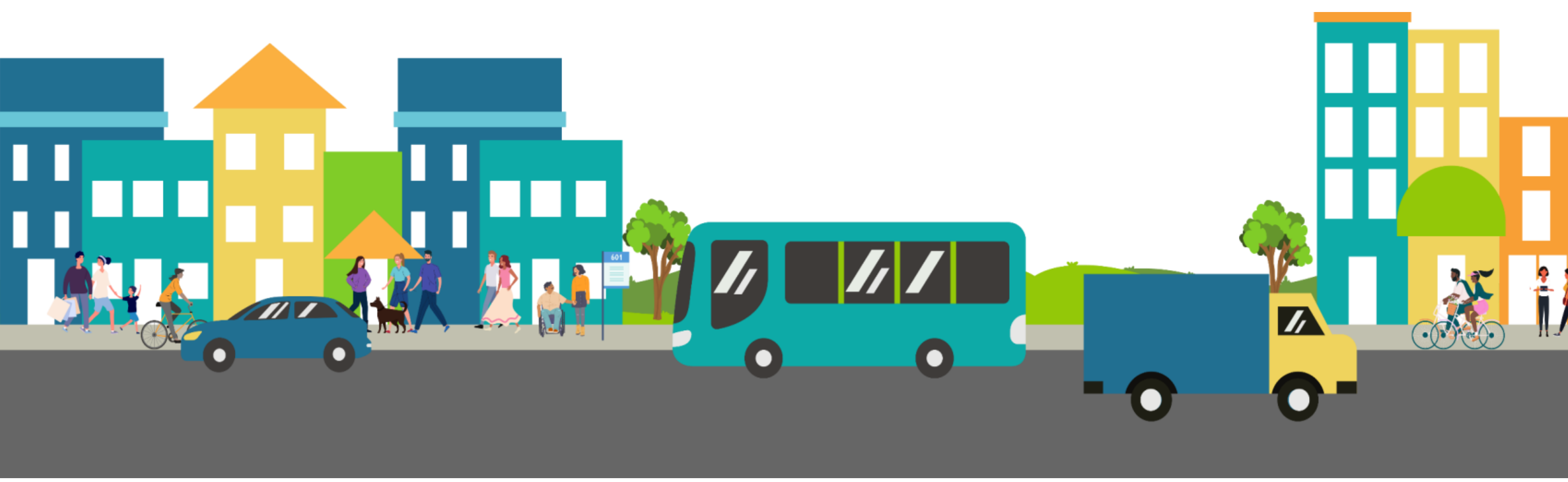
Kennedy Community Complete Streets Plan

Existing Conditions Report

San Joaquin County

September 21, 2023

→ **The Power of Commitment**



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1. Introduction

1.1 Purpose & Goals

The Kennedy Community Complete Streets Plan aims to facilitate safe, accessible, and sustainable transportation options to transform the existing vehicle-centric circulation network to one that is designed for safety of people of all ages and abilities. The Plan will provide the residents and workers of the rural-residential and agricultural district with an opportunity to:

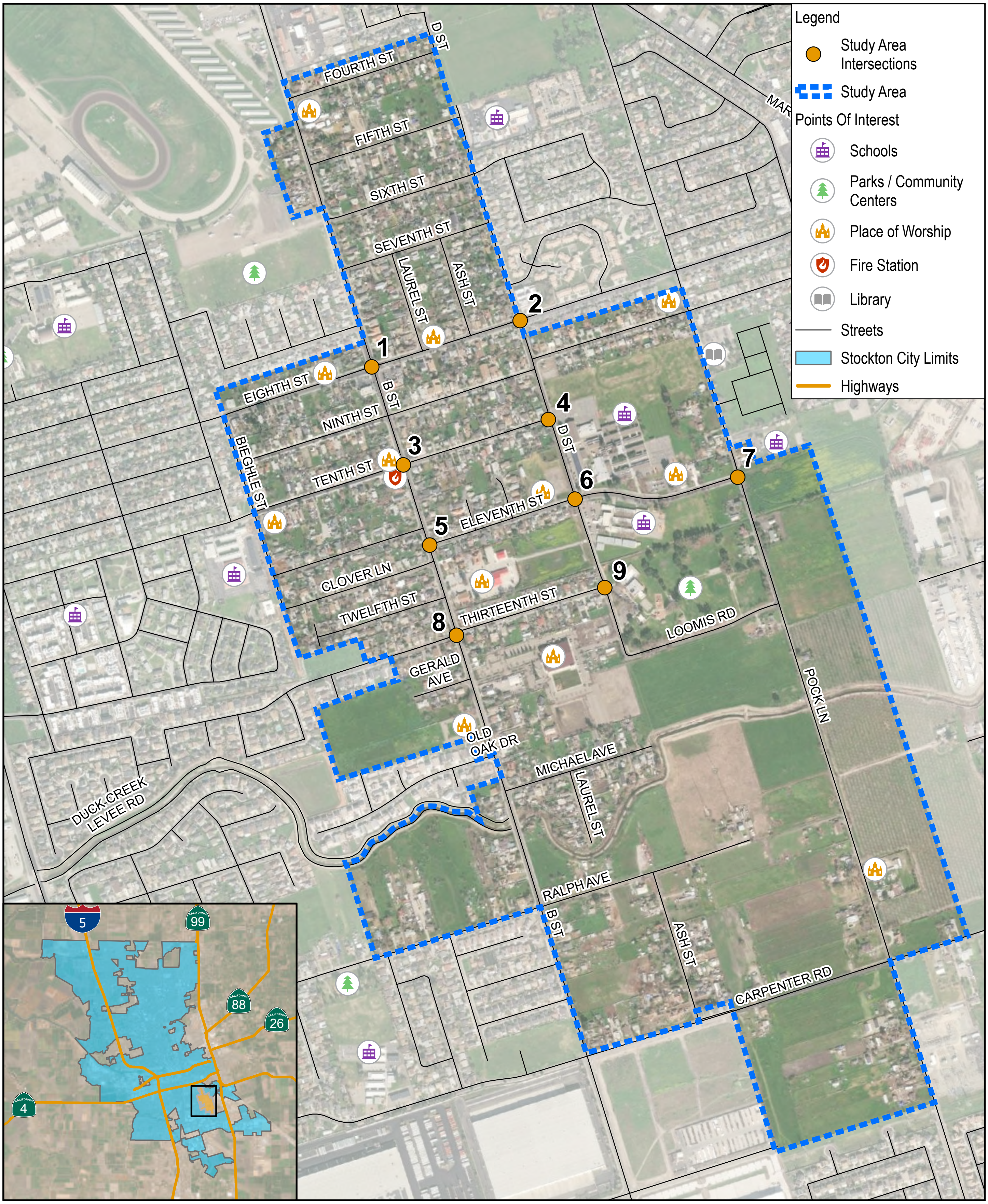
– Enhance and introduce safe and comfortable multimodal mobility choices for all ages and abilities.
– Improve economic resiliency and environmental sustainability through good design.
– Bridge gaps in the multimodal infrastructure for local destinations and connect to existing and planned facilities within the City of Stockton (City).

Identifying the existing conditions is the first step to developing a context-sensitive, performance-based complete streets plan. This report will establish existing conditions and is key to identifying barriers to active transportation modes, areas of safety concern, demographics, land uses and key destinations that define the area's context. This document provides an inventory of existing and planned bicycle, pedestrian, and transit infrastructure, roadways and vehicular operations within the Kennedy Community. Throughout the process of developing the Plan, the existing conditions will be used, in conjunction with input from the community, to develop complete street improvements which enhance the community to provide safe active transportation options for access to economic opportunities. The Plan will also involve:

– **Reaching** consensus on transportation goals, objectives, and priorities amongst the community.
– **Visualizing** the community's vision and goals with compelling renderings and graphics.
– **Understanding** the community's needs through extensive engagement online and in-person.
– **Achieving** local, regional and State partner agency performance metrics and goals.
– **Identifying** "catalyst" projects for economic and community development.
– **Delivering** a prioritized list of fundable capital projects and programs for implementation.

1.2 Existing Setting

The Kennedy community is located in unincorporated San Joaquin County (County), south of the City. The community borders the City limits and is within the City's sphere of influence. There are two schools within the study area, Hamilton Elementary School and Monroe Elementary School, located across from each other at D Street and 11th Street. There are two other schools slightly outside the study area that likely draw attendance from Kennedy: Aspire Rosa Parks Elementary on 5th Street and D Street, and Van Buren Elementary School on 10th Street and Scribner Street. Other points of interest include the Kennedy Community Center located at D Street and 13th Street, local businesses located at 8th Street and B Street, and the Maya Angelou Branch Library on Pock Lane near 9th Street just outside the study area. There are also several places of worship in the community. Figure 1.1 presents the study area.



Paper Size ANSI A

0 250 500 750 1,000

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

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**San Joaquin County
Kennedy Community
Complete Streets Plan**

Study Area

Project No. **12602049**
Revision No. **-**
Date **7/25/2023**

FIGURE 1.1

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Print date: 25 Jul 2023 - 15:33

Data source: World Imagery: Earthstar Geographics
World Imagery: Maxar. Created by: zporteous

1.2.1 Roadway System

The roadway system in the Kennedy community is mostly a grid network where local roads that serve the community's residents connect to "B" and "D" Streets, 8thStreet, and Pock Lane. The main roadways in the study area are described below. Some roadways and intersections on the perimeter of the community are partially or fully within the City's jurisdiction and will require coordination and approval from both County and City.

8th Street East is an east-west two-lane major collector with a posted speed limit of 35 mph. 8th Street East provides access to Mariposa Road and South Airport Way which are arterials.

B Street is a north-south two-lane major collector with a posted speed of 25 mph south of 4th Street, and 35 mph north of 4th Street, outside of the study area. B Street provides access to Dr. Martin Luther King Jr. Boulevard to the north, and the industrial area and Stockton Airport to the south.

D Street is a north-south two-local roadway with a posted speed of 25 mph. D Street provides access to the local schools.

Pock Lane is a north-south local road with a posted speed limit of 35 mph south of 11th Street, 25 mph north of 8h Street, and 25 mph school zone signs north of 11th Street and south of 9th Street. Pock Lane provides access along the eastern part of the community, connects to Mariposa Road to the north and the industrial area to the south.

Eleventh Street is an east-west local road with an assumed speed limit of 25 mph (no posted). Eleventh Street provides connection to the two elementary schools in the study area, and connects between B Street and Pock Lane.

1.3 Related Planning Documents

There are several related planning documents within the region that pertain to this Complete Streets Plan and will assist in determining regional priorities, goals, and planned circulation improvements. These documents are described below.

San Joaquin County General Plan (2016)

The County General Plan identifies the County's comprehensive and long-term vision for the future and guides priorities for future development, including population and economic growth, preservation goals, and quality of life for residents. The Transportation and Mobility Element seeks to encourage a context sensitive multi-modal transportation network that serves all residents, specifically through requiring complete streets techniques on all new roads. The General Plan's transportation goals include:

- To maintain a comprehensive and coordinated multimodal transportation system that enhances the mobility of people, improves the environment, and is safe, efficient, and cost effective.
- To improve county roadways to include pedestrian, bicycle, and transit facilities to better serve people who use these active transportation modes.
- To maintain a safe, efficient, and cost-effective roadway system for the movement of people and goods.
- To maintain and expand a safe, continuous, and convenient bicycle system and pedestrian network.
- To maintain a public transit system that meets the needs of all county residents while providing a convenient, reliable alternative to automobile travel.
- To maintain congestion management strategies to reduce single-occupant automobile use.
- To maintain an efficient transportation network to facilitate the movement of goods within and through the county.
- To ensure that the air transportation system accommodates the growth of air commerce and general aviation needs within the parameters of compatible surrounding uses.
- To use emerging transportation technologies and services to increase transportation system efficiency.

The General Plan's Community Development Element aims to encourage roadway infrastructure that supports all modes of transportation.

San Joaquin County Bicycle Master Plan (2022)

The County's Bicycle Master Plan aims to encourage bicycling through policy, program, and project recommendations that enhance safety and comfort for residents and visitors. The plan includes an analysis of existing conditions, public engagement, and project and programmatic recommendations throughout the county. The plan's goals are to:

– Invest in a high quality, reduced stress, and efficient bikeway network in the county.
– Make the transportation network more accessible to bike now and in the future.
– Expand ridership, systematically improve safety for people who currently ride bicycles in the county and those who may wish to do so in the future.
– Promote ridership and bicycling skills throughout education and encouragement programs.
– Increase accessibility of bicycling in the county by incorporation equity into considerations for bicycle infrastructure investments and programs

The plan does not outline specific recommendations within the project area.

San Joaquin Regional Transit District Short-Range Transit Plan (2019)

The County Regional Transit District Short Range Transit Plan (SRTP) for Fiscal Years 2018/2019 to 2027/2028 provides guiding goals, objectives, and policies for future transit services in the city and county over the next 10 years. The plan aims to:

– Provide transit services that meet the community's transit needs and competes effectively with single occupant vehicles.
– Maintain sound financial management by implementing system efficiency standards and diversifying RTD's revenue streams.
– Coordinate with local agencies at all levels to ensure transit competes as a viable mode and that all transportation system investments are strategic and socially and economically equitable.
– Help reduce traffic congestion and air pollution in the San Joaquin Valley to meet regional air quality goals.

The County Regional Transit District (RTD) serves the Kennedy community, and improvements suggested by the plan may benefit Kennedy Residents.

The City of Stockton Envision Stockton 2040 General Plan (2018)

The City's General Plan includes a chapter on Transportation and Circulation. It identifies places that can be a focus for active transportation projects: future transit corridors, barriers and gaps in the bicycle network, locations of collisions involving pedestrians, and infill development areas. The General Plan also updates the Level of Service (LOS) standards for motor vehicle traffic in the Downtown area to better support people walking, biking, and taking transit. The four key transportation goals include: Mobile Community, Active Community, Sustainable Transportation, and Effective Transportation Assessments.

The City of Stockton Bicycle Master Plan (2017)

The City's Bicycle Master Plan strives to improve connectivity and accessibility through a low-stress, equitably distributed bicycle network that serves users of all ages and abilities. The plan provides an inventory of existing bicycle facilities and recommendations for improvements. The Bicycle Master Plan's goals include:

– Provide a connected bicycle grid of low stress facilities that acts as the primary spine for north/south and east/west routes while closing gaps in the existing bicycle network.
– Make the city a bike-friendly city with multi-modal complete streets design and secure, convenient bicycle parking, while reducing the number of severe injuries and fatalities using Vision Zero principles.
– Accommodate all trip types and cyclist needs with family friendly facilities, connections to critical services, connections to transit, effective branding, and advances in technology.

- Educate roadway users of all ages and abilities about proper cycling techniques and laws, health benefits, economic opportunities, sustainability, and supportive programs to increase cycling as a preferred mode of transportation in the city.

The plan proposes to extend the Duck Creek Levee Road Class I bike path from B Street to East Mariposa Road and implement a Class II bike lane along 8th Street from South Airport Way to East Mariposa Road. The plan also recommends a Safe Routes to School program, various educational, enforcement, encouragements, and maintenance programs, and create a set of backbone network projects that improve connectivity and safety throughout the city.

Greater Downtown Stockton Active Transportation Plan (2020)

The City's Greater Downtown Active Transportation Plan performs a needs analysis of existing conditions and provides recommendations to improve downtown's bicycle and pedestrian facilities. Recommendations included short- and long-term projects, programs, and policies as well as cost estimates and implementation strategies. The plan identifies improvements that the Kennedy community could plan to connect to, including Class IV separated bikeways proposed along S. Airport Way and Martin Luther King, Junior Boulevard.

Safe Routes to School Master Plan (2017)

The City's Safe Routes to School program provides infrastructure and programmatic recommendations for 64 schools across the city to improve safety for children and families traveling to school. The plan aims to:

- Reducing the number of cars on the road during the morning commute to school makes transportation safer for children and improves air quality.
- Walking or riding a bike or scooter to school is good exercise, improves fitness, and has been demonstrated to positively impact school performance.
- Walking or bicycling to school promotes a sense of community and enables students to become more familiar navigating the neighbourhoods around their school and home.
- Students who are responsible for getting themselves to school have lower rates of tardiness and develop a sense of independence and confidence.
- The use of fossil fuels is one of the leading contributors to global warming; shifting car trips to active forms of transportation helps our planet.

The plan does not highlight Hamilton Elementary School or Monroe Elementary school for infrastructure improvements or programs.

Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS)

The 2022 Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS), created by the San Joaquin Council of Governments (SJCOG), aims to meet greenhouse gas emissions reductions targets from motor vehicles through land use development and transportation strategies. The plan aims to:

- Enhance the environment for existing and future generations and conserve energy.
- Maximize mobility and accessibility, which includes optimizing the public transportation system for all users and providing transportation improvements to facilitate nonmotorized travel, using complete streets design elements when appropriate.
- Increase safety and security.
- Preserve the efficiency of the existing transportation system.
- Support economic vitality
- Promote interagency coordination and public participation for transportation decision-making and planning efforts,
- Maximize cost effectiveness.
- Improve quality of life for residents.

2. Demographic Information

All demographic data reflects 2021 5-year estimates from the American Community Survey, unless otherwise indicated.

2.1 Means of Transportation

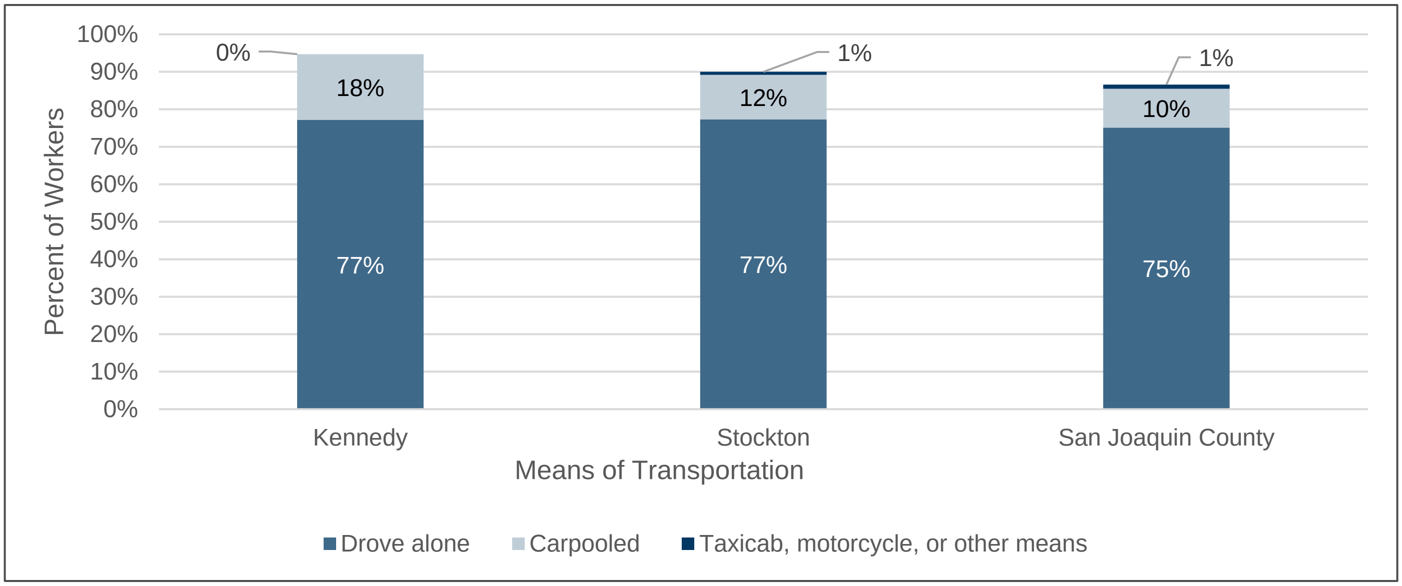
Data from the United States Census Bureau's 2017-2021 (2021) American Community Survey (ACS) 5-year estimates, form the basis of the following demographic analysis. Table 2.1 shows how residents travel to work by total and percentage for Kennedy, the city, and the county. Figure 2.1 shows the percentage of residents driving to work and means of transportation of Kennedy compared to the city and county, and Figure 2.2 shows the percentage of residents walking, bicycling, and taking public transportation to work for Kennedy compared to the other regions. Based on the ACS data shown in Table 2.1, Kennedy residents carpooled to work more often than residents of the city and county. Kennedy residents did not report bicycling to work, and few took public transportation, but 2.4% reported walking, significantly more than in both the city (0.6%) and county (0.7%). Significantly fewer Kennedy residents work from home (2.5%) as compared to the city (8%) and county (11.4%).

Table 2.1 Means of Transportation and Carpooling Statistics

Means of Transportation to Work	Kennedy		City of Stockton		San Joaquin County	
	Number	Percent	Number	Percent	Number	Percent
Workers 16 years and over	912	-	129,397	-	318,695	-
Car, truck, or van	**864**	**94.7%**	**115,422**	**89.2%**	**272,484**	**85.5%**
Drove alone	704	77.2%	100,024	77.3%	239,340	75.1%
Carpooled	160	17.5%	15,398	11.9%	33,144	10.4%
Workers per car, truck, or van	1012	1.11	1	1.08	341,004	1.07
Public transportation (excluding taxicab)	3	0.3%	1,553	1.2%	2,231	0.7%
Walked	22	2.4%	766	0.6%	2,231	0.7%
Bicycle	0	0.0%	129	0.1%	1,593	0.5%
Taxicab, motorcycle, or other means	0	0.0%	1,025	0.8%	3,506	1.1%
Worked from home	23	2.5%	10,352	8.0%	36,331	11.4%

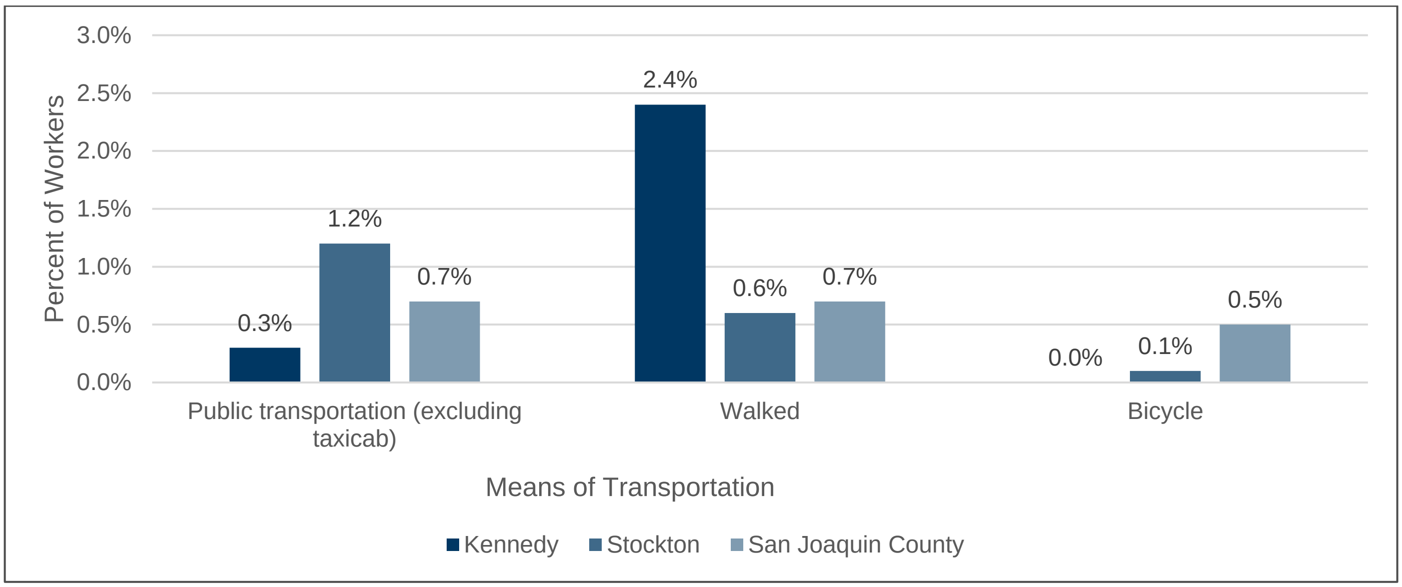
Source: American Community Survey 2021 5-year Estimates, US Census Bureau.

Figure 2.1 Residents Driving to Work



Source: American Community Survey 2021 5-year Estimates, US Census Bureau.

Figure 2.2 Residents Walking, Bicycling, or Taking Public Transportation to Work



Source: American Community Survey 2021 5-year Estimates, US Census Bureau.

2.2 Travel Time to Work and Work Destinations

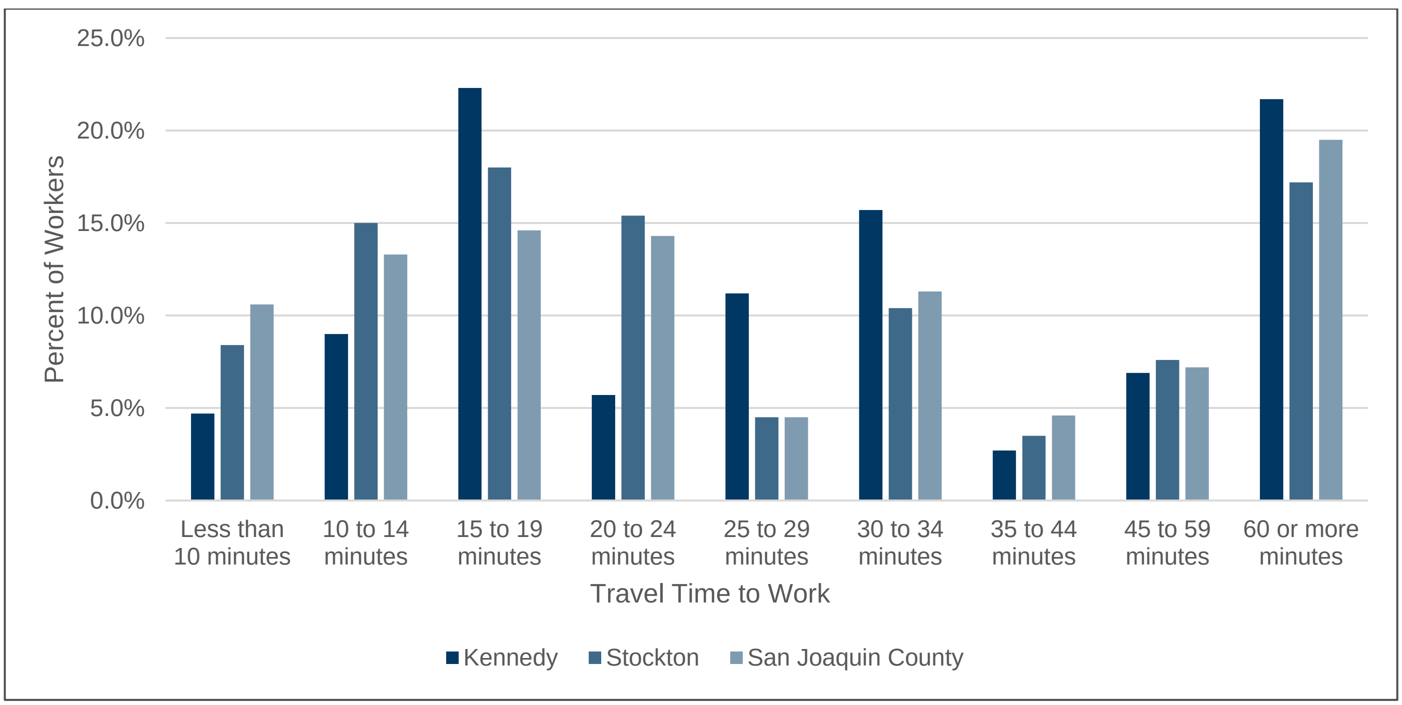
Table 2.2 and Figure 2.3 show travel time to work for Kennedy, city, and county residents. On average, Kennedy residents have longer average commute times (37.8 minutes) than those in the city (32.5 minutes) and in the county (33.4 Minutes). The highest share of Kennedy residents travelled 15 to 19 minutes to work (22.3%), followed by those who travelled 60 minutes or more to work (21.7%). 58% of Kennedy residents had a commute of 25 minutes or more, while there were less people in the city and county with commute times of 25 minutes or more (43% and 47% respectively).

Table 2.2 Travel Time to Work

Travel time to work	Kennedy	Stockton	San Joaquin County
Less than 10 minutes	4.7%	8.4%	10.6%
10 to 14 minutes	9.0%	15.0%	13.3%
15 to 19 minutes	22.3%	18.0%	14.6%
20 to 24 minutes	5.7%	15.4%	14.3%
25 to 29 minutes	11.2%	4.5%	4.5%
30 to 34 minutes	15.7%	10.4%	11.3%
35 to 44 minutes	2.7%	3.5%	4.6%
45 to 59 minutes	6.9%	7.6%	7.2%
60 or more minutes	21.7%	17.2%	19.5%
Mean travel time to work (minutes)	37.8 Minutes	32.5 Minutes	33.4 Minutes

Source: American Community Survey 2021 5-year Estimates, US Census Bureau.

Figure 2.3 Travel Time to Work



Source: American Community Survey 2021 5-year Estimates, US Census Bureau.

Journey-to-work data is available from the Longitudinal Employer-Household Dynamics (LEHD) program. Figure 2.4 shows census tracts where Kennedy residents work and the density of jobs in throughout the region. Many workers travel within the county for work, primarily southeast of Kennedy and east of Tracy. Table 2.3 describes which cities Kennedy residents travel to for work as total counts and percentage of total jobs. The largest share of workers commute to Stockton (30.3%), then Tracy (4.4%), then Lodi (3.4%).

Figure 2.4 Work Destination Analysis by Census Tract

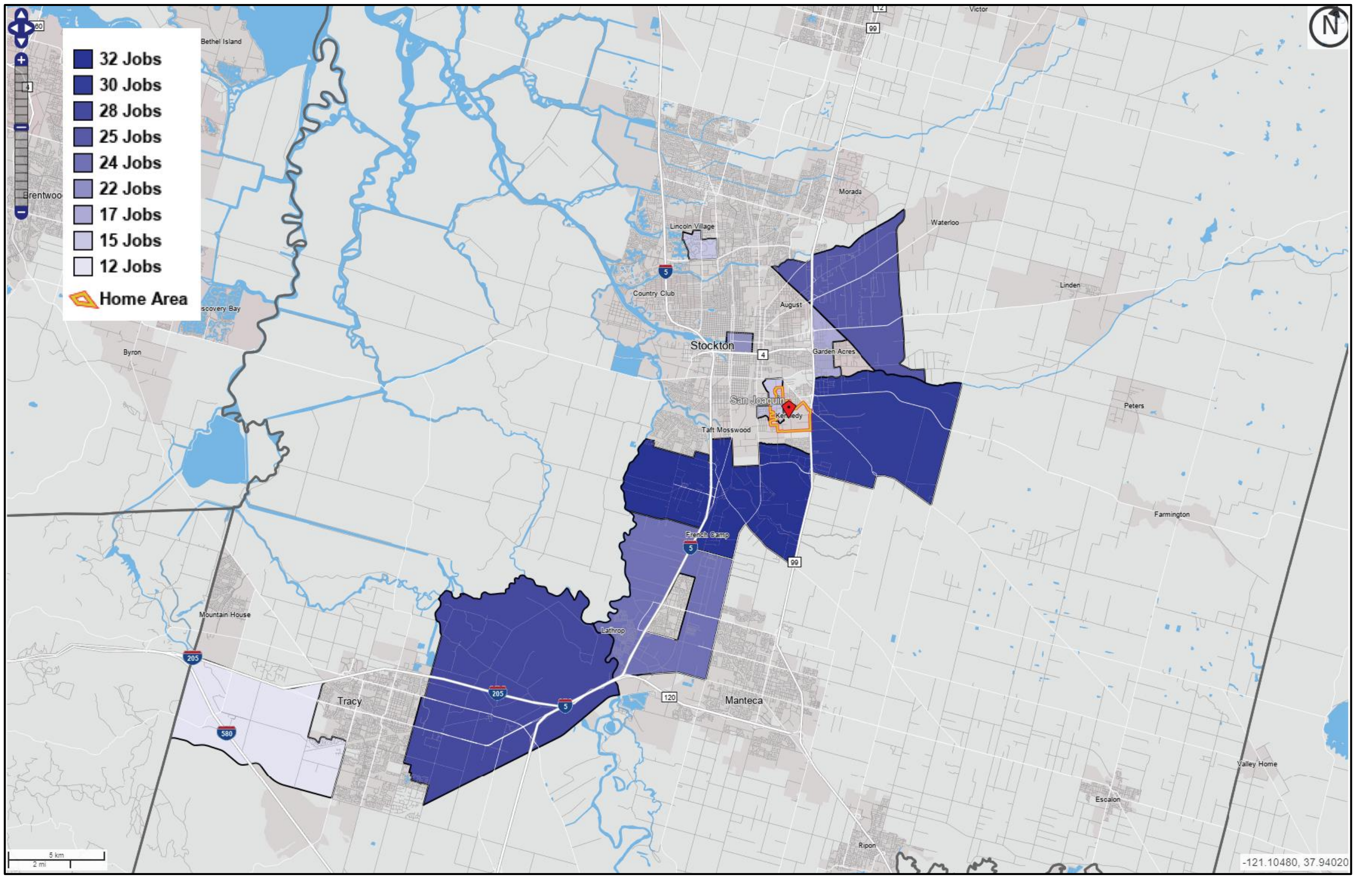


Table 2.3 Where Kennedy Residents Work

City	Jobs	Percent of Total Jobs
Stockton, CA	278	30.3%
Tracy, CA	40	4.4%
Lodi, CA	31	3.4%
Sacramento, CA	27	2.9%
Lathrop, CA	24	2.6%
San Francisco, CA	24	2.6%
Garden Acres, CA	18	2.0%
Fremont, CA	16	1.7%
Oakland, CA	15	1.6%
Modesto, CA	14	1.5%
All Other Locations	429	46.8%

American Community Survey 2021 5-year Estimates

2.3 Population

Kennedy is home to roughly 2,632 residents, or about 733 households.

2.4 Age

As shown in Table 2.4, Kennedy, the city, and county have similar population ages, with Kennedy having a slightly lower Median Age (32.4 years). Residents under 18 years of age account for over one-fourth of Kennedy's population. A majority of those under 18 are unable to drive themselves in personal vehicles, signifying an increased need to walk, bicycle, or take transit to their destinations.

Table 2.4 Age by Location

Age Group	Kennedy	Stockton	San Joaquin County
Under 18	28.3%	27.7%	27.2%
18-24	12.4%	10.8%	9.5%
25-44	29.7%	27.7%	27.2%
45-64	18.6%	21.6%	23.4%
65 and over	11.0%	12.2%	12.6%

American Community Survey 2021 5-year Estimates

2.5 Income

Median household income in Kennedy is $42,083 which is significantly below the county's median of $80,681 and the California median of $84,907, and lower than the city's median of $69,844.

2.6 Access to Cars

Table 2.5 shows the number of households with one or fewer vehicles available. Households without access to a car rely on walking, bicycling, or taking transit for their daily transportation needs. Households with access to only one vehicle are considered "car light". If these households have two or more members who are unemployed or attending an educational institution, there may be reliance on other modes of transportation for their commute.

Table 2.5 Vehicle Availability per Housing Unit

Row Labels	Kennedy	Stockton	San Joaquin County
No vehicle available	24	7,147	12,122
1 vehicle available	224	28,540	60,646

American Community Survey 2021 5-year Estimates

2.7 Disadvantaged Communities

Disadvantaged communities include populations with lower income, lower access to community resources, and those with increased exposure to environmental and human health hazards. This Plan evaluated disadvantaged communities in the study area by looking the Center for Disease Control and Prevention (CDC) Social Vulnerability Index (SVI) and the California Climate Investment Priority Populations.

Figure 2.5 shows the map of vulnerable communities designated by the CDC SVI, which identifies socially vulnerable populations at the census tract level using 15 social factors, such as poverty levels, lack of access to vehicles, minority status, and crowded hosing. The most recent available year of SVI data (2020) demonstrates census tracts in and around the study area fall into the high vulnerability category, with the primary census tract in Kennedy scoring in the 96th percentile of vulnerability.

Figure 2.6 shows the map of disadvantaged communities designated by the California Climate Investments (CCI) distributes proceeds from the Cap-and-Trade Program to projects and programs that further the State's Climate Goals, specifically to those that are economically disadvantaged (Low-Income Community) and are especially vulnerable to the effects of pollution and climate change (Disadvantaged Communities). CCI utilizes CalEnviroScreen 4.0 and Census data to define disadvantaged communities as:

- Census tracts receiving the highest 25 percent of overall scores in CalEnviroScreen 4.0
- Census tracts lacking overall scores in CalEnviroScreen 4.0 due to data gaps, but receiving the highest 5 percent of CalEnviroScreen 4.0 cumulative pollution burden scores
- Census tracts identified in the 2017 DAC designation as disadvantaged, regardless of their scores in CalEnviroScreen 4.0
- Lands under the control of federally recognized tribes. CCI defines the primary census tracts in Kennedy as disadvantaged communities as they received scores in the top 25% of CalEnviroScreen scores

Kennedy is identified as being in the 80.8th percentile of CalEnviroScreen 4.0 scores, qualifying as a disadvantaged community for receiving a score within the top 25 percent of all scores.

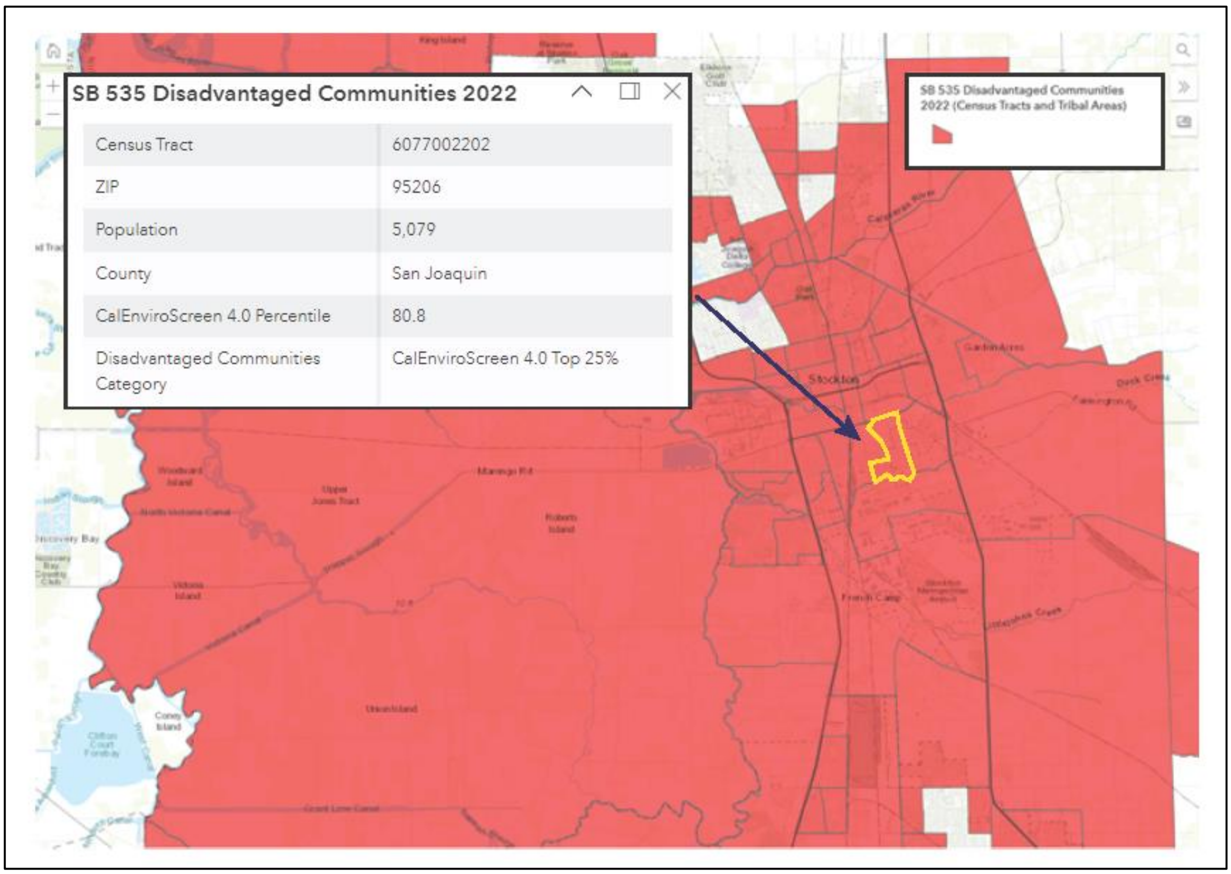


Figure 2.5 Center for Disease Control and Prevention Social Vulnerability Index

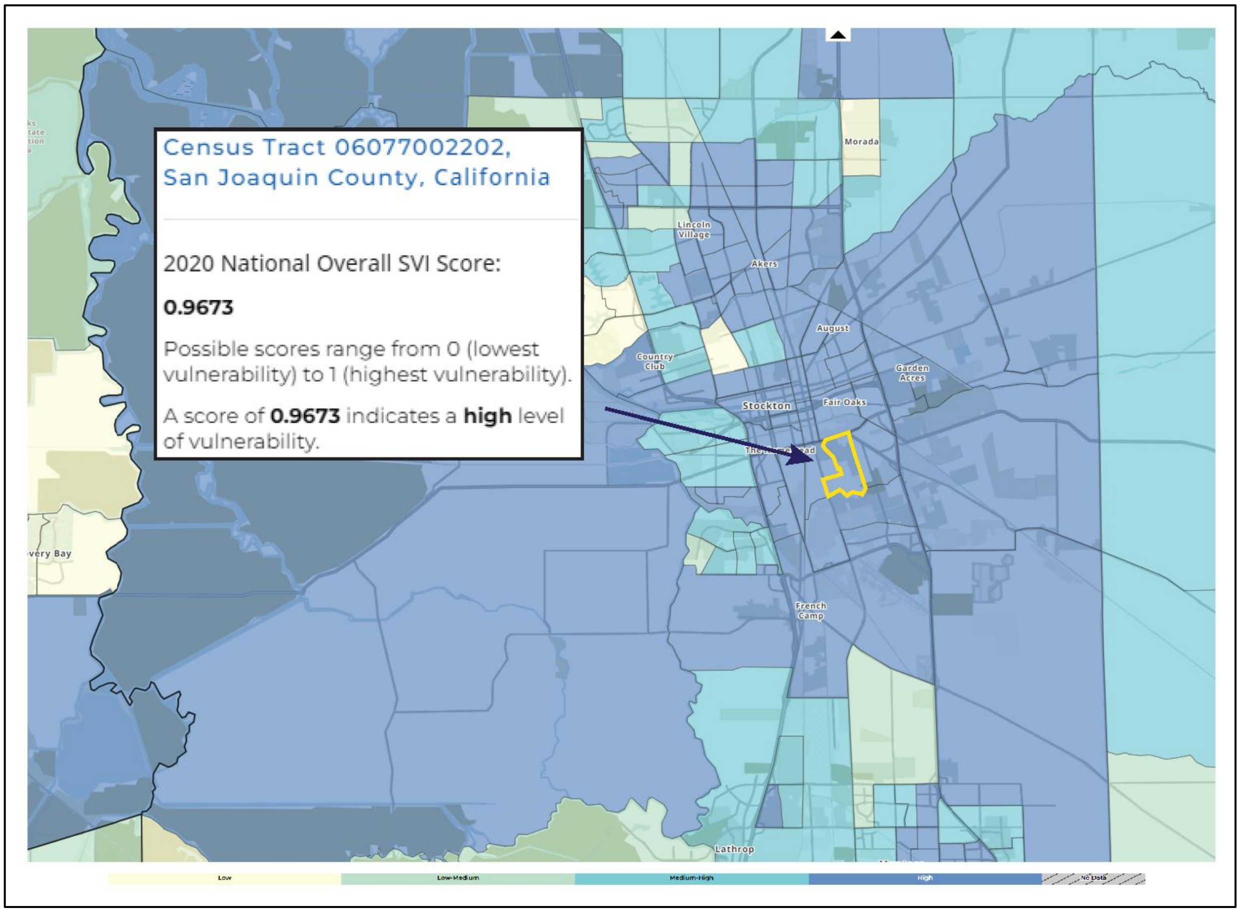


Figure 2.6 California Climate Investment Priority Populations

2.8 Future Development

The Plan will consider future travel conditions and growth within the community and surrounding region. The basis of the anticipated growth will be the County General Plan and the Envision Stockton 2040 General Plan. In addition to these regional planning documents, local development anticipated includes residential subdivisions along Pock Lane near Duck Creek and Loomis Road. These developments are anticipated to construct frontage improvements along Pock Lane including high-visibility crosswalks at intersections, potentially with flashing crossing signs, and possibly closing the sidewalk gap south of Loomis Road.

3. Existing Traffic Operations

Traffic operations were quantified through the determination of "Level of Service" (LOS). LOS is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an intersection or roadway segment, representing progressively worsening traffic conditions. LOS "A" represents free-flow operating conditions and LOS "F" represents over-capacity conditions. LOS was calculated for all intersection control types using the methods documented in the Transportation Research Board's publication *Highway Capacity Manual, Sixth Edition, A Guide for Multimodal Mobility Analysis*, 2016 (HCM 6). Further explanation of the LOS criteria and methodology is contained in **Appendix A**.

3.1 Existing Data Collection

Existing weekday AM and PM peak hour traffic volume counts for the 9 study intersections were collected on Wednesday, May 10, 2023, and Wednesday May 17, 2023. The AM peak hour is defined as one hour of peak traffic flow (which is the highest total volume count over four consecutive 15-minute count periods) counted between 7:00 AM and 9:00 AM on a typical weekday, when local area schools were in session. The PM peak hour was determined based on the highest one hour of peak traffic flow counted between 2:00 PM and 6:00 PM on a typical weekday, to collect the school-related peak traffic, which typically occurred about 3:15 pm. In addition to vehicular traffic counts, the operational analysis also incorporate number of bicyclists and pedestrians crossing these intersections. Figure 3.1 presents the Existing peak hour traffic volumes at the study intersections.

3.2 Existing Operations

Existing weekday AM and PM peak hour intersection traffic operations were analyzed using the existing traffic volumes and existing intersection lane geometrics and controls. Table 3.1 presents the intersection operations for Existing Conditions. All intersections are currently operating under the Target LOS.

Table 3.1 Existing Conditions Intersection Operations

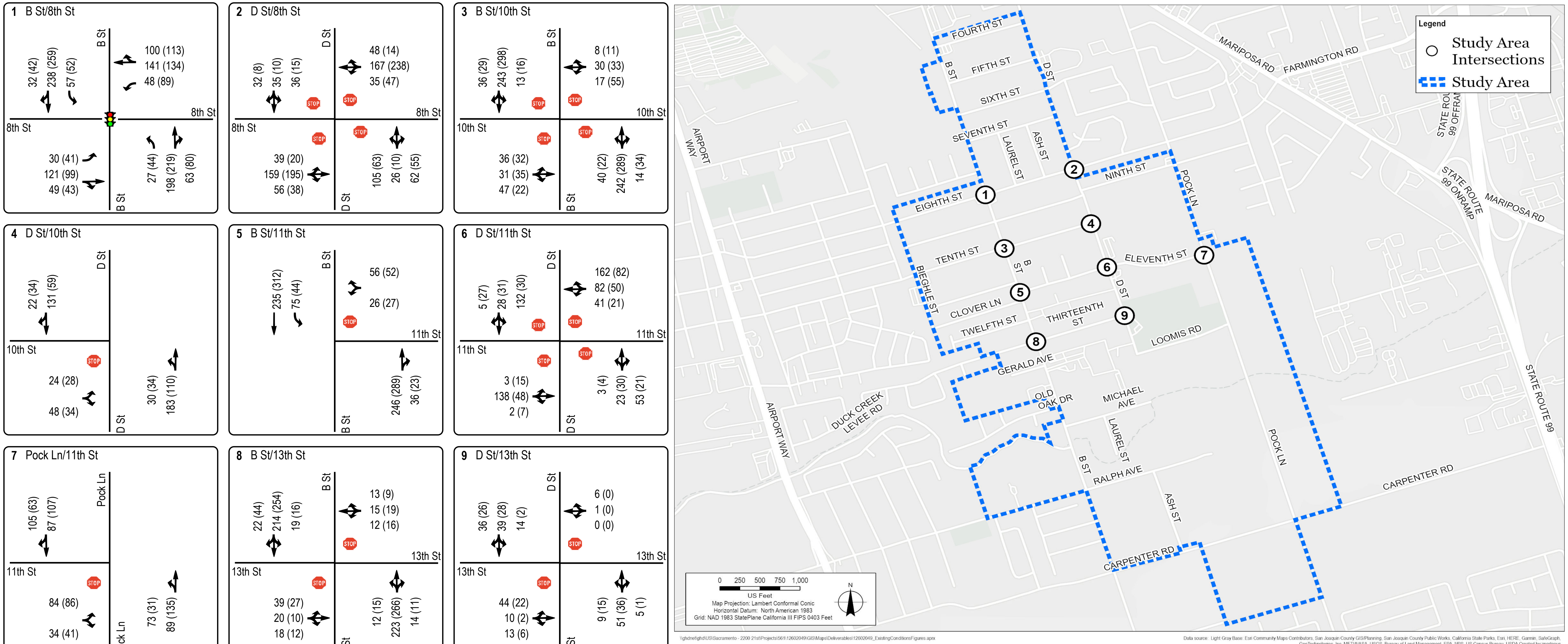
#	Intersection	Control Type[1,2]	Target LOS	AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS
1	B St & 8th St	Signal	D	17.6	B	17.9	B
2	D St & 8th St	AWSC	D	13.3	B	11.4	B
3	B St & 10th St	AWSC	D	12.4	B	13.0	B
4	D St & 10th St	TWSC	D	10.4	B	10.5	B
5	B St & 11th St	TWSC	D	14.2	B	13.2	B
6	D St & 11th St	AWSC	D	10.6	B	9.1	A
7	Pock Ln & 11th St	TWSC	D	13.7	B	12.5	B
8	B St & 13th St	TWSC	D	17.4	C	15.3	C
9	D St & 13th St	TWSC	D	10.9	B	9.8	A

Notes:

1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control; RNDBT = Roundabout

2. LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC, Signal, RNDBT

3. Warrant = Based on California MUTCD Warrant 3



Legend

XX (YY) AM (PM) Peak Hour Volumes

Turn Lane

Stop Sign

Traffic Signal

Roundabout

Client
Kennedy Complete Streets Plan

Existing Conditions
Peak Hour Traffic Volumes,
Lane Geometries & Traffic Control

Project No. 12345678
Report No. 001
Date 7/27/23

FIGURE 3.1

4. Safety

Collision data over the most recent six-year period (January 1, 2017 – December 31, 2022[1]) available from the Statewide Integrated Traffic Records System (SWITRS) and Transportation Injury Mapping System (TIMS) was utilized to evaluate safety within the Kennedy community.

4.1 Collision Severity & Collision Density

Table 4.1 and Figure 4.1 show the number and severity of collision per year in the study area. As shown, most collisions (171) resulted in Property Damage Only (PDO), 12 resulted in fatality or severe injury, and 55 were visible injuries or complaints of pain were reported. More collisions occurred in 2022 than any other year during the study period.

Figure 4.2 shows the location of collisions reported within the study area by severity. Three fatal collisions have occurred, at the intersection of B Street and Ralph Avenue, on Pock Lane near Carpenter Road, and on B Street near Clover Lane, the last of which resulted in the death of a pedestrian. Figure 4.3 shows collision density, or where collisions occurred most frequently. Most collisions occurred at intersections, especially along 8th Street, B Street, and Pock Lane. Intersections with the highest number of collisions (>20 collisions) were at 9th Street at Pock Lane, at Carpenter Road and Pock Lane, and at Carpenter Road and B Street.

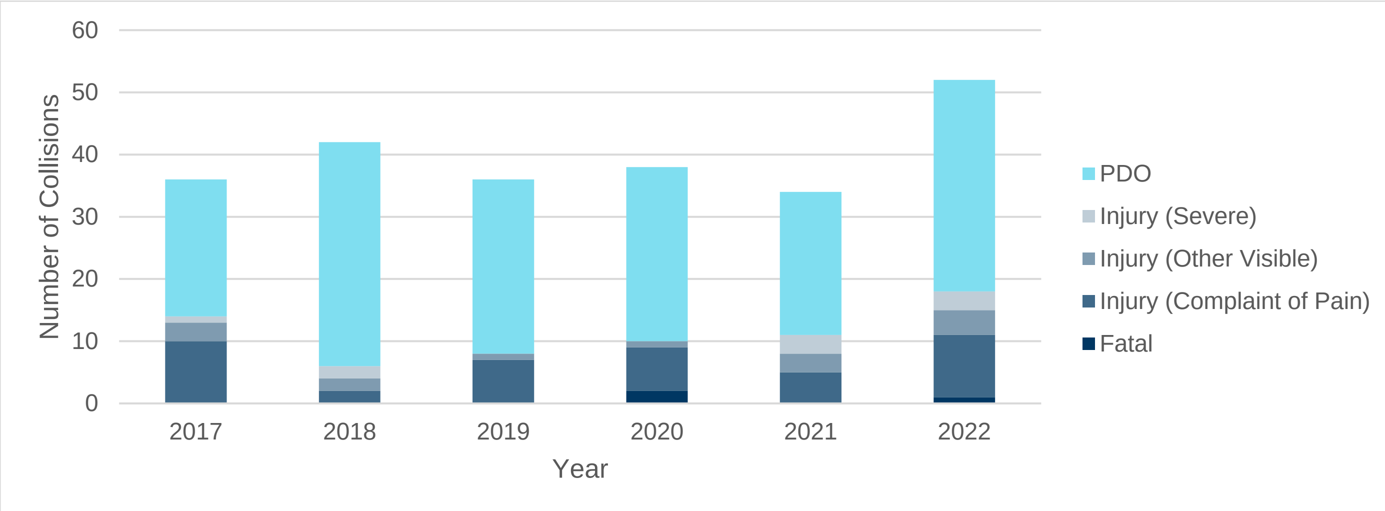
Table 4.1 Collision Severity

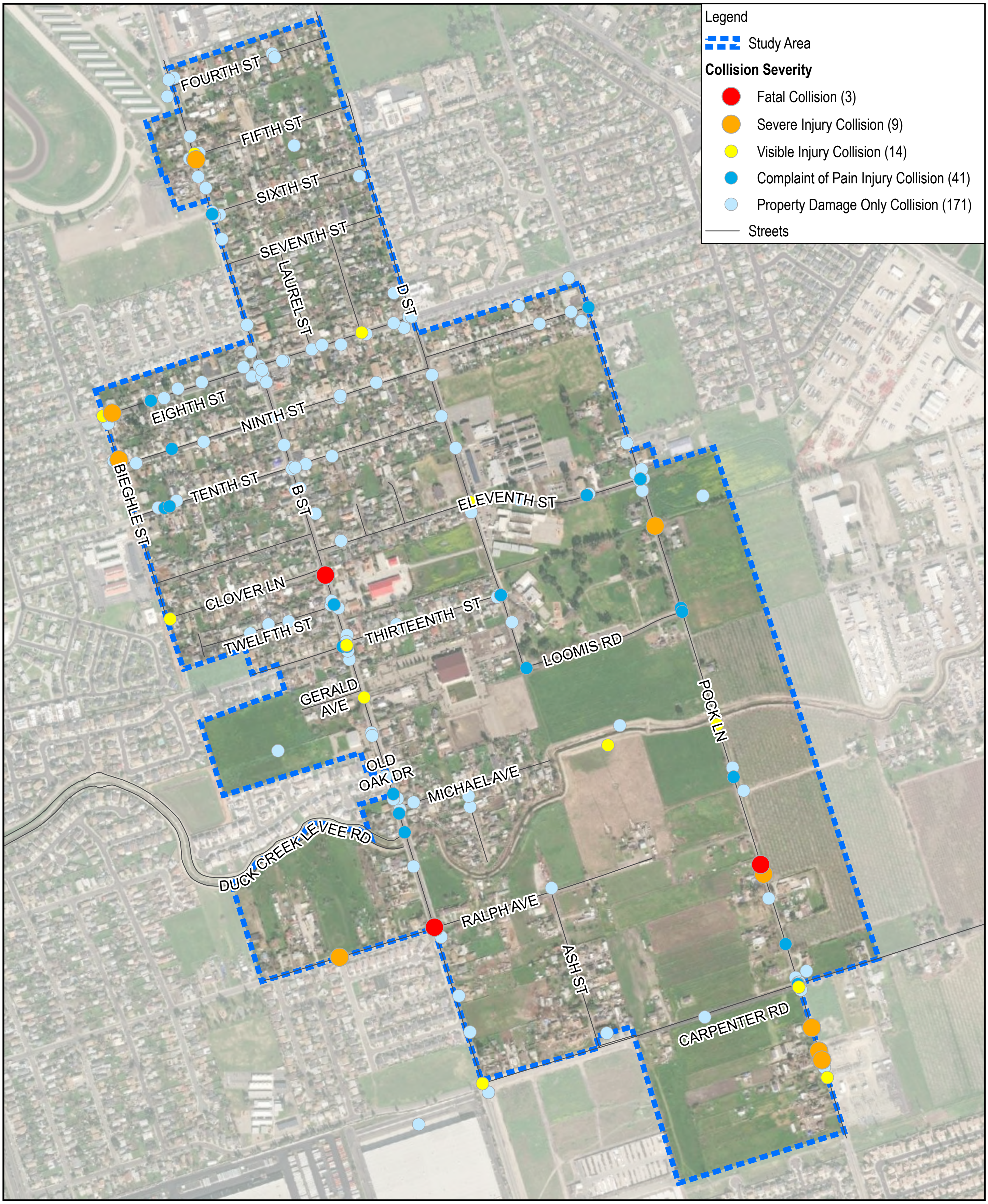
Collision Severity	2017	2018	2019	2020	2021	2022	Total
Fatal	0	0	0	2	0	1	3
Injury (Complaint of Pain)	10	2	7	7	5	10	41
Injury (Other Visible)	3	2	1	1	3	4	14
Injury (Severe)	1	2	0	0	3	3	9
PDO	22	36	28	28	23	34	171
Total	**36**	**42**	**36**	**38**	**34**	**52**	**238**

Statewide Integrated Traffic Records System 2017-2022
Transportation Injuring Mapping System 2017-2022

[1] 2021 - 2022 collision data from SWITRS and TIMS is provisional and subject to change.

Figure 4.1 Collisions by Severity per Year





Paper Size ANSI A

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

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San Joaquin County
Kennedy Community
Complete Streets Plan

Collisions by Severity (2017-2022)

Project No. 12602049
Revision No. -
Date 7/26/2023

FIGURE 4.2

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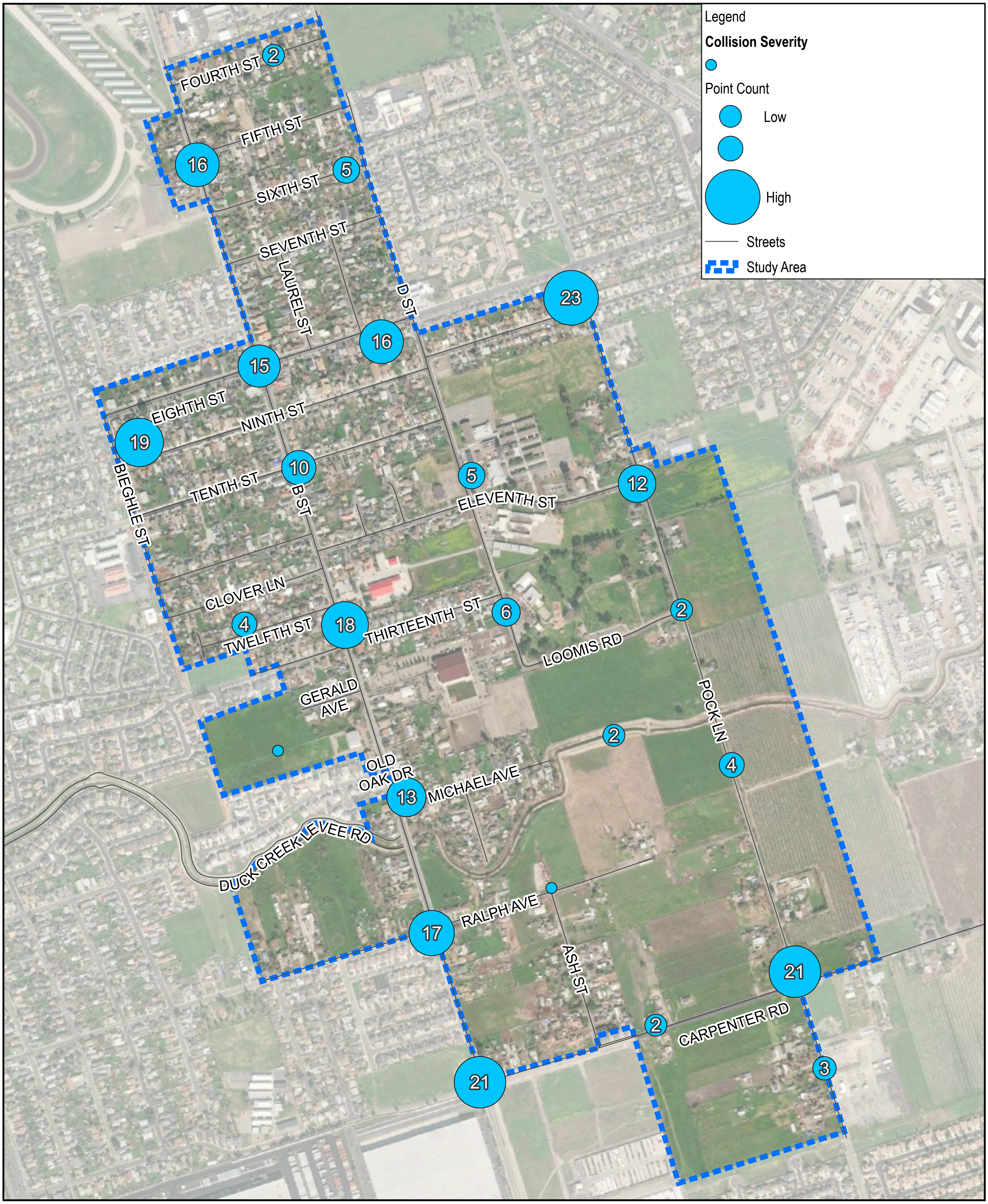
Print date: 26 Jul 2023 - 10:11

Data source: World Imagery: Maxar. Created by: zporteous



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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

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San Joaquin County
Kennedy Community
Complete Streets Plan

Collision Density (2017-2022)

Project No. **12602049**
Revision No. **-**
Date **7/26/2023**

FIGURE 4.3

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Print date: 26 Jul 2023 - 13:02

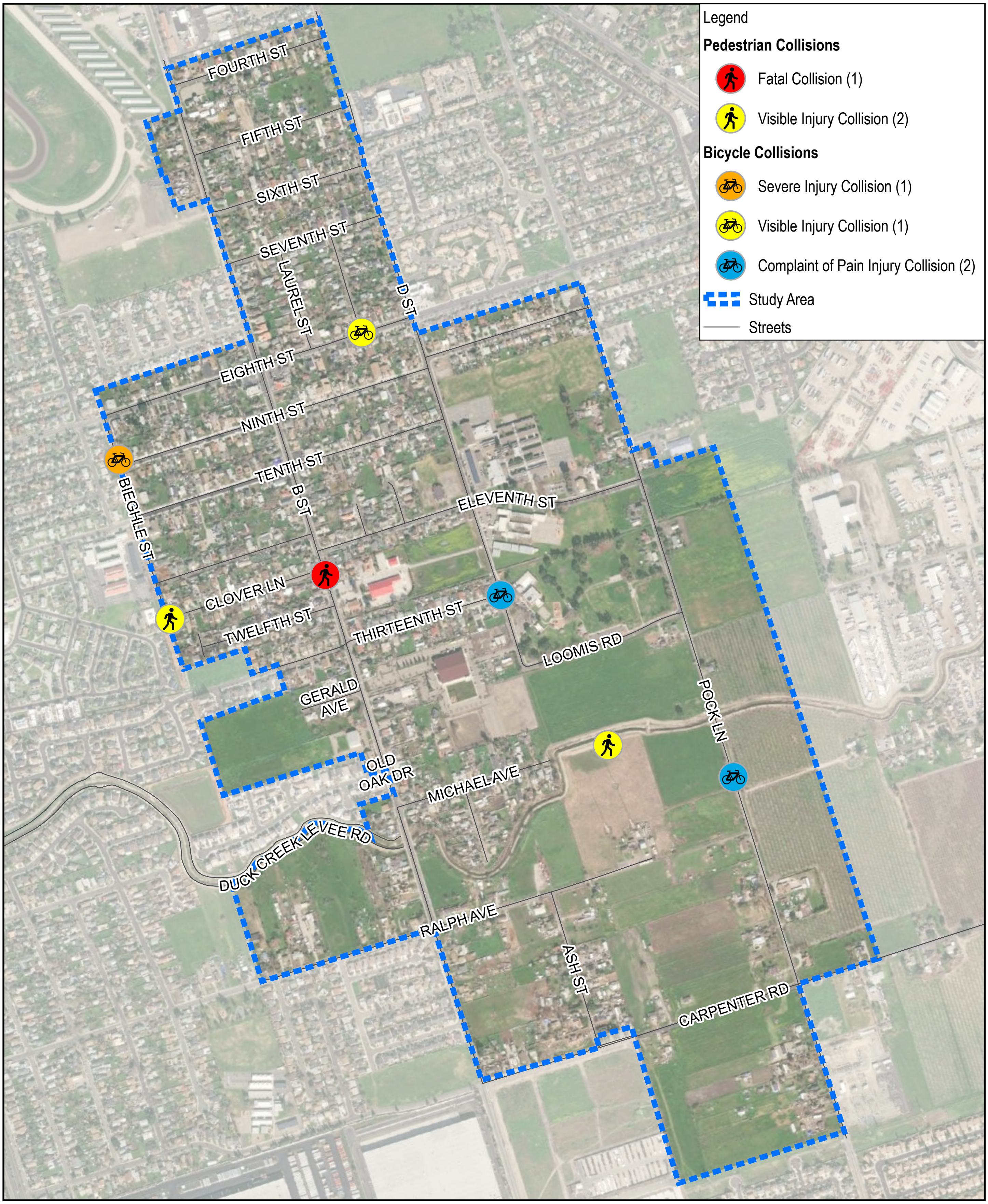
Data source: World Imagery: Maxar. Created by: zporteous

4.2 Pedestrian and Bicycle Collisions

Figure 4.4 shows the pedestrian and bicycle collisions that have occurred in the study area since 2017. There have been six collisions involving bicyclists and pedestrians, one resulting in the fatality of a pedestrian.

Based on the historical collision data evaluated, there have been two pedestrian collisions. The first collision occurred in 2017 where Clover Lane meets Bieghle Street; it is a 90 degree turn without bicycle lanes or sidewalks. The second collision occurred in 2020 on B Street near Clover Lane and resulted in a pedestrian fatality. The intersection features a stop sign on Clover Lane and no stop sign for B Street road users. There are school crossing signs and road markings throughout the block, but no crosswalk at the site of the intersection.

Four bicyclist collisions have occurred since 2017. The first collision occurred in 2017 at the intersection of 8th Street and Ash Street. Ash Street features a stop sign and crosswalk and no sidewalks or bicycle lanes. 8th Street does not have a crosswalk or stop sign and does not have bicycle lanes. The second collision occurred at the intersection of D Street and 13th Street. This intersection is in a school zone indicated by signage and roadway markings, and is adjacent to the Kennedy Community Center. Sidewalks are featured on 13th Street and on the east side of D Street. Thirteenth Street and the community center driveway are stop-controlled, while D Street has a free movement. Thirteenth Street has a marked crosswalk, and D street has a marked crosswalk on the north leg. There are no bicycle lanes along either street. The third collision occurred in 2021 on Bieghle Street near 9th Street. There are no crosswalks, stop signs, or bike lanes along Bieghle Street in this area. Bieghle Street only features sidewalks on the east side. The third collision occurred in 2022 on Pock Lane south of Duck Creek. Pock lane does not have bicycle lanes, sidewalks, or any crossing opportunities between 8th Street and Carpenter Road.



Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

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San Joaquin County
Kennedy Community
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Bicycle and Pedestrian Collisions (2017-2022)

Project No. **12602049**
Revision No. **-**
Date **7/25/2023**

FIGURE 4.4

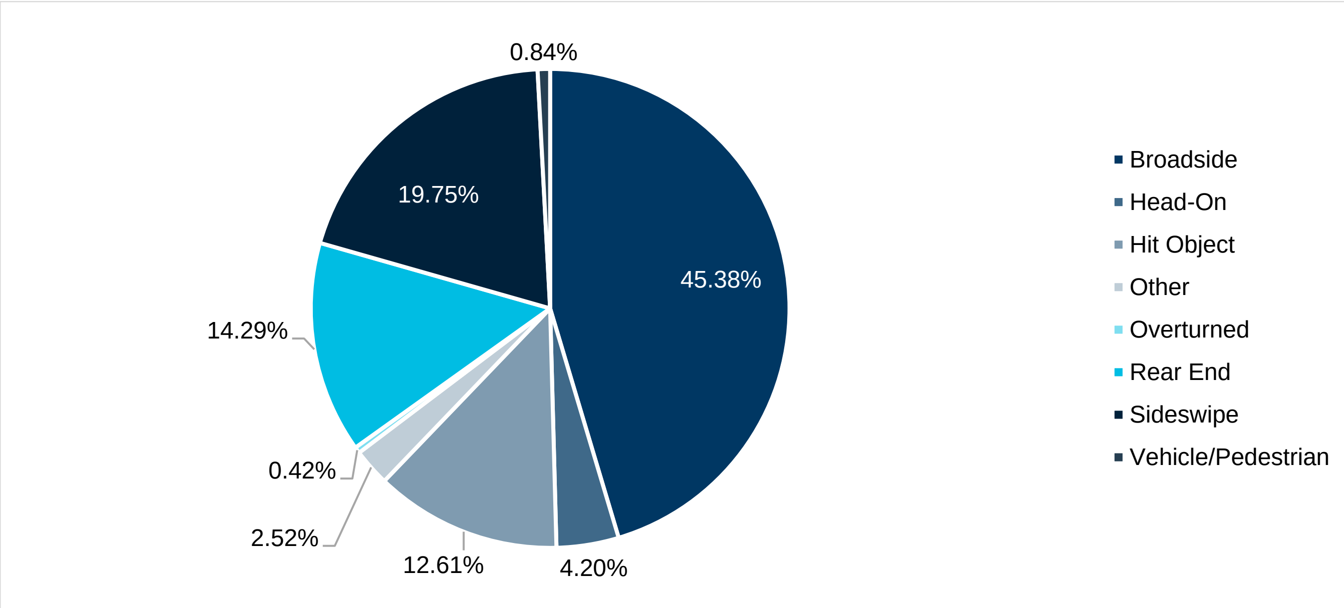
\\ghdnet\ghd\US\Sacramento - 2200 21st\Projects\561\12602049\GIS\Maps\Deliverables\12602049_ExistingConditionsFigures.aprx - 12602049_004_BicycleAndPedestrian_Collisions_F4.4
Print date: 25 Jul 2023 - 15:35

Data source: World Imagery: Maxar. Created by: zporteous

4.3 Collision Type

Figure 4.5 presents the number of collisions as a percentage of total collisions that occurred over the study period. As shown, the most reported collision types were broadside collisions at 45.38%, followed by sideswipe (19.75%) and rear end collisions (14.29%).

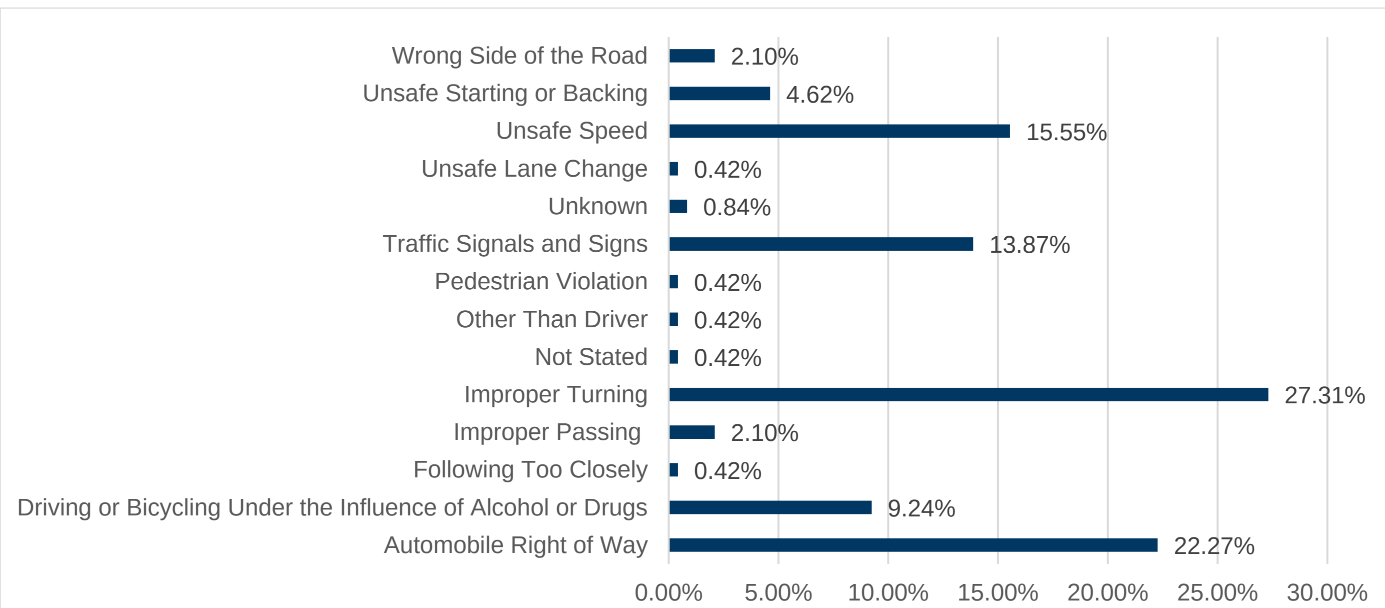
Figure 4.5 Collision Type



4.4 Primary Collision Factors

Figure 4.6 shows the distribution of primary collision factors associated with the collisions reported within the study area. As shown, the most common reported primary collision factors were improper turning (27.31%), automobile right of way (22.27%), and unsafe speed (15.55%). More than half of all collisions were attributed to these three factors.

Figure 4.6 Primary Collision Factors



5. Existing Multimodal Circulation

5.1 Bikeway Facilities

This Plan will encourage the use of walking and bicycling. The following functional classifications of bicycle facilities are utilized within this document. The below five definitions are consistent with the California Highway Design Manual (HDM, July 2020). It is emphasized that the designation of bikeways as Class I, II,III, and IV should not be construed as a hierarchy of bikeways; that one is better than the other. Each class of bikeway has its appropriate application.

Class I - Bike Path - Class I facilities are multi-use bikeways that provide a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized. Class I facilities can also be referred to as a “shared-use path”. Class I bikeways must be compliant with provisions of the Americans with Disabilities Act (ADA). These bikeways are intended to provide superior safety, connectivity, and recreational opportunities as compared to facilities that share right-of-way with motor vehicles.

Class II - Bike Lanes - Class II facilities provide a striped and signed lane for one-way bicycle travel on each side of a street or highway within the paved area of a roadway. The minimum width for bike lanes ranges between four and six feet depending upon the edge of roadway conditions (curb and gutter). Bike lanes are demarcated by a six-inch white stripe, signage and pavement legends.

Class III – Bike Route/Shared Roadway - Class III facilities provide signs for shared use with motor vehicles within the same travel lane on a street or highway. Bike routes may be enhanced with warning or guide signs and shared lane marking pavement stencils. While Class III routes do not provide measures of separation, they have an important function in providing continuity to the bikeway network. By law, bicycles are allowed on all roadways in California except on freeways when a suitable alternate route exists. However, Class III bikeways serve to identify roads that are more suitable for bicycles.

Class IV Separated Bikeways - Known as separated bikeways or cycle tracks, Class IV bikeways provide a separate travel way that is designated exclusively for bicycle travel adjacent to the roadway and are protected from vehicular traffic by physical separation. The separation may include, but is not limited to, grade separation, planters, flexible posts, inflexible posts, physical barriers, or on-street parking.

In addition to the defined bikeway classes above, the American Association of State Highway Transportation Officials (AASHTO) “Guide for the Development of Bicycle Facilities “ (2012) and the National Association of City Transportation Officials (NACTO) “Urban Bikeway Design Guide” are used as resources to identify the following bicycle facilities.

Bicycle Boulevard (Class IIIB)- Bicycle boulevards are streets where the following conditions are created in order to prioritize bicycle safety and optimize through travel for bicycles rather than automobiles:

- Slow traffic speed and low volume.
- Use of diverters and roundabouts to discourage through and non-local motor vehicle traffic.
- Improved travel for bicyclists by assigning the right-of-way priority to the bicycle boulevard at intersections with other roads wherever possible.
- Traffic controls that help bicyclists cross major arterial roads.
- Signage and street design that encourages use by bicyclists and informs motorists that the roadway is a priority route for bicyclists.

Bicycle boulevards use a variety of traffic calming elements to achieve a safe environment. For instance, diverters with bicycle cut-outs allow cyclists to continue to the next block, but discourage through traffic by motor vehicles. Typically, these modifications will also calm traffic and improve pedestrian safety as well as encourage bicycling. Bicycle Boulevards are generally applicable to local roadways.

Buffered Bike Lanes (Class IIB)- Buffered bike lanes are conventional bicycle lanes (Class II) paired with a designated buffer space separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane. A buffered bike lane is allowed as per MUTCD guidelines for buffered preferential lanes (section 3D-01). Buffered bike lanes provide space between bicyclists and the traveled way, allow room for bicyclists to pass without encroaching into the vehicle travel lane, and can be used to provide a buffer between on-street parking and the bike lane. Buffered bike lanes are ideal for streets with extra lanes or extra lane width, and along roadways with higher travel speeds, higher traffic, and truck volume.

Green Colored Bike Facilities - may be installed within bicycle lanes or the extension of the bicycle lane through an intersection or transition trough a conflict area as a supplement to bike lane markings. The Federal Highway Administration has issued an Interim Approval (IA-14) on April 15, 2011 for the optional use of green colored pavement for marked bicycle lanes.)

Bike Boxes - designate an area for bicyclists to queue in front of automobiles, but behind the crosswalk at signalized intersections. Bike boxes provide cyclists a safe way to be visible to motorists by getting ahead of the queue during the red signal phase, and they reduce vehicle incursion into crosswalks. Bike Boxes also improve safety for conflicts with right-turning vehicles when the traffic signal turns green. Bike boxes can be utilized to facilitate left turn positioning and gives priority to cyclists.

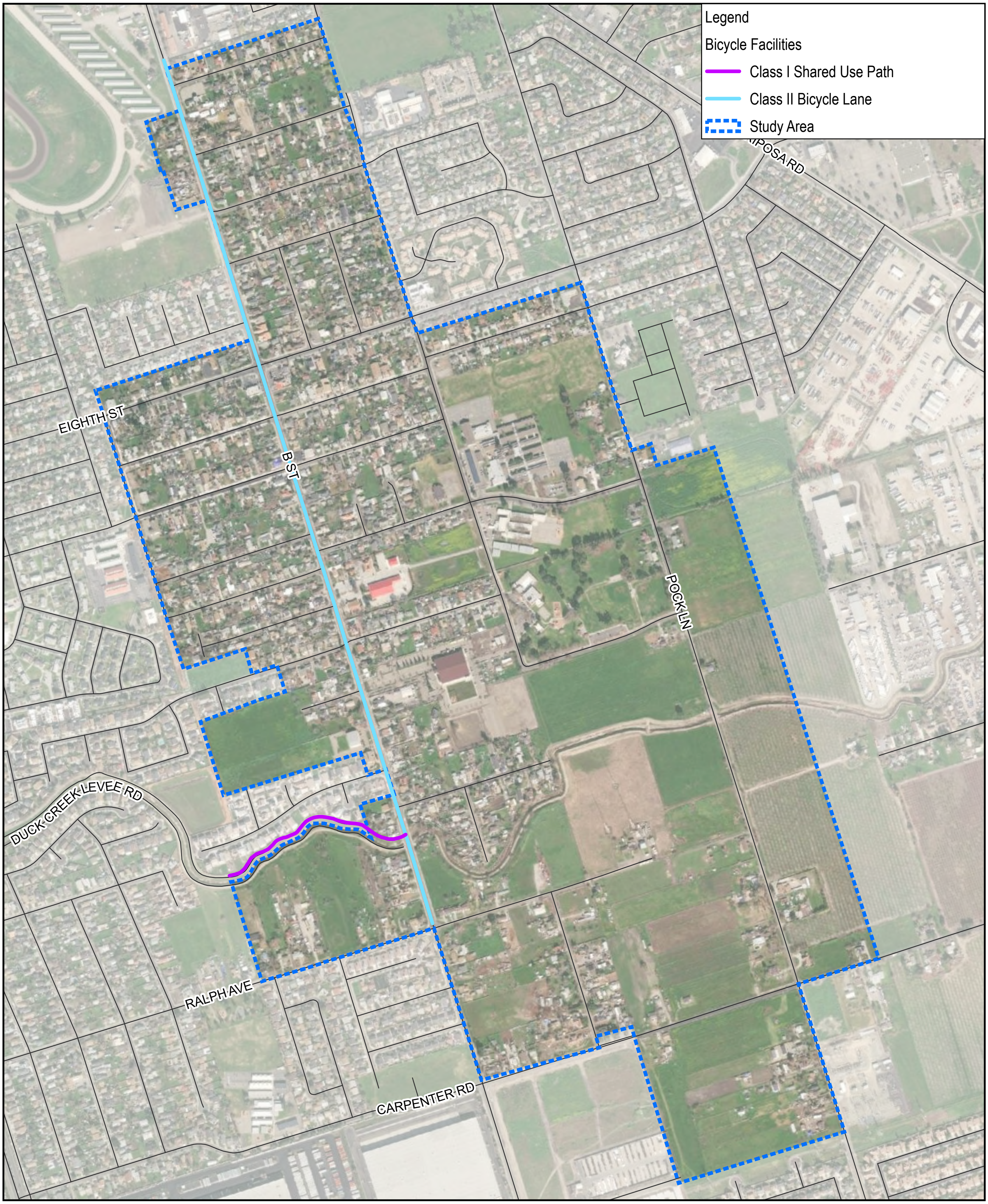
Shared Lane Markings ("Sharrows") - help remind motorists that bicyclists are allowed to use the full lane and remind bicyclists to avoid riding too close to parked cars for safety. The shared lane markings help bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane. These markings are primarily recommended on low-speed streets.

5.2 Existing Bikeways

There are few designated bikeways throughout Kennedy. On local roads, bicyclists share the roadway with vehicular traffic, and there is a lack of designated bicycle facilities that connect to major roadways and existing Class II bike lanes.

There is a Class I bike path that runs between B Street and Airport Way along Duck Creek, just west of Kennedy. Within Kennedy, only one roadway has Class II bike lanes. B Street from just north of 4th Street to Ralph Avenue has bike lanes, the speed limit is 25 mph for a majority of the segment, and there is on-street parking. On several sections of B Street, mostly approaching intersections, the parking goes away and the bike lane is shifted closer to the sidewalk, and then shifts again as parking reappears. Drivers continue to park in the bike lane where on-street parking is not available.

Figure 5.1 shows existing bikeways in the study area by bikeway classification.



Paper Size ANSI A

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Map Projection: Lambert Conformal Conic
Horizontal Datum: NAD 1983 2011
Grid: NAD 1983 2011 StatePlane California III FIPS 0403 Ft US

San Joaquin County
Kennedy Community
Complete Streets Plan

Existing Bikeway Network

Project No. **12602049**
Revision No. **-**
Date **9/7/2023**

FIGURE 5.1

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Print date: 07 Sep 2023 - 08:56

Data source: World Imagery: Maxar. Created by: zporteous

5.3 Existing Bicycle Level of Traffic Stress (LTS)

Level of Traffic Stress (LTS) is the perceived sense of danger associated with bicycling or walking in or adjacent to vehicle traffic. Studies have shown that traffic stress is one of the biggest deterrents to bicycling and walking. The less stressful the experience, and the lower the LTS score, the more likely it is to appeal to a broader segment of the population. A bicycle and pedestrian network will attract a large portion of the community if it is designed to reduce stress associated with potential motor vehicle conflicts and connects people to their destinations. Bicycle and pedestrian facilities are considered low stress if they have few interactions with vehicle traffic (such as slow, low-traffic neighborhood streets) or if greater separation is provided between people walking or bicycling and vehicle traffic.

5.3.1 Bicycle LTS Methodology

Bicycle LTS is a suitability rating system of the safety, comfort, and convenience of active transportation facilities from the perspective of the user. Moreover, the methodology allows planning practitioners to assess gaps in connectivity that may discourage active users from traversing roadways. Bicycle LTS analyzed as part of this Plan assigns a score from 1 to 4 for roadway segments, intersection crossings, and intersection approaches within the Kennedy Community, using the methods described in the Oregon Department of Transportation (ODOT) “Analysis Procedures Manual Version 2, Chapter 14, Multimodal Analysis,” (October 2020). The methodology presented there is based on the paper, Low Stress Bicycling and Network Connectivity, Report 11-19, published by the Mineta Transportation Institute (MTI) (May 2012). The LTS methodology as reported by ODOT’s latest Multimodal Analysis Procedure Manual includes updates to the methodology that was originally published by MTI. The updated methodology includes analysis criteria for new bicycle facility types that have become more popularly used since the original report was published and considers additional infrastructure types not analyzed under the MTI methodological approach. The methodology scores roadway facilities into one of four classifications or ratings for measuring the effects of traffic-based stress on bicycle riders, with 1 being the lowest stress or most comfortable, and 4 being the highest stress or least comfortable. The stress level of a given roadway segment, intersection crossing, or intersection approach is based on a variety of infrastructure characteristics, including, but not limited to:

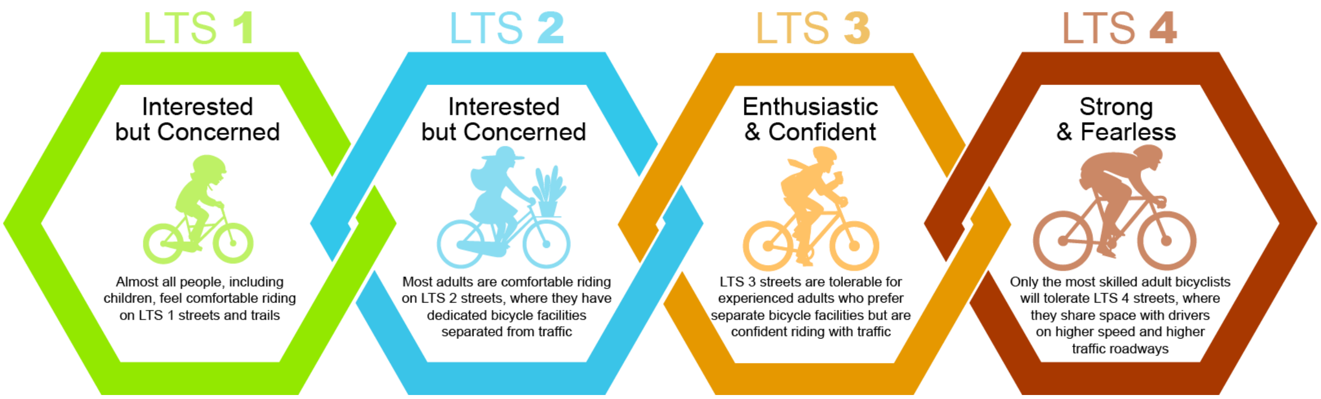
- Number of vehicle lanes
- Posted speed limit
- Roadway functional classification
- Type of bikeway, if applicable
- Separation between bicycle facility and vehicles
- Presence of parking alongside on-street bike lanes
- Width of bike lanes and parking aisles
- Intersection control (stop signs, traffic signals, roundabouts)
- Presence of turn lanes

An overall LTS score is then determined for the segment, combining the segment, intersection approach and crossing scores. The overall score is governed by the worst-case principle, meaning that the highest stress score associated with the analyzed criteria will determine the LTS score of the overall segment, with LTS 1 being the lowest stress and LTS 4 being the highest stress. The specific criteria and details of the methodology used to determine the LTS scores are provided in **Appendix B**.

5.3.2 Types of Bicyclists

Research conducted by the Portland Bureau of Transportation indicates the majority of people in the United States would bicycle if dedicated bicycle facilities were provided. Based on their skill level and confidence, most people self-identify as one of the four “types of bicyclists” shown in Figure 5.2. Only a small percentage of Americans are willing to ride if no facilities are provided—the so-called “Strong and Fearless” bicyclists. To better meet the needs of the “Interested but Concerned” bicyclists, it is recommended that communities work to decrease stress and improve comfort on their bikeway network. LTS 1 and 2 roads are typically appealing to these bicyclists. Generally, an LTS score of 1 indicates the facility provides a traffic stress tolerable by most children and less experienced riders, such as multi-use paths that are separated from motorized traffic. An LTS score of 4 indicates a stress level tolerable by only the most experienced cyclists who are comfortable with high-volume and high-speed, mixed traffic environments. LTS 3 and 4 represent high stress conditions for bicyclists and reflect the need for visibility and safety improvements.

Figure 5.2 Level of Traffic Stress by User Category



5.3.3 Bicycle Level of Traffic Stress (LTS) Analysis Results

Segment LTS

Figure 5.3 shows Segment LTS throughout the study area. Most roadways within the community are local neighborhood streets with 25 mph speeds, resulting in LTS 1. 8th Street is shown as LTS 3 for the segment LTS because it does not have bike lanes, and the posted speed is 35 mph. Pock Lane was determined to be LTS 2 north of 11th Street and LTS 3 south of 11th Street, due to the speed limit going from 25 mph to 35 mph.

Most segments along B Street are classified as LTS 3, apart from a few segments. The segment near 11th Street is identified as LTS 2 because the bike lane is less than or equal to 5.5 feet wide and is not parking adjacent. Google aerial imagery shows the southern segment between 11th Street and Clover Lane having similar conditions but is considered to be LTS 3 due to frequent blockages from parked cars in the bike lane.

The segment of B Street from 8th Street to 9th Street is considered LTS 2 because the speed limit is 25 mph, the west side of the street is parking adjacent, and the width of the parking lane and bike lane is between 14 and 14.5 feet for most of the segment. The segments identified as LTS 2 may experience blockages as well.

The segment of B Street north of 8th Street is considered LTS 1 because the speed limit is 25 mph, the west side of the street is parking adjacent, and the width of the parking lane and bike lane is 15 feet or more for most of the segment.

Ralph Avenue east of B Street is considered LTS 3 because it is a collector road without bike lanes.

Intersection LTS (Approaches and Crossings)

Figure 5.4 shows both the intersection approach and crossing scores. Intersection approach LTS was evaluated at locations with turn pockets. the two intersections with left turn pockets throughout the study area: B street at 8th Street, and B Street at 11th Street. The east and west approaches to the B Street and 8th Street intersection are identified as LTS 4 because the speed limit is 35 mph and bicyclists must cross one lane of traffic to reach the turn lane. The north and south approaches are identified as LTS 3 because the speed limit is 25 mph and bicyclists must cross one lane of traffic to reach the turn lane. The southbound turn lane approach to the B Street and 11th Street intersection is also identified as LTS 3 because the speed limit is 25 mph and bicyclists must cross one lane of traffic to reach the turn lane.

Intersection crossing LTS was evaluated at every intersection. LTS 1 is assumed for the crossing movements at signalized intersections unless the location is known to create a barrier for the user. Most unsignalized crossings within Kennedy were also identified as LTS 1. However, a few locations were identified as LTS 2 because the posted speed limit in these areas is 35 mph.

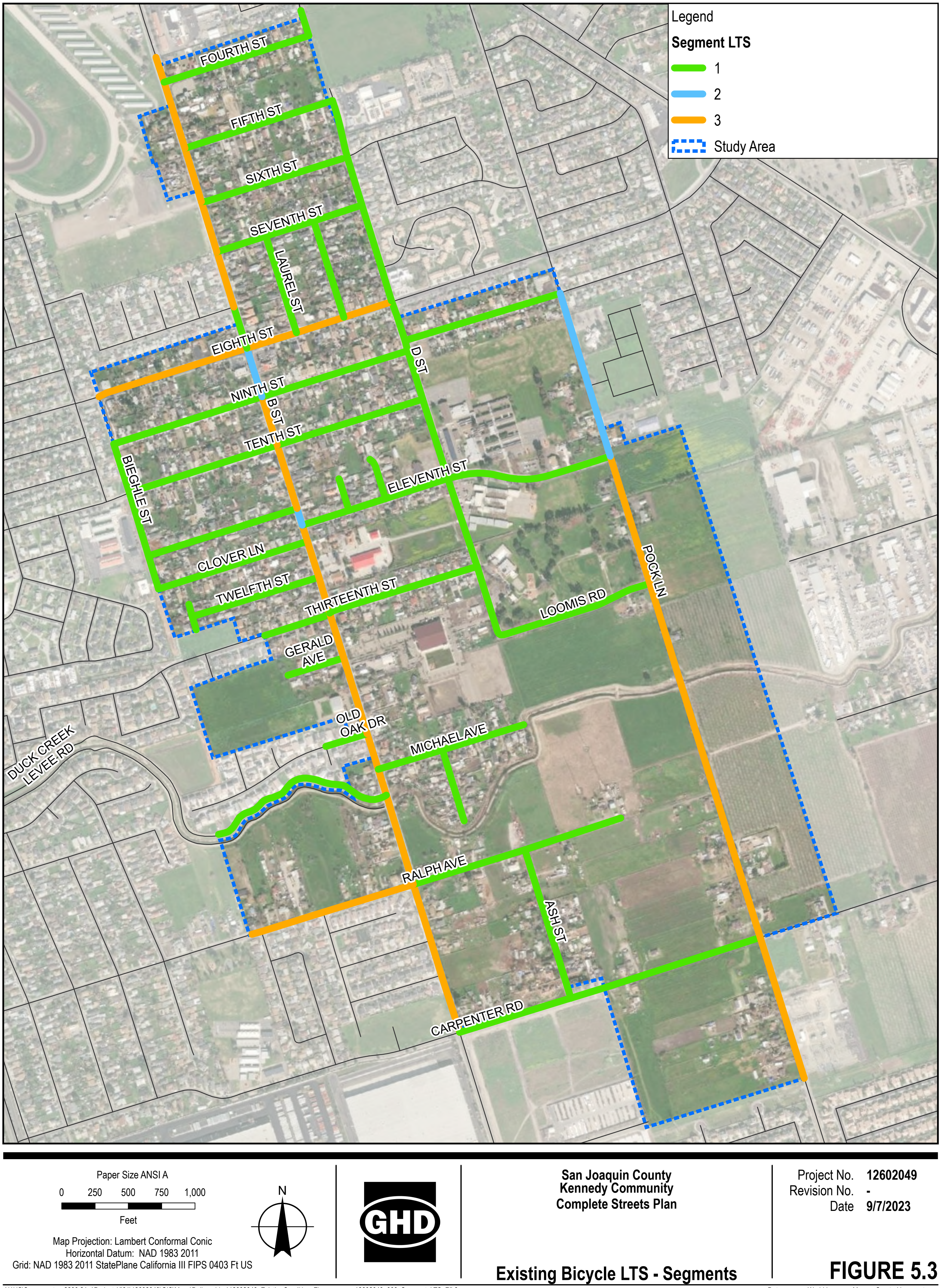
Overall LTS

Figure 5.5 shows overall LTS throughout the study area, based on the highest stress score associated with the analyzed criteria. Many of the street segments in Kennedy are LTS 1 because they are mixed traffic, local neighborhood roads with speed limits of 25 mph of less.

Pock Lane north of 11th Street is identified as LTS 2, and south of 11th Street as LTS 3 because it is a local road with a speed limit of 25 mph north of 11th Street and 35 mph south of 11th Street.

B Street is identified as LTS 3 because although it has one lane of traffic in each direction with a speed limit of 25 mph, the 5-foot bike lane is parking adjacent (13 feet total or less throughout the length) with frequent blockages and the intersection approaches are LTS 3 as previously described.

8th Street from Bieghle Street to Laurel Street is identified as LTS 4 because at the approaches to the B Street intersection are at LTS 4. 8th Street from Laurel Street to D Street is LTS 3 because it is a mixed traffic collector street with one lane of traffic in each direction and a speed limit of 35 mph.



Map Projection: Lambert Conformal Conic
Horizontal Datum: NAD 1983 2011
Grid: NAD 1983 2011 StatePlane California III FIPS 0403 Ft US

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San Joaquin County
Kennedy Community
Complete Streets Plan

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Revision No. **-**
Date **9/7/2023**

Existing Bicycle LTS - Segments

FIGURE 5.3

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Map Projection: Lambert Conformal Conic
Horizontal Datum: NAD 1983 2011
Grid: NAD 1983 2011 StatePlane California III FIPS 0403 Ft US

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Existing Bicycle LTS - Crossings and Approaches

Project No. **12602049**
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Date **8/9/2023**

FIGURE 5.4

N:\US\Sacramento - 2200 21st\Projects\561\12602049\GIS\Maps\Deliverables\12602049_ExistingConditionsFigures.aprx - 12602049_010_Crossing_Approach_LTS_F5.4
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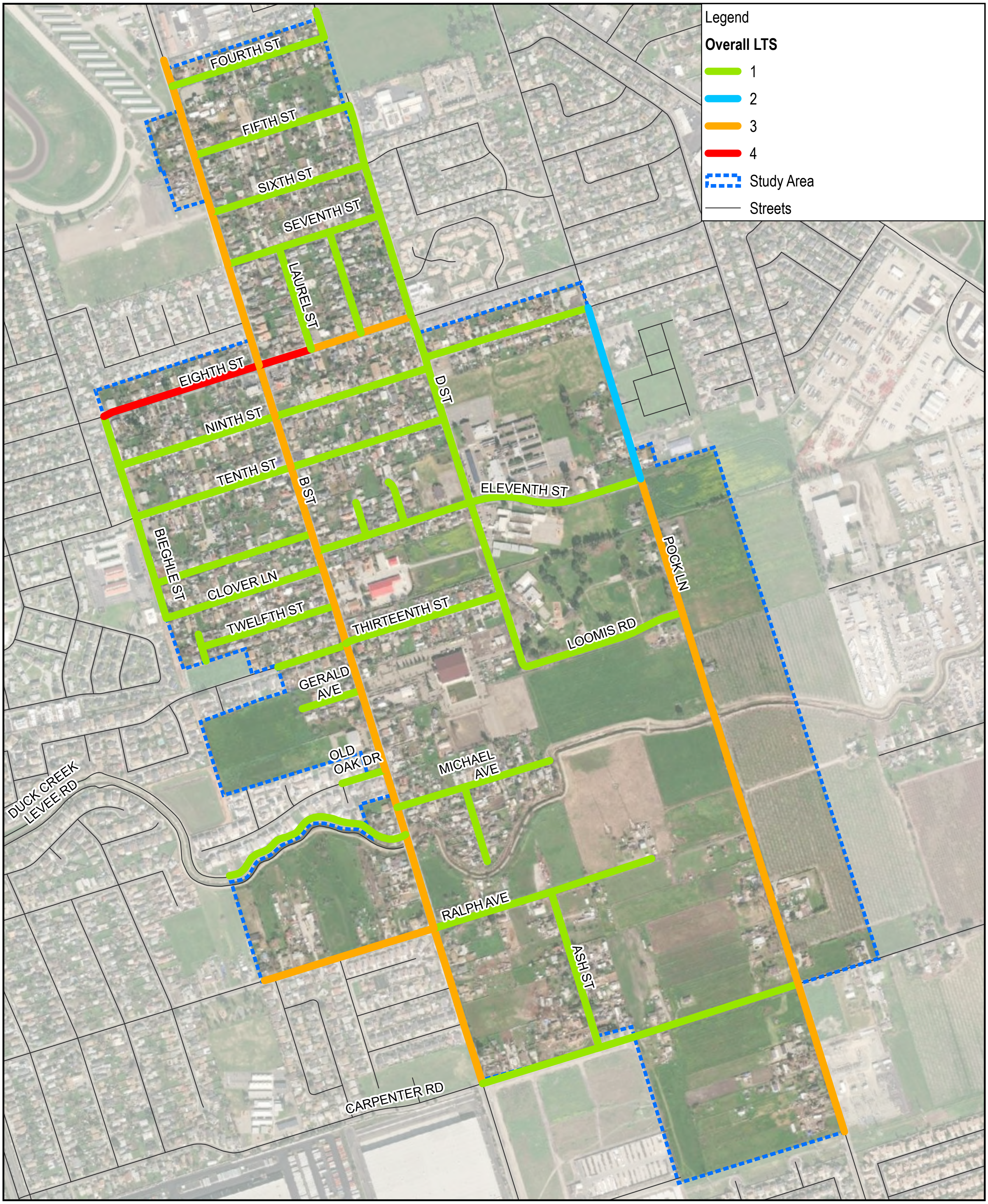

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Map Projection: Lambert Conformal Conic
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Existing Bicycle LTS - Overall Score

FIGURE 5.5

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Print date: 07 Sep 2023 - 08:55

Data source: World Imagery: Maxar. Created by: zporteous

5.4 Existing Pedestrian Facilities

Sidewalks

Sidewalks are the backbone of the pedestrian transportation network and connect residents to key destinations. Figure 5.6 shows existing sidewalks and crosswalks within the Kennedy community. Sidewalks are present along collector roads, but are lacking on many local streets. Existing sidewalks in Kennedy are typically between 5 and 6 feet wide and most are adjacent to parking. Many existing sidewalks on collector roads are in relatively good condition, but sidewalks along B Street south of Michael Avenue are uneven, partially covered by greenery, and may cause tripping hazards or mobility issues. Sidewalks along Pock Lane and Loomis Road are lacking or incomplete, narrow, winding, adjacent to traffic, and/or obstructed by greenery. Many segments in the study area only have sidewalks on one side of the street.

Crosswalks

Crosswalks are an extension of the sidewalk and provide guidance for pedestrians by defining a path of travel across the roadway at intersections. Crosswalks are not required to be marked but marked crosswalks alert drivers to the crossing and increase yielding for pedestrians.

Fewer than half of the intersections within the study area have crosswalks – the 13 existing crosswalks are concentrated along B Street and D Street, with some crosswalks crossing local roads on Bieghle Street. Many local roads without sidewalks are also missing marked crosswalks along B Street and 8th Street, both of which are collector roads.

Pedestrians are more vulnerable at uncontrolled crossings where they have a crosswalk, but vehicles are not required to stop. There are uncontrolled crossings at B Street and 11th Street, B Street and 12th Street, D Street and 9th Street, D Street and 10th Street, and D Street and 13th Street, Beighle Street and 10th Street, and Beighle Street and 11th Street.

Curb Ramps

Curb ramps are necessary to access sidewalks and crosswalks for people using wheelchairs or mobility devices, pushing strollers, and for those who may have difficulty stepping onto a raised curb. Under the Americans with Disabilities Act (ADA), curb ramps are required to be installed with all new or retrofitted sidewalks. At corners, two curb ramps should be provided that align with each crosswalk.

Multiple marked crossings within the study area are missing ADA compliant curb ramps, including a major crossing near Hamilton Elementary and Monroe Elementary.

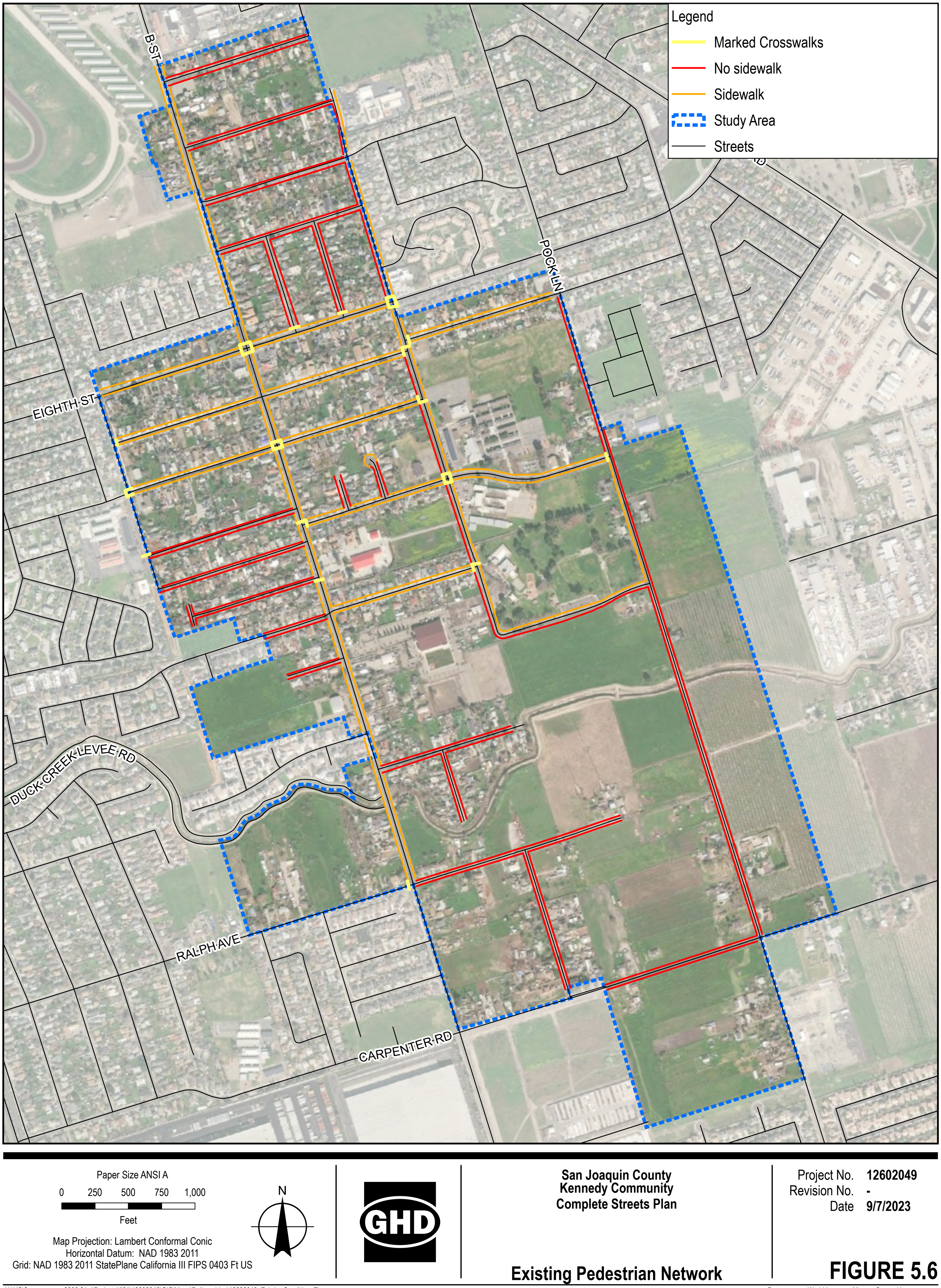
School Zones

Adjacent to Hamilton Elementary and Monroe Elementary Schools, pedestrian counts show that 137 crossings were made at the D Street and 11th Street intersection during peak school hours.

Along D Street passing the two elementary schools, the sidewalk is only present on the school (east) side of the street from 5th Street to Loomis Road, with the exception between 8th Street and 9th Street where both sides of the road have sidewalks. There is a four way stop with four marked crosswalks at the intersection of D Street and 11th Street, between the two schools. There are no curbs or ADA accessible curb ramps on the west corners of the intersection, and those crossing must walk on grass to access the sidewalk.

Adjacent local roads, 8th through 13th Street, have sidewalks as well, but many of these sidewalks end w at B Street. Students can walk along sidewalks in the close vicinity of the schools, but those who must walk more than a block may have to share the road with traffic.

At Van Buren Elementary School, there are no sidewalks on Beighle Street south of 10th Street, and there is a marked crossing across 10th Street at Tiffany Street. At Aspire Rosa Parks Elementary School, there are no pedestrian crossings, and there is only sidewalk on the East Side of D Street.



Map Projection: Lambert Conformal Conic
Horizontal Datum: NAD 1983 2011
Grid: NAD 1983 2011 StatePlane California III FIPS 0403 Ft US

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San Joaquin County
Kennedy Community
Complete Streets Plan

Existing Pedestrian Network

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Date **9/7/2023**

FIGURE 5.6

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Print date: 07 Sep 2023 - 09:02

Data source: World Imagery: Maxar. Created by: zporteous

5.5 Transit Routes and Stops

San Joaquin Regional Transit District (RTD) is the county's public transit system, which operates 63 transit routes countywide. RTD operates seven transit routes serving the Kennedy Community: 44, 49, 378, 380, 385, 390, and 580. Figure 5.7 shows existing transit routes and stops throughout the study area. Each route and major bus stop is described below. There may be minor bus stops that are not accounted for.

- **Route 378**
  - Route 378 begins in Garden Acres on Section Avenue and South Oro Avenue and ends the Mall Transfer Station at Sherwood Mall. The bus runs twice a day. There is one major stop in the study area at 8th Street and B Street where the bus stops once a day at 4:23 pm traveling southbound.
  - The 8th Street and B Street Bus stop has a shelter, two benches, and room to stand under shelter.
- **Route 380**
  - Route 380 begins at 10th Street and Anne Street and ends at Franklin Highschool. The bus runs four times a day. The first major bus stop is at 11th Street and D street at 7:40 AM and 7:42 AM traveling northbound and at 3:53 PM and 3:54 PM traveling southbound. The second major bus stop is at 8th Street and B Street at 3:56 PM and 3:57 PM traveling southbound.
  - The southbound 11th Street and D Street stop is a sign without a sidewalk or platform. There is no bench or shelter.
  - The 8th Street and B Street Stop consists of a sign and a bench and does not have a shelter.
- **Route 385**
  - Route 385 begins at the PG&E Energy Training Center and travels northbound to the Stockton Downtown Transit Center (DTC). The runs twice a day. Major bus stops in the study area include 8th Street and B Street at 7:50 AM travelling Northbound and at B Street and 9th Street at 4:07 travelling southbound.
  - The 8th Street and B Street bus stop has a shelter, two benches, and room to stand under the shelter.
  - The B Street and 9th Street bus stop consists of only a sign and does not have a bench or shelter.
- **Route 390**
  - Route 390 begins at 99 Frontage Road and Marfargoa Road and ends at the Stockton DTC. The bus runs twice a day and stops in Kennedy only traveling south bound. Major bus stops in the study area include 11th Street and D Street at 4:03 PM and 8th Street and B street at 4:06 PM.
  - The 8th Street and B Street Bus stop has a bench and a wide sidewalk. There is no bus shelter.
  - The 11th Street and D Street Bus stop is a sign without a sidewalk or platform. There is no bench or shelter.
- **Route 44**
  - Route 44 is a north-south Bus Rapid Transit (BRT) line that is known as the Airport Corridor route. Route 44 begins at the PG&E Energy Training Center and ends at the Stockton DTC. Route 44's weekday headway is between 15 and 30 minutes on weekdays and 30 minutes on weekends. Major bus stops in the study area include B Street and Ralph Avenue, and 8th Street and B Street travelling Northbound, and Ralph Avenue and B Street travelling southbound.
  - The 8th Street and B Street Bus stop has a bench and a wide sidewalk. There is no bus shelter.
  - The B Street at Ralph Avenue bus stop is marked only by a sign and does not have a bench or shelter.
  - The Ralph Avenue at B Street bus stop is marked only by a sign and does not have a bench or shelter.
- **Route 49**
  - Route 49 is an east-west BRT line (MLK Corridor route) that begins at Edison High School at French Camp Turnpike and Doctor MLK Jr Boulevard and ends at Mariposa Road and Farmington Road. Route 49's headways are every 30 minutes on weekdays and every hour on weekends. Major bus stops in the study area include 8th Street and B Street.

- The 8th Street and B Street Bus stop has a shelter, two benches, and standing room under the shelter.

– **Route 580**

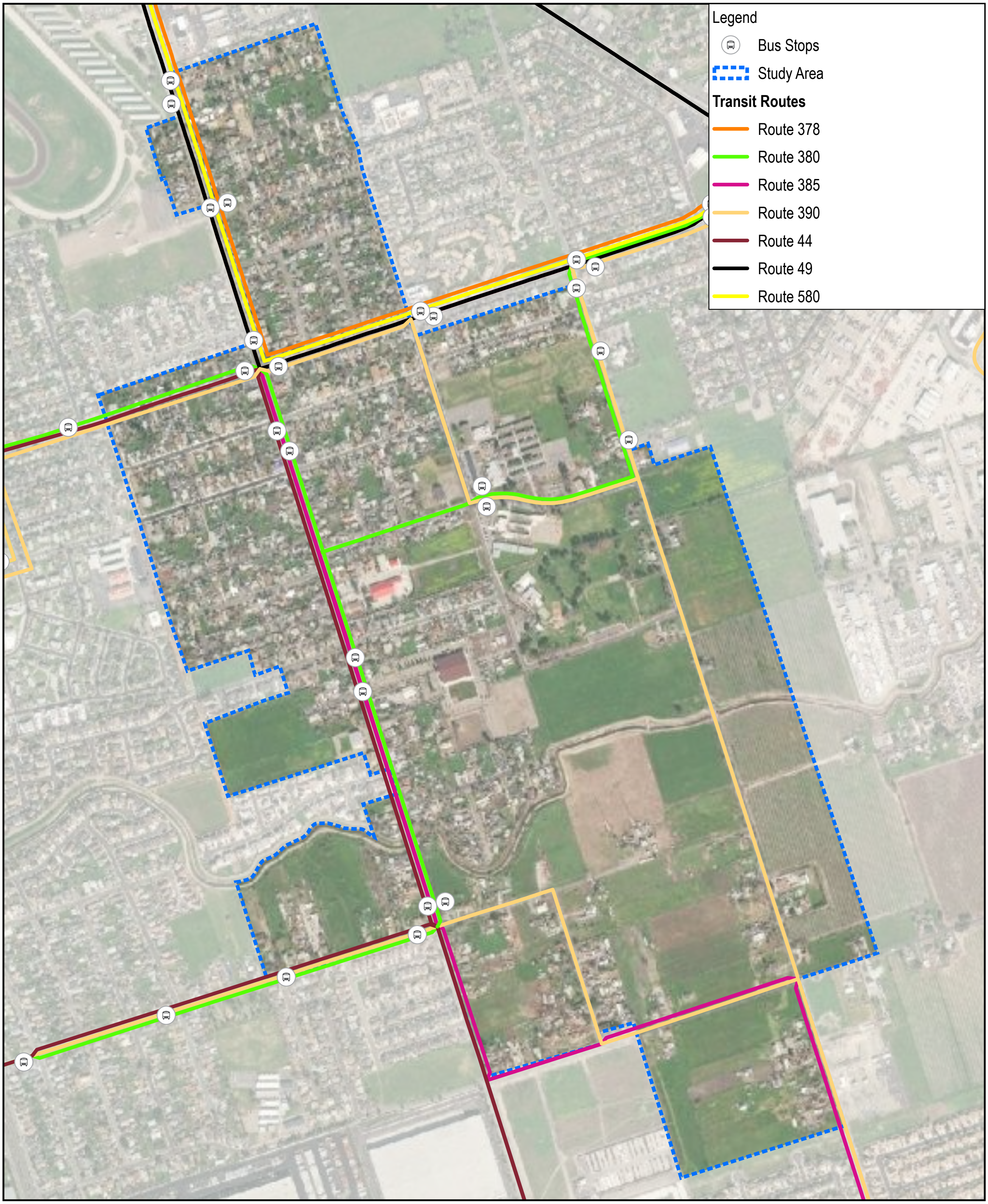
- Route 580 begins at Section Avenue and Oro Avenue ant ends at the Stock DTC. Route 580's headway is every hour. Major bus stops in the study area include 8th Street and B street traveling southbound.
- The 8th Street and B Street Stop has a shelter, two benches, and standing room under the shelter.

Routes 44, 378, 385, all have a stop within walking distance (1/4 mile) of the City's downtown train station and/or the DTC.

RTD has provided the ridership information for bus stops within the Kennedy community, presented in Table 5.1. As shown, the bus stop at 8th Street and B Street has the highest average weekday daily boardings (by far) and 2nd highest average daily alightings for Route 44 which is a BRT line that goes to the DTC and has the shortest headways (15-30 minutes). The highest average daily alightings is at the same location, but for Route 49, which is also a BRT route which goes along the MLK corridor. Another more frequented stop is Ralph Avenue at B Street, for Routes 44 and 49.

Table 5.1 Average Daily Boardings & Alightings within Kennedy

	Weekday		**Weekend**	
Bus Stops	Avg. Daily Boardings	Avg. Daily Alightings	Avg. Daily Boardings	Avg. Daily Alightings
Route 44				
8th Street & B Street	20.83	7.41	7.75	3.98
Ralph Avenue & B Street	5.09	11.44	2.04	4.67
Route 49				
8th Street & B Street	7.72	13.37	2.03	3.15
Route 378				
8th Street & B Street	0.01	0.04		
Route 380				
8th Street & B Street	0.02	0.50		
11th Street & D Street EB	0.64	0.09		
11th Street & D Street WB	0.02	0.82		
Route 385				
8th Street & B Street	1.09	0.26		
B Street & 9th Street	0.02	1.42		
Route 390				
8th Street & B Street	0.06	0.29		
11th Street & D Street	0.03	0.33		



Paper Size ANSI A

0 250 500 750 1,000 1,250

Feet

Map Projection: Mercator Auxiliary Sphere
Horizontal Datum: WGS 1984
Grid: WGS 1984 Web Mercator Auxiliary Sphere

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GHD

**San Joaquin County
Kennedy Community
Complete Streets Plan**

Project No. **12602049**
Revision No. **-**
Date **7/25/2023**

Existing Transit Routes and Stops

FIGURE 5.7

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Print date: 25 Jul 2023 - 15:36

Data source: World Imagery: Maxar. Created by: zporteous

6. Goods Movement

6.1 Truck Routes

Truck routes are intended to carry heavyweight commercial, industrial, and agricultural vehicles through and around the community with minimum disruption to local auto traffic and minimum annoyance to residential areas. The 1982 Surface Transportation Assistance Act set standards for large trucks, known as STAA trucks, and set minimum truck sizes that states must allow on the National Network including the Interstate System and other defined routes.

There are no designated truck routes directly through the community, however there are various truck routes surrounding the community along Airport Way, Mariposa Road, Dr. MLK Jr. Boulevard, SR 99, and Arch Airport Road.

6.2 Rail

Nearby rail includes the Stockton Rail Yard which is maintained by the Union Pacific (UP) Railroad Company, located just west of the study area. Just north of this large rail yard is the Stockton Diamond Railroad Crossing, where two major railroads intersect (UP and BNSF). This rail intersection is the busiest, most congested rail bottleneck in California (stocktondiamond.com), resulting in local delays at crossings. Because of the issue, passenger service is limited through this corridor. There are plans to make this intersection into a grade-separated rail crossing in 2024. The improvement would hopefully facilitate passenger rail service expansion for Altamont Corridor Express (ACE) and Amtrak San Joaquins. These rail lines provide access to the Port of Stockton.

As for existing passenger service, the closest train station to Kennedy is in the City's downtown (Stockton station), which provides access to the ACE train and Amtrak. There is also an Amtrak station at San Joaquin Street. These trains provide service outside the region including the Bay Area, San Jose, Sacramento, Fresno, Bakersfield.

6.3 Airports

The closest airport to Kennedy is the Stockton Metropolitan Airport, which is a mile and a half south of the study area.

Appendices

Appendix A

Level of Service Methodology

Level of Service Methodology

The following section outlines the analysis parameters and methodologies that were used in the transportation impact study to quantify potential project affects for the analysis scenarios.

Level of Service (LOS)

Traffic operations were quantified through the determination of "Level of Service" (LOS). LOS is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an intersection or roadway segment, representing progressively worsening traffic conditions. LOS "A" represents free-flow operating conditions and LOS "F" represents over-capacity conditions. LOS was calculated for all intersection control types using the methods documented in the Transportation Research Board’s publication *Highway Capacity Manual, Sixth Edition, A Guide for Multimodal Mobility Analysis*, 2016 (HCM 6).

Intersection Operations

The Synchro 10 (Trafficware) software program was used to implement the HCM 6 analysis methodologies. Synchro 10 has the capability to produce results based on HCM 2000, HCM 2010, HCM 6, or Synchro methodologies, and considers intersection signal timing and queuing constraints when calculating delay and queue lengths. Intersection LOS was calculated for all control types using the methods documented in HCM 6. For signalized and all-way stop-controlled (AWSC) intersections, an LOS determination is based on the calculated average delay for all approaches and movements. For two-way or side-street stop-controlled (TWSC) intersections, an LOS determination is based upon the calculated average delay for all movements of the worst-performing lane. The vehicular-based LOS criteria for different types of intersection controls are presented in Table A.1.

Table A.1 Level of Service (LOS) Criteria for Intersections

Level of Service	Type of Flow	Delay	Maneuverability	Stopped Delay per Vehicle	
				Signalized	Un-signalized
A	Stable Flow	Very slight delay. Progression is very favorable, with most vehicles arriving during the green phase not stopping at all.	Turning movements are easily made, and nearly all drivers find freedom of operation.	≤10.0	≤10.0
B	Stable Flow	Good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	Vehicle platoons are formed. Many drivers begin to feel somewhat restricted within groups of vehicles.	>10.0 and ≤20.0	>10.0 and ≤15.0
C	Stable Flow	Higher delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.	Back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted	>20.0 and ≤35.0	>15.0 and ≤25.0
D	Approaching Unstable Flow	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	Maneuverability is severely limited during short periods due to temporary back-ups.	>35.0 and ≤55.0	>25.0 and ≤35.0
E	Unstable Flow	Generally considered to be the limit of acceptable delay. Indicative of poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.	There are typically long queues of vehicles waiting upstream of the intersection.	>55.0 and ≤80.0	>35.0 and ≤50.0
F	Forced Flow	Generally considered to be unacceptable to most drivers. Often occurs with over saturation. May also occur at high volume-to-capacity ratios. There are many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors.	Jammed conditions. Back-ups from other locations restrict or prevent movement. Volumes may vary widely, depending principally on the downstream back-up conditions.	>80.0	>50.0

Source: National Academies of Sciences, Engineering, and Medicine. 2016. *Highway Capacity Manual 6th Edition: A Guide for Multimodal Mobility Analysis*. Washington, DC: The national Academies Press.

Level of Service Policies

San Joaquin County

The County's General Plan Public Facilities and Service Element, 2016, specifies the following policy pertaining to the LOS standards for county-maintained roadways:

TM-3.1 Roadway Provision

The County shall maintain Level of Service (LOS) standards consistent with the San Joaquin Council of Governments (SJCOG) Congestion Management Program (CMP) for State highways and designated County roadways and intersections of regional significance. Per the CMP, all designated CMP roadways and intersections shall operate at an LOS D or better except for roadways with "grandfathered" LOS. LOS for State highways shall be maintained in cooperation with Caltrans. ***The County LOS standards for intersections is LOS "D" or better on Minor Arterials and roadways of higher classification and LOS "C" or better on all other non-CMP designated County roadways and intersections****. The County shall also maintain the following:*

– *on State highways, LOS D or Caltrans standards whichever is stricter.*

– *Within a city's sphere of influence, LOS D, or the city planned standards for that level of service.*

– *On Mountain House Gateways, as defined in the Master Plan, LOS D, on all other Mountain House roads, LOS C.*

For State highways are designated as part of SJCOG's CMP, both the Caltrans and CMP LOS standards shall apply. Where roadways are designated as part of SJCOG's CMP, both the County and CMP LOS standards shall apply.

All study intersections are within County jurisdiction and within the City's sphere of influence, therefore the applicable LOS standard for these locations is **LOS D** or better.

Traffic Signal Warrant Analysis

A supplemental traffic signal "warrant" analysis was completed if an intersection operates or is projected to operate beyond the LOS threshold. The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the need for installation of a traffic signal at an otherwise unsignalized intersection. This study will employ the signal warrant criteria presented in the latest edition of the 2014 California Manual on Uniform Traffic Control Devices (2014 CA MUTCD, Revision 6). The signal warrant criteria are based upon several factors including volume of vehicular and pedestrian traffic, frequency of accidents, location of school areas etc. The CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. The ultimate decision to signalize an intersection should be determined after careful analysis of all intersection and area characteristics.

This traffic operations analysis will specifically utilize the Peak-Hour-Volume-based Warrant 3 as one representative type of traffic signal warrant analysis. Signal warrant analyses will only be conducted for non-signalized intersections which are projected to operate beyond the LOS threshold.

Technical Analysis Parameters

Table A.2 presents the technical parameters that were utilized for the evaluation of the study intersections. All parameters not listed should be assumed as default values or calculated based on parameters listed.

Table A.2 Technical Parameter Assumptions

	Technical Parameter	Assumption
1	Intersection Peak Hour Factor (PHF)	Existing: Based on counts, intersection overall
2	Intersection Heavy Vehicle Percent (HV%)	Based on counts, intersection overall
3	Pedestrian & Bicycle Counts	Based on counts by approach or crossing

Appendix B

Bicycle Level of Traffic Stress Methodology

Bicycle Level of Traffic Stress Methodology

The following section outlines the analysis parameters and methodologies that were used in the bicycle level of traffic stress analysis to quantify traffic stress bicyclists experience on roadways throughout the study area.

Bicycle Level of Traffic Stress (LTS) Introduction

Level of traffic stress (LTS) is a suitability rating system from the perspective of different subsets of the population, which measures the perceived comfort, safety and convenience associated with bicycling or walking in or adjacent to vehicle traffic. Studies have shown that 60 percent of the population will be deterred from bicycling or walking if an active transportation facility features high levels of traffic stress and they will only choose the routes with the highest levels of perceived safety.[2] The less stressful the experience, and the lower the LTS score, the more likely bicycling or walking is to appeal to a broader segment of the population.

A bicycle and pedestrian network will attract greater numbers of residents, employees and visitors of all ages and abilities if it is designed to reduce the level of stress associated with potential conflicts with motor vehicles and safely connect people to their destinations. Facilities that provide greater separation between vehicle traffic and people walking and bicycling, as well as minimize the potential for stressful conflicts between these road user groups, will result in the lowest levels of traffic stress and highest comfort using the facility.

The LTS analysis for the Kennedy Community Complete Streets Plan analyzes the traffic stress associated with bicycling in the Kennedy community. Bicycle LTS analysis employs the level of traffic stress methodology described in the Oregon Department of Transportation (ODOT) "Analysis Procedures Manual Version 2, Chapter 14, Multimodal Analysis," (October 2020). The methodology presented there is based on the paper, *Low Stress Bicycling and Network Connectivity,* Report 11-19, published by the Mineta Transportation Institute (MTI) (May 2012). The LTS methodology as reported by ODOT's latest Multimodal Analysis Procedure Manual includes updates to the methodology that was originally published by MTI. The updated methodology includes analysis criteria for new bicycle facility types that have become more popularly used since the original report was published and considers additional infrastructure types not analyzed under the MTI methodological approach.

This memorandum describes the LTS methodology and analysis criteria in additional detail. For internal review of the results of the analysis, an internally accessible Atlas web map can be accessed **https://atlas.ghd.com/portal/apps/webappviewer/index.html?id=ee1d1123a3fb40e7b3c87b2cc4b5b1fd**.

Methodology

The bicycle level of traffic stress methodology considers a variety of roadway infrastructure characteristics to determine the LTS score of a roadway or intersection, including:

- level of separation from vehicular traffic
- street width (number of lanes), daily traffic volumes and/or functional classification
- presence and width of bike lanes, parking lanes, medians and turn lanes
- frequency of bike lane blockage
- speed limit or prevailing speed of adjacent street or streets being travelled along or crossed

[2] "Four Types of Transportation Cyclists in Portland," Geller, 2006

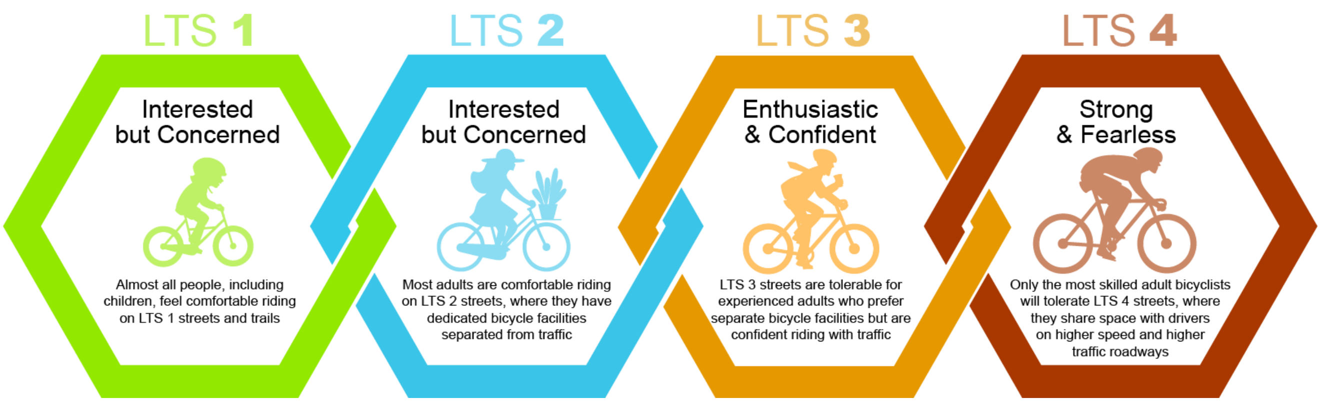
- intersection control type

Level of traffic stress scores are governed by the worst-case principle, meaning that the highest stress score associated with analyzed criteria will determine the LTS score of the overall segment, with LTS 1 being the lowest stress and LTS 4 being the highest stress. The application of these criteria-specific bicycle level of traffic stress analysis of the study area's streets and bikeways is described below.

Bicycle LTS Criteria

Figure B.1 describes each LTS score by bicycle user type or category. 60 percent of the population falls within the interested but concerned LTS 1 or LTS 2 categories. Bicycle level of traffic stress analyzes roadway segments, intersection approaches and intersection crossings, and the worst score among the three analysis categories determine the overall LTS score of the overall segment.

Figure B.1 Level of Traffic Stress by User Category



Segments

The criteria for analyzing Bicycle LTS is broken into three categories:

- physically separated paths or lanes, such as Class I shared-use paths or Class IV cycle tracks
- streets with standard bicycle lanes, such as Class II or Class II buffered bicycle lanes
- streets without bicycle lanes, also referred to as mixed traffic

Physically separated paths or lanes are generally assigned LTS scores of one due to the greater separation from vehicular traffic, while the LTS scores associated with the other two categories vary based on a variety of factors.

The criteria for analyzing the segment LTS of streets with Class II bicycle lanes are presented in Table B.1 and Table B.2 which are separated by segments that feature an adjacent parking lane, and those that do not. As shown, the segment LTS score considers bicycle lane width, presence and parking lane width, speed, and lanes per direction.

Table B.1 LTS Criteria for Segment with Bike Lane and Adjacent Parking Lane

Prevailing or Posted Speed	1 Lane per direction			≥2 lanes per direction	
	≥ 15' bike lane + parking	14' – 14.5' bike lane + parking	13' bike lane + parking or Frequent blockage[1]	≥ 15' bike lane + parking	≤ 14.5' bike lane + parking or Frequent blockage[1]
≤25 mph	LTS 1	LTS 2	LTS 3	LTS 2	LTS 3
30 mph	LTS 1	LTS 2	LTS 3	LTS 2	LTS 3
35 mph	LTS 2	LTS 3	LTS 3	LTS 3	LTS 3
≥40 mph	LTS 2	LTS 4	LTS 4	LTS 3	LTS 4

1 Typically occurs in urban areas (i.e., delivery trucks, parking maneuvers, stopped buses).

Table B.2 LTS Criteria for Segment with Bike Lane, no Adjacent Parking Lane

Prevailing or Posted Speed	1 Lane per direction				≥2 lanes per direction	
	≥ 7' bike lane (buffered bike lane)	5.5' – 7' bike lane	≤ 5.5' bike lane	Frequent bike lane blockage[1]	≥ 7' bike lane (buffered bike lane)	< 7' bike lane or frequent blockage[1]
≤30 mph	LTS 1	LTS 1	LTS 2	LTS 3	LTS 1	LTS 3
35 mph	LTS 2	LTS 3	LTS 3	LTS 3	LTS 2	LTS 3
≥40 mph	LTS 3	LTS 4	LTS 4	LTS 4	LTS 3	LTS 4

1 Typically occurs in urban areas (i.e., delivery trucks, parking maneuvers, stopped buses).

Table B.3 and Table B.4 presents the criteria for analyzing segments without bicycle lanes that require a bicyclist to ride with mixed traffic. If daily traffic volume is available, then that data should be considered in the analysis. If daily volume data is not available, functional classification should be analyzed in place of daily traffic volumes. As shown, lower speed roadways and higher speed roadways are analyzed differently, but both categories consider presence of a marked centerline, number of through lanes per direction, daily traffic volume or functional classification, and speed. Due to the absence of reliable ADT data across the community's streets, functional class was considered rather than ADT for this analysis.

Table B.3 LTS Criteria for Segments in Mixed Traffic - 30 mph or less

Number of Lanes	ADT (Average Daily Traffic)	Functional Class	Posted or Prevailing Speed (mph)		
			≤20	25	30
Unmarked Centerline	≤750	Local	LTS 1	LTS 1	LTS 2
	750 - ≤1,500	Local/Collector	LTS 1	LTS 1	LTS 2
	1,500 - ≤3,000	Collector	LTS 2	LTS 2	LTS 2
	>3,000	Arterial	LTS 2	LTS 3	LTS 3
1 through lane per direction	≤750	Local	LTS 1	LTS 1	LTS 2
	750 - ≤1,500	Local/Collector	LTS 2	LTS 2	LTS 2
	1,500 - ≤3,000	Collector	LTS 2	LTS 3	LTS 3
	>3,000	Arterial	LTS 3	LTS 3	LTS 3
2 through lanes per direction	≤8,000	Arterial	LTS 3	LTS 3	LTS 3
	>8,000	Arterial	LTS 3	LTS 3	LTS 4
3+ through lanes per direction	Any ADT	Arterial	LTS 3	LTS 3	LTS 4

Table B.4 LTS Criteria for Segments in Mixed Traffic - 35 mph or more

Number of Lanes	ADT (Average Daily Traffic)	Functional Class	Posted or Prevailing Speed (mph)		
			35	40	>45
Unmarked Centerline	≤750	Local	LTS 2	LTS 3	LTS 3
	750 - ≤1,500	Local/Collector	LTS 3	LTS 3	LTS 4
	1,500 - ≤3,000	Collector	LTS 3	LTS 4	LTS 4
	>3,000	Arterial	LTS 3	LTS 4	LTS 4
1 through lane per direction	≤750	Local	LTS 2	LTS 3	LTS 3
	750 - ≤1,500	Local/Collector	LTS 3	LTS 3	LTS 4
	1,500 - ≤3,000	Collector	LTS 3	LTS 4	LTS 4
	>3,000	Arterial	LTS 3	LTS 4	LTS 4
2 through lanes per direction	≤8,000	Arterial	LTS 3	LTS 4	LTS 4
	>8,000	Arterial	LTS 4	LTS 4	LTS 4
3+ through lanes per direction	Any ADT	Arterial	LTS 4	LTS 4	LTS 4

Intersection Approaches

Right-Turns

There are no existing right-turn pockets in Kennedy. Therefore, only locations with left-turn pockets were analyzed.

Left-Turns

The original LTS methodology published by MTI did not consider the effect of left-turns on an intersection approach. However, the ODOT methodology suggests an approach for considering left-turn lanes in locations where a route requires a left-turn and typically uses the vehicle lane rather than a two-stage movement for facilitating the left-turn. There are two left-pockets within the study area, both of which were analyzed.

Table B.5 presents the criteria for analyzing the left turns considered in this analysis. For locations where bicyclists use a lower-stress two-stage movement such as with a bike box or left-turn queue box markings at a low-speed signalized intersection, then the left-turn approach LTS is scored as LTS 1 and the crossing LTS score will determine the stress of the movement. High-speed intersections should include additional treatments to provide the lowest-stress bicycling experience.

Table B.5 LTS Criteria for Intersection Approaches with Left-Turn Lanes [1]

Prevailing Speed or Speed Limit (mph)	No Lane Crossed [2]	1 Lane Crossed	2 + Lanes Crossed
≤ 25	LTS 2	LTS 3	LTS 4
30	LTS 3	LTS 4	LTS 4
≥ 35	LTS 4	LTS 4	LTS 4

1 Use LTS 4 for any shared/exclusive dual left turn lane configuration.
2 For shared through-left lanes or where mixed traffic conditions occur (no bike lanes present)

Intersection Crossings

The Bicycle LTS criteria for analyzing intersection crossings considers only unsignalized intersections, because signalized intersections usually do not create a barrier as the signal generally provides adequate protections. LTS 1 is assumed for the crossing movements at signalized intersections unless the location is known to create a barrier for the user. All signalized intersections analyzed herein were assigned a LTS score of 1 due to no available data to suggest otherwise. If there are locations known to feature issues causing a barrier, the LTS score of the locations should be adjusted to reflect this information. Barriers could result from difficulty in triggering signal detection, or an intersection may not have the proper markings, ramps, and/or push-button accommodations for bicyclists. In locations such as these, the bicyclist is often forced to use the crosswalk like a pedestrian and should be assigned LTS 2. Engineering judgement should be used for assigning stress levels higher than LTS 1 at signalized intersections.

Table B.6 and Table B.7 present the LTS criteria for analyzing unsignalized crossing locations, which considers the total number of through lanes, daily traffic volume or functional classification and speed. Locations with a median refuge can lower traffic stress by providing space for bicyclists if they are unable to cross before oncoming traffic is approaching.

Table B.6 LTS Criteria for Unsignalized Intersection Crossing without a Median Refuge[1]

Prevailing Speed or Speed Limit (mph)	Total Through/Turn Lanes Crossed (Both Directions)2					
	≤ 3 Lanes			4 -5 Lanes		≥ 6 Lanes
	Functional Class/ADT (daily traffic volume)					
	Local	Collector	Arterial	Arterial		Arterial
	≤ 1,200	1,200 - ≤3,000	>3,000	≤ 8,000	>8,000	Any ADT
≤ 25	LTS 1	LTS 1	LTS 2	LTS 3	LTS 4	LTS 4
30		LTS 1	LTS 3	LTS 3	LTS 4	LTS 4
35		LTS 2	LTS 3	LTS 4	LTS 4	LTS 4
≥ 40		LTS 3	LTS 4	LTS 4	LTS 4	LTS 4

1 For street being crossed

Table B.7 LTS Criteria for Unsignalized Intersection Crossing with a Median Refuge[1]

Prevailing Speed or Speed Limit (mph)	Maximum Through/Turn Lanes Crossed per Direction			
	1 Lane	2 Lanes	3 Lanes	4+ Lanes
≤ 25	LTS 1 [2]	LTS 2 [2]	LTS 2	LTS 3
30	LTS 1 [2]	LTS 2 [2]	LTS 3	LTS 3
35	LTS 2	LTS 3	LTS 4	LTS 4
≥ 40	LTS 3	LTS 4	LTS 4	LTS 4

1 For street being crossed.
2 Refuge should be at least 10 feet to accommodate a wide range of bicyclists (i.e., bicycle with a trailer) for LTS 1, otherwise LTS=2 for refuges 6 to <10 feet.

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