

TRANSPORTATION AND TRAFFIC

4.13 TRANSPORTATION AND TRAFFIC

This chapter describes the regulatory framework and existing conditions on the Project site related to transportation and traffic, and the potential impacts of the Project on circulation in the vicinity of the Project. For the purposes of this chapter, “study area” refers to the area in the general vicinity of the Project site. This chapter was informed by analysis contained in the San Leandro Shoreline Development Project, Transportation Impact Analysis prepared by Kittelson & Associates and included in Appendix H, Transportation Impact Analysis, of this Draft EIR.

4.13.1 ENVIRONMENTAL SETTING

4.13.1.1 REGULATORY SETTING

State Regulations

It is important to note that Senate Bill (SB) 743 will alter how transportation and traffic impacts are analyzed under State CEQA Guidelines. In general, SB 743 requires that the CEQA Guidelines be amended to provide an alternative to using level of service standards for evaluation transportation impacts. While the 2015 State CEQA Guidelines will be amended to incorporate the provisions of SB 743, this draft EIR was prepared based on existing 2014 CEQA Guidelines, and therefore, relies on the existing standard of using level of service to determine potential transportation impacts.

California Department of Transportation

The California Department of Transportation (Caltrans) is responsible for planning, design, construction, and maintenance of all interstate freeways and State routes. The department sets design standards that are often used by local governments. Interstate 880 (I-880), a freeway in the Project study area, is under Caltrans jurisdiction, as are portions of Davis Street (State Route [SR] 112) and Doolittle Drive (SR 61) from Davis Street to its north. Caltrans requirements are described in their Guide for Preparation of Traffic Impact Studies¹, which covers the information needed for Caltrans to review the impacts to State highway facilities; including freeway segments, on- and off-ramps, and signalized intersections.

Regional Regulations

Alameda County Transportation Commission

The Alameda County Transportation Commission (Alameda CTC) coordinates transportation planning efforts throughout Alameda County and programs local, regional, State and federal funding for project implementation. Additionally, it prepares the Congestion Management Program (CMP), a plan mandated by California law to describe the strategies to address congestion problems on the CMP network, which includes State highways and principal arterials. The CMP requires analysis of Metropolitan Transportation System (MTS) roadway and transit system and uses level of service standards as a means to measure

¹ California Department of Transportation, *Guide for the preparation of Traffic Impact Studies*, December 2002.

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congestion and has established level of service standards to determine how local governments meet the standards of the CMP.

Local Regulations

With the exception of State highways that are under Caltrans' jurisdiction, streets in the study area are generally under the jurisdiction of the City of San Leandro.

San Leandro General Plan

The City of San Leandro General Plan was adopted in 2002 is the primary planning document in the City and serves to guide development through 2015, at which time the next iteration of the San Leandro General Plan will replace the current version. The Transportation Element of the San Leandro General Plan provides the policy framework for the regulation and development of transportation systems, balancing demands for moving people and goods within the City. It is comprehensive, addressing vehicular, pedestrian, bicycle, transit, truck, ferry and air transportation, as well as land use. Table 4.13-1 includes the goals of the San Leandro General Plan related to transportation and traffic.

TABLE 4.13-1 SAN LEANDRO GENERAL PLAN GOALS RELEVANT TO TRANSPORTATION AND TRAFFIC

| Goal Number | Goal Text |
|-----------------------|--|
| Transportation | |
| Goal 13 | Coordinating Land Use and Transportation – Coordinate land use and transportation planning. |
| Goal 14 | Bicycle and Pedestrian Circulation – Promote and accommodate alternative, environmentally-friendly methods of transportation, such as walking and bicycling. |
| Goal 15 | Public Transportation – Ensure that public transportation is safe, convenient, and affordable and provides a viable alternative to driving. |
| Goal 16 | Streets and Highways – Improve major transportation arteries for circulation in and around the City. |
| Goal 17 | Neighborhood Traffic Management – Minimize the adverse effects of business, industrial, and through traffic on neighborhood streets. |
| Goal 18 | Traffic Safety – Improve traffic safety and reduce the potential for accidents on San Leandro Streets. |
| Goal 19 | Pedestrian-Oriented Streetscape – Encourage community design principles and standards which de-emphasize automobiles. |
| Goal 20 | Interagency Coordination – Coordinate local transportation planning with other agencies and jurisdictions. |

Source: San Leandro General Plan.

Bicycle and Pedestrian Master Plan

San Leandro's Bicycle and Pedestrian Master Plan was adopted in February 2011. The plan contains an assessment of existing conditions for bicyclists and pedestrians and provides recommendations for biking and walking facilities, the interface between bicyclists and transit, and related programs. Table 4.13-2 contains Bicycle and Pedestrian Master Plan goals relevant to the proposed Project.

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TABLE 4.13-2 BICYCLE AND PEDESTRIAN MASTER PLAN GOALS

| Goal Number | Goal |
|--------------------|--|
| Goal 1 | Support bicycling and walking and the development of a comprehensive bicycle and pedestrian transportation system as a viable alternative to the automobile. |
| Goal 2 | Implement bicycle and pedestrian improvements maximizing the amount of funding for which San Leandro is eligible. |
| Goal 3 | Develop a bicycle system that meets the needs of utilitarian and recreation users, helps reduce vehicle trips, and links residential neighborhoods with local and regional destinations. |
| Goal 4 | Create a well-connected pedestrian environment by improving the walkability of all streets in San Leandro through the planning, implementing, and maintaining of pedestrian supportive infrastructure that meets the needs of all users. |
| Goal 5 | Maximize bicycle and pedestrian access to transit. |
| Goal 6 | Improve bicycle and pedestrian safety. |
| Goal 7 | Develop detailed and ranked bicycle and pedestrian improvements. |
| Goal 8 | Raise awareness of the benefits of walking and biking by developing a coordinated public outreach strategy to encourage bicycling and walking. |
| Goal 9 | Develop land use policies and development standards that promote bicycling and walking for utilitarian and recreation trips. |

Source: San Leandro General Plan.

4.13.1.2 EXISTING CONDITIONS

Roadway Network

The roadway network that would be affected by the proposed Project is made up of the freeway system that serves Alameda County and an extensive street system made up of arterial and local roads, as shown in Figure 4.13-1.

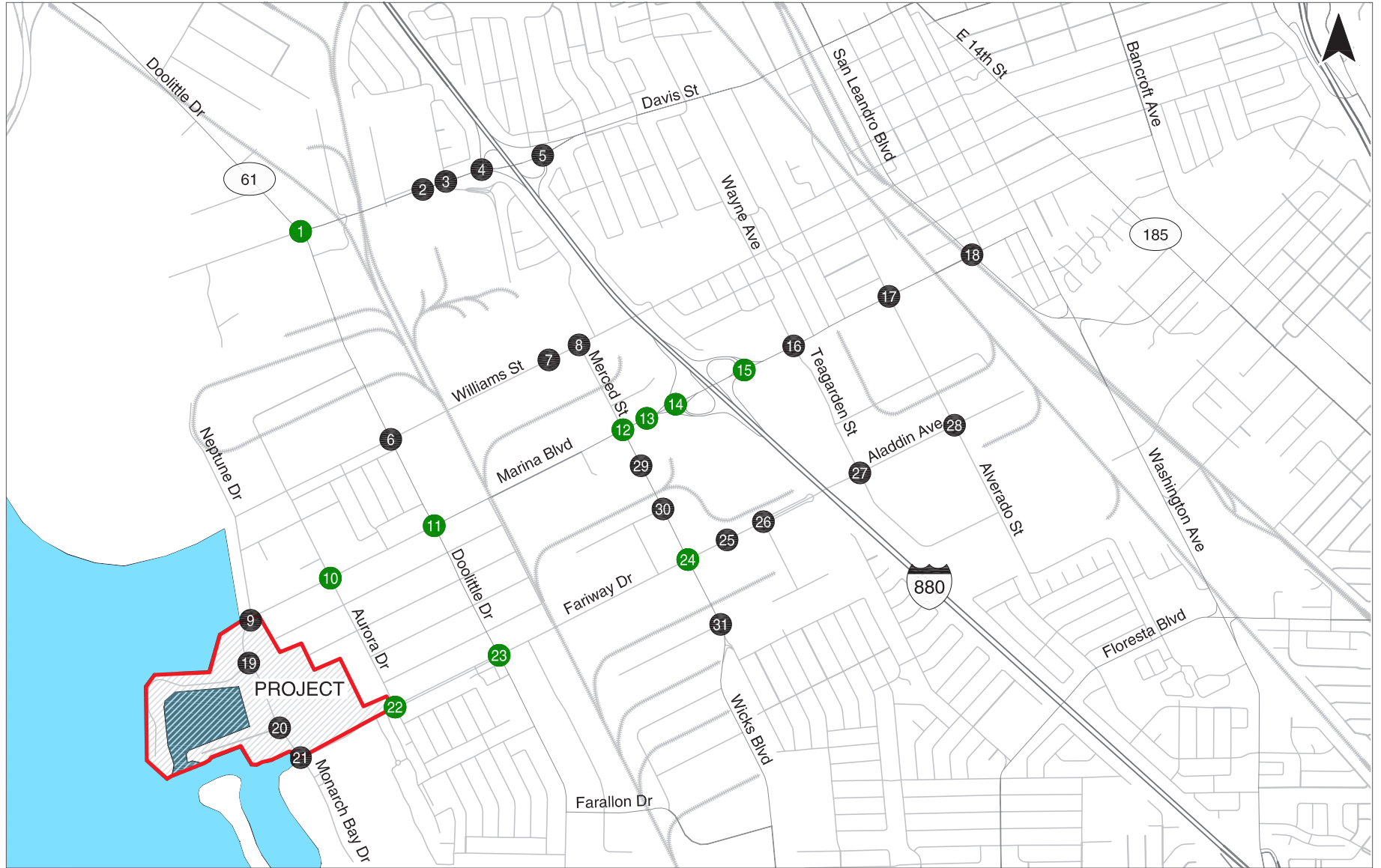
Freeways

Freeways are distinguished from other types of roadways in that abutting lands have no right or easement of access to or from their abutting lands or in some cases such owners have only limited or restricted right or easement of access.²

Interstate 880

I-880 is an 8- to 10-lane freeway with a posted speed limit of 65 miles per hour. This north-south freeway connects San Leandro with nearby cities, including Hayward and Oakland, as well as regional destinations, such as Fremont and San Jose. I-880 also provides access to the larger freeway network in the region with direct connections to Interstates 80, 580, 980, 238; U.S. Highway 101; SR 92, 237, and 17.

² California Department of Transportation, 2012, Highway Design Manual, Chapter 60 Nomenclature.



Source: Kittelson & Associates, Inc., 2014.

- - AM and PM Peak Hour Analysis
- - AM, PM and Saturday Peak Hour Analysis
- ▭ Project Site

Figure 4.13-1
Study Intersections

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The Project site is served by freeway interchanges at Marina Boulevard and Davis Street in San Leandro. The average daily traffic on I-880 in the vicinity of Marina Boulevard, the closest interchange to the Project site, ranges between 201,000 and 206,000 vehicles per day (VPD).³

Arterials

Arterial roadways are primarily for through travel and access to collector streets and local roads.⁴ The daily vehicle volumes along selected arterial roadways in the study area are shown in Table 4.13-3.

TABLE 4.13-3 TWENTY-FOUR HOUR VEHICLE COUNTS OF SELECTED ARTERIAL ROADWAYS

| Roadway | Segment | Direction | Weekday | Saturday |
|------------------|---|------------|---------|----------|
| Doolittle Drive | Marina Boulevard to Fairway Drive | Northbound | 8,860 | 6,190 |
| | | Southbound | 6,960 | 4,850 |
| | | Total | 15,820 | 11,040 |
| Doolittle Drive | Williams Street to Marina Boulevard | Northbound | 8,080 | 4,950 |
| | | Southbound | 7,170 | 4,625 |
| | | Total | 15,250 | 9,575 |
| Davis Street | Doolittle Drive to Warden-Timothy Drive | Eastbound | 11,555 | 8,270 |
| | | Westbound | 11,470 | 7,885 |
| | | Total | 23,025 | 16,155 |
| Marina Boulevard | Neptune Drive to Aurora Drive | Eastbound | 2,635 | 3,460 |
| | | Westbound | 2,355 | 3,190 |
| | | Total | 4,990 | 6,650 |
| Marina Boulevard | Doolittle Drive to Merced Street | Eastbound | 9,705 | 9,125 |
| | | Westbound | 10,050 | 8,940 |
| | | Total | 19,755 | 18,065 |
| Fairway Drive | Monarch Bay Drive to Aurora Drive | Eastbound | 1,300 | 1,260 |
| | | Westbound | 1,120 | 1,060 |
| | | Total | 2,420 | 2,320 |
| Fairway Drive | Doolittle Drive to Merced Street | Eastbound | 4,725 | 3,080 |
| | | Westbound | 4,440 | 2,785 |
| | | Total | 9,165 | 5,865 |

Note: Counts collected on Thursday, January 17, 2013 and Saturday, January 19, 2013.
Source: Kittelson & Associates, Inc., 2013.

³ 2012 Traffic Volumes, California Department of Transportation, <http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm>, accessed June 10, 2014.

⁴ California Department of Transportation, 2012, Highway Design Manual, Chapter 60 Nomenclature.

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Marina Boulevard

Marina Boulevard is a 2- to 6-lane, east-west road with a posted speed limit of 30 to 40 miles per hour. It extends from the Project area, east to Washington Avenue. The portion of Marina Boulevard closest to the Project site, between Monarch Bay Drive and Doolittle Drive, allows on-street parking on intermittent sections of the roadway and has two travel lanes. The roadway is designated as a residential arterial in the San Leandro General Plan.⁵ Sidewalks are generally available along Marina Boulevard with the exception of a portion of the roadway where it crosses over I-880, between Merced Street and Teagarden Street. Additionally, there is a railway crossing over Marina Boulevard which runs parallel along Menlo Street to the east. Walkways are limited to the southern side of the road in this area. However, as part of the I-880 interchange improvement project currently under construction, sidewalks would be provided on both sides of the Marina Boulevard Overcrossing upon its completion. In the area adjacent to the study area, Marina Boulevard is bordered by industrial, commercial and residential land uses and is also designated as a local truck route. At the western end of the roadway, Marina Boulevard becomes Monarch Bay Drive.

Fairway Drive

Fairway Drive is a 2- to 4-lane, east-west road with a posted speed limit between 30 and 40 miles per hour. It extends east from the Project area to Teagarden Street, where it becomes Aladdin Avenue and continues eastward. The street ends at the Niles Subdivision of the Union Pacific Railroad. West of Doolittle Drive, the roadway is designated as a residential collector street and is divided by raised, landscaped medians.⁶ On-street parking is allowed on intermittent sections of Fairway Drive between Nicholson Street and Doolittle Drive, although truck parking is prohibited. Sidewalks are generally provided with the exception of the overpass between Miller and Teagarden Streets where the sidewalk is only on the south side of the street. In the study area, Fairway Drive is generally bordered by industrial, residential, and public/open space land uses. Fairway Drive is located south of, and borders, the southern boundary of the Marina Golf Course.

Doolittle Drive

Doolittle Drive is a four-lane, north-south roadway with a posted speed limit of 40 miles per hour. The roadway runs from the city of Alameda to just south of the study area. North of Davis Street, Doolittle Drive is designated as SR 61. According to Caltrans, the 2012 average daily vehicle volumes in the study area were around 22,300. Doolittle Drive is designated as a local truck route and is generally bordered by industrial, commercial, and residential land uses. South of Fairway Drive, the roadway is designated as a collector.⁷

Davis Street

Davis Street is a four- to six-lane, east-west road with a posted speed limit of 35 miles per hour. It spans slightly west of Doolittle Drive and East 14th Street in downtown San Leandro where it becomes Callan

⁵ City of San Leandro, *General Plan 2002*, Transportation Element, Figure 4-2, page 4-13.

⁶ City of San Leandro, *General Plan 2002*, Transportation Element, Figure 4-2, page 4-13.

⁷ City of San Leandro, *General Plan 2002*, Transportation Element, Figure 4-2, page 4-13.

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Avenue. Davis Street is designated as SR 112 between Doolittle Drive and East 14th Street. In the study area, the roadway is bordered by industrial and commercial land uses. According to Caltrans, the 2012 average daily vehicle volumes in the study area were between 29,000 and 54,000, with the higher volumes near the I-880 interchange. There is a raised median and an overpass for crossing the railroad tracks between Doolittle Drive and Phillips Lane.

Davis Street is designated as a local truck route. Sidewalks are generally provided on both sides of the roadway but are limited to the south side on the overpass between Doolittle Drive and Phillips Lane and near the I-880 interchange. However, as part of the I-880 interchange improvement project under construction, upon its completion, sidewalks would be provided on both sides of Davis Street only on the new interchange structure.

Merced Street

Merced Street is a three- to four-lane, north-south road with a posted speed limit of 35 miles per hour. In the study area, the roadway is bordered by industrial and commercial land uses. Between Williams Street and Marina Boulevard, on-street parking is allowed on intermittent sections of the roadway. Sidewalks are generally provided on this roadway throughout the study area.

Collectors

Monarch Bay Drive

Monarch Bay Drive is a two-lane, north-south road that extends from Marina Boulevard and terminates at the Estudillo Canal, south of the Project site, at the southern end of Marina Park. The posted speed limit on this roadway is 30 miles per hour. There are raised medians south of Fairway Drive and a raised, landscaped median on the northern portion of the roadway near the intersection of Monarch Bay Drive and Neptune Drive. On-street parking is allowed on intermittent sections of the roadway. Sidewalk is limited to the west side of the street along the Marina Inn frontage. In the study area, Monarch Bay Drive is bordered by commercial and recreational land uses, the majority of which is within the Project site.

Neptune Drive

Neptune Drive is a two-lane, north-south roadway with a posted speed limit of 25 miles per hour that provides access to mostly residential land uses near the Project site. Sidewalks are provided on both sides of the street. On-street parking is allowed and truck parking is prohibited. Neptune Drive is a designated Class III bike route and is a part of the San Francisco Bay Trail.

Aurora Drive

Aurora Drive is a two-lane, north-south road with a posted speed limit of 25 miles per hour that primarily provides access to residences. On-street parking is allowed but truck parking is prohibited. Sidewalks are provided on both sides of the street.

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Williams Street

Williams Street is a two-lane, east-west road with a posted speed limit of 30 to 35 miles per hour. Williams Street is bordered by industrial land uses on the portion of the roadway between I-880 and Doolittle Drive. West of Doolittle Drive, Williams Street is lined with residences on the south side of the street. Williams Street, a designated local truck route, generally maintains sidewalks on both sides of the roadway.

Transit Facilities

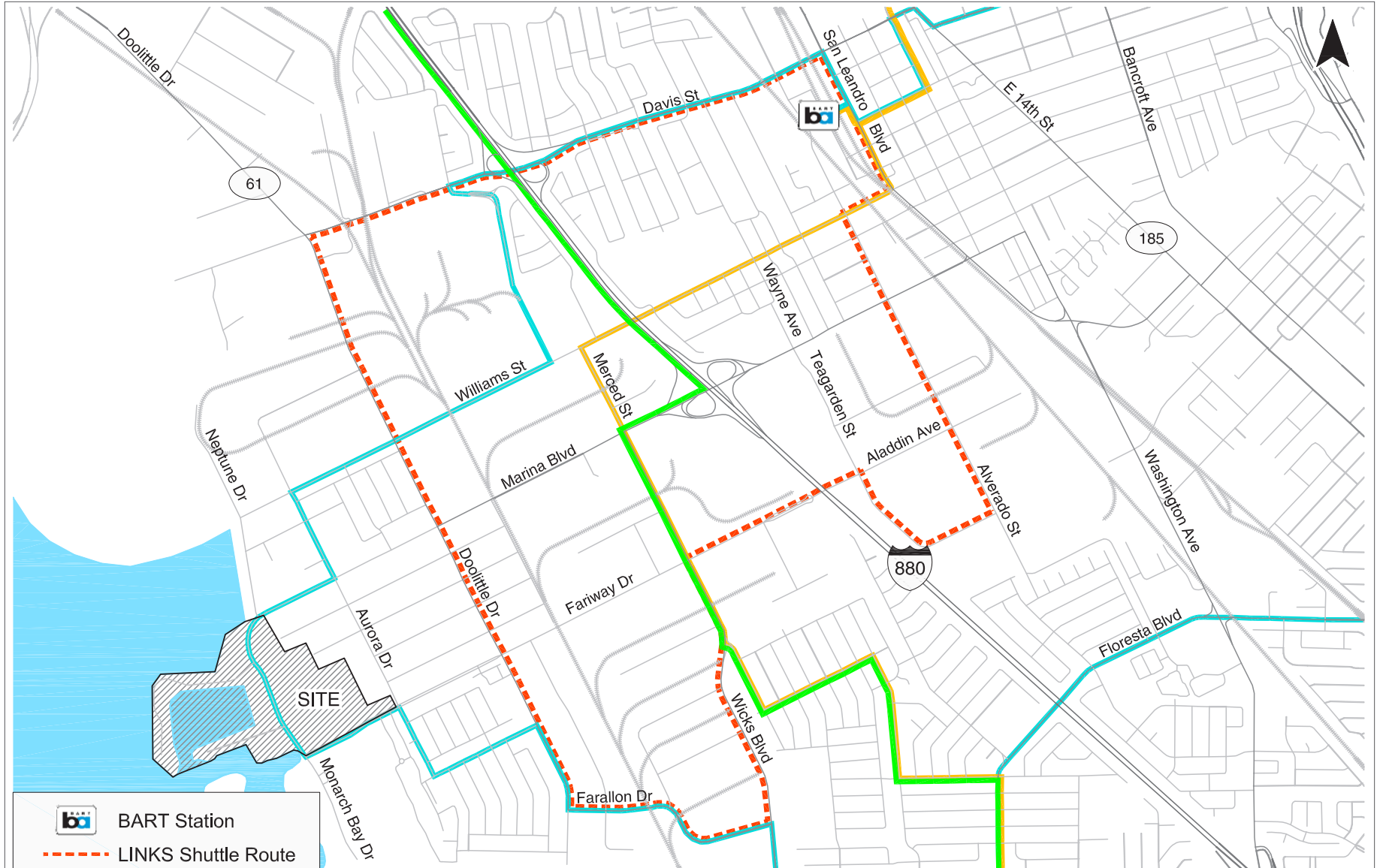
In addition to automobile facilities, the Project site is served by a variety of public transportation options which are described below.

AC Transit

AC Transit provides bus services in the Alameda and western Contra Costa Counties, serving 13 cities as well as unincorporated areas of Alameda County. The service operates local buses, school buses, as well as Transbay routes to San Francisco and the Peninsula. AC Transit is also a service provider for East Bay Paratransit: a public transit service for people who are unable to use regular buses or trains, like those operated by AC Transit and BART, because of a disability or a disabling health condition. Additionally, AC Transit is a participating transit provider for the regional, All-Nighter bus system, providing night owl bus service when BART is not operating. AC Transit buses are equipped with front-loading racks that can hold up to two bicycles.

In the study area, AC Transit operates one local bus route, Route 89. This route connects the San Leandro Shoreline Recreational Area with BART via the San Leandro Station and the Bay Fair Station, as well as other local destinations, such as Downtown San Leandro and the Bayfair Shopping Center. The nearest bus stops to the Project site, indicated with a pole and sign showing the route number, are located at Monarch Bay Drive at Mulford Point Drive and Monarch Bay Drive at Neptune Drive. Other bus routes in the study area include Local Route 75 and Transbay Route S. Bus service on these routes is detailed in Table 4.13-4 and shown in Figure 4.13-2.

Although Rapid Bus service is currently in operation with the 1R line connecting Berkeley BART to San Leandro BART, AC Transit has plans to introduce the Bus Rapid Transit (BRT) system in the East Bay. According to the *East Bay Bus Rapid Transit Project Design Workshop* conducted in November 2012, the proposed line would span 9.5 miles connecting Downtown Oakland to Downtown San Leandro. The system would include stops in Downtown San Leandro and the San Leandro BART station. A dedicated bus lane is proposed for a majority of the corridor. However, the dedicated bus lane will only span a couple of blocks in San Leandro on East 14th Street up from the northern city limit to just south of Broadmoor Boulevard. Other amenities would be provided including sheltered seating at bus stops, off-bus fare payment, real-time arrival signs, and traffic signal priority. The BRT project is expected to start construction in 2014 and open for service in 2016.



Source: Kittelson & Associates, Inc.

Figure 4.13-2
Existing Transit Facilities

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TABLE 4.13-4 AC TRANSIT BUS SERVICE IN THE STUDY AREA

| Route | Serving | Timepoints | Day | | Times |
|-------|---|--|-------------------|-------------------|-------------------|
| 75 | San Leandro, Ashland, Castro Valley, Oakland | San Leandro BART; Marina Blvd & Merced St; Purdue St. & Farnsworth St; Washington Ave. & Lewelling Blvd; Bay Fair BART; Estudillo Ave & MacArthur Blvd; Bancroft Ave & Dutton Ave. | Weekday | First | 5:31 a.m. |
| | | | | Last | 8:58 p.m. |
| | | | Weekend | Frequency | 60 minutes |
| | | | | <i>No Service</i> | |
| 89 | San Leandro, Ashland, Castro Valley | San Leandro BART; Davis St & Hays St; Estudillo Ave & Bancroft Ave; Bay Fair BART; Washington Ave & Floresta Blvd; Farallon St & Wicks Blvd; Fairway Dr & Aurora Dr; Marina Blvd & Aurora Dr. | Weekday | First | 5:15 a.m. |
| | | | | Last | 8:52 p.m. |
| | | | | Frequency | 30 minutes |
| | | | Weekend | First | 7:00 a.m. |
| | | | | Last | 8:01 p.m. |
| | | | | Frequency | 60 minutes |
| S | San Francisco, Oakland, San Leandro, San Lorenzo, Hayward | San Francisco (Transbay Temporary Terminal); Marina Blvd & Merced St; Manor Blvd & Farnsworth St; Washington Ave & Lewelling Blvd; Paseo Grande & Hesperian Blvd; Winton Ave & Hesperian Blvd; Hesperian Blvd & Tahoe Ave; Eden Shores Park. | Weekday Eastbound | First | 4:15 p.m. |
| | | | | Last | 8:15 p.m. |
| | | | | Frequency | 30 minutes |
| | | | Weekday Westbound | First | 5:10 a.m. |
| | | | | Last | 8:50 a.m. |
| | | | | Frequency | 15 minutes (peak) |
| | | | | <i>No Service</i> | |

Sources: AC Transit website, www.actransit.org, accessed July 29, 2013; Kittelson & Associates, Inc., 2013.

LINKS

The LINKS program is a free shuttle that provides transportation between the San Leandro BART Station to major employment centers in west San Leandro. The program is funded by a Business Improvement District fee and various grants, including those from the Bay Area Air Quality Management District (BAAQMD). It is managed by the San Leandro Transportation Management Organization (SLTMO) and operated by M.V. Transportation.

The shuttle operates every 20 minutes on non-holiday weekdays from 5:45 a.m. to 9:45 a.m., and from 3:00 p.m. to 7:00 p.m. SLTMO is currently working on program enhancements that will provide more frequent service intervals, beginning in 2015. The LINKS program has two bus stops close to the Project site located on Doolittle Drive at Marina Boulevard and at Fairway Drive.

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FLEX Shuttle

The City of San Leandro provides transportation for seniors and people with disabilities through the FLEX Shuttle service. Riders must be residents of San Leandro and must be 60 years of age or older, or at least 18 years of age and East Bay Paratransit certified.⁸ FLEX Shuttle requires an annual registration fee of \$20 along with an application which must be renewed by June 30 of each year in order to continue using the shuttle; however, after the annual fee is paid, the shuttle can be used at no additional charge. The shuttle operates Monday through Friday between 9:00 a.m. and 5:00 p.m. and operates a north and south route. The northern route operates in the northern portion of San Leandro and the southern route operates in the southern half of the City. Each route has 10 stops at various locations.

BART

Bay Area Rapid Transit (BART) provides heavy-rail, regional transit service to the Counties of Alameda, San Francisco, Contra Costa, and San Mateo. The BART station closest to the Project site is the San Leandro BART Station, located at Davis and San Leandro Streets about 2.9 miles northeast of the Project site.

BART's direct service from this station includes the Richmond-Fremont line, the Dublin-Pleasanton/Daly City-Millbrae line, and the Fremont/Daly City line. Table 4.13-5 summarizes the BART service from the San Leandro station.

Amtrak

Amtrak operates interstate and intercity heavy rail service. Its Capital Corridor and Coast Starlight routes run through San Leandro. However, there are currently no Amtrak stops within the city. The Capital Corridor route is served by the Oakland Coliseum Station, which is also adjacent to a BART station, located about five miles north from of the Project site. The Coast Starlight route is served by the Oakland Jack London Square Station, ten miles northwest of the Project site. The current San Leandro General Plan calls for further exploration of an Amtrak station stop in San Leandro, possibly near the San Leandro BART station. Marina Boulevard crosses the Amtrak railway east of the Project Area, between Alvarado Street and San Leandro Boulevard,

Bicycle and Pedestrian Facilities

Bicycle and pedestrian facilities are important components of the transportation network in the study area. They not only offer non-motorized opportunities for travel, but also provide connections to BART and bus stations to allow access to the public transportation network.

Existing Bicycle Facilities

According to the San Leandro Bicycle and Pedestrian Master Plan and field observations, the following bikeways are currently present within the study area:

⁸ City of San Leandro, FLEX Shuttle Service, <https://www.sanleandro.org/depts/rec/paratransit.asp#flexsvc>, accessed on November 12, 2014.

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TABLE 4.13-5 BART SERVICE FROM THE SAN LEANDRO BART STATION

| Line | Day | Times | |
|---|----------|--------------------------|---------------|
| Fremont/Richmond | Weekday | First | 4:20 a.m. |
| | | Last | 1:10 a.m. |
| | | Frequency | 15-20 minutes |
| | Saturday | First | 6:15 a.m. |
| | | Last | 1:10 a.m. |
| | | Frequency | 20 minutes |
| | Sunday | First | 8:15 a.m. |
| | | Last | 1:10 a.m. |
| | | Frequency | 20 minutes |
| Dublin-Pleasanton/Daly City - Millbrae. | Weekday | First | 4:35 a.m. |
| | | Last | 12:40 a.m. |
| | | Frequency | 15-20 minutes |
| | Saturday | First | 6:20 a.m. |
| | | Last | 12:40 a.m. |
| | | Frequency | 20 minutes |
| | Sunday | First | 8:20 a.m. |
| | | Last | 12:40 a.m. |
| | | Frequency | 20 minutes |
| Fremont/Daly City | Weekday | First | 5:30 a.m. |
| | | Last | 7:40 p.m. |
| | | Frequency | 15 minutes |
| | Saturday | First | 9:10 a.m. |
| | | Last | 7:40 p.m. |
| | | Frequency | 20 minutes |
| | Sunday | <i>No direct service</i> | |

Sources: BART Fares and Schedules, accessed December 31, 2013; Kittelson & Associates, Inc., 2013.

Class I Bike Paths

- Oyster Bay Regional Shoreline.
- Intermittent sections of Pescador Point Drive and Mulford Point Drive. These paths are part of the San Francisco Bay Trail. When complete, the Bay Trail would allow continuous pedestrian and bicycle travel around the shoreline of San Francisco Bay.

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Class II Bike Lanes

- Davis Street between Gilmore Drive and the railroad tracks west of Alvarado Street
- Williams Street between Neptune Drive and San Leandro Boulevard
- Fairway Drive between Monarch Bay Drive and Miller Street
- Aladdin Avenue between Teagarden Street and Alvarado Street
- Teagarden Street between Aladdin Avenue and Alvarado Street
- Doolittle Drive between the city limit to the north and Williams Street and between Fairway Drive and Farallon Drive
- Westgate Parkway between Walmart driveway and Williams Street
- Alvarado Street between West Estudillo Avenue and Thornton Street
- Alvarado Street between Marina Boulevard and Aladdin Avenue
- San Leandro Boulevard between Davis Street and Washington Boulevard
- Merced Street between Marina Boulevard and Fairway Drive

Class III Bike Routes

- Neptune Drive between Oyster Bay Regional Shoreline entrance and Marina Boulevard. This is part of the San Francisco Bay Trail.
- Fairway Drive-Aladdin Avenue between Miller Street and Teagarden Street
- Alvarado Street between Teagarden Street and Fremont Avenue

Bicyclist Volumes

Bicyclists were counted at selected study intersections between January and May 2013. The highest volumes were found within the Project site at the intersection of Monarch Bay Drive and Pescador Point Drive, where 26 bicyclists were observed during the midday hour on Saturday. Table 4.13-6 shows the peak hour volumes during weekday AM and PM and Saturday midday at six representative study intersections.

Existing Pedestrian Facilities

Adjacent to the Project site on Monarch Bay Drive, from Fairway Drive to Neptune Drive, pedestrian facilities are limited. Four-foot wide sidewalks are provided only at intermittent sections on the west side of the roadway. No sidewalks are provided on the eastern side along Monarch Bay Drive along the border of the nine-hole Marina Golf Course. Roadways used to get to the Project site such as Neptune Drive, Marina Boulevard, and Fairway Drive are generally provided with concrete sidewalks in good condition on both sides of the street.

Other than at the intersection of Monarch Bay Drive and Fairway Drive (#21), marked crosswalks are not provided along Monarch Bay Drive. However, pedestrian ramps are present at nearly all intersection corners in the study area. Currently, these pedestrian ramps lack truncated domes for visually impaired pedestrians.

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TABLE 4.13-6 BICYCLE VOLUMES AT SELECTED INTERSECTIONS

| Intersection | Peak | Times | Volumes |
|--|----------|-------------------------|---------|
| Aurora Drive and Fairway Drive | AM | 7:15 a.m. – 8:15 a.m. | 2 |
| | PM | 5:00 p.m. – 6:00 p.m. | 13 |
| | Saturday | 11:30 a.m. – 12:30 p.m. | 4 |
| Merced Street and Marina Boulevard | AM | 7:30 a.m. – 8:30 a.m. | - |
| | PM | 4:30 p.m. – 5:30 p.m. | - |
| | Saturday | 12:45 p.m. – 1:45 p.m. | 8 |
| Doolittle Drive and Fairway Drive | AM | 7:30 a.m. – 8:30 a.m. | - |
| | PM | 4:45 p.m. – 5:45 p.m. | - |
| | Saturday | 12:45 p.m. – 1:45 p.m. | 4 |
| Aurora Drive and Marina Boulevard | AM | 7:30 a.m. – 8:30 a.m. | - |
| | PM | 5:00 p.m. – 6:00 p.m. | - |
| | Saturday | 11:45 p.m. – 12:45 p.m. | 11 |
| Monarch Bay Drive and Mulford Point Drive | AM | 8:00 a.m. – 9:00 a.m. | 1 |
| | PM | 5:00 p.m. – 6:00 p.m. | 7 |
| | Saturday | 12:00 p.m. – 1:00 p.m. | 19 |
| Monarch Bay Drive and Pescador Point Drive | AM | 8:00 a.m. – 9:00 a.m. | 1 |
| | PM | 4:45 p.m. – 5:45 p.m. | 9 |
| | Saturday | 12:00 p.m. – 1:00 p.m. | 26 |

Note: Counts conducted by Marks Traffic Data on Thursday, January 17, 2013 for the AM (7:00 to 9:00 a.m.) and PM (4:00 to 6:00 p.m.) peak-hours and Saturday, February 2, 2013 from 10:00 a.m. to 2:00 p.m. for Intersection #10, #14, and #26. Counts were conducted separately for Intersections #5, #28 and #29 on Thursday, May 30, 2013 for the AM and PM peak-hours and Saturday, May 18, 2013.

Source: Kittelson & Associates, Inc., 2013.

Pedestrian Volumes

Pedestrians were counted at six intersections in the study area in February and May 2013. The highest pedestrian volumes were observed at the Aurora Drive and Fairway Drive intersection (#22) during all three observation periods. The lowest pedestrian volumes were recorded along Monarch Bay Drive at Mulford Point Drive (#19) and Pescador Point Drive (#20). Only one pedestrian was observed on either intersection during the Saturday peak-hour. Table 4.13-7 shows the observed volumes at six selected study intersections.

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TABLE 4.13-7 PEDESTRIAN VOLUMES AT SELECTED INTERSECTIONS

| Intersection | Peak | Times | Volumes |
|--|----------|-------------------------|---------|
| Aurora Drive and Fairway Drive | AM | 7:15 a.m. – 8:15 a.m. | 21 |
| | PM | 5:00 p.m. – 6:00 p.m. | 14 |
| | Saturday | 11:30 a.m. – 12:30 p.m. | 24 |
| Merced Street and Marina Boulevard | AM | 7:30 a.m. – 8:30 a.m. | - |
| | PM | 4:30 p.m. – 5:30 p.m. | - |
| | Saturday | 12:45 p.m. – 1:45 p.m. | 8 |
| Doolittle Drive and Fairway Drive | AM | 7:30 a.m. – 8:30 a.m. | - |
| | PM | 4:45 p.m. – 5:45 p.m. | - |
| | Saturday | 12:45 p.m. – 1:45 p.m. | 14 |
| Aurora Drive and Marina Boulevard | AM | 7:30 a.m. – 8:30 a.m. | - |
| | PM | 5:00 p.m. – 6:00 p.m. | - |
| | Saturday | 11:45 p.m. – 12:45 p.m. | 14 |
| Monarch Bay Drive and Mulford Point Drive | AM | 8:00 a.m. – 9:00 a.m. | 4 |
| | PM | 5:00 p.m. – 6:00 p.m. | 1 |
| | Saturday | 12:00 p.m. – 1:00 p.m. | 1 |
| Monarch Bay Drive and Pescador Point Drive | AM | 8:00 a.m. – 9:00 a.m. | 8 |
| | PM | 4:45 p.m. – 5:45 p.m. | 6 |
| | Saturday | 12:00 p.m. – 1:00 p.m. | 1 |

Notes: Counts for Intersection #10, #14, and #26 conducted on Saturday, February 2, 2013 from 10:00 a.m. to 2:00 p.m.. No AM and PM peak period counts were conducted at these three locations. Counts for Intersections #5, #28 and #29 were conducted on Thursday, May 30, 2013 for the AM and PM peak-hours and Saturday, May 18, 2013.

Source: Kittelson & Associates, Inc., 2013

Goods Movement

The abundance of nearby industrial and commercial uses has resulted in a variety of infrastructure components related to goods movement.

Railroad Crossings

Some of the roadways in the study area are bisected by at-grade railroad crossings, which are owned and operated by Union Pacific Railroad (UPRR). As observed during a field survey, all of the at-grade crossings in the study area appeared to be provided with adequate features to facilitate traffic crossings for vehicles, pedestrians and bicyclists, including concrete rail crossing panels, warning bells, and crossing gates.

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Truck Routes

Within the San Leandro General Plan, the City of San Leandro has established a two-tier truck route system on city-operated roadways.⁹ The first tier is for through trips, where the origin and destination of the trucks are not within the city limits. The second tier is for local access trips where the origin or destination is in San Leandro. For sites in San Leandro that are not on the local truck routes, trucks must access the designated truck routes as directly as possible to their origin or from their destination. San Leandro Boulevard and portions of Washington Avenue are designated truck routes for through trips in the study area; the following roadways are designated as local truck routes:

- Davis Street, Marina Boulevard and Fairway Drive east of Doolittle Drive
- Williams Street west of I-880
- Alvarado Street south of Marina Boulevard
- Doolittle Drive
- Merced Street

Existing Traffic Conditions

In order to ascertain the existing traffic and circulation conditions in the Project study area, existing operations of the study intersections, freeway mainline segments, and ramp merge and diverge areas were assessed. This assessment was based on data collected from several sources. Intersection turning movement volumes were collected at the study intersections during typical weekday morning (AM) peak period (7:00 a.m. to 9:00 a.m.) and afternoon (PM) peak period (4:00 p.m. to 6:00 p.m.) and during Saturday midday period (10:00 a.m. to 2:00 p.m.) in January 2013. The existing intersection volumes and lane geometries are shown in Figure 4.13-3 and Figure 4.13-4. Freeway volumes were compiled from Caltrans' Performance Measurement System (PeMS) in January 2014. These volumes are shown in Table 4.13-8.

Analysis Methodologies and Level of Service Standards

"Levels of Service" describe the operating conditions experienced by motorists. Level of service (LOS) is a qualitative measure of the effect of a number of factors, including speed and travel time, traffic interruptions, freedom to maneuver, driving comfort, and convenience. LOS are designated "A" through "F" from best to worst, which cover the entire range of traffic operations that might occur. LOS "A" through "E" generally represents traffic volumes at less than roadway capacity, while LOS "F" represents over capacity and/or forced flow conditions.

⁹ City of San Leandro, *General Plan 2002*, Transportation Element, Figure 4-3, page 4-17.

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TABLE 4.13-8 EXISTING FREEWAY VOLUMES AND LEVEL OF SERVICE

| Location | Type | Existing – AM Peak Hour | | | Existing – PM Peak Hour | | |
|-------------------------------|--------------------|-------------------------|----------------------|------------------|-------------------------|----------------------|------------------|
| | | Volume ^a | Density ^b | LOS ^c | Volume ^a | Density ^b | LOS ^c |
| I-880 Northbound | | | | | | | |
| Washington Ave to Marina Blvd | Mainline | 7,957 | 28.0 | D | 7,161 | 24.7 | C |
| Marina Blvd to Davis St | Mainline | 8,356 | 36.2 | E | 7,426 | 32.7 | D |
| | Weave ^d | 1,563 | N/A | B | 1,953 | N/A | C |
| Davis St to 98th Ave | Mainline | 6,151 | 26.9 | D | 5,695 | 24.5 | C |
| I-880 Southbound | | | | | | | |
| 98th Ave to Davis St | Mainline | 5,619 | 24.2 | C | 6,340 | 27.9 | D |
| Davis St to Marina Blvd | Mainline | 6,584 | 26.0 | C | 7,712 | 32.3 | D |
| | Weave ^d | 1,164 | N/A | A | 1,471 | N/A | B |
| Marina Blvd to Washington Ave | Mainline | 6,153 | 21.0 | C | 7,508 | 26.1 | D |

a. Volume = vehicles per hour (vph)

b. Density = passenger car per mile per lane (pc/m/ln)

c. LOS = Level of Service

d. Marina Blvd. to Davis St. analyzed as a weaving section using the Leisch Method as described in the Caltrans Design Manual, May 7, 2012. The volume shown for this segment is the weaving volume.

Source: Kittelson & Associates, Inc., 2014.

Intersection

Intersection analyses were conducted using the methodology outlined in the 2000 Highway Capacity Manual (HCM)¹⁰ and Synchro software tool as required by the City of San Leandro.

- **Signalized Intersection.** The HCM procedure calculates a weighted average stop delay in seconds per vehicle at a signalized intersection and assigns a level of service designation based upon the delay.
- **Unsignalized Intersection.** The HCM methodology calculates a weighted average stop delay in seconds per vehicle for each controlled intersection leg and for the intersection as a whole. A level of service designation is assigned based upon the weighted average control delay per vehicle on the intersection leg with the worst delay at one- or two-way stop-controlled intersections. For all-way stop-controlled intersections, a level of service designation is based upon the weighted average control delay for all intersection legs, similar to the level of service designation for signalized intersections.

Table 4.13-9 presents the relationship of average delay to level of service for both signalized and stop controlled intersections.

¹⁰ Transportation Research Board, Washington, D.C., 2000

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TABLE 4.13-9 LEVEL OF SERVICE DEFINITION FOR INTERSECTIONS

| Signalized Intersection Average Delay Per Vehicle (Seconds) | LOS | Description of Traffic Conditions | Unsignalized Intersection Average Delay Per Vehicle (Seconds) |
|---|-----|---|---|
| ≤10.0 | A | Free flowing. Most vehicles do not have to stop. | ≤10.0 |
| >10.0 and ≤ 20.0 | B | Minimal delays. Some vehicles have to stop, although waits are not bothersome. | >10.0 and ≤ 15.0 |
| >20.0 and ≤ 35.0 | C | Acceptable delays. Significant numbers of vehicles have to stop because of steady, high traffic volumes. Still, many pass without stopping. | >15.0 and ≤ 25.0 |
| >35.0 and ≤ 55.0 | D | Tolerable delays. Many vehicles have to stop. Drivers are aware of heavier traffic. Cars may have to wait through more than one red light. Queues begin to form, often on more than one approach. | >25.0 and ≤ 35.0 |
| >55.0 and ≤ 80.0 | E | Significant delays. Cars may have to wait through more than one red light. Long queues form, sometimes on several approaches. | >35.0 and ≤ 50.0 |
| >80.0 | F | Excessive delays. Intersection is jammed. Many cars have to wait through more than one red light, or more than 60 seconds. Traffic may back up into “up-stream” intersections. | >50.0 |

Source: Transportation Research Board, Highway Capacity Manual, Washington, D.C., 2000.

Freeway Mainline Segments

To assess circulation system performance, to determine the level of service threshold from LOS A to F, and to analyze the Congestion Management Program (CMP), the methodology outlined in the HCM and Highway Capacity Software (HCS) tool used to calculate the density, in terms of passenger cars per mile, per lane. Table 4.13-10 shows the relationship of freeway density to level of service.

TABLE 4.13-10 LEVEL OF SERVICE DEFINITION FOR FREEWAY MAINLINE SEGMENT

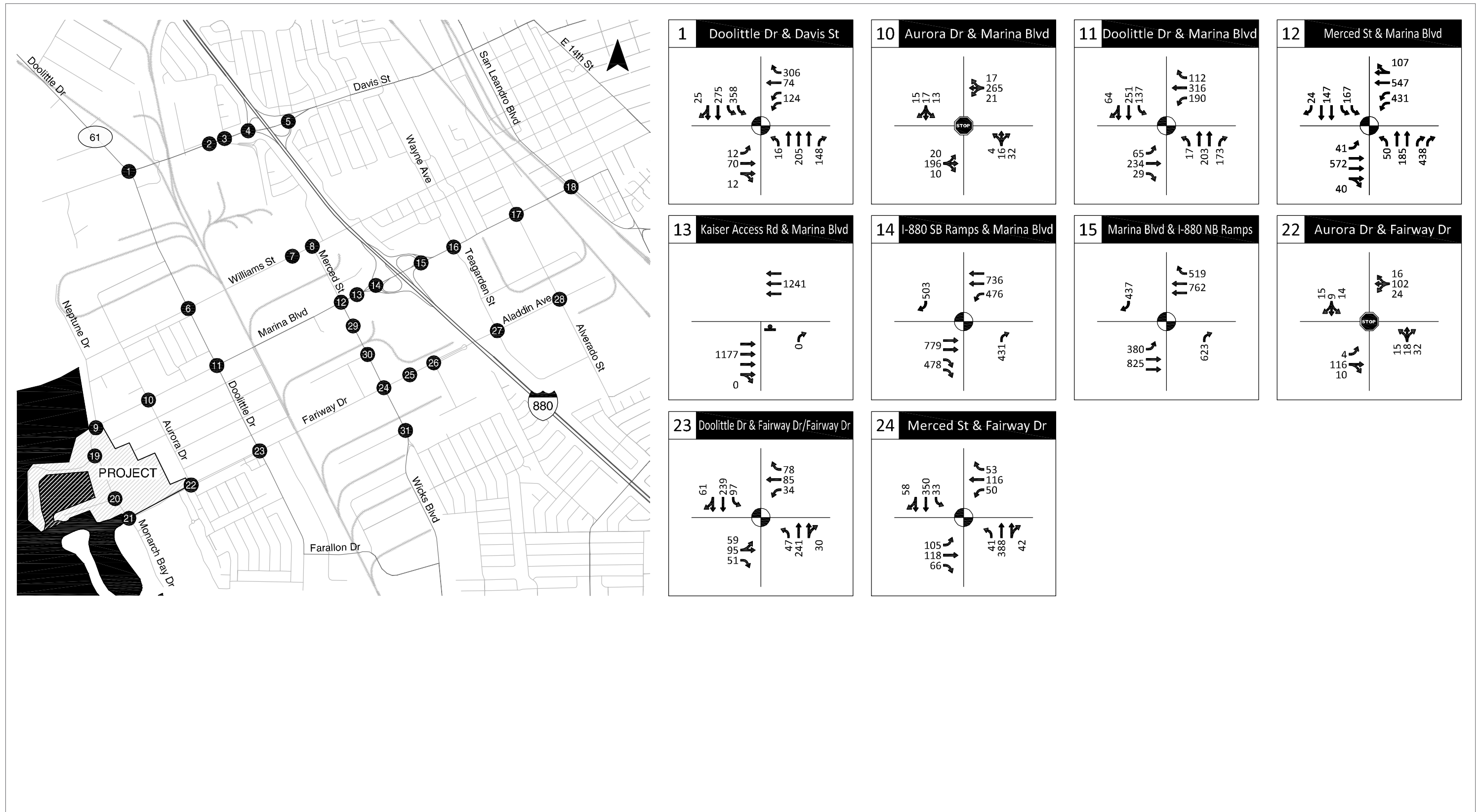
| LOS | Density (passenger vehicles per mile per lane) |
|-----|--|
| A | ≤11 |
| B | >11-18 |
| C | >18-26 |
| D | >26-35 |
| E | >35-45 |
| F | >45 Demand exceeds capacity |

Source: Transportation Research Board, *Highway Capacity Manual* Washington, D.C., 2010, 11-7.



Source: Kittelson & Associates, Inc.

Figure 4.13-3
Existing Week Day Peak Hour Intersection Traffic Volumes and Lane Configurations



Source: Kittelson & Associates, Inc.

Figure 4.13-4
Existing Saturday Hour Intersection Traffic Volumes and Lane Configurations

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Freeway Weaving Analysis

For the circulation system performance analysis, freeway weaving segments were analyzed using the Leisch Method as described in the Caltrans Design Manual, dated May 7, 2012. Freeway weaving conditions are dependent upon traffic volumes, weaving length between the interchanges, lane configurations, and free-flow speed of the freeway segment. Weaving analysis is typically applicable for freeway segments where the distance between an on-ramp and a downstream off-ramp is less than 2,500 feet.

CMP Arterial Segment Analysis

Level of service analysis for designated Metropolitan Transportation System (MTS) arterial segments was performed based on the service volume table shown in Exhibit 10-7 of the HCM 2000. A volume to capacity ratio was calculated using the volumes from the Alameda Countywide Travel Demand Model and using the LOS F service volume threshold shown in Exhibit 10-7 of the HCM 2000 as the estimate for roadway capacity.

Existing Freeway Levels of Service

Table 4.13-8 presents the level of service on the study freeway segments under existing conditions. As shown in this table, all study segments are experiencing LOS D or better, with the exception of the I-880 northbound segment between Marina Boulevard and Davis Street. This mainline segment experiences LOS E during the AM peak hour.

Existing Intersection Levels of Service

Intersection turning movement volumes, lane configurations, and traffic control conditions were used to calculate the level of service at the study intersections. As shown in Table 4.13-11, all study intersections operate at LOS D or better.

4.13.2 STANDARDS OF SIGNIFICANCE

The proposed development of the Plan area would result in a significant impact with regard to transportation and traffic if it would:

1. 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, 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.
2. Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.
3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

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TABLE 4.13-11 INTERSECTION LEVEL OF SERVICE – EXISTING CONDITIONS

| | North/South Street | East/West Street | Control | AM Peak Hour | | PM Peak Hour | | Saturday Midday Hour | | | |
|----|-------------------------------|-----------------------|------------|---------------------|-------|----------------|----------|----------------------|-------|--|--|
| | | | | Delay | LOS | Delay | LOS | Delay | LOS | | |
| 1 | Doolittle Drive (SR 61) | Davis Street (SR 112) | Signalized | 24.8 | C | 20.1 | C | 18.2 | B | | |
| 2 | Phillips Lane | Davis Street (SR 112) | Signalized | 20.9 | C | 29.4 | C | | | | |
| 3 | Warden Avenue-Timothy Drive | Davis Street (SR 112) | Signalized | 19.2 | B | 29.5 | C | | | | |
| 4 | I-880 Southbound ramps | Davis Street (SR 112) | Signalized | 12.1 | B | 12 | B | | | | |
| 5 | I-880 Northbound ramps | Davis Street (SR 112) | Signalized | 13.7 | B | 16.8 | B | | | | |
| 6 | Doolittle Drive | Williams Street | Signalized | 19.5 | B | 16.1 | B | | | | |
| 7 | Westgate Parkway | Williams Street | Signalized | 16.4 | B | 25.5 | C | | | | |
| 8 | Merced Street | Williams Street | Signalized | 38.2 | D | 28.3 | C | | | | |
| 9 | Neptune Drive | Marina Boulevard | TWSC | 1.4 (9.7) | A (A) | 0.5 (11.3) | A (B) | | | | |
| 10 | Aurora Drive | Marina Boulevard | AWSC | 11.4 (11.8) | B (B) | 10.8 (11.9) | B (B) | 9.7 (10.3) | A (B) | | |
| 11 | Doolittle Drive | Marina Boulevard | Signalized | 34.7 | C | 36 | D | 30.7 | C | | |
| 12 | Merced Street | Marina Boulevard | Signalized | 37.8 | D | 39.8 | D | 36.9 | D | | |
| 13 | Kaiser Access Driveway | Marina Boulevard | TWSC | Future Intersection | | | | | | | |
| 14 | I-880 Southbound ramps | Marina Boulevard | TWSC | 5.0 (17.9) | A (C) | 6.5 (21.1) | A (C) | 5.6 (16.1) | A (C) | | |
| 15 | I-880 Northbound ramps | Marina Boulevard | TWSC | 10.0 | A (D) | 4.9 (18.6) | A (C) | 3.7 (14.9) | A (B) | | |
| 16 | Wayne Avenue-Teagarden Street | Marina Boulevard | Signalized | 24.3 | C | 30.7 | C | | | | |
| 17 | Alvarado Street | Marina Boulevard | Signalized | 24.2 | C | 20.6 | C | | | | |
| 18 | San Leandro Boulevard | Marina Boulevard | Signalized | 44.8 | D | 36 | D | | | | |
| 19 | Monarch Bay Drive | Mulford Point Drive | AWSC | 7.7 (7.8) | A (A) | 8.5 (8.7) | A (A) | | | | |
| 20 | Monarch Bay Drive | Pescador Point Drive | AWSC | 7.6 (7.7) | A (A) | 7.8 (7.9) | A (A) | | | | |
| 21 | Monarch Bay Drive | Fairway Drive | AWSC | 7.9 (8.1) | A (A) | 9.1 | A | | | | |
| 22 | Aurora Drive | Fairway Drive | AWSC | 8.2 (8.4) | A (A) | 8.5 (9.1) | A (A) | 8.1 (8.6) | A (A) | | |
| 23 | Doolittle Drive | Fairway Drive | Signalized | 16.8 | B | 16 | B | 14.5 | B | | |
| 24 | Merced Street | Fairway Drive | Signalized | 32.8 | C | 30.1 | C | 28.1 | C | | |
| 25 | Garfield Drive | Fairway Drive | Signalized | 3.0 | A | 3.7 | A | | | | |
| 26 | Miller Street | Fairway Drive | Signalized | 6.7 | A | 11.9 | B | | | | |
| 27 | Aladdin Avenue | Teagarden Street | Signalized | 12.4 | B | 14.5 | B | | | | |
| 28 | Aladdin Avenue | Alvarado Street | Signalized | 24.4 | C | 21.7 | C | | | | |

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TABLE 4.13-11 INTERSECTION LEVEL OF SERVICE – EXISTING CONDITIONS

| | North/South Street | East/West Street | Control | AM Peak Hour | | PM Peak Hour | | Saturday Midday Hour | |
|----|--------------------|----------------------|------------|---------------|-------|---------------|----------|----------------------|-----|
| | | | | Delay | LOS | Delay | LOS | Delay | LOS |
| 29 | Merced Street | Wells Fargo Driveway | Signalized | 1.2 | A | 4.4 | A | | |
| 30 | Merced Street | Republic Avenue | TWSC | 0.7 (25.0) | A (C) | 1.1 (26.3) | A (D) | | |
| 31 | Merced Street | West Avenue 140th | Signalized | 2.3 | A | 4.1 | A | | |

Notes: TWSC = Two-Way Stop Controlled; AWSC = All-Way Stop Controlled; LOS = Level of Service; Delay = Weighted average delay of all intersection approaches; the number in parentheses for stop-controlled intersection indicates the average delay on the worst approach.

Saturday Midday LOS data were provided for a limited set of key intersections located near the Project site.

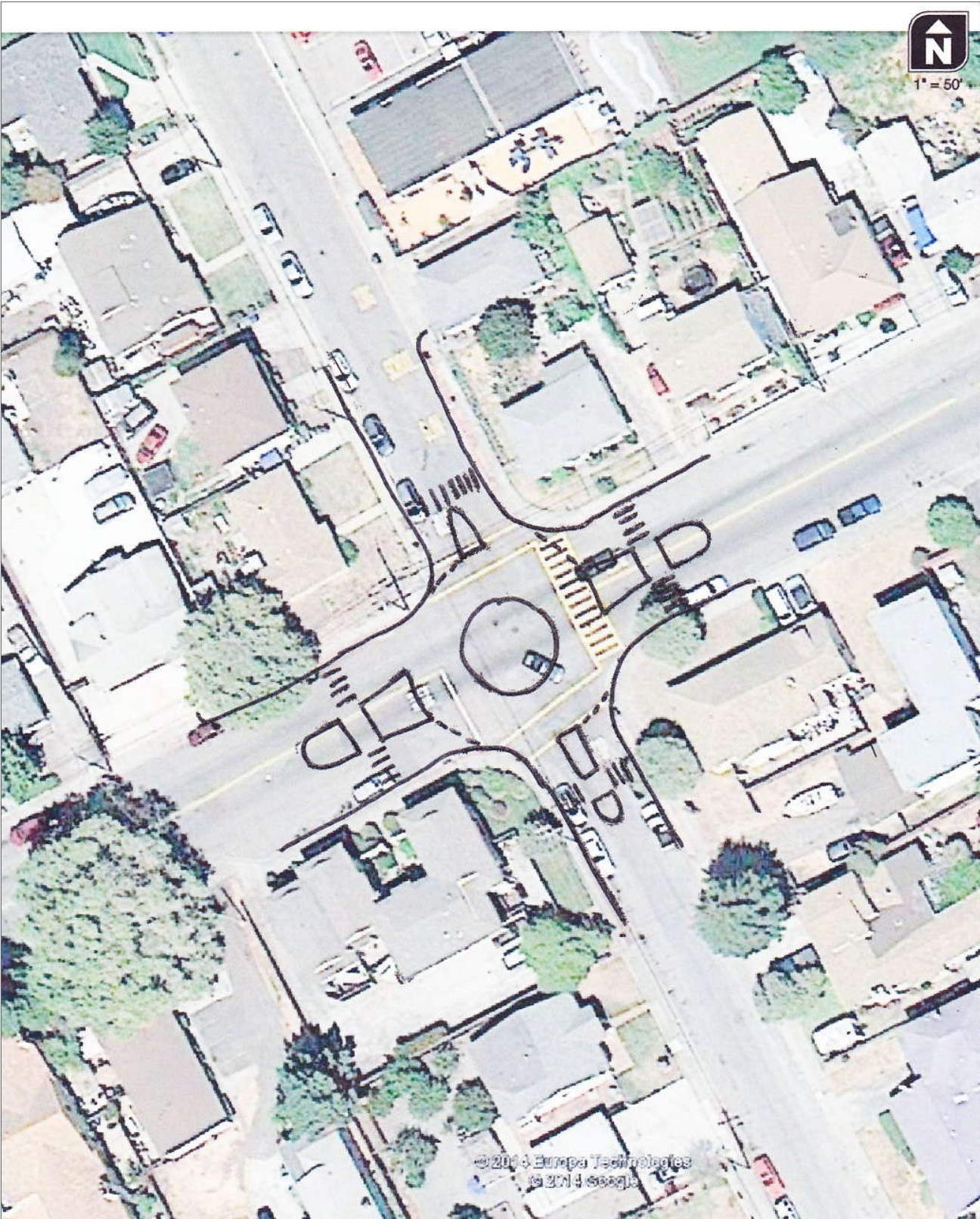
Source: Kittelson & Associates, 2014.

4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
5. Result in inadequate emergency access.
6. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

4.13.3 IMPACT DISCUSSION

TRAF-1 The proposed Project would 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, 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.

The San Leandro General Plan contains level of service standards for intersection operations at both signalized intersections and unsignalized intersections. San Leandro General Plan Policy 16.02 in the Transportation Element states that the minimum acceptable level of service is LOS D for streets and intersections, unless otherwise indicated in the Transportation Element. In the discussion of level of service on page 4-20 in the San Leandro General Plan, it is explained that LOS D may only be exceeded under two circumstances. These circumstances are if road improvements are not possible because the necessary right-of-way does not exist and cannot be acquired without significant impacts on adjacent buildings and properties or if the intersection or road segment is in a pedestrian district, such as Downtown, where the priority is on pedestrian, bicycle, and public transit access rather than vehicle traffic.



Source: Kittelson & Associates, Inc.

Figure 4.13-5
Marina Boulevard/Aurora Avenue Mini-Roundabout Concept

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For the purposes of this study, significant traffic impacts at intersections in the study area are identified if the Project causes:

- An intersection to operate at LOS E or F; or
- An increase in the volume-to-capacity (v/c) ratio¹¹ of 0.05 or more for signalized intersections that operate at LOS E or F under No Project conditions; or
- An increase in average delay of more than 5 seconds on the worst approach for unsignalized intersections that operate at LOS E or F under No Project conditions.

For freeways, Caltrans seeks to maintain a target level of service at the transition between LOS C and LOS D. However, Caltrans acknowledges that this may not always be feasible. Therefore, if an existing State highway facility is operating at less than the appropriate target level of service, Caltrans seeks to have the existing Measure of Effectiveness (MOE) be maintained.

For the purposes of this study, significant traffic impacts on I-880 in the study area are identified if the Project causes:

- The operations of a freeway segment or ramp to deteriorate from LOS D or better to LOS E or F; or
- An increase in the amount of vehicle traffic on a freeway segment already operating at LOS E or F by more than 1 percent of the freeway segment's design capacity.

Project Trip Generation

The Project would potentially generate about 9,408 trips on a typical weekday of which 8,752 are new external vehicular trips, as shown in Table 4.13-12. Of the external trips, 1,040 trips would occur during the weekday morning peak hour and 1,060 trips during the weekday evening peak hour. The Project is also projected to generate 909 trips during the Saturday midday hour of which 860 are new external trips. The trip generation data was incorporated into the Alameda Countywide Travel Demand Model (Countywide Model) to project the number of background and project trips for analysis.

Project Trip Distribution and Assignment

The Countywide Model was also used to distribute new trips associated with development of the proposed Project to and from the Project site and to assign them onto the roadway network for each of the analysis conditions. As San Leandro and adjacent communities develop, land uses and roadway network vary between the three different analysis conditions (2014, 2020, and 2035). Therefore, the distribution patterns of the Project trips may also vary slightly.

¹¹ The V/C ratio is calculated by comparing the peak hour link volume to the peak hour capacity of the road link.

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TABLE 4.13-12 PROJECT TRIP GENERATION

| Trip Generation Land Use Category | Amount | Source | Weekday | Trips Generated | | | | | | | | |
|--------------------------------------|-------------|------------------------|--------------|-----------------|------------|--------------|--------------|------------|--------------|------------|------------|------------|
| | | | | AM Peak Hour | | | PM Peak Hour | | | Saturday | | |
| | | | | In | Out | Total | In | Out | Total | In | Out | Total |
| Office | 150.0 KSF | ITE (710) | 1,787 | 233 | 32 | 265 | 33 | 164 | 197 | 35 | 30 | 65 |
| Café | 8.0 KSF | ITE (932) ^a | 1,017 | 47 | 39 | 86 | 47 | 32 | 79 | 60 | 53 | 113 |
| Restaurant – Quality | 13.0 KSF | ITE (931) ^b | 1,169 | 6 | 5 | 11 | 65 | 32 | 97 | 83 | 58 | 141 |
| Conference Center ^c | 15.0 KSF | n/a | 1,500 | 281 | 50 | 331 | 50 | 281 | 331 | 140 | 25 | 165 |
| Hotel | 200 Rooms | ITE (310) | 1,417 | 63 | 43 | 106 | 61 | 59 | 120 | 80 | 62 | 142 |
| Apartment | 159 Units | ITE (220) ^d | 1,087 | 16 | 66 | 82 | 68 | 37 | 105 | 42 | 42 | 84 |
| Townhome/Condo | 153 Units | ITE (230) | 931 | 12 | 61 | 73 | 57 | 28 | 85 | 47 | 40 | 87 |
| Single-Family Detached | 42 Units | ITE (210) | 473 | 10 | 29 | 39 | 30 | 18 | 48 | 25 | 21 | 46 |
| Park/Open Space | 14.48 Acres | ITE (411) ^e | 27 | 36 | 29 | 65 | 29 | 22 | 51 | 33 | 33 | 66 |
| Total Project Trips | | | 9,408 | 704 | 354 | 1,058 | 440 | 673 | 1,113 | 545 | 364 | 909 |
| Internal Trips ^f | | | -656 | -9 | -8 | -18 | -26 | -25 | -53 | -24 | -24 | -49 |
| New External Trips | | | 8,752 | 695 | 346 | 1,040 | 414 | 648 | 1,060 | 521 | 340 | 860 |

a. ITE's High-Turnover (Sit Down) Restaurant category is applied to the Café land use.

b. The AM peak hour distribution percentage for the High-Turnover (Sit Down) Restaurant category is applied to the Quality Restaurant.

c. Data on conference center or similar category are not available in the ITE manual; therefore, the trip generation was calculated based on a set of assumptions on the anticipated use of the facility. It is projected that the 15,000 square-foot facility has a 20-square foot per person capacity and that 75 percent of guests would arrive within the AM and Saturday peak hours and depart within the PM peak hour in vehicles that have an average occupancy of two persons per vehicle.

d. Apartments are assumed to be for rent units; while other residential units are assumed to be for sale units.

e. ITE's City Park category is applied to the Park/Open Space land use.

f. Internal capture adjustments are made between Hotel and Conference Center uses, and between Restaurant, Residential/Hotel, and Office uses.

Source: Trip Generation Manual and User's Guide and Handbook 9th Edition; Kittelson & Associates, 2014.

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Circulation System Performance

The performance of the intersections and freeway locations which were analyzed was assessed for the period before the opening of the proposed Project but after the completion of currently planned or underway construction improvements and developments (Baseline Conditions) and for future planning years 2020 and 2035 (**Near-Term Cumulative Conditions** and **Long-Term Cumulative Conditions**). The process through which the background and Project-generated traffic were developed is first described below, followed by impact assessments of each analysis conditions.

Traffic Volume Forecasting Approach

The Alameda Countywide Travel Demand Model was used to forecast traffic volumes for both background No Project and plus Project scenarios of all study conditions. The latest (August 2011) model is based on assumptions from the *Transportation 2035 Plan for the San Francisco Bay Area*, a regional transportation plan (RTP) published by the Metropolitan Transportation Commission (MTC), and the *Alameda Countywide Transportation Plan*, and on socio-economic forecasts from *Projections 2009*, published by the Association of Bay Area Governments (ABAG). At the time of this analysis, the most recent integrated land use and transportation plan, *Plan Bay Area*, adopted in July 2013, had not yet been incorporated into the Countywide Model. The model forecasts weekday, daily traffic and AM and PM peak hour traffic for links and intersections based on a standard 4-step travel demand model method. The model does not forecast Saturday conditions. For this reason, Saturday midday traffic was derived from the relationship between Saturday counts and weekday counts collected for baseline conditions and are referenced above in Section 4.13.1.2, Existing Conditions, of this Draft EIR, then extrapolated to the weekday model forecasts.

Baseline Conditions

Intersection and freeway analysis of Baseline plus Project conditions was performed to determine the potential traffic impacts of the proposed Project in combination with the impacts that would result from the first phase of the Kaiser Permanente San Leandro Medical Center on Marina Boulevard and the related completion of the I-880 Marina Boulevard interchange improvement project. The first phase of the Kaiser Medical Center opened in mid-2014. The interchange improvement was a requirement of the Kaiser project approval and is under construction. It is anticipated to be completed in mid-2015 in time for the opening of the Shoreline development. These improvements were included in the Baseline Conditions because both the Kaiser and the interchange projects would substantially affect the transportation network in the project area and are currently being developed; therefore, their inclusion in the baseline conditions more accurately reflects existing transportation conditions at the time when the Project opens. Analyzing existing conditions without these current but not yet complete improvements would not accurately represent existing conditions. No other planned developments or roadway improvements are assumed in the Baseline Conditions.

The Marina Boulevard interchange at I-880 would be reconfigured and be signalized at both the northbound and southbound on-ramps. The roadway improvements associated with Phase 1 of the Kaiser Permanente San Leandro Medical Center include the following:

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- A new Kaiser Permanente San Leandro Medical Center access driveway on Marina Boulevard would be provided for limited right-turn inbound and right-turn outbound access.
- Republic Avenue would be extended to the east onto the Kaiser Permanente San Leandro Medical Center campus and its intersection with Merced Street would be signalized.
- Merced Street would be restriped from the Wells Fargo driveway to Republic Avenue to provide two lanes and one Class II bike lane in each direction and two southbound left-turn lanes at the Merced Street/Republic Avenue intersection.
- Merced Street would be widened from Republic Avenue to Fairway Drive to provide two northbound lanes, two southbound lanes, a center median as well as Class II bike lanes. A northbound left-turn lane would be provided at the Republic Avenue intersection and a southbound left-turn lane would be provided at the Fairway Drive intersection.
- Fairway Drive intersections of Miller Street and Garfield Drive would be signalized (these improvements have already been completed at the time of intersection volume counts were collected; therefore, they are included in existing conditions.)
- Fairway Drive would be widened to three lanes from Merced Street to Miller Street to provide two westbound lanes and one eastbound lane. Westbound left-turn lanes would be provided at Miller Street and at Merced Street, and eastbound left-turn lane would be provided at Garfield Drive and at Miller Street.

Vehicular traffic generated by the Kaiser Permanente San Leandro Medical Center Phase 1 project was added to the existing traffic volumes to derive the background traffic for the Baseline Conditions. The Kaiser Permanente San Leandro Medical Center traffic was developed using the Countywide Model based on land use information from the *Kaiser Permanente San Leandro Medical Center/Mixed-Use Retail Development Project Draft Environmental Impact Report*.

Baseline Intersection Operations

Information regarding the weekday and Saturday midday peak hour intersection turning movement volumes and lane configurations for Baseline Conditions was used to calculate level of service and identify potential impacts at the Analysis Intersections based on the City's significance thresholds. The level of service results are summarized in Table 4.13-13, Table 4.13-14, and Table 4.13-15 and the detailed calculation worksheets are provided in Appendix H.

Signalized Intersections

Under the Baseline scenario, without the addition of Project trips, one signalized Analysis Intersection is projected to operate below the City's standard of LOS D. As seen in Table 4.13-13, the intersection of Aladdin Avenue and Alvarado Street (#28) would operate at LOS E with an average delay of 75.2 seconds. The addition of Project traffic would cause the service level to further reduce to LOS F and increase the v/c ratio by 0.02. Since the Project would only cause the v/c ratio to increase by 0.02 at the Aladdin Avenue and Alvarado Street intersection (#28), where it would already operate at substandard conditions without adding the Project traffic, the impact at this location is considered to be *less than significant* because the increase would not exceed the 0.05 threshold.

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TABLE 4.13-13 INTERSECTION LEVEL OF SERVICE – BASELINE CONDITIONS – AM PEAK HOUR

| No | Street | Street | Control | Baseline | | Baseline + Project | | Change v/c or Delay | After Mitigation | |
|----|------------------------|----------------------|---------|-------------|----------|--------------------|----------|---------------------------|------------------|----------|
| | | | | Delay | LOS | Delay | LOS | | Delay | LOS |
| 1 | Doolittle Dr (SR 61) | Davis St (SR 112) | Sig | 26.6 | C | 26.8 | C | | 26.8 | C |
| 2 | Phillips Ln | Davis St (SR 112) | Sig | 20.0 | B | 20.0 | C | | 20.0 | C |
| 3 | Warden Av-Timothy Dr | Davis St (SR 112) | Sig | 19.7 | B | 19.7 | B | | 19.7 | B |
| 4 | I-880 Southbound ramps | Davis St (SR 112) | Sig | 12.8 | B | 12.8 | B | | 12.8 | B |
| 5 | I-880 Northbound ramps | Davis St (SR 112) | Sig | 13.7 | B | 13.6 | B | | 13.6 | B |
| 6 | Doolittle Dr | Williams St | Sig | 19.7 | B | 21.0 | C | | 21.0 | C |
| 7 | Westgate Pkwy | Williams St | Sig | 15.6 | B | 15.8 | B | | 15.8 | B |
| 8 | Merced St | Williams St | Sig | 35.1 | D | 34.6 | C | | 34.6 | C |
| 9 | Neptune Dr | Marina Blvd | TWSC | 1.4 (9.7) | A (A) | 0.7 (18.3) | A (C) | | 0.7 (18.7) | A (C) |
| 10 | Aurora Dr | Marina Blvd | AWSC | 9.7 | A | 76.1 | F | | 9.0/10.4 | A/B |
| 11 | Doolittle Dr | Marina Blvd | Sig | 34.6 | C | 75.7 | E | | 46.1 | D |
| 12 | Merced St | Marina Blvd | Sig | 35.4 | D | 44.9 | D | | 44.9 | D |
| 13 | Kaiser driveway | Marina Blvd | TWSC | 0.1 (8.7) | A (A) | 0.1 (8.8) | A (A) | | 0.1 (8.8) | A (A) |
| 14 | I-880 Southbound ramps | Marina Blvd | Sig | 18.9 | B | 18.9 | B | | 18.9 | B |
| 15 | I-880 Northbound ramps | Marina Blvd | Sig | 17.1 | B | 18.2 | B | | 18.2 | B |
| 16 | Wayne Av-Teagarden St | Marina Blvd | Sig | 25.3 | C | 25.2 | C | | 25.2 | C |
| 17 | Alvarado St | Marina Blvd | Sig | 26.3 | C | 26.1 | C | | 26.1 | C |
| 18 | San Leandro Blvd | Marina Blvd | Sig | 44.7 | D | 54.8 | D | | 54.8 | D |
| 19 | Monarch Bay Dr | Mulford Point Dr | AWSC | 7.6 | A | 17.8 | C | | 7.3 | A |
| 20 | Monarch Bay Dr | Pescador Pt Dr | AWSC | 7.5 | A | 8.4 | A | | 8.4 | A |
| 21 | Monarch Bay Dr | Fairway Dr | AWSC | 7.9 | A | 8.8 | A | | 8.8 | A |
| 22 | Aurora Dr | Fairway Dr | AWSC | 8.3 | A | 10.0 | A | | 10.0 | A |
| 23 | Doolittle Dr | Fairway Dr | Sig | 16.8 | B | 18.5 | B | | 18.5 | B |
| 24 | Merced St | Fairway Dr | Sig | 32.4 | C | 33.2 | C | | 33.2 | C |
| 25 | Garfield Rd | Fairway Dr | Sig | 10.1 | B | 13.2 | B | | 13.2 | B |
| 26 | Miller St | Fairway Dr | Sig | 13.6 | B | 13.8 | B | | 13.8 | B |
| 27 | Aladdin Av | Teagarden St | Sig | 18.9 | B | 19.8 | B | | 19.8 | B |
| 28 | Aladdin Av | Alvarado St | Sig | 75.2 | E | 84.3 | F | 0.02 | 84.3 | F |
| 29 | Merced St | Wells Fargo Driveway | Sig | 2.2 | A | 2.2 | A | | 2.2 | A |
| 30 | Merced St | Republic Av | Sig | 19.0 | B | 19.1 | B | | 19.1 | B |
| 31 | Merced St | West Av 140th | Sig | 2.3 | A | 2.3 | A | | 2.3 | A |

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TABLE 4.13-13 INTERSECTION LEVEL OF SERVICE – BASELINE CONDITIONS – AM PEAK HOUR

| No | Street | Street | Control | Baseline | | Baseline + Project | | Change | After Mitigation | |
|---|--------|--------|---------|----------|-----|--------------------|-----|--------------|------------------|-----|
| | | | | Delay | LOS | Delay | LOS | v/c or Delay | Delay | LOS |
| Notes: Sig = Signalized; TWSC = Two-Way Stop Controlled; AWSC = All-Way Stop Controlled; LOS = Level of Service; Delay = Weighted average delay of all intersection approaches; the number in parentheses for stop-controlled intersection indicates the average delay on the worst approach. | | | | | | | | | | |
| Change in v/c or delay is shown when relevant to significance determination | | | | | | | | | | |
| Bold font indicates substandard operations | | | | | | | | | | |
| Shaded cells indicate significant impact | | | | | | | | | | |
| * The mitigated results of both roundabout/signalization are shown for the Aurora Drive/Marina Boulevard intersection. | | | | | | | | | | |
| Source: Kittelson & Associates, 2014. | | | | | | | | | | |

The Project traffic would cause two other signalized intersections to reduce to unacceptable levels where the intersections would operate at LOS D or better without the Project. The Doolittle Drive and Marina Boulevard intersection (#11) would reduce to LOS E during AM and PM peak hours; while the San Leandro Boulevard and Marina Boulevard intersection (#18) would reduce to LOS E in the PM peak hour.

Since the Project would cause the intersection level of service to reduce from LOS C to LOS E in the AM and PM peak hours at the intersection of Doolittle Drive and Marina Boulevard (#11), in the absence of adequate mitigation a *significant* impact would result.

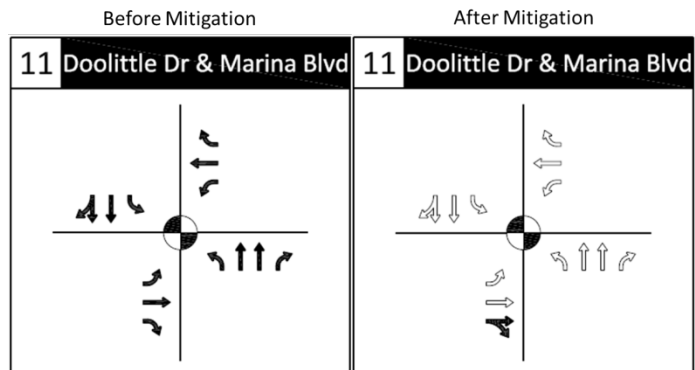
Impact TRAF-1A: The proposed Project would contribute to unacceptable operation (from LOS C to LOS E in the AM and PM peak hours) at the intersection of Doolittle Drive and Marina Boulevard (#11) under baseline Plus Project conditions.

Mitigation Measure TRAF-1A.1: Convert the existing eastbound right-turn lane on Marina Boulevard to a shared through-right turn lane to provide one left-turn lane, one through lane and one shared through-right turn lane on the eastbound approach.

Mitigation Measure TRAF-1A.2: Optimize the cycle length of the traffic signal at the intersection of Doolittle Drive and Marina Boulevard (#11). The traffic signal does not operate in coordination with any other signal; therefore, the cycle length can be adjusted without affecting other signals in the system.

Significance After Mitigation: Less than significant. Implementation of Mitigation Measures TRAF-1A.1 and TRAF-1A.2 would improve the operation of this intersection to LOS D during the AM and PM peak hours and lessen the Project impacts to *less than significant*.

The lane geometries before and after these mitigation measures are graphically shown in the figures right. In the “after” figure, the mitigation measure is shown in solid black while lanes not being changed are shown in gray-scale.



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TABLE 4.13-14 INTERSECTION LEVEL OF SERVICE – BASELINE CONDITIONS – PM PEAK HOUR

| No | Street | Street | Control | Baseline | | Baseline + Project | | Change v/c or Delay | After Mitigation | |
|----|------------------------|----------------------|---------|-----------|------|--------------------|----------|---------------------------|------------------|-------|
| | | | | Delay | LOS | Delay | LOS | | Delay | LOS |
| 1 | Doolittle Dr (SR 61) | Davis St (SR 112) | Sig | 20.2 | C | 21.5 | C | | 21.5 | C |
| 2 | Phillips Ln | Davis St (SR 112) | Sig | 31.0 | C | 31.6 | C | | 31.6 | C |
| 3 | Warden Av-Timothy Dr | Davis St (SR 112) | Sig | 30.7 | C | 30.6 | C | | 30.6 | C |
| 4 | I-880 Southbound ramps | Davis St (SR 112) | Sig | 12.6 | B | 12.9 | B | | 12.9 | B |
| 5 | I-880 Northbound ramps | Davis St (SR 112) | Sig | 16.9 | B | 16.8 | B | | 16.8 | B |
| 6 | Doolittle Dr | Williams St | Sig | 16.7 | B | 18.2 | B | | 18.2 | B |
| 7 | Westgate Pkwy | Williams St | Sig | 26.0 | C | 26.1 | C | | 26.1 | C |
| 8 | Merced St | Williams St | Sig | 28.0 | C | 28.1 | C | | 28.1 | C |
| 9 | Neptune Dr | Marina Blvd | TWSC | 0.5(11.2) | A(B) | 0.4(23.3) | A(C) | | 0.4 (23.3) | A (C) |
| 10 | Aurora Dr* | Marina Blvd | AWSC | 10.1 | B | 70.8 | F | | 8.6/7.8 | A/A |
| 11 | Doolittle Dr | Marina Blvd | Sig | 34.9 | C | 62.5 | E | | 50.0 | D |
| 12 | Merced St | Marina Blvd | Sig | 38.5 | D | 43.4 | D | | 43.4 | D |
| 13 | Kaiser driveway | Marina Blvd | TWSC | 0.1 (8.8) | A(A) | 0.1(9.2) | A(A) | | 0.1 (9.2) | A (A) |
| 14 | I-880 Southbound ramps | Marina Blvd | Sig | 21.7 | C | 22.6 | C | | 22.6 | C |
| 15 | I-880 Northbound ramps | Marina Blvd | Sig | 27.0 | C | 28.1 | C | | 28.1 | C |
| 16 | Wayne Av-Teagarden St | Marina Blvd | Sig | 32.4 | C | 32.8 | C | | 32.8 | C |
| 17 | Alvarado St | Marina Blvd | Sig | 22.0 | C | 21.7 | C | | 21.9 | C |
| 18 | San Leandro Blvd | Marina Blvd | Sig | 50.1 | D | 58.1 | E | | 44.9 | D |
| 19 | Monarch Bay Dr | Mulford Point Dr | AWSC | 8.4 | A | 52.4 | F | | 8.1 | A |
| 20 | Monarch Bay Dr | Pescador Pt Dr | AWSC | 7.7 | A | 8.8 | A | | 8.8 | A |
| 21 | Monarch Bay Dr | Fairway Dr | AWSC | 9.1 | A | 10.4 | B | | 10.4 | B |
| 22 | Aurora Dr | Fairway Dr | AWSC | 8.6 | A | 10.4 | B | | 10.4 | B |
| 23 | Doolittle Dr | Fairway Dr | Sig | 16.2 | B | 18.1 | B | | 18.1 | B |
| 24 | Merced St | Fairway Dr | Sig | 33.2 | C | 33.5 | C | | 33.5 | C |
| 25 | Garfield Rd | Fairway Dr | Sig | 9.9 | A | 11.5 | B | | 11.5 | B |
| 26 | Miller St | Fairway Dr | Sig | 19.8 | B | 20.0 | C | | 20.0 | C |
| 27 | Aladdin Av | Teagarden St | Sig | 17.4 | B | 17.6 | B | | 17.6 | B |
| 28 | Aladdin Av | Alvarado St | Sig | 26.6 | C | 26.6 | C | | 26.6 | C |
| 29 | Merced St | Wells Fargo driveway | Sig | 3.8 | A | 3.8 | A | | 3.8 | A |
| 30 | Merced St | Republic Av | Sig | 20.2 | C | 20.1 | C | | 20.1 | C |
| 31 | Merced St | West Av 140th | Sig | 3.4 | A | 3.4 | A | | 3.4 | A |

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TABLE 4.13-14 INTERSECTION LEVEL OF SERVICE – BASELINE CONDITIONS – PM PEAK HOUR

| No | Street | Street | Control | Baseline | | Baseline + Project | | Change v/c or Delay | After Mitigation | |
|---|--------|--------|---------|----------|-----|--------------------|-----|---------------------------|------------------|-----|
| | | | | Delay | LOS | Delay | LOS | | Delay | LOS |
| Notes: Sig = Signalized; TWSC = Two-Way Stop Controlled; AWSC = All-Way Stop Controlled; LOS = Level of Service; Delay = Weighted average delay of all intersection approaches; the number in parentheses for stop-controlled intersection indicates the average delay on the worst approach. | | | | | | | | | | |
| Change in v/c or delay is shown when relevant to significance determination | | | | | | | | | | |
| Bold font indicates substandard operations | | | | | | | | | | |
| Shaded cell indicates significant impact | | | | | | | | | | |
| * The mitigated results of both roundabout/signalization are shown for the Aurora Drive/Marina Boulevard intersection. | | | | | | | | | | |
| Source: Kittelson & Associates, 2014. | | | | | | | | | | |

TABLE 4.13-15 INTERSECTION LEVEL OF SERVICE – BASELINE CONDITIONS – SATURDAY MIDDAY PEAK HOUR

| No | Street | Street | Control | Baseline | | Baseline + Project | | Change v/c or Delay | After Mitigation | |
|---|------------------------|-------------------|---------|-----------|-------|--------------------|-------|---------------------------|------------------|-------|
| | | | | Delay | LOS | Delay | LOS | | Delay | LOS |
| 1 | Doolittle Dr (SR 61) | Davis St (SR 112) | Sig | 18.6 | B | 18.5 | B | | 18.5 | B |
| 10 | Aurora Dr* | Marina Blvd | AWSC | 9.9 | A | 32.1 | D | | 7.0/7.7 | A/A |
| 11 | Doolittle Dr | Marina Blvd | Sig | 30.4 | C | 40.6 | D | | 39.8 | D |
| 12 | Merced St | Marina Blvd | Sig | 36.6 | D | 37.6 | D | | 37.6 | D |
| 13 | Kaiser driveway | Marina Blvd | TWSC | 0.1 (8.7) | A (A) | 0.1 (8.8) | A (A) | | 0.1 (8.8) | A (A) |
| 14 | I-880 Southbound ramps | Marina Blvd | Sig | 20.6 | C | 20.8 | C | | 20.8 | C |
| 15 | I-880 Northbound ramps | Marina Blvd | Sig | 15.6 | B | 16.1 | B | | 16.1 | B |
| 22 | Aurora Dr | Fairway Dr | AWSC | 8.1 | A | 9.9 | A | | 9.9 | A |
| 23 | Doolittle Dr | Fairway Dr | Sig | 15.5 | B | 15.9 | B | | 15.9 | B |
| 24 | Merced St | Fairway Dr | Sig | 29.1 | C | 30.8 | C | | 30.8 | C |
| Notes: Sig = Signalized; TWSC = Two-Way Stop Controlled; AWSC = All-Way Stop Controlled; LOS = Level of Service; Delay = Weighted average delay of all intersection approaches; the number in parentheses for stop-controlled intersection indicates the average delay on the worst approach. | | | | | | | | | | |
| Change in v/c or delay is shown when relevant to significance determination | | | | | | | | | | |
| * The mitigated results of both roundabout/signalization are shown for the Aurora Drive/Marina Boulevard intersection. | | | | | | | | | | |
| Source: Kittelson & Associates, 2014. | | | | | | | | | | |

As discussed above, the addition of traffic associated with implementation of the proposed Project would cause the intersection level of service to reduce from LOS D to LOS E in the PM peak hour at the intersection of San Leandro Boulevard and Marina Boulevard (#18). Therefore, this impact is considered to be *significant* in the absence of adequate mitigation.

Impact TRAF-1B: The proposed Project would contribute to unacceptable operation (from LOS D to LOS E in the PM peak hour) at the intersection of San Leandro Boulevard and Marina Boulevard (#18) under baseline Plus Project conditions.

Mitigation Measure TRAF-1B: Optimize the traffic signal timing splits at the intersection of San Leandro Boulevard and Marina Boulevard (#18).

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Significance After Mitigation: Less than significant. Implementation of this Mitigation Measure would improve the operation of this intersection to LOS D and lessen this impact to a *less-than-significant* level during the PM peak hour.

Unsignalized Intersections

All unsignalized intersections are projected to operate within acceptable standards under the Baseline No Project scenario. The addition of Project traffic would cause two all-way stop controlled intersections to reduce to unacceptable levels whereas they would operate at LOS B or better without the Project. The Aurora Drive and Marina Boulevard intersection (#10) would reduce to LOS F during AM and PM peak hours; while the Monarch Bay Drive and Mulford Point Drive intersection (#19) within the Project site would reduce to LOS F in the PM peak hour.

As discussed above, the addition of traffic associated with implementation of the proposed Project would cause the level of service at the intersection of Aurora Drive and Marina Boulevard (#10) to reduce from LOS A to LOS F in the AM and from LOS B to LOS F in the PM peak hour. In the absence of adequate mitigation, this impact is considered to be *significant*.

Impact TRAF-1C: The proposed Project would contribute to unacceptable operation (from LOS A to LOS F in the AM and from LOS B to LOS F in the PM peak hour) at the intersection of Aurora Drive and Marina Boulevard (#10) under baseline Plus Project conditions.

Mitigation Measure TRAF-1C: Install a modern mini-roundabout that could be accommodated within the existing right-of-way.¹² Research has shown that roundabout-controlled intersections have similar low frequency and severity of crashes as all-way stop-controlled intersections. Further, the slower speed at roundabout also reduces the risk of injuries and fatalities for road users in the event of a crash. A conceptual drawing of a mini-roundabout is provided in Figure 4.13-5. Implementation of this mitigation measure would improve the operation of this intersection to LOS A in the AM, PM and Saturday midday peak hours. Alternatively, installation of a traffic signal would also mitigate the project impact as peak hour signal warrant is met. Upon implementation, the intersection would improve to LOS B in the AM peak hour and LOS A in the PM peak hour and Saturday midday peak hour.

Significance After Mitigation: Less than significant. Implementation of this Mitigation Measure would improve the operation to LOS A in the AM and PM peak hours as well as the Saturday peak hour. This would reduce this impact to a *less-than-significant* level during the PM peak hour.

The addition of traffic associated with implementation of the proposed Project would cause the level of service at the intersection of Monarch Bay Drive and Mulford Point Drive (#19) to reduce from LOS A to LOS F in the PM peak hour. In the absence of adequate mitigation, this would result in a *significant* impact.

¹² Roundabout analysis was performed using Sidra software based on HCM 2010 methodology with Caltrans adjustments.

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Impact TRAF-1D: The proposed Project would contribute to unacceptable operation (from LOS A to LOS F in the PM peak hour) at the intersection of Monarch Bay Drive and Mulford Point Drive (#19) under baseline Plus Project conditions.

Mitigation Measure TRAF-1D: Install a roundabout at the intersection of Monarch Bay Drive and Mulford Point Drive (#19).¹³

Significance After Mitigation: Less than significant. Implementation of this measure would improve the operation to LOS A and lessen the Project impacts to *less than significant* during the PM peak hour.

Baseline Freeway Operations

Weekday peak hour freeway operations are shown in Table 4.13-16 and detailed calculation worksheets are provided in Appendix H. As seen in Table 4.13-16, the results indicate that the mainline segment of I-880 northbound between Marina Boulevard and Davis Street would operate at LOS E during the AM peak hour under Baseline Conditions. The Project would add traffic volumes equivalent to only 0.1 percent of the freeway segment's design capacity. The Project impact is considered to be *less than significant* because the increase would not exceed the greater than 1% threshold. All other freeway segments would operate at LOS D or better and therefore no mitigation is necessary.

| | |
|---------------|---|
| TRAF-2 | The proposed Project would conflict with an applicable congestion management program, including, but not limited to, level of service standards, travel demand measures, or other standards established by the county congestion management agency for designated roads or highways. |
|---------------|---|

According to the Alameda County Congestion Management Program (CMP), the level of service standard for Metropolitan Transportation System (MTS) roadways, which include the CMP roadway network, is LOS E, except for those locations that were at LOS F in 1991. The MTS roadway facilities in the Project area include I-880, Davis Street, and Doolittle Drive. Significant traffic impacts on MTS roadways in the study area are identified if the Project causes:

- The operations on MTS roadways to deteriorate from LOS E or better to LOS F with the exception of southbound I-880 between Hegenberger Road and Washington Avenue, where the standard is LOS F; or
- An increase in the v/c ratio on an MTS roadway already operating at LOS F by more than 0.03.

These standards have been included to address impacts along roadway segments currently operating under unacceptable levels and were developed based on professional judgment using a "reasonableness test" of daily fluctuations of traffic. In addition, a change in the v/c ratio of more than 0.03 has been found to be the threshold for which a perceived change in congestion is observed. This change is equivalent to about one-half of the change from one level of service to the next.

¹³ Roundabout analysis was performed using Sidra software based on HCM 2010 methodology with Caltrans adjustments.

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TABLE 4.13-16 FREEWAY LEVEL OF SERVICE – BASELINE CONDITIONS – AM AND PM PEAK HOUR

| Location | Type | Baseline | | | Baseline + Project | | |
|--------------------------------|--------------------|---------------------|----------------------|------------------|---------------------|----------------------|------------------|
| | | Volume ^a | Density ^b | LOS ^c | Volume ^a | Density ^b | LOS ^c |
| AM PEAK HOUR | | | | | | | |
| I-880 Northbound | | | | | | | |
| Washington Av. to Marina Blvd. | Mainline | 7,989 | 28.2 | D | 8,169 | 29.0 | D |
| Marina Blvd. to Davis St. | Mainline | 8,399 | 36.6 | E | 8,408 | 36.7 | E |
| | Weave ^d | 1,605 | N/A | C | 1,614 | N/A | C |
| Davis St. to 98th Av. | Mainline | 6,186 | 27.0 | D | 6,204 | 27.1 | D |
| I-880 Southbound | | | | | | | |
| 98th Av. to Davis St | Mainline | 5,810 | 25.1 | C | 5,932 | 25.7 | C |
| Davis St. to Marina Blvd. | Mainline | 6,616 | 26.3 | C | 6,626 | 26.4 | C |
| | Weave ^d | 1,196 | N/A | A | 1,205 | N/A | A |
| Marina Blvd. to Washington Av. | Mainline | 6,218 | 21.3 | C | 6,289 | 21.5 | C |
| PM PEAK HOUR | | | | | | | |
| I-880 Northbound | | | | | | | |
| Washington Av. to Marina Blvd. | Mainline | 7,241 | 25.0 | C | 7,323 | 25.3 | C |
| Marina Blvd. to Davis St. | Mainline | 7,644 | 34.7 | D | 7,657 | 34.9 | D |
| | Weave ^d | 2,168 | N/A | C | 2,181 | N/A | C |
| Davis St. to 98th Av. | Mainline | 5,864 | 25.4 | C | 5,896 | 25.5 | C |
| I-880 Southbound | | | | | | | |
| 98th Av. to Davis St | Mainline | 6,418 | 28.4 | D | 6,452 | 28.5 | D |
| Davis St. to Marina Blvd. | Mainline | 7,941 | 34.3 | D | 7,654 | 34.5 | D |
| | Weave ^d | 1,699 | N/A | B | 1,711 | N/A | B |
| Marina Blvd. to Washington Av. | Mainline | 7,692 | 26.9 | D | 7,866 | 27.6 | D |

a. Volume = vehicles per hour (vph)

b. Density = passenger car per mile per lane (pc/m/ln)

c. LOS = Level of Service

d. Marina Blvd. to Davis St. analyzed as a weaving section using the Leisch Method as described in the Caltrans Design Manual, May 7, 2012. The volume show for this segment is the weaving volume.

Regarding public transportation facilities, the CMP requires consideration of the Project’s impact on MTS transit operators and riders. For the purpose of this study, significant transit impacts are identified if the Project causes:

- Congestion that degrades transit vehicle operations; or
- Ridership to exceed existing transit capacity; or

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- Contribution of at least three percent of the total trips when the capacity is already exceeded under No Project conditions; or
- Inadequate pedestrian connections between the Project site and transit stops.

Congestion Management Program

Congestion Management Program Land Use Analysis was performed to identify any potential impacts of the Project on the Metropolitan Transportation System (MTS) roadway network and the MTS transit operators. The potential impacts of the Project to bicyclists and pedestrians are discussed under the later Pedestrian Impacts and Bicycle Impacts sections under Impact TRAF-6. MTS roadways in the study area include I-880, Doolittle Drive, and Davis Street.

Vehicle impacts were assessed at selected roadway locations, including three segments of I-880 and two arterial segments on Doolittle Drive and on Davis Street. Transit impacts were addressed for AC Transit bus routes servicing the Project study area (Line 89) and other nearby routes (Lines S and 75). The BART system was also investigated for impacts to the San Leandro BART station.

MTS Roadway Segments

Traffic forecasts for 2020 and 2035 conditions were extracted from the most current version of the Countywide Model (dated August 2011) at the selected MTS roadway segments. The Countywide Model specifies forecasts for 2020 and 2035 as horizon years. The forecasts differ from those applied to the Circulation System Performance analysis discussed above under impact TRAF-1, in that no adjustments or changes were made to the Model in accordance with CMP guidelines. Consequently, the CMP analysis results do not account for land use developments or roadway improvements not already in the model. The **Plus Project** forecasts for roadway segments were derived by manually by adding the Project-generated traffic developed for the Circulation System Performance analysis to the No Project forecasts.

The level of service results along with peak hour volumes and density on the freeway analysis segments for 2020 and 2035 with and without Project conditions are provided in Table 4.13-17 and Table 4.13-18 and on the MTS arterial segments in Table 4.13-19 and Table 4.13-20.

MTS Freeway Segments

The 2020 results indicate that the I-880 northbound segments north of Marina Boulevard and north of Davis Street would operate at LOS F before the addition of Project traffic in the AM peak hour. However, the Project would not cause v/c ratios to increase by more than 0.03. In the PM peak hour, the northbound segment of I-880, north of Davis Street, would reduce from LOS E to LOS F when Project traffic is added, which would be a significant effect. Under 2035 conditions, the two I-880 northbound segments north of Marina Boulevard and north of Davis Street are projected to be at LOS F before the addition of Project traffic in both the AM and PM peak hours. However, the Project would not cause the v/c ratios to increase by more than 0.03. Similarly, the southbound segment of I-880, north of Marina Boulevard, would also operate at LOS F without the Project. While the Project would add traffic to this segment, the v/c ratio would not increase by more than 0.03.

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TABLE 4.13-17 METROPOLITAN TRANSPORTATION SYSTEM FREEWAY LEVEL OF SERVICE RESULTS FOR 2020

| Location | Type | No Project | | | Plus Project | | | Change in v/c > 3%? | Significant? |
|-----------------------------|-------|---------------------|----------------------|------------------|---------------------|----------------------|------------------|---------------------|--------------|
| | | Volume ^a | Density ^b | LOS ^c | Volume ^a | Density ^b | LOS ^c | | |
| 2020 AM PEAK HOUR | | | | | | | | | |
| I-880 Northbound | | | | | | | | | |
| South of Marina Boulevard | Basic | 9,234 | 34.8 | D | 9,383 | 35.8 | E | No | No |
| North of Marina Boulevard | Weave | 9,282 | v/c >1 ^d | F | 9,288 | v/c >1 ^d | F | No | No |
| North of Davis Street | Basic | 8,862 | 50.3 | F | 8,908 | 51.0 | F | No | No |
| I-880 Southbound | | | | | | | | | |
| North of Davis Street | Basic | 8,106 | 28.7 | D | 8,242 | 29.4 | D | No | No |
| North of Marina Boulevard | Weave | 8,190 | 39.4 | E | 8,329 | 40.9 | E | No | No |
| South of Marina Boulevard | Basic | 7,420 | 25.7 | C | 7,493 | 26.0 | D | No | No |
| 2020 PM PEAK HOUR | | | | | | | | | |
| I-880 Northbound | | | | | | | | | |
| South of Marina Boulevard | Basic | 8,716 | 31.8 | D | 8,777 | 32.1 | D | No | No |
| North of Marina Boulevard | Weave | 8,968 | 46.2 | E | 9,005 | 46.7 | E | No | No |
| North of Davis Street | Basic | 8,399 | 44.3 | E | 8,470 | 45.2 | F | No | Yes |
| I-880 Southbound | | | | | | | | | |
| I-880 North of Davis Street | Basic | 9,488 | 36.5 | E | 9,551 | 36.9 | E | No | No |
| North of Marina Boulevard | Weave | 9,630 | 49.9 | E | 9,665 | 50.4 | E | No | No |
| South of Marina Boulevard | Basic | 9,528 | 36.7 | E | 9,673 | 37.7 | E | No | No |

Note: **Bold** font indicates exceedance of standard.

a. Volume = vehicles per hour (vph).

b. Density = passenger car per mile per lane (pc/m/ln).

c. LOS = Level of Service.

d. Volume exceeds weaving segment capacity.

Source: Kittelson & Associates, Inc., 2014.

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TABLE 4.13-18 METROPOLITAN TRANSPORTATION SYSTEM FREEWAY LEVEL OF SERVICE RESULTS FOR 2035

| Location | Type | No Project | | | Plus Project | | | Change in v/c > 3%? | Significant? |
|-----------------------------|-------|---------------------|----------------------|------------------|---------------------|----------------------|------------------|---------------------|--------------|
| | | Volume ^a | Density ^b | LOS ^c | Volume ^a | Density ^b | LOS ^c | | |
| 2035 AM PEAK HOUR | | | | | | | | | |
| I-880 Northbound | | | | | | | | | |
| South of Marina Boulevard | Basic | 9,880 | 39.2 | E | 10,031 | 40.4 | E | No | No |
| North of Marina Boulevard | Weave | 9,654 | v/c > 1 ^d | F | 9,662 | v/c > 1 ^d | F | No | No |
| North of Davis Street | Basic | 9,598 | 63.2 | F | 9,651 | 64.3 | F | No | No |
| I-880 Southbound | | | | | | | | | |
| North of Davis Street | Basic | 9,019 | 33.5 | D | 9,167 | 34.4 | D | No | No |
| North of Marina Boulevard | Weave | 9,338 | 48.1 | E | 9,477 | 49.9 | E | No | No |
| South of Marina Boulevard | Basic | 8,755 | 32.0 | D | 8,819 | 32.4 | D | No | No |
| 2035 PM PEAK HOUR | | | | | | | | | |
| I-880 Northbound | | | | | | | | | |
| South of Marina Boulevard | Basic | 9,764 | 38.4 | E | 9,810 | 38.7 | E | No | No |
| North of Marina Boulevard | Weave | 9,860 | v/c > 1 ^d | F | 9,905 | v/c > 1 ^d | F | No | No |
| North of Davis Street | Basic | 9,889 | 70.0 | F | 9,982 | 72.6 | F | No | No |
| I-880 Southbound | | | | | | | | | |
| I-880 North of Davis Street | Basic | 10,199 | 41.8 | E | 10,277 | 42.4 | E | No | No |
| North of Marina Boulevard | Weave | 10,276 | v/c > 1 ^d | F | 10,346 | v/c > 1 ^d | F | No | No |
| South of Marina Boulevard | Basic | 10,121 | 41.1 | E | 10,263 | 42.3 | E | No | No |

Note: **Bold** font indicates exceedance of standard.

a. Volume = vehicles per hour (vph).

b. Density = passenger car per mile per lane (pc/m/ln).

c. LOS = Level of Service.

d. Volume exceeds weaving segment capacity.

Source: Kittelson & Associates, Inc., 2014.

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TABLE 4.13-19 METROPOLITAN TRANSPORTATION SYSTEM ARTERIAL LEVEL OF SERVICE RESULTS FOR 2020

| Segment | 2020 No-Project Volume | 2020 Plus Project Volume | Change in v/c Ratio | Change in Volume | 2020 No-Project LOS | 2020 Plus Project LOS | Change in v/c >0.03? | Significant Impact? |
|---------------------------------------|------------------------------|--------------------------------|------------------------|---------------------|---------------------------|-----------------------------|----------------------------|------------------------|
| NORTHBOUND/ EASTBOUND | | | | | | | | |
| AM Peak Hour | | | | | | | | |
| Doolittle Drive North of Davis Street | 2,282 | 2,325 | 0.02 | 43 (1.9%) | F | F | No | No |
| Davis Street East of Doolittle Drive | 810 | 853 | 0.03 | 43 (5.3%) | C | C | No | No |
| PM Peak Hour | | | | | | | | |
| Doolittle Drive North of Davis Street | 2,126 | 2,230 | 0.06 | 104 (4.9%) | F | F | Yes | Yes |
| Davis Street East of Doolittle Drive | 1,930 | 1,973 | 0.03 | 43 (2.2%) | F | F | No | No |
| SOUTHBOUND/WESTBOUND | | | | | | | | |
| AM Peak Hour | | | | | | | | |
| Doolittle Drive North of Davis Street | 722 | 792 | 0.04 | 70 (9.7%) | C | C | Yes | No |
| Davis Street East of Doolittle Drive | 1,975 | 1,978 | 0.00 | 3 (0.2%) | F | F | No | No |
| PM Peak Hour | | | | | | | | |
| Doolittle Drive North of Davis Street | 2,152 | 2,213 | 0.03 | 61 (2.8%) | F | F | No | No |
| Davis Street East of Doolittle Drive | 1,754 | 1,787 | 0.02 | 33 (1.9%) | F | F | No | No |

Note: **Bold** font indicates exceedance of standard.

Shaded cells indicates significant impact.

Volume Source: Alameda CTC Countywide Model, Kittelson & Associates, Inc., 2014.

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TABLE 4.13-20 METROPOLITAN TRANSPORTATION SYSTEM ARTERIAL LEVEL OF SERVICE RESULTS FOR 2035

| Segment | 2035 No-Project Volume | 2035 Plus Project Volume | Change in v/c Ratio | Change in Volume | 2035 No-Project LOS | 2035 Plus Project LOS | Change in v/c >0.03? | Significant Impact? |
|---------------------------------------|------------------------------|--------------------------------|------------------------|---------------------|---------------------------|-----------------------------|----------------------------|------------------------|
| NORTHBOUND/ EASTBOUND | | | | | | | | |
| AM Peak Hour | | | | | | | | |
| Doolittle Drive North of Davis Street | 2,828 | 2,866 | 0.02 | 38 (1.3%) | F | F | No | No |
| Davis Street East of Doolittle Drive | 1,085 | 1,134 | 0.03 | 49 (4.5%) | D | D | No | No |
| PM Peak Hour | | | | | | | | |
| Doolittle Drive North of Davis Street | 2,310 | 2,381 | 0.04 | 71 (3.1%) | F | F | Yes | Yes |
| Davis Street East of Doolittle Drive | 2,015 | 2,073 | 0.03 | 58 (2.9%) | F | F | No | No |
| SOUTHBOUND/WESTBOUND | | | | | | | | |
| AM Peak Hour | | | | | | | | |
| Doolittle Drive North of Davis Street | 963 | 1,017 | 0.03 | 54 (5.6%) | C | C | No | No |
| Davis Street East of Doolittle Drive | 1,974 | 1,989 | 0.01 | 15 (0.8%) | F | F | No | No |
| PM Peak Hour | | | | | | | | |
| Doolittle Drive North of Davis Street | 2,552 | 2,595 | 0.02 | 43 (1.7%) | F | F | No | No |
| Davis Street East of Doolittle Drive | 1,999 | 2,014 | 0.01 | 15 (0.8%) | F | F | No | No |

Note: **Bold** font indicates exceedance of standard.

Shaded cells indicates significant impact.

Volume Source: Alameda CTC Countywide Model, Kittelson & Associates, Inc., 2014.

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As discussed above, the addition of traffic associated with implementation of the proposed Project would cause the I-880 northbound segment north of Davis Street to deteriorate from LOS E to LOS F in the PM peak hour, under Year 2020 conditions. In the absence of adequate mitigation, this would result in a *significant* impact.

Impact TRAF-2A: The proposed Project would cause the I-880 northbound segment north of Davis Street to reduce from LOS E to LOS F in the PM peak hour under Year 2020 conditions

Mitigation Measure TRAF-2A: One of the following measures shall occur:

- Widen I-880 to provide an additional travel lane in the northbound direction; or
- Develop and implement a Transportation Demand Management (TDM) plan that would discourage single occupant vehicle trips. TDM measures may include:
 - Provide a shuttle service that operates between the Project site and key locations such as San Leandro and Coliseum BART stations and Oakland International Airport;
 - Facilitate carpool and ridesharing among residents of the Project.

Significance After Mitigation: Significant and unavoidable. Implementation of one of the measures under Mitigation Measure TRAF-2 may mitigate this impact to a less-than-significant level. However, the project impact would remain *significant and unavoidable* because of the following reasons:

- Widening I-880 is not considered to be feasible due to cost and freeway right of way constraints as a result of being within Caltrans right-of-way and would be beyond the control of the City; and
- The effectiveness of TDM measures in reducing the number of Project trips cannot be adequately quantified to ensure project impacts would be fully mitigated.

The on-going I-880 Integrated Corridor Management effort led by the Metropolitan Transportation Commission that aims to optimize freeway, arterial signal, rail, and bus systems, and incorporate Intelligent Transportation System would also help enhance efficiency on the freeway.

MTS Arterial Segments

The MTS arterial segment analysis results are similar for both 2020 and 2035. The same segments are projected to operate at LOS F with and without the addition of Project traffic. The northbound Doolittle Drive segment north of Davis Street would be at LOS F before the addition of Project traffic in both AM and PM peak hours. The Project would cause the v/c ratios to increase by more than the 0.03 threshold in the PM peak hour. The southbound Doolittle Drive segment north of Davis Street would also be at LOS F in the PM peak hour; but the increase in v/c ratio resulting from the Project traffic would be less than 0.03. The Davis Street segment east of Doolittle Drive would operate at LOS F in both the eastbound and westbound directions in the PM peak hour, and in the westbound direction in the AM peak hour under both 2020 and 2035 conditions. However, the Project would not cause the v/c ratios to increase by more than 0.03 in either peak periods. Since the Project would cause v/c ratios to increase by more than 0.03 in the PM peak hour, in the absence of adequate mitigation, a significant impact would result.

As discussed above, the addition of traffic associated with implementation of the proposed Project would cause the v/c ratio on the northbound segment of Doolittle Drive, which would operate at LOS F, to

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increase by 0.06 under Year 2020 conditions and by 0.04 under Year 2035 conditions in the PM peak hour. In the absence of adequate mitigation, this would result in a *significant* impact.

Impact TRAF-2B: The proposed Project would cause the volume-to-capacity (v/c) ratio on the northbound segment of Doolittle Drive, which would operate at Level of Service (LOS) F, to increase by 0.06 under Year 2020 conditions and by 0.04 under Year 2035 conditions in the PM peak hour.

Mitigation Measure TRAF-2B.1: Widen Doolittle Drive to provide an additional travel lane in the northbound direction; or

Mitigation Measure TRAF-2B.2: Provide a shuttle service that operates between the Project site and key locations such as San Leandro and Coliseum BART stations and Oakland International Airport.

Significance After Mitigation: Significant and unavoidable. Widening Doolittle Drive to provide an additional travel lane in the northbound direction would improve the level of service to LOS C in Year 2020 and LOS D in Year 2035 and would mitigate the Project impact to less than significant. However, the feasibility of this measure is uncertain due to right of way constraints along this mostly developed corridor. Alternatively, provision of a shuttle service that operates between the Project site and key locations, such as San Leandro and Coliseum BART stations and Oakland International Airport, during the PM peak hour would likely lessen the Project's impact on the freeway segment. However, the effectiveness of the shuttle service in reducing the number of Project trips on Doolittle Drive cannot be adequately quantified. As discussed above, the on-going I-880 Integrated Corridor Management effort led by the Metropolitan Transportation Commission that aims to optimize freeway, arterial signal, rail, and bus systems and incorporate Intelligent Transportation System would also help enhance efficiency on the freeway. However, for the reasons listed above this impact would remain *significant and unavoidable*.

MTS Transit Operations

The two primary transit agencies serving the Project area are AC Transit and BART. AC Transit lines S, 75, and 89 provide bus service in the study area; while the San Leandro BART station is the closest to the Project site. AC Transit line 89 provides direct access to the Project site, connecting the site to the San Leandro BART station. According to the Bay Area Travel Survey 2000 (BATS2000) mode shares by trip purpose and proximity to rail and ferries table,¹⁴ the Project is expected to generate a 2.7 percent rail and ferry mode share and a 2.4 percent bus mode share. The associated number of trips are detailed in Table 4.13-21.

¹⁴ Alameda County Transportation Commission, October 2013, Congestion Management Program. Appendix L.

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TABLE 4.13-21 MODE SPLIT FOR TOTAL TRIPS GENERATED BY A PROJECT MORE THAN 1 MILE FROM A BART STATION WITH A HIGH SUBURBAN DENSITY

| Mode | Percentage | Weekday | AM Peak Hour | | | PM Peak Hour | | | Saturday | | |
|-------------------|------------|---------|--------------|-----|-------|--------------|-----|-------|----------|-----|-------|
| | | | In | Out | Total | In | Out | Total | In | Out | Total |
| In-Vehicle Person | 82.0% | 7,177 | 570 | 284 | 853 | 339 | 531 | 869 | 427 | 279 | 705 |
| Rail & Ferry | 2.7% | 236 | 19 | 9 | 28 | 11 | 17 | 29 | 14 | 9 | 23 |
| Bus | 2.4% | 210 | 17 | 8 | 25 | 10 | 16 | 25 | 13 | 8 | 21 |
| Bicycle | 1.1% | 96 | 8 | 4 | 11 | 5 | 7 | 12 | 6 | 4 | 9 |
| Pedestrian | 10.7% | 936 | 74 | 37 | 111 | 44 | 69 | 113 | 56 | 36 | 92 |
| Other | 1.2% | 105 | 8 | 4 | 12 | 5 | 8 | 13 | 6 | 4 | 10 |

Source: Kittelson & Associates, 2014.

Effects of Vehicle Traffic on Mixed Flow Transit Operations

An assessment was made to determine if vehicle trips generated by the Project would cause congestion that reduces transit vehicle operations. AC Transit currently operates three lines in the area which include S, 75, and 89. The S line is a transbay service providing service between Eden Shores Park in Hayward and the Transbay Terminal in San Francisco. Both lines 75 and 89 provide circulator routes that stop at both the San Leandro and Bay Fair BART stations.

AC Transit Line S departs I-880 at the Marina Boulevard interchange and proceeds down Merced Street. The Project is not expected to significantly increase the number of vehicles or delay on Merced Street. However, the Project would affect transit operations on this line near the I-880 Marina interchange due to the increase in vehicle volume resulting from the proposed Project. The increased number of vehicles would cause an increase in delay for transit vehicles. The proposed mitigation measure for the Marina Boulevard and I-880 southbound off ramp (#14) identified under both **Near-Term Cumulative** and **Long-Term Cumulative** sections in the Circulation System Performance analysis would eliminate this delay, resulting in little, if any, impact on Line S.

Line 75 runs a similar route as Line S near the Project site using Merced Street to travel south. Merced Street is not anticipated to be impacted by the project since there are no geometric changes; however, Line 75 does use the Marina Boulevard and Merced Street intersection (#12). Project traffic traveling through this intersection on Marina Boulevard may increase the delay of Line 75 at this intersection.

Of the three transit lines near the proposed Project, Line 89 is expected to be most affected by the proposed Project. Line 89 uses Davis Street and Williams Street when heading towards and away from the San Leandro BART station. While these two streets are not expected to be greatly affected by the Project, Line 89 uses the Marina Boulevard and Aurora Drive (#10) intersection as well as routing along Monarch Bay Drive through the Mulford Point Drive (#19) intersection. Additionally, most of the Project trips would pass through one or both of these two intersections and thereby would potentially impact the transit operations of Line 89.

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As discussed above, the Project would cause increases in delays at the Aurora Drive and Marina Boulevard (#10), Marina Boulevard and Merced Street (#12), Marina Boulevard and I-880 southbound off ramp (#14), and Monarch Bay Drive and Mulford Point Drive (#19) intersections, which would adversely impact the transit operations of AC Transit Lines S, 75 and 89. In the absence of adequate mitigation this would result in a *significant* impact to transit operators.

Impact TRAF-2C: The proposed Project would cause increases in delays at the Aurora Drive and Marina Boulevard (#10), Marina Boulevard and Merced Street (#12), Marina Boulevard and I-880 southbound off ramp (#14), and Monarch Bay Drive and Mulford Point Drive (#19) intersections, which would adversely impact the transit operations of AC Transit Line S, 75 and 89.

Mitigation Measure TRAF-2C: Implement Mitigation Measures TRAF-1A through TRAF-7F. Any roundabouts shall be designed to accommodate AC Transit busses.

Significance After Mitigation: Less than significant. Implementation of Mitigation Measure TRAF-2C would reduce impacts to transit operations to a *less-than-significant* level by improving transit travel times through the intersections impacted by the proposed Project.

Transit Capacity

In addition to the impact of vehicles on transit operations, the CMP guidelines require a determination for whether a proposed Project would cause the existing transit service to exceed its available capacity. Both BART and the three AC Transit lines were considered for these purposes. The San Leandro BART station is located approximately three miles northeast of the Project site. As shown in Table 4.13-21, the Project is expected to generate 236 weekday BART trips with 28 occurring in the AM peak hour and 29 in the PM peak hour. The Project is also expected to generate approximately 23 trips during the Saturday peak hour. Table 4.13-22 shows the distribution of Project trips for each peak hour on BART. The Project is likely to contribute between 2 and 5 additional passengers per train, which would not exceed BART's capacity.

TABLE 4.13-22 BART PEAK HOUR PROJECT TRIPS

| Peak Hour | Project Trips | BART Trains | Additional Passengers/Train |
|-----------|---------------|-------------|-----------------------------|
| AM | 28 | 12 | 2.3 |
| PM | 29 | 12 | 2.4 |
| SAT | 23 | 6 | 3.8 |

Source: Kittelson & Associates, 2014.

The Project is estimated to generate 210 bus trips per day with approximately 25 occurring in the AM and PM peak hours with 21 during the Saturday peak hour. Line 75 currently operates one bus per hour while Lines S and 89 operate two busses per hour during the weekday peak hours. Line 89 is the only line operating on Saturday, and is on a one bus per hour frequency.

Lines S and Line 75 do not provide direct access to the Project site and would therefore not be expected to carry the full number of peak hour trips generated by the Project. Currently, the average maximum load factor of Line S is 0.41 for the AM commute meaning only 41 percent of seats are filled in the busiest section on average. The average maximum load factor of Line 75 is 0.38. The capacity of these two lines is therefore not expected to be exceeded by the proposed Project, which would generate up to 25 transit trips in the peak hour and is not directly served by these two routes.

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Line 89 serves the Project site directly and would likely be used by all 25 of the peak hour transit bus riders. The average maximum load factor for any one segment of Line 89 is approximately 0.40. This route currently uses a 25-passenger bus which leaves 15 available seats at the average maximum load factor on this route. If all 25 transit passengers from the Project board the same bus, there would not be sufficient seats to accommodate all riders leaving 10 riders standing on average in the most crowded section of the route. However, this is a local bus line and is therefore meant for short duration trips. Standing passengers over short distances would not significantly impact the capacity of Line 89. Based on this assessment, the Project would not cause the transit ridership to exceed existing transit capacity and this impact would be *less than significant*.

Transit Access and Egress

The conceptual drawing of the Project indicates there would be adequate connections between local transit service and the Project site. It is assumed that sidewalks would be built to the current ADA accessibility guidelines including both clear width and appropriate curb ramp design in accordance to City standards. The Project includes a promenade that surrounds the site and connects across the existing marina entrance via a new pedestrian and bicycle bridge. The promenade would facilitate transit riders from the marina side of the Project site to the bus stops on Monarch Bay Drive and Fairway Drive. Project residents on the east side of Monarch Bay Drive are provided with walkways that lead to the bus stops. Based on this assessment, the Project would provide adequate pedestrian connection between the Project site and transit stops and a *less-than-significant* impact would result in this respect.

Future Transit Service

The Project site is currently served by AC Transit Line 89, which runs along Monarch Bay Drive. Project improvements along this route would not preclude future transit service. Therefore, given the Project would not preclude future transit service from being added, a *less-than-significant* impact would occur.

Consistency with Adopted Plans

The Project's consistency with transit operators' adopted plans was assessed. The Project is not expected to generate additional BART trips to a point that would exceed the current capacity of the BART trains. Construction of the Project would also not affect any future plans established by BART. AC Transit's future plans are also not expected to be inhibited by the proposed Project and a *less-than-significant* impact would result in this respect.

TRAF-3 The proposed Project would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

While the Project site is located approximately a mile from the Oakland International Airport, the nature of the Project as a mixed-use, low rise residential, commercial and recreational project is such that it would not result in a change in air traffic patterns. Therefore, *no impact* would occur in this respect.

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Applicable Regulations:

- None

Significance Before Mitigation: No impact.

TRAF-4 The proposed Project would substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

The types of land uses proposed as a part of the Project are generally similar to existing and surrounding uses and thereby are compatible with the existing uses on the Project site and in the surrounding area. Therefore *no impact* would result from hazards as a result of incompatible uses.

The current version of the Project plans shows that the location of the proposed northern driveway of the North Golf Course Residential component of the Project would potentially result in design hazard due to restricted sight distance. Please refer to Figure 3-3, Conceptual Site Plan in the Project Description. The northern most driveway on the east side of Monarch Bay Drive which would provide right-turn in and right-turn out movements, near the intersection of Monarch Bay Drive and Neptune Drive is slightly off-set to the east from Neptune Drive. Southbound through vehicles from Neptune Drive may also access this driveway; whereas all other movements would be restricted by physical barriers. The safety issue results from the fact that the segment of Monarch Bay Drive immediate to the west of the driveway is a curved as Monarch Bay Drive turns into Marina Boulevard. Drivers pulling out of the driveway would experience difficulty observing oncoming traffic moving in a northeasterly direction on Monarch Bay Drive. By the time that drivers pulling out of the driveway are able to see cars traveling north on Monarch Bay Drive, these cars would not have sufficient time to make a safe right turn out of the driveway. Without implementation of adequate mitigation this would result in a *significant* impact.

Impact TRAF-4A: The location of the proposed northern driveway of the North Golf Course Residential component of the Project presents a potential sight distance challenge for cars pulling out of the driveway.

Mitigation Measure TRAF-4A: Remove the North Golf Course northern driveway from the Project plans.

Significance After Mitigation: Less than significant. Since the 64 unit North Golf Course Residential component of the Project would be served by two other access driveways, the small amount of diverted traffic could be accommodated by the remaining two driveways without resulting in secondary impact and this impact would be reduced to a *less-than-significant* level.

The proposed southern driveway of the northern Golf Course Residential component of the Project also has the potential to result in a hazard as a result of the proposed design. As a general rule, it is always preferable to provide a uniform four-legged intersection rather than an off-set leg due to the increase visibility and safety associated with uniform four-legged intersections. In this situation it would be even more advantageous to move the position of this driveway to the north to align with the entrance to the marina to the west at Mulford Point Drive because, as seen in Figure 3-3, Conceptual Site Plan, in Chapter 3, the currently proposed driveway would enter onto Monarch Bay Drive where the stop bar for

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northbound vehicles would be located. If the mitigation measure for the Monarch Bay Drive and Mulford Point Drive intersection (TRAF-1D and TRAF-7F) discussed above is implemented, a roundabout would operate more effectively with a standard fourth leg and would be able to accommodate the added driveway volumes. Overall, the southern driveway of the North Golf Course Residential component would result in a design hazard due to its location in relation to the proposed Monarch Bay Drive and Mulford Point Drive intersection. In the absence of adequate mitigation this would result in a *significant* impact.

Impact TRAF-4B: The proposed southern driveway of the North Golf Course Residential component would potentially result in a design hazard due to its location in relation to the proposed Monarch Bay Drive and Mulford Point Drive intersection.

Mitigation Measure TRAF-4B: Move the Southern Driveway of the North Golf Course residential component to the north, to form a standard four-legged intersection. This measure shall be implemented in coordination with Mitigation Measure TRAF-1D.

Significance After Mitigation: Less than significant. Implementation of Mitigation measure TRAF-4B would reduce the impact regarding the North Golf Course Residential Southern Driveway to a *less-than-significant* level.

TRAF-5 The proposed Project would not result in inadequate emergency access.

The proposed concept design is required to comply with all City roadway and access standards as well as other requirements in the California Fire Code and California Vehicle Code. The Project is well-served by public streets and based on the concept plan, the proposed Project would not result in inadequate emergency access and a *less-than-significant* impact would result.

Applicable Regulations:

- San Leandro General Plan

Significance Before Mitigation: Less than significant.

TRAF-6 The proposed Project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Bicycle Facilities

The City of San Leandro Bicycle and Pedestrian Master Plan and the Alameda Countywide Bicycle Plan¹⁵ both include a planned Class II bicycle lane along Monarch Bay Drive between Neptune Drive and Fairway Drive and a planned Class I bicycle path in the marina area of the Project site. The proposed public

¹⁵ Alameda County Transportation Commission, Alameda Countywide Bicycle Plan, adopted October 25, 2012.

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promenade along the waterfront edge would provide the Class I facility identified in the plans and a Class II bicycle lane proposed by the Project would complete the bicycle lane along Monarch Bay Drive.

The increase in automobile trips on Marina Boulevard that would result from the proposed Project could make this route less desirable for cyclists. The existing bike lanes on Williams Street and planned bike lanes and bike routes on Davis Street would provide the primary east/west connections to the Project site via the planned bike lanes on Doolittle Drive and the existing bike route on Neptune Drive. Additionally, there are bike lines providing east/west connection along Fairway Drive/Aladdin Avenue. Most of the traffic generated by the proposed Project would be funneled through the intersection of Monarch Bay Drive and Mulford Point Drive (#19). As such, by limiting driveways along the main access road, the Project would not present significant barriers to bicyclists.

Pedestrian Facilities

As described in Chapter 3 of this Draft EIR, as a part of the Project, a 20 foot wide promenade along the waterfront edge would provide protected walkways for pedestrians in the marina area. As shown in Figure 3-3, Conceptual Site Plan, this promenade would be connected to the west side of Monarch Bay Drive at the existing path just south of Neptune Drive and continue south to the Mulford Point Drive intersection. A similar multi-use path is proposed on the east side of Monarch Bay Drive from the northern driveway to the southern driveway of the North Golf Course Residential.

The portion of Monarch Bay Drive between Marina Boulevard and Fairway Drive is identified in the City's Bicycle and Pedestrian Master Plan as within the San Leandro Marina Pedestrian Improvement Area and targeted pedestrian improvements. Specifically, the plan states that "continuous pedestrian pathways should be created on both sides of Monarch Bay Drive...to facilitate a safe pedestrian environment to this major destination." The plan further requires that "crosswalks, a minimum of 250 to 350 feet apart, should be installed along Monarch Bay Drive to encourage pedestrians to cross at safe locations." Additionally, the plan specifically indicates that a pedestrian crossing should be created at the Monarch Bay Drive and Neptune Drive intersection.¹⁶

The Project will include pedestrian paths along Monarch Bay Drive south of Mulford Point Drive and marked crosswalks along Monarch Bay Drive. Therefore, it does not conflict with the adopted City of San Leandro Bicycle and Pedestrian Master Plan. The Project impact is therefore considered to be *less than significant*.

The effect of the proposed Project on public transportation facilities is addressed above under impact TRAF-2.

Applicable Regulations:

- San Leandro General Plan
- San Leandro Bicycle and Pedestrian Master Plan

Significance Before Mitigation: Less than significant.

¹⁶ City of San Leandro, 2010, City of San Leandro Bicycle and Pedestrian Master Plan, page 50.

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4.13.4 CUMULATIVE IMPACT DISCUSSION

TRAF-7 **The proposed Project, in combination with past, present and reasonably foreseeable projects, would result in a significant cumulative impacts with respect to transportation and traffic.**

Near-Term Cumulative Conditions

In order to provide a realistic analysis of the potential impacts of the proposed Project, several scenarios were analyzed. The **Near-Term Cumulative Conditions** analysis projects how the study area's transportation system would operate with the full build-out of the Project in combination with the growth and changes of the surrounding community by the year 2020. The analysis assumed certain planned roadway facilities would be completed and land use growth projected in the Countywide Model for the year 2020.

Planned Developments and Improvements

In addition to those improvements identified above under Baseline Conditions, the following major planned developments and roadways and transit improvements in the vicinity of the Project site are included in this analysis based on discussions with San Leandro City staff:

- Kaiser Permanente San Leandro Medical Center and Mixed-Use Retail Development would be fully completed. The Kaiser Permanente San Leandro Medical Center driveway on Marina Boulevard would be signalized and provide westbound left-turn access into the Kaiser Permanente San Leandro Medical Center site in addition to the eastbound right-turn inbound and northbound right-turn outbound access.
- Traffic signal timing at Aladdin Avenue and Alvarado Street Intersection would be optimized as part of the mitigation measures for the Kaiser Permanente San Leandro Medical Center project.
- I-880 would have a High Occupancy Vehicle (HOV) lane installed in the southbound direction from Hegenberger Road to the current HOV lane located south of Marina Boulevard.
- Marina Boulevard, from Teagarden Street to Alvarado Street, would be widened to six lanes (from the existing four lanes).
- Alvarado Street, from Marina Boulevard to Aladdin Avenue, would be widened to four lanes (from the existing two lanes with a two-way left turn lane).
- Davis Street (SR 112), between Warden Avenue-Timothy Drive to the I-880 interchange, would be widened to six lanes (from the existing four lanes) and is expected to be completed in 2015.
- Bus Rapid Transit (BRT) would be in operation along International Boulevard and East 14th Street to the San Leandro BART station, which is the planned southern terminus of this enhanced bus service.

Near-Term Cumulative Intersection Operations

The weekday and Saturday midday peak hour intersection turning movement volumes and lane configurations for the **Near-Term Cumulative scenario under No Project**, and **Plus Project Conditions** are provided in Appendix H. The information was used to calculate the level of service and identify potential

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impacts at the Analysis Intersections based on the City's significance thresholds. The level of service results are summarized in Table 4.13-23, Table 4.13-24 and Table 4.13-25 and the detailed calculation worksheets are provided in Appendix H.

Signalized Intersections

Under **Near-Term Cumulative No Project** scenario, two signalized intersections are projected to operate below the City's standard of LOS D. The intersection of I-880 southbound ramps at Marina Boulevard (#14) would operate at LOS E and would have an average delay of 72.5 seconds and the intersection of San Leandro Boulevard and Marina Boulevard (#18) would operate at LOS F and would have an average delay of 180.8 seconds in the PM peak hour. The addition of traffic associated with development of the proposed Project would cause the v/c ratio to increase by 0.07 at both intersections.

Furthermore, the Project traffic would cause the operations at these two intersections to operate below the City standard during other analysis periods whereas they would operate at acceptable levels without implementation of the Project. As seen in Tables 4.13-23 and 4.13-24, the I-880 southbound ramps intersection (#14) would reduce to LOS E during both AM and Saturday peak hours and the San Leandro Boulevard intersection (#18) would reduce to LOS E in the AM peak hour.

The Project traffic would also cause the intersections of Doolittle Drive and Marina Boulevard (#11) during the weekday analysis periods and Aladdin Avenue and Alvarado Street (#28) during the PM peak hour to deteriorate to substandard operations. Therefore, in the absence of adequate mitigation, a *significant* cumulative impact would occur with regards to intersection level of service at these intersections.

Impact TRAF-7A: The addition of traffic associated with implementation of the proposed Project would cause the intersection level of service at Doolittle Drive and Marina Boulevard (#11) to reduce from LOS D to LOS F in the AM and PM peak hours under Near-Term Cumulative Conditions.

Mitigation Measure TRAF-7A: Implementation of Mitigation Measures TRAF-1A.1 – TRAF-1A.2 for the eastbound approach identified under the baseline **Plus Project** condition.

Significance After Mitigation: Less than significant. Implementation of these mitigation measures would improve the operations of this intersection to LOS D and lessen the cumulative impacts to a *less-than-significant* level during the AM and PM peak hours.

As discussed above, the addition of Project traffic would cause the operations at the intersection of I-880 southbound ramps and Marina Boulevard (#14) to reduce to LOS E in the AM and Saturday peak hours, adding to the substandard operations to further reduce the service levels from LOS E to LOS F in the PM peak hour and cause the v/c ratio to increase by 0.07. Therefore, in the absence of adequate mitigation this would result in a *significant* impact.

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TABLE 4.13-23 INTERSECTION LEVEL OF SERVICE – NEAR TERM CUMULATIVE CONDITIONS – AM PEAK HOUR

| No | Street | Street | Control | Near Term | | Near Term + Project | | Change v/c or Delay | After Mitigation | |
|----|------------------------|----------------------|---------|------------|------|---------------------|----------|---------------------|------------------|----------|
| | | | | Delay | LOS | Delay | LOS | | Delay | LOS |
| 1 | Doolittle Dr (SR 61) | Davis St (SR 112) | Sig | 31.2 | C | 31.6 | C | | 31.6 | C |
| 2 | Phillips Ln | Davis St (SR 112) | Sig | 18.4 | B | 18.5 | B | | 18.5 | B |
| 3 | Warden Av-Timothy Dr | Davis St (SR 112) | Sig | 19.6 | B | 19.4 | B | | 19.4 | B |
| 4 | I-880 Southbound ramps | Davis St (SR 112) | Sig | 14.2 | B | 14.2 | B | | 14.2 | B |
| 5 | I-880 Northbound ramps | Davis St (SR 112) | Sig | 14.5 | B | 14.5 | B | | 14.5 | B |
| 6 | Doolittle Dr | Williams St | Sig | 24.0 | C | 28.8 | C | | 28.8 | C |
| 7 | Westgate Pkwy | Williams St | Sig | 16.0 | B | 16.0 | B | | 16.0 | B |
| 8 | Merced St | Williams St | Sig | 29.3 | C | 29.1 | C | | 29.1 | C |
| 9 | Neptune Dr | Marina Blvd | TWSC | 1.3 (10.0) | A(B) | 1.0 (21.8) | A (C) | | 1.0 (21.8) | C |
| 10 | Aurora Dr* | Marina Blvd | AWSC | 9.9 | A | 75.7 | F | | 9.0/10.7 | A/B |
| 11 | Doolittle Dr | Marina Blvd | Sig | 39.2 | D | 93.8 | F | | 54.9 | D |
| 12 | Merced St | Marina Blvd | Sig | 37.4 | D | 54.8 | D | | 54.8 | D |
| 13 | Kaiser driveway | Marina Blvd | TWSC | 6.6 | A | 6.8 | A | | 6.8 | A |
| 14 | I-880 Southbound ramps | Marina Blvd | Sig | 38.6 | D | 59.8 | E | | 26.8 | C |
| 15 | I-880 Northbound ramps | Marina Blvd | Sig | 15.5 | B | 16.5 | B | | 16.5 | B |
| 16 | Wayne Av-Teagarden St | Marina Blvd | Sig | 27.0 | C | 26.4 | C | | 26.9 | C |
| 17 | Alvarado St | Marina Blvd | Sig | 24.0 | C | 26.1 | C | | 28.6 | C |
| 18 | San Leandro Blvd | Marina Blvd | Sig | 53.2 | D | 66.8 | E | | 66.8 | E |
| 19 | Monarch Bay Dr | Mulford Point Dr | AWSC | 7.6 | A | 17.4 | C | | 7.3 | A |
| 20 | Monarch Bay Dr | Pescador Pt Dr | AWSC | 7.5 | A | 8.4 | A | | 8.4 | A |
| 21 | Monarch Bay Dr | Fairway Dr | AWSC | 7.9 | A | 8.8 | A | | 8.8 | A |
| 22 | Aurora Dr | Fairway Dr | AWSC | 8.4 | A | 10.2 | B | | 10.2 | B |
| 23 | Doolittle Dr | Fairway Dr | Sig | 16.7 | B | 18.6 | B | | 18.6 | B |
| 24 | Merced St | Fairway Dr | Sig | 33.1 | C | 34.6 | C | | 34.6 | C |
| 25 | Garfield Rd | Fairway Dr | Sig | 11.8 | B | 7.2 | A | | 7.2 | A |
| 26 | Miller St | Fairway Dr | Sig | 17.6 | B | 18.9 | B | | 18.9 | B |
| 27 | Aladdin Av | Teagarden St | Sig | 37.5 | D | 44.1 | D | | 44.1 | D |
| 28 | Aladdin Av | Alvarado St | Sig | 36.7 | D | 39.3 | D | | 25.3 | C |
| 29 | Merced St | Wells Fargo driveway | Sig | 1.0 | A | 1.0 | A | | 1.0 | A |
| 30 | Merced St | Republic Av | Sig | 10.0 | B | 10.3 | B | | 10.3 | B |
| 31 | Merced St | West Av 140th | Sig | 1.9 | A | 1.9 | A | | 1.9 | A |

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TABLE 4.13-23 INTERSECTION LEVEL OF SERVICE – NEAR TERM CUMULATIVE CONDITIONS – AM PEAK HOUR

| No | Street | Street | Control | Near Term | | Near Term + Project | | Change v/c or Delay | After Mitigation | |
|----|--------|--------|---------|-----------|-----|---------------------|-----|---------------------|------------------|-----|
| | | | | Delay | LOS | Delay | LOS | | Delay | LOS |

Notes: Sig = Signalized; TWSC = Two-Way Stop Controlled; AWSC = All-Way Stop Controlled; LOS = Level of Service; Delay = Weighted average delay of all intersection approaches; the number in parentheses for stop-controlled intersection indicates the average delay on the worst approach.

Change in v/c or delay is shown when relevant to significance determination

Bold font indicates substandard operations

Shaded cells indicate significant impact

* The mitigated results of both roundabout/signalization are shown for the Aurora Drive/Marina Boulevard intersection.

Source: Kittelson & Associates, 2014.

Impact TRAF-7B: The addition of traffic associated with implementation of the proposed Project would cause I-880 southbound ramps and Marina Boulevard (#14) to reduce to LOS E during both AM and Saturday peak hours, and would further reduce the service levels from LOS E to LOS F in the PM peak hour, under Near-Term Cumulative Conditions.

Mitigation Measure TRAF-7B.1: Modify the traffic signal to a two-phase operation to provide non-conflicting:

- Eastbound and westbound through movements on Marina Boulevard during the first phase.
- Southbound right-turn, northbound right-turn and westbound left-turn movements during the second phase.

Mitigation Measure TRAF-7B.2: Prohibit westbound U-turn movements.

Significance After Mitigation: Significant and unavoidable. Implementation of the these mitigation measures would improve the operations at the intersection of I-880 southbound ramps and Marina Boulevard to LOS C in the AM and Saturday peak hours and to LOS D in the PM peak hour, thereby reducing the Project impacts to a less-than-significant level. However, because this ramp intersection is under Caltrans’ jurisdiction, the implementation of timing and phasing Mitigation Measures are not under the City’s jurisdiction. Therefore, this impact would remain *significant and unavoidable*.

As discussed above, the addition of traffic associated with implementation of the proposed Project would cause operations at the intersection of San Leandro Boulevard and Marina Boulevard (#18) to reduce from LOS D to LOS E in the AM peak hour; and would add to the existing substandard LOS F in the PM peak hour and cause the v/c ratio to increase by 0.07. Therefore, in the absence of adequate mitigation this impact would be *significant*.

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TABLE 4.13-24 INTERSECTION LEVEL OF SERVICE – NEAR TERM CUMULATIVE CONDITIONS – PM PEAK HOUR

| No | Street | Street | Control | Near Term | | Near Term + Project | | Change v/c or Delay | After Mitigation | |
|----|------------------------|----------------------|---------|--------------|----------|---------------------|----------|---------------------|------------------|----------|
| | | | | Delay | LOS | Delay | LOS | | Delay | LOS |
| 1 | Doolittle Dr (SR 61) | Davis St (SR 112) | Sig | 22.0 | C | 24.9 | C | | 24.9 | C |
| 2 | Phillips Ln | Davis St (SR 112) | Sig | 37.3 | D | 39.2 | D | | 39.2 | D |
| 3 | Warden Av-Timothy Dr | Davis St (SR 112) | Sig | 36.8 | D | 39.3 | D | | 39.3 | D |
| 4 | I-880 Southbound ramps | Davis St (SR 112) | Sig | 13.8 | B | 14.1 | B | | 14.1 | B |
| 5 | I-880 Northbound ramps | Davis St (SR 112) | Sig | 17.3 | B | 17.2 | B | | 17.2 | B |
| 6 | Doolittle Dr | Williams St | Sig | 17.2 | B | 18.4 | B | | 18.4 | B |
| 7 | Westgate Pkwy | Williams St | Sig | 29.5 | C | 29.6 | C | | 29.6 | C |
| 8 | Merced St | Williams St | Sig | 26.2 | C | 26.2 | C | | 26.2 | C |
| 9 | Neptune Dr | Marina Blvd | TWSC | 0.5 (11.6) | A (B) | 0.7 (30.4) | A (D) | | 0.7 (30.4) | A (D) |
| 10 | Aurora Dr* | Marina Blvd | AWSC | 10.2 | B | 66.1 | F | | 8.4/9.4 | A/A |
| 11 | Doolittle Dr | Marina Blvd | Sig | 35.9 | D | 73.1 | E | | 47.9 | D |
| 12 | Merced St | Marina Blvd | Sig | 39.1 | D | 49.2 | D | | 49.2 | D |
| 13 | Kaiser driveway | Marina Blvd | TWSC | 21.6 | C | 23.2 | C | | 23.2 | C |
| 14 | I-880 Southbound ramps | Marina Blvd | Sig | 72.5 | E | 87.6 | F | 0.07 | 38.8 | D |
| 15 | I-880 Northbound ramps | Marina Blvd | Sig | 22.0 | C | 24.8 | C | | 24.8 | C |
| 16 | Wayne Av-Teagarden St | Marina Blvd | Sig | 33.2 | C | 32.8 | C | | 32.6 | C |
| 17 | Alvarado St | Marina Blvd | Sig | 45.4 | D | 50.4 | D | | 54.3 | D |
| 18 | San Leandro Blvd | Marina Blvd | Sig | 180.8 | F | 192.4 | F | 0.07 | 192.4 | F |
| 19 | Monarch Bay Dr | Mulford Point Dr | AWSC | 8.5 | A | 52.9 | F | | 8.1 | A |
| 20 | Monarch Bay Dr | Pescador Pt Dr | AWSC | 7.8 | A | 8.9 | A | | 8.9 | A |
| 21 | Monarch Bay Dr | Fairway Dr | AWSC | 9.1 | A | 10.7 | B | | 10.7 | B |
| 22 | Aurora Dr | Fairway Dr | AWSC | 8.7 | A | 11.0 | B | | 11.0 | B |
| 23 | Doolittle Dr | Fairway Dr | Sig | 17.3 | B | 19.4 | B | | 19.4 | B |
| 24 | Merced St | Fairway Dr | Sig | 35.0 | C | 36.5 | D | | 36.5 | D |
| 25 | Garfield Rd | Fairway Dr | Sig | 15.7 | B | 12.3 | B | | 12.3 | B |
| 26 | Miller St | Fairway Dr | Sig | 26.5 | C | 27.4 | C | | 27.4 | C |
| 27 | Aladdin Av | Teagarden St | Sig | 32.4 | C | 35.3 | D | | 35.3 | D |
| 28 | Aladdin Av | Alvarado St | Sig | 54.2 | D | 57.1 | E | | 36.0 | D |
| 29 | Merced St | Wells Fargo driveway | Sig | 3.6 | A | 3.8 | A | | 3.8 | A |
| 30 | Merced St | Republic Av | Sig | 21.3 | C | 21.3 | C | | 21.3 | C |
| 31 | Merced St | West Av 140th | Sig | 3.2 | A | 3.2 | A | | 3.2 | A |

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TABLE 4.13-24 INTERSECTION LEVEL OF SERVICE – NEAR TERM CUMULATIVE CONDITIONS – PM PEAK HOUR

| No | Street | Street | Control | Near Term | | Near Term + Project | | Change v/c or Delay | After Mitigation | |
|---|--------|--------|---------|-----------|-----|---------------------|-----|---------------------|------------------|-----|
| | | | | Delay | LOS | Delay | LOS | | Delay | LOS |
| Notes: Sig = Signalized; TWSC = Two-Way Stop Controlled; AWSC = All-Way Stop Controlled; LOS = Level of Service; Delay = Weighted average delay of all intersection approaches; the number in parentheses for stop-controlled intersection indicates the average delay on the worst approach. | | | | | | | | | | |
| Change in v/c or delay is shown when relevant to significance determination | | | | | | | | | | |
| Bold font indicates substandard operations | | | | | | | | | | |
| Shaded cells indicate significant impact | | | | | | | | | | |
| * The mitigated results of both roundabout/signalization are shown for the Aurora Drive/Marina Boulevard intersection. | | | | | | | | | | |
| Source: Kittelson & Associates, 2014. | | | | | | | | | | |

TABLE 4.13-25 INTERSECTION LEVEL OF SERVICE – NEAR TERM CUMULATIVE CONDITIONS – SATURDAY MIDDAY PEAK HOUR

| No | Street | Street | Control | Near Term | | Near Term + Project | | Change v/c or Delay | After Mitigation | |
|---|------------------------|-------------------|---------|-----------|-----|---------------------|----------|---------------------|------------------|-----|
| | | | | Delay | LOS | Delay | LOS | | Delay | LOS |
| 1 | Doolittle Dr (SR 61) | Davis St (SR 112) | Sig | 19.3 | B | 19.2 | B | | 19.2 | B |
| 10 | Aurora Dr* | Marina Blvd | AWSC | 10.1 | B | 35.6 | E | | 7.1/7.8 | A/A |
| 11 | Doolittle Dr | Marina Blvd | Sig | 31.9 | C | 45.0 | D | | 44.0 | D |
| 12 | Merced St | Marina Blvd | Sig | 36.8 | D | 37.6 | D | | 37.6 | D |
| 13 | Kaiser driveway | Marina Blvd | TWSC | 14.3 | B | 14.5 | B | | 14.5 | B |
| 14 | I-880 Southbound ramps | Marina Blvd | Sig | 53.0 | D | 57.1 | E | | 20.3 | C |
| 15 | I-880 Northbound ramps | Marina Blvd | Sig | 14.2 | B | 14.6 | B | | 14.6 | B |
| 22 | Aurora Dr | Fairway Dr | AWSC | 8.2 | A | 10.1 | B | | 10.1 | B |
| 23 | Doolittle Dr | Fairway Dr | Sig | 15.3 | B | 16.2 | B | | 16.2 | B |
| 24 | Merced St | Fairway Dr | Sig | 34.0 | C | 36.6 | D | | 36.6 | D |
| Notes: Sig = Signalized; TWSC = Two-Way Stop Controlled; AWSC = All-Way Stop Controlled; LOS = Level of Service; Delay = Weighted average delay of all intersection approaches; the number in parentheses for stop-controlled intersection indicates the average delay on the worst approach. | | | | | | | | | | |
| Change in v/c or delay is shown when relevant to significance determination | | | | | | | | | | |
| Bold font indicates substandard operations | | | | | | | | | | |
| Shaded cells indicate significant impact | | | | | | | | | | |
| * The mitigated results of both roundabout/signalization are shown for the Aurora Drive/Marina Boulevard intersection. | | | | | | | | | | |
| Source: Kittelson & Associates, 2014. | | | | | | | | | | |

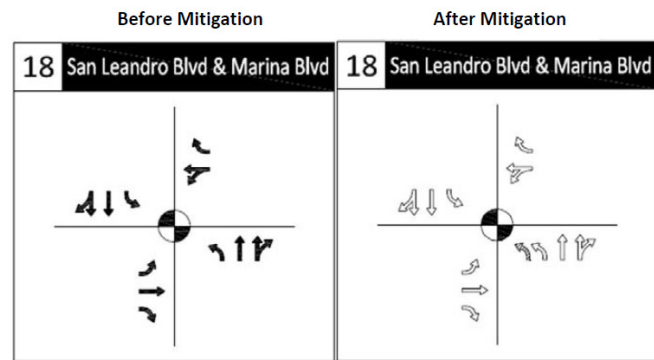
Impact TRAF-7C: The proposed Project would cause operations at the intersection of San Leandro Boulevard and Marina Boulevard (#18) to reduce from LOS D to LOS E in the AM peak hour, adding to the existing substandard LOS F in the PM peak hour and cause the volume-to-capacity (v/c) ratio to increase by 0.07 under Near-Term Cumulative Conditions.

Mitigation Measure TRAF-7C.1: Add a northbound left-turn lane on San Leandro Boulevard to provide two left-turn lanes: one through lane and one shared through-right turn lane.

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Mitigation Measure TRAF-7C.2: Restripe lanes on the west leg to provide two corresponding receiving lanes.

The lane geometries before and after implementation of these Mitigation Measures are shown in the figure opposite.



Significance After Mitigation: Significant and unavoidable. Mitigation Measure TRAF-7C.1 and TRAF-7C.2 are identified in the Kaiser Permanente San Leandro Medical Center/Mixed Use Retail Development Project EIR and would mitigate the **Near-Term** cumulative impact during the AM and PM peak hours to less than significant. However, the available right-of-way on the northbound approach would not be sufficient to accommodate the two left-turn lanes, one through lane, and one shared through-right turn lane, as well as a bike lane. Therefore, this measure is considered to be infeasible and the impact would remain *significant and unavoidable*.

The addition of Project traffic would cause the level of service at the intersection of Aladdin Avenue and Alvarado Street (#28) to reduce from LOS D to LOS E in the PM peak hour. In the absence of adequate mitigation, this would result in a *significant* impact.

Impact TRAF-7D: The proposed Project would cause the level of service at the intersection of Aladdin Avenue and Alvarado Street (#28) to reduce from LOS D to LOS E in the PM peak hour under **Near-Term Cumulative** Conditions.

Mitigation Measure TRAF-7D: Optimize traffic signal cycle length at the intersection of Aladdin Avenue and Alvarado Street. This signal does not operate in coordination with any other signal; therefore, the cycle length can be adjusted without affecting other signals in the system.

Significance After Mitigation: Less than significant. Implementation of this Mitigation Measure would improve the operations to LOS D in the PM peak hour and lessen the Project impacts to a *less-than-significant* level.

Unsignalized Intersections

All unsignalized intersections are projected to operate at acceptable levels under the **Near-Term Cumulative No Project** scenario. However, the Project generated traffic would cause two of the all-way stop controlled intersections to reduce to substandard levels. With the addition of Project related traffic, the Aurora Drive and Marina Boulevard intersection (#10) would operate at LOS F during all three analysis periods and the Monarch Bay Drive and Mulford Point Drive intersection (#19) would reduce to LOS F during the PM peak hour. In the absence of adequate mitigation, this would result in a *significant* impact.

As discussed above, the addition of Project traffic would cause the level of service at the intersection of Aurora Drive and Marina Boulevard (#10) to reduce from LOS A to LOS F in the AM peak hour and from LOS B to LOS F in the PM and Saturday peak hours. Therefore, in the absence of adequate mitigation a *significant* impact would result in this respect.

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Impact TRAF-7E: The proposed Project would cause the level of service at the intersection of Aurora Drive and Marina Boulevard (#10) to reduce from LOS A to LOS F in the AM peak hour and from LOS B to LOS F in the PM peak hour and from LOS B to LOS E in the Saturday peak hour.

Mitigation Measure TRAF-7E: Implementation of Mitigation Measure TRAF-1C, installing a mini-roundabout or a traffic signal, would lessen the near term cumulative impacts to *less than significant*. The mini-roundabout would improve the operations to LOS A in all three peak period hours. A traffic signal would improve the operation of the intersection to LOS B in the AM peak hour and LOS A in the PM and Saturday peak hours.

Significance After Mitigation: Less than significant.

As discussed above, the addition of traffic associated with implementation of the proposed Project would cause the level of service at the intersection of Monarch Bay Drive and Mulford Point Drive (#19) to reduce from LOS A to LOS F in the PM peak hour. In the absence of adequate mitigation this would result in a *significant* impact.

Impact TRAF-7F: The proposed Project would cause the level of service at the intersection of Monarch Bay Drive and Mulford Point Drive (#19) to reduce from LOS A to LOS F in the PM peak hour.

Mitigation Measure TRAF-7F: Implement Mitigation Measure TRAF-1D by installing a roundabout. This would improve the operations to LOS A in the PM peak hour.

Significance After Mitigation: Less than significant. Implementation of this Mitigation Measure would improve the operation to LOS A and lessen the Project's cumulative impacts to *less than significant* during the PM peak hour.

Near-Term Cumulative Freeway Operations

The weekday peak hour freeway operations are presented in Table 4.13-26, and the detailed calculation worksheets are provided in Appendix H. Similar to Baseline Conditions, the results indicate that the mainline segment of I-880 northbound between Marina Boulevard and Davis Street would operate at LOS E in the AM peak hour under **Near-Term Cumulative No Project** conditions.

The same segment would also operate at LOS E in the PM peak hour. The Project would add traffic volume equivalent to only 0.09 percent to the freeway design capacity of the mainline in the AM peak hour and 0.2 percent in the PM peak hour. Furthermore, the mainline segment of I-880 southbound between Davis Street and Marina Boulevard would also operate at LOS E in the PM peak hour under No Project conditions and the Project would add traffic volume equivalent to 0.4 percent of the freeway mainline design capacity. Since the Project would not increase traffic by more than one percent of the freeway's design capacity at these locations, the Project impacts are considered to be *less than significant*. All other study segments are projected to operate at LOS D or better.

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TABLE 4.13-26 FREEWAY LEVEL OF SERVICE – NEAR TERM CUMULATIVE CONDITIONS – AM AND PM PEAK HOUR

| Location | Type | Near Term | | | Near Term + Project | | |
|-------------------------------|--------------------|---------------------|----------------------|------------------|---------------------|----------------------|------------------|
| | | Volume ^a | Density ^b | LOS ^c | Volume ^a | Density ^b | LOS ^c |
| AM PEAK HOUR | | | | | | | |
| I-880 Northbound | | | | | | | |
| Washington Ave to Marina Blvd | Mainline | 8,335 | 29.8 | D | 8,484 | 30.6 | D |
| Marina Blvd to Davis St | Mainline | 8,790 | 38.6 | E | 8,797 | 38.7 | E |
| | Weave ^d | 1,591 | N/A | C | 1,597 | N/A | C |
| Davis St to 98th Ave | Mainline | 6,526 | 29.0 | D | 6,572 | 29.3 | D |
| I-880 Southbound | | | | | | | |
| 98th Ave to Davis St | Mainline | 6,994 | 24.0 | C | 7,130 | 24.6 | C |
| Davis St to Marina Blvd | Mainline | 6,837 | 27.0 | C | 6,844 | 27.0 | C |
| | Weave ^d | 1,097 | N/A | A | 1,103 | N/A | A |
| Marina Blvd to Washington Ave | Mainline | 7,316 | 25.3 | C | 7,389 | 25.6 | C |
| PM PEAK HOUR | | | | | | | |
| I-880 Northbound | | | | | | | |
| Washington Ave to Marina Blvd | Mainline | 8,034 | 28.4 | D | 8,095 | 28.7 | D |
| Marina Blvd to Davis St | Mainline | 8,254 | 37.3 | E | 8,292 | 37.7 | E |
| | Weave ^d | 1,994 | N/A | C | 2,031 | N/A | C |
| Davis St to 98th Ave | Mainline | 6,440 | 28.5 | D | 6,511 | 28.9 | D |
| I-880 Southbound | | | | | | | |
| 98th Ave to Davis St | Mainline | 7,281 | 25.2 | C | 7,344 | 25.4 | C |
| Davis St to Marina Blvd | Mainline | 8,760 | 38.3 | E | 8,798 | 38.7 | E |
| | Weave ^d | 1,616 | N/A | B | 1,654 | N/A | B |
| Marina Blvd to Washington Ave | Mainline | 8,359 | 30.0 | D | 8,504 | 30.7 | D |

a. Volume = vehicles per hour (vph)

b. Density = passenger car per mile per lane (pc/m/ln)

c. LOS = Level of Service

d. Marina Blvd. to Davis St. analyzed as a weaving section using the Leisch Method as described in the Caltrans Design Manual, May 7, 2012. The volume shown for this segment is the weaving volume.

Source: Kittelson & Associates, Inc., 2014.

Long Term Cumulative Conditions

The Long-Term Cumulative Conditions analysis projects how the study area’s transportation system would operate with the full build-out of the Project in combination with anticipated growth and changes in the surrounding community, by the year 2035.

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Planned Developments and Improvements

The land use and roadway network assumptions for the Long-Term Cumulative Conditions are based on the Countywide Model for the year 2035. It includes all the planned developments and improvements identified under Baseline and **Near-Term Cumulative Conditions** and the full buildout of the Kaiser Permanente San Leandro Medical Center. No other roadway improvements in the study area are assumed.

Long-Term Cumulative Intersection Operations

The peak hour and Saturday intersection turning movement volumes and lane configurations for Long-Term Cumulative Conditions with and without the Project are provided in Appendix H. This information was used to calculate the level of service and identify potential impacts at the Analysis Intersections based on the City's significance thresholds. The level of service results are summarized in Table 4.13-27, Table 4.13-28, and Table 4.13-29 and the detailed calculation worksheets are provided in Appendix H.

Signalized Intersections

As shown in Tables 4.13-26, 4.13-27, and 4.13-28, under the **Long-Term Cumulative No Project** scenario, seven signalized intersections are projected to operate below the City's standard of LOS D. Two of these intersections are located along Marina Boulevard. The I-880 southbound ramps intersection (#14) is projected to operate at LOS E in the PM and Saturday peak hours, the San Leandro Boulevard intersection (#18) would operate at LOS F in the PM and AM peak hours. Two Davis Street intersections, at Phillips Lane (#2) and at Warden Avenue/Timothy Drive (#3), would both operate at LOS E in the PM peak hour. The Miller Street and Fairway Drive intersection (#26) would operate at LOS E in the AM peak hour and the Aladdin Avenue and Teagarden Street intersection (#27) would operate at LOS F in the AM peak hour.

The addition of Project traffic would increase the substandard operations at these locations. However, it would only cause the v/c ratios to increase by 0.05 or more at two intersections. Therefore, only two of the seven intersections have significant impacts under Long-Term Cumulative Conditions where the v/c ratios would increase by 0.10 at the I-880 southbound ramps and Marina Boulevard intersection (#14) during the PM peak hour; and the service level would reduce from LOS D to LOS E in the AM peak hour. The v/c ratios at the San Leandro Boulevard and Marina Boulevard intersection (#18) would increase by 0.07 in the AM peak hour and 0.10 in the PM peak hour.

The Project traffic would also cause the service levels to reach unacceptable levels at three signalized intersections where they would operate acceptably under Long-Term Cumulative No Project conditions. The Marina Boulevard intersections of Doolittle Drive (#11) would reduce to LOS F during the weekday analysis periods and Merced Street intersection (#12) would reduce from LOS D to LOS E during the AM and PM peak hours. The intersection of Aladdin Avenue and Teagarden Street intersection (#27) would also reduce from LOS D to LOS E during the PM peak hour.

As discussed above, the addition of traffic associated with implementation of the proposed Project would cause two intersections already below standard under Long-Term Cumulative No Project conditions to worsen by 0.05 or more and would cause three intersections to worsen from an acceptable LOS (LOS D or better) to an unacceptable LOS (LOS E or F). Therefore, five intersections would be significantly impacted in the absence of adequate mitigation measures under Long-Term Cumulative Plus Project conditions.

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TABLE 4.13-27 INTERSECTION LEVEL OF SERVICE – LONG TERM CUMULATIVE CONDITIONS – AM PEAK HOUR

| No | Street | Street | Control | Long Term | | Long Term + Project | | Change v/c or Delay | After Mitigation | |
|----|------------------------|----------------------|---------|--------------|----------|---------------------|----------|---------------------|------------------|----------|
| | | | | Delay | LOS | Delay | LOS | | Delay | LOS |
| 1 | Doolittle Dr (SR 61) | Davis St (SR 112) | Sig | 44.0 | D | 44.2 | D | | 44.2 | D |
| 2 | Phillips Ln | Davis St (SR 112) | Sig | 31.1 | C | 32.6 | C | | 32.6 | C |
| 3 | Warden Av-Timothy Dr | Davis St (SR 112) | Sig | 17.6 | B | 17.6 | B | | 17.6 | B |
| 4 | I-880 Southbound ramps | Davis St (SR 112) | Sig | 27.6 | C | 28.4 | C | | 28.4 | C |
| 5 | I-880 Northbound ramps | Davis St (SR 112) | Sig | 14.5 | B | 14.4 | B | | 14.4 | B |
| 6 | Doolittle Dr | Williams St | Sig | 21.3 | C | 23.2 | C | | 23.2 | C |
| 7 | Westgate Pkwy | Williams St | Sig | 16.6 | B | 16.8 | B | | 16.7 | B |
| 8 | Merced St | Williams St | Sig | 29.9 | C | 29.4 | C | | 30.1 | C |
| 9 | Neptune Dr | Marina Blvd | TWSC | 1.3 (10.0) | A (B) | 1.1 (25.2) | A (C) | | 1.1 (25.2) | A (C) |
| 10 | Aurora Dr* | Marina Blvd | AWSC | 10.0 | A | 81.2 | F | | 9.2/10.6 | A/B |
| 11 | Doolittle Dr | Marina Blvd | Sig | 38.0 | D | 94.6 | F | | 54.3 | D |
| 12 | Merced St | Marina Blvd | Sig | 53.7 | D | 65.1 | E | | 45.5 | D |
| 13 | Kaiser driveway | Marina Blvd | TWSC | 6.7 | A | 6.9 | A | | 6.9 | A |
| 14 | I-880 Southbound ramps | Marina Blvd | Sig | 46.4 | D | 66.7 | E | | 33.3 | C |
| 15 | I-880 Northbound ramps | Marina Blvd | Sig | 19.3 | B | 21.5 | C | | 21.5 | C |
| 16 | Wayne Av-Teagarden St | Marina Blvd | Sig | 28.8 | C | 26.0 | C | | 26.1 | C |
| 17 | Alvarado St | Marina Blvd | Sig | 28.7 | C | 35.3 | D | | 39.4 | D |
| 18 | San Leandro Blvd | Marina Blvd | Sig | 205.4 | F | 223.1 | F | 0.07 | 223.1 | F |
| 19 | Monarch Bay Dr | Mulford Point Dr | AWSC | 7.6 | A | 18.0 | C | | 7.3 | A |
| 20 | Monarch Bay Dr | Pescador Pt Dr | AWSC | 7.5 | A | 8.4 | A | | 8.4 | A |
| 21 | Monarch Bay Dr | Fairway Dr | AWSC | 7.9 | A | 8.8 | A | | 8.8 | A |
| 22 | Aurora Dr | Fairway Dr | AWSC | 8.3 | A | 10.1 | B | | 10.1 | B |
| 23 | Doolittle Dr | Fairway Dr | Sig | 17.0 | B | 18.8 | B | | 18.8 | B |
| 24 | Merced St | Fairway Dr | Sig | 33.1 | C | 34.7 | C | | 34.7 | C |
| 25 | Garfield Rd | Fairway Dr | Sig | 9.5 | A | 8.8 | A | | 8.8 | A |
| 26 | Miller St | Fairway Dr | Sig | 57.3 | E | 65.3 | E | 0.02 | 65.3 | E |
| 27 | Aladdin Av | Teagarden St | Sig | 97.6 | F | 106.0 | F | 0.03 | 106.0 | F |
| 28 | Aladdin Av | Alvarado St | Sig | 52.8 | D | 51.1 | D | | 51.1 | D |
| 29 | Merced St | Wells Fargo driveway | Sig | 1.3 | A | 1.3 | A | | 1.3 | A |
| 30 | Merced St | Republic Av | Sig | 11.2 | B | 11.5 | B | | 11.5 | B |
| 31 | Merced St | West Av 140th | Sig | 1.9 | A | 2.0 | A | | 2.0 | A |

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TABLE 4.13-27 INTERSECTION LEVEL OF SERVICE – LONG TERM CUMULATIVE CONDITIONS – AM PEAK HOUR

| No | Street | Street | Control | Long Term | | Long Term + Project | | Change v/c or Delay | After Mitigation | |
|----|--------|--------|---------|-----------|-----|---------------------|-----|---------------------|------------------|-----|
| | | | | Delay | LOS | Delay | LOS | | Delay | LOS |

Notes: Sig = Signalized; TWSC = Two-Way Stop Controlled; AWSC = All-Way Stop Controlled; LOS = Level of Service; Delay = Weighted average delay of all intersection approaches; the number in parentheses for stop-controlled intersection indicates the average delay on the worst approach.

Change in v/c or delay is shown when relevant to significance determination

Bold font indicates substandard operations

Shaded cells indicate significant impact

* The mitigated results of both roundabout/signalization are shown for the Aurora Drive/Marina Boulevard intersection.

Source: Kittelson & Associates, 2014.

Impact TRAF-7G: The proposed Project would cause the intersection level of service of the intersection of Doolittle Drive and Marina Boulevard (#11) to reduce from LOS D to LOS F in the AM and PM peak hours.

Mitigation Measure TRAF-7G: Implement Mitigation Measures TRAF-1A.1 and TRAF-1A.2.

Significance After Mitigation: Less than significant. Implementation of Mitigation Measure TRAF-7G would improve the operations to LOS D and lessen this cumulative impact to less-than-significant levels during the AM and PM peak hours.

Additionally, as discussed above, the addition of traffic associated with implementation of the proposed Project would cause the intersection level of service of the intersection of Merced Street and Marina Boulevard (#12) to reduce from LOS D to LOS E in the AM and PM peak hours. In the absence of adequate mitigation, this would result in a *significant* impact.

Impact TRAF-7H: The proposed Project would cause the intersection of Merced Street and Marina Boulevard (#12) to reduce from LOS D to LOS E during the AM and PM peak hours

Mitigation Measure TRAF-7H: Modify the traffic signal phasing and optimize cycle length and signal split timing based on real time traffic demands by improving operations of recently implemented, adaptive traffic signals at the intersection of Merced Street and Marina Boulevard (#12).

Significance After Mitigation: Less than significant. Implementation of this Mitigation Measure would improve the operations at this intersection to LOS D in both AM and PM peak hours and reduce the impact to a less-than-significant level.

As discussed above, the addition of Project traffic would cause the operations at the intersection of I-880 southbound ramps and Marina Boulevard (#14) to reduce from LOS D to LOS E in the AM peak hour; and it would add to the existing substandard operations to further reduce the level of service from LOS E to LOS F in the PM peak hours as well cause the v/c ratio to increase by 0.10 in the PM peak hour which is higher than the 0.05 allowed by the City. Saturday peak hours would continue operating at LOS E as well as cause the v/c ratio to increase by 0.03. In the absence of adequate mitigation, a *significant* impact would result in this respect.

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TABLE 4.13-28 INTERSECTION LEVEL OF SERVICE – LONG TERM CUMULATIVE CONDITIONS – PM PEAK HOUR

| No | Street | Street | Control | Long Term | | Long Term + Project | | Change v/c or Delay | After Mitigation | |
|----|------------------------|----------------------|---------|--------------|----------|---------------------|----------|---------------------|------------------|----------|
| | | | | Delay | LOS | Delay | LOS | | Delay | LOS |
| 1 | Doolittle Dr (SR 61) | Davis St (SR 112) | Sig | 29.3 | C | 35.6 | D | | 35.6 | D |
| 2 | Phillips Ln | Davis St (SR 112) | Sig | 72.2 | E | 81.1 | F | 0.03 | 81.1 | F |
| 3 | Warden Av-Timothy Dr | Davis St (SR 112) | Sig | 58.0 | E | 63.6 | E | 0.01 | 63.6 | E |
| 4 | I-880 Southbound ramps | Davis St (SR 112) | Sig | 16.3 | B | 16.9 | B | | 16.9 | B |
| 5 | I-880 Northbound ramps | Davis St (SR 112) | Sig | 16.6 | B | 16.9 | B | | 16.9 | B |
| 6 | Doolittle Dr | Williams St | Sig | 19.6 | B | 21.2 | C | | 21.2 | C |
| 7 | Westgate Pkwy | Williams St | Sig | 31.1 | C | 31.3 | C | | 31.5 | C |
| 8 | Merced St | Williams St | Sig | 27.5 | C | 27.1 | C | | 32.7 | C |
| 9 | Neptune Dr | Marina Blvd | TWSC | 0.5 (11.7) | A (B) | 0.8 (34.2) | A (D) | | 0.5 (25.5) | A (D) |
| 10 | Aurora Dr* | Marina Blvd | AWSC | 10.3 | B | 67.0 | F | | 8.4/7.7 | A/A |
| 11 | Doolittle Dr | Marina Blvd | Sig | 39.0 | D | 91.2 | F | | 50.3 | D |
| 12 | Merced St | Marina Blvd | Sig | 44.2 | D | 63.8 | E | | 54.4 | D |
| 13 | Kaiser driveway | Marina Blvd | TWSC | 21.3 | C | 25.3 | C | | 25.3 | C |
| 14 | I-880 Southbound ramps | Marina Blvd | Sig | 79.3 | E | 102.3 | F | 0.10 | 49.1 | D |
| 15 | I-880 Northbound ramps | Marina Blvd | Sig | 33.9 | C | 41.7 | D | | 41.7 | D |
| 16 | Wayne Av-Teagarden St | Marina Blvd | Sig | 38.8 | D | 42.3 | D | | 42.3 | D |
| 17 | Alvarado St | Marina Blvd | Sig | 100.0 | F | 119.2 | F | 0.01 | 119.2 | F |
| 18 | San Leandro Blvd | Marina Blvd | Sig | 326.5 | F | 349.4 | F | 0.10 | 349.4 | F |
| 19 | Monarch Bay Dr | Mulford Point Dr | AWSC | 8.5 | A | 52.6 | F | | 8.1 | A |
| 20 | Monarch Bay Dr | Pescador Pt Dr | AWSC | 7.8 | A | 8.9 | A | | 8.9 | A |
| 21 | Monarch Bay Dr | Fairway Dr | AWSC | 9.0 | A | 10.6 | B | | 10.6 | B |
| 22 | Aurora Dr | Fairway Dr | AWSC | 8.7 | A | 11.1 | B | | 11.1 | B |
| 23 | Doolittle Dr | Fairway Dr | Sig | 18.4 | B | 20.4 | C | | 20.4 | C |
| 24 | Merced St | Fairway Dr | Sig | 45.9 | D | 49.6 | D | | 53.5 | D |
| 25 | Garfield Rd | Fairway Dr | Sig | 14.9 | B | 15.2 | B | | 15.2 | B |
| 26 | Miller St | Fairway Dr | Sig | 36.2 | D | 37.6 | D | | 37.6 | D |
| 27 | Aladdin Av | Teagarden St | Sig | 52.2 | D | 59.0 | E | | 37.0 | D |
| 28 | Aladdin Av | Alvarado St | Sig | 48.4 | D | 50.2 | D | | 50.2 | D |
| 29 | Merced St | Wells Fargo driveway | Sig | 3.1 | A | 3.1 | A | | 4.6 | A |
| 30 | Merced St | Republic Av | Sig | 21.0 | C | 20.8 | C | | 26.0 | C |
| 31 | Merced St | West Av 140th | Sig | 3.1 | A | 3.2 | A | | 3.2 | A |

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TABLE 4.13-28 INTERSECTION LEVEL OF SERVICE – LONG TERM CUMULATIVE CONDITIONS – PM PEAK HOUR

| No | Street | Street | Control | Long Term | | Long Term + Project | | Change v/c or Delay | After Mitigation | |
|--|--------|--------|---------|-----------|-----|---------------------|-----|---------------------|------------------|-----|
| | | | | Delay | LOS | Delay | LOS | | Delay | LOS |
| Notes: Sig = Signalized; TWSC = Two-Way Stop Controlled; AWSC = All-Way Stop Controlled; LOS = Level of Service; Delay = Weighted average delay of all intersection approaches; the number in parentheses for stop-controlled intersection indicates the average delay on the worst approach. Change in v/c or delay is shown when relevant to significance determination. | | | | | | | | | | |
| Bold font indicates substandard operations. | | | | | | | | | | |
| Shaded cells indicate significant impact. | | | | | | | | | | |
| * The mitigated results of both roundabout/signalization are shown for the Aurora Drive/Marina Boulevard intersection. | | | | | | | | | | |
| Source: Kittelson & Associates, 2014. | | | | | | | | | | |

TABLE 4.13-29 INTERSECTION LEVEL OF SERVICE – LONG TERM CUMULATIVE CONDITIONS – SATURDAY MIDDAY PEAK HOUR

| No | Street | Street | Control | Long Term | | Long Term + Project | | Change v/c or Delay | After Mitigation | |
|---|------------------------|-------------------|---------|-------------|----------|---------------------|----------|---------------------|------------------|-----|
| | | | | Delay | LOS | Delay | LOS | | Delay | LOS |
| 1 | Doolittle Dr (SR 61) | Davis St (SR 112) | Sig | 21.2 | C | 21.3 | C | | 21.3 | C |
| 10 | Aurora Dr* | Marina Blvd | AWSC | 10.2 | B | 37.3 | E | | 7.2/7.8 | A/A |
| 11 | Doolittle Dr | Marina Blvd | Sig | 32.3 | C | 46.2 | D | | 45.2 | D |
| 12 | Merced St | Marina Blvd | Sig | 42.3 | D | 44.1 | D | | 44.1 | D |
| 13 | Kaiser driveway | Marina Blvd | TWSC | 14.0 | B | 14.1 | B | | 14.5 | B |
| 14 | I-880 Southbound ramps | Marina Blvd | Sig | 60.3 | E | 64.4 | E | 0.03 | 22.4 | C |
| 15 | I-880 Northbound ramps | Marina Blvd | Sig | 18.5 | B | 19.2 | B | | 19.2 | B |
| 22 | Aurora Dr | Fairway Dr | AWSC | 8.2 | A | 10.0 | B | | 10.0 | A |
| 23 | Doolittle Dr | Fairway Dr | Sig | 15.4 | B | 16.5 | B | | 16.5 | B |
| 24 | Merced St | Fairway Dr | Sig | 36.1 | D | 38.5 | D | | 38.5 | D |
| Notes: Sig = Signalized; TWSC = Two-Way Stop Controlled; AWSC = All-Way Stop Controlled; LOS = Level of Service; Delay = Weighted average delay of all intersection approaches; the number in parentheses for stop-controlled intersection indicates the average delay on the worst approach. Change in v/c or delay is shown when relevant to significance determination | | | | | | | | | | |
| Bold font indicates substandard operations | | | | | | | | | | |
| Shaded cells indicate significant impact | | | | | | | | | | |
| * The mitigated results of both roundabout/signalization are shown for the Aurora Drive/Marina Boulevard intersection. | | | | | | | | | | |
| Source: Kittelson & Associates, 2014. | | | | | | | | | | |

Impact TRAF-7I: The proposed project would cause the operations at the intersection of I-880 southbound ramps and Marina Boulevard (#14) to reduce from LOS D to LOS E in the AM peak hour, adding to the existing substandard operations to further reduce the level of service from LOS E to LOS F in the PM and Saturday peak hours and cause the volume-to-capacity (v/c) ratios to increase by 0.10 during both periods, which is higher than the 0.05 allowed by the City.

Mitigation Measure TRAF-7I: By modifying the signal to a two-phase operation, implementation of Mitigation Measure TRAF-7B.1 (described above) would improve the operations to LOS C in the AM and Saturday peak hours, and to LOS D in the PM peak hour.

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Significance After Mitigation: Significant and unavoidable. Implementation of Mitigation Measure TRAF-7I would lessen impacts related to I-880 southbound ramps and Marina Boulevard (#14) to a less-than-significant level. However, because this ramp intersection is under Caltrans' jurisdiction, the implementation and timing of the Mitigation Measures are not under the City's control. Therefore, this impact would remain significant and unavoidable. Implementing adaptive traffic signals as identified in the Kaiser Permanente San Leandro Medical Center/Mixed-Use Retail Development Project EIR may lessen the cumulative impacts. However, such implementation requires approval by Caltrans which has not yet been obtained. Therefore, this impact would remain *significant and unavoidable*.

As discussed above, the addition of traffic associated with implementation of the proposed Project would add to the existing substandard LOS F operations at the intersection of San Leandro Boulevard and Marina Boulevard (#18) and cause the v/c ratio to increase by 0.07 in the AM peak hour and 0.10 in the PM peak hour. In the absence of adequate mitigation a *significant* impact would result in this respect.

Impact TRAF-7J: The proposed Project would add to the Long-Term Cumulative No Project substandard LOS F operations at the intersection of San Leandro Boulevard and Marina Boulevard (#18) and cause the v/c ratio to increase by 0.07 in the AM peak hour and 0.10 in the PM peak hour.

Mitigation Measure TRAF-7J: Implementation of Mitigation Measures 7C.1 and 7C.2 would reduce the v/c ratios to a less-than-significant level.

Significance After Mitigation: Significant and unavoidable. Implementation of these Mitigation Measures would reduce the v/c ratios to a less-than-significant level. However, as indicated, the available right-of-way would not be sufficient to accommodate the necessary northbound travel and bike lanes. Therefore, the measure is considered infeasible and the cumulative impact would be *significant and unavoidable*.

As discussed above, the addition of traffic associated with development of the proposed Project would cause the level of service at the intersection of Aladdin Avenue and Teagarden Street (#27) to reduce from LOS D to LOS E in the PM peak hour. In the absence of adequate mitigation, a *significant* impact would result.

Impact TRAF-7K: The proposed Project would cause the level of service at the intersection of Aladdin Avenue and Teagarden Street (#27) to reduce from LOS D to LOS E in the PM peak hour.

Mitigation Measure TRAF-7K: Optimize the traffic signal cycle length at the intersection of Aladdin Avenue and Teagarden Street (#27). This traffic signal does not operate in coordination with any other signal; therefore, the cycle length can be adjusted without affecting other signals in the system.

Significance After Mitigation: Less than significant. Implementation of this Mitigation Measure would improve the operations at this intersection to LOS D in the PM peak hour, thereby reducing this impact to a *less-than-significant* level.

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Unsignalized Intersections

Similar to the **Near-Term Cumulative No Project** scenario, all unsignalized intersections are projected to operate at acceptable levels under **Long-Term Cumulative No Project** scenario; however, the Project-generated traffic would cause the same two all-way stop-controlled intersections to reduce to substandard levels. The Aurora Drive and Marina Boulevard intersection (#10) would operate at LOS F during AM and PM peak hours and LOS E during Saturday Midday peak hour and the Monarch Bay Drive and Mulford Point Drive intersection (#19) would reduce to LOS F during the PM peak hour with the addition of Project traffic.

As discussed above, the addition of traffic associated with development of the proposed Project would cause the level of service at the intersection of Aurora Drive and Marina Boulevard (#10) to reduce from LOS A to LOS F in the AM peak hour and from LOS B to LOS F in the PM peak hour. Saturday peak hour operations would reduce from LOS B to LOS E. In the absence of adequate mitigation, a *significant* impact would result.

Impact TRAF-7L : The proposed Project would cause the level of service at the intersection of Aurora Drive and Marina Boulevard (#10) to reduce from LOS A to LOS F in the AM peak hour and from LOS B to LOS F in the PM and Saturday peak hours.

Mitigation Measure TRAF-7L: Implementation of Mitigation Measure TRAF-1C, installing a mini-roundabout or a traffic signal, would lessen the impacts in the long term cumulative conditions to *less than significant*. The mini-roundabout would improve the operations to LOS A in the AM and PM peak hours and to LOS B in the Saturday peak hour. A traffic signal would improve the operation of this intersection to LOS B in the AM peak hour and LOS A in the PM and Saturday peak hours.

Significance After Mitigation: Less than significant.

As discussed above, the addition of Project traffic would cause the level of service at the intersection of Monarch Bay Drive and Mulford Point Drive (#19) to reduce from LOS A to LOS F in the PM peak hour. In the absence of adequate mitigation, a *significant* impact would result.

Impact TRAF-7M: The proposed Project would cause the level of service at the intersection of Monarch Bay Drive and Mulford Point Drive (#19) to reduce from LOS A to LOS F in the PM peak hour.

Mitigation Measure TRAF-7M: Implement Mitigation Measure TRAF-1D by installing a roundabout at the intersection of Monarch Bay Drive and Mulford Point Drive (#19).

Significance After Mitigation: Less than significant. Implementation of Mitigation Measure TRAF-7M would improve the operations to LOS A in the PM peak hour and thereby reduce this impact to a *less-than-significant* level.

Long-Term Cumulative Freeway Operations

The weekday peak hour freeway operations are presented in Table 4.13-30 and the detailed calculation worksheets are provided in Appendix H. The same locations projected to operate unacceptably under

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Near Term Cumulative conditions would also experience substandard operations under Long Term Cumulative conditions.

TABLE 4.13-30 FREEWAY LEVEL OF SERVICE – LONG TERM CUMULATIVE CONDITIONS – AM AND PM PEAK HOUR

| Location | Type | Long Term | | | Long Term + Project | | |
|-------------------------------|--------------------|---------------------|----------------------|------------------|---------------------|----------------------|------------------|
| | | Volume ^a | Density ^b | LOS ^c | Volume ^a | Density ^b | LOS ^c |
| AM PEAK HOUR | | | | | | | |
| I-880 Northbound | | | | | | | |
| Washington Ave to Marina Blvd | Mainline | 8,172 | 29.1 | D | 8,323 | 29.8 | D |
| Marina Blvd to Davis St | Mainline | 8,538 | 37.8 | E | 8,547 | 37.9 | E |
| | Weave ^d | 1,707 | N/A | C | 1,715 | N/A | C |
| Davis St to 98th Ave | Mainline | 6,389 | 28.2 | D | 6,442 | 28.5 | D |
| I-880 Southbound | | | | | | | |
| 98th Ave to Davis St | Mainline | 7,712 | 27.0 | D | 7,860 | 27.6 | D |
| Davis St to Marina Blvd | Mainline | 6,719 | 27.0 | C | 6,728 | 27.1 | C |
| | Weave ^d | 1,271 | N/A | B | 1,279 | N/A | B |
| Marina Blvd to Washington Ave | Mainline | 8,339 | 29.9 | D | 8,403 | 30.2 | D |
| PM PEAK HOUR | | | | | | | |
| I-880 Northbound | | | | | | | |
| Washington Ave to Marina Blvd | Mainline | 8,692 | 31.7 | D | 8,738 | 31.9 | D |
| Marina Blvd to Davis St | Mainline | 8,806 | 41.1 | E | 8,852 | 41.6 | E |
| | Weave ^d | 2,119 | N/A | C | 2,164 | N/A | C |
| Davis St to 98th Ave | Mainline | 7,166 | 33.2 | D | 7,259 | 33.8 | D |
| I-880 Southbound | | | | | | | |
| 98th Ave to Davis St | Mainline | 7,063 | 24.3 | C | 7,141 | 24.6 | C |
| Davis St to Marina Blvd | Mainline | 9,317 | 41.6 | E | 9,363 | 42.1 | E |
| | Weave ^d | 1,686 | N/A | B | 1,731 | N/A | B |
| Marina Blvd to Washington Ave | Mainline | 8,205 | 29.2 | D | 8,347 | 29.9 | D |

a. Volume = vehicles per hour (vph)

b. Density = passenger car per mile per lane (pc/m/ln)

c. LOS = Level of Service

d. Marina Blvd. to Davis St. analyzed as a weaving section using the Leisch Method as described in the Caltrans Design Manual, May 7, 2012. The volume shown for this segment is the weaving volume.

Source: Kittelson & Associates, Inc., 2014.

I-880 northbound between Marina Boulevard and Davis Street in the AM and PM peak hours and I-880 southbound between Davis Street and Marina Boulevard in the PM peak hour would operate at LOS E under Long-Term Cumulative No Project scenario. The Project would add traffic equivalent to 0.1 percent of the freeway’s design capacity to the northbound segment in the AM peak hour and 0.5 percent to the same segment in the PM peak hour. It would also add traffic equivalent to 0.4 percent of the freeway’s

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design capacity to the southbound segment in the PM peak hour. Because the Project would not add traffic greater than one percent of the freeway segment's design capacity, the Project impacts are considered to be less than significant. All other study segments are projected to operate at LOS D or better.