construction employees. Furthermore the Traffic Control Plan requires construction employee parking be provided on the project site to eliminate conflicts with nearby residential areas.

Construction Material Import

The project would also require the importation of construction material, including raw materials for the building pads, the buildings, the parking area, and landscaping. Based on past construction of similar projects, importing this material is estimated to require approximately 6,000 trucks for raw materials, approximately 800 trucks of concrete, and a maximum of 1,500 trucks for the parking lots, asphalt paving, and landscaping material, totaling approximately 8,300 trucks. Each truck would generate one inbound and one outbound trip, accounting for two trips for a total of 16,600 trips. During the maximum peak construction period, the project could generate approximately 300 truck trips per day. Furthermore, under the provisions of the Traffic Control Plan, if

importation and exportation of material becomes a traffic nuisance, then the City Engineer may limit the hours the activities can take place.

Conclusion

Heavy equipment being hauled to and from the site each month during construction activities would be short-term. In addition, the required Traffic Control Plan would show proposed parking locations for construction workers and would ensure a safe flow of traffic in the project area. Furthermore, under the provisions of the Traffic Control Plan, if importation and exportation of material becomes a traffic nuisance, then the City Engineer may limit the hours the activities can take place. Therefore, the demolition and construction activities associated with the proposed project would not lead to noticeable congestion in the vicinity of the site or the perception of decreased traffic safety resulting in a ***less-than-significant*** impact. It should be noted that this analysis assumed construction of the entire project in one phase to identify the potential worst-case traffic effects. If the project is built in phases over time, the effects of each phase would be the same or less. Each phase would be subject to a Traffic Control Plan and oversight by the City Engineer. The last phase may require added worker parking measures, depending on the circumstances, as there would not be any remaining vacant land for parking; however, location of final phase construction worker parking would be determined through the Traffic Control Plan process.

Mitigation Measure(s)
None required.

4.9-2 Study roadway intersections. Based on the analysis below, and the lack of feasible mitigation, the impact is *significant and unavoidable*.

The proposed project would result in an increase in vehicle trips in the project area. Table 4.9-5 above, shows the project would generate approximately 9,940 new daily trips, 797 new AM peak hour trips, and 947 new PM peak hour trips. The proposed project trips were assigned to the study intersections in accordance with the trip generation and distribution assumptions described above. Table 4.9-6 shows the Existing Plus Project LOS results at the study intersections.

As shown in the table, all study intersections would operate at an acceptable level both with and without the proposed project except for three intersections, Railroad Avenue & E. Leland Road (Intersection #3), Harbor Street & Buchanan Road (Intersection #7) and Somersville Road & Buchanan Road (Intersection #22).

Although the Harbor Street & Buchanan Road intersection would operate acceptably in the PM peak hour, the intersection operates unacceptably in the AM peak hour (LOS D) both with and without the project. Therefore the threshold that applies is the delay criteria (increased delay by five seconds or more). The delay at the Harbor Street & Buchanan Road intersection during the AM peak hour is expected to increase by

approximately seven seconds during the AM peak hour with the development of the proposed project.

The Railroad Avenue & E. Leland Road intersection would operate acceptably in the AM peak hour and unacceptably in the PM peak hour both with (LOS E) and without (LOS D) the project. Therefore the threshold that applies is the delay criteria (increased delay by five seconds or more). The delay at the Railroad Avenue & E. Leland Road intersection during the PM peak hour is expected to increase by approximately nine seconds during the PM peak hour with the development of the proposed project.

The Somersville Road & Buchanan Road intersection operates unacceptably in both the AM and PM peak hours. With the development of the proposed project the Somersville Road & Buchanan Road intersection would deteriorate from LOS C to LOS E during the AM and PM peak hours.

Therefore, the proposed project would cause a ***significant*** impact to the intersections of Railroad Avenue & E. Leland Road in the PM peak hour, Harbor Street & Buchanan Road in the AM peak hour and Somersville Road & Buchanan Road in the AM and PM peak hours under Existing Plus Project conditions.

Table 4.9-6
Intersection LOS – Existing Plus Project Conditions

Intersection	Control	Existing Conditions				Existing Plus Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS
1. Railroad Ave & SR-4 WB Ramps	Traffic Signal	32.9	C	19.7	B	34.0	C	19.9	B
2. Railroad Ave & SR-4 EB Ramps	Traffic Signal	28.3	C	25.3	C	28.7	C	25.5	C
3. Railroad Ave & E. Leland Rd	Traffic Signal	36.6	D	**51.2**	**D**	40.7	D	**60.4**	**E**
4. Railroad Ave & Buchanan Rd	Traffic Signal	15.9	B	37.9	D	18.2	B	38.4	D
5. Kirker Pass Rd & Montreux Entrance	Traffic Signal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6. Harbor St & E. Leland Rd	Traffic Signal	24.9	C	37.3	D	25.6	C	39.4	D
7. Harbor St & Buchanan Rd	Traffic Signal	38.5	D	23.6	C	**45.6**	**D**	25.2	C
8. California Ave & SR-4 WB Ramps (Loveridge)	Traffic Signal	18.4	B	28.0	C	18.2	B	28.2	C
9. Loveridge Rd & California Ave	Traffic Signal	34.4	C	23.2	C	36.5	D	23.7	C
10. Loveridge Rd & SR-4 EB Ramps	Traffic Signal	22.3	C	26.2	C	22.4	C	26.8	C
11. Loveridge Rd & E. Leland Rd	Traffic Signal	23.5	C	29.8	C	25.1	C	32.1	C
12. Loveridge Rd & Buchanan	Traffic Signal	38.8	D	25.4	C	43.5	D	30.6	C

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Table 4.9-6
Intersection LOS – Existing Plus Project Conditions

Intersection	Control	Existing Conditions				Existing Plus Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS
Rd									
13. Buchanan Rd & Ventura Dr	Traffic Signal	15.3	B	22.2	C	17.7	B	30.4	C
14. Ventura Dr & James Donlon Blvd	Traffic Signal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15. Buchanan Rd & Tuscany Meadows Dr	Traffic Signal	N/A	N/A	N/A	N/A	41.5	D	30.2	C
16. Tuscany Meadows Dr[2] & James Donlon Blvd	Traffic Signal[3]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17. Buchanan Rd & Tuscany Meadows Apartments	Traffic Signal	N/A	N/A	N/A	N/A	23.6	C	40.7	D
18. Auto Center Dr & Century Blvd	Traffic Signal	17.1	B	21.1	C	17.2	B	21.5	C
19. Somersville Rd & SR-4 WB Ramps	Traffic Signal	24.3	C	22.9	C	30.3	C	24.9	C
20. Somersville Rd & SR-4 EB Ramps	Traffic Signal	12.2	B	20.8	C	12.3	B	21.0	C
21. Somersville Rd & Delta Fair Blvd	Traffic Signal	19.3	B	19.8	B	20.7	C	19.9	B
22. Somersville Rd & Buchanan Rd	Traffic Signal	33.5	C	29.6	C	**64.2**	**E**	**58.3**	**E**
23. Somersville Rd & Tuscany Meadows	Traffic Signal	N/A	N/A	N/A	N/A	8.3	A	4.8	A
24. Somersville Rd & James Donlon Blvd	Traffic Signal	9.9	A	8.5	A	9.9	A	8.5	A
25. Buchanan Rd & Delta Fair Blvd	Traffic Signal	9.8	A	12.0	B	10.4	B	12.3	B
26. James Donlon Blvd & Contra Loma Blvd	Traffic Signal	17.8	B	13.1	B	18.0	B	13.2	B
27. James Donlon Blvd & Lone Tree Way	Traffic Signal	19.2	B	23.2	C	19.3	B	23.5	C
28. Kirker Pass Rd & Myrtle Dr	Traffic Signal	6.7	A	4.6	A	6.7	A	4.7	A
29. Ygnacio Valley Rd & Concord Blvd	Traffic Signal	34.1	C	30.0	C	35.8	D	31.3	C
30. Ygnacio Valley Rd & Clayton Blvd	Traffic Signal	35.9	D	36.5	D	36.6	D	37.1	D
31. Buchanan Rd & Chateau Mobile Park	Traffic Signal[4]	11.9	B	21.3	C	13.8	B	27.5	D
32. Delta Fair Blvd & Century Blvd	Traffic Signal	12.9	B	15.8	B	13.2	B	16.4	B

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Table 4.9-6
Intersection LOS – Existing Plus Project Conditions

Intersection	Control	Existing Conditions				Existing Plus Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS
33. Somersville Rd & Fairview Dr	Traffic Signal	16.7	B	32.3	C	16.1	B	39.4	D
34. Delta Fair Blvd & Fairview Dr	Traffic Signal	17.5	B	20.1	C	20.4	C	23.6	C

Notes:
1. For signalized and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection.
2. With project implementation, intersection Metcalf St & James Donlon Blvd would become Tuscany Meadows Dr & James Donlon Blvd.
3. Implementation of Traffic Signal is part of the JDE.
4. Implementation of Traffic Signal is part of the City of Antioch's Buchanan Crossings Shopping Center improvement.

Bold indicates unacceptable operations.

Source: Abrams Associates, 2014.

Mitigation Measure(s)

The project applicant would be required to pay local and regional transportation impact fees, which would provide funding for roadway improvements. In addition, implementation of the following mitigation measures would reduce the above impacts to a less-than-significant level. The resulting intersection LOS after mitigation for Railroad Avenue & E. Leland Road would be LOS C and LOS D for the AM and PM peak hour, respectively. The resulting intersection LOS after mitigation for Harbor Street & Buchanan Road would be LOS C for both the AM and PM peak hour. The resulting intersection LOS after mitigation for Somersville Road & Buchanan Road would be LOS C for both the AM and PM peak hour. However, the widening of Buchanan Road is not a feasible mitigation measure due to the lack of available right of way. Furthermore, successful implementation of the alternatively recommended additional metering would need approval by all local agencies in the area, of which the City of Pittsburg has no control. For this reason, the City of Pittsburg is conservatively acknowledging the possibility that, despite its own commitment to work with the surrounding local agencies, mutually acceptable accommodation may not be reached. In addition, the construction for the JDE is estimated to be approximately $56 million dollars and would therefore be too financially burdensome for one project to construct. Therefore, the above impact would be considered to remain *significant and unavoidable.*

Railroad Avenue & E. Leland Road

4.9-2(a) *Prior to approval of Improvement Plans, the Improvement Plans shall include an additional southbound left-turn lane and associated widening at the Railroad Avenue & E. Leland Road intersection, to the satisfaction of the City Traffic Engineer. [Implementation of this mitigation measure would cause an increase in traffic flow at other intersections in the area where right of way constraints exist. Thus, this mitigation measure would be considered infeasible.]*

Harbor Street & Buchanan Road

4.9-2(b) *Harbor Street & Buchanan Road intersection – Widening of Buchanan Road to allow for the construction of two through lanes on the westbound approach as well as two receiving lanes on the west side of the intersection. [Infeasible]*

Or,

Construction of the JDE from Somersville Road to Kirker Pass Road. [Economically infeasible]

Somersville Road & Buchanan Road

4.9-2(c) *Somersville Road & Buchanan Road intersection – Construct an additional eastbound left turn lane to allow for a dual left turn movement onto northbound Somersville Road and an additional northbound lane to allow for a dual left turn movement onto westbound Buchanan Road. [Infeasible]*

Or,

Implementation of PM peak hour metering of southbound Kirker Pass Road & Pheasant Drive intersection. PM peak hour metering shall be studied and approved prior to implementation. [Outside of Pittsburg jurisdiction]

Or,

Construction of the JDE from Somersville Road to Kirker Pass Road. [Economically infeasible]

4.9-3 Study roadway intersections under Baseline Plus Project conditions Based on the analysis below, the impact is *significant and unavoidable*.

The Baseline scenario evaluates the existing conditions with the addition of traffic from reasonably foreseeable projects in the area, including traffic from the approved Sky Ranch Project (415 units), the approved Black Diamond Residential Project (286 units), the Buchanan Crossings Commercial Project (103,000 square feet), and the planned Montreux Residential Project (368 units). As previously noted, the increase in traffic as a result of demolition and construction activities associated with the proposed project has been quantified assuming a worst-case single phase construction period of 24 months. Thus, the general baseline growth in traffic was developed based on the assumption that the project completion date would be 2017. The baseline scenario was prepared in coordination with the City of Pittsburg and includes all reasonably foreseeable projects that would significantly affect the traffic volumes in the project study area.

The Baseline plus proposed project traffic forecasts were developed by adding project-related traffic to the baseline traffic volumes. Table 4.9-7 summarizes the associated LOS results for the Baseline and Baseline Plus Project weekday AM and PM peak hour conditions without JDE (i.e. the existing roadway network).

As shown in Table 4.9-7, all of the signalized study intersections would continue to have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours except for seven intersections which would operate at LOS E or F during either the AM or PM peak hours. The unacceptable intersections include the intersections of Railroad Avenue & E. Leland Road (Intersection #3), Harbor Street & Buchanan Road (Intersection #7), Loveridge Road & Buchanan Road (Intersection #12), Buchanan Road & Ventura Drive (Intersection #13), Buchanan Road & Tuscany Meadows Drive (Intersection #15), Buchanan Road & Tuscany Meadows Apartments (Intersection #17), and Somersville Road & Buchanan Road (Intersection #22). Therefore, the impacts would be considered ***significant***.

Table 4.9-7
Intersection LOS – Baseline Plus Project Conditions

Intersection	Control	Baseline Conditions				Baseline Plus Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS
1. Railroad Ave & SR-4 WB Ramps	Traffic Signal	36.4	D	21.0	C	37.5	D	23.3	C
2. Railroad Ave & SR-4 EB Ramps	Traffic Signal	29.8	C	26.3	C	30.6	C	26.9	C
3. Railroad Ave & E. Leland Rd	Traffic Signal	40.2	D	**59.8**	**E**	**47.4**	**D**	**68.6**	**E**

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Table 4.9-7
Intersection LOS – Baseline Plus Project Conditions

Intersection	Control	Baseline Conditions				Baseline Plus Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS
4. Railroad Ave & Buchanan Rd	Traffic Signal	18.2	B	29.1	C	21.2	C	50.8	D
5. Kirker Pass Rd & Montreux Entrance	Traffic Signal	8.0	A	5.6	A	8.5	A	5.7	A
6. Harbor St & E. Leland Rd	Traffic Signal	26.2	C	39.8	D	27.1	C	42.2	D
7. Harbor St & Buchanan Rd	Traffic Signal	42.2	D	24.4	C	**52.6**	**D**	27.4	C
8. California Ave & SR-4 WB Ramps (Loveridge)	Traffic Signal	18.4	B	28.1	C	18.3	B	28.3	C
9. Loveridge Rd & California Ave	Traffic Signal	39.8	D	24.9	C	41.1	D	25.3	C
10. Loveridge Rd & SR-4 EB Ramps	Traffic Signal	22.5	C	26.9	C	22.9	C	28.3	C
11. Loveridge Rd & E. Leland Rd	Traffic Signal	24.8	C	31.6	C	26.6	C	34.1	C
12. Loveridge Rd & Buchanan Rd	Traffic Signal	42.8	D	28.2	C	**52.3**	**D**	37.4	D
13. Buchanan Rd & Ventura Dr	Traffic Signal	21.4	C	27.4	C	28.9	C	**47.2**	**D**
14. Ventura Dr & James Donlon Blvd	Traffic Signal	N/A	N/A	N/A	N/A	2.5	A	2.2	A
15. Buchanan Rd & Tuscany Meadows Dr	Traffic Signal	N/A	N/A	N/A	N/A	**52.5**	**D**	**55.8**	**E**
16. Tuscany Meadows Dr[2] & James Donlon Blvd	Traffic Signal[3]	10.7	B	10.5	B	10.7	B	8.9	A
17. Buchanan Rd & Tuscany Meadows Apartments	Traffic Signal	N/A	N/A	N/A	N/A	26.2	C	**59.6**	**E**
18. Auto Center Dr & Century Blvd	Traffic Signal	17.6	B	21.6	C	17.6	B	21.6	C
19. Somersville Rd & SR-4 WB Ramps	Traffic Signal	27.6	C	26.6	C	25.9	C	26.6	C
20. Somersville Rd & SR-4 EB Ramps	Traffic Signal	12.0	B	21.4	C	12.2	B	30.0	C
21. Somersville Rd & Delta Fair Blvd	Traffic Signal	20.8	C	20.3	C	20.9	C	23.5	C
22. Somersville Rd & Buchanan Rd	Traffic Signal	42.2	D	29.9	C	**78.4**	**E**	**50.3**	**D**
23. Somersville Rd & Tuscany Meadows	Traffic Signal	N/A	N/A	N/A	N/A	8.8	A	4.9	A
24. Somersville Rd & James Donlon Blvd	Traffic Signal	11.0	B	10.2	B	11.0	B	11.1	B
25. Buchanan Rd & Delta Fair Blvd	Traffic Signal	10.3	B	12.8	B	10.9	B	13.1	B

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Table 4.9-7
Intersection LOS – Baseline Plus Project Conditions

Intersection	Control	Baseline Conditions				Baseline Plus Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS
26. James Donlon Blvd & Contra Loma Blvd	Traffic Signal	20.0	C	13.5	B	21.7	C	13.7	B
27. James Donlon Blvd & Lone Tree Way	Traffic Signal	20.0	B	24.1	C	20.3	C	24.2	C
28. Kirker Pass Rd & Myrtle Dr	Traffic Signal	6.8	A	4.8	A	6.9	A	5.0	A
29. Ygnacio Valley Rd & Concord Blvd	Traffic Signal	37.1	D	32.5	C	39.3	D	33.6	C
30. Ygnacio Valley Rd & Clayton Blvd	Traffic Signal	37.7	D	38.4	D	38.6	D	38.9	D
31. Buchanan Rd & Chateau Mobile Park	Traffic Signal[4]	4.7	A	6.4	A	4.3	A	6.5	A
32. Delta Fair Blvd & Century Blvd	Traffic Signal	13.3	B	16.8	B	13.6	B	17.1	B
33. Somersville Rd & Fairview Dr	Traffic Signal	17.1	B	32.0	C	20.3	C	37.3	D
34. Delta Fair Blvd & Fairview Dr	Traffic Signal	18.5	B	22.4	C	22.2	C	26.3	C

Notes:
1. For signalized and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection.
2. With project implementation, intersection Metcalf St & James Donlon Blvd would become Tuscany Meadows Dr & James Donlon Blvd.
3. Implementation of Traffic Signal is part of the JDE. Although the table shows the intersection LOS for Tuscany Meadows Dr & James Donlon Blvd, the baseline scenario does not include the JDE. Therefore, Tuscany Meadows Dr & James Donlon Blvd is not a full intersection under the baseline scenario.
4. Implementation of Traffic Signal is part of the City of Antioch's Buchanan Crossings Shopping Center improvement.

Bold indicates unacceptable operations.

Source: Abrams Associates, 2014.

Mitigation Measures

The project applicant would be required to pay local and regional transportation impact fees, which would provide funding for roadway improvements. In addition, implementation of the following mitigation measures would reduce the above impacts to a less-than-significant level at the Railroad Avenue & E. Leland Road intersection; however, the widening of Buchanan Road is not a feasible mitigation measure due to the lack of available right of way (see Table 4.9-8). Furthermore, successful implementation of the alternatively recommended additional metering would need approval by all local agencies in the area, of which the City of Pittsburg has no control.

For this reason, the City of Pittsburg is conservatively acknowledging the possibility that, despite its own commitment to work with the surrounding local agencies, mutually acceptable accommodation may not be reached. In addition, the construction for the JDE is estimated to be approximately $56 million dollars and would therefore be too financially burdensome for one project to construct. Therefore, the above impact would be considered to remain *significant and unavoidable.*

4.9-3(a) *Implement Mitigation Measure 4.9-2(a), 4.9-2(b), and 4.9-2(c).*

Loveridge Road & Buchanan Road

4.9-3(b) *Widening of Buchanan Road at the Loveridge Road & Buchanan Road intersection, to allow for the construction of two through lanes on the westbound approach as well as two receiving lanes on the west side of the intersection. [Infeasible]*

Or,

Construction of the JDE from Somersville Road to Kirker Pass Road. [Economically infeasible]

Buchanan Road & Ventura Drive

4.9-3(c) *Widening of Buchanan Road at the Buchanan Road & Ventura Drive intersection, to allow for the construction of two through lanes on the eastbound approach as well as two receiving lanes on the east side of the intersection. [Infeasible]*

Or,

Implementation of PM peak hour metering of southbound Kirker Pass Road at Pheasant Drive. [Outside of Pittsburg jurisdiction]

Or,

Construction of the JDE from Somersville Road to Kirker Pass Road. [Economically infeasible]

Buchanan Road & Tuscany Meadows Drive

4.9-3(d) *Widening of Buchanan Road at the Buchanan Road & Tuscany Meadows Drive intersection, to allow for the construction of two through lanes on the eastbound approach as well as two receiving lanes on the east side of the intersection. [Infeasible]*

Or,

Relocation of control point metering to this intersection and implementation of PM peak hour metering of southbound Kirker Pass Road at Pheasant Drive. [Outside of Pittsburg jurisdiction]

Or,

Construction of the JDE from Somersville Road to Kirker Pass Road. [Economically infeasible]

Buchanan Road & Tuscany Meadows Apartments Intersection

4.9-3(e) Widening of Buchanan Road at the Buchanan Road & Tuscany Meadows Apartments intersection, to allow for the construction of two through lanes on the eastbound approach as well as two receiving lanes on the east side of the intersection. [Infeasible]

Or,

Implementation of PM peak hour metering of southbound Kirker Pass Road at Pheasant Drive. [Outside of Pittsburg jurisdiction]

Or,

Construction of the JDE from Somersville Road to Kirker Pass Road. [Economically infeasible]

4.9-4 Study freeway facilities. Based on the analysis below, the impact is *less than significant.*

The development of the proposed project would increase the total traffic during both AM and PM peak hours. The recent freeway construction has also been causing poor operations and increased delay; however, upon completion of all planned freeway and mass transit improvements in the area (i.e., e-BART) all freeway facilities in the area would operate at acceptable conditions according to Caltrans standards.

For SR 4, the East County Action Plan specifies a maximum delay index of 2.5.[6] As shown in Table 4.9-8, the proposed project would not significantly increase the delay index under existing conditions and would continue to be well within the MTSO of 2.5. Therefore the proposed project would have a ***less-than-significant*** impact to freeway operations.

Mitigation Measure(s)
None required.

Table 4.9-8 SR 4 Delay Index				
Scenario	**Direction**	**MTSO**	**No Project**	**Plus Project**
Existing AM Peak Hour (2014)	Eastbound	2.5	1.1	1.1
	Westbound	2.5	1.6	1.7
Existing PM Peak Hour (2014)	Eastbound	2.5	1.5	1.6
	Westbound	2.5	1.3	1.3
Source: Abrams Associates, 2014				

4.9-5 Alternative transportation facilities. Based on the analysis below, and with implementation of mitigation, the impact is *less than significant.*

Transit System

The proposed project would not conflict with any transit plans or goals of the City or the CCTA, or interfere with any existing bus routes and would not remove or relocate any existing bus stops. However, a portion of the proposed project's residents are expected to utilize the future Railroad Avenue e-BART station and would increase ridership and demand for local bus companies.

Bicycle and Pedestrian System

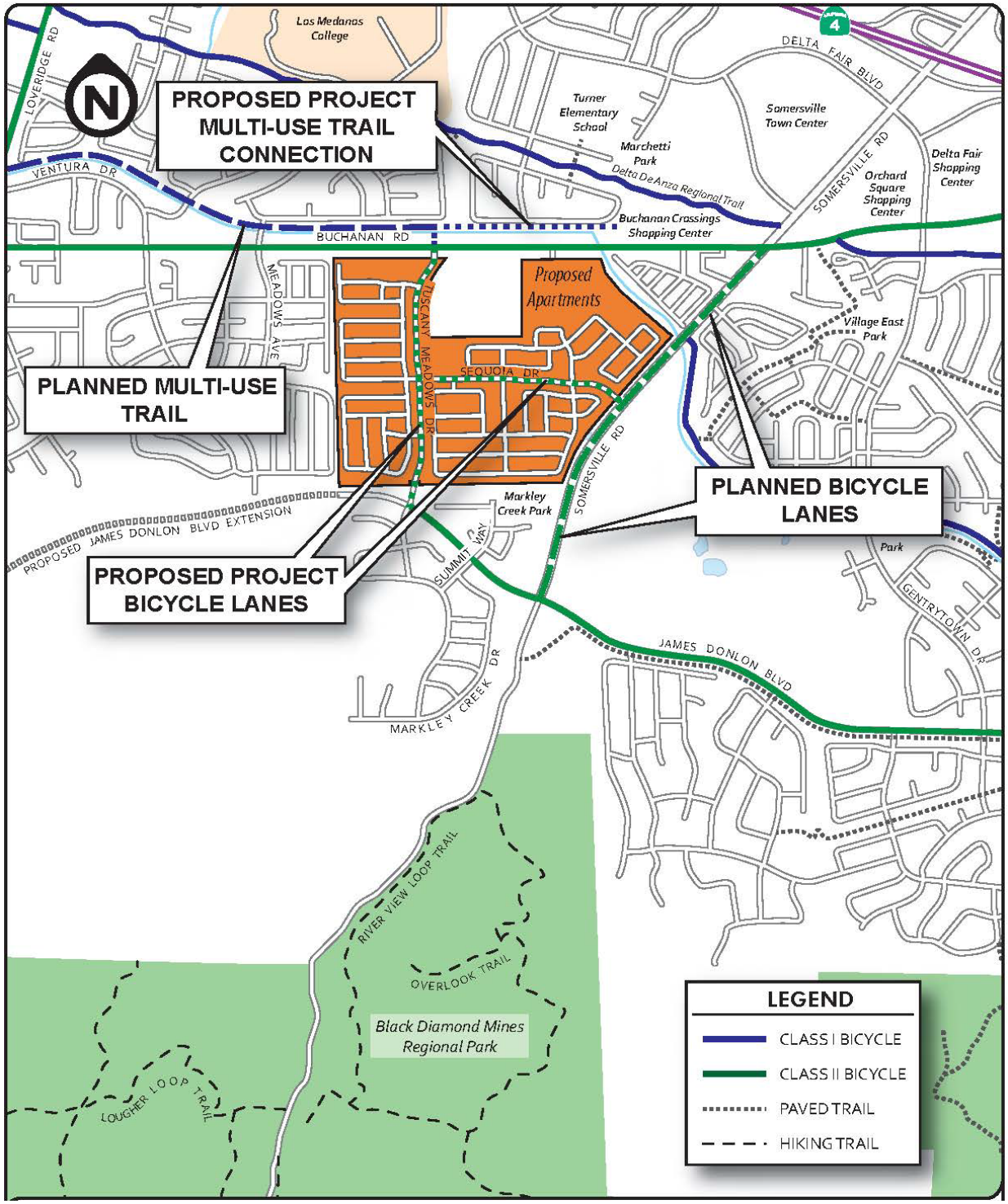
Due to its proximity to bicycle lanes and trails the proposed project would generate additional pedestrian and bicycle traffic in the area, thereby potentially increasing conflicts between vehicles, bicycles, and pedestrians. Within the project site, sidewalks would be provided on all streets, and bicycle lanes would be included on the collector streets (Tuscany Meadows Drive and Sequoia Drive) (see Figure 4.9-3). Because a site plan does not exist for the high-density residential area (Parcel A), Figure 4.9-3 does not include a pedestrian connection between the high-density residential area and the single-family residential area.

Conclusion

The proposed project would generate an increase in population that would increase the demand on transit, bicycle and pedestrian systems in the area. Therefore a ***potentially significant*** impact would occur related to alternative transportation facilities.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

Figure 4.9-3
Planned Bicycle and Pedestrian System



Note: The Planned Bicycle Lanes identified along Somersville Road have now been constructed.
Source: Abrams Associates, 2014.

4.9-5(a) Prior to approval of Improvement Plans for Phase I improvements, the Improvement Plans shall include bus turnouts, including shelters and bicycle racks, on both sides of Buchanan Road adjacent to the proposed intersection with Tuscany Meadows Drive. The turnouts, shelters, and bicycle racks shall be constructed with the roadway improvements.

4.9-5(b) The Phase I improvements of the proposed project shall include completion of a multi-use trail/path connection to the Delta De Anza Trail. The final location and design of the trail/path shall be submitted to the City Engineer for review and approval prior to approval of Improvement Plans.

4.9-5(c) Prior to approval of Improvement Plans for either the multi-family or the contiguous single-family residential portion of the proposed project, whichever is submitted first, the Improvement Plans shall include a pedestrian trail connection between the multi-family and single-family residential portions of the project site, for review and approval by the City Engineer.

4.9-6 Site access and circulation. Based on the analysis below, the impact is *less than significant.*

The proposed project's residential development would have a signalized primary entrance on Buchanan Road at the main residential entrance, another signalized entrance into the apartments, and a signalized entrance on Somersville Road. In addition, the project would have a future signalized connection to the JDE at Tuscany Meadows Drive. According to the TIA, the proposed site circulation would function well and would not cause any safety or operational problems. The project site design has been required to conform to City design standards and is not expected to create any significant impacts to pedestrians, bicyclists or traffic operations. See Figure 4.9-4 for a view of the Tentative Map and proposed site circulation.

A comment letter was received regarding impacts to traffic operations for elementary schools in the area. The families that would live in the proposed residential project would generate additional traffic to and from local schools. Using census data the number of elementary school children per household was calculated and converted into estimates of trip generation to local elementary schools. The LOS analysis indicated that with the additional project traffic the school study intersections would continue to have acceptable operations during the weekday AM commute period (see Appendix L for calculations). Therefore, impacts related to site access and circulation to the proposed project would be ***less-than-significant***.

Mitigation Measure(s)
None required.

Figure 4.9-4
Tentative Map

Cumulative Impacts and Mitigation Measures

As mentioned above, the cumulative scenario (year 2035) traffic conditions at each of the project study intersections are based on the existing turning movements with the addition of traffic from all planned and approved projects such as the approved Black Diamond and Sky Ranch projects, the proposed Montreux development, the Concord Naval Weapons Station Reuse Plan, plus the addition of incremental growth in background traffic estimated by the County's traffic model.

As mentioned above, for the purposes of the impact analysis the JDE is assumed to be in place under the Cumulative Conditions and Cumulative Plus Project Conditions. The Extension is a planned and partially funded project included in the County's Regional Transportation Plan. The cumulative scenario does not assume construction of Standard Oil Road, based on the assumptions used for planning purposes in the County's travel demand model and is consistent with other traffic studies prepared in the area.

Cumulative impacts of the proposed project on the transportation system are identified in this section. Each impact is followed by recommended mitigation measures to reduce the significance of identified impacts.

4.9-7 Study roadway intersections under Cumulative Plus Project conditions. Based on the analysis below, and the lack of feasible mitigation, the impact is *significant and unavoidable*.

Table 4.9-9 summarizes the LOS results for Cumulative Conditions and Cumulative Plus Project Conditions for each of the project study intersections. The proposed project trips were added to the cumulative traffic volumes for the Cumulative Plus Project Conditions. As shown on the table, during the PM peak hour, the delay at the Railroad Avenue & East Leland Road (Intersection #3), which operates unacceptably under no project conditions, would increase by more than five seconds during the PM peak hour. The Somersville Road & Buchanan Road (Intersection #22) would deteriorate from acceptable LOS to an unacceptable LOS during the AM and PM peak hour. Therefore, a ***significant*** cumulative impact would result to the Railroad Avenue & East Leland Road and Somersville Road & Buchanan Road intersections under the Cumulative Plus Project conditions.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a less-than-significant level (see Table 4.9-10). However, the widening of Buchanan Road is not a feasible mitigation measure due to the lack of available right of way. Furthermore, successful implementation of the alternatively recommended additional metering would need approval by all local agencies in the area, of which the City of Pittsburg has no control. For this reason, the City of Pittsburg is conservatively acknowledging the possibility that, despite its own commitment to work with the surrounding local agencies, mutually acceptable accommodation may not be reached. Therefore, the above impact would be considered to remain cumulatively *significant and unavoidable.*

4.9-7(a) Implement Mitigation Measures 4.9-2(b) and 4.9-3(a).

Table 4.9-9
Intersection LOS – Cumulative Conditions

Intersection	Control	Cumulative Conditions				Cumulative Plus Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS
1. Railroad Ave & SR-4 WB Ramps	Traffic Signal	31.8	C	25.1	C	32.0	C	25.2	C
2. Railroad Ave & SR-4 EB Ramps	Traffic Signal	27.8	C	23.9	C	28.3	C	24.6	C
3. Railroad Ave & E. Leland Rd	Traffic Signal	35.0	D	56.0	E	38.0	D	**61.1**	**E**
4. Railroad Ave & Buchanan Rd	Traffic Signal	21.6	C	20.4	C	22.9	C	23.4	C
5. Kirker Pass Rd & Montreux Entrance	Traffic Signal	23.0	C	17.4	B	25.8	C	20.6	C
6. Harbor St & E. Leland Rd	Traffic Signal	33.9	C	40.8	D	33.8	C	41.3	D
7. Harbor St & Buchanan Rd	Traffic Signal	39.1	D	25.8	C	39.9	D	25.9	C
8. California Ave & SR-4 WB Ramps (Loveridge)	Traffic Signal	19.1	B	30.1	C	19.3	B	30.3	C
9. Loveridge Rd & California Ave	Traffic Signal	51.4	D	30.0	C	52.9	D	30.6	C
10. Loveridge Rd & SR-4 EB Ramps	Traffic Signal	23.7	C	28.8	C	24.6	C	29.9	C
11. Loveridge Rd & E. Leland Rd	Traffic Signal	27.6	C	36.0	D	28.7	C	38.1	D
12. Loveridge Rd & Buchanan Rd	Traffic Signal	31.1	C	28.5	C	30.4	C	26.3	C
13. Buchanan Rd & Ventura Dr	Traffic Signal	18.9	B	30.8	C	20.1	C	31.2	C
14. Ventura Dr & James Donlon Blvd	Traffic Signal	18.9	B	15.4	B	20.5	C	16.4	B
15. Buchanan Rd & Tuscany Meadows Dr	Traffic Signal	N/A	N/A	N/A	N/A	31.3	C	39.0	D
16. Tuscany Meadows Dr[2] & James Donlon Blvd	Traffic Signal[3]	3.6	A	4.1	A	14.0	B	12.8	B
17. Buchanan Rd & Tuscany Meadows Apartments	Traffic Signal	N/A	N/A	N/A	N/A	24.0	C	35.4	D
18. Auto Center Dr & Century Blvd	Traffic Signal	19.2	B	23.2	C	19.2	B	23.3	C
19. Somersville Rd & SR-4 WB Ramps	Traffic Signal	31.6	C	26.5	C	33.2	C	29.7	C
20. Somersville Rd & SR-4 EB Ramps	Traffic Signal	13.0	B	21.2	C	12.7	B	22.9	C
21. Somersville Rd & Delta Fair Blvd	Traffic Signal	30.1	C	18.6	B	31.0	C	21.9	C

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Table 4.9-9
Intersection LOS – Cumulative Conditions

Intersection	Control	Cumulative Conditions				Cumulative Plus Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS
22. Somersville Rd & Buchanan Rd	Traffic Signal	39.4	D	34.6	C	**62.7**	**E**	**60.6**	**E**
23. Somersville Rd & Tuscany Meadows	Traffic Signal	N/A	N/A	N/A	N/A	6.8	A	3.6	A
24. Somersville Rd & James Donlon Blvd	Traffic Signal	20.2	C	25.6	C	21.0	C	26.1	C
25. Buchanan Rd & Delta Fair Blvd	Traffic Signal	12.0	B	15.9	B	12.7	B	16.2	B
26. James Donlon Blvd & Contra Loma Blvd	Traffic Signal	41.8	D	19.6	B	43.7	D	19.9	B
27. James Donlon Blvd & Lone Tree Way	Traffic Signal	22.8	C	27.4	C	23.1	C	27.8	C
28. Kirker Pass Rd & Myrtle Dr	Traffic Signal	7.4	A	5.5	A	7.5	A	5.7	A
29. Ygnacio Valley Rd & Concord Blvd	Traffic Signal	47.0	D	37.3	D	50.0	D	38.0	D
30. Ygnacio Valley Rd & Clayton Blvd	Traffic Signal	43.2	D	45.0	D	44.4	D	46.5	D
31. Buchanan Rd & Chateau Mobile Park	Traffic Signal[4]	4.9	A	6.8	A	4.6	A	6.9	A
32. Delta Fair Blvd & Century Blvd	Traffic Signal	14.9	B	19.4	B	15.5	B	19.7	B
33. Somersville Rd & Fairview Dr	Traffic Signal	30.2	C	29.0	C	27.6	C	40.2	D
34. Delta Fair Blvd & Fairview Dr	Traffic Signal	22.9	C	31.5	C	29.6	C	34.2	C

Notes:
1. For signalized and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection.
2. With project implementation, intersection Metcalf St & James Donlon Blvd would become Tuscany Meadows Dr & James Donlon Blvd.
3. Implementation of Traffic Signal is part of the JDE.
4. Implementation of Traffic Signal is part of the City of Antioch's Buchanan Crossings Shopping Center improvement.

Bold indicates unacceptable operations.

Source: Abrams Associates, 2014.

Table 4.9-10
Cumulative Intersection LOS - with and without Mitigation

Intersection	Without Mitigation				With Mitigation			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]
3. Railroad Ave & SR-4 WB Ramps	38.0	D	**61.1**	**E**	34.3	C	37.9	D
22. Somersville Rd & Buchanan Rd	**62.7**	**E**	**60.6**	**E**	29.8	C	30.7	C

Notes:
1. For signalized and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection.
2. HCM LOS results at signalized intersections are presented in terms of average intersection delay in seconds per vehicle. All intersections in this table have a threshold of 45 seconds established as the maximum allowable average delay.

Bold indicates unacceptable operations.

Source: Abrams Associates, 2014.

4.9-8 Study freeway facilities under cumulative conditions. Based on the analysis below, the impact is *less than significant.*

As noted above the development of the proposed project would increase the total traffic during both AM and PM peak hours. However, the East County Action Plan specifies a maximum delay index of 2.5 for SR 4.[7] As shown in Table 4.9-11, the proposed project would not significantly increase the delay index under cumulative conditions and would continue to be well within the MTSO of 2.5. Therefore the proposed project would have a ***less-than-significant*** cumulative impact to freeway operations.

Table 4.9-11
SR 4 Cumulative Delay Index

Scenario	Direction	MTSO	No Project	Plus Project
Cumulative AM Peak Hour (2035)	Eastbound	2.5	1.2	1.3
	Westbound	2.5	1.8	1.9
Cumulative PM Peak Hour (2035)	Eastbound	2.5	1.6	1.7
	Westbound	2.5	1.3	1.3

Source: Abrams Associates, 2014

Mitigation Measure(s)
None required.

4.9-9 Alternative transportation facilities under cumulative conditions. Based on the analysis below, and with implementation of mitigation, the impact is *less than significant.*

As noted above, the proposed project is expected to generate an increase in demand for alternative transportation facilities and in combination with other proposed and pending projects in the area would cause potentially significant impacts to the transit, bicycle, and pedestrian systems. Therefore, cumulative impacts related to alternative transportation facilities in the area could be ***potentially significant***.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4.9-9 Implement Mitigation Measures 4.9-5(a), 4.9-5(b), and 4.9-5(c).

Endnotes

[1] Abrams Associates Traffic Engineering Inc. *Transportation Impact Analysis Tuscany Meadows Residential Project*. July 2014.
[2] Contra Costa Transportation Authority. Final Technical Procedures. January 16, 2013.
[3] Contra Costa Transportation Authority. 2011 Contra Costa Congestion Management Plan. 2011.
[4] Transportation Research Board. *2010 Highway capacity Manual (HCM).* 2011.
[5] Institute of Transportation Engineers. *ITE Trip Generation Handbook, 2nd Edition, Appendix B.* 2012.
[6] Fehr & Peers Associates. *Draft East County Action Plan for Routes of Regional Significance*. November 2013.
[7] *Ibid.*