

Local Road Safety Plan (LRSP)

City of Waterford



REPORT SIGNATURE SHEET

This Local Road Safety Plan has been prepared under the direction of the following Professional Traffic Engineer. The Registered Traffic Engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.



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April 24, 2021

Date

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Executive Summary

In 2020, the City of Waterford was awarded a state grant from Caltrans to perform a Local Road Safety Plan (LRSP). The LRSP grant application included a citywide analysis of the roadway system in Waterford comprising of the current collisions patterns and high-risk roadway characteristics (systemic analysis). Furthermore, the Waterford's goal is to identify safety countermeasures to help mitigate the City's primary crash type trends and reduce the overall collision severity.

The LRSP is a collaborative process that is similar to a Systemic Safety Analysis Report (SSAR) except a LRSP has a local leadership group that represents the 5 E's (not just engineering) and public outreach. The 5 E's of traffic safety include Engineering, Enforcement, Education, Emergency Services, and Emerging Technologies.



This holistic approach allows certain areas of concern not showing a crash pattern to be analyzed. Also, it fosters local, state, and agency partnerships to advance local road safety.

In following the overall LRSP process, a Stakeholder Working Group (Working Group) was formed with the City as the lead and local organizations from the 5 E's and anyone with an interest in improving the City's roadway safety. In addition, with Yosemite Boulevard/SR 132 serving as the main corridor through the City of Waterford, Caltrans was an important Stakeholder in the Working Group. This group gathered for meetings to discuss the overall collision analysis, goals, priorities, safety recommendations, and overall development of the safety plan.

Based on the City's Stakeholder Working Group Meetings, this LRSP will address multiple Strategic Highway Safety Plan (SHSP) Challenge Areas including but not limited to:

- 1. Intersections
- 2. Pedestrians
- 3. Bicycling
- 4. Distracted Roadway Usage
- 5. Aggressive Driving

In addition, the vision, mission statement, and goals were established in guiding the development of the LRSP. It was also decided that the LRSP for the City of Waterford would be a living document with official updated every five (5) years.



Based on the LRSP working group, the following strategies are recommended for the focused study locations and citywide systemic applications for the 5 E's of Traffic Safety.

- 1. Engineering: Apply low cost safety countermeasures at current locations experiencing collisions and systemically at locations with similar risks (comprehensive approach).
- 2. Enforcement: Enforce actions that reduce high-risk behaviors to include speeding, distracted roadway usage, and Driving Under the Influence (DUI).
- 3. Education: Educate all road users on safe behaviors.
- 4. Emergency Response: Improve emergency response times and actions.
- 5. Emerging Technologies: Apply emerging technologies to the roadway, vehicle, and user.

In addition, it is important to understand the upcoming funding opportunities in the successful implementation of these safety projects.

Funding opportunities include but not limited to:

- Highway Safety Improvement Program (HSIP) Call typically every 2 years. Last call (cycle 10) started in April and ended November 2, 2020 (extended due to COVID-19)
 - Next call HSIP Cycle 11 is schedule to start in April 2022
- Active Transportation Program (ATP)
 - Next call for funding projects is scheduled to start in March 2022
- Congestion Mitigation and Air Quality (CMAQ) program
- Sustainable Transportation Planning Grant (Sustainable Communities)
 - The City of Waterford is currently applying for this grant for the State Route 132 (SR 132) corridor. The goal of the grant application is to transform SR 132 into a complete streets corridor.



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- Appendix C Stakeholder and Public Input
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1. Introduction

The project involves the development of a Local Road Safety Plan (LRSP), which provides local agencies an opportunity to address unique roadway safety needs in their jurisdictions. The process of preparing an LRSP creates a framework to systematically identify and analyze local safety problems and recommend engineering safety improvements for future Highway Safety Improvement Program (HSIP) funding.

Preparing an LRSP facilitates local agency partnerships and collaboration, resulting in a prioritized list of improvements and actions that contribute to California's Strategic Highway Safety Plan (SHSP) overall vision and goals. This SHSP focuses on reducing fatal and severe injury collisions (FSI collisions) with focused challenge areas with a focus on the Five "E's" of Traffic Safety (see **Figure 1.1**).



The City and GHD will follow the Federal Highways Administration's (FHWA) Local Road Safety process in the following six (6) steps as shown in **Figure 1.2**:



Figure 1.2 FHWA's LRSP Development Process

In working with the first step of establishing leadership, Michael Pitcock, the City Manager from the City of Waterford, reached out to the various stakeholder representative for the LRSP working group in capturing the "5E's" and local community members that can contribute to the overall safety plan for the City of Waterford. This working group was key in creating a comprehensive safety plan that is tailored to address the local needs and issues.



2. Background

2.1 Purpose and Need

The City of Waterford has a current approximate population of 9,000 and is approximately 10 miles east of Modesto, California. The City of Waterford has a mix of traffic that includes local and commuter traffic. The *City of Waterford General Plan Vision 2025* evaluates how the City growth and development will occur. This plan describes the "new-urbanism" design principal and goals in providing solutions for existing problems and long-term growth. These goals include the development of a "sustainable" community that has a balance of job creating opportunities and vibrant commercial districts with "livable" neighborhoods.

In focusing in on the roadway safety needs, the past five (5) years of collisions (2015-2019) were evaluated for the City roadways and Caltrans roadways (Yosemite Boulevard/SR 132) separately and the fatal and severe injury collisions are discussed below.

2.1.1 City Roadways

During the five-year period (2015-2019), there were no fatal collisions and one severe injury collision recorded for the roadways under the City of Waterford's jurisdiction.

The severe injury collision on the City streets had the following characteristics:

 2017 – A rear-end collision with a parked motor vehicle cited as "Unsafe Speed" on Bonnie Brae Avenue, west of Cinnabar Way

2.1.2 Caltrans Roadways

During the same five-year period (2015-2019), there was one fatal collision and one severe injury collision on SR 132.

The severe injury collision on the SR 132 had the following characteristics:

 2018 – A vehicle-pedestrian collision on Yosemite Boulevard (SR 132), west of Skyline Boulevard

The fatal collision on SR 132 had the following characteristics:

 2018 – A vehicle-bicycle sideswipe collision cited as "Traffic Signals and Signs" on Yosemite Boulevard (SR 132) at Tim Bell Road

In addition to these collisions, there were two (2) fatalities and 1 (one) severe injury collision that occurred in 2020 on Yosemite Boulevard/SR 132.

- 2020 One fatal collision due to a pedestrian crossing (elderly male) at SR 132 and Pasadena Avenue.
- 2020 One severe injury collision due to a pedestrian crossing SR 132 at Pasadena Avenue during early-hour low-light condition in a wheelchair.
- 2020 One fatal collision involved a single vehicle and caused by driving under influence; this collision was recorded at the intersection of SR 132/F Street.



In improving roadway safety for the City of Waterford, it is important to focus on mitigating these high injury collisions and loss of life.

2.2 LRSP Methodology

The LRSP methodology followed the FHWA's LRSP development process as shown in Figure 2.1.

Below is a roadmap created by the Federal Highway Administration to show the process of creating the Local Road Safety Plan. Here are the primary steps used to create this plan:

1. Identify Stakeholders

i) Working Group was formed of the 5 E's and other interested representatives.

2. Use Safety Data

i) Past 5 years of collisions were analysed with discussion of other high-risk locations.

3. Chose Proven Solutions

i) FHWA Proven Countermeasures and Caltrans safety countermeasures were used in mitigation collision trends and risk characteristics.

4. Implement Solutions

i) Projects were identified for specific location and systemically.



Figure 2.1 FHWA's LRSP Development Map

Source: Federal Highway Administration

2.3 Standards and Guidelines

In developing the City of Waterford LRSP, the following standards and guidelines were followed:



- "Local Roadway Safety, A Manual for California's Local Road Owners", Caltrans, Version 1.5, April 2020.
- 2020-2024 California's Strategic Highway Safety Plan (SHSP), "California Safe Roads: 2020-2024 Strategic Highway Safety Plan", Caltrans.
- "Developing Safety Plans, A Manual for Local Rural Road Owners", Federal Highway Administration, March 2012.
- "Highway Safety Manual", American Association of State Highway Officials (AASHTO), 1st Edition, 2014 supplement.
- "California Manual of Uniform Traffic Control Devices (CA MUTCD)", Revision 5, 2014.

2.4 Current Safety Projects

The City of Waterford and Caltrans have conducted some previous safety analysis that has developed the following planned safety projects. **Table 2.1** shows these improvements within the City and their respective locations. In addition, refer to **Appendix A: Previous Safety Plans and Projects** for specific project details.

2.4.1 ATP Calls for Project – Cycle 5

The City of Waterford received one (1) ATP grant from Cycle 3 and submitted two ATP applications for Cycle 5. The Cycle 5 selection of projects should come out in February 2020. The details of the ATP projects are as follows:

- An ATP, Cycle 3 grant was awarded to Waterford for installation of ten Rectangular Rapid Flashing Beacons (RRFBs) at various existing crosswalks in the City of Waterford. As of December 2020, the City received funding for environmental and planning (E&P) phase of the project and intends on applying for construction funds in January of 2021. These RRFBs will be generally located on school routes and around schools. Construction for this project is expected to complete in March of 2022 or sooner.
- 2. An ATP, Cycle 5 application was submitted for the "Waterford Safe Routes to School Project" along Washington Road. This project includes 1,715 linear feet of curbs, gutters, and sidewalks along the north side of Washington Road between S Pasadena Avenue and S Reinway Avenue, along the east side of S Reinway Avenue to the northernmost school driveway, and along the west side of South Pasadena Avenue for the areas without sidewalk. This This project will also include the installation of six streetlights, five crosswalks, and seven (7) ADA compliant curb ramps; and road widening.
- 3. An ATP, Cycle 5 application was submitted for the "Waterford Safe Routes to School Project" along Yosemite Boulevard. This project includes 1,910 linear feet of curbs, gutters, and sidewalks along the north side of SR 132 between Reinway Avenue and Eucalyptus Avenue and south side of SR 132 from end of existing sidewalk 640' west of SR 132/Reinway Ave intersection to S Eucalyptus Ave. The project will also include the installation of six streetlights; upgrade of an existing 4-way crosswalk to high-visibility continental markings, and widening the road's shoulders.



2.4.2 SR 132 Americans with Disabilities Act (ADA) Improvements

Caltrans' project will provide various improvements to include pedestrian accommodations along SR 132 (Yosemite Boulevard) in the City. Some of these improvements include curb, gutter, sidewalk, curb ramps, and pedestrian signal upgrades to Accessible Pedestrian Signals (APS) with countdown timers at Reinway Avenue, Western Avenue, and F Street. These improvements are expected to be completed by March 2022.

In addition, to this project, during the LRSP stakeholder meetings, it was identified that a pedestrian lead interval (pedestrian will receive the right of way to cross before vehicles) would be benefit at the signals at SR 132/Reinway Avenue and SR 132/Western Avenue. Per coordination between the City and Caltrans, five (5) seconds of lead time to the pedestrian crossing phases was added in August 2020.

Also, the City has a desire to provide the frontage road improvements at the SR 132 and Pasadena Avenue intersection and east of Center Street in the ultimate Right of Way location. Especially, for the intersection at SR 132 and Pasadena Avenue where a future traffic signal will be installed (refer to Section 2.4.1).

2.4.3 Edgewater Subdivision – Rodway Improvement

The Edgewater Subdivision is a residential development project located at the northwest corner of Pecan Avenue and N. Pasadena Avenue. As part of this project, sidewalks will be constructed along the project site. This project will construct sidewalk curb, gutter, and pavement widening along the west side of N. Pasadena Avenue from Kadota Avenue to Pecan Avenue, north side of Pecan Avenue between N. Reinway Avenue and N. Pasadena Avenue, and south side of Kadota Avenue from to Modesto Irrigation District (MID) Canal to N. Pasadena Avenue. The intersection at N. Reinway Avenue and Pecan Avenue has school crosswalks on all legs due to the close proximately to the Moon School and Lucille Whitehead Intermediate School.

2.4.4 Traffic Signal at SR 132 at Pasadena Avenue

The intersection at SR 132 and Pasadena Avenue is currently unsignalized. The City did receive a CMAQ grant to install a signal at this location. However, in the interim, it is recommended that a RRFB be installed on the east leg until the signal is constructed. This RRFB is funded through the ATP application mentioned is Section 2.4.1.

All current safety projects are summarized in Table 2.1.



Project Title Street/Intersection Improvement Construct sidewalk, curb, gutter, and pavement wideninglong west side of N Pasadena Ave Pasadena Avenue between Kadota Avenue to Pecan Avenue. Construct sidewalk, curb, gutter, and pavement widening along south side of Edgewater Subdivision Kadota Ave Kadota Avenue between M.I.D. Main Canal to N Pasadena Avenue. Construct sidewalk, curb, gutter, and pavement widening along north side of Pecan Ave Pecan Avenue between N Pasadena Avenue to N Reinway Avenue. Pedestrian signal upgrade to Accessible Pedestrian Signal (APS) with SR 132/S Reinway Ave countdown timers. Installation of ADA compliant curb ramps Pedestrian signal upgrade to Accessible Pedestrian Signal (APS) with SR 132/Western Ave countdown timers. Installation of ADA compliant curb ramps. State Route 132 Americans with Pedestrian signal upgrade to Accessible Pedestrian Signal (APS) with Disabilities Act (ADA) Improvements SR 132/F St countdown timers. Installation of ADA compliant curb ramps. SR 132 (Yosemite Blvd) from Install missing sidewalk and correct ADA issues on the south side from Reinway Ave to F St Reinway Ave to F St and north side of street from Reinway Ave to Bentley Ave. F St/Tweed St Install RRFB F St/Dorsev St Install RRFB Church St/Pecan Ave Install RRFB Bentley St/D St Install RRFB Bentley St/C St Install RRFB Active Transportation Projects (ATP) -Bentley St/B St Install RRFB Cycle 3 Washington Rd/S Reinway Ave Install RRFB Welch St/D St Install RRFB Welch St/C St Install RRFB Install RRFB. Signal will be installed as part of CMAQ funded projects -SR132/N Pasadena Ave expected completion 2022-2023. Install curb, gutter, and sidewalk along the north side of Washington Road between S Pasadena Avenue and S Reinway Avenue, along the east side of Washington Rd between S S Reinway Avenue to the northern school driveway, and along the west side Pasadena Ave and S Reinway of S Pasadena Avenue in completing the discontinuous sidewalk. This Ave project will also include the installation of six streetlights, five crosswalks, Active Transportation Projects (ATP) and seven (7) ADA compliant curb ramps; and road widening. Cycle 5 (Contingent upon grant approval) Install sidewalk along north side of SR 132 from N Reinway Ave to N Eucalyptus Ave and along south side of SR 132 from end of existing sidewalk SR 132 (Yosemite Blvd) 640' west of SR 132/Reinway Ave intersection to S Eucalyptus Ave. The between Reinway Ave to project will also include the installation of six streetlights; upgrade of an Eucalyptus Ave existing 4-way crosswalk to high-visibility continental crosswalk markings, and widening the road's shoulders.

Table 2.1 Safety Projects Planned within the City of Waterford

3. Safety Partners/Stakeholders

3.1 LRSP Working Group Members

Based on community connections, the City of Waterford led the formation of the LRSP Working Member Group. This leadership group was crucial in the development of the LRSP and helped in capturing the safety needs, goals, and priorities including safety countermeasures for the City of Waterford.



The LRSP Working Group included the following representatives:

- City of Waterford
- Caltrans District 10
- Waterford Police Services
- Waterford Unified School District
- Stanislaus Consolidated Fire Protection District (SCFPD)
- GHD, Inc.

3.1.1 LRSP Working Group Meetings

Two meetings were held with the stakeholder working group. The virtual meetings were as follows:

- 1. August 5, 2020 10 a.m. to noon
 - a. Discussed the LRSP overall process, working group member's safety priorities, past 5 years of collisions (City and Caltrans roadways), vision, goals, and priorities.
- 2. October 29, 2020 10 a.m. to noon
 - a. Reviewed first meeting, discussed public comments and ways to address their concerns, recent developments, safety countermeasures and projects, refined of LRSP's guiding principles, and coordinated next steps.

The stakeholder working group also provided their feedback and comments on the Draft Local Road Safety Plan document before the plan was finalized. With many of the safety countermeasures to include engineering, enforcement, and emergency response, it is important to have buy off from the stakeholders in understanding how the plan will be implemented.

3.2 Guiding Principles

The members of the working group coordinated to establish the vision, mission statement, and goals that guided the development of the document. Ideally, this document will help the City move toward Vision Zero. The aim of Vision Zero is to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, and equitable mobility for all. Traditionally traffic deaths and severe injuries have been considered as inevitable side effects of modern life. The reality is that these tragedies can be addressed overtime by taking a proactive, preventative approach that prioritizes traffic safety as a public health issue.

3.2.1 Vision Zero

Vision Zero is a significant departure from the status quo in two major ways:

• Vision Zero recognizes that people will sometimes make mistakes, so the road system and related policies should be designed to minimize those inevitable mistakes and reduce their likeliness to result in severe injuries or fatalities. This means that system designers and





policymakers are expected to improve the roadway environment, policies (such as speed management), and other related systems to lessen the severity of crashes. Roadway users are however still responsible for their mistakes and should follow all applicable laws and use reasonable judgement when conducting themselves within the public right of way.

 Vision Zero is a multidisciplinary approach, bringing together diverse and necessary stakeholders to address this complex problem. In the past, meaningful, cross-disciplinary collaboration among local traffic planners and engineers, policymakers, and public health professionals has not been the norm. Vision Zero acknowledges that many factors contribute to safe mobility -- including roadway design, speeds, behaviors, technology, and policies -and sets clear goals to achieve the shared goal of zero fatalities and severe injuries.

As shown in **Figure 3.1**, is the comparison of the traditional approach versus the Vision Zero approach.





3.2.2 SHSP Challenge Areas

The LRSP will complement California's SHSP 2020-2024. Per this plan the recommended challenge areas area shown in **Figure 3.2**. These challenge areas are recommended emphasis areas in the development of the plan.



Figure 3.2 SHSP Challenge Areas



Based on the LRSP Working Group Meetings, this LRSP will address multiple Strategic Highway Safety Plan (SHSP) Challenge Areas including:

- 1. Intersections
- 2. Pedestrians
- 3. Bicycling
- Distracted Driving (and other distracted roadway usage from all users to include pedestrians and bicyclists)
- 5. Aggressive Driving

3.2.3 Vision

A vision statement describes what the Local Road Safety Plan is trying to achieve.

Working together in creating a comprehensive roadway safety plan that encourages improved safety for all users, whether it is walking, biking, and driving – because every person in our community matters.

3.2.4 Mission Statement

The mission statement defines the purpose of the plan, what it does, and what it is about. The mission statement was developed in collaboration with the working group.

Waterford will provide a safe and sustainable multimodal transportation system for all users of the public roadways in the City of Waterford.



3.2.5 Goals

Safety goals were development for the Local Road Safety Plan. It is important to capture realistic goals that can be measurable or evolve over time.

- Strive toward zero deaths or life altering injuries on local roadways by 2030.
- Increase walking, biking, rolling (wheelchair, skateboard, scooter, etc.) to work, and to schools.
- Improve safety around schools.



- Implement education campaigns regarding Rectangular Rapid Flashing Beacon (RRFB) and distracted roadway usage utilizing schools and social media.
- Increase law enforcement capabilities.
- Improve the health and vitality of our community through our multimodal transportation system.

4. Data Analysis

The City of Waterford collision data was gathered using the Statewide Integrated Traffic Records System (SWITRS), Traffic Accident Surveillance and Analysis System (TASAS) for SR 132, and City collision records. Each data set was analyzed, crosschecked, and compiled into one complete comprehensive data set. This process was done to ensure that all reported collisions occurring within the City are accounted for and to provide additional information that one system may not have captured. The data set contains five years' worth of collisions spanning from January 1, 2015 to December 31, 2019.

During this period, a total of 166 collisions were reported in the City of Waterford. These collisions were classified based on roadway jurisdiction (City or Caltrans). Collisions were further categorized into intersection related collisions and roadway segment related collisions with a separate focus on the City streets and SR 132.

The pie chart in **Figure 4.1** depicts the number of collisions by roadway jurisdiction and collision location (intersection or segment). The highest number of collisions was at intersections on SR 132 (61 collisions) followed by City street intersections (52 collisions).





Figure 4.1 Total Collisions within the City of Waterford (2015-2019)

4.1.1 Collisions on City Roadways

There were 88 collisions recorded on the City roadways between 2015 and 2019. As shown on the collision density map (see **Figure 4.2** below), areas with high density of collisions include F Street at Bonnie Brae Avenue and F Street at Bentley Street. There were no fatal collisions and one severe injury collision on the City roadways. Hit-object collisions were the most common collision type. The top five violation categories in order (not including unknown or not stated collisions) for City roadways are listed below.

- Improper Turning
- Unsafe Speed
- Automobile Right of Way
- DUI/BUI
- Unsafe Starting/Backing





Figure 4.3 summarizes the City collisions based on severity and type.



Figure 4.3 Summary of City Collisions



Table 4.1 shows the breakdown of collision severity and violation type by intersection. The total number of collisions and Equivalent Property Damage Only (EPDO) rating were also assessed at these locations to determine the top study intersections (refer to **Appendix B: Collision Data**). Per the *Caltrans Local Roadway Safety Manual*, it is recommended to rank locations with higher severity as higher focus. The Highway Safety Manual (HSM) methodology of Equivalent Property Damage Only (EPDO) rating assigns a weight to collisions in capturing the relative severity in equivalent property damage only (PDO =1).

Table 4.2 provides the comprehensive collision costs and EPDO weights that were used in ranking the collisions. Collision costs include both direct and indirect costs. Direct crash costs include ambulance service, police and fire services, property damage, insurance, and other costs directly related to the crashes. Indirect collision costs account for the value society would place on pain and suffering or loss of life associated with the crash.

				56	verny										PCF Violation								
North/South Road	East/West Road	Fatal	Injury (Severe)	Injury (Other Visible)	Injury (Complaint of Pain)	Property Damage Only	Unknown	DUI/BUI	Impeding Traffic	Unsafe Speed	Following Too Closely	Wrong Side of Road	Improper Passing	Unsafe Lane Change	Improper Turning	Automobile Right of Way	Pedestrian Violation	Traffic Signals and Signs	Other Hazardous Violation	Unsafe Starting or Backing	Other Improper Driving	Other/Not Listed	Total Collisions
EAGLE PEAK DR	CLARKE MILL AVE					1									1								1
N PASADENA AVE	KADOTA AVE	_				1																1	1
N PASADENA AVE	CHERRY LN		_			1				1			-										1
LOCH NESS DR	CURRAN DR					1				1													1
N BECKY WAY	PECAN AVE					1														1			1
BURNS CREEK CT	WASHINGTON RD					1												1					1
N WESTERN AVE	HERNANDEZ AVE					1				1													1
S WESTERN AVE	WASHINGTON RD					1				1													1
CHURCH ST	KADOTA AVE			1																		1	1
CHURCH ST	DORSEY ST						1						·									1	1
CHURCH ST	PECAN AVE					1									1					-			1
ROSE CT	ROSE WAY					1																1	1
G ST	DORSEY ST			1									·			1							1
G ST	BENTLEY ST			1																		1	1
OAKDALE WATERFORD HWY	TWEED ST					1																1	1
OAKDALE WATERFORD HWY	BONNIE BRAE AVE			1		3									2	1						1	4
OAKDALE WATERFORD HWY	ROSE WAY			1		1										1						1	2
OAKDALE WATERFORD HWY	SUMMERS ST				1	1										1				1			2
OAKDALE WATERFORD HWY	BENTLEY ST				1	5										3						3	6
EST	BENTLEY ST					2																2	2
E ST	WELCH ST					1	1											1				1	2
CINNABAR WAY	BONNIE BRAE AVE					1		1															1
DST	WELCH ST			1						1													1
BRONZE LN	BONNIE BRAE AVE					1																1	1
CST	BONNIE BRAE AVE				1					1													1
CST	ODEN DR					2		1														1	2
TIM BELL RD	BONNIE BRAE AVE					1																1	1
TIM BELL RD	MAIN ST					1					1												1
TIM BELL RD	SUNFLOWER DR					1									1								1
TIM BELL RD	WELCH ST					1																1	1
LOY ST	WELCH ST					2		1										1					2
N APPLING RD	WATERFRONT DR					1																1	1
DAYFLOWER CT	SUNFLOWER DR					1																1	1
TISDELL DR	BENTLEY ST			1		1									1				1				2
PETICHIA PL	WELCH ST					1									1								1

Table 4.1 Intersection Collisions on City Roadways



Severity	Comprehensive Costs	EPDO Weight
Fatal (K)	\$6,418,400	544
Severe Injury (A)	\$345,800	30
Minor Injury (B)	\$126,500	11
Non-Visible Injury (C)	\$71,900	6
PDO (O)	\$11,800	1

Table 4.2 Comprehensive Collision Costs and EPDO Weights (2018 dollars)

Based on Table 7-1, Highway Safety Manual, 2010, Adjusted to 2018 dollars.

The intersection of Oakdale-Waterford Highway/F Street and Bonnie Brae Avenue had the highest EPDO score at 14. The intersection of Oakdale-Waterford Highway/F Street and Bentley Street had the highest number of collisions (6 total collisions). Further detailed collision analysis is in **Appendix B: Collision Data**.

The segment collisions were also analyzed by EPDO and total number of collisions. Bonnie Brae Avenue between Oakdale-Waterford Highway and Tim Bell Road had the highest EPDO rating (34) due to a severe injury. However, Oakdale-Waterford Highway between the northern City limit and southern City limit had the highest number of segment collisions (6 total collisions) and second highest EPDO (16).

4.1.2 Collisions on Caltrans Roadways (SR 132)

There were 77 collisions on Yosemite Boulevard (SR 132) between 2015 and 2019. As seen by the collision density map (see **Figure 4.4**), the area on SR 132 at N Western Avenue has a high density of collisions with 12 total collisions with other "hot spots" at Pasadena Avenue, Reinway Avenue, F Street, and E Street. In total, there was one fatal and one severe injury collision on SR 132. The majority of collisions were rear ends.

In 2020, there were one (1) fatal collision and one (1) severe injury collision on SR 132 at Pasadena Avenue that involved a vehicle/pedestrian collision type. There was one (1) fatal collision at SR 132 and F Street due to an impaired driver. These collisions were not included in the collision analysis since they did not occur during the complete five-year time period (2015 – 2019). The top three violation categories (not including unknown and not stated collisions) for SR 132 are listed in order below. After the top 3, the next 5 violation categories (Wrong Way, Improper Passing, Improper Turning, Traffic Signals and Signs, and Other Improper Turning) all had two (2) collisions.

- Unsafe Speed
- Automobile Right of Way
- Following Too Closely





Figure 4.4 Collision Density on Caltrans Roads





Figure 4.5 Summary of SR 132 Collisions



Table 4.3 shows the breakdown of collision severity and violation type by intersection. The intersection of SR 132 and Western Ave had the highest number of collisions (12) and the intersection of SR 132 and Tim Bell Rd the highest EPDO (550) due a fatality with other collisions. Refer to **Appendix B: Collision Data** for more detailed information.

		Severity								PCF Violation														
North/South Road	East/West Road	Fatal	Injury (Severe)	Injury (Other Visible)	Injury (Complaint of Pain)	Property Damage Only	Unknown	DUI/BUI	Impeding Traffic	Unsafe Speed	Following Too Closely	Wrong Side of Road	Improper Passing	Unsafe Lane Change	Improper Turning	Automobile Right of Way	Pedestrian Violation	Traffic Signals	and orgins Other Hazardone	Violation	Unsafe Starting or Backing	Other Improper Driving	Other/Not Listed	Total Collisions
EUCALYPTUS AVE	SR 132					2										1							1	2
REINWAY AVE	SR 132			1	2	3				1								1					4	6
PASADENA AVE	SR 132			2		7		1			1		1			2							4	9
WESTERN AVE	SR 132			2		10				5					1								6	12
CHURCH ST	SR 132					2												1					1	2
IST	SR 132			1		1				1													1	2
CENTER ST	SR 132					3						1											2	3
H ST	SR 132					1					1													1
G ST	SR 132			1	1	3				3	1												1	5
OAKDALE WATERFORD HWY	SR 132			2		5				2	1					1							3	7
E ST	SR 132			2	2	3										2					1	1	3	7
TIM BELL RD	SR 132	1			1					1					1			1						2
N APPLING RD	SR 132					2		1															1	2
SKYLINE BLVD	SR 132					2				1		1												2

Table 4.3 Intersection Collisions on SR 132

4.1.3 Pedestrian and Bicycle Collisions

There were a total of five (5) pedestrian and two (2) bicycle collisions for the City and Caltrans roadways. The majority of pedestrian and bicycle collisions were along Yosemite Boulevard. The location of each collision, along with its associated jurisdiction is outlined in **Figures 4.6** and **4.7**.





Figure 4.6 Map of Pedestrian Collisions

Figure 4.7 Map of Bicycle Collisions





5. Emphasis Areas

The emphasis areas determined by the working group are as follows:

- Safe routes to school
- Evaluate ways to improve pedestrian crossings
- Implement educational campaign regarding Rectangular Rapid Flashing Beacon (RRFB) and prevention of distracted roadway usage.
 - Promote walking and bicycling
- Provide complete roadway infrustructure for all roadway users (complete streets)
- Prioritize based on collision frequency and collision severity

These emphasis areas were used in prioritizing safety projects.

5.1 Performance Measures

Performance measures should be **SMART**:

Specific – clear action item description

Measurable – identified performance measures

Achievable – committed resources by responsible organization

Relevant – statewide significance and data-driven issue and countermeasure

Time Constrained – achievable within the LRSP time frame

The performance measures will coincide with the goals defined by the LRSP working group.

5.2 Strategies

Strategies to improve safety will coincide with the current safety issues, goals of the LRSP, public outreach, and goals of the previous safety plans.

In summary the following strategies will be implemented based on the findings.

6. Identify Strategies

6.1 Public Outreach

6.1.1 Utility Mailer

In September 2020, a project flyer in English and Spanish was sent out with the utility bills in describing the LRSP process and encouraging public input through the website for the Local Road Safety Plan. **Figure 6.1** shows the project flyer (English version) that was mailed to the City





residents. The majority of the comments were captured on the website, but some responses were also emailed. All comments are summarized in **Appendix C: Stakeholder and Public Input**.

Figure 6.1 Public Flyer



We want to hear from you! Provide your input on the safety of the roadways in our community and learn more about the LRSP by visiting the following link:

Irsp.mysocialpinpoint.com/waterford

For further information, contact: Kathryn Kleinschmidt Michael Pitcock kathryn.kleinschmidt@ghd.com mpitcock@cityofwateford.org What is a Local Road Safety Plan (LRSP)?

The LRSP provides local agencies an opportunity to address unique roadway safety needs in their jurisdictions. The process of preparing an LRSP creates a framework to systematically identify and analyze local safety problems and recommend safety improvements for all road users (vehicles, bicycles, pedestrians, transit, etc.). Preparing an LRSP facilitates local agency partnerships and collaboration, resulting in a prioritized list of improvements and actions that contribute to California's Strategic Highway Safety Plan (SHSP) overall vision and goals. The SHSP focuses on reducing fatal and injury collisions with focused challenge areas.

6.1.2 Social Pinpoint Website

A project website was created on the Social Pinpoint platform to inform the public about the LRSP and provide a platform for input. **Figure 6.2** displays the homepage for the website found at Irsp.mysocialpinpoint.com/waterford. Visitors to the page were invited to provide comments on an interactive project map and share their thoughts through a project survey. Comments from the interactive map and detailed results from the survey are included in **Appendix C: Stakeholder and Public Input**.





Figure 6.2 Public Website Home Page

6.1.2.1 Interactive Map

The interactive map feature on the website allowed the public to drag icons to a location within the City and leave a comment regarding driving, pedestrian, or bicycle suggestions at that location. **Figure 6.3** shows the interactive map feature from the website. Some of the public concerns collected from the interactive map are as follows:

- Difficulty turning onto F Street from Western Avenue/La Gallina Avenue due to speed and density of vehicles on F Street
- Improper passing of vehicles (waiting to turn left/right out of Yosemite Boulevard) on Yosemite Boulevard where a turn pocket is not available for turning vehicles.
- Speed of vehicles on Bonnie Brae Avenue Bentley Street, Yosemite Boulevard and S Reinway Avenue.
- Lack of sidewalks on Yosemite Boulevard between Tim Bell Road and N Appling Road, Yosemite Boulevard between Center Street and H Street, Pecan Avenue between Western Avenue and Church Street and along Skyline Boulevard (North of Yosemite Boulevard).
- Condition, sight distance, and width of Skyline Boulevard





Figure 6.3 Public Website Interactive Map

6.1.2.2 Public Survey

The City of Waterford Public Survey asked six questions relating to the LRSP. As of January 13, 2021, the survey received 20 responses. According to the survey, one of the primary safety issues for Waterford was a lack of infrastructure (see **Figure 6.4** for a chart with the responses). Common suggestions for roadway improvements included pedestrian enhancements such as sidewalks and improvements to crossings. Ninety percent of the respondents were familiar with Rectangular Rapid Flashing Beacons (RRFB) and that survey received 20 responses.





Figure 6.4 Public-Identified Roadway Issues

7. **Prioritize and Incorporate Strategies**

Through coordination and feedback from the City of Waterford, LRSP working group, and public outreach, safety projects and strategies were identified for the Local Road Safety Plan.

The LRSP will reference specific location engineering projects and systemic safety applications. In addition, safety strategies and projects that address the other E's to include Enforcement, Education, Emergency Response, and Emerging Technologies will be discussed below.

7.1 Engineering Strategies

7.1.1 City Intersection Projects

Per the HSIP program, engineering countermeasures are available for grant funding. Per the most recent HSIP Cycle (Cycle 10) the approved countermeasures and crash reduction benefits were quantified in the HSIP analyzer. The recommended countermeasures for the 13 intersections with the highest Equivalent Property Damage Only (EPDO) ranking are presented in **Appendix D**: **Recommended Projects**. Since the next HSIP Cycle 11 is in 2022, further safety analysis should be conducted at that time in refining the collision data and subsequent safety projects and Benefit to Cost Ratios (BCRs).

Examples of two recommended projects for future HSIP Cycles are shown below.





Countermeasures were evaluated and prioritized based on benefit to cost ratios as prescribed in Caltrans most recent Local Road Safety Manual (LRSM). Refer to **Appendix D: Recommended Projects** for the list of countermeasures from Caltrans LRSM. The benefit value of a crash is the expected reduction in crashes with the countermeasure and the associated costs with the crash. Caltrans has opted to use 5 years of observed crashes in estimating future expected crashes. A benefit in reduction of cost can include benefits derived from savings of societal cost (emergency response, medical cost, and property damage). Cost associated with a project is based on planning level estimates of construction cost, planning and environmental cost and costs associated with right-of-way and utilities.

Proposed countermeasures at City Intersections are shown in **Table 7.1**. Estimated benefit to cost ratios for proposed projects for City intersections are shown in **Table 7.2**.



Table 7.1 Proposed Countermeasures for City Intersections

Intersection Priority	Intersection	EPDO	Total Crashes	Intersection Type	Countermeasure Number	CRF	Recommended Countermeasures	Systemic
					NS17	20%	1) Install right turn lane on northbound approach	
	Oakdale Waterford Hwy/Bonnie				NS06	15%	2) Install/upgrade larger or additional stop signs	Yes
1	Brae Ave	14	4	TWSC	NS07	25%	3) Upgrade intersection pavement markings	Yes
					NS03/NS04	30%/VARIES	4) Install signals or convert to roundabout from all way stop if CAMUTCD warrants are satisfied.	
2	Tisdell St/Bentley St	12	2	TWSC	NS07	25%	1) Upgrade intersection pavement markings	Yes
3	Oakdale Waterford Hwy/Rose	12	2	TWSC	NS06	15%	1) Install/upgrade larger or additional stop signs	Yes
	Way	12	2	1000	NS07	25%	2) Upgrade intersection pavement markings	Yes
					NS03	30%	1) Install signals	
4	Oakdale Waterford Hwy/Bentley	11	6	AWSC	NS06	15%	2) Install/upgrade larger or additional stop signs	Yes
-	St		U	A1100	NS07	25%	3) Upgrade intersection pavement markings	Yes
					NS09	30%	4) Install flashing beacons as advance warning	
5	Church St/Kadota Ave	11	1	TWSC	NS02	50%	1) Convert to all-way STOP control (from 2-way control) if warrants are met	
					NS06	15%	1) Install/upgrade larger or additional stop signs	Yes
6	G St/Dorsey St	11	1	TWSC	NS07	25%	2) Upgrade intersection pavement markings	Yes
					NS12	55%	3) Improve pavement friction (High friction surface treatment)	
7	G St/Bentlev St	11	1	TWSC	NS06	15%	1) Install/upgrade larger or additional stop signs	Yes
				_	NS07	25%	2) Upgrade intersection pavement markings	Yes
8	Oakdale Waterford	7	2	TWSC	NS06	15%	1) Install/upgrade larger or additional stop signs	Yes
	Hwy/Summers St				NS07	25%	2) Upgrade intersection pavement markings	Yes
9	C St/Bonnie Brae Ave	6	1	TWSC	-	-	1) Install object markers (on bridge wall)	
10	E St/Bentley St	2	2	AWSC	-	-	1) Replace existing parking with back-in diagonal parking	
11	C St/Oden Dr	2	2	TWSC	NS06	15%	1) Install/upgrade larger or additional stop signs	Yes
				_	NS07	25%	2) Upgrade Intersection pavement markings	Yes
12	Barnes Ave/Welch St	2	2	TWSC	NS07	25%	1) Upgrade Intersection pavement markings	Yes
					NS06	15%	1) Install/upgrade larger or additional stop signs	Yes
13	E St/Welch St	2	2	AWSC	NS07	25%	2) Upgrade intersection pavement markings	Yes
					NS14	25%	3) Install raised median on approaches	



Intersection	Intersection Type	Countermeasure Number	Benefit to Cost Ratio (BCR)	B/C Ratio
			Install right turn lane on northbound approach	
Oakdale Waterford Hwy/Bonnie	TWSC	NS17, NS06,NS07	Install/upgrade larger or additional stop signs	3.01
Brae Ave			Upgrade intersection pavement markings	
		NS03	Install Signal	0.55
		NS04	Install Roundabout	0.44
Tisdell St/Bentley St	TWSC	NS07	Upgrade intersection pavement markings	5.89
Oakdale Waterford Hwy/Rose	TWSC	NS06 NS07	Install/upgrade larger or additional stop signs	5.85
Way	11100	11000,11007	Upgrade intersection pavement markings	0.00
		NS03	Install signals	0.46
Oakdale Waterford Hwy/Bentley	AWSC		Install/upgrade larger or additional stop signs	
St	ANGO	NS06, NS07, NS09	Upgrade intersection pavement markings	2.64
			Install flashing beacons as advance warning	
Church St/Kadota Ave	TWSC	NS02	Convert to all-way STOP control (from 2-way control)	1.18

Table 7.2 Benefit to Cost Calculations for Proposed Projects for City Intersections

7.1.2 City and Caltrans Segment Analysis

Through the analysis period there were 38 collisions reported on City of Waterford roadway segments (non-intersection related). A breakdown of roadway collisions on City streets are included in **Appendix B: Collision Data**.

Proposed mitigation measure for roadway segments are shown in **Table 7.3**. Benefit-to-cost analysis for proposed mitigation measures along roadway segments are shown in **Table 7.4**.

In Figure 7.1 the proposed safety improvements are shown on Oakdale-Waterford Highway.



Table 7.3 Proposed Mitigation Measure for Roadway Segments

Segment	EPDO	Total Crashes	Countermeasure Number	CRF	Recommended Countermeasures	Systemic		
Bonnie Brae Ave btwn Oakdale-	24	5	R21	55%	1) Improve pavement friction (High Friction Surface Treatments)			
Waterford Hwy and Tim Bell Rd	34	5	R26	30%	2) Install dynamic/variable speed warning signs	Yes		
			R13	30%	1) Add two-way left-turn lane (without reducing travel lanes)			
Limit and S CityLimit	16	6	R28	25%	2) Install edge-lines and centerlines			
			R32PB	35%	3) Install bike lanes			
Reinway Ave btwn Yosemite Blvd and	11	1	R26	30%	1) Install dynamic/variable speed warning signs	Yes		
S City Limit		'	R28	25%	2) Install edge-lines and centerlines			
			R26	30%	1) Install dynamic/variable speed warning signs	Yes		
Tim Bell Rd btwn El Pomar Ave and	7	2	R28	25%	2) Install edge-lines and centerlines			
			R34PB	80%	3) Install sidewalk/pathway (to avoid walking along roadway)			
			R28	25%	1) Install edge-lines and centerlines			
N Western Ave biwn Oakdale- Waterford Hwy and Yosemite Blyd	4	4	4	4	R26	30%	2) Install dynamic/variable speed warning signs	Yes
			R22	15%	3) Install/Upgrade signs with new fluorescent sheeting (regulatory or warning)			
			-	-	4) Install "Sharrow" pavement markings			
			R26	30%	1) Install dynamic/variable speed warning signs	Yes		
Reinway Ave btwn N City Limit and	3	3	-	-	2) Install "Sharrow" pavement markings			
Yosemite Blvd			-	-	Sidewalk for portion of this roadway will be installed as part of Edgewater Residential Development.			
			R21	55%	1) Improve pavement friction (High Friction Surface Treatments)			
Yosemite Blvd btwn Center St St and	70	11	R22	15%	2) Install/Upgrade signs with new fluorescent sheeting (regulatory or warning)			
E City Limit	70		R30	20%	3) Install centerline rumble strips/stripes			
			R31	15%	4) Install edgeline rumble strips/stripes			
Yosemite Blvd btwn W City Limit and	10	4	-	-	Installation of new sidewalk and other improvement is planned for this segment through the SR	1		
Center St	13	4	-	-	132 American Disability Act (ADA) improvements project.			



Table 7.4 Benefit to Cost Analysis for Proposed Mitigation Measures AlongRoadway Segments

Segment	Countermeasure Number	Recommended Countermeasures	B/C Ratio
Bonnie Brae Ave btwn Oakdale- Waterford Hwy and Tim Bell Rd	R21, R26	Improve pavement friction (High Friction Surface Treatments) Install dynamic/variable speed warning signs	110.15
Oakdale Waterford Hwy btwn N City Limit and S City Limit	R13, R28, R32PB	Add two-way left-turn lane (without reducing travel lanes) Install edge-lines and centerlines Install bike lanes	1.08
Reinway Ave btwn Yosemite Blvd and S City Limit	R26, R28	Install dynamic/variable speed warning signs Install edge-lines and centerlines	1.55
Tim Bell Rd btwn El Pomar Ave and Yosemite Blvd	R26, R28, R34PB	Install dynamic/variable speed warning signs Install edge-lines and centerlines Install sidewalk/pathway (to avoid walking along roadway)	
Yosemite Blvd btwn Center St St and E City Limit	R21, R30, R31	Improve pavement friction (High Friction Surface Treatments) Install centerline rumble strips/stripes Install edgeline rumble strips/stripes	24.83

Figure 7.1 Recommended Improvements to Oakdale-Waterford Highway





7.1.3 SR 132 - Yosemite Boulevard

Countermeasures for state route intersections were determined using strategies from Caltrans LRSM and the most recent information from HSIP Cycle 10. The recommended countermeasures for the nine intersections with the highest Equivalent Property Damage Only (EPDO) ranking are presented in **Appendix D: Recommended Projects.**

Proposed countermeasures at intersections along SR 132 are presented in **Table 7.5**. Benefit to cost ratios for these countermeasures are presented in **Table 7.6**.

As shown here, a proposed improvement (restriping to include an eastbound left turn lane) was identified on SR 132 at E Street. Currently, there is no exclusive eastbound left turn lane for E Street. It is noted that vehicles still make this movement on E Street. Additionally, Waterford's Police Department, Stanislaus Consolidated Fire Department, and Waterford City Hall are located on this street. Therefore, it is important to provide convenient access for our citizens and emergency responders.



	1 NS18-INSTALL LEFT-TURN LANES
SR 132 at E St	2 NS06-INSTALL/UPGRADE LARGER OR ADDITIONAL STOP SIGNS
BUK=14.35	3 NS07-UPGRADE INTERSECTION PAVEMENT MARKINGS



Table 7.5 Proposed Countermeasure at Intersections Along State Route 132/Yosemite Blvd

Intersection Priority	Intersection	EPDO	Total Crashes	Intersection type	Countermeasur e Number	CRF	Recommended Countermeasures	Systemic	
					NS03	30%	1) Install signals		
1	Tim Bell Rd/Yosemite Blvd	550	2	TWSC	NS04	VARIES	2) Convert intersection to mini-roundabout (from all way stop)		
					NS12	55%	3) Improve pavement friction (high friction surface treatment)		
					NS06	15%	4) Install/upgrade larger or additional stop signs	Yes	
					NS07	25%	5) Upgrade intersection pavement markings	Yes	
					-	-	6) Install advance (intersection ahead) warning sign with beacon		
	E St/Yosemite Blvd	37	7	TWSC	NS18	35%	1) Install left turn lane (where no-left turn lane exist)	Yes	
2					NS06	15%	2) Install/Upgrade larger or additional stop signs	Yes	
					NS07	25%	3) Upgrade intersection pavement markings	Yes	
			12	Signal	S02	15%	1) Improve signal hardware: lenses, back-plates with retroreflective borders, mounting, size and number	Yes	
3	Western Ave/Yosemite Blvd	32			S03	15%	2) Improve signal timing (coordination, phases, red, yellow, or operation)	Yes	
					S21PB	60%	3) Modify signal phasing to implement a leading pedestrian interval	Yes	
					S11	55%	4) Improve pavement friction (high friction surface treatment)		
4	Pasadena Ave/Yosemite Blvd	29*	9*	TWSC	NS03	30%	1) Install signals		
	Oakdale Waterford Hwy/F St/Yosemite Blvd	27	7	Signal	S02	15%	 Improve signal hardware: lenses, back-plates with retroreflective borders, mounting, size and number 	Yes	
5					S03	15%	2) Improve signal timing (coordination, phases, red, yellow, or operation)	Yes	
					S11	55%	3) Improve pavement friction (high friction surface treatment)	Yes	
					S09	10%	4) Install raised pavement markers and striping (through intersection)		
	G St/Yosemite Blvd	20	5	TWSC	NS18	35%	1) Install left turn lane (where no-left turn lane exist)	Yes	
6					NS07	25%	2) Upgrade intersection pavement markings	Yes	
					NS06	15%	3) Install/upgrade larger or additional stop signs	Yes	
	I St/Bentley St/Yosemite Blvd	12	2	TWSC	NS18	35%	1) Install left turn lane (where no-left turn lane exist)	Yes	
7					NS07	25%	2) Upgrade intersection pavement markings	Yes	
					NS06	15%	3) Install/upgrade larger or additional stop signs	Yes	
	Center St/Yosemite Blvd	3	3	TWSC	NS18	35%	1) Install left turn lane (where no-left turn lane exist)	Yes	
8					NS07	25%	2) Upgrade intersection pavement markings	Yes	
					NS06	15%	3) Install/Upgrade larger or additional stop signs	Yes	
9	N Appling Rd/Yosemite Blvd		2	TWSC	NS18	35%	1) Install left turn lane (where no-left turn lane exist)	Yes	
		2			NS07	25%	2) Upgrade intersection pavement markings	Yes	
* -					NS06	15%	3) Install/upgrade larger or additional stop signs	Yes	
* I wo additional fatal collisions were recorded in 2020.									


Table 7.6 Benefit to Cost Analysis at Intersections Along SR 132/Yosemite Blvd

Intersection Priority	Intersection	Intersection type	Countermeasur e Number	Recommended Countermeasures	B/C Ratio
			NS03	Install signals	2.23
			NS04	Convert intersection to mini-roundabout (from all way stop)	1.09
1	Tim Bell Rd/Yosemite Blvd	TWSC		Improve pavement friction (high friction surface treatment)	
			NSU6, NSU7,	Install/upgrade larger or additional stop signs	6.13
			NOTZ	Upgrade intersection pavement markings	
				Install left turn lane (where no-left turn lane exist)	
2	E St/Yosemite Blvd	TWSC	NSU6, NSU7,	Install/Upgrade larger or additional stop signs	14.35
			NOTO	Upgrade intersection pavement markings	
				Improve signal hardware: lenses, back-plates with retroreflective borders,	
3	Western Ave/Vosemite Blud	Signal	S02, S03,	mounting, size and number	9.46
5	Western Ave/ i osennite Diva	Signal	S11	Improve signal timing (coordination, phases, red, yellow, or operation)	3.40
				Improve pavement friction (high friction surface treatment)	
				Improve signal hardware: lenses, back-plates with retroreflective borders,	
	Ookdolo Weterferd Llux/E		602 602	mounting, size and number	
5	St/Vecemite Plvd	Signal	SU2, SU3,	Improve signal timing (coordination, phases, red, yellow, or operation)	5.54
	St/ Poseinite Biva		309, 311	Improve pavement friction (high friction surface treatment)	
				Install raised pavement markers and striping (through intersection)	
				Install left turn lane (where no-left turn lane exist)	
6	G St/Yosemite Blvd	TWSC	NS18	Install/Upgrade larger or additional stop signs	7.77
			Nono	Upgrade intersection pavement markings	



7.1.4 Identified Challenge Areas

Per the SHSP, the identified challenge areas for the LRSP were as follows:

- 1. Intersections Projects were identified for the top intersections with collision severity and frequency.
- 2. Pedestrians Providing pedestrian accommodations to include crossing enhancements and continuous sidewalks. In the plan, we have identified current safety projects to include Rectangular Rapid Flashing Beacons (RRFB) at intersection crossings, sidewalk and ADA improvements, and pedestrian signal enhancements. Other locations for pedestrian improvements are identified in the engineering strategies. Non engineering strategies to improve pedestrian safety will be discussed in a later section of the report.
- 3. Bicycling Bicycling safety countermeasures/projects were recommended at multiple locations.
- 4. Distracted Roadway Usage Prevention of distracted roadway usage is addressed though education and enforcement component of the non-engineering strategies. These strategies can be communicated through social media channels and through the schools.
- 5. Aggressive Driving Aggressive driving can include improper speeds, improper turning and improper passing. Engineering strategies were identified for intersections and segments at locations where these issues were identified. Non-engineering strategies to prevent aggressive driving includes enforcement in selective areas. Some engineering strategies to address aggressive driving includes:
 - Install raised median on approaches
 - o Install turn lanes

7.1.5 Systemic Safety Countermeasures

When selecting countermeasures, just focusing on locations with a current collision issues is a reactive approach to roadway safety planning. A reactive approach targets recent hot-spots and specific problems that are associated with these locations; as a result of this approach, locations with low traffic volumes but with similar safety issues as hot spot locations are not addressed. In order to mitigate collisions in a both a reactive and proactive approach, Caltrans' Local Road Safety Manual suggests agencies utilize a comprehensive approach that includes systemic and hot spot location improvements in developing a safety plan.

Systemic approach to countermeasure is generally based on 'system wide' crash data. With systemic approach locations with high levels (number and severity) of crashes and location with similar geometric features but with lower level of crashes are treated with same low-cost safety countermeasures. Benefits of adopting systemic approach to countermeasures include:

 Widespread Effect: As systemic improvement throughout a corridor or roadway network will improve safety at multiple locations under one project. Inclusion of the



systemic locations will improve safety at those locations while inclusion of hot-spot locations will maintain positive benefit-to-cost ratio for the project.

- Crash Type Prevention: By focusing countermeasures on a predominant crash type, an agency can address locations with fewer number of these crashes but have similar high risk characteristics as a hot-spot locations.
- Cost Effectiveness: Implementing low-cost solutions across an entire system or corridor can be a more cost-effective approach to addressing system-wide safety issues. Even though this approach does not address all (or total) safety issues for a given location, the deployment of low-cost countermeasures often results in the highest overall safety benefit for an agency with limited safety funding.
- Reduced Data Needs: Because this approach does not always address locations with a history of crashes and active stakeholders, it can be difficult to justify the improvements. The Systemic Approach will rarely include a recommendation for a large-scale safety improvement at a single location. Since large-scale projects usually garner attention from decision makers, the media, elected officials, and the general public, safety practitioners often need to make additional efforts to explain the Systemic Approach and its benefits to those groups. Safety practitioners can utilize the high B/C ratios of these systemic projects to convey their benefits compared to high-profile, single location projects with lower B/C ratios.

Some systemic safety countermeasures options at intersections for the current high-risk roadway characteristics are shown in **Table 7.7**.

Project #	Intersection Type	Jurisdiction	Countermeasure Number	CRF	Recommended Countermeasures
1	TWSC	City &	NS06	15%	1) Install/Upgrade larger or additional stop signs
	11100	Caltrans	NS07	25%	2) Upgrade Intersection Pavement markings
2	TWSC	Caltrans	NS18	35%	1) Install left turn lane (where no-left turn lane exist)
-		oundand	NS07	25%	2) Upgrade Intersection Pavement markings
			NS06	15%	3) Install/Upgrade larger or additional stop signs
			S02	15%	1) Improve Signal hardware: lenses, back-plates with retroreflective borders, mounting, size and number
3	Signal	Caltrans	S03	15%	2) Improve signal timing (coordination, phases, red, yellow, or operation)
			S11	55%	3) Improve pavement friction (High friction surface treatment)

Table 7.7 Recommended Systemic Safety Countermeasures at Intersections

Benefit to cost analysis for systemic countermeasures for intersections is shown in **Table 7.8.** The proposed systemic countermeasure at stop-controlled intersections on City roadways has a B/C Ratio of 2.09.



System Project ID	Intersection	Intersection Type	Counterm easure Number	Benefit to Cost Ratio (BCR)	B/C Ratio
1	Systemic Improvement at Ten (10) City of Waterford Stopped Controlled Intersection	TWSC/AWSC	NS06, NS07	Install/upgrade larger or additional stop signs Upgrade intersection pavement markings	2.09
3	Systemic Improvement at Six (6) Side Street Controlled Intersctions along SR 132/Yosemite Blvd	TWSC	NS06, NS07, NS18	Install/upgrade larger or additional stop signs Upgrade intersection pavement markings Install left tum lane (where no-left tum lane exist)	35.73
4	Systemic Improvements at Two (2) Signalized Intersections along SR 132/Yosemite blvd	Signalized	S02, S03, S11	Improve Signal hardware: lenses, back-plates with retroreflective borders, mounting, size and number Improve signal timing (coordination, phases, red, yellow, or operation) Improve pavement friction (High Friction Surface Treatment)	8.70

Table 7.8 Systemic Projects Benefit to Cost Analysis

7.1.6 Additional Safety Projects

A comprehensive approach to selecting countermeasure recognizes that not all safety issues can be addressed through infrastructure improvement. The comprehensive approach to safety involves the '5 E's of traffic safety. Besides engineering safety countermeasures, it is important to recommend safety countermeasures to coincide with the other safety E's.

7.2 Non-Engineering Strategies

7.2.1 Education



Education strategies are listed below.

- Campaign to prevent distracted driving and walking
- Safe route to school maps and outreach at schools
- Social media blasts with quick education tool for all users

7.2.2 Emerging Technologies



- Possible emerging technologies strategies are listed below.
 - ITS infrastructure, web/mobile application (apps) and smart cities practices
 - Video detection and APS for new signals along Caltrans roadways
 - Evaluate allowing the Sheriff Department to have access to the Emergency Vehicle Preemption (opticom) at signalized intersections along SR 132/ Yosemite Blvd
 - o Fire department currently has access, but Sheriff department does not



- Crash warning system
- Communication with traffic signals
- Changeable message signs
 - The City has access to a mobile speed feedback sign

7.2.3 Enforcement

Enforcement strategies are listed below.

- Targeted speed enforcement
 - Focus on areas of concern for residents based on public feedback
- DUI check points or routine stops along SR 132
- Increasing number of traffic enforcement officers
- Distracted driving enforcement

7.2.4 Emergency Response



Emergency response strategies are suggested below.

- Emergency signal installation
- Ability to administer life saving measures on-site of a collision
- Emergency vehicle pre-emption at signalized intersections
- Improvements to roadways to increase access and potentially shorten response times
 - o Recommended improvements to SR 132 and E Street

8. Implementation Process

In evaluating how to implement safety projects, a prioritized list of projects with additional systemic projects is included in **Appendix D: Recommended Projects**. The City of Waterford can look for opportunities to incorporate safety enhancements with the Capital Improvement Program. However, it is noted that funding is very limited and typically used from roadway paving. Additional funding opportunities can come through grant funding to include HSIP, ATP, and CMAQ.

Table 8.1 contains a prioritized list of the proposed intersection projects on City roadways based ontheir respective benefit-to-cost ratios.**Table 8.2** shows a prioritized list of the proposed segmentprojects for City roadway segment based on benefit-to-cost ratios.

Low-cost systemic countermeasures are preferred by Caltrans in the HSIP process.



Intersection	Intersection Type	Countermeasure Number	Benefit to Cost Ratio (BCR)	B/C Ratio
Tisdell St/Bentley St	TWSC	NS07	Upgrade intersection pavement markings	5.89
Oakdale Waterford Hwy/Rose Way	TWSC	NS06 NS07	Install/upgrade larger or additional stop signs	5 85
Calcule Watchold Hwy/1000 Way	inco	1000,11007	Upgrade intersection pavement markings	0.00
Oakdale Waterford Hww/Bonnie Brae			Install right turn lane on northbound approach	
Ave	TWSC	NS17, NS06,NS07	Install/upgrade larger or additional stop signs	3.01
			Upgrade intersection pavement markings	
			Install/upgrade larger or additional stop signs	
Oakdale Waterford Hwy/Bentley St	AWSC	NS06, NS07, NS09	Upgrade intersection pavement markings	2.64
			Install flashing beacons as advance warning	
Church St/Kadota Ave	TWSC	NS02	Convert to all-way STOP control (from 2-way control)	1.18

Table 8.1 Priority of Intersection Projects

Table 8.2 Priority of City Segment Projects

Segment	Countermeasure Number	Recommended Countermeasures	B/C Ratio
Bonnie Brae Ave btwn Oakdale-	R21 R26	Improve pavement friction (High Friction Surface Treatments)	110.15
Waterford Hwy and Tim Bell Rd	1121,1120	Install dynamic/variable speed warning signs	
Tim Boll Dd bhun El Domor Avo and		Install dynamic/variable speed warning signs	
Yosemite Blvd	R20, R20, R34PB	Install edge-lines and centerlines	1.68
	non b	Install sidewalk/pathway (to avoid walking along roadway)	
Reinway Ave btwn Yosemite Blvd and	P26 P28	Install dynamic/variable speed warning signs	1 5 5
S City Limit	1120, 1120	Install edge-lines and centerlines	1.55
	D40 D00	Add two-way left-turn lane (without reducing travel lanes)	
akdale Waterford Hwy btwn N City nit and S City Limit	R13, R28, R32PB	Install edge-lines and centerlines	1.08
	NOZI D	Install bike lanes	

9. Evaluation Process

To evaluate the success of this plan, yearly collision analysis, along with requests for public feedback, can take place and be compared to the established goals.

- **Goal:** Strive toward zero deaths or life altering injuries on local roadways by 2030
 - Measure of Success: This can be achieved by smaller reductions of 1 fatal or severe injury (FSI) collision reduction per year toward the zero goal.





- **Goal:** Increase walking, biking, rolling (wheelchair, skateboard, scooter, etc.) to work and to schools.
 - Measure of Success: Increase in multimodal infrastructure and improvements and subsequent pedestrian and bicycle counts. Currently, the City of Waterford does not collect pedestrian and bicycle counts but that might be an addition in capturing this metric.
- **Goal:** Improve safety around schools by providing safe routes to school for students for all modes of travel.
 - Measure of Success: Results of public feedback shows that there is a lack of connectivity between transportation infrastructures around schools in the City of Waterford. Some school routes along streets need sidewalks. An evaluation of the improvements of multimodal transportation infrastructure around school will capture effectiveness of this goal.
- **Goal:** Implement education campaigns regarding Rectangular Rapid Flashing Beacon (RRFB) and distracted roadway usage utilizing school and social media.
 - Measure of Success: Results of the public survey shows that 90% of participants are already familiar with Rectangular Rapid Flashing Beacon (RRFB). An increase in familiarity measured through similar survey would indicate an effective education campaign. A reduction in the number of citations regarding distracted roadway usage would also indicate an effective educational campaign.
- Goal: Increase law enforcement capabilities.
 - **Measure of Success:** Increase in the number of law enforcement officers and equipment dedicated to traffic enforcement would indicate an increase in law enforcement capabilities.
- **Goal:** Improve the health and vitality of our community.
 - **Measure of Success:** Understand the metrics from Stanislaus County Health and Human Services Agency and work to improve them through improved transportation and community facilities.

10. Next Steps

The City of Waterford's Local Road Safety Plan will go to City Council in May 2021 for adoption. This safety plan will be a living document and will guide the City's roadway safety needs for the next five years. It will be updated as needed and the goals will be monitored.

11. References

Ongoing/Planned Projects



- "Project Report for Project Approval on Route 13, in the City of Waterford between Reinway Avenue and Hickman Road/"F" St", Caltrans, may 2019
- "ATP Location Map", MCR Engineering.
- "Edgewater: Vesting Tentative Subdivision Map", North Star Engineering Group, October 2018.
- "Waterford Safe Routes to School: Washington Road", MCR Engineering, June 2020.
- "Waterford Safe Routes to School: Yosemite Boulevard (State Route 132)", MCR Engineering, June 2020.
- Finalized Active Transportation Program (ATP) Application for Waterford Safe Route to School Project Washington Road, City of Waterford, November 2020.
- Finalized Active Transportation Program (ATP) Application for Waterford Safe Route to School Project Yosemite Boulevard, City of Waterford, November 2020.

Traffic Data

- City of Waterford Collision Data, Statewide Integrated Traffic Records System, 2015-2019.
- City of Waterford Collision Data, Transportation Injury Mapping System, 2015-2019.
- Collision Reports, City of Waterford, 2015-2020.
- TASAS Selective Record Retrieval: TSAR, California Department of Transportation, 2015-2019.
- TASAS Selective Record Retrieval: Table B, California Department of Transportation, 2015-2019.

Manuals

- "Developing Safety Plans, A Manual for Local Rural Road Owners", Federal Highway Administration, March 2012, http://safety.fhwa.dot.gov/local_rural/training/fhwasa12017/.
- 2020-2024 California's Strategic Highway Safety Plan (SHSP), "California Safe Roads: 2020-2024 Strategic Highway Safety Plan", Caltrans.
- "Local Roadway Safety, A Manual for California's Local Road Owners", Caltrans, Version 1.5, April 2020
- "Highway Safety Manual", American Association of State Highway Officials (AASHTO), 1st Edition, 2014 supplement.
- "California Manual of Uniform Traffic Control Devices (CA MUTCD)", Revision 5, 2014.
- "City of Waterford General Plan: Vision 2025", Waterford Planning Department, June 2007, https://www.cityofwaterford.org/v5/wp-content/uploads/2018/07/General-Plan-Final.pdf.

Websites

• California Department of Transportation, "Strategic Highway Safety Plan (SHSP)", https://dot.ca.gov/programs/safety-programs/shsp.



- California Department of Transportation, "Local Roadway Safety Plan (LRSP) and Systemic Safety Analysis Report Program (SSARP)", https://dot.ca.gov/programs/local-assistance/fed-and-state-programs/highway-safety-improvement-program/local-roadway-safety-plans.
- California Department of Transportation, "HSIP Cycle 10", https://dot.ca.gov/programs/local-assistance/fed-and-state-programs/highway-safety-improvement-program/apply-now.
- City of Waterford Local Road Safety Plan, https://lrsp.mysocialpinpoint.com/waterford.

Surveys

• Local Road Safety Plan Project Survey, https://lrsp.mysocialpinpoint.com/waterford.



about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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Appendix A – Previous Safety Plans and Projects













R.N.

ME

NG • 1354 Fax

IMC.

SHEET

NUMBER

2

of **4**

MAP

SUBDIVISION

TENTATIVE

VESTING









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PECAN AVENUE MOON ELEMENTARY SCHOOL N. REINWAY AVE PASADENA AVE. WATERFORD SCHOOL DISTRICT z YOSEMITE BLVD (SR 132) S PASADENA AVE WATERFORD HIGHSCHOOL WASHINGTON ROAD REINWAY AVE CITY LIMITS Ś LOCATION MAP DATE: JUNE, 2020 MCR ENGINEERING, INC. WATERFORD SAFE ROUTES TO SCHOOL 1242 DUPONT COURT MANTECA, CA 95336 WASHINGTON ROAD NG TEL: (209)239-6229 FAX: (209)239-8839 m_c_r_e_n_g__c_o m

YOSEMITE BOULEVARD (STATE ROUTE 132)



creng.com

MANTECA, CA 95336 IG TEL: (209)239-6229 FAX: (209)239-8839



Appendix B – Collision Data



Collisions at City of Waterford Intersections

			Se	everity									PCF	⁻ Violat	tion								1	Гуре				1		Ye	ar			
North/South Road	East/West Road	Fatal Injury (Severe)	Injury (Other Visible)	Injury (Complaint of Pain)	Property Damage Only	Unknown	DUI/BUI Impeding Traffic	Unsafe Speed	Following Too Closely	Wrong Side of Road	Improper Passing	Unsafe Lane	unange Improper	Lurning Automobile Right of Way	Pedestrian Violation	Traffic Signals and Signs	Other Hazardous Violation	Unsafe Starting or Backing	Other Improper Driving	Other/Not Listed	Head-on	Sideswipe	Rear Enu Broadside	Hit Object	Vehicle/	Pedestrian Other/Not Listed	Pedestrian	Bicycle	2015	2016	2018	2019	EPDO	Total Collisions
EAGLE PEAK DR	CLARKE MILL AVE				1								1									1	1					1			1		0	1
N PASADENA AVE	KADOTA AVE				1															1		1							1				0	1
N PASADENA AVE	CHERRY LN				1			1														1								1			0	1
LOCH NESS DR	CURRAN DR				1			1														1	1								1		0	1
N BECKY WAY	PECAN AVE				1													1				1	1							1	1		0	1
BURNS CREEK CT	WASHINGTON RD				1											1							1								1		0	1
N WESTERN AVE	HERNANDEZ AVE				1			1																1						1	1		0	1
S WESTERN AVE	WASHINGTON RD				1			1															1							1	1		0	1
CHURCH ST	KADOTA AVE		1																	1	1									1			11	1
CHURCH ST	DORSEY ST					1														1				1						1			1	1
CHURCH ST	PECAN AVE				1								1									1	1								1		0	1
ROSE CT	ROSE WAY				1															1		1										1	0	1
G ST	DORSEY ST		1											1									1									1	11	1
G ST	BENTLEY ST		1																	1		1	1								1		11	1
OAKDALE WATERFORD HWY	TWEED ST				1															1				1							1		0	1
OAKDALE WATERFORD HWY	BONNIE BRAE AVE		1		3								2	1						1		1 1	1 1	1					1	2	2 1		11	4
OAKDALE WATERFORD HWY	ROSE WAY		1		1									1						1		1	1 1						1	1			11	2
OAKDALE WATERFORD HWY	SUMMERS ST			1	1									1				1				1	1								1	1	6	2
OAKDALE WATERFORD HWY	BENTLEY ST			1	5									3						3		1	5							2 2	21	1	6	6
E ST	BENTLEY ST				2															2		2	2							1 1	1		0	2
E ST	WELCH ST				1	1										1				1	1	1	1							1	1		1	2
CINNABAR WAY	BONNIE BRAE AVE				1		1	_														1	1							1	1		0	1
D ST	WELCH ST		1					1														1										1	11	1
BRONZE LN	BONNIE BRAE AVE				1															1						1						1	0	1
C ST	BONNIE BRAE AVE			1				1																1						1	1		6	1
C ST	ODEN DR				2		1													1		1		1						1		1	0	2
TIM BELL RD	BONNIE BRAE AVE				1															1						1				1	1		0	1
TIM BELL RD	MAIN ST				1				1													1	1							1			0	1
TIM BELL RD	SUNFLOWER DR				1								1											1								1	0	1
TIM BELL RD	WELCH ST				1															1		1									1		0	1
LOY ST	WELCH ST				2		1									1						1	1 1								2		0	2
N APPLING RD	WATERFRONT DR				1															1				1						1	1		0	1
DAYFLOWER CT	SUNFLOWER DR				1															1		1								1	1		0	1
TISDELL DR	BENTLEY ST		1		1								1				1				1	1	1							1 1	1		11	2
PETICHIA PL	WELCH ST				1								1									1									1		0	1
		0 0	7	3		2	3 0	6	1	0	0	0	7	7	0	3	1	2	0	20	3	11 1	.4 12	8	0 0	2	0	0	3	11 1	4 14	8	-	50

Collisions at Caltrans Intersection

			S	Severit	ty									PCF	Viola	tion									Ţ	уре						Y	ear			
North/South Road	East/West Road	Fatal	Injury (Severe) Injury (Other Visible)	Injury (Complaint	or Pain) Property Damage	Only Unknown	DUI/BUI	Impeding Traffic	Unsale Speed Following Too	Closely	Wrong Side of Road	improper Passing	Unsafe Lane Change	Improper Turning	Automobile Right of Way	Pedestrian Violation	Traffic Signals	and Jugus Other Hazardous	Violation	Unsare Starting or Backing	Other Improper Driving	Other/Not Listed	Head-on	Sideswipe Rear End	Broadside	Hit Object	Overturned Vehicle/	Pedestrian Other/Not Listed	Pedestrian	Bicycle	2015	2016	2017	2019	EPDO	Total Collisions
EUCALYPTUS AVE	SR 132				2	2									1							1			1		1				1	1			0	2
REINWAY AVE	SR 132		1	2	3	3			1								1					4		3	3								3	2 1	23	6
PASADENA AVE	SR 132		2		7	7	1			1		1			2							4	1	1 3	3			1			2	1	4	2	22	9
WESTERN AVE	SR 132		2		1	0			5					1								6	2	7	2			1			1	1	1 (36	22	12
CHURCH ST	SR 132				2	2											1					1	2						1		1		(1	0	2
IST	SR 132		1		1	L			1													1		2							1		1		11	2
CENTER ST	SR 132				3	8					1											2		2	1						1		(1 1	0	3
H ST	SR 132				1	L				1														1									1		0	1
G ST	SR 132		1	1	3	3			3	1												1		5								1	1 1	1 2	17	5
OAKDALE WATERFORD HWY	SR 132		2		5	5			2	1					1							3		3	2			2				1	1 (4 1	22	7
E ST	SR 132		2	2		3									2					1	1	3	1	2	1	2		1	1	1		1	(42	34	7
TIM BELL RD	SR 132	1		1					1								1							1 1						1		1	1	1	550	2
N APPLING RD	SR 132				2	2	1															1	1	1								1	:	1	0	2
SKYLINE BLVD	SR 132				2	2			1		1														2							1	:	1	0	2
		1	0 11	6		0	2	0 1	.4	4	2	1	0	1	6	0	3	()	1	1	27	7	3 29	15	2	1	0 5	2	2	7	9	12 2	1 13	-	62

Collisions at Selected Segments

			Se	veri	ty				1	уре							Y	'ear					
Street Name	Segment	Fatal	Injury (Severe) Injury (Other	visible) injury	(Complaint of Pain) Property	Damage Only	Head-on Sideswipe	Rear End	Broadside	Hit Object	Overturned	Vehicle/ Pedestrian	unennu Listed	Pedestrian	Bicycle	2015	2016	2017	2018	2019	EPDO	Fatal + Injury	Total
REINWAY AVE	B/W N CITY LIMIT AND YOSEMITE BLVD					3	2		1								1	1	1		3	0	3
REINWAY AVE	B/W YOSEMITE BLVD AND S CITY LIMIT		1									1		1		1					11	1	1
FLORA WAY	B/W BRIGADOON LN AND LOCH NESS DR					2		1		1								2			2	0	2
HERNANDEZ AVE	B/W STEIN WAY AND N WESTERN AVE					1	1												1		1	0	1
KADOTA AVE	B/W REINWAY AVE AND N WESTERN AVE					1							1						1		1	0	1
S PASADENA AVE	B/W YOSEMITE BLVD AND WASHINGTON RD									1							1				0	0	1
N WESTERN AVE	B/W OAKDALE-WATERFORD HWY AND YOSEMITE BLVD					4	1	1		2							2	2			4	0	4
RIVERSIDE RD	B/W S WESTERN AVE AND YOSEMITE BLVD					1				1									1		1	0	1
OAKDALE-WATERFORD HWY	B/W N CITY LIMIT AND S CITY LIMIT		1			5	1	1	1	2	1					1	2		1	2	16	1	6
MAGNETITE WAY	B/W QUICKSILVER ST AND GOLDMINE AVE					1						1				1					1	0	1
GOLDMINE AVE	B/W MAGNETITE WAY AND E END					1				1										1	1	0	1
BONNIE BRAE AVE	B/W OAKDALE-WATERFORD HWY AND TIM BELL RD		1			4	1	1	1	1			1				2	1	1	1	34	1	5
ODEN DR	B/W LA GALLINA AVE AND C ST					1				1									1		1	0	1
LA GALLINA AVE	B/W OAKDALE-WATERFORD HWY AND C ST					2	1	1									1	1			2	0	2
E ST	B/W LA GALLINA AVE AND YOSEMITE BLVD					2	1		1										1	1	2	0	2
C ST	B/W WELCH ST AND COVEY ST					1				1									1		1	0	1
TIM BELL RD	B/W EL POMAR AVE AND YOSEMITE BLVD				1	1		1				1		1				1	1		7	1	2
HARBOR DR	B/W RIVERBEND LN AND MARINA LN					1		1								1					1	0	1
SELBY WAY	B/W WELCH ST AND SKYLINE BLVD					1	1											1			1	0	1
RIVER POINTE DR	B/W YOSEMITE BLVD AND RIVERCREST DR					1				1									1		1	0	1
YOSEMITE BLVD (SR 132)	B/W W CITY LIMIT AND CENTER ST		1		1	2	1	1	1	1								2		2	19	2	4
YOSEMITE BLVD (SR 132)	B/W CENTER ST AND E CITY LIMIT		1 3			7	1 1	2	2	3		1	1	1		3		1	6	1	70	4	11
	Total	0	2 6		2	42	2 10) 10) 7	16	1	4	3	3	0	7	9	12	17	8	-	-	53

Violation Category – City Roadways

Unknown/ Not Stated, 42			Unsafe	5peed, 9
		Traffic Signa Sign, 3	al and 1	Following oo Closely, 2
	Unsafe Starting/	Other Hazardous Violation,	Wrong Way, 1 Pedestri Viola <u>tion</u> .	Unsafe Lane Change, 1 Other Improper

Lighting – City Roadways



Violation Category – Caltrans Roadways



Lighting – Caltrans Roadways



Appendix C – Stakeholder and Public Input

Waterford LRSP Public Comments

Public Comment from Email	Response
1. Bentley Rd. at the big curve just past Katy Court has a long stretch where a car can easily plunge into the canal and there is no barrier to prevent it from happening.	Agree. Safety improvements must be coordinated with W.I.D. Main Canal. It is important for them to retain access.
2. At the end of Lyn Way (off Skyline), this barely paved street deadends at the main canal and there is no barrier or reflector to prevent someone from driving straight into the canal.	
I don't think I need to go much further than calling out the road conditions here in Stanislaus county as a whole for being in extreme bad condition for the law abiding tax paying residences of this county, let's get down to brass tacks Oakdale Waterford hwy is outrageous to drive on a daily basis the city of Oakdale south third street is totally in disrepair and had not been fixed in over 40 yrs check my facts on that but the city had money to a skate park in just out on Geer rd you can't make this up it's outrageous that our roads are in such disrepair but the state can allocate 100 million dollars for the illegal immigrants of calif, need I go on or do you have enough that's just 2 examples	This LRSP will only address the roadways in Waterford (not Oakdale). The Oakdale Waterford Hwy is "F" Street in Waterford. It has some areas that are in need of repairs and we will be addressed in the future. With Measure L and SB1 funding, Waterford has completed maintenance on 38% of our road segments. Waterford is working on a plan that will increase that to nearly 70% in the next 12 months pending council approval to change the scope of our next project from reconstruction of a couple roads for slurry and cape seals of other better conditioned roads.
Public Comment from Interactive Map	Response
Turn lane (Intx of Yosemite Blvd and Tim Bell Rd/Baker St)	Agree. This was documented in LRSP. Proposed intersection improvements through LRSP.
Because Bonnie Brae is a mostly a straight road, with no stop signs between F Street and Timbell cars constantly speed up and down this road. There is a park across the street from our home where children and adults cross on Bonnie Brae. It is just a matter of time before a child or adult is hit and possibly killed. Speed bumps would help as would a stop sign on Bonnie Brae at C Street where one currently exists on the C Street side. Make it a two way stop on Bonnie Brae.	Any traffic control changes would need to be evaluated to see if they meet CA MUTCD warrants. However, this concern is noted in the LRSP.
This section of Bentley is a concern for me as speed and poor sight distance makes the elevation change and turn concerning as you head north and approach the turn and the Modesto Irrigation District Canal. I think we should investigate better signage/lighting so those unfamiliar with the section of roadway do not end up in the canal. (Bentley St just south of irrigation canal)	Install chevron signs on horizontal curve (LRSM countermeasure R23 with CRF of 40%) can be applied at this location as suggested. This location does not have a collision history, however, countermeasures can be implemented as a proactive approach.
Dangerous area to pull off of western onto F as well as other roads at this intersection. People are driving too fast and clustered together. (Intx of F St and N Western Ave/La Gallina Ave)	Comment Noted. Table 7.1 of the LRSP proposes mitigation measures at this intersection.
High visibility crosswalk with flashing lights. We need to reduced the speed of traffic through here! Too many speeders. (Intx of Oakdale-Waterford Hwy (F St) and Tweed St)	Active Transportation Project (ATP) Cycle 3 funded project will install RRFB at this intersection.

Cars speed between Tim Bell and Bentley/E Street constantly.	Section 7.2.3 of the Waterford LRSP recommends targeted speed enforcement as a non-engineering mitigation measure.
Stop sign needed to stop speeding. Intersection is by a park and leads to a school. Popular street for cars and pedestrians going to/from school. (Intx of Church St and Pecan St)	Active Transportation Project (ATP) Cycle 3 funded project will install RRFB at this intersection.
	Any traffic control changes would need to be evaluated to see if they meet CA MUTCD warrants.
	Section 7.2.3 of the Waterford LRSP recommends targeted speed enforcement as a non-engineering mitigation measure.
Lots of kids walk to school down this path. Would be great if we had a sidewalk for them to walk safely. (Yosemite Blvd btwn Center St and H St)	SR 132 Americans with Disability Act (ADA) improvements along SR 132/ Yosemite Blvd from Reinway Ave to F St will install missing sidewalks and correct ADA issues on the south side from Reinway Ave to F St and north side of street from Reinway Ave to Bentley St.
This intersection needs a stop sign. (Intx of Bentley St and D St)	Any traffic control changes would need to be evaluated to see if they meet CA MUTCD warrants.
	Active Transportation Project (ATP) Cycle 3 funded project will install RRFB at this intersection.
Road needs to be re-paved and sidewalks need to be added. Popular street for people walking/driving kids to school. (<i>Pecan Ave btwn N Western Ave</i> <i>and Church St</i>)	Some sidewalks along Pecan Ave will be installed by the Edgewater Subdivision residential development.
Country gardens needs to be replaced. One of the older neighborhoods has many patches from pipe work and could use a face-lift (<i>Curran Dr btwn Curran Ct and Loch Ness Dr</i>)	Comment noted
This intersection needs lighted crosswalk. (Intx of Dorsey St and F St)	Active Transportation Project (ATP) Cycle 3 funded project will install RRFB at this intersection.
This intersection needs either a light or flashing lights for crossing. It's difficult to either cross on foot or make a left hand turn on to Yosemite from Pasadena. (Intx of Yosemite Blvd and Pasadena Ave)	Active Transportation Project (ATP) Cycle 3 funded project will install RRFB at this intersection. Signal (with pedestrian crossing) will be installed as part of CMAQ funded projects – expected completion 2022-2023.
SPEED BUMPS!!! People use Bonnie Brae as a drag strip and its only a matter of time before someone gets hurt or killed. (Bonnie Brae Ave east of F St)	Table 7.3 of the LRSP proposes mitigation measures at this segment.
Fix road. Place sidewalks so cars don't park halfway on road (<i>Skyline Blvd just north of Yosemite Blvd</i>)	Improvements at this roadway segment is limited by available right of way. There is no collision history on this segment.
There are no sidewalks in this area. Vehicles pass on the right of vehicles waiting to turn left onto Tim Bell. People walking near the southside of the road are in danger of being hit by these vehicles. (Yosemite Blvd btwn Tim Bell Rd and N Appling Rd)	Table 7.8 of the LRSP recommends installing left turn lanes at intersections along SR 132/ Yosemite Blvd.

The speed limit increase thru this area recently. The cross walk is wide but drivers do not watch for pedestrians. Students often cross the street here. (Oakdale-Waterford Hwy (F St) btwn Blarney Dr and Tweed St)	Table 7.4 of the LRSP recommendsimprovements along Oakdale Waterford Hwy (FSt).
This section of road is narrow and in bad shape. School buses must traverse this route to get students in the area and it can be hazardous in the winter months. (Skyline Blvd just north of Yosemite Blvd)	Improvements along this roadway segment is limited by available right of way. There is no current collision history.
This is a narrow roadway with a steep drop off to the west. There are over grown trees shortening the sight line for safe left turns onto Skyline. also right turns from skyline encroach on the on coming lane of travel on Yosemite. School buses travel this roadway daily (Skyline Blvd just north of Yosemite Blvd)	Improvements along this roadway segment is limited by available right of way. The intersection sight distance will be evaluated and overgrown trees and vegetation will be maintained/trimmed back.
Many drivers are not coming into town at a faster speed and forget its 35 mph in townand this curve with an uphill speed is unsafe because it introduces drivers into a busy intersection and into downtown with pedestrian crossing and slower trafficso drivers are speeding uphill not knowing what to expect on the other sideneed to enforce Hwy 132 driving through or follow the current 35 speed limitthanks (<i>Yosemite Blvd btwn E St and</i> <i>Tim Bell Rd/Baker St</i>)	Section 7.2.3 of the Waterford LRSP recommends targeted speed enforcement as a non-engineering mitigation measure.
Drivers need to drive uphill slowly because they dont have visibility of the other side of the hill and they can run into a pedestrian, a car making a left turn into Tim Bell from Covey, a biker or many times you see kids walking in groups to the river and since there is no sidewalk, they walk very close to the edge of the road so cars going uphill cannot know whats on the other sidethere is a sign that says Speed Limit 25 but many rush uphillsolution? (<i>Tim Bell Rd just north of</i> <i>Yosemite Blvd</i>)	Table 7.4 of the Waterford LRSP proposes mitigation measures for this section of roadway.Mitigations include Dynamic/variable speed feedback signs, installing edge lines and centerlines, and installing sidewalk/pathway (to avoid walking along roadway)In order to reduce aggressive driving related collisions (speed related) Section 7.2.3 of the Waterford LRSP recommends targeted speed enforcement as a non-engineering mitigation measure.
Supporting the other poster about this curve on Bently, a driver not paying attention at night can easily go straight into the canalits like a trap so there needs to have some reflective sturdy metal street guard to avoid any accident and to let drivers know there is a canal,its an uphill surprise,this is a MUST easy fix. <i>(Bentley Street at the Canal)</i>	Install chevron signs on horizontal curve (LRSM countermeasure R23 with CRF of 40%) can be applied at this location as suggested. This location does not have a collision history, however, a proactive approach would be to install some warning signs.

Survey Responses from Website

1. What are the main roadway safety issues for Waterford? Check all that apply.



*If Other, please list

- No control what so ever of the speeding traffic on the Oakdale Waterford hwy entering town and the extreme amount of trucks rumbling through town no regard for speed limits let alone the amount of dust they raise putting on our patios and the amount of noise they send into our houses each and every day after day it goes on no cares at all about the tax paying residences but the city has no problem collecting the taxes
- Speeding through neighborhoods
- 2. Are you familiar with Rectangular Rapid Flashing Beacons (RRFB)?



3. What roadway improvements would you like to see in and around school zones?



4. What other improvements would you like to see?



Additional Comments

- Enforce traffic laws especially when the high school lets out , the kids don't follow the traffic laws
- Fix the Oakdale Waterford hwy they just raised the gas tax you have the money

Appendix D – Recommended Projects

Recommended City Intersection Mitigations

Intersection Priority	Intersection	EPDO	Total Crashes	Intersection Type	Countermeasure Number	CRF	Recommended Countermeasures	Sytemic
1	Oakdale Waterford Hwy/Bonnie Brae Ave	14	4	TWSC	NS17	20%	1) Install right turn lane on northbound approach	
					NS06	15%	2) Install/upgrade larger or additional stop signs	Yes
					NS07	25%	3) Upgrade intersection pavement markings	Yes
					NS03/NS04	30%/VARIES	4) Install signals or convert to roundabout (from all way stop)	
2	Tisdell Sr/Bentley St	12	2	TWSC	NS07	25%	1) Upgrade intersection pavement markings	Yes
3	Oakdale Waterford Hwy/Rose Way	12	2	TWSC	NS06	15%	1) Install/upgrade larger or additional stop signs	Yes
					NS07	25%	2) Upgrade intersection pavement markings	Yes
4	Oakdale Waterford Hwy/Bentley St	11	6	AWSC	NS03	30%	1) Install signals	
					NS06	15%	2) Install/upgrade larger or additional stop signs	Yes
					NS07	25%	3) Upgrade intersection pavement markings	Yes
					NS09	30%	4) Install flashing beacons as advance warning	
5	Church St/Kadota Ave	11	1	TWSC	NS02	50%	1) Convert to all-way STOP control (from 2-way control)	
6	G St/Dorsey St	11	1	TWSC	NS06	15%	1) Install/upgrade larger or additional stop signs	Yes
					NS07	25%	2) Upgrade intersection pavement markings	Yes
					NS12	55%	3) Improve pavement friction (High friction surface treatment)	
7	G St/Bentley St	11	1	TWSC	NS06	15%	1) Install/ppgrade larger or additional stop signs	Yes
					NS07	25%	2) Upgrade intersection pavement markings	Yes
8	Oakdale Waterford	7	2	TWSC	NS06	15%	1) Install/upgrade larger or additional stop signs	Yes
	Hwy/Summers St				NS07	25%	2) Upgrade intersection pavement markings	Yes
9	C St/Bonnie Brae Ave	6	1	TWSC	-	-	1) Install object markers (on bridge wall)	
10	E St/Bentley St	2	2	AWSC	-	-	1) Replace existing parking with back-in diagonal parking	
11	C St/Oden Dr	2	2	TWSC	NS06	15%	1) Install/upgrade larger or additional stop signs	Yes
					NS07	25%	2) Upgrade Intersection pavement markings	Yes
12	Loy St (Barnes Ave?)/Welch St	2	2	TWSC	NS07	25%	1) Upgrade Intersection pavement markings	Yes
13	E St/Welch St	2	2	AWSC	NS06	15%	1) Install/upgrade larger or additional stop signs	Yes
					NS07	25%	2) Upgrade intersection pavement markings	Yes
					NS14	25%	3) Install raised median on approaches	
Recommended Caltrans Intersection Mitigations

Intersection Priority	Intersection	EPDO	Total Crashes	Intersection type	Countermeasur e Number	CRF	Recommended Countermeasures	Sytemic
					NS03	30%	1) Install signals	
1	Tim Bell Rd/Yosemite Blvd	550	2	TWSC	NS04	VARIES	2) Convert intersection to mini-roundabout (from all way stop)	
					NS12	55%	3) Improve pavement friction (high friction surface treatment)	
					NS06	15%	4) Install/upgrade larger or additional stop signs	Yes
					NS07	25%	5) Upgrade intersection pavement markings	Yes
					-	-	6) Install advance (intersection ahead) warning sign with beacon	
	E St/Yosemite Blvd	37	7	TWSC	NS18	35%	1) Install left turn lane (where no-left turn lane exist)	Yes
2					NS06	15%	2) Install/Upgrade larger or additional stop signs	Yes
					NS07	25%	3) Upgrade intersection pavement markings	Yes
3	Western Ave/Yosemite Blvd	32	12	Signal	S02	15%	1) Improve signal hardware: lenses, back-plates with retroreflective borders,	Yes
					503	15%	2) Improve signal timing (coordination, phases, red, yellow, or operation)	Ves
					\$21PB	60%	3) Modify signal phasing to implement a leading pedestrian interval	Yes
					S11	55%	4) Improve pavement friction (high friction surface treatment)	
4	Pasadena Ave/Yosemite Blvd	29*	9*	TWSC	NS03	30%	1) Install signals	
	Oakdale Waterford Hwy/F St/Yosemite Blvd	27	7	TWSC	S02	15%	1) Improve signal hardware: lenses, back-plates with retroreflective borders, mounting, size and number	Yes
5					S03	15%	2) Improve signal timing (coordination, phases, red, yellow, or operation)	Yes
					S11	55%	3) Improve pavement friction (high friction surface treatment)	
					S09	10%	4) Install raised pavement markers and striping (through intersection)	
	G St/Yosemite Blvd		5	TWSC	NS18	35%	1) Install left turn lane (where no-left turn lane exist)	Yes
6		20			NS07	25%	2) Upgrade intersection pavement markings	Yes
					NS06	15%	3) Install/upgrade larger or additional stop signs	Yes
	I St/Bentley St/Yosemite Blvd	12	2	TWSC	NS18	35%	1) Install left turn lane (where no-left turn lane exist)	Yes
7					NS07	25%	2) Upgrade intersection pavement markings	Yes
					NS06	15%	3) Install/upgrade larger or additional stop signs	Yes
8		3	3	TWSC	NS18	35%	1) Install left turn lane (where no-left turn lane exist)	Yes
	Center St/Yosemite Blvd				NS07	25%	2) Upgrade intersection pavement markings	Yes
					NS06	15%	3) Install/Upgrade larger or additional stop signs	Yes
	N Appling Rd/Yosemite Blvd	2	2	TWSC	NS18	35%	1) Install left turn lane (where no-left turn lane exist)	Yes
9					NS07	25%	2) Upgrade intersection pavement markings	Yes
					NS06	15%	3) Install/upgrade larger or additional stop signs	Yes
* Two additional fatal collisions were recorded in 2020.								

Project #	Intersection Type	Jurisdiction	Countermeasure Number	CRF	Recommended Countermeasures
1	TWSC	City & Caltrans	NS06	15%	1) Install/Upgrade larger or additional stop signs
I	1000		NS07	25%	2) Upgrade Intersection Pavement markings
2	TWEC	Coltropo	NS18	35%	1) Install left turn lane (where no-left turn lane exist)
2	10000	Callians	NS07	25%	2) Upgrade Intersection Pavement markings
			NS06	15%	3) Install/Upgrade larger or additional stop signs
3		Caltrans	S02	15%	 Improve Signal hardware: lenses, back-plates with retroreflective borders, mounting, size and number
	Signal		S03	15%	2) Improve signal timing (coordination, phases, red, yellow, or operation)
			S11	55%	3) Improve pavement friction (High friction surface treatment)

Recommended Segment Mitigations

Segment	EPDO	Total Crashes	Countermeasure Number	CRF	Recommended Countermeasures
Bonnie Brae Ave btwn Oakdale-	34	5	R21	55%	1) Improve pavement friction (High Friction Surface Treatments)
Waterford Hwy and Tim Bell Rd			R26	30%	2) Install dynamic/variable speed warning signs
Ookdolo Waterford Hung hturn N. City	16	6	R13	30%	1) Add two-way left-turn lane (without reducing travel lanes)
Limit and S City Limit			R28	25%	2) Install edge-lines and centerlines
			R32PB	35%	3) Install bike lanes
Reinway Ave btwn Yosemite Blvd and S	11	1	R26	30%	1) Install dynamic/variable speed warning signs
City Limit			R28	25%	2) Install edge-lines and centerlines
	7	2	R26	30%	1) Install dynamic/variable speed warning signs
Yosemite Blvd			R28	25%	2) Install edge-lines and centerlines
			R34PB	80%	3) Install sidewalk/pathway (to avoid walking along roadway)
N Mastern Ave blue Oskiele Materferd	4	4	R28	25%	1) Install edge-lines and centerlines
Hwy and Yosemite Blvd			R26	30%	2) Install dynamic/variable speed warning signs
			R22	15%	3) Install/Upgrade signs with new fluorescent sheeting (regulatory or warning)
			-	-	4) Install "Sharrow" pavement markings
	3	3	R26	30%	1) Install dynamic/variable speed warning signs
Reinway Ave btwn N City Limit and			-	-	2) Install "Sharrow" pavement markings
Yosemite Blvd			-	-	Sidewalk for portion of this roadway will be installed as part of Edgewater Residential Development.
	70	11	R21	55%	1) Improve pavement friction (High Friction Surface Treatments)
Yosemite Blvd btwn Center St St and E			R22	15%	2) Install/Upgrade signs with new fluorescent sheeting (regulatory or warning)
City Limit			R30	20%	3) Install centerline rumble strips/stripes
			R31	15%	4) Install edgeline rumble strips/stripes
Yosemite Blvd btwn W City Limit and	19	4	-	-	Installation of new sidewalk and other improvement is planned for this segment through the SR 132
Center St			-	-	American Disability Act (ADA) improvements project.