U.S. 50 East Shore
CORRIDOR MANAGEMENT PLAN

December 2023

VOLUME 2

U.S. 50 East Shore
Corridor Management Plan

NEVADA DOT
SAFE AND CONNECTED

U.S. HIGHWAY 50 CORRIDOR MANAGEMENT PLAN PROJECT CHARTER

DRAFT 10/22/2021

This Project Charter is an agreement between the Project Sponsor, the Nevada Department of Transportation, hereinafter referenced as NDOT, and the following agencies: the Federal Highway Administration, Nevada Division, hereinafter referenced as FHWA; Douglas County, Nevada, hereinafter referenced as DC; the Nevada Division of State Parks, hereinafter referenced as NDSP; the Nevada Division of State Lands, hereinafter referenced as NDSL; Tahoe Transportation District, hereinafter referenced as TTD; the Tahoe Regional Planning Agency, hereinafter referenced as TRPA; the United States Forest Service, Lake Tahoe Basin Management Unit, hereinafter referenced as USFS-LTBMU; and the Washoe Tribe, hereinafter referenced as WT.

Nevada - U.S. 50 Corridor Management Plan
U.S. 50 from Stateline to Spooner Summit

PROJECT CHARTER PURPOSE

The purpose of the Project Charter is to document key agreements between the Project Sponsor and the FHWA, DC, NDSP, NDSL, TTD, TRPA, USFS-LTBMU, and WT on the essential elements of the U.S. 50 Corridor Management Plan, hereinafter referenced as CMP. This Project Charter evidences the commitment necessary for accomplishing multi-agency coordination within the corridor in developing a single document, the CMP, and improving the U.S. 50 National Scenic Byway - "America's Most Beautiful Drive." It is recognized that solutions to transportation and land use challenges within the U.S. 50 corridor may require cross jurisdictional boundary solutions to affect the greatest positive outcome. This Project Charter will provide guidance to the Project Development Team (PDT) consisting of the primary corridor operating agencies and public landowners, NDOT, TTD, TRPA-TMPO, USFS-LTBMU, DC, and NDSP, as well as other relevant participating agencies FHWA, NDSL, WT, Department of Public Safety, Nevada Highway Patrol, hereinafter referenced as NHP, and the Douglas County Sheriff's Office, hereinafter referenced as DCSO, on external communication, decision-making, and issue or conflict resolution throughout the project development process. This Project Charter should be updated or revised as appropriate at the beginning of each project phase.

PROJECT BACKGROUND

NDOT is the Project Sponsor and lead agency in developing the UCMP in cooperation with the partner agencies. TRPA has been authorized by Federal Public Law 96-551, also known as the Tahoe Regional Planning Compact, as the lead planning agency for the Lake Tahoe region, spanning the neighboring states of Nevada and California. Under Article IX of the Tahoe Regional Planning Compact, TTD was designated as a special purpose district to implement transportation projects and systems with the TRPA boundaries.

The U.S. 50 corridor from the state line in Stateline, NV to Spooner Summit (Exhibit 1 Map) is identified as a National Scenic Byway and is the main access to many popular public recreational areas, such as Van Sickle Bi-State Park, Nevada Beach, Round Hill Pines Historic Resort and Beach, Zephyr Cove Resort and Beach, Cave Rock State Park, Logan Shoals Vista, Spooner Lake State Park, numerous trails including the famed Tahoe Rim Trail, the Tahoe Trail, and other USFS, state, and local public lands. The highway is the only access to many residential properties and smaller businesses located along the corridor, as well as the primary access from the east to the business and casino core of South Lake Tahoe. Moreover, the corridor spans 13 miles of the 3,073 miles of the U.S. 50 National Highway System route connecting Sacramento, California in the west with Ocean City, Maryland in the east. The U.S. 50 corridor acts as an important local connection for a wide range of recreation, employment, and residential centers while also being an important regional connector for commerce and through connectivity on US 50.

U.S. 50 is designated as an “Other Principal Arterial” and generally consists of four lanes, two in each direction, with low to moderate access control, open shoulders and few bicycle or pedestrian facilities. The U.S. 50 corridor interestingly experiences high volumes of traffic, not only in peak summer season, but throughout the year from a mix of users including commercial trucks and passenger vehicles, pedestrians, and bicyclists. Safety is a major issue with this highway experiencing a high rate of fatal vehicle crashes, a large number of shoulder-parked cars, pedestrians and bicyclists crossing or travelling along the highway, and little transit service to this corridor. Safety is not the only concern, environmental sustainability, traffic flow, public land capacity, and many other concerns are and have been apparent throughout this corridor for quite some time.

The SR 28 Corridor Management Plan was completed in October 2013 which helps form a basis for this planning process as the two roadways intersect along the east shore of Lake Tahoe. The ongoing SR 28 Corridor Management Team (SR 28 CMT), which includes thirteen partnering agencies, was developed as a part of that plan, and continues to meet monthly to address SR 28 corridor operations and maintenance challenges. The corridor management team format supports and assist in long-term cross jurisdictional management responsibilities between transportation agencies and land use agencies. The SR28 CMT potentially provides a good foundation to continue developing and expanding on the corridor partnership format for U.S. 50The US 50 CMP will complete the corridor management planning for the east shore, Nevada side of Lake Tahoe.

A number of other plans, assessments and studies have been completed and will be documented in the CMP which will help inform the planning process for U.S. 50. They will be great tools but, for the most part, have not taken a corridor approach which looks at the interactions between the various challenges to address today’s concerns in the corridor within a structure that encourages and seeks cooperation among all agencies involved. The CMP, led by NDOT, in cooperation with FHWA, DC, NDSP, NDSL, TTD, TRPA, USFS-LTBMU, and WT, will develop, update, expand and fill in the gaps of the previous plans, assessments and studies in order to create a single document for all agencies, signatory hereto, to utilize for project development, implementation, and applying for funding.

PROJECT DESCRIPTION

The CMP is intended to document the short-term and long-term objectives of the U.S. 50 corridor. The CMP will build upon previous, independent efforts to develop coordinated management strategies for the U.S. 50 East Shore and identify enhancement opportunities. In addition to defining the corridor’s vision, goals and objectives, the CMP will synthesize current and future conditions into a comprehensive guide to assist in the management of and appropriately provide for corridor uses so that they benefit the corridor’s transportation, safety, environmental, recreation, and economic functions.

The CMP will include a summary of relevant planning efforts from the past 20 years. Based on the summary, an implementation matrix will be developed to identify the projects or goals previously made, what elements have been implemented, still need to be implemented, or are no longer relevant. Existing features will be mapped using existing Geographic Information System (GIS) databases. The CMP will summarize the current corridor conditions in relation to transportation demands, safety, transit, parking, trail systems, recreation use and access, natural resources, and economic studies.

The CMP will build upon the findings from the data inventory and analysis. Transportation demand model outputs and forecasts will attempt to identify the corridor's future needs and specific projects and recommendations will be developed to address those needs. The plan will include but is not limited to opportunities to identify and address recreation access, multi-modal transportation solutions, protect natural resources, and enhance the user experience for residents and visitors. It will identify the various residential community's desire, such as the need to improve sight distance or turn movements to and from the highway from adjacent residential areas, as well as consider commercial access requirements on the highway. Locations for scenic, emergency and/or maintenance pull-outs, parking, transit services, transit stops, park and ride lots, and access points will be defined. These recommendations and the overall corridor vision will be highly illustrated throughout the CMP to provide a visual tool that clearly communicates the desired conditions. A series of aesthetic alternatives for signs, vistas, barriers, gateways, pull-offs, and rock cuts similar to or expanding on the SR 28 CMP will be developed to identify aesthetic solutions and create a consistent sense of place representative of the scenic byway.

The CMP will address additional elements required for a scenic byway management plan per federal regulation. Included will be a discussion of intrinsic qualities, accommodating development, accommodating commerce, positioning the corridor for marketing, and managing visual intrusions such as signage.

Finally, the CMP will address implementation and monitoring of the CMP. The CMP is intended to be a living document that is updated and provides Project Charter partners who are parties hereto a quick reference to identify future projects, compatible projects, funding sources, and project proponents. A matrix will be developed to show the relationship between identified projects, funding opportunities, project partners, and project goals. Known costs for capital improvement projects and operations and management will be summarized and projected costs for future transit programs will be generated. The CMP will be identifying priority projects within segments of the corridor while acknowledging individual agencies may have priorities within their facilities or their agency and that available grant funds can move projects up on the list. As part of the planning process, it is anticipated that a number of target indicators will be identified and established to provide evidence of successful achievement of corridor goals. Baseline conditions for these items will be captured, goals for improvement will be identified, and enhancements will be met through implementation of the CMP, which will be documented.

Public outreach is a vital component of the CMP. The planning process will utilize virtual and in-person workshop forums as study needs and public health conditions due to Covid-19 dictate. There will be additional outreach opportunities such as survey(s) and public engagement tools to gather input on the existing conditions and project recommendations. Project stakeholders will be engaged as part of the project delivery, either in smaller group meetings centered on similar interests, for example small businesses in the corridor or utility companies. The stakeholder meetings may also be a part of a larger Project Development Team (PDT) meeting. Any smaller stakeholder meetings done independently will have documentation of the meeting and will be provided to the PDT as part of the project development process. The PDT will meet approximately four times with NDOT finalizing the recommendations and providing the final U.S. 50 CMP to their respective agencies. The PDT may engage a smaller subset of the agencies involved to provide technical assistance and act as a Technical Advisory Group on a specific issue, for example NHP, DC Sheriff and NDSP could be engaged to find solutions for shoulder or median parking.

PROJECT VISION STATEMENT

Provide all users a Corridor from lake to rim that reflects its national scenic corridor status and the unique qualities of the east shore of Lake Tahoe while promoting safety, defining connections to recreation areas, expanding transportation choices, improving water quality, and enhancing the enjoyment of Lake Tahoe.

NOTE: This Project Vision will continue to be developed by all agencies listed in the Project Charter collaboratively through the development of the CMP.

PROJECT GOALS AND OBJECTIVES

The purpose of the US 50 CMP is to address the Corridor's safety, transportation, environmental, recreation, scenic, and economic needs in a coordinated manner. The CMP is intended to facilitate implementation of a long-term vision for the Corridor that accomplishes the following goals and objectives:

- Improve Safety, such as:
  - Design for fewer crashes, zero fatalities
  - Provide safer pedestrian, bicyclist, and motorist choices
- Protect Lake Tahoe, such as:
  - Reduce erosion with appropriate parking, trails, and access
  - Ensure water quality by reducing fine sediments that reach Lake Tahoe
- Enhance the Visitor Experience, such as:
  - Manage capacity at appropriate levels
  - Enhance recreation alternatives
- Expand Multi-Modal Transportation Choices, such as:
  - Plan for implementation of a robust network of transit, bicycling, and walking options
  - Encourage riding of transit, bicycling, and walking options
  - Construct the missing links of the Tahoe Trail -- a walking/biking shared-use path
- Promote Economic Vitality, such as:
  - Encourage collaboration
  - Establish public/private partnerships
- Promote and Enhance Agency Collaboration and Management:
  - Establish a corridor management team who meet regularly
  - Establish a problem resolution process between signatory agencies
  - Recognize each responsible agency authority and responsibility while addressing solutions that cross any jurisdictional boundary leveraging resources and creating cooperative partnerships

The CMP recognizes the unique role, mission, and goals of individual agencies while providing a platform for a coordinated approach to facilitate agency collaborations so they may operate more effectively and efficiently within the Corridor.

NOTE: These Project Goals and Objectives will continue to be developed by all agencies listed in the Project Charter collaboratively through the development of the CMP.

PROJECT LIMITS

- CA/NV state line on U.S. 50 in Stateline, NV to Spooner Summit (South to North)
- Tahoe Rim Trail to Lake Tahoe (East to West)

A project map (Exhibit 1) can be found on the last page of this Charter.

PROJECT CONSTRAINTS

The CMP process is constrained by concurrence from all agencies identified in this Project Charter.

PROJECT FUNDING

Total estimated funding available for development of the U.S. 50 CMP is $428,925

The funding allocation is as follows:

- NDOT will fund $343,140 from federal sources (80-percent)
- NDOT will fund $85,785 in State Planning and Research funds (20-percent)

NONBINDING AGREEMENT

This Project Charter creates no right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity. The parties shall manage their respective resources and activities in a separate, coordinated and mutually beneficial manner to meet the purposes(s) of this Project Charter. Nothing in this Project Charter authorizes any of the parties to obligate or transfer anything of value.

Specific prospective projects or activities that involve the transfer of funds, services, property, and/or anything of value to a party requires execution of separate agreements and are contingent upon numerous factors, including, as applicable, but not limited to: agency availability of appropriated funds and other resources; cooperator availability of funds and other resources; agency and cooperator administrative and legal requirements (including agency authorization by stature); etc. This Project Charter neither provides, nor meets these criteria. If the parties elect to enter into an obligation agreement that involves the transfer of funds, services, property, and or anything of value to a party, then the applicable criteria must be met. Additionally, under a prospective agreement, each party operates under its own laws, regulations, and/or policies, and any agency's obligation is subject to the availability of appropriated funds and other resources. The negotiation, execution, and administration of these prospective agreements must comply with all applicable law.

Nothing in this Project Charter is intended to alter, limit, or expand the agencies' statutory and regulatory authority.

DELIVERABLE MANAGEMENT

This is accomplished through the following:

Project Development Team (PDT)

- Develop effective strategies for improving the U.S. 50 corridor and to identify and deliver projects within the corridor.
- Four meetings will be held or as needed to review and monitor the project progress.
- Anticipate issues and develop strategies and/or elevate conflicts with recommendations to Management.

COMMUNICATIONS ARRAY

Function	NDOT	FHWA	DC	NDSP	NDSL	TTD	TRPA	USFS	WT
Executive Management	Kristina Swallow Director (775) 888-7000	Susan Klekar Division Administrator	Patrick Cates County Mgr. (775) 782-9821	Robert Mergell Administrator (775) 684-2778	Charlie Donohue Administrator (775) 684-2738	Carl Hasty District Mgr. (775) 589-5501	Joanne Marchetta Executive Director (775) 589-5226	Vacant Forest Supervisor (530) 543-2600	Serrell Smokey Chairman (775) 265-8600
Project Manager	Melissa Chandler Multimodal Program Development (775) 888-7170	Andrea Gutierrez Transportation Engineer (775) 687-5334	Scott Morgan Community Services Director (775)782-9828	Janice Keillor Deputy Administrator (775) 684-2787	Meredith Gosejohan Tahoe Program Mgr. (775) 684-2787	Danielle Hughes Capital Program Mgr (775) 557-4901	Melanie Sloan Sr. Transportation Planner (775) 589-5208	Mike Gabor Forest Engineer (530) 543-2600	
Additional Project Contact	Mark Costa Multimodal Program Development Chief (775) 888-7120		Jon Erb Transportation Engineering Mgr. (775) 782-6233	Allen Woolridge Supervisor Lake Tahoe NV State Park (775) 831-0494		George Fink Transit Mgr (775) 589-5325	Shannon Friedman Senior Planner (775) 589-5205		
Additional Project Contact			Sam Booth Planning Mgr. (775) 782-6210				Michelle Glickert Principal Transportation Planner (775) 589-5204		
Additional Project Contact							Nick Haven Division Manager – Long Range & Transportation Planning Division (775) 589-5256		

CONFLICT MANAGEMENT PROCESS

All parties agree to work cooperatively to avoid conflicts and resolve them at the lowest level possible. If disagreements emerge and cannot be resolved, the following process will be followed:

REPRESENTATIVES FOR THE PROCESS:

1. **NDOT Project Manager (PM)**: Co-leads the PDT to evaluate the impacts of issues and develop solutions or recommendations. If conflicts arise that have an adverse effect on project delivery, the PM elevates unresolved conflicts with recommendations to the Assistant Director of Planning or Engineering for guidance and action.
2. **FHWA-NV Project Manager (PM):** Co-leads the PDT to evaluate the impacts of issues and develop solutions or recommendations. If conflicts arise that have an adverse effect on project delivery, the PM elevates unresolved conflicts with recommendations to the Division Manager for guidance and action.
3. **Douglas County Project Manager (PM):** Co-leads the PDT to evaluate the impacts of issues and develop solutions or recommendations. If conflicts arise that have an adverse effect on project delivery, the PM elevates unresolved conflicts with recommendations to the Douglas County, County Manager for guidance and action.
4. **NDSP Project Manager (PM):** Co-leads the PDT to evaluate the impacts of issues and develop solutions or recommendations. If conflicts arise that have an adverse effect on project delivery, the PM elevates unresolved conflicts with recommendations to the NDSP Administrator for guidance and action.
5. **NDSL Project Manager (PM):** Co-leads the PDT to evaluate the impacts of issues and develop solutions or recommendations. If conflicts arise that have an adverse effect on project delivery, the PM elevates unresolved conflicts with recommendations to the NDSL Administrator for guidance and action.
6. **TTD Project Manager (PM):** Co-leads the PDT to evaluate the impacts of issues and develop solutions or recommendations. If conflicts arise that have an adverse effect on project delivery, the PM elevates unresolved conflicts with recommendations to the TTD District Manager for guidance and action.
7. **TRPA-TMPO Project Manager (PM):** Co-leads the PDT to evaluate the impacts of issues and develop solutions or recommendations. If conflicts arise that have an adverse effect on project delivery, the PM elevates unresolved conflicts with recommendations to the TRPA Executive Director for guidance and action.
8. **USFS-LTBMU Project Manager (PM):** Co-leads the PDT to evaluate the impacts of issues and develop solutions or recommendations. If conflicts arise that have an adverse effect on project delivery, the PM elevates unresolved conflicts with recommendations to the LTBMU Forest Supervisor for guidance and action.
9. **Washoe Tribe Project Manager (PM):** Co-leads the PDT to evaluate the impacts of issues and develop solutions or recommendations. If conflicts arise that have an adverse effect on project delivery, the PM elevates unresolved conflicts with recommendations to the Washoe Tribe Chairman for guidance and action.

NDOT, FHWA-NV, DC, NDSP, NDSL, TTD, TRPA-TMPO, USFS-LTBNU and the WT share the following principles in the resolution of conflicts:

1. The efficient delivery of a single document, the CMP for U.S. 50 from the state line in Stateline, NV to Spooner Summit.
2. The efficient delivery of effective, appropriate projects is the primary goal of the CMP.
3. The parties will focus on their common goals rather than differences.
4. Win/Win solutions to conflicts should be sought.
5. Differences of opinion are okay.
6. Timely, open, and honest communication is the key to avoiding and resolving conflicts.
7. Decisions should be made, and conflicts should be resolved at the lowest level possible.

DECISION PROCESS

The attached "Conflict Resolution Plan Array" is to be followed to identify the process by which unresolved issues may be elevated to a higher decision authority.

If a solution is reached that is agreeable to all pertinent parties, the respective agencies and NDOT will work to implement the solution. If the agreement is not achieved, the issue may delay the project schedule and or jeopardize the timely use of funds. All decisions and agreements should be documented fully, and a copy should be kept in the appropriate agencies' PM project files.

CONFLICT RESOLUTION PLAN ARRAY

Level	Decision Timeframe	NDOT	FHWA	DC	NDSP	NDSL	TTD	TRPA	USFS	WT
1	**One to Fifteen Days**	Project Manager	Project Manager	Project Manager	Project Manager	Project Manager	Project Manager	Project Manager	Project Manager	Project Manager
2	**Sixteen to Thirty Days**	Director	Division Administrator	County Manager	Administrator	Administrator	District Manager	Executive Director	Forest Supervisor	Chairman

Signatures: This agreement may be executed in counterparts and is deemed duly executed when original signature pages of all parties are executed and delivered to NDOT.

IN WITNESS WHEREOF, the parties hereto have executed the U.S. 50 Corridor Management Plan Project Charter.

<u>Nevada Department of Transportation:</u>

____

Kristina Swallow, P.E., Director

____

Date

Federal Highway Administration

____
Susan Klekar, Division Administrator

____
Date

County of Douglas

____
Patrick Cates, County Manager

ATTEST:

____
Amy Burgans, County Clerk

State of Nevada, Division of State Parks

____
Robert Mergell, Administrator

____
Date

STATE OF NEVADA)
Ss
County of ________)

On_________________2021 personally appeared before me, a notary public, Robert Mergell, Administrator, Division of State Parks who acknowledged the executed the above instrument.

____
NOTARY PUBLIC

State of Nevada, Division of State Lands

____
Charlie Donohue, Administrator

____
Date

STATE OF NEVADA)
Ss
County of ________)

On_________________2021 personally appeared before me, a notary public, Charlie Donohue, Administrator, Division of State Parks who acknowledged he executed the above instrument.

____
NOTARY PUBLIC

Tahoe Transportation District

____
Carl Hasty, District Manager

____
Date

Tahoe Regional Planning Agency

____

Joanne Marchetta, Executive Director

____

Date

U.S.D.A Forest Service, Lake Tahoe Basin Management Unit

____
William Jackson, Forest Supervisor

____
Date

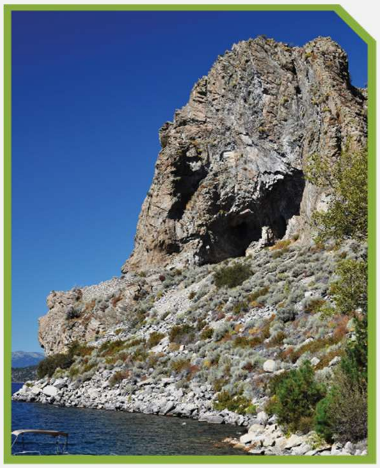
Washoe Tribe of Nevada and California:

____
Serrell Smokey, Chairman

____
Date

Exhibit 1: Study Area Map

Final Existing Conditions Memorandum



July 27, 2021

Prepared for:

NEVADA DOT
SAFE AND CONNECTED

Prepared by:

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Blvd
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

TABLE OF CONTENTS

APPENDICES

TABLES

FIGURES

ACRONYMS AND ABBREVIATIONS

&	And
#	Number
#/hr	Number per Hour
%(ile)	Percent(ile)
AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
Act	Actuated
ADA	Americans with Disabilities Act
Adj	Adjusted
ADT	Average Daily Traffic
ATM	Active Traffic Management
ATP	Active Transportation Plan
Aug	August
Avail	Available
Cap	Capacity
Clr	Clearance
CMP	Corridor Management Plan
CO	Carbon Monoxide
Ctrl	Control
Dec	December
Dist	Distance
DO	Douglas County
EA	Environmental Assessment
EB	Eastbound
Effct	Effect
EIR/EIS	Environmental Impact Report/Environmental Impact Statement
Env	Environmental
EPDO	Equivalent Property Damage Only
Ext	Extension
Feb	February
FHWA	Federal Highway Administration
Flt	Adjustment Factor for Left-Turns
Frt	Adjustment Factor for Right-Turns
ft	feet
g/hr	grams per hour
gal	gallons
g/c	green time per cycle length
GID	General Improvement District
Grp	Group
h	hour
HCM	Highway Capacity Manual
Hdwy	Headway
ICU	Intersection Capacity Utilization
Incr	Incremental
Int	Intersection
ITE	Institute of Transportation Engineers
ITS	Intelligent Transportation Systems

Jun	June
L	Left
LnGrp	Lane Group
LOS	Level-of-Service
LTCCP	Linking Tahoe: Corridor Connection Plan
Mar	March
Max	Maximum
Min(s)	minute(s)
Min	Minimum
MP	Mile Post
MPH (or mph)	Miles-per-Hour
MPO	Metropolitan Planning Organization
MSMP	Main Street Management Plan
Mvmt	Movement
MVMT	Million Vehicle Miles Traveled
NACTO	National Association of City Transportation Officials
NB	Northbound
NDOT	Nevada Department of Transportation
NEPA	National Environmental Policy Act
NFS	National Forest System
NHP	Nevada Highway Patrol
Nov	November
NOx	Nitrogen Oxides
NV	Nevada
ONTP	One Nevada Transportation Plan
PCC	Portland Cement Concrete
PDO	Property Damage Only
Ped(s)	Pedestrian(s)
Perm	Permitted
Ph or Phs	Phase
PMD	Personal Mobility Device
Prot	Protected
Pt	Point
Q	Queue
R	Right
Rec	Recreation
Reductn	Reduction
RSA	Road Safety Assessment
RT	Right-Turn
RTOR	Right-Turn-On-Red
RTP	Regional Transportation Plan
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RV	Recreational Vehicle
S	South
s(s)	second(s)
Sat	Saturated
Satd	Saturated
SB	Southbound
Sep	September

SEZ	Sinclair Land Capability
SLI	Signals, Lighting, and ITS
SR	State Route
SRTP	Short Range Transit Plan
Stg	Stage
T	Through
Thru	Through
TMC	Turning Movement Count
TMP	Transit Master Plan
TMPO	Tahoe Metropolitan Planning Organization
TRINA	Traffic Records Information Access
TRPA-MPO	Tahoe Regional Planning Agency – Metropolitan Planning Organization
TTD	Tahoe Transportation District
TWLTL	Two-Way-Left-Turn-Lane
TWSC	Two-Way Stop Controlled
Unsig	Unsignalized
US	United States
US 50	United States Route 50
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USFS-LTBMU	United States Forest Service – Lake Tahoe Basin Management Unit
Util	Utilization
v	volume
V/C	Volume over Capacity
veh	Vehicles
veh/h/ln	vehicles per hour per lane
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds
Vol	Volume
vph	vehicles per hour
vphpl	vehicles per hour per lane
WB	Westbound

EXECUTIVE SUMMARY

US 50 East Shore Corridor Management Plan

Existing Conditions Key Takeaways

US50 CMP Existing Conditions Takeaways

The US50 East Shore Corridor Management Plan (CMP) Existing Conditions Report includes an extensive array of data and information regarding the study corridor. The following is a brief, infographic summary of a few of the key takeaways from this document. Details are provided throughout the report.

- US50 serves 7 million motorists annually with speed often exceeding the 45MPH limit on this four-lane, mountainous and curving arterial with numerous driveways, making for challenging mobility conditions.
- 28 NEVADA — The majority of signalized and high-volume intersections operate at acceptable conditions. However, SR28, and specifically the left turns, are problematic with long queues, resulting in dangerous behavior.
- The base corridor right-of-way width is 80-feet, yet varies to over 400-feet in places. However, topography and adjacent development limit the ability to expand into much of the excess right-of-way.
- Transit is limited to local service within the City of South Lake Tahoe and Kingsbury and regional service connecting to the Carson Valley. Funding constraints make maintaining and expanding transit services a challenge.
- The Tahoe East Shore Trail currently ends at Round Hill Pines Resort. Extended it north 10 miles to Spooner Summit either within the US50 right-of-way or parallel to it is a key challenge of this study.
- The largest recreation impacts to US50 operations occur at Zephyr Cove, where summertime roadside parking can extend almost 1 mile. Other locations of spillover parking include Nevada Beach, Round Hill Pines, Cave Rock State Park, Logan Shoals and Spooner Summit.
- NDOT manages 5 dynamic message signs, 5 road weather sensors, 4 cameras, and the highway advisory radio. There are gaps in fiber optics and cellular limiting communications
- There are 1,200 existing parking spaces in/near recreation facilities with none meeting average peak demand. The challenge is to provide a multi-modal system, to manage that system for a good visitor experience, and protect Lake Tahoe's resources.
- The US50 East Shore CMP builds upon the work of over 20 previous efforts that align around several important goals.

US 50 East Shore Corridor Management Plan

Existing Conditions Key Takeaways

US50 Crash Data Summary

A summary of crash data was conducted for five years of NDOT data, spanning the period 2015 to 2019. Below are the key takeaways from that summary by corridor segment and intersection.

SEGMENT 1
Over 40% of crashes involved drivers going too fast with 57% of crashes involving a single vehicle.

SEGMENT 2
Over 35% of crashes involved drivers going too fast. One fatality associated with alcohol.

SEGMENT 3
Common factors include excessive speed, improper lane changes, and failure to stay within lanes. One impairment fatality.

SEGMENT 4
Speed a factor in 1/3 of crashes. Most crashes occurred on "Deadman's Curve" near Zephyr Cove.

SEGMENT 5
Over 10% of crashes were multi-modal in an area with no roadside bike/ped facilities. Inattention and impairment were notable.

SEGMENT 6
Crashes due to inattention and multi-modal crashes may correlate to low light.

General crash characteristics include:
- **30%** of crashes involved high speed
- **60%** of crashes had clear weather
- **71%** of crashes occurred in daylight

SR28 Intersection **A**
Over 40% of crashes were angle crashes, indicative of turning vehicles which coincides with left-turn delay identified in the traffic operations analysis.

Warrior Way Intersection **B**
40% of crashes were angle crashes indicative of turning vehicles.

Elks Point Road Intersection **C**
Over 60% of crashes were rear-end or sideswipe with driving too fast being the largest factor.

Kahle Drive Intersection **D**
Bicycle and pedestrian crashes accounted for 22% of all crashes, likely associated with nearby parks and trailheads.

Kingsbury Grade Intersection **E**
Almost half of crashes were rear-end, with driving too fast the largest factor.

Lake Parkway Intersection **F**
73% of crashes were rear-end or angle, often due to distracted driving and failure to yield

SECTION 1 | BACKGROUND

United States Route 50 (US 50) is a transcontinental highway that stretches from Sacramento, California to Ocean City, Maryland. Within Nevada, US 50 stretches across the middle of the state and has been dubbed "The Loneliest Road in America" by *Life* magazine.

US 50 enters the state of Nevada from California as a four-lane road on the shores of alpine Lake Tahoe in Stateline, Nevada. The highway travels along the Lake Tahoe eastern shore, traversing between the lake and the crest of the Carson Range. US 50 then narrows through the Cave Rock Tunnel, eventually cresting at Spooner Summit. Once out of the study area, US 50 descends into Carson City, Nevada.

1.1 Study Purpose and Need

The US 50 East Shore Corridor Management Plan (CMP) will assess and evaluate needs along the 13-mile corridor within the Lake Tahoe Basin and be consistent with existing Tahoe Regional Planning Agency – Metropolitan Planning Organization (TRPA-MPO) plans, goals, objectives, as well as goals described in the Lake Tahoe Compact. The CMP will identify a mobility vision, objectives, performance measurements, and improvement strategies for the corridor, based on existing regional plans, stakeholder input, and sound technical assessment. In addition, the corridor vision will focus on recognizing regional economic development objectives, the unique seasonal and massive visitor-driven fluctuations in use, local planning and project development activities, and serving to guide the project development process. The study will examine potential multi-modal solutions, local and regional transit services, and the potential innovative transportation and mobility strategies. The CMP will be developed cooperatively with the TRPA-MPO, Tahoe Transportation District (TTD), United States Forest Service – Lake Tahoe Basin Management Unit (USFS-LTBMU), and the Nevada Department of Transportation (NDOT) among other local and state partners.

1.1 Study Area

The US 50 East Shore CMP corridor in Nevada begins at the crest of the Carson Range at Spooner Summit and extends south and west to Stateline Avenue, extending through Douglas County. The corridor encompasses the unincorporated communities of Stateline, Zephyr Cove, Round Hill Village, Skyland, Lakeridge, and Glenbrook along the eastern shore and links to the incorporated municipality of South Lake Tahoe, California. A map of the US 50 East Shore study area is illustrated in **Figure 1**.

The 13-mile study area was then broken up into six (6) separate segments, based off of the differing characteristics of each segment, as shown in **Figure 2**. The segments of the US 50 East Shore CMP, and their accompanying characteristics, include:

1. ***Spooner to Glenbrook*** – Higher speed section with few access points, speed is a concern approaching Glenbrook, recreation access and congestion is a concern around State Route 28 (SR 28) and Spooner
2. ***Glenbrook to Cave Rock State Park*** – Driveway and cross-street challenges with little recreation apart from Long Shoals, Cave Rock State Park provides a potential breaking point for future cross-section alternatives
3. ***Cave Rock State Park to Skyland*** – Similar driveway and cross-street issues as the previous segment with parking around Cave Rock State Park and pedestrian activity being a concern, Cave Rock provides a potential breaking point for future cross-section alternatives
4. ***Skyland to Roundhill Pines Beach Resort*** – Heart of the area with parking and other challenges along Zephyr Cove, key next phase in the stateline bikeway, priority segment to expand transit opportunities

5. ***Roundhill Pines Beach Resort to Kingsbury Grade Road*** – Transitions to the more urban areas of the corridor, volumes increase as you approach Elks Point Road and commercial establishiments, the change in land use limits the opportunities for lane reduction alternatives
6. ***Kingsbury Grade Road to Stateline Avenue*** – Experiences the highest volumes, heavily impacted by the Loop Road and Main Street revitalization projects, most of the segment has been through National Environmental Policy Act (NEPA) approvals

Figure 1: US 50 East Shore Study Area

Figure 2: US 50 East Shore Corridor Segments

SECTION 2 | EXISTING CONDITIONS

2.1 Existing Roadway Conditions

The roadway configuration of US 50 changes throughout the study area and consists of the following:

- ***Spooner to Glenbrook*** – 4-lane road with varying shoulders – See **Figure 3**
  - Shoulder Condition: Varies in width through segment
  - Pedestrian Walkways: No sidewalks and/or paths through segment
- ***Glenbrook to Cave Rock State Park*** – 4-lane road with varying shoulders – See **Figure 4**
  - Shoulder Condition: Varies in width through segment
  - Pedestrian Walkways: No sidewalks and/or paths through segment
- ***Cave Rock State Park to Skyland*** – 4-lane road with varying shoulders – See **Figure 5**
  - Shoulder Condition: Varies in width through segment
  - Pedestrian Walkways: No sidewalks and/or paths through segment
- ***Skyland to Roundhill Pines Beach Resort*** – 4-lane road with varying shoulders – See **Figure 6**
  - Shoulder Condition: Varies in width through segment
  - Pedestrian Walkways: No sidewalks and/or roadside paths through segment, except for a small strip of sidewalk on the westside of US 50 by the Zephyr Cove Lodge and Restaurant and a path connecting the Zephyr Cove Campground with Warrior Way.
- ***Roundhill Pines Beach Resort to Kingsbury Grade Road*** – 4-lane road with varying shoulders from Roundhill Pines Beach Resort to Kahle Drive – See **Figure 7**, 4-lane road with a two-way-left-turn-lane (TWLTL) and sidewalks on both the east and west stides of US 50 from Kahle Drive to Kingsbury Grade Road – See **Figure 8**
  - Shoulder Condition
    - Roundhill Pines Beach Resort to Kahle Drive: Varies in width through segment
    - Kahle Drive to Kingsbury Grade Road: Shoulder is basically non-existant as it is part of the curb and gutter
  - Pedestrian Walkways
    - Roundhill Pines Beach Resort to Kahle Drive: No sidewalks and/or roadside paths through segment, except for a small strip of concrete sidewalk on the westside of US 50 north and south of Elks Point Road, and a small strip of concrete sidewalk on the eastside of US 50 south of Elks Point Road
    - Kahle Drive to Kingsbury Grade Road: Mixture of concrete and asphalt sidewalk on westside of US 50, concrete sidewalk on the eastside of US 50 that runs from Kingsbury Grade Road to the bus stop just south of Kahle Drive
    - The Stateline-to-Stateline Bikeway connects Roundhill Pines Resort with Kahle Drive west of the US50 corridor.
- ***Kingsbury Grade Road to Stateline Avenue*** – 4-lane road with a compacted walk area on the westside and an incomplete sidewalk on the eastside of US 50 from Kingsbury Grade Road to Lake Parkway – See **Figure 9**, 4-lane road with a TWLTL and varying/separated sidewalks with landscape strips from Lake Parkway to Stateline Avenue – See **Figure 10**
  - Shoulder Condition:
    - Kingsbury Grade Road to Lake Parkway: Shoulder is basically non-existant as it is part of the curb and gutter
    - Lake Parkway to Stateline Avenue: Shoulder is basically non-existant as it is part of the curb and gutter

- Pedestrian Walkways:
  - Kingsbury Grade Road to Lake Parkway: Compacted materail forms a sidewalk/path on the westside of US 50, no sidewalk on the eastside of US 50 except for a short concrete sidewalk that becomes a dirt path and meanders as it approaches Kingsbury Grade Road
  - Lake Parkway to Stateline Avenue: Concrete sidewalk on the eastside which meanders past the Hard Rock Hotel and Casino, concrete sidewalk on the westside

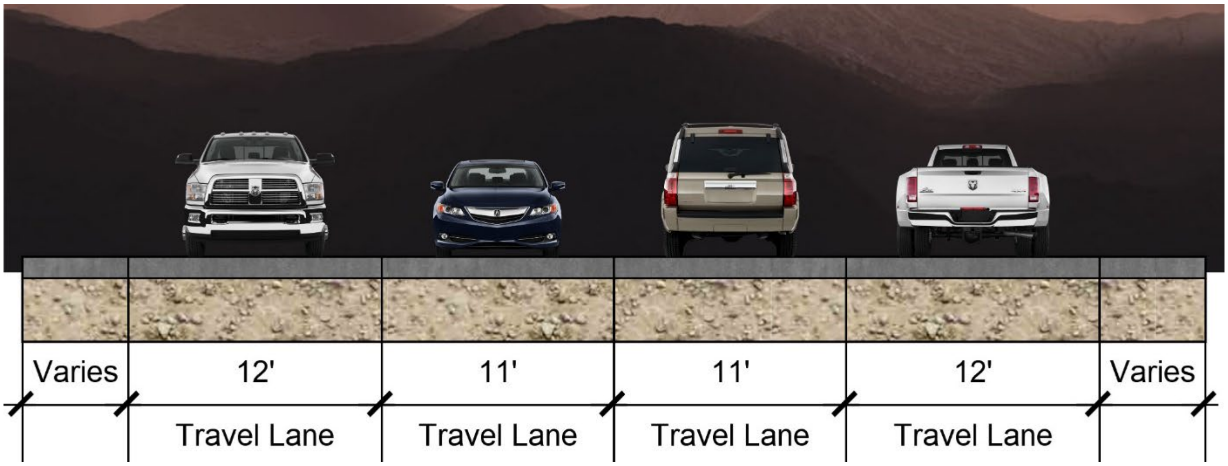


Figure 3: Cross Section of US 50 from Spooner to Glenbrook

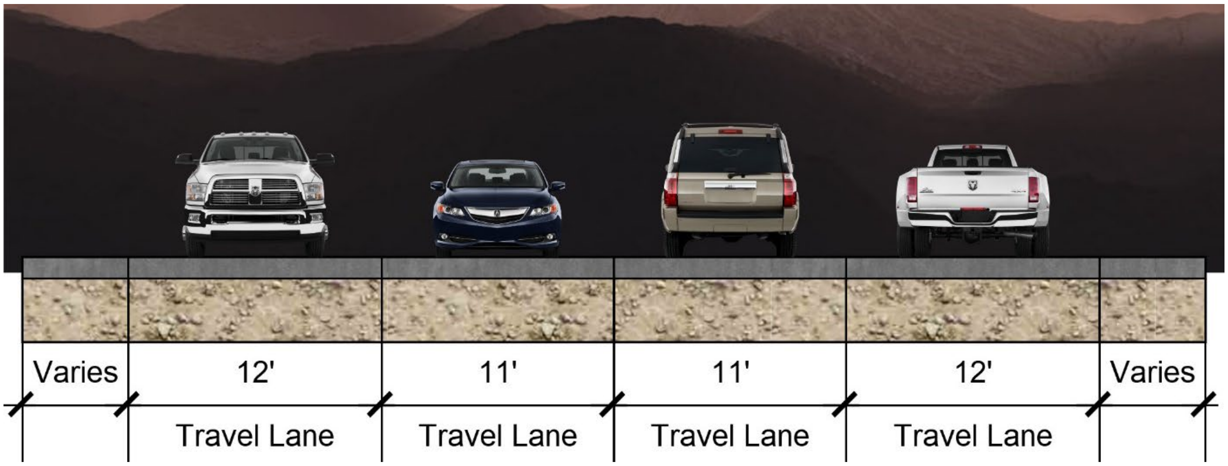


Figure 4: Cross Section of US 50 from Glenbrook to Cave Rock State Park

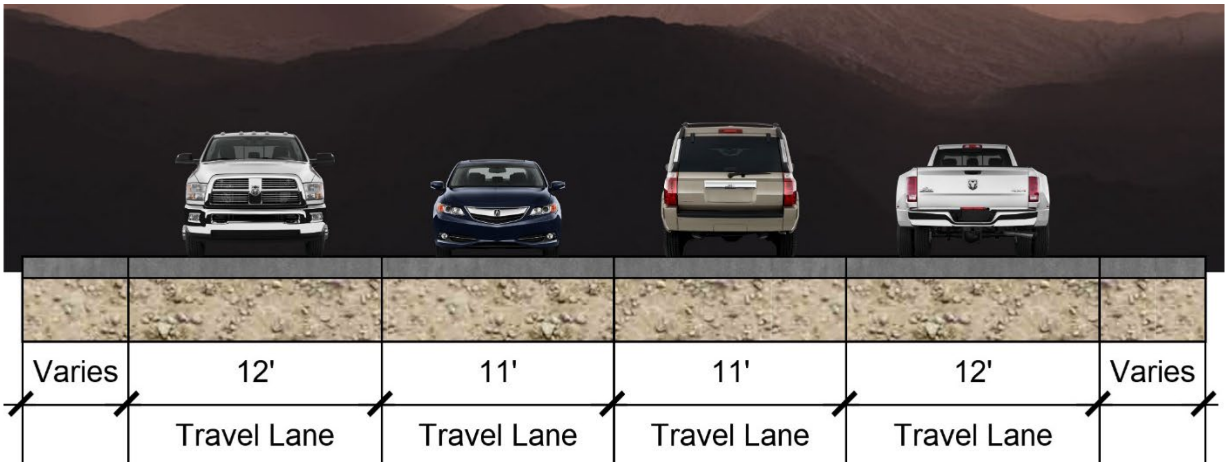


Figure 5: Cross Section of US 50 from Cave Rock State Park to Skyland

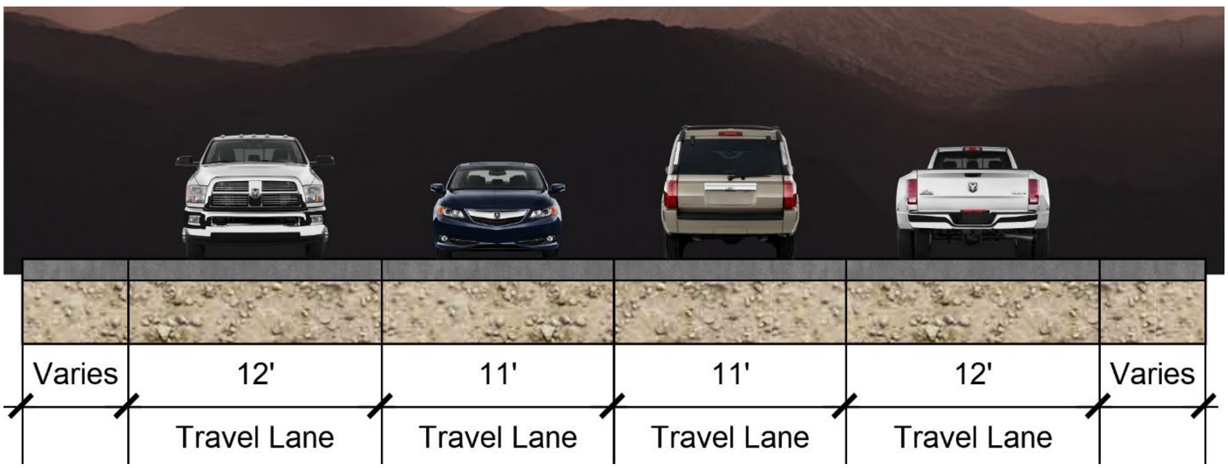


Figure 6: Cross Section of US 50 from Skyland to Round Hill Pines Beach Resort

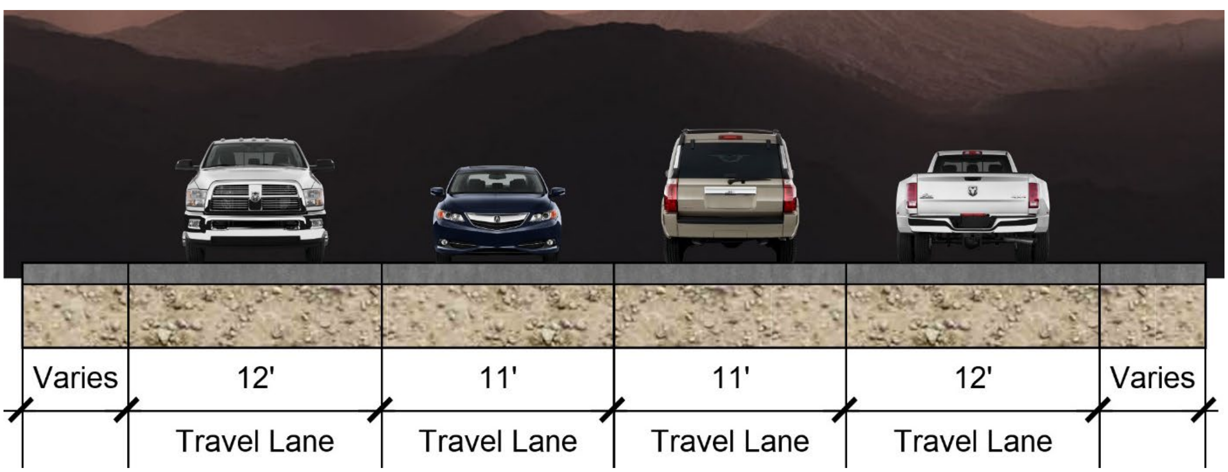


Figure 7: Cross Section of US 50 from Round Hill Pines Beach Resort to Kahle Drive

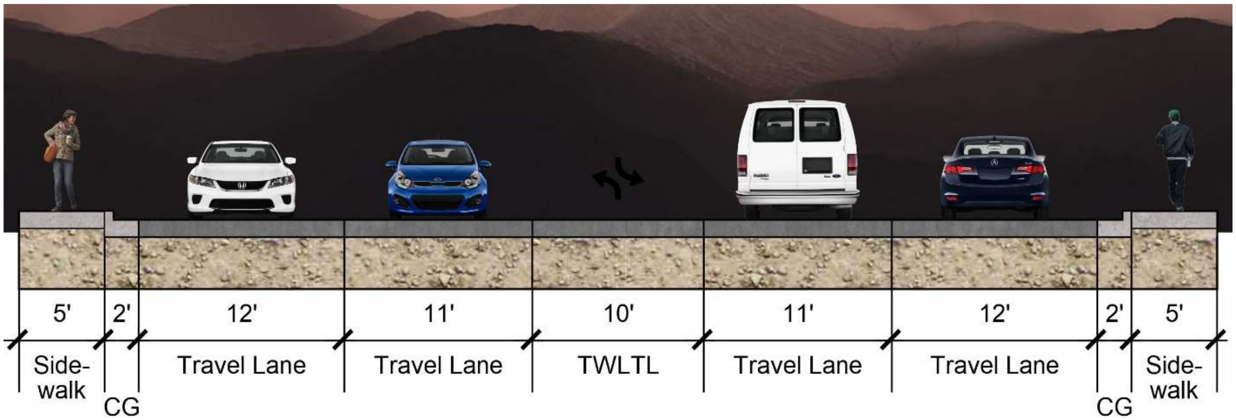


Figure 8: Cross Section of US 50 from Kahle Drive to Kingsbury Grade Road

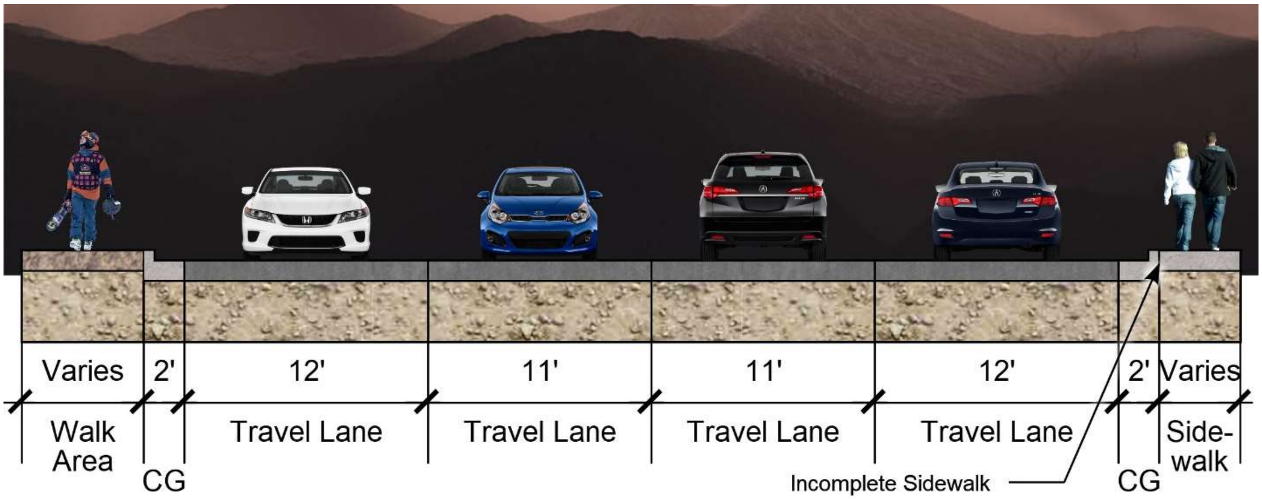


Figure 9: Cross Section of US 50 from Kingsbury Grade Road to Lake Parkway

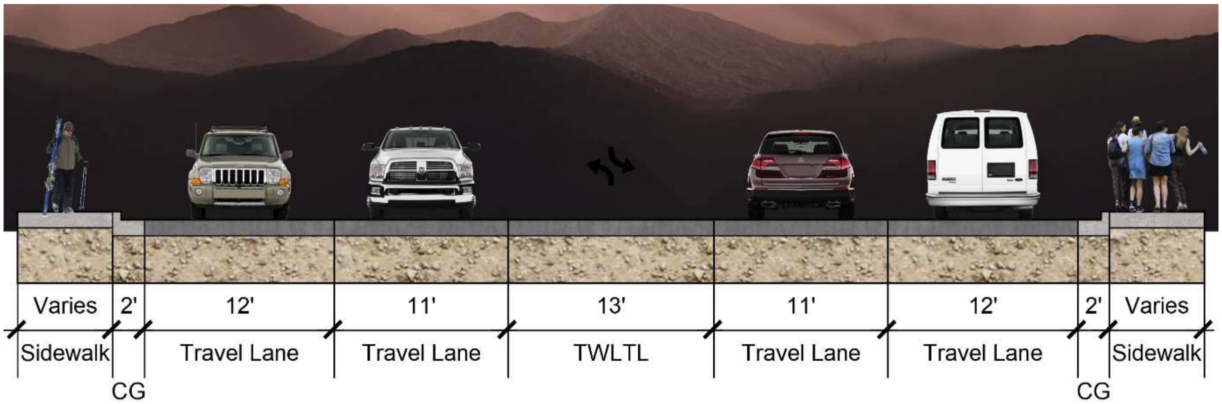


Figure 10: Cross Section of US 50 from Lake Parkway to Stateline Avenue

Roadway pavement condition was reviewed based on NDOT Present Serviceability Index (PSI) values provided by the NDOT Materials Division. PSI is a scale ranging from 5-0 with 5 being excellent condition and 0 being deteriorated condition. The available PSI data is illustrated in **Figure 11**. It should be noted that NDOT has a pavement rehabilitation project scheduled for construction in 2023.

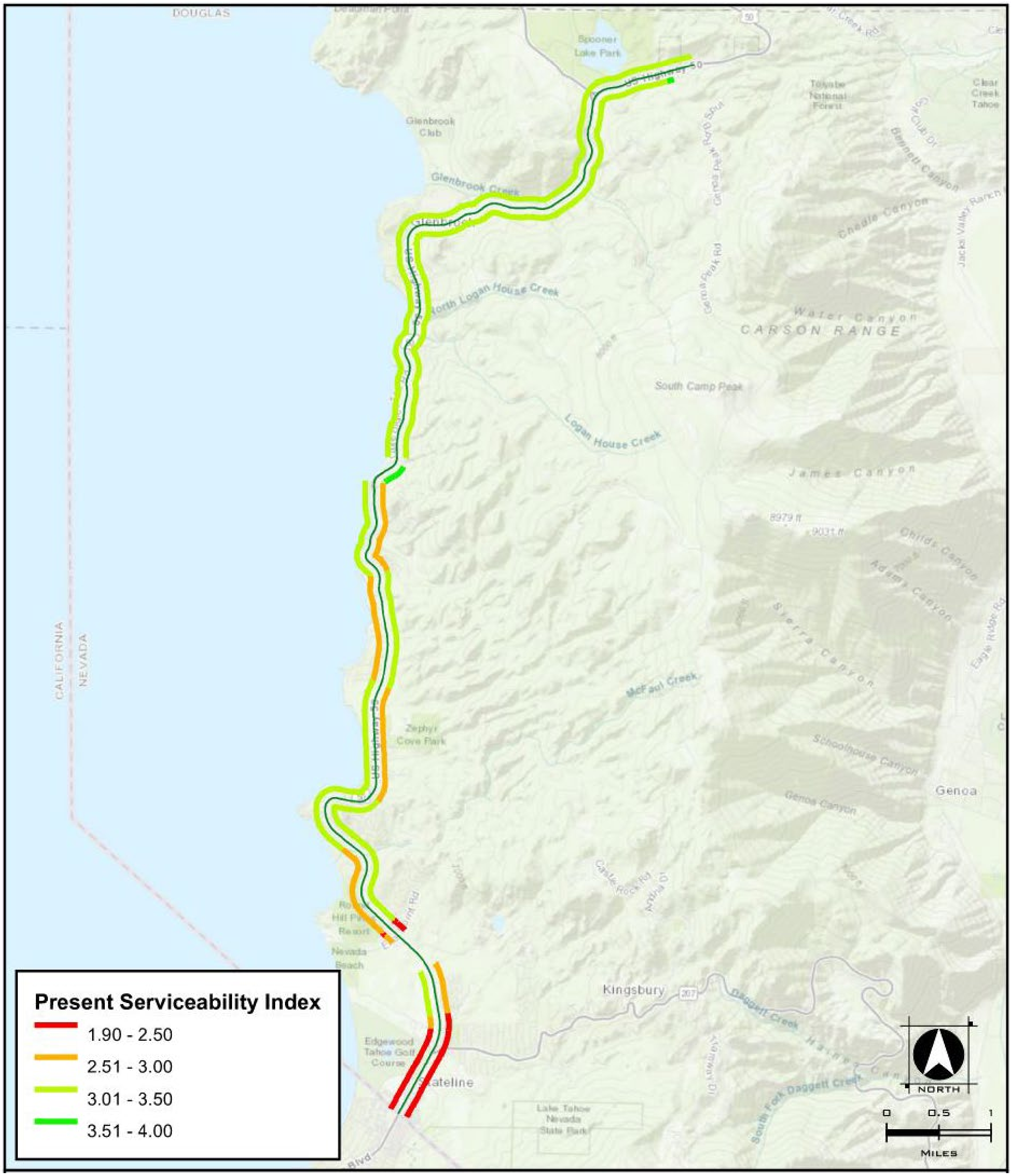


Figure 11: Existing Pavement Condition

2.2 Existing Traffic Conditions

US 50, within the study area, was analyzed for existing traffic conditions and other road user data. This information is used to identify areas where traffic operational deficiencies could be contributing to crashes and to inform alternatives development. One important dataset is the annual average daily traffic (AADT), which was obtained from NDOT's Traffic Records Information Access (TRINA) application for key corridor segments over a 10-year period, and is summarized in **Figure 12**.

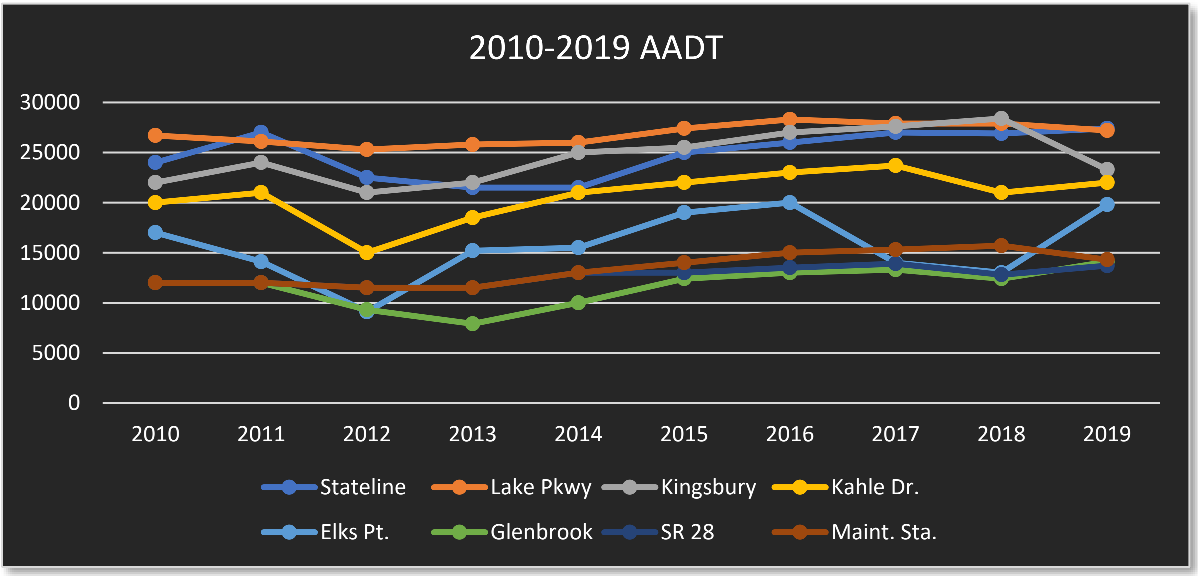


Figure 12: US 50 10-Year AADT Volumes

The volumes show that the AADT is higher in the southern portion of the US 50 corridor than the northern portion, as well as the fact that there was a general slight upward increase in vehicular volumes from 2010 to 2019. The increase in volumes was consistent throughout the count station locations through the study corridor. In addition to the 10-year AADT volume comparison, the most recent AADT yearly data (2019) within the study area was gathered, as shown in **Figure 13**.

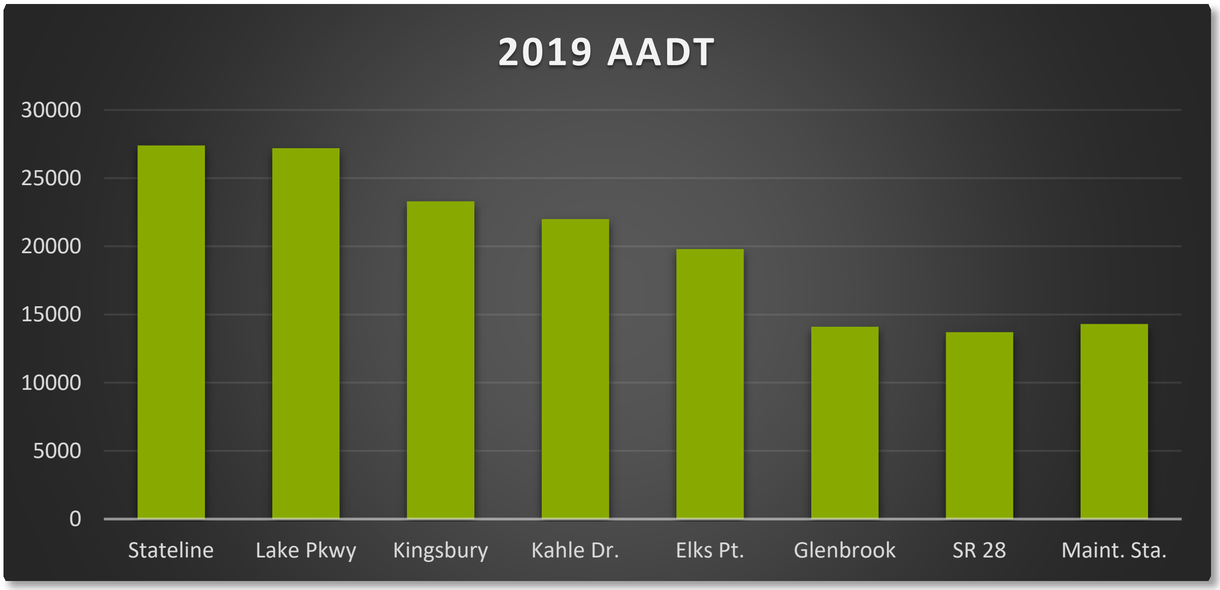


Figure 13: US 50 2019 AADT Volumes

The 2019 volumes illustrate a decrease in traffic volumes as you travel further away from the more densely populated and tourist areas. In particular, there is a notable decrease in volumes north of Elks Point Road.

Turning movement counts (TMCs) along US 50 at the existing signalized intersections and SR28, representing the highest turning volume locations, were determined through the use of StreetLight, which utilizes location-based devices (e.g. smartphones, vehicle navigation devices, etc.) as sensors to collect vehicular volumes. StreetLight does not have TMCs available for specific days within the study area, however, seasonal averages for hourly TMCs were collected for the 2019 and 2020 Winter, Spring, Summer, and Fall seasons (see **Appendix A**). Through analysis, it was determined that the highest seasonal average TMCs, which is the worst-case seasonal traffic scenario, occurred at the following times:

- US 50 and Kingsbury Grade Road: 2019 Fall, on Saturday from 4 PM – 5 PM
- US 50 and Kahle Drive: 2019 Fall, on Saturday from 4 PM – 5 PM
- US 50 and Elks Point Road: 2019 Fall, on Saturday from 4 PM – 5 PM
- US 50 and Zephyr Cove: 2020 Fall, on Saturday from 3 PM – 4 PM
- US 50 and SR 28 T-Intersection: 2020 Fall, on Saturday from 1 PM – 2 PM
- SR 28 Off-Ramp to US 50: 2020 Fall, on Saturday from 2 PM – 3 PM
- US 50 Off Ramp to SR 28: 2020 Summer, on Saturday from 7 AM – 8 AM

To best align the analysis seasons with typical visitation patterns, the following months constitute each season:

- Winter: Dec-Feb
- Spring: Mar-May
- Summer: Jun-Aug
- Fall: Sep-Nov

As a comparison, the percent difference of each of the season's highest average hourly TMCs were calculated for each intersection and can be viewed in **Table 1**.

The southern three analyzed intersection TMCs (US 50/Kingsbury Grade Road, US 50/Kahle Drive, and US 50/Elks Point Road) were balanced with each other, due to their close proximity, and the intersection of US 50/SR 28 was balanced by itself due to its interchange-like characteristics. Balancing refers to distributing the turning volumes based on available data to create actionable counts. **Figure 14** illustrates the TMCs at the five analyzed intersections and detailed calculations can be seen in **Appendix B**.

Table 1: Seasonal Percent Difference of Turning Movement Counts				
Kingsbury Grade Road and US50				
Year and Season	**Day**	**Time**	**Total**	**Percent Difference from Highest Total Volume**
2019 Fall	**Saturday**	**4pm (4pm-5pm)**	**3,619**	**N/A**
2019 Winter	Saturday	4pm (4pm-5pm)	3,312	-9%
2019 Spring	Saturday	4pm (4pm-5pm)	3,196	-12%
2019 Summer	Saturday	5pm (5pm-6pm)	3,219	-12%
2020 Fall	Saturday	4pm (4pm-5pm)	3,389	-7%
2020 Winter	Saturday	4pm (4pm-5pm)	2,849	-24%
2020 Spring	Friday	3pm (3pm-4pm)	2,004	-57%
2020 Summer	Saturday	3pm (3pm-4pm)	2,861	-23%
Kahle Drive and US50				
Year and Season	**Day**	**Time**	**Total**	**Percent Difference from Highest Total Volume**
2019 Fall	**Saturday**	**4pm (4pm-5pm)**	**2,961**	**N/A**
2019 Winter	Saturday	4pm (4pm-5pm)	2,732	-8%
2019 Spring	Saturday	4pm (4pm-5pm)	2,599	-13%
2019 Summer	Saturday	4pm (4pm-5pm)	2,770	-7%
2020 Fall	Saturday	4pm (4pm-5pm)	2,871	-3%
2020 Winter	Saturday	2pm (2pm-3pm)	2,470	-18%
2020 Spring	Saturday	2pm (2pm-3pm)	1,637	-58%
2020 Summer	Saturday	3pm (3pm-4pm)	2,476	-18%
Elks Point Road and US50				
Year and Season	**Day**	**Time**	**Total**	**Percent Difference from Highest Total Volume**
2019 Fall	**Saturday**	**4pm (4pm-5pm)**	**2,911**	**N/A**
2019 Winter	Saturday	3pm (3pm-4pm)	2,605	-11%
2019 Spring	Saturday	4pm (4pm-5pm)	2,574	-12%
2019 Summer	Saturday	4pm (4pm-5pm)	2,840	-2%
2020 Fall	Saturday	3pm (3pm-4pm)	2,860	-2%
2020 Winter	Saturday	3pm (3pm-4pm)	2,418	-19%
2020 Spring	Saturday	2pm (2pm-3pm)	1,604	-58%
2020 Summer	Saturday	3pm (3pm-4pm)	2,408	-19%
Zephyr Cove and US50				
Year and Season	**Day**	**Time**	**Total**	**Percent Difference from Highest Total Volume**
2019 Fall	Saturday	4pm (4pm-5pm)	2,134	-28%
2019 Winter	Saturday	3pm (3pm-4pm)	2,073	-30%
2019 Spring	Saturday	4pm (4pm-5pm)	2,082	-30%
2019 Summer	Saturday	1pm (1pm-2pm)	2,470	-13%
2020 Fall	**Saturday**	**3pm (3pm-4pm)**	**2,816**	**N/A**
2020 Winter	Saturday	4pm (4pm-5pm)	2,335	-19%
2020 Spring	Saturday	2pm (2pm-3pm)	1,447	-64%
2020 Summer	Saturday	3pm (3pm-4pm)	2,352	-18%

SR28 and US50 T-Intersection				
Year and Season	**Day**	**Time**	**Total**	**Percent Difference from Highest Total Volume**
2019 Fall	Saturday	3pm (3pm-4pm)	1,988	-16%
2019 Winter	Saturday	3pm (3pm-4pm)	1,960	-17%
2019 Spring	Sunday	11am (11am-12noon)	1,906	-20%
2019 Summer	Saturday	4pm (4pm-5pm)	2,307	-1%
2020 Fall	**Saturday**	**1pm (1pm-2pm)**	**2,323**	**N/A**
2020 Winter	Saturday	12pm (12noon-1pm)	1,904	-20%
2020 Spring	Saturday	12pm (12noon-1pm)	1,324	-55%
2020 Summer	Saturday	3pm (3pm-4pm)	2,072	-11%
SR28 Off-Ramp				
Year and Season	**Day**	**Time**	**Total**	**Percent Difference from Highest Total Volume**
2019 Fall	Saturday	2pm (2pm-3pm)	647	-21%
2019 Winter	Saturday	3pm (3pm-4pm)	708	-12%
2019 Spring	Saturday	4pm (4pm-5pm)	542	-38%
2019 Summer	Sunday	2pm (2pm-3pm)	594	-29%
2020 Fall	**Saturday**	**2pm (2pm-3pm)**	**799**	**N/A**
2020 Winter	Saturday	2pm (2pm-3pm)	568	-34%
2020 Spring	Saturday	2pm (2pm-3pm)	323	-85%
2020 Summer	Sunday	2pm (2pm-3pm)	571	-33%
US50 Off-Ramp				
Year and Season	**Day**	**Time**	**Total**	**Percent Difference from Highest Total Volume**
2019 Fall	Friday	3pm (3pm-4pm)	220	-61%
2019 Winter	Friday	7am (7am-8am)	227	-59%
2019 Spring	Tuesday	8am (8am-9am)	222	-61%
2019 Summer	Sunday	12pm (12noon-1pm)	239	-54%
2020 Fall	Monday	7am (7am-8am)	411	-1%
2020 Winter	Sunday	1pm (1pm-2pm)	345	-18%
2020 Spring	Saturday	12pm (12noon-1pm)	325	-24%
2020 Summer	**Saturday**	**7am (7am-8am)**	**415**	**N/A**

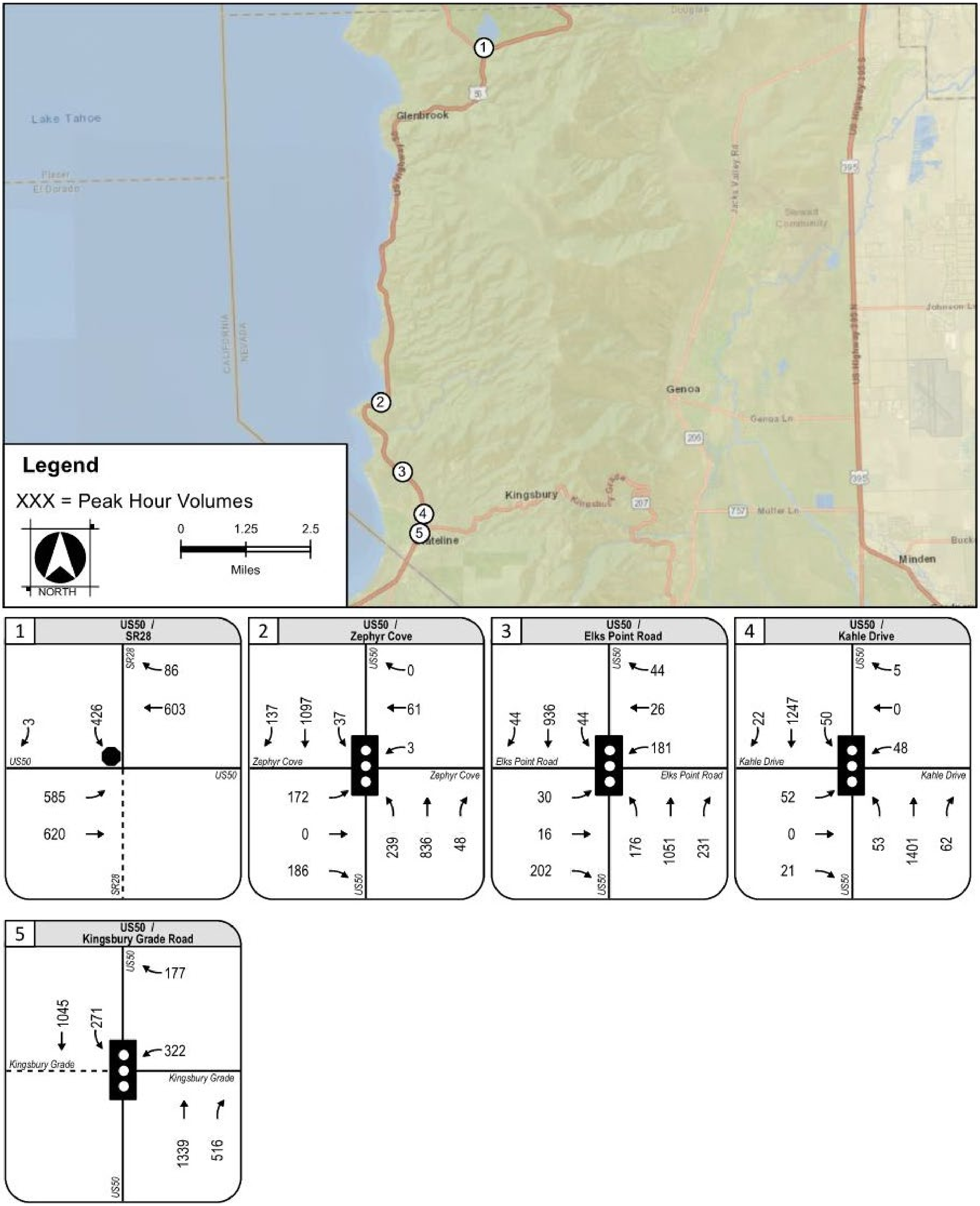


Figure 14: Existing Lane Geometrics and Controls

2.3 Existing Intersection Level-of-Service and Queue Analysis

Traffic operations in this study have been quantified through the determination of level-of-service (LOS). LOS has been calculated for all intersection control types using methods documented in the Transportation Research Board (TRB) publication *Highway Capacity Manual*, Sixth Edition (HCM 6).

LOS is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to study facilities, representing progressively worsening traffic operations.

Synchro 10 macrosimulation software was utilized to calculate the LOS at five (5) US 50 intersections within the study area. According to trafficware.com:

> *Synchro is a macroscopic analysis and optimization software application. Synchro supports the HCM 6th Edition, 2010, and 2000 for signalized intersections, unsignalized intersections, and roundabouts. Synchro also implements the Intersection and Capacity Utilization method for determining intersection capacity. Synchro's signal optimization routine allows the user to weight specific phases, thus providing users more options when developing signal timing plans. Synchro supports multiple scenarios to a single file. Because the software is easy to use, traffic engineers are modeling within days, thus adding to the number of reasons why Synchro remains the leading traffic analysis application.*

The TMCs shown in **Figure 14** were one of the inputs used in the analysis. Existing signal timings were supplied by Carson City and used as an additional input into Synchro 10, which are located in **Appendix C**. The existing lane geometrics were collected through field visits and Google Earth.

The resulting HCM 6 LOS for all approaches and overall intersections is displayed in **Table 2**, and a more detailed description of each intersection can be viewed in **Appendix D**. LOS considered unacceptable to NDOT (LOS E and LOS F) are highlighted in red. It should be noted that Kahle Drive has a speed limit of 15 miles-per-hour (MPH), however HCM 6 does not recognize speed limits less than 25 MPH, thus Kahle Drive was updated to 25 MPH in Synchro for the HCM 6 analysis.

TABLE 2: US 50 LEVEL-OF-SERVICE (HCM 6) - EXISTING CONDITIONS

US 50 Intersection	Signalization	Time	Approach Delay (Seconds) & LOS								Intersection Delay (Seconds) & LOS	
			EB		WB		NB		SB			
Nevada State Route 28	Unsignalized	2020 Fall, Saturday, 1 PM - 2 PM	20.3	C	0.0	A	-	-	26,684.6	F	26,684.6	F
Zephyr Cove	Signalized	2020 Fall, Saturday, 3 PM - 4 PM	36.4	D	30.7	C	26.7	C	41.3	D	34.6	C
Elks Point Road	Signalized	Fall, Saturday, 4 PM - 5 PM	43.9	D	1,160.5	F	32.0	C	33.0	C	128.4	F
Kahle Drive	Signalized	Fall, Saturday, 4 PM - 5 PM	36.0	D	34.7	C	12.2	B	10.7	B	12.6	B
Kingsbury Grade Road	Signalized	Fall, Saturday, 4 PM - 5 PM	-	-	57.6	E	23.6	C	18.7	B	26.5	C

Source: Wood Rodgers, May 2021

As shown in **Table 2**, the intersections of US 50/Zephyr Cove, US 50/Kahle Drive, and US 50/Kingsbury Grade Road acceptably perform at LOS C, LOS B, and LOS C, respectively. On the other hand, the intersection of US 50/SR 28 fails due to the high delay caused by the southbound left-turn/right-turn unsignalized approach, and the intersection of US 50/Elks Point Road fails due to the high delay caused by the westbound left-turn/through approach.

The US 50/Elks Point Road westbound approach delay of 1,160.5 seconds, equates to 19.3 minutes of delay, and when using engineering judgement, it was determined that this HCM 6 calculation was incorrect. Similarly, the US 50/SR 28 southbound approach delay of 26,684.6 seconds, equates to 7.4 hours of delay, and when using engineering judgement, it was determined that this HCM 6 calculation was also incorrect. Therefore, a separate Synchro Default LOS for all approaches and overall intersections was completed to see if similar long delays occurred in the westbound direction at US 50/Elks Point Road and the southbound direction at US 50/SR 28. The Synchro Default results are displayed in **Table 3**, and a more detailed description of each intersection can be viewed in **Appendix D**. Note: For the Synchro Default option, the speed limit of Kahle Drive was reentered to the existing speed limit of 15 MPH.

TABLE 3: US 50 LEVEL-OF-SERVICE (SYNCHRO DEFAULT) - EXISTING CONDITIONS												
US 50 Intersection	Signalization	Time	Approach Delay (Seconds) & LOS								Intersection Delay (Seconds) & LOS	
			EB		WB		NB		SB			
Nevada State Route 28	Unsignalized	2020 Fall, Saturday, 1 PM - 2 PM	9.8	A	0.0	A	-	-	Error*	Error*	Error*	Error*
Zephyr Cove	Signalized	2020 Fall, Saturday, 3 PM - 4 PM	27.7	C	29.9	C	26.9	C	34.7	C	**30.6**	**C**
Elks Point Road	Signalized	2019 Fall, Saturday, 4 PM - 5 PM	12.8	B	54.8	D	25.8	C	27.3	C	**27.7**	**C**
Kahle Drive	Signalized	2019 Fall, Saturday, 4 PM - 5 PM	9.4	A	35.5	D	12.8	B	13.4	B	**13.4**	**B**
Kingsbury Grade Road	Signalized	2019 Fall, Saturday, 4 PM - 5 PM	-	-	56.9	E	21.6	C	19.9	B	**25.8**	**C**
**The SB delay is too high for Synchro to read*												
Source: Wood Rodgers, May 2021												

As shown in **Table 3**, the intersections of US 50/Zephyr Cove, US 50/Kahle Drive, and US 50/Kingsbury Grade Road all still acceptably perform at LOS C, LOS B, and LOS C, respectively, and each is 4 seconds or less different than the HCM 6 results. On the other hand, the intersection of US 50/Elks Point Road now performs at an acceptable LOS C and the westbound approach went from a delay time of 1,160.5 seconds to 54.8 seconds. Using engineering judgement and looking at the westbound left-turn and through volumes, the eastbound through and right-turn volumes, as well as the signal time allotted to those two movements, it was determined that the Synchro Default was the best Synchro 10 version used for this segment of US 50.

Also shown in **Table 3**, the intersection of US 50/SR 28 still performs poorly in the southbound direction, in fact the Synchro Default results in an "Error" message. However, it is recognized that the southbound approach needs to be addressed due to the difficulty of making a southbound left-turn at the unsignalized intersection of US 50/SR 28, which also has sight-distance concerns. In fact, over 1000-feet southbound queues have been visualized in the field at this intersection during peak times.

In addition to the LOS, a queue analysis was performed to determine if the existing queue storage lengths are sufficient to hold the vehicles utilizing the existing turn pockets during the peak hours, details of which can be found in **Appendix D**. As a result, the following movements have a queue length longer than the storage length:

- US 50 and SR 28 – Eastbound Left-Turn
    - Note: The Southbound movement is not a pocket and the queue was calculated as an "Error"
- US 50 and Zephyr Cove – Eastbound Right-Turn and Northbound Left-Turn
- US 50 and Elks Point Road – Northbound Left-Turn
- US 50 and Kingsbury Grade Road – Westbound Left-Turn and Southbound Left-Turn

Existing Volumes Compared to LOS

As mentioned in Section 2.2, volumes are higher in the southern portion of the US 50 corridor than they are in the northern portion. However, the volumes are still low enough at the southern analyzed US 50 signalized intersections of Kingsbury Grade Road, Kahle Drive, Elks Point Road, and Zephyr Cove to result in LOS C or better for each intersection. Albeit, the intersections of US 50/Kingsbury Grade Road, US 50/Elks Point Road, and US 50/Zephyr Cove all need turn pockets lengthened and/or added.

The only analyzed intersection that fails in the existing conditions is the unsignalized intersection of US 50 and SR 28, where the volumes are lower because it is located in the northern portion of the US 50 corridor. This intersection fails mainly due to the fact that it is unsignalized. Thus, this intersection should be an area of focus during the next phase of the *US 50 East Shore CMP*, where redesigning the intersection and/or signalizing the intersection may improve the LOS to LOS D or better.

2.4 Existing Speed Limits

The posted speed limit varies along the US 50 corridor, reflective of the differences in adjacent land uses and densities. The majority of the corridor is posted at 45 MPH, with 50 MPH the highest posted speed limit, and 25 MPH the lowest. The existing posted speed limits are shown in **Figure 15**. These speed limits are determined by NDOT based on a variety of factors including operating speed and roadway geometry.

Vehicles traveling over the posted speed limit is a concern along the US 50 corridor. In fact, NDOT performed multiple speed studies along US 50 from Kahle Drive (Mile Post Douglas-0.9) to 0.5 miles north (Mile Post Douglas-1.4) to determine the 85^{th}-percential speed before and after implementing variable speed signs through this section, details of which can be found in **Appendix E**. The results of the speed study are the following:

- Before March 16, 2016 (no variable speed sign)
    - Posted Speed Limit = **35 MPH**
    - 85^{th} Percentile Speed = **44 MPH**
- After November 16, 2016 (variable speed sign installed on June 20, 2016)
    - Posted Speed Limit = **35 MPH**
    - 85^{th} Percentile Speed = **41 MPH**
- After December 17, 2017 (variable speed sign)
    - Posted Speed Limit = **35 MPH**
    - 85^{th} Percentile Speed = **42 MPH**
- After August 18, 2018 (variable speed sign)
    - Posted Speed Limit = **35 MPH**
    - 85^{th} Percentile Speed = **48 MPH**

As shown in the results above, implementing the variable speed signs through this location dropped the 85^{th}-percentile speed by 3 MPH, albeit still 6 MPH over the posted speed limit. However, the variable speed signs only helped reduce the speeds initially, as shown in the 2018 speed study where the 85^{th}-percentile speed is actually 4 MPH above where it was in 2016, and 13 MPH over the posted speed limit.

2.5 Roadway Grades

Given the mountainous terrain of the corridor, the roadway grade, or longitudinal slope, varies throughout the US 50 corridor. Grades can be an important factor in understanding potential crash factors and identifying locations with potential sight distance issues, among other things. The existing roadway grades are depicted in **Figure 16**.

The grades, specifically the downgrades, make it easy for vehicles (heavy and light) to travel faster than the posted speed limit without the driver forcing the vehicle to accelerate. Vehicular travel speed is a major concern along the US 50 corridor and a factor in many crashes. As vehicles travel south toward Stateline, the posted speed limits are reduced, but vehicles continue to travel at speeds posted in the northern section of the US 50 corridor. There may be a correlation between high speeds and the wide, uninterrupted nature of the downgrade from Spooner Summit to Glenbrook in the northern segment of the corridor. Therefore, speed reduction will be one of the main focus points during the next phase of the *US 50 East Shore CMP*.

2.6 Existing Right-of-Way

The US 50 right-of-way varies significantly in width throughout the corridor, as illustrated in **Figure 17a** through **Figure 17o**. The base right-of-way width is 80-feet with many sections expanded beyond the base width to reflect the area's topography. The maximum right-of-way width within the study limits is 430-feet near Spooner Summit. Right-of-way through the study area does not appear to be a concern, but will be considered when developing recommendation alternatives during the next phase of the *US 50 East Shore CMP*. Furthermore, right-of-way may limit opportunities for large-scale improvements such as curve flattening.

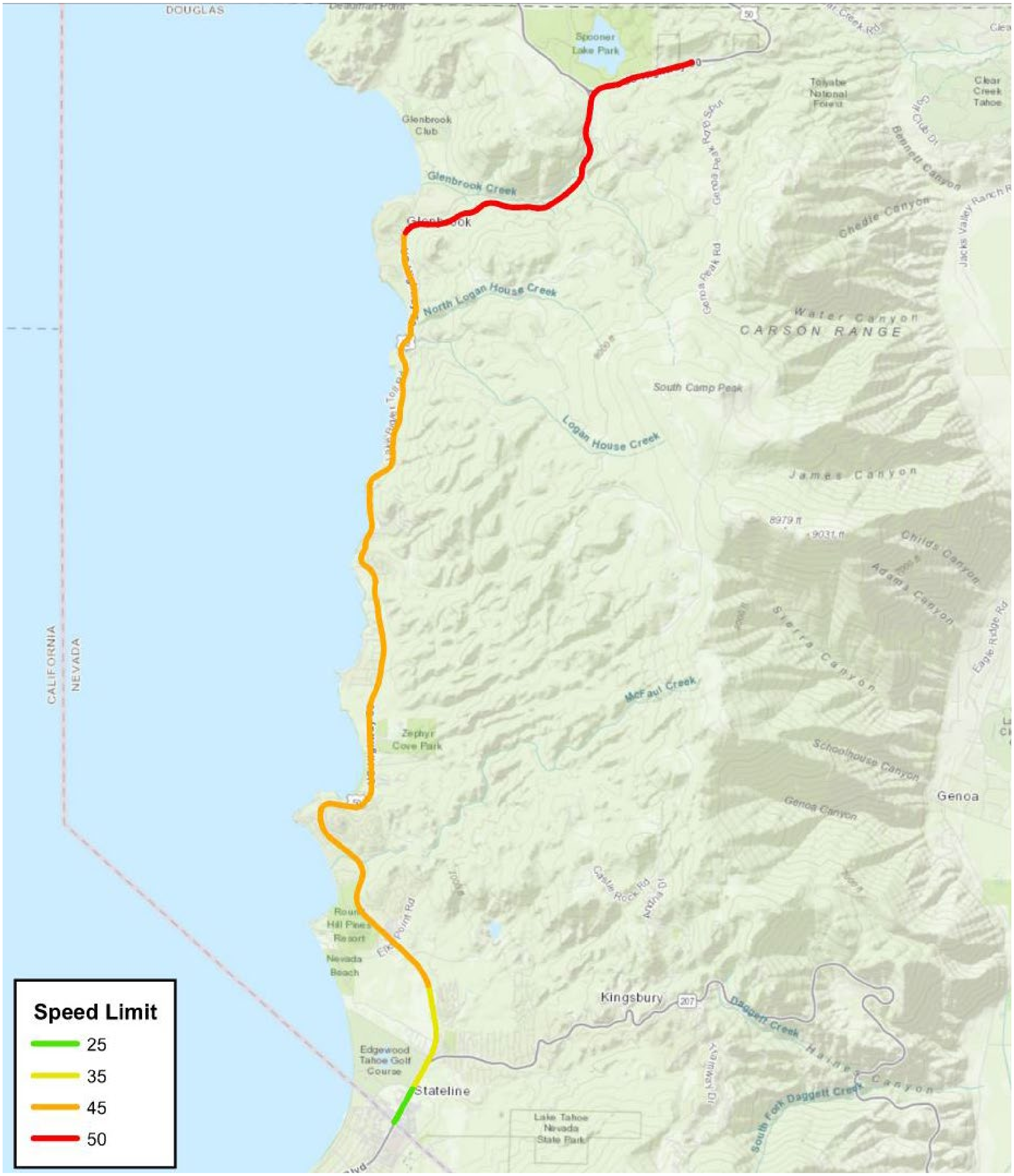


Figure 15: Posted Speed Limits

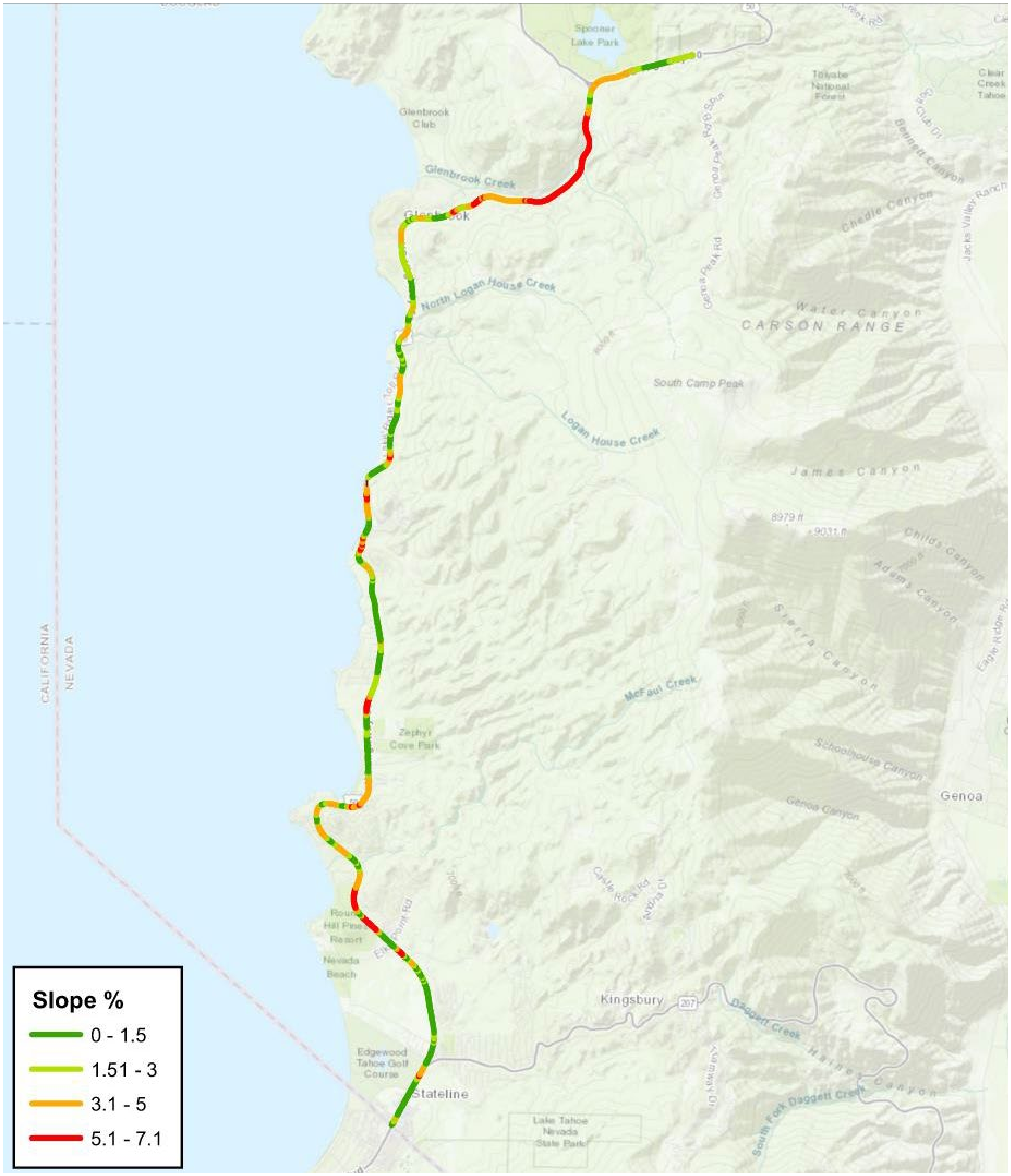


Figure 16: Roadway Grades per 100' Sections

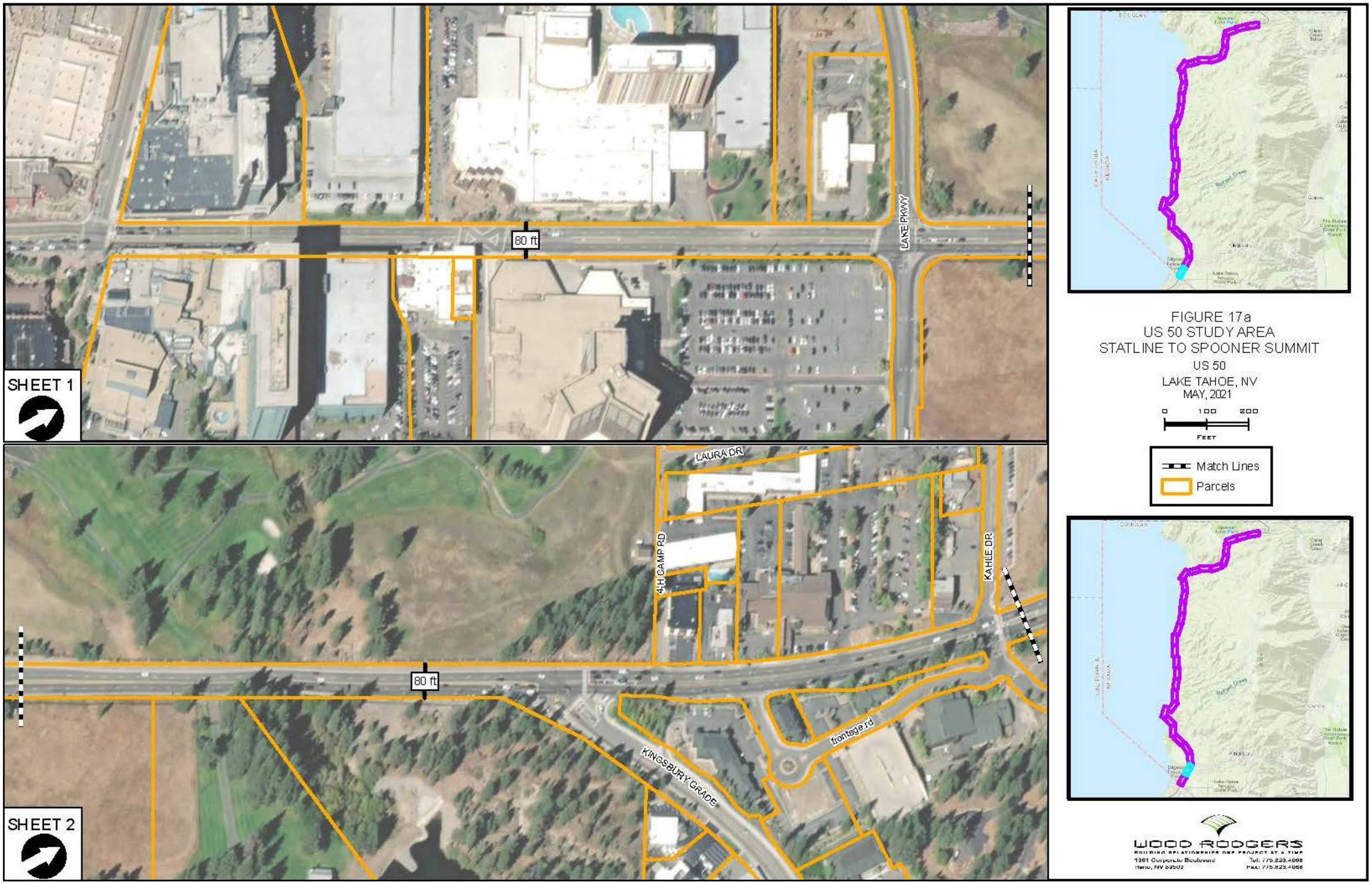


Figure 17a: US 50 Right-of-Way

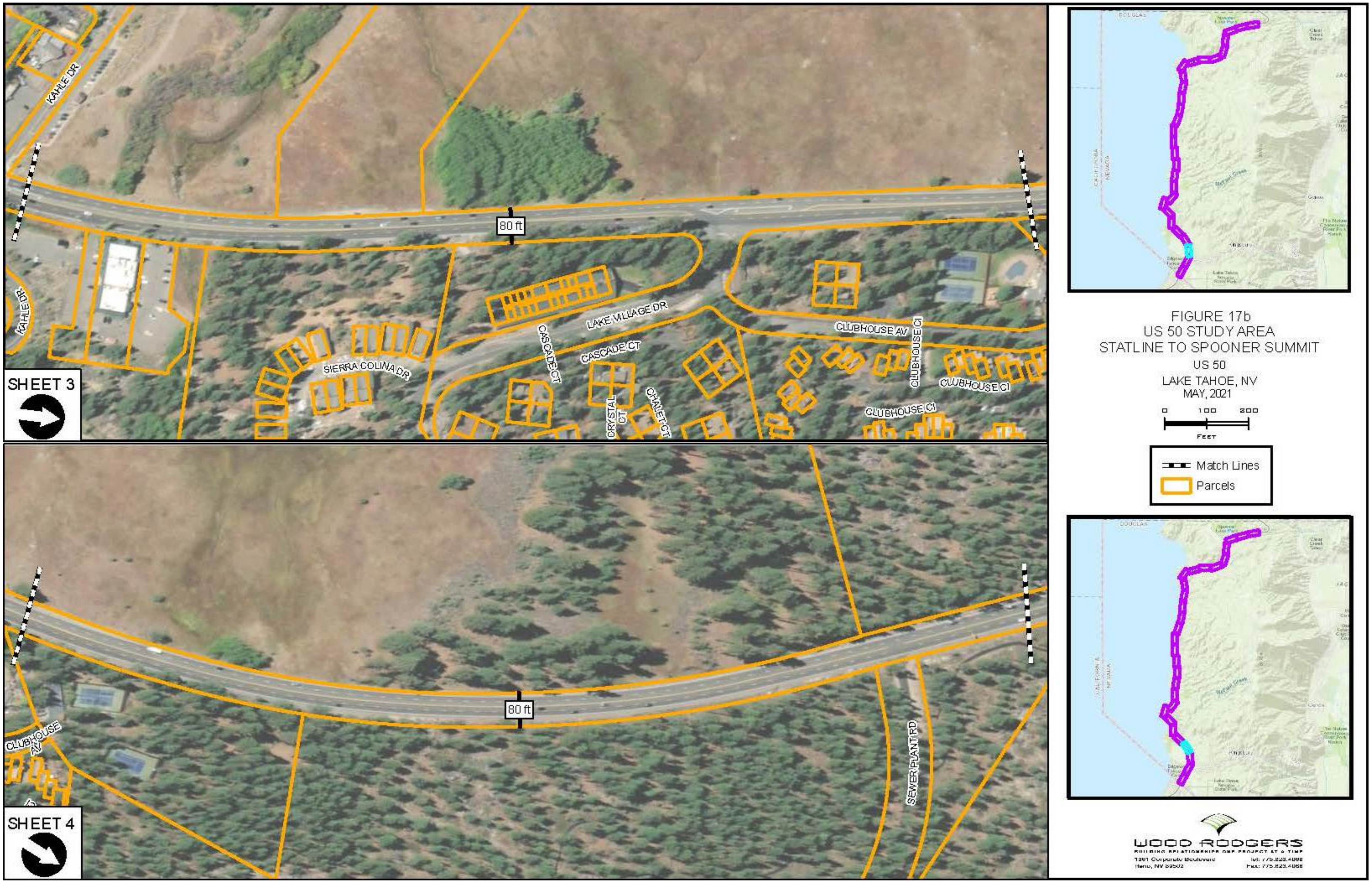


Figure 17b: US 50 Right-of-Way

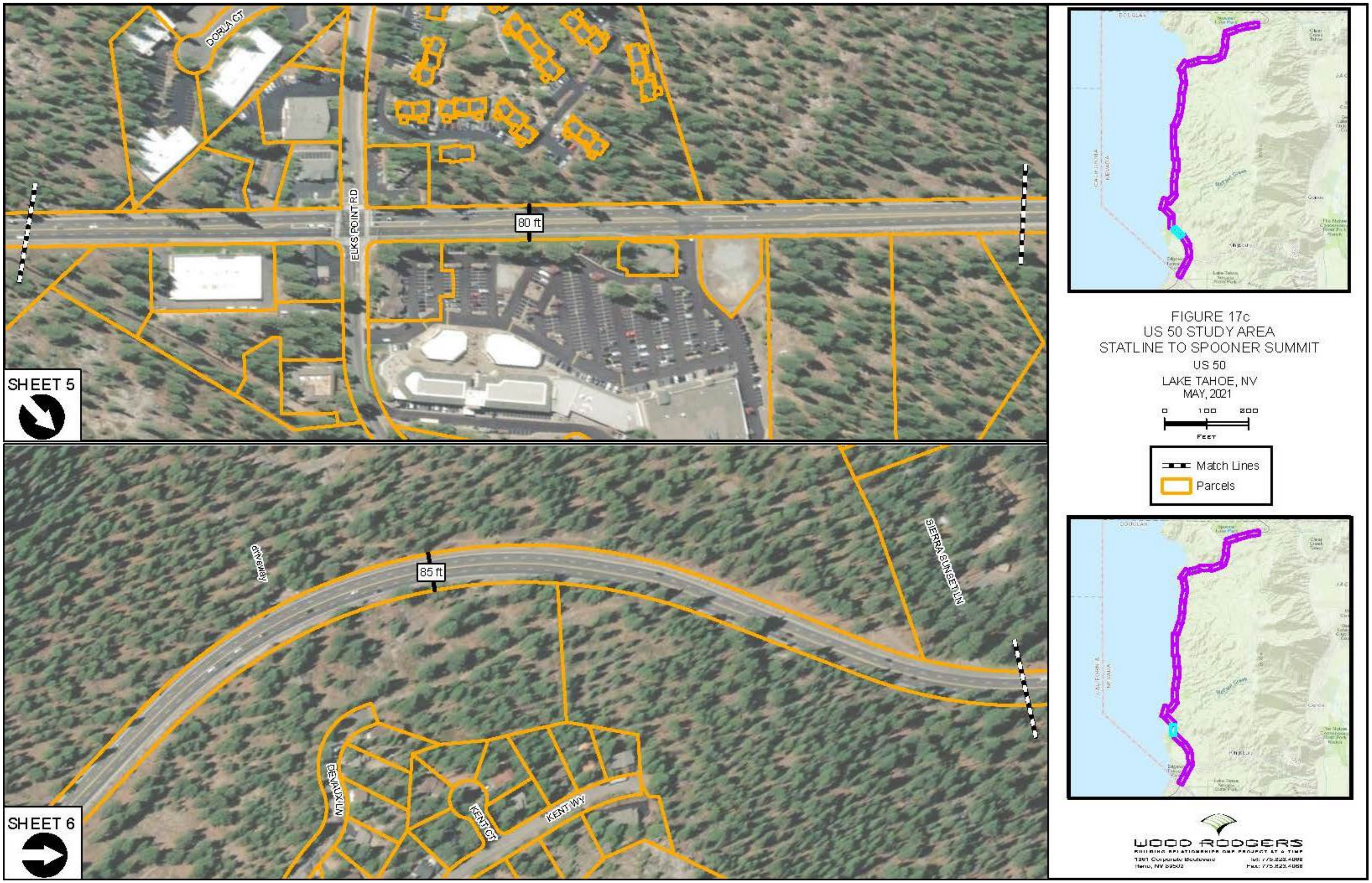


Figure 17c: US 50 Right-of-Way

Figure 17d: US 50 Right-of-Way

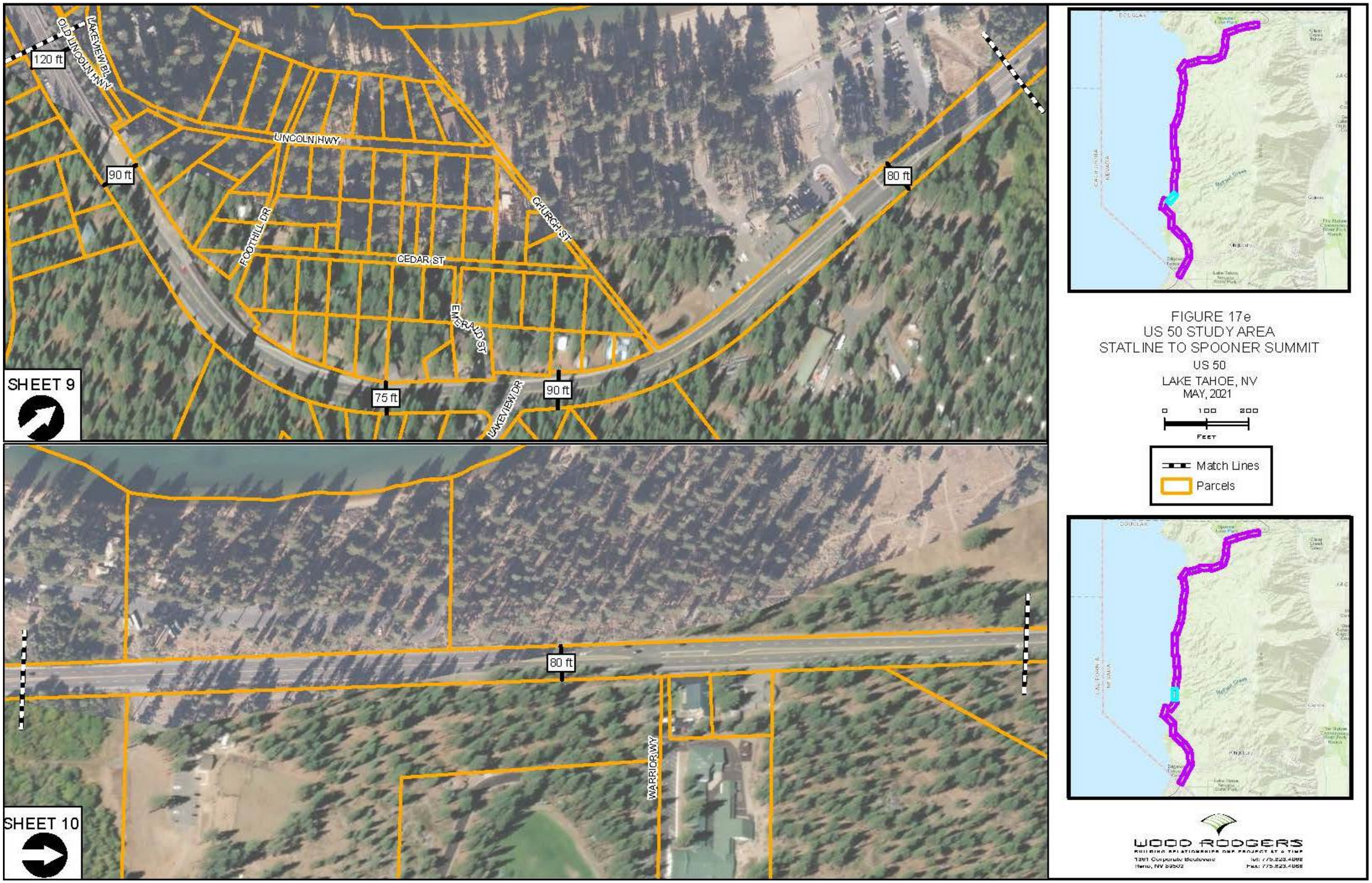


Figure 17e: US 50 Right-of-Way

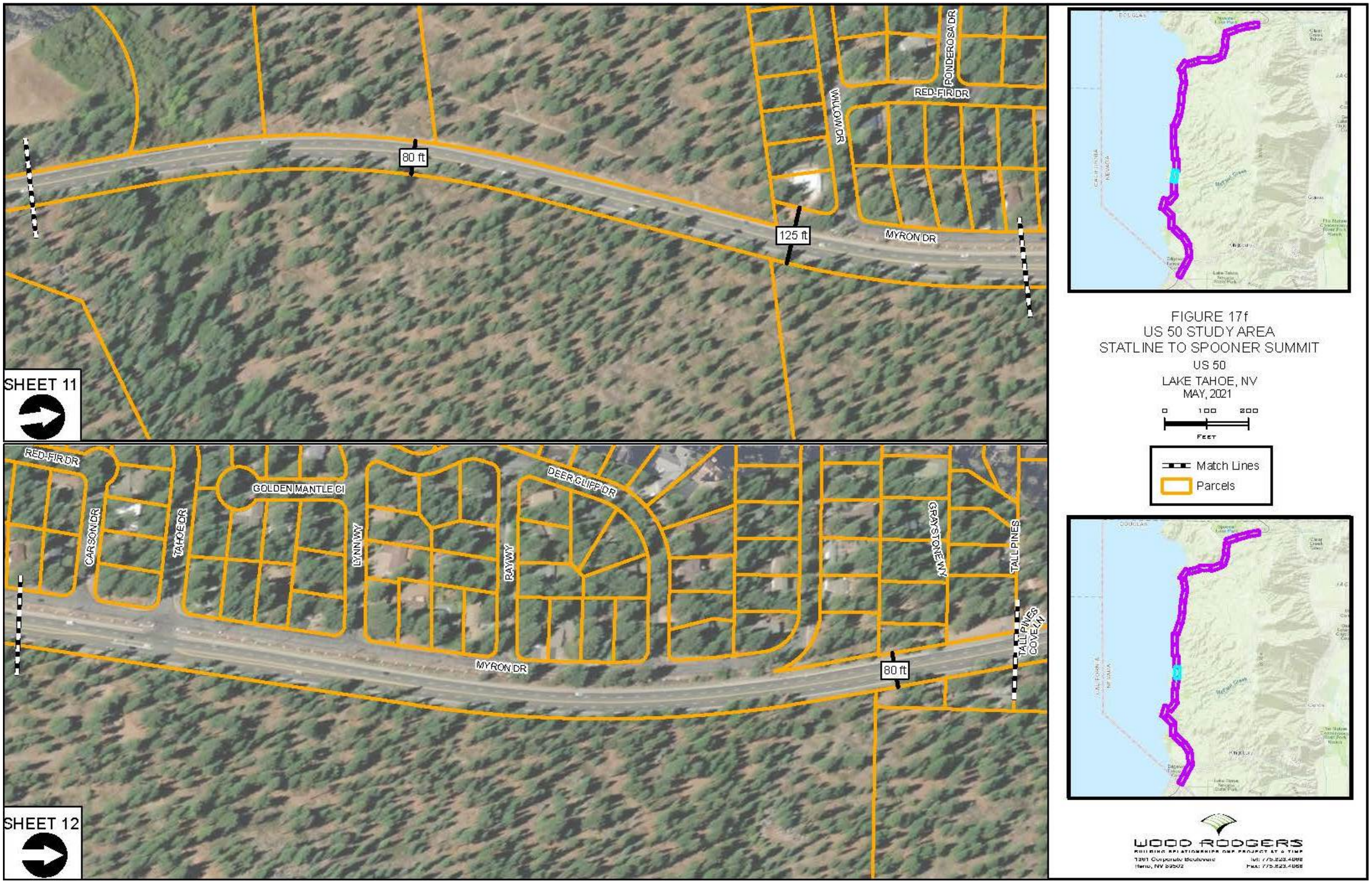


Figure 17f: US 50 Right-of-Way

Figure 17g: US 50 Right-of-Way

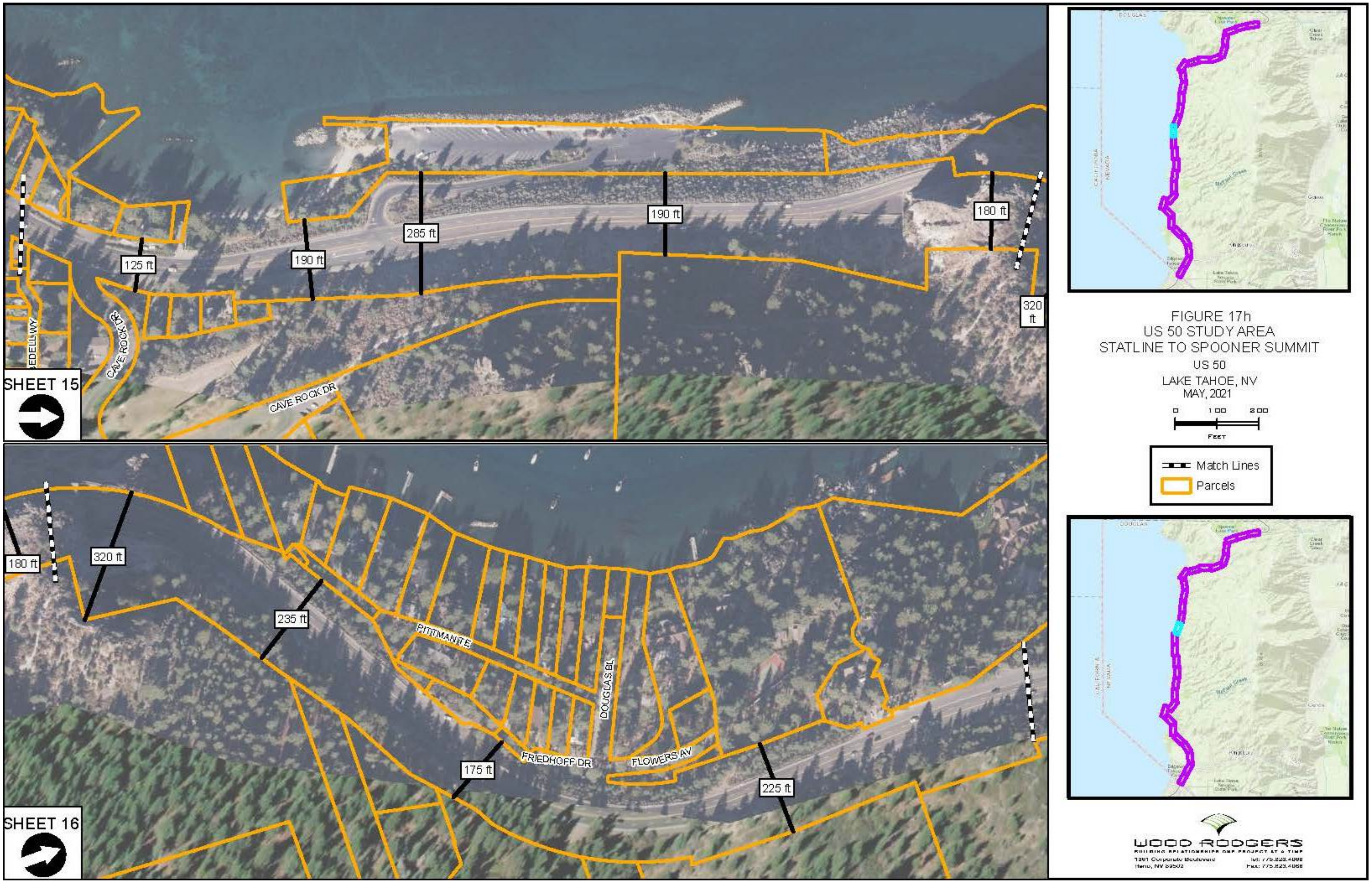


Figure 17h: US 50 Right-of-Way

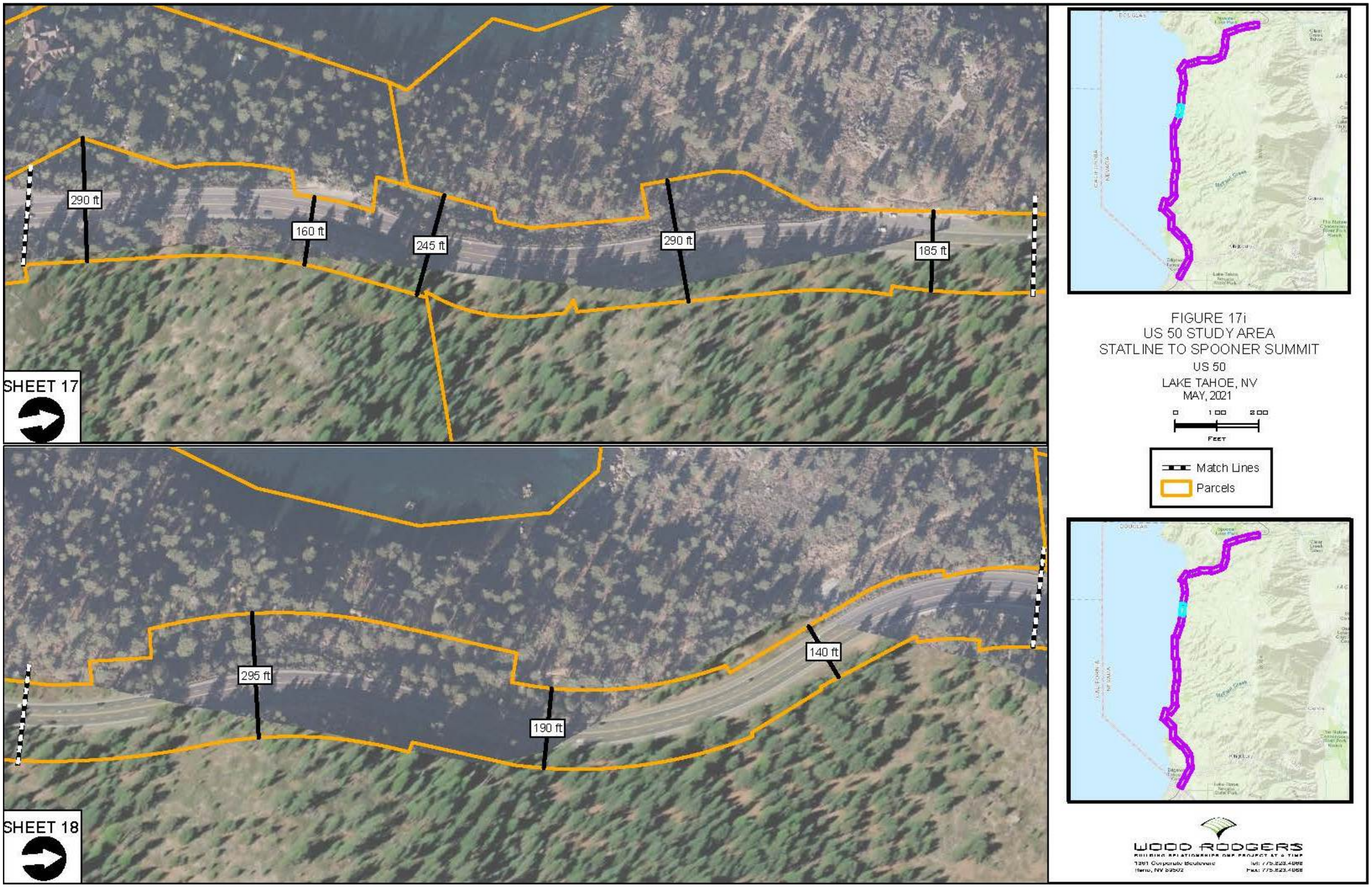


Figure 17i: US 50 Right-of-Way

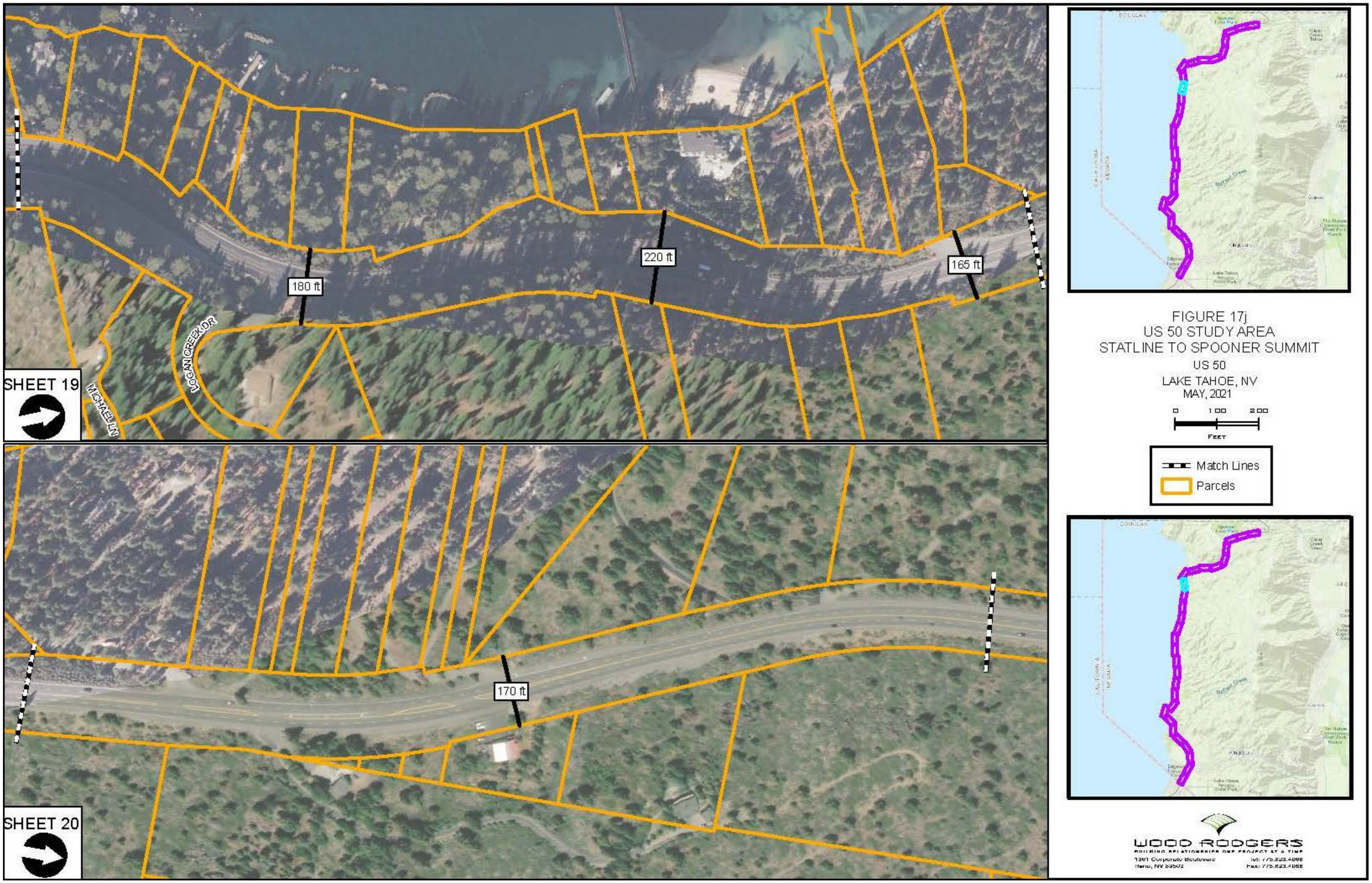


Figure 17j: US 50 Right-of-Way

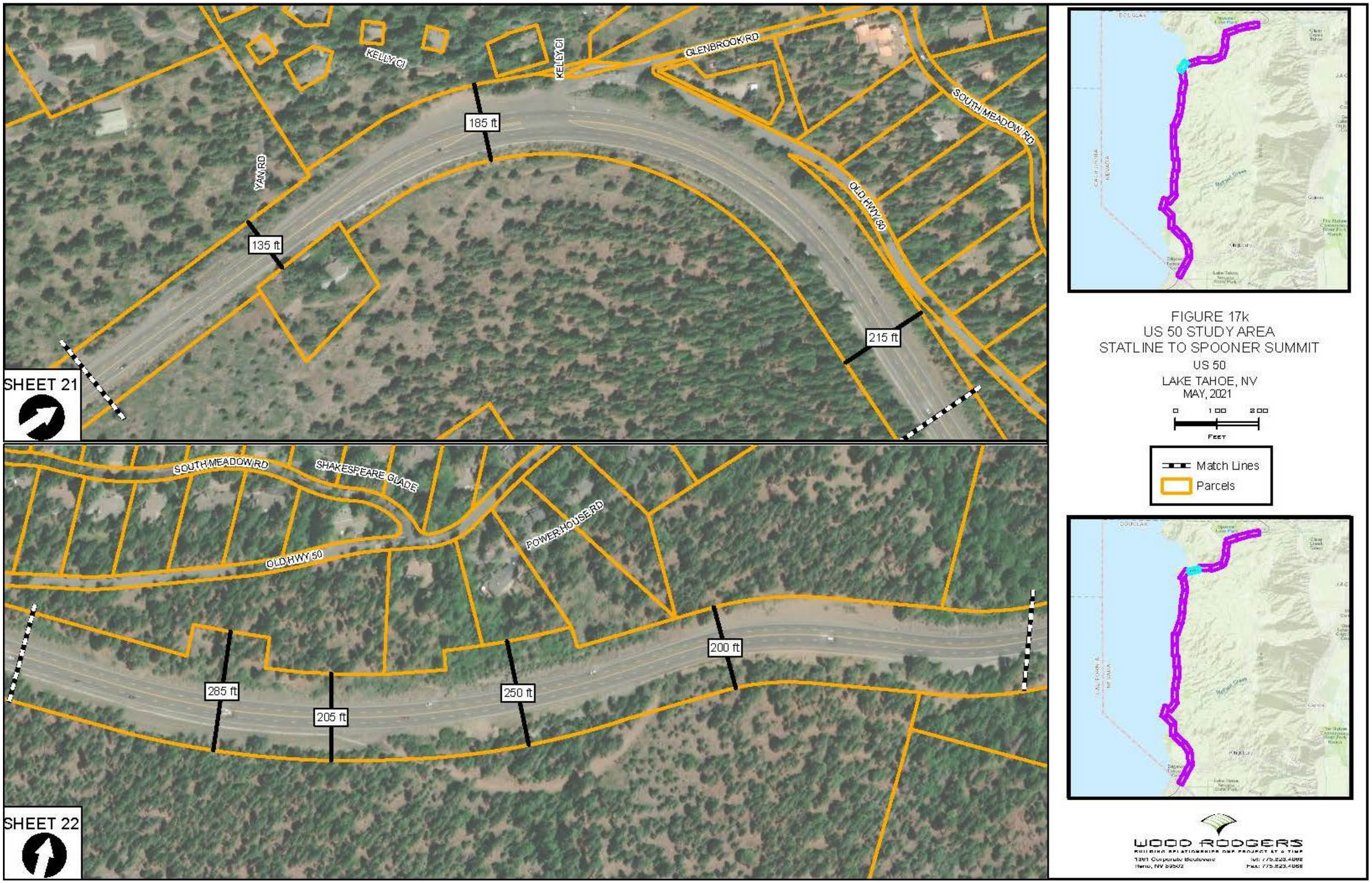


Figure 17k: US 50 Right-of-Way

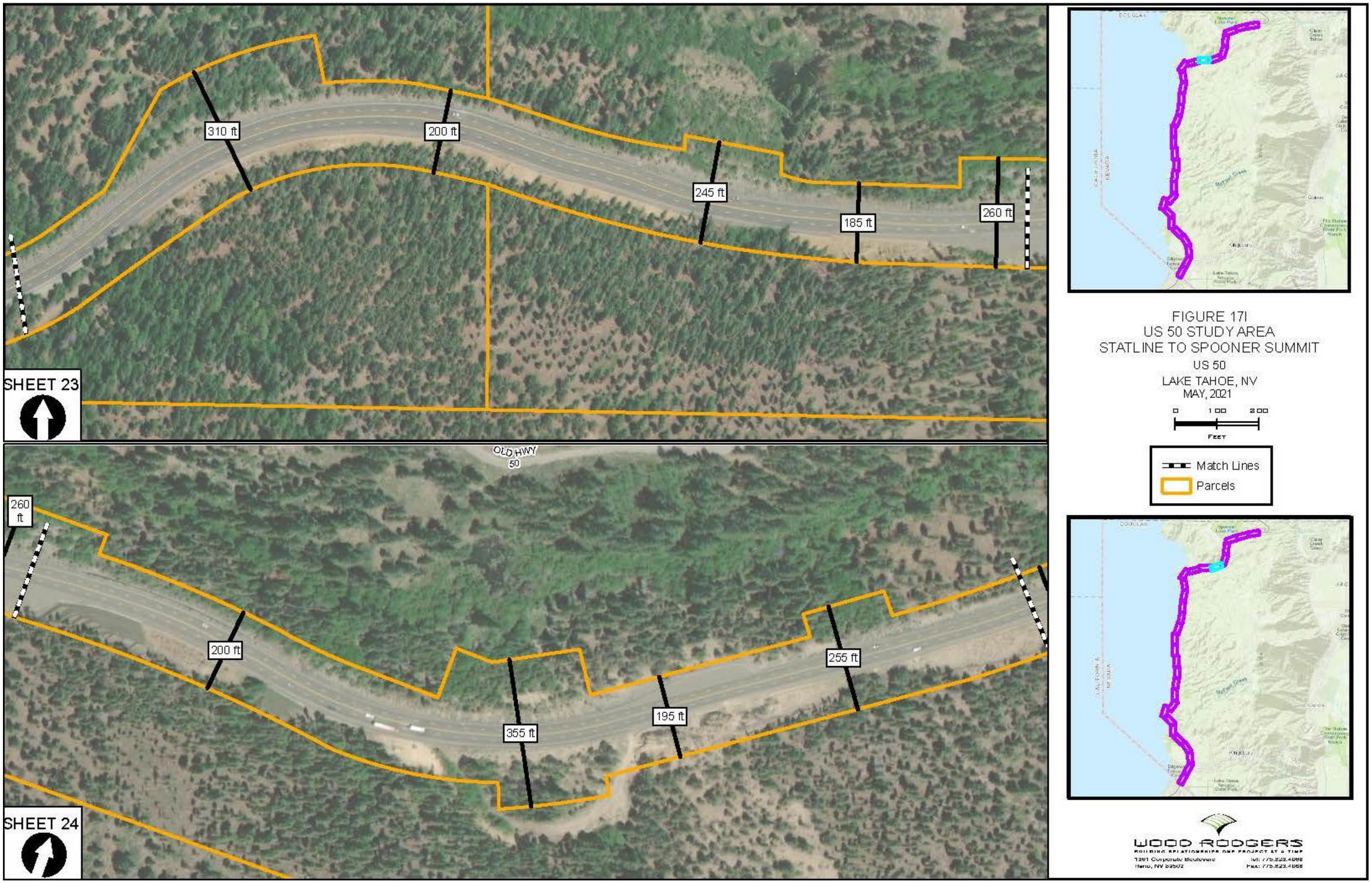


Figure 17l: US 50 Right-of-Way

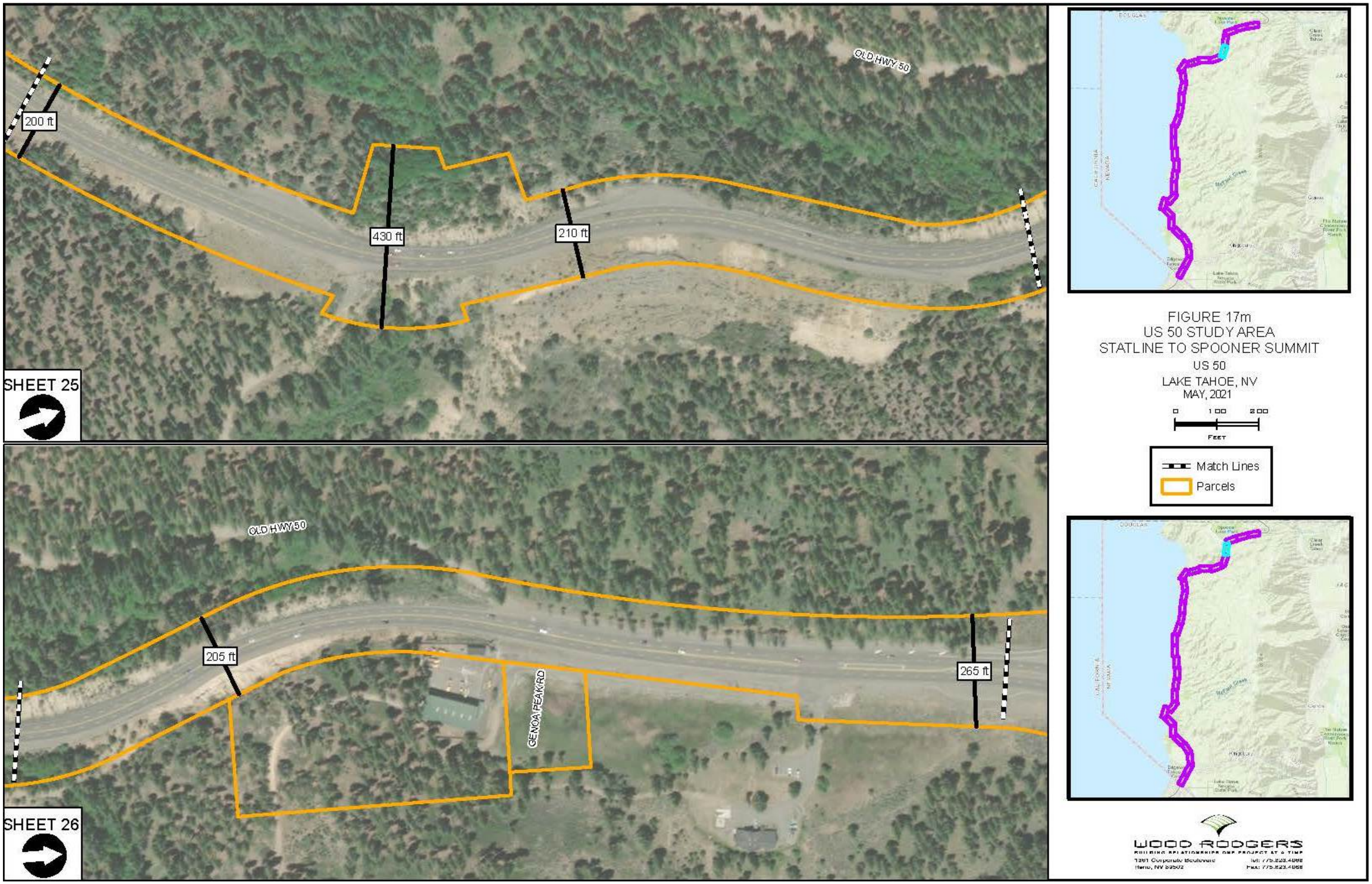


Figure 17m: US 50 Right-of-Way

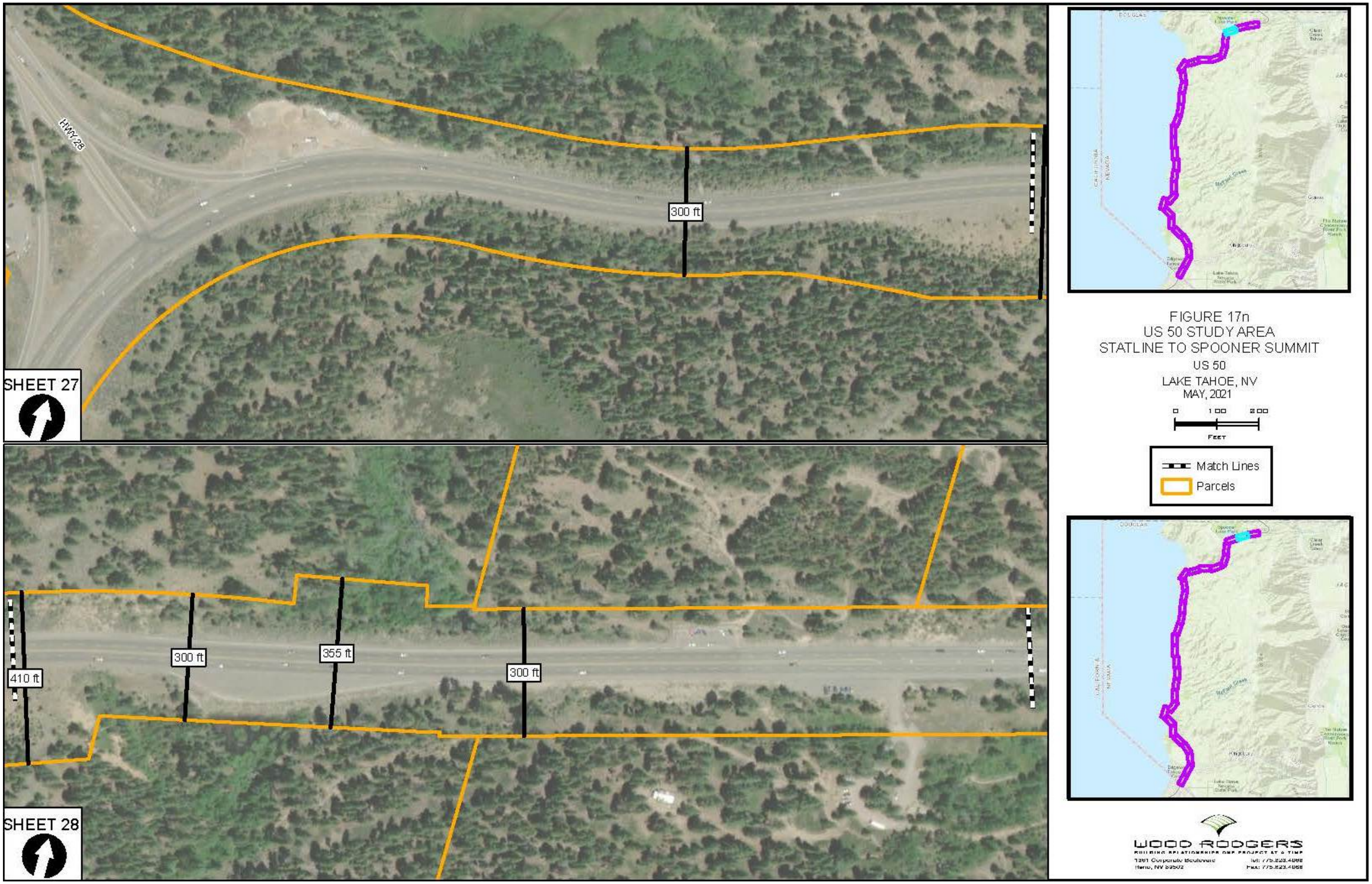


Figure 17n: US 50 Right-of-Way

FIGURE 17o
US 50 STUDY AREA
STATLINE TO SPOONER SUMMIT
US 50
LAKE TAHOE, NV
MAY, 2021

0 100 200
FEET

Match Lines
Parcels

WOOD RODGERS

Figure 17o: US 50 Right-of-Way

2.7 Existing Multi-Modal Facilities

Providing opportunities for active transportation is an important goal for NDOT, particularly in locations with limited ability to expand vehicular capacity, such as the US50 corridor. NDOT's One Nevada Transportation Plan, the state's long-range transportation plan (see Section 5), identifies "Connecting Communities" as one of six critical goal areas, setting a strong emphasis on providing multi-modal opportunities. The US50 East Shore CMP will likewise have a strong focus on expanding multi-modal opportunities and transportation choice. The existing multi-modal network is described in this section.

Current Transit Service

Transit within the study area is provided by TTD. In recent years, TTD has had to consolidate and reduce service in and to/from the corridor. A major challenge for TTD is transit funding requirements. Given the community setting of Lake Tahoe, an urbanized area intrinsically tied to rural communities, the study area incorporates characteristics that are both urban and rural. Therefore, the transit system services communities that qualify as both urban and rural and transit funding is often limited to either. For example, the study area corridor is not eligible for §5311 rural program transit funds. This limits the ability to fund transit expansion through traditional funding sources.

Currently, the corridor is serviced by four routes. These four routes are described below and illustrated in **Figure 18**. In addition to these routes, private service is available connecting South Lake Tahoe with the Reno/Tahoe International Airport.

- **Route 50** – Provides frequent and local transit service within the City of South Lake Tahoe, from the South Y Transit Center at the intersection of US50 and SR89 to the Stateline Transit Center. The line does not intersect the study area directly, but the Stateline Transit Center is within close proximity to the resort corridor. Frequencies range from 20 to 50 minutes.
- **Route 55** – Provides frequent and local transit service within the City of South Lake Tahoe and the Stateline community, from the South Y Transit Center to the Kingsbury Transit Center located off Kahle Drive. The route runs on a 60-minute frequency.
- **Route 22** – Provides regional service from the Kingsbury Transit Center through the Kingsbury community to Gardnerville at the Douglas County Community Center. There is a stop at the base of SR207 at the Foothill Road Park and Ride. The service runs on frequencies ranging from 60 to 120-minutes.
- **Route 19x** – Provides express, regional service from the Stateline Transit Center to the Washington Street/Plaza Street transit stop in Carson City. This stop connects riders to Carson City's Jump Around Carson transit service and regional service to Reno and the Reno/Tahoe International Airport via the RTC Regional Connector. The route is serviced in the morning and evening peaks on 120-minute frequencies.

Existing Bicycle and Pedestrian Facilities

Dedicated bicycle and pedestrian facilities are scarce throughout the 13-mile corridor as described in Section 2.1. Sidewalks are limited to urban and commercial areas around Stateline and Elks Point and there are no bike lanes along the corridor. The Stateline-to-Stateline Bikeway is envisioned to eventually provide bicycle and pedestrian connectivity through the corridor, ultimately connecting the California State Lines in both North and South Lake. Portions of the bikeway have been constructed in the corridor, specifically from Kahle Drive through Roundhill Pines Resort as shown in **Figure 18**. North of the study area, the bikeway also exists from Incline Village (Tunnel Creek) to Sand Harbor and is under development from Sand Harbor to Spooner Summit (Phase 3).

A key challenge of the US50 East Shore CMP will be to close the gap between the current terminus at Roundhill Pines Resort and the proposed Phase 3 segment terminus at Spooner Summit. The study will need to determine if and where it may be reasonable and feasible to accommodate the bikeway within the transportation right-of-way and, where it is not feasible, what parallel shared-use path opportunities exist.

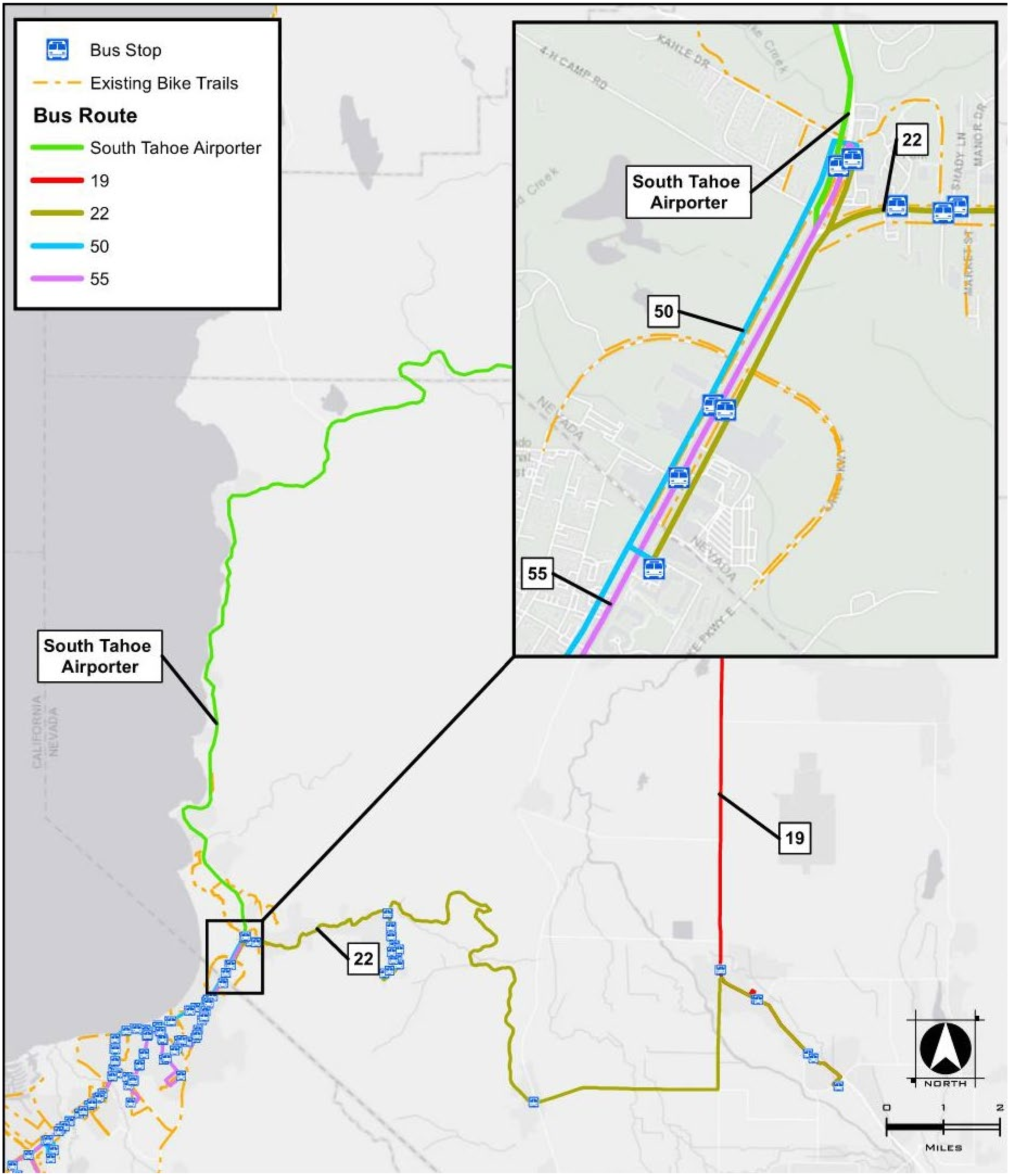


Figure 18: Existing Transit and Shared Use Paths

SECTION 3 | EXISTING CRASH DATA SUMMARY

The existing crash data summary encapsulates the crash data throughout the US 50 corridor and notes some of the common characteristics associated with various intersections along the corridor and various corridor segments, in addition to the corridor as a whole. Five years of crash data, January 1, 2015 to December 31, 2019, was obtained from NDOT and revealed a total of 527 crashes for the US 50 study corridor from Douglas County Milepost 0 to Douglas County Milepost 12.36. Specifically, 162 of the 527 (31-percent) crashes occurred at six (6) intersections along the US 50 corridor. The following sections outline a summary of the crash data along the US 50 corridor, as well as for each of the six (6) intersections that experienced crashes during the five-year study period. **Figure 19** illustrates a crash density heat map of the study area.

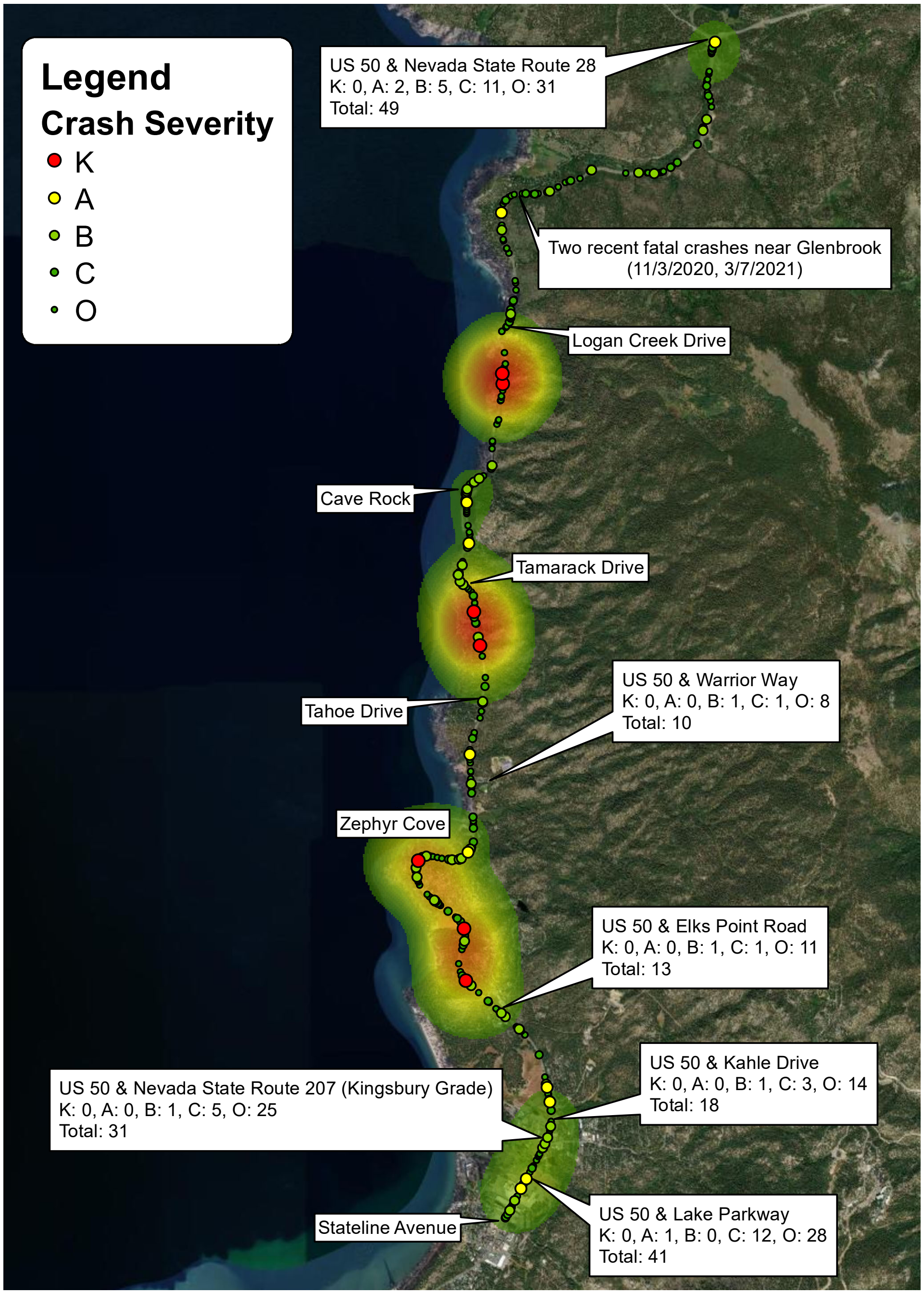


Figure 19: US 50 Corridor Crash Density Heat Map

3.1 US 50 Corridor Crash Data

As mentioned, there were a total of 527 crashes over the five-year period along the US 50 corridor, resulting in seven (7) fatalities and 12 serious injuries, as shown in **Figure 20**. Some of the common characteristics of the fatal and serious injury crashes include:

- Impaired driving (both drug and/or alcohol involvement)
- Driving too fast for conditions
- Failure to keep in lane
- Ran off road
- Crashes with pedestrians

*Note: Two (2) additional fatal crashes occurred near Glenbrook during the course of this study (noted in **Figure 19**), however specific information on the two fatal crashes is not yet available. The crashes are shown due to their community awareness*

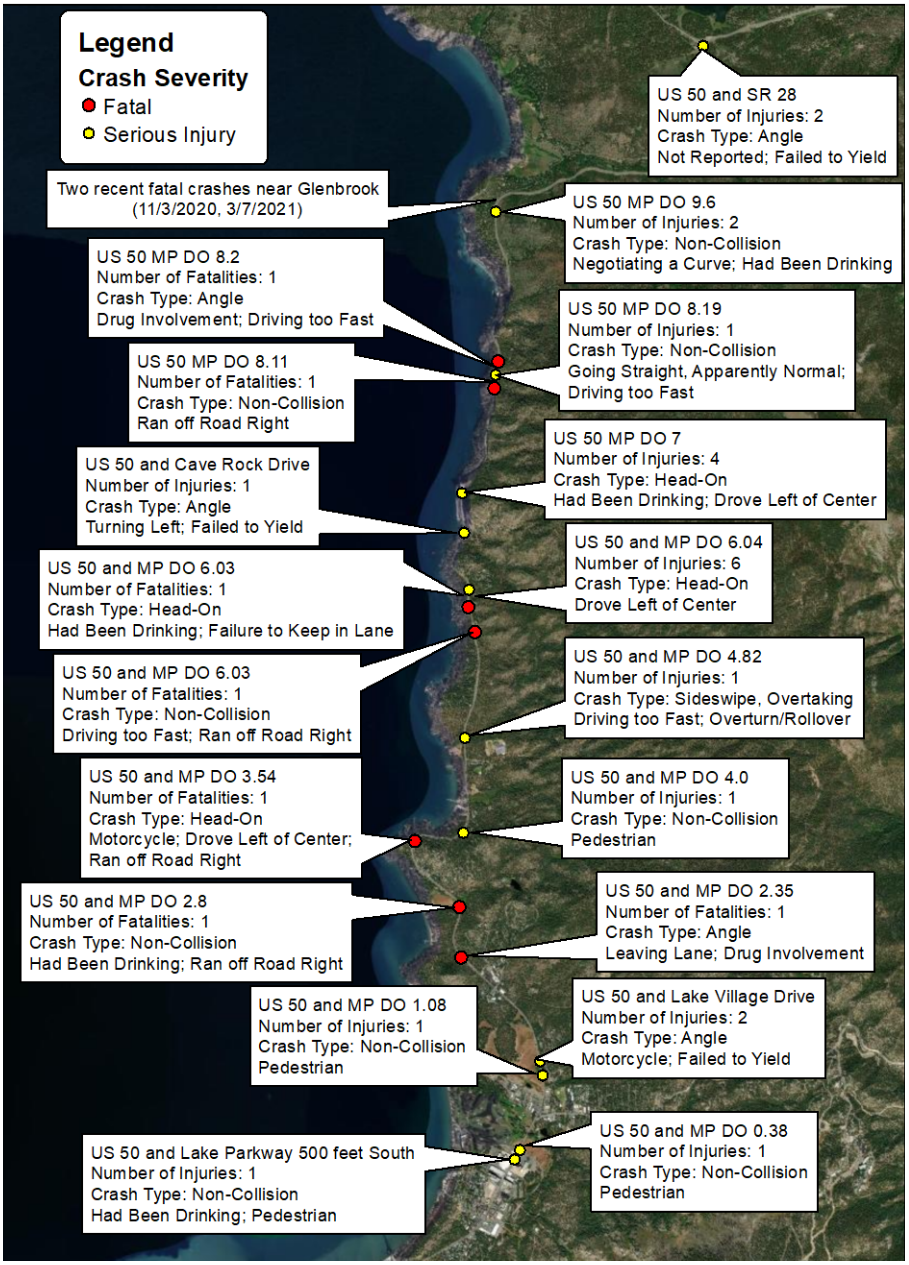


Figure 20: US 50 Corridor Fatal and Serious Injury Crash Map

Note: Overlapping crashes have been moved slightly for better visibility.

Three tables were developed to help summarize the crash data along the US 50 corridor, including:

- **Table 4** summarizes the US 50 corridor crashes by severity, as well as pedestrian, pedal cycle, and motorcycle crashes. *Note: There were no bus-related crashes along the US 50 corridor during the study period.*
- **Table 5** contains a summary of the corridor crashes by highest contributing crash attribute, broken down by fatal and serious injury crashes, as well as total crashes
    - **Appendix F** contains a more detailed breakdown of corridor crashes by crash type, vehicle factors, driver factors, weather conditions, lighting, time of day, and month of year.
- **Table 6** describes crash types along the US 50 corridor for both total crashes and fatal/serious injury crashes.

Table 4: US 50 Corridor Crashes by Severity

Severity	All Crashes		Pedestrian		Pedal Cycle		Motorcycle	
Fatal	7	1.3%	0	0.0%	0	0.0%	1	12.5%
Injury A	12	2.3%	4	28.6%	0	0.0%	2	25.0%
Injury B	53	10.1%	5	35.7%	1	16.7%	4	50.0%
Injury C	94	17.8%	2	14.3%	4	66.7%	1	12.5%
PDO	361	68.5%	3	21.4%	1	7.1%	0	0.0%
Total	**527**	**100%**	**14**	**100% (2.7%)**	**6**	**100% (1.1%)**	**8**	**100% (1.5%)**

Table 5: US 50 Corridor Crash Characteristics

Crash Attribute	Fatal and Serious Injury Crashes		Crashes	
Crash Type: Non-collision	9	47.4%	193	36.6%
Vehicle Factors: Driving Too Fast for Conditions	5	26.3%	154	29.2%
Driver Factors: Apparently Normal	8	42.1%	322	61.1%
Weather Conditions: Clear	14	73.7%	320	60.7%
Lighting Conditions: Daylight	10	52.6%	375	71.2%
Time of Day: 12:00 PM – 6:00 PM	3	15.8%	232	44.0%
Month of Year: January	3	15.8%	76	14.4%
Month of Year: July	1	5.3%	68	12.9%

Table 6: US 50 Corridor Crash Types

Crash Type	Fatal and Serious Injury Crashes		Crashes	
Non-Collision	9	47.4%	193	36.6%
Angle	5	26.3%	126	23.9%
Rear-End	0	0%	100	19.0%
Sideswipe, Overtaking or Meeting	1	5.3%	76	14.4%
Head-On	4	21.1%	20	3.8%
Backing	0	0%	8	1.5%
Unknown	0	0%	4	0.8%
Total	**19**	**-**	**527**	**-**

The statistics within **Table 5** are a summary of the corridor crashes by *highest* contributing crash attribute, however the following is a list of additional significant contributing crash attributes:

- Crash Type
  - Non-collision = 37%
  - Angle = 24%
  - Rear-end = 19%
- Vehicle Factors
  - Driving too fast for conditions = 29%
  - Unsafe lane change = 19%
  - Failure to keep in proper lane = 17%
- Driver Factors
  - Apparently Normal = 61%
  - Drug/alcohol involvement = 8%
- Weather Conditions
  - Clear = 61%
  - Cloudy = 15%
  - Snow = 14%
- Lighting Conditions
  - Daylight = 71%
  - Dark = 24%
  - Dusk/dawn = 5%

As shown, the majority of the crashes involved apparently normal drivers, during clear weather conditions, in the daylight, as opposed to impaired drivers, at night, in adverse weather conditions. A larger breakdown of additional crash attributes can be viewed in **Appendix F**.

Corridor Segments

Segment 1: Spooner to Glenbrook

Crashes along Segment 1, from Spooner to Glenbrook, were predominantly non-collision crashes (57%) and almost 40% of the crashes involved drivers going too fast for the conditions. Similar to the corridor as a whole, many of the crashes involved drivers who were apparently normal and the crashes occurred primarily during clear weather and in daylight hours. There was also one pedestrian crash and no pedal cycle crashes through Segment 1. **Figure 21** illustrates the crashes along Segment 1, from Spooner to Glenbrook.

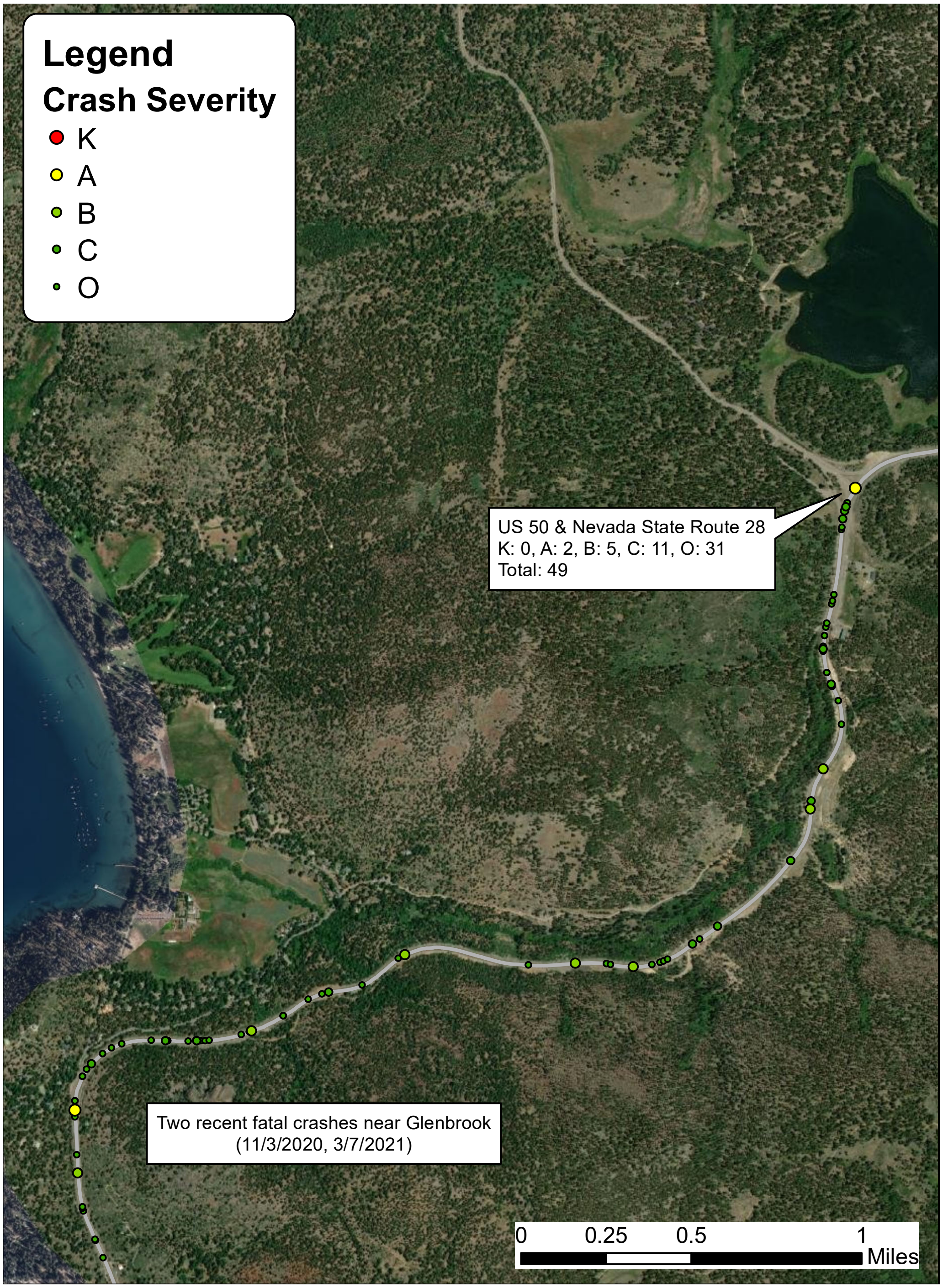


Figure 21: US 50 Corridor Crashes from Spooner to Glenbrook

Segment 2: Glenbrook to Cave Rock State Park

Crashes along Segment 2, from Glenbrook to Cave Rock State Park, were predominantly non-collision crashes (60%) and over 35% of the crashes involved drivers going too fast for the conditions. Similar to the corridor as a whole, many of the crashes involved drivers who were apparently normal and the crashes occurred primarily during clear weather and in daylight hours. There were no pedestrian or pedal cycle crashes through Segment 2, however there were two (2) fatalities – one involving a driver with drug involvement and the other with unknown conditions. **Figure 22** illustrates the crashes along Segment 2, from Glenbrook to Cave Rock State Park.

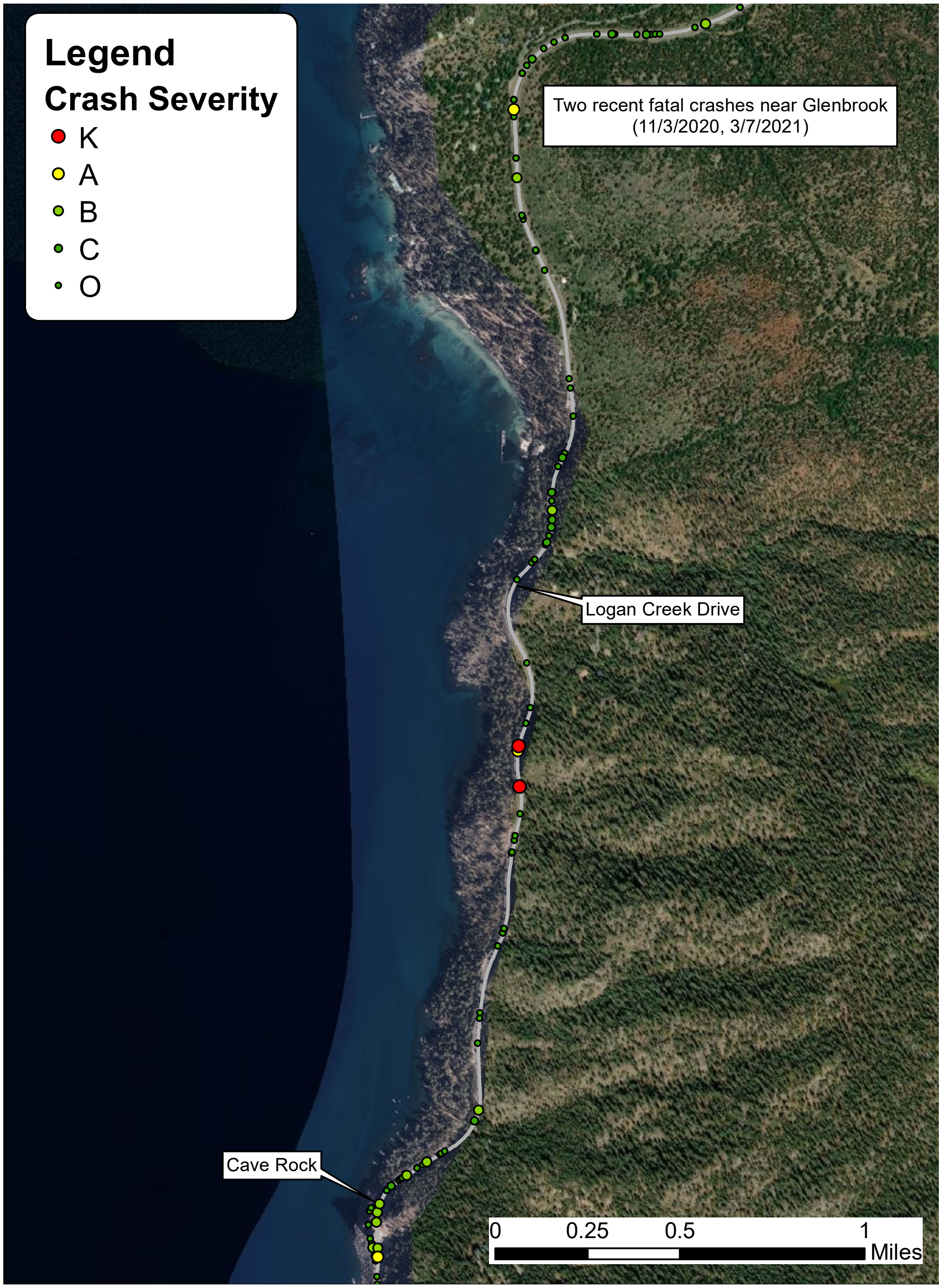


Figure 22: US 50 Corridor Crashes from Glenbrook to Cave Rock State Park

Segment 3: Cave Rock State Park to Skyland

Crashes along Segment 3, from Cave Rock State Park to Skyland, fell overwhelmingly into the following three crash type categories: angle, non-collision, and sideswipe crashes. A large percentage of the drivers were driving too fast for the conditions, failed to keep in the proper lane, or made an unsafe lane change. Similar to the corridor as a whole, many of the crashes involved drivers who were apparently normal and the crashes occurred primarily during clear weather and in daylight hours. There were no pedestrian or pedal cycle crashes through Segment 2, however there were two (2) fatalities – one during rainy conditions where the driver was apparently normal and the other which involved alcohol. **Figure 23** illustrates the crashes along Segment 3, from Cave Rock State Park to Skyland.

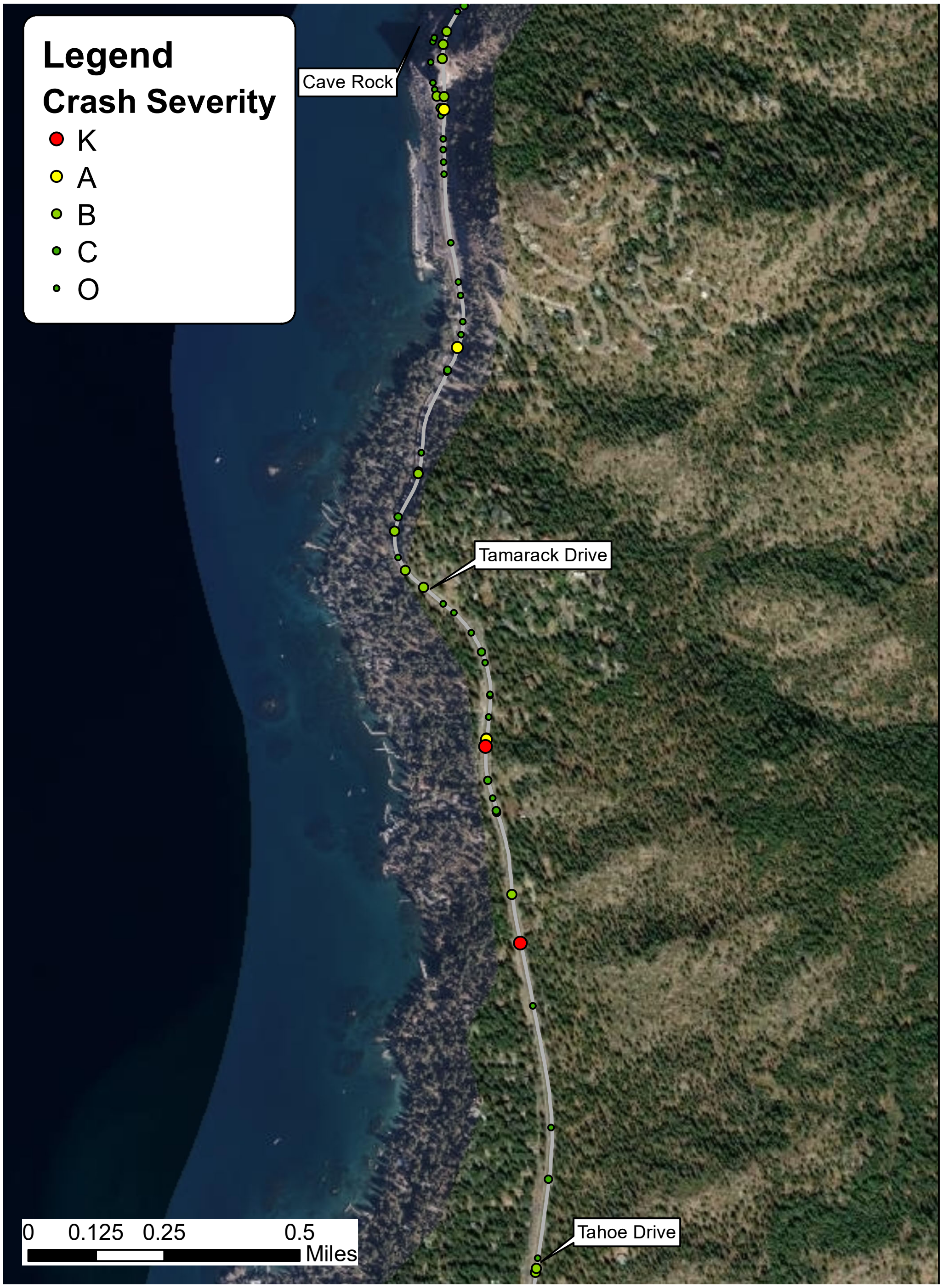


Figure 23: US 50 Corridor Crashes from Cave Rock State Park to Skyland

Segment 4: Skyland to Roundhill Pines Beach Resort

Crashes along Segment 4, from Skyland to Roundhill Pines Beach Resort, mostly involved drivers driving too fast for the conditions (31%), where many of the crashes were non-collision crashes (32%), closely followed by angle crashes (28%). Similar to the corridor as a whole, many of the crashes involved drivers who were apparently normal and the crashes occurred primarily during clear weather and in daylight hours. Based on visual observations, a large percentage of the crashes occurred towards the southern portion of Segment 4 where there are multiple roadway curves. There were two (2) pedestrian and one (1) pedal cycle crashes through Segment 4. In addition, there were two (2) fatalities – one which involved alcohol and the other in which the driver was apparently normal. **Figure 24** illustrates the crashes along Segment 4, from Skyland to Roundhill Pines Beach Resort.

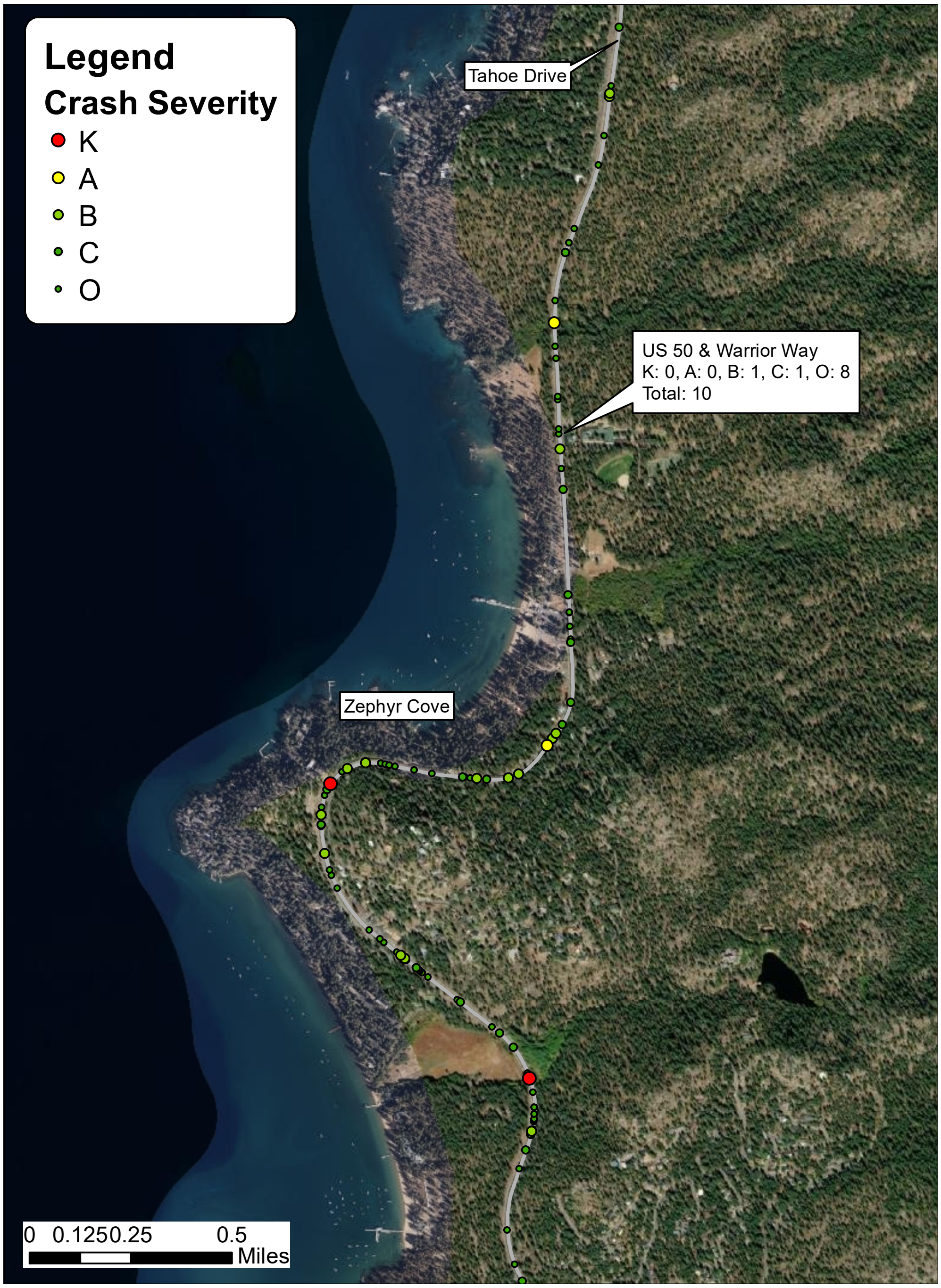


Figure 24: US 50 Corridor Crashes from Skyland to Roundhill Pines Beach Resort

Segment 5: Roundhill Pines Beach Resort to Kingsbury Grade Road

The 72 crashes along Segment 5, from Roundhill Pines Beach Resort to Kingsbury Grade Road, mostly involved non-collision crashes (36%), followed by rear-end crashes (30%), and there was not a clear vehicle factor that contributed to crashes along this segment. Similar to the corridor as a whole, many of the crashes involved drivers who were apparently normal and the crashes occurred primarily during clear weather and in daylight hours. There were six (6) pedestrian and three (3) pedal cycle crashes through Segment 5. In addition, there was one (1) fatality, which involved driving on the wrong side of the road and included drug involvement. **Figure 25** illustrates the crashes along Segment 5, from Roundhill Pines Beach Resort to Kingsbury Grade Road.

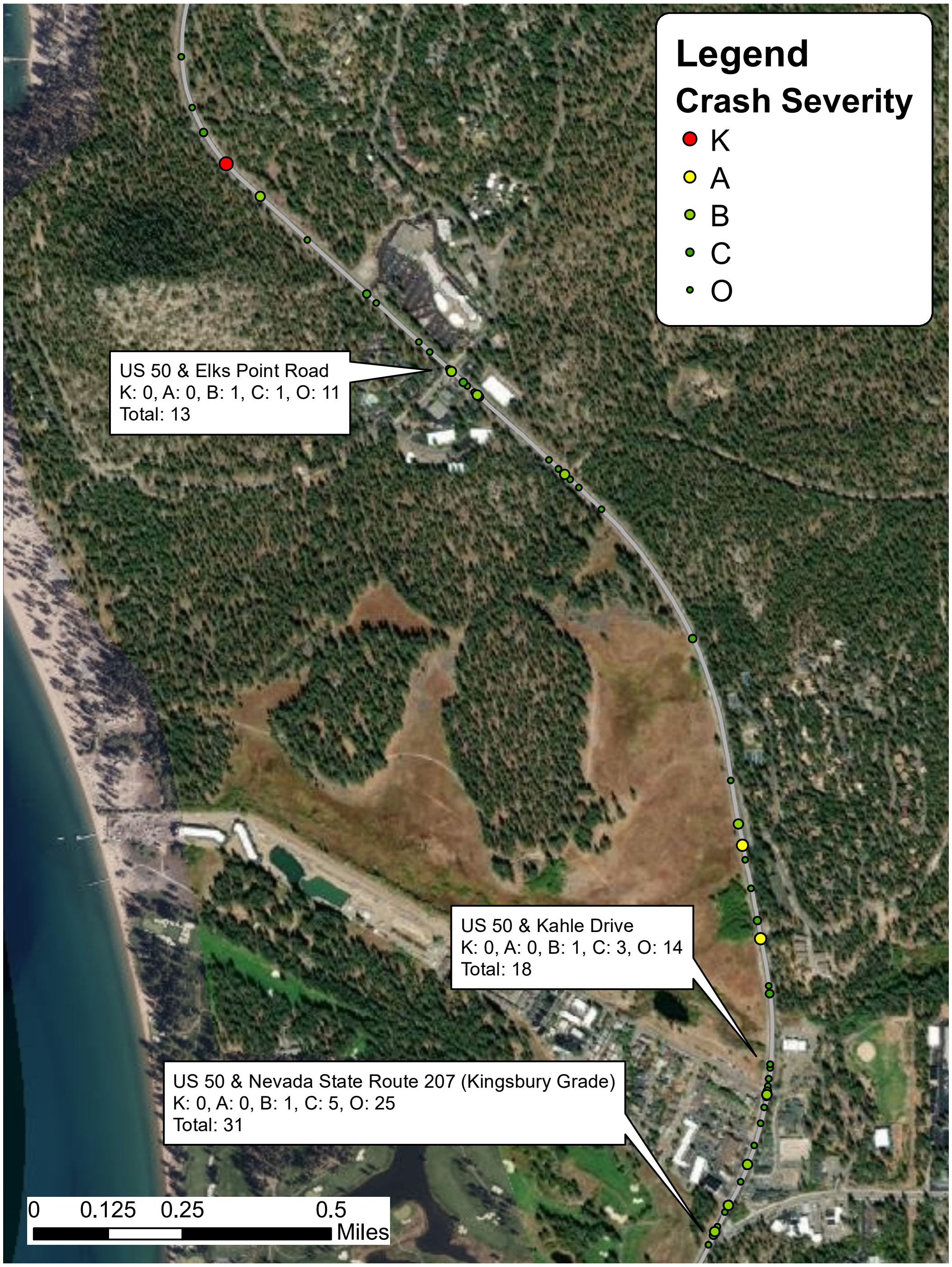


Figure 25: US 50 Corridor Crashes from Roundhill Pines Beach Resort to Kingsbury Grade Road

Segment 6: Kingsbury Grade Road to Stateline Avenue

The 87 crashes along Segment 6, from Kingsbury Grade Road to Stateline Avenue, primarily involved rear-end crashes (50%), followed by angle crashes (22%). Note: an increase in access points, which occurs within Segment 6, can contribute to an increase in rear-end and angle crashes. Many of these crashes involved vehicles following too closely or driving too fast for the conditions. Similar to the corridor as a whole, many of the crashes involved drivers who were apparently normal and the crashes occurred primarily during clear weather and in daylight hours. There were also five (5) pedestrian and two (2) pedal cycle crashes that occurred along Segment 6. There was a noted correlation between pedestrian crashes and dark lighting conditions. **Figure 26** illustrates the crashes along Segment 6, from Kingsbury Grade Road to Stateline Avenue.

Figure 26: US 50 Corridor Crashes from Kingsbury Grade Road to Stateline Avenue

3.2 Intersection Crash Data

In addition to the US 50 corridor crash analysis, six (6) intersections were analyzed due to the high number of crashes that occurred during the five-year study period. Many of these are similar to those analyzed for traffic operations but were selected based solely on crash activity. The intersections include:

- US 50 and Nevada State Route 28 – Unsignalized
- US 50 and Warrior Way – Unsignalized
- US 50 and Elks Point Road – Signalized
- US 50 and Kahle Drive – Signalized
- US 50 and Kingsbury Grade Road – Signalized
- US 50 and Lake Parkway – Signalized

US 50 and Nevada State Route 28 Crash Data

Over the five-year study period, there were a total of 49 crashes, resulting in zero fatalities and two (2) serious injuries, at the unsignalized intersection of US 50 and Nevada State Route 28. **Table 7** categorizes the crashes at this intersection by severity and **Table 8** breaks down the crash characteristics of the intersection. As shown in **Table 8**, the majority of crashes were angle and non-collision, and involved vehicles failing to yield to the right-of-way. Additionally, most drivers were apparently normal and the majority of crashes occurred in clear, daylight conditions. A more detailed breakdown of the intersection by crash type, vehicle factors, driver factors, most harmful events, driver age, weather conditions, lighting conditions, day of week, time of day, and month of year can be viewed in **Appendix G**.

Table 7: US 50 and State Route 28 Crashes by Severity

Severity	All Crashes		Pedestrian		Pedal Cycle		Motorcycle	
Fatal	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury A	2	4.1%	0	0.0%	0	0.0%	0	0.0%
Injury B	5	10.2%	0	0.0%	0	0.0%	1	100.0%
Injury C	11	22.4%	0	0.0%	0	0.0%	0	0.0%
PDO	31	63.3%	0	0.0%	0	0.0%	0	0.0%
Total	**49**	**100%**	**0**	**0% (0%)**	**0**	**0% (0%)**	**1**	**100% (2%)**

Table 8: US 50 and State Route 28 Crash Characteristics

Crash Attribute	Crashes	
Crash Type: Angle	20	40.8%
Crash Type: Non-Collision	14	28.6%
Vehicle Factors: Failed to Yield Right of Way	12	24.5%
Driver Factors: Apparently Normal	27	53.8%
Weather Conditions: Clear	34	69.4%
Lighting Conditions: Daylight	39	79.6%

US 50 and Warrior Way Crash Data

Over the five-year study period, there were a total of 10 crashes, resulting in zero fatalities and zero serious injuries, at the unsignalized intersection of US 50 and Warrior Way. Warrior Way is the road off of US 50 that leads to George Whittell High School, and three (3) out of the 10 crashes involved a driver between the ages of 16 and 20. **Table 9** categorizes the crashes at this intersection by severity and **Table 10** breaks down the crash characteristics of the intersection. As shown in **Table 10**, the majority of crashes were angle and non-collision, and involved vehicles failing to yield to the right-of-way and vehicles making an unsafe lane change. Additionally, most drivers were apparently normal and the majority of crashes occurred in clear, daylight conditions. A more detailed breakdown of the intersection is located in **Appendix G**.

Table 9: US 50 and Warrior Way Crashes by Severity

Severity	All Crashes		Pedestrian		Pedal Cycle		Motorcycle	
Fatal	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury A	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury B	1	10.0%	1	100.0%	0	0.0%	0	0.0%
Injury C	1	10.0%	0	0.0%	0	0.0%	0	0.0%
PDO	8	80.0%	0	0.0%	0	0.0%	0	0.0%
Total	**10**	**100%**	**1**	**100% (10%)**	**0**	**0% (0%)**	**0**	**0% (0%)**

Table 10: US 50 and Warrior Way Crash Characteristics

Crash Attribute	Crashes	
Crash Type: Angle	4	40.0%
Crash Type: Non-Collision	3	30.0%
Vehicle Factors: Failed to Yield Right of Way	2	20.0%
Vehicle Factors: Unsafe Lane Change	2	20.0%
Driver Factors: Apparently Normal	7	70.0%
Weather Conditions: Clear	10	100%
Lighting Conditions: Daylight	10	100%

US 50 and Elks Point Road Crash Data

Over the five-year study period, there were a total of 13 crashes, resulting in zero fatalities and zero serious injuries, at the signalized intersection of US 50 and Elks Point Road. **Table 11** categorizes the crashes at this intersection by severity and **Table 12** breaks down the crash characteristics of the intersection. As shown in **Table 12**, the majority of crashes were rear-end and sideswipe/overtaking/meeting, and involved vehicles driving too fast for the conditions. Additionally, most drivers were apparently normal and the majority of crashes occurred in clear, daylight conditions. A more detailed breakdown of the intersection is located in **Appendix G**.

Table 11: US 50 and Elks Point Road Crashes by Severity

Severity	All Crashes		Pedestrian		Pedal Cycle		Motorcycle	
Fatal	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury A	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury B	1	7.7%	0	0.0%	0	0.0%	0	0.0%
Injury C	1	7.7%	0	0.0%	0	0.0%	0	0.0%
PDO	11	84.6%	0	0.0%	0	0.0%	0	0.0%
Total	**13**	**100%**	**0**	**0% (0%)**	**0**	**0% (0%)**	**0**	**0% (0%)**

Table 12: US 50 and Elks Point Road Crash Characteristics

Crash Attribute	Crashes	
Crash Type: Rear-End	4	30.8%
Crash Type: Sideswipe, Overtaking, or Meeting	4	30.8%
Vehicle Factors: Driving Too Fast for Conditions	4	30.8%
Driver Factors: Apparently Normal	7	53.8%
Weather Conditions: Clear	7	53.8%
Lighting Conditions: Daylight	10	76.9%

US 50 and Kahle Drive Crash Data

Over the five-year study period, there were a total of 18 crashes, resulting in zero fatalities and zero serious injuries, at the signalized intersection of US 50 and Kahle Drive. **Table 13** categorizes the crashes at this intersection by severity and **Table 14** breaks down the crash characteristics of the intersection. As shown in **Table 13**, two pedestrian crashes and two pedal cycle crashes occurred at the intersection of US 50 and Kahle Drive. Additionally, **Table 14** shows the majority of crashes were rear-end and non-collision, most drivers were apparently normal, and the majority of crashes occur in clear, daylight conditions. A more detailed breakdown of the intersection is located in **Appendix G**.

Table 13: US 50 and Kahle Drive Crashes by Severity

Severity	All Crashes		Pedestrian		Pedal Cycle		Motorcycle	
Fatal	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury A	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury B	1	5.6%	0	0.0%	0	0.0%	0	0.0%
Injury C	3	16.7%	1	50.0%	1	50.0%	0	0.0%
PDO	14	77.8%	1	50.0%	1	50.0%	0	0.0%
Total	**18**	**100%**	**2**	**100% (11.1%)**	**2**	**100% (11.1%)**	**0**	**0% (0%)**

Table 14: US 50 and Kahle Drive Crash Characteristics

Crash Attribute	Crashes	
Crash Type: Rear-End	7	38.9%
Crash Type: Non-Collision	5	27.8%
Vehicle Factors: Failed to Yield Right of Way	4	22.2%
Driver Factors: Apparently Normal	10	55.6%
Weather Conditions: Clear	11	61.1%
Lighting Conditions: Daylight	15	83.3%

US 50 and Kingsbury Grade Road Crash Data

Over the five-year study period, there were a total of 31 crashes, resulting in zero fatalities and zero serious injuries, at the signalized intersection of US 50 and Kingsbury Grade Road. **Table 15** categorizes the crashes at this intersection by severity and **Table 16** breaks down the crash characteristics of the intersection. As shown in **Table 16**, the majority of the crashes were rear-end, and involved vehicles driving too fast for the conditions and vehicles following too closely. Additionally, most drivers were apparently normal and the majority of crashes occurred in clear, daylight conditions. A more detailed breakdown of the intersection is located in **Appendix G**.

Table 15: US 50 and Kingsbury Grade Road Crashes by Severity

Severity	All Crashes		Pedestrian		Pedal Cycle		Motorcycle	
Fatal	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury A	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury B	1	3.2%	0	0.0%	0	0.0%	0	0.0%
Injury C	5	16.1%	0	0.0%	0	0.0%	0	0.0%
PDO	25	80.6%	0	0.0%	0	0.0%	0	0.0%
Total	**31**	**100%**	**0**	**0% (0%)**	**0**	**0% (0%)**	**0**	**0% (0%)**

Table 16: US 50 and Kingsbury Grade Road Crash Characteristics

Crash Attribute	Crashes	
Crash Type: Rear-End	15	48.4%
Crash Type: Angle	8	25.8%
Vehicle Factors: Driving Too Fast for Conditions	7	22.6%
Vehicle Factors: Followed Too Closely	6	19.4%
Driver Factors: Apparently Normal	16	51.6%
Weather Conditions: Clear	20	64.5%
Lighting Conditions: Daylight	21	67.7%

US 50 and Lake Parkway Crash Data

The intersection of US 50 and Lake Parkway is a signalized intersection that is just northeast of the casinos located in Stateline, Nevada. For the five-year study period, there were a total of 41 crashes, resulting in zero fatalities and one serious injury. **Table 17** summarizes the crashes by severity at US 50 and Lake Parkway and **Table 18** summarizes the crash characteristics at the intersection of US 50 and Lake Parkway, where the majority of the crashes were rear-end, and involved vehicles following too closely, vehicles failing to yield to the right-of-way, and vehicles driving too fast for the conditions. Additionally, the majority of the crashes occurred in clear, daylight conditions. A more detailed breakdown of the intersection is located in **Appendix G**.

Table 17: US 50 and Lake Parkway Crashes by Severity

Severity	All Crashes		Pedestrian		Pedal Cycle		Motorcycle	
Fatal	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury A	1	2.4%	1	100.0%	0	0.0%	0	0.0%
Injury B	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury C	12	29.3%	0	0.0%	1	100.0%	1	100.0%
PDO	28	68.3%	0	0.0%	0	0.0%	0	0.0%
Total	**41**	**100%**	**1**	**100% (2.4%)**	**1**	**100% (2.4%)**	**1**	**100% (2.4%)**

Table 18: US 50 and Lake Parkway Crash Characteristics

Crash Attribute	Crashes	
Crash Type: Rear-End	18	43.9%
Crash Type: Angle	12	29.3%
Vehicle Factors: Followed Too Closely	9	22.0%
Vehicle Factors: Failed to Yield Right of Way	8	19.5%
Vehicle Factors: Driving Too Fast for Conditions	8	19.5%
Driver Factors: Apparently Normal	18	43.9%
Weather Conditions: Clear	23	56.1
Lighting Conditions: Daylight	31	75.6%

SECTION 4 | OTHER CORRIDOR CONDITIONS

4.1 Major Recreation Areas

Approximately 25 million visitors enter the Lake Tahoe Basin annually, equating to nearly 10 million vehicles (*Linking Tahoe Corridor Connection Plan*). The majority of these visitors come to enjoy some form of recreation and outdoor activity, with many of these recreation destinations located within or near the US 50 corridor. This demand for access to recreation is a key driver for this study and it is important to illustrate the location and the types of activities that draw recreationalists to the corridor. To that end, the major recreation destinations along the corridor and their use have been mapped and are shown in **Figure 27**. Details of many of these recreation areas are further described on the following pages by segment. *Note: A few metrics related to some of these locations can be found at monitoring.laketahoeinfo.org.*

Segment 1 Recreation Highlights

The segment from Spooner Summit to Glenbrook consists of recreation day uses for both the summer and winter seasons. Spooner Summit is where the Tahoe Rim Trail, a 170-mile long-distance hiking trail that loops the Lake Tahoe Basin, crosses the US 50 corridor. This crossing brings hikers and occasional mountain bikers to Spooner Summit for active day use in warm months. The Tahoe Rim Trail is popular and trailhead capacity is often exceeded on weekends and holidays. In the winter months, this area is used for snowmobile tours with riders typically shuttled in from Zephyr Cove. Due to the demand, the USFS is considering opportunities to expand parking and circulation at Spooner Summit, including connections to the USFS site further west and tying into the SR 28 intersection.

At the SR 28 intersection, there is an established parking area in the northwest quadrant, accessed from SR 28. This parking area is used in the summer as the Aquatic Invasive Species inspection station for boats (to be relocated), as well as a drop-off/pick-up location for mountain biking shuttles servicing Spooner Lake State Park and the famed Flume Trail. Summer demand at this location is moderate, while winter demand can be extensive on weekends for families looking for a place to snow sled. The sledding demand can cause challenges with spillover parking and extensive trash left over by recreationalists.

Winter Sledding at SR 28 and US 50

South of SR 28 to Glenbrook, there is little recreational activity apart from the occasional road biker given steep slopes and little access.

Segment 2 Recreation Highlights

The segment spanning the section from Glenbrook south to Cave Rock experiences limited recreation. The largest attraction in this segment is Logan Shoals which is a vista point overlooking Lake Tahoe with views west towards the Desolation Wilderness. The Logan Shoals Vista Point consists of a roadside pull-off area with undefined parking, an interpretive information board, vault toilet, a short paved trail section, and unimproved trails that snake their way down to the lake shore. Parallel to the lake shore is the old roadbed that provides some access north and south. The majority of visitors to the Logan Shoals Vista Point are short duration tourists stopping for a quick picture, however, some locals use the trails for recreation and dog walking. During busy periods, the parking area can overfill along US 50 and there are some sight distance challenges exiting the parking area due to a horizontal curve in the roadway just north of the vista point.

Roadside Parking at Logan Shoals Vista Point

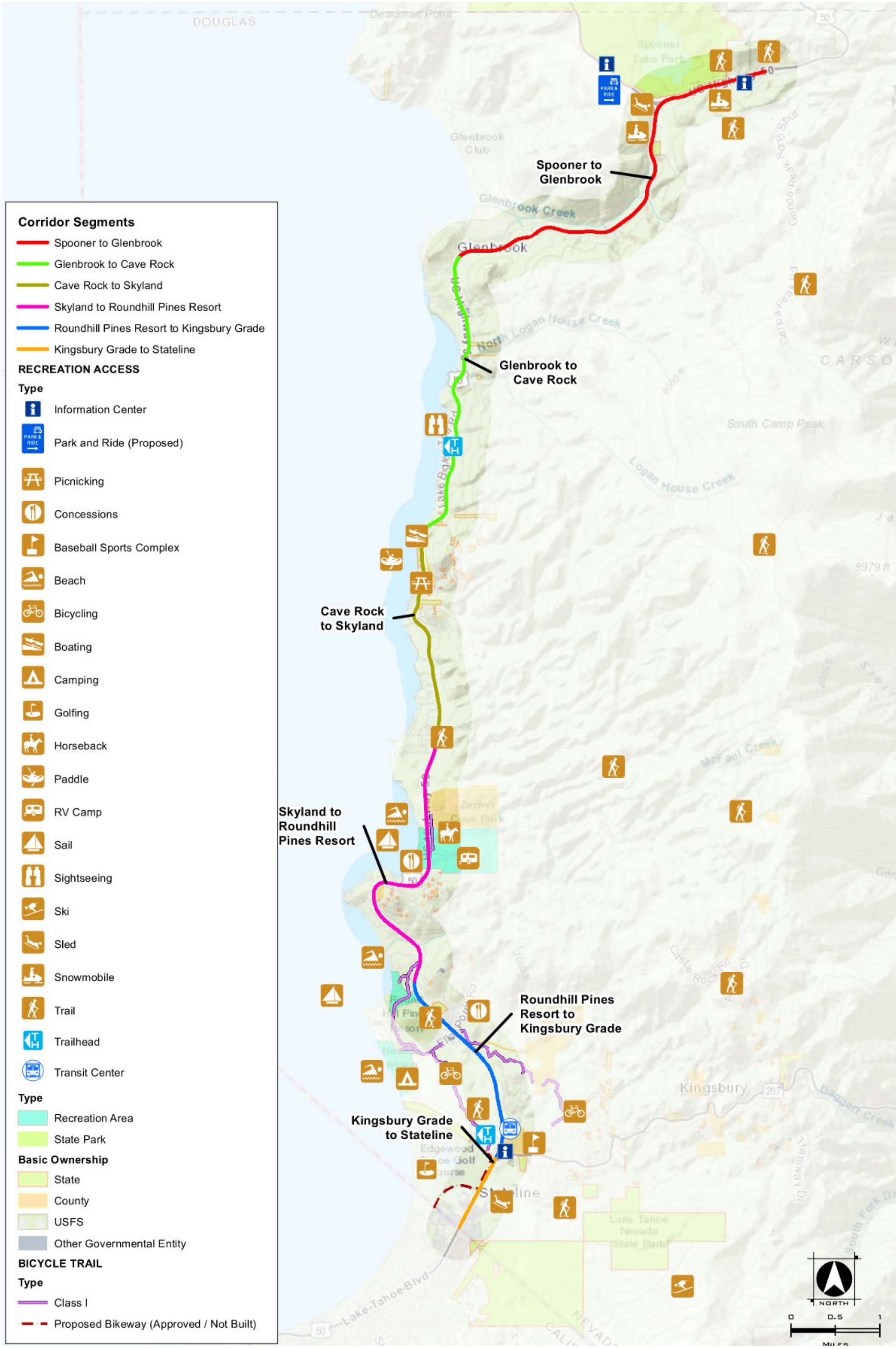
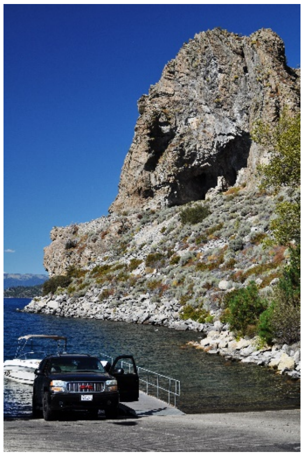


Figure 27: Major Corridor Recreation Destinations

Segment 3 Recreation Highlights

Recreation in the segment from Cave Rock to Skyland is dominated by Cave Rock. Cave Rock Lake Tahoe Nevada State Park is a small but popular state park located southwest of Cave Rock. The park offers a boat ramp, picnic tables, a small beach area, and is used to launch kayaks. Given its location between US 50, the lake, Cave Rock, and private residences to the south, the park is small resulting in limited parking for users. The majority of parking is designated for boat trailers with fewer than 10 spots available for passenger cars. The limited parking results in boaters and other users finding roadside and off-street parking opportunities north and south of the park, often in areas that do not provide for safe ingress/egress. Boat parking used to be allowed in the median of US 50 but has since been prohibited. Due to the limited parking, visitors often look for parking in the residential neighborhood across US 50 and to the south of the park, requiring visitors to cross US 50. There is an existing pedestrian crossing at Lyons Avenue that can be challenging for drivers to see due to the curvy nature of US 50 in the area. Furthermore, drivers, and especially those pulling trailers, often complain about the difficulty pulling out of the park easily, particularly in the northbound direction.


Cave Rock Boat Ramp

In addition to the park, there is also a small trailhead located off of Winding Way that provides three parking spaces for hikers making the short hike to the top of Cave Rock. Road bikers on US 50 traverse Cave Rock through the tunnels alongside vehicular traffic and there is an existing actuated warning sign to alert drivers that bicyclists are present.

Furthermore, it should be noted that Cave Rock is considered a sacred site to the Washoe Tribe who regularly hold ceremonies at the site. Therefore, no alternatives that require physical impacts or defacing of Cave Rock in any way should be considered.

Segment 4 Recreation Highlights

The segment from Skyland to Round Hill Pines Resort sees some of the highest summer recreation demand in the corridor. The Zephyr Cove Resort is a hot spot for summer recreation for Carson Valley and South Lake Tahoe residents alike, as well as tourists. Zephyr Cove Resort is owned by the USFS with operations managed by a concessionaire, and it offers a beach, marina, restaurant, and a few cabins west of US 50 and a campground and horse stables east of US 50. The marina offers various rentals and provides access to pleasure cruises. The resort also offers rental space for outdoor events and weddings near the beach. This extensive level of summertime activity creates demand that far exceeds parking demand which spills over onto US 50. This results in visitors and families walking along and across US 50 traffic, often distracted, carrying coolers, rafts, and other bulky items. There is an existing signal at the entrance to Zephyr Cove Resort with a crosswalk; however, pedestrians crossing US 50 away from this crosswalk is rampant. NDOT is planning on constructing a new traffic signal at Warrior Way, providing another opportunity for a crosswalk in 2022. However, until the roadside parking is relocated, and pedestrian traffic is better channelized and controlled, conflicts with vehicular traffic and pedestrians will continue to be one of the biggest challenges in the corridor.


Zephyr Cove Resort Spillover onto US 50

Further south of Zephyr Cove Resort is Round Hill Pines. Similarly, Round Hill Pines is owned by the USFS and operated by a concessionaire. The resort offers an expansive beach, restaurant, bar, marina, and is the current north terminus of the Stateline-to-Stateline bikeway in South Lake Tahoe. There is a single unsignalized entrance from US 50 into the resort and concerns of sight distance has the USFS developing a new entrance further north to alleviate the issue. With limited parking available on site, parking has spilled out along US 50 in recent years given increased demand, creating similar challenges to Zephyr Cove Resort. With recent renovations at Round Hill Pines Resort, this parking spillover is likely to continue unless alternative parking options are provided.

Round Hill Pines Resort Spillover onto US 50

Segment 5 Recreation Highlights

The segment from Round Hill Pines Resort to Kingsbury Grade Road (SR 207) marks the transition from residential and recreational uses along US 50 to more commercial and higher density residential as you near the City of South Lake Tahoe. Even with this transition, there are important recreation attractions in this segment including Nevada Beach and Nevada Beach Campground. Nevada Beach and the campground are owned by the USFS and managed through a concessionaire. Nevada Beach offers day use and beach access along an undeveloped section of lake shore with the Nevada Beach Campground offering 50 total individual and group camp sites. The beach and campground are accessed from Elks Point Road with the entrance located approximately 0.5-miles west of US 50. During peak visitation periods, parking can spill back onto Elks Point Road where informal roadside parking also serves the Stateline-to-Stateline Bikeway and connecting trails including the Rabe Meadows Trailhead located on Kahle Drive to the south.

Nevada Beach and Campground Entrance

East of US 50 and north of Kingsbury Grade Road lies Kahle Park. This 19-acre Douglas County park offers sports fields, playgrounds, a picnic pavilion, along with the Kahle Community Center. The park attracts mostly local residents for recreation and events. The on-site parking is generally sufficient to meet demand and does not typically effect US 50.

Segment 6 Recreation Highlights

The southern-most segment, spanning Kingsbury Grade Road to Stateline, incorporates the resort corridor where much of the recreation is of the casino variety. One exception is Edgewood Golf Course, a popular golf course for more affluent visitors and home of the American Century Celebrity Golf tournament held annually in July. This televised event is one of the most popular and well-attended events in South Lake Tahoe, drawing spectators from around the country. In the winter season, across US 50 in the field east of the Montbleu Resort and Casino, there is a sled tubing hill and snowmobile rentals on a circular course, as well as Van Sickle Bi-State Park. This Nevada State Park provides trail access to the south and connections to the Tahoe Rim Trail for hikers, bicyclists, and equestrians.

Given the fact that this segment spans the resort corridor, pedestrian and parking accommodations are more plentiful. Each of the casinos offers free parking garages with additional surface parking as well. Therefore, parking is less of a challenge in segment 6.

Celebrity Golf Tournament

Current Recreation Efforts

In 2017, the Lake Tahoe Sustainable Recreation Working Group was convened. The group consists of a multi-sector working group of public and private conservation and recreation professionals. The goal of the group is to provide high-quality outdoor recreation experiences while also preserving and restoring resources in the Lake Tahoe Basin. The group continues to meet and develop strategies to achieve their goals and objectives.

Also of note, TRPA is in the process of updating the *Tahoe Regional Trails Master Plan*. Initiated in early 2021, the results of the plan could eventually impact trail recreation access within the US 50 CMP corridor in the future. Information is available at Tahoe Regional Trails Plan.

4.2 Existing Parking Facilities

As noted in the previous section, a typical challenge that stems from recreation demand is demand for parking to access recreation centers, access points, and trailheads. The US 50 CMP will evaluate and consider changes and enhancements to how visitors and residents access recreation (for example, mode choice) and associated parking demand. It is understood that it is simply not feasible to provide enough parking to 100-percent meet recreation demands, particularly at peak visitation times and seasons. With that understanding, it is important that parking and parking demand be managed to the greatest extent possible to provide parking opportunities in conjunction with other access choices. A list of existing parking facilities and the dedicated number of parking spaces can be seen in **Table 19**.

Table 19: Parking Facilities and Number of Parking Spaces

Location	Recreation Type	Parking Type	No. of Spaces
Round Hill Pines	USFS Recreation Area	Off US 50 site parking	260
Zephyr Cover Resort	USFS Recreation Area	Off US 50 site parking	290
Nevada Beach	USFS Recreation Area	Off US 50 site parking	131
Logan Shoals Vista Point	USFS Interpretive Site	Roadside pullout parking	10
Lam Watah Historic Trail	Douglas Cty. Trailhead	Off US 50 site parking	20
Cave Rock State Rec. Area	NV State Parks	Off US 50 site parking	61
Van Sickle Bi-State Park	NV State Parks	Off US 50 site parking	27
Van Sickle Bi-State Park	CA Tahoe Conservancy	Off US 50 site parking	13
George Whittel High School	Douglas Cty School District	Off US 50 site parking	113
Zephyr Cove Elementary	Douglas Cty School District	Off US 50 site parking	33
Zephyr Cove Park	Douglas Cty. Parks	Off US 50 site parking	94
Kingsbury Transit Center	Douglas County	Off US 50 garage parking	215
		Total Parking Count	**1,267**

4.3 Tahoe Basin Environmental Thresholds

In 1982, the TRPA established nine environmental carrying capacities known as thresholds, which set resource standards in conjunction with overall land development within the Basin. These thresholds are generational goals across resources and provide a long-term plan for attainment through the Environmental Improvement Program. The nine threshold areas consist of:

- Water Quality
- Scenic Resources
- Transportation and Sustainable Communities
- Soil Conversation
- Fisheries
- Vegetation
- Wildlife
- Noise
- Recreation

Since these thresholds interact with development to ensure plan compliance, all of the CMP recommendations must take these thresholds into consideration. Any improvements that move forward for implementation will be measured against thresholds prior to approval. To that end, available resource GIS data has been obtained and mapped to inform CMP development. The resource map is shown in **Appendix H**.

4.4 ITS and Communications

NDOT deploys a statewide network of communication and Intelligent Transportation System (ITS) devices to manage transportation activities and demand. The NDOT Signals, Lighting and ITS (SLI) group supports the Traffic Operations Division in planning, implementing and maintaining this network. Installations within the prevue of the SLI group include closed circuit televisions, ITS signs, highway advisory radio, communications devices, road and weather information systems, Active Traffic Management (ATM), signals and roadway lighting. The US 50 corridor includes several of these devices as shown in **Figure 28** and further described in **Appendix I**. ITS and communications opportunities will be explored as part of the CMP recommendations as a supportive strategy and to improve corridor operations.

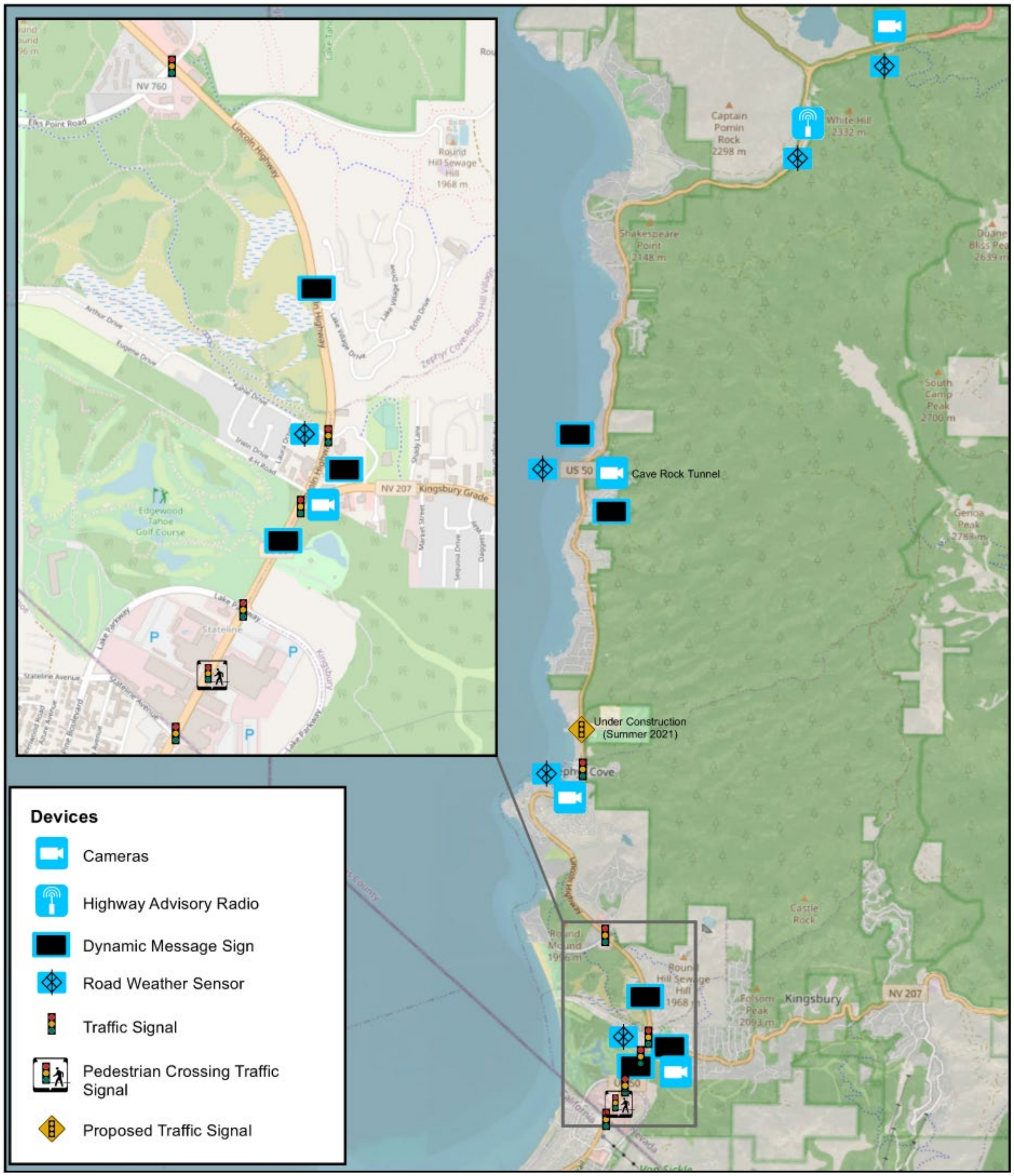


Figure 28: ITS and Communication Devices

SECTION 5 | RELEVANT POLICIES, PLANS, AND STUDIES

5.1 Summary of Relevant Policies, Plans, and Studies

Numerous plans and studies have been identified by the project team as being relevant to the *US 50 East Shore CMP*, which are summarized in this section. As shown, much work has been done on, within, and around the corridor. It is important that the CMP build upon the work done to date and is reflective of the goals instilled in the body of this work. **Figure 29** illustrates these documents with detailed descriptions located in **Appendix J**. Furthermore, **Table 20** provides a summary matrix of documents for quick reference.

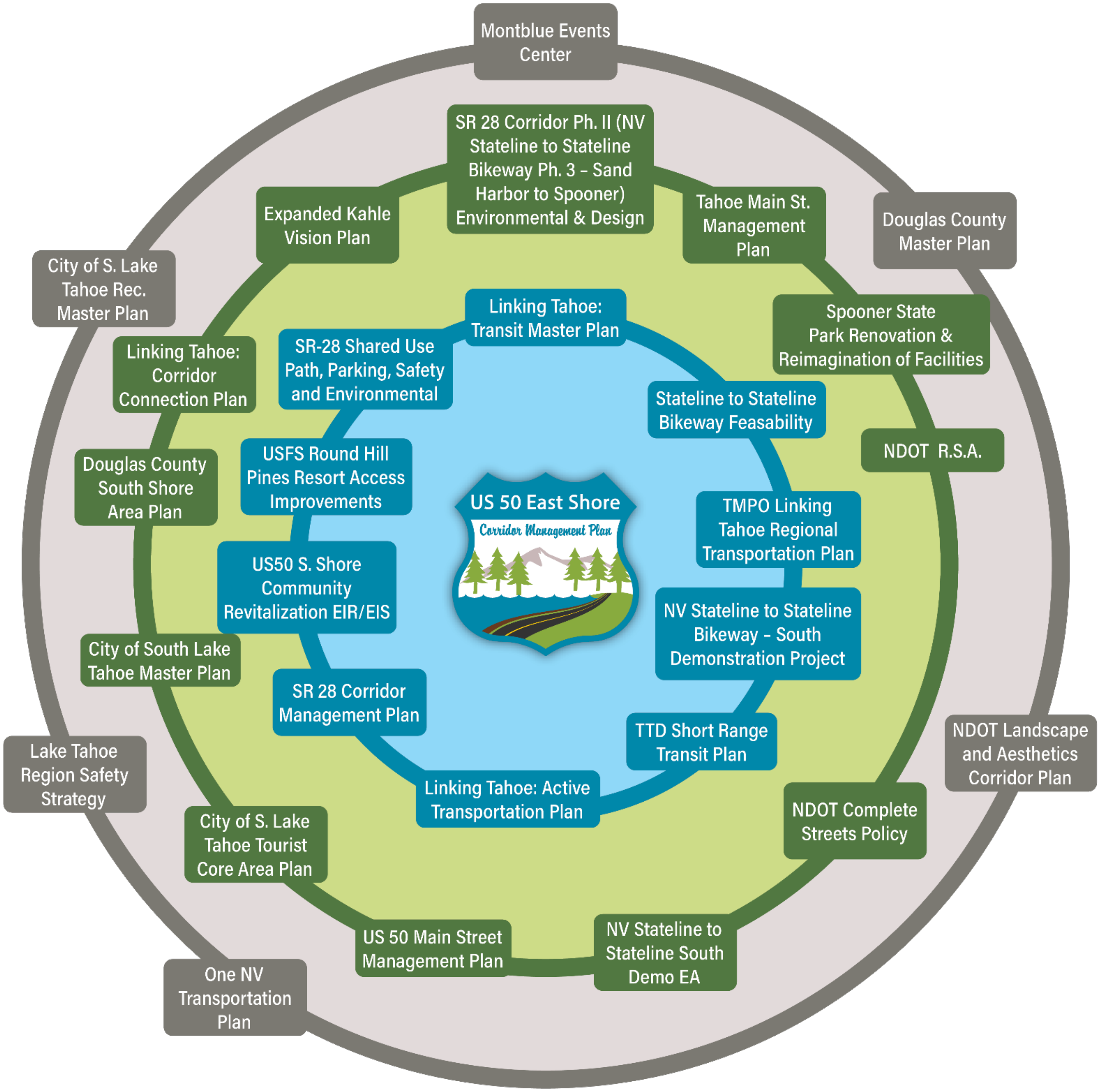


Figure 29: Summary of Relevant Plans and Studies

Table 20: Summary of Relevant Plans and Studies

Document	Owner	Description	Status
Transportation Plans and Studies			
One Nevada Transportation Plan (2018) (ONTP)	NDOT	Nevada's statewide performance-based long-range transportation plan. The ONTP sets forth a framework to achieve benchmarks around six critical goal areas. The framework includes a prioritization process that identifies those needs and projects, including recommendations from studies such as the US 50 East Shore CMP, that best help NDOT achieve these goals.	Ongoing
Linking Tahoe Regional Transportation Plan (2020)	TRPA	The Regional Transportation Plan (RTP) is the Tahoe Basin MPO's fiscally constrained long-range transportation plan. It sets forth transportation goals and supporting projects, programs, and strategies to achieve these goals over a 25-year planning horizon. The RTP is updated on a four-year cycle. Relevant RTP projects include the South Shore Community Revitalization Project and the US 50 pavement rehabilitation project.	Ongoing
Linking Tahoe Active Transportation Plan (2016)	TRPA	The Linking Tahoe: Active Transportation Plan (ATP) presents a guide for planning, designing, constructing, and maintaining a regional active transportation network that includes innovative infrastructure, support facilities, and awareness programs. The ATP works in conjunction with the RTP and identifies four relevant active transportation projects in the study area.	Ongoing
Linking Tahoe Corridor Connection Plan (2017) (LTCCP)	TTD	The LTCCP looks closely at travel patterns, using innovative data approaches to better understand how people travel to, through, and within the Lake Tahoe Basin. The research, analysis, and recommendations developed as part of the LTCCP helped inform development of the RTP.	Complete
Linking Tahoe Transit Master Plan (2017)	TTD	The intent of this plan is to create a transit system that treats all users as locals, whether they are here for a day or a lifetime. The master plan outlines an approach to increasing transit usage through a focus on increasing service over new routes. Within the study area, the plan focuses on increasing service to/from the Reno-Tahoe International Airport and expanding service to Zephyr Cove.	Ongoing
Tahoe Transportation District Short Range Transit and Operations Plan (2017) (SRTP)	TTD	The SRTP guides the development of TTD's goals, objectives, and policies for a five-year period. The SRTP was developed within the context of the master plan. With respect to the CMP corridor, the SRTP recommends service expansion to destinations west connecting to the existing transit center, increasing service and frequency.	Ongoing

Document	Owner	Description	Status
US 50 South Shore Community Revitalization Project (2018)	TTD	As proposed, the project would realign US 50 around the casino core, enabling the creation of a pedestrian-oriented, "Main Street" through the middle of the existing tourist core, where the highway is now located. Walking, bicycling, and reliable transit would be attractive and safe transportation options and community gathering places would be available in the tourist core. The project forms the multi-modal foundation within the southernmost segment of the US 50 CMP.	Design Underway
NV Stateline to Stateline Bikeway Feasibility Study (2011)	TTD	The feasibility study was the first major step forward in defining the opportunity for a premier separated bikeway and shared use facility circling Lake Tahoe, connecting the borders with California in North and South Lake Tahoe. It forms the basis for alternatives considered and dismissed heading into the CMP analysis for much of the US 50 corridor.	Status Varies by Bikeway Section
NDOT Complete Streets Policy (2017)	NDOT	Sets forth NDOT's approach and policy with respect to Complete Streets design. Complete Streets include enhanced accommodation for people riding bicycles, walking, using transit, and other users, in addition to the traditional accommodation for vehicles. This document helps inform US 50 CMP alternatives development, particularly for multimodal sections co-located within the roadway right-of-way.	Adopted
NDOT Landscape and Aesthetics Corridor Plan (2006)	NDOT	The goal of the plan is to establish a landscape and aesthetics program for the Nevada state highway system. The CMP corridor is specifically included with design elements described in the "Lake of the Sky" section. These elements should be referenced for any recommendations incorporating landscape and/or aesthetic features.	Adopted
NV Stateline to Stateline Bikeway South Demonstration Environmental Assessment (EA) (2011)	TRPA	The South Demonstration Project shared-use path is located in Douglass County, Nevada on the east shore of Lake Tahoe, beginning on Lake Parkway at the Nevada/California border in the south shore casino core and ending ~0.3 miles north of the entrance to Round Hill Pines Beach. The path is part of the Stateline to Stateline bikeway.	Complete in 2018
Stateline to Stateline Bikeway, Phase 3 Sand Harbor to Spooner Summit (2019)	USFS	This document analyzes proposed improvements to highway safety, infrastructure, summer recreation access, and scenic quality for the SR 28 Scenic Byway corridor from Sand Harbor to Spooner Junction as part of the Stateline to Stateline Bikeway. Relevant recommendations include revisions to the Spooner State Park entrance area.	NEPA Approved

Document	Owner	Description	Status
TRPA-MPO Lake Tahoe Safety Plan (2019)	TRPA	The plan included data analysis findings, recommendations, proposed projects, and changes in how transportation projects are developed. The overall intent was to reduce crashes on Tahoe roadways. The plan included specific safety recommendations with the US 50 CMP study, namely enhanced crosswalks, sidewalk improvements, and roadway reconfigurations between Lake Parkway and Kingsbury Grade Road.	Adopted
NDOT Scoping Report and Associated Public Outreach Comments	NDOT	In 2017, the NDOT Scoping Division developed safety improvement concepts for the corridor, including a potential lane reduction on US 50. A public meeting and outreach effort was conducted in May of 2017 to receive feedback on the concepts. The 2017 materials inform what was considered and what the public feedback on the recommendations were at the time.	Complete in 2017
NDOT Road Safety Assessment (RSA) (2016)	NDOT	NDOT Traffic Safety Engineering authorized a Complete Streets-Focused RSA to be conducted on US 50, between Stateline, Nevada and the intersection of SR 28. The RSA identifies specific safety concerns and opportunities which should be considered as part of US 50 CMP alternatives development and following design development.	Complete in 2016
Round Hill Pines Resort Access Improvements	FHWA Office of Federal Lands	The proposed project is to improve safety for visitors entering and exiting the Round Hill Pines Resort from US 50 in Douglas County. There is a need to improve the safety due to the limited sight distance, unprotected movements across US 50, and vehicle queuing in the eastbound inside lane of US 50 during peak visitation periods. The proposed project moves and reconfigures the access from US 50 to Round Hill Pines Resort. The US 50 CMP should consider this project to be in place when developing alternatives.	Design Underway
		Land Use and Area Plans	
City of South Lake Tahoe Parks, Trails and Recreation Master Plan (2014)	City of South Lake Tahoe and El Dorado County	The plan represents a coordinated effort to align recreation resources and obtain community support to enhance recreation facilities and services for the Eastern Slope of El Dorado County. The plan provides direction for enhancing recreation opportunities for residents and visitors by increasing collaborative efforts and focusing resources where they are most needed. The plan includes a phased implementation plan with no specific recommendations noted for the US 50 CMP study area.	Adopted
City of South Lake Tahoe Tourist Core Area Plan (2013)	City of South Lake Tahoe	This plan addresses land use regulations, development and design standards, transportation, recreation, public services, and environmental	Adopted

Document	Owner	Description	Status
		improvements for the area. It encourages general improvement and enhancement for the built environment. Relevant to the US 50 CMP, the plan proposes to install a pedestrian sidewalk along the east side of US 50, from Lake Parkway to Kingsbury Grade Road.	
Douglas County South Shore Area Plan (2013)	Douglas County	The South Shore Area Plan was developed around the future US 50 South Shore Community Revitalization Project. The bike and pedestrian plan for the South Shore Area Plan is consistent with Map 5 of the Conceptual Bicycle and Pedestrian Facilities of the 2012 TRPA-MPO Regional Plan.	Adopted
Expanded Kahle Vision Plan (2019)	Nevada Tahoe Conservation District	Between Lake Parkway and Kahle Drive, completion of the Tahoe Trail along Edgewood Tahoe's frontage will connect cyclists and pedestrians to the future Main Street redevelopment area. Enhanced bike lanes and the addition of a sidewalk along the east side of US50 allows cyclists and pedestrians a designated place to bike and walk.	Adopted
Tahoe Main Street Management Plan (2020) (MSMP)	TRPA	This MSMP covers the bi-state South Shore corridor from which the current US 50 will be located. It stretches from the intersection with Lake Parkway in Nevada to just beyond the intersection with Pioneer Trail in California. The MSMP provides design guidance for the corridor and surrounding properties and includes a plan for a variety of transportation modes. The recommendations are being incorporated in part through the US 50 South Shore Community Revitalization Project.	Portions Under Design
Montbleu Events Center	Private	Proposed 4,200 seat event center built by and adjacent to the Montbleu Resort and Casino. The project includes improvements to the immediate roadway area and provisions for transit operations during events.	Under Construction
Zephyr Cove Revised Access Plan	USFS	A roundabout has been considered for the intersection of US 50 and the entrance of the Zephyr Cove RV Park and Campground. Furthermore, the USFS is considering revisions to the site circulation at Zephyr Cove in conjunction with the proposed signal at US50 and Warrior Way.	Conceptual
Cave Rock Road Boat Ramp Parking Plan	NV State Parks	A crosswalk along with a solar powered pedestrian beacon is being considered at the park.	Conceptual

5.2 Consistent and Overlapping Goals

The documents outlined in the previous section represent over a decade of focus in and around the US 50 corridor. Reviewing their respective visions and goals reveals a consistent push for improving transportation choice, multi-modal opportunities, reducing vehicle miles traveled (VMT), improving safety, and enhancing the Tahoe experience while respecting the unique natural setting of Lake Tahoe in close balance with economic opportunities. Each of the most relevant documents were reviewed and have been summarized to illustrate these long-term consistent and overlapping goals, as shown in **Figure 30**. This overlap of goals informs and strengthens the purpose and need for the US 50 CMP and the lasting collaboration envisioned to implement resulting strategies and alternatives.

	Rec. Access and Connectivity	Encourage Transit	Encourage Multimodal	Reduce VMT & Congestion Management	Streetscape	Improve Safety	Economic Vitality	Environmental
Transportation Plans								
One NV Transportation Plan	●	●	●	●		●	●	●
Linking Tahoe 2020 RTP		●	●	●		●	●	●
Linking Tahoe: Active Transportation Plan	●		●			●		●
Linking Tahoe: Corridor Connection Plan	●	●	●	●		●	●	
Linking Tahoe: Transit Master Plan	●	●		●			●	
Stateline to Stateline Bikeway Feasability	●		●	●		●	●	
NDOT Complete Streets Policy		●	●			●		
NDOT Landscape and Aesthetics Corridor Plan					●			
TTD Short Range Transit Plan	●	●	●	●				
US50 S. Shore Community Revitalization EIR/EIS		●	●	●	●		●	●
NV Stateline to Stateline South Demo EA	●		●				●	●
SR-28 Shared Use Path, Parking, Safety and Env	●	●	●	●	●	●		●
Lake Tahoe Region Safety Strategy			●			●		
Land Use and Area Plans								
City of S. Lake Tahoe Rec. Master Plan	●							
City of S. Lake Tahoe Tourist Core Area Plan		●	●					
Douglas County South Shore Area Plan		●	●		●		●	
Expanded Kahle Vision Plan	●		●		●			
Tahoe Main St. Management Plan		●	●		●		●	●
Montblue Events Center		●	●	●	●		●	

Figure 30: Consistent and Overlapping Goals

APPENDIX A – STREETLIGHT TMCs

The table within **Appendix A** is an expanded version of **Table 1** and includes the highest seasonal averages for each turning movement.

Kahle Drive and US50

Year and Season	Day	Time	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	**Total**
2019 Winter	Saturday	4pm (4pm-5pm)	25	13	14	34	0	33	63	1302	29	21	1156	42	2732
2019 Spring	Saturday	4pm (4pm-5pm)	45	0	32	33	0	13	61	1176	16	36	1142	45	2599
2019 Summer	Saturday	4pm (4pm-5pm)	23	0	49	25	8	30	59	1112	27	62	1327	48	2770
2019 Fall	**Saturday**	**4pm (4pm-5pm)**	**52**	**0**	**21**	**48**	**0**	**5**	**53**	**1401**	**62**	**50**	**1247**	**22**	**2961**
2020 Winter	Saturday	2pm (2pm-3pm)	12	6	60	17	0	43	42	1087	32	71	1077	23	2470
2020 Spring	Saturday	2pm (2pm-3pm)	37	0	13	19	0	13	29	720	49	12	725	20	1637
2020 Summer	Saturday	3pm (3pm-4pm)	22	19	42	43	0	55	46	910	23	40	1247	29	2476
2020 Fall	Saturday	4pm (4pm-5pm)	23	0	46	28	7	26	56	1278	20	45	1322	20	2871

Kingsbury Grade Road and US50

Year and Season	Day	Time	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	**Total**
2019 Winter	Saturday	4pm (4pm-5pm)	0	0	0	332	0	298	0	1121	401	191	969	0	3312
2019 Spring	Saturday	4pm (4pm-5pm)	0	0	0	310	0	231	0	1069	374	236	976	0	3196
2019 Summer	Saturday	5pm (5pm-6pm)	0	0	0	265	0	191	0	1007	366	336	1054	0	3219
2019 Fall	**Saturday**	**4pm (4pm-5pm)**	**0**	**0**	**0**	**322**	**0**	**176**	**0**	**1329**	**516**	**263**	**1013**	**0**	**3619**
2020 Winter	Saturday	4pm (4pm-5pm)	0	0	0	221	0	197	0	1075	417	254	685	0	2849
2020 Spring	Friday	3pm (3pm-4pm)	0	0	0	208	0	165	0	646	320	172	493	0	2004
2020 Summer	Saturday	3pm (3pm-4pm)	0	0	0	186	0	159	0	891	309	266	1050	0	2861
2020 Fall	Saturday	4pm (4pm-5pm)	0	0	0	227	0	158	0	1235	438	329	1002	0	3389

Elks Point Road and US50

Year and Season	Day	Time	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	**Total**
2019 Winter	Saturday	3pm (3pm-4pm)	19	6	89	185	12	20	112	964	195	49	922	32	2605
2019 Spring	Saturday	4pm (4pm-5pm)	39	9	106	131	25	40	108	906	218	29	915	48	2574
2019 Summer	Saturday	4pm (4pm-5pm)	54	66	112	237	38	43	152	844	226	53	982	33	2840
2019 Fall	**Saturday**	**4pm (4pm-5pm)**	**30**	**16**	**195**	**174**	**26**	**44**	**173**	**1035**	**228**	**44**	**902**	**44**	**2911**
2020 Winter	Saturday	3pm (3pm-4pm)	12	13	29	260	0	34	90	965	314	65	596	40	2418
2020 Spring	Saturday	2pm (2pm-3pm)	24	7	9	170	20	18	56	583	135	27	541	14	1604
2020 Summer	Saturday	3pm (3pm-4pm)	36	19	132	203	21	35	103	720	154	57	905	23	2408
2020 Fall	Saturday	3pm (3pm-4pm)	13	44	120	245	17	41	87	952	170	74	1072	25	2860

Zephyr Cove and US50

Year and Season	Day	Time	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	**Total**
2019 Winter	Saturday	3pm (3pm-4pm)	38	0	87	10	0	24	62	792	30	41	932	57	2073
2019 Spring	Saturday	4pm (4pm-5pm)	46	0	83	18	0	0	180	752	5	45	795	158	2082
2019 Summer	Saturday	1pm (1pm-2pm)	123	37	148	43	11	13	188	880	46	18	815	148	2470
2019 Fall	Saturday	4pm (4pm-5pm)	77	37	93	21	0	0	255	763	17	7	693	171	2134
2020 Winter	Saturday	4pm (4pm-5pm)	135	0	113	0	0	0	346	782	100	0	628	231	2335
2020 Spring	Saturday	2pm (2pm-3pm)	33	0	0	0	0	0	33	525	139	26	571	120	1447
2020 Summer	Saturday	3pm (3pm-4pm)	121	0	104	41	0	14	118	800	65	25	935	129	2352
2020 Fall	**Saturday**	**3pm (3pm-4pm)**	**172**	**0**	**186**	**3**	**61**	**0**	**239**	**836**	**48**	**37**	**1097**	**137**	**2816**

SR28 and US50 T-Intersection

Year and Season	Day	Time	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	**Total**
2019 Winter	Saturday	3pm (3pm-4pm)	279	0	23	0	0	0	339	538	0	0	652	129	1960
2019 Spring	Sunday	11am (11am-12noon)	263	0	4	0	0	0	418	635	0	0	480	106	1906
2019 Summer	Saturday	4pm (4pm-5pm)	311	0	8	0	0	0	389	724	0	0	643	232	2307
2019 Fall	Saturday	3pm (3pm-4pm)	301	0	15	0	0	0	347	569	0	0	600	156	1988
2020 Winter	Saturday	12pm (12noon-1pm)	364	0	3	0	0	0	542	446	0	0	466	83	1904
2020 Spring	Saturday	12pm (12noon-1pm)	249	0	25	0	0	0	237	360	0	0	426	27	1324
2020 Summer	Saturday	3pm (3pm-4pm)	411	0	3	0	0	0	411	605	0	0	584	58	2072
2020 Fall	**Saturday**	**1pm (1pm-2pm)**	**426**	**0**	**3**	**0**	**0**	**0**	**585**	**620**	**0**	**0**	**603**	**86**	**2323**

APPENDIX B – BALANCED TMCs

The tables within **Appendix B** illustrate the highest seasonal volumes in **Table 1** and **Appendix A**, where the following intersections have been balanced with each other:

- Page B-1: The US 50 intersections of Elks Point Road, Kahle Drive, and Kingsbury Grade Road were balanced with each other, due to their close proximity
  - Color Representation
    - Pink – Highest Seasonal TMCs
    - Blue – Balanced Seasonal TMCs
    - Grey – Movement Does Not Exist
    - Yellow – Check (Zero means it works)
- Page B-2: The US 50 intersection with SR 28 was balanced with its respective ramps – No volumes changed, but the volumes shown were used as inputs into Synchro
  - Color Representation
    - Yellow – Highest Seasonal TMCs

1,024	1,125

195	15.3%	1,271
902	71.0%	
174	13.7%	
7	15.3%	48
34	71.0%	
7	13.7%	
202	15.3%	1,319
936	71.0%	
181	13.7%	

			1,024					
			44	936	44			
			SBR	SBT	SBL			
248	30	EBL	**US 50 & Elks Point Road**			WBR	44	**251**
	16	EBT				WBT	26	
	202	EBR				WBL	181	
			NBL	NBT	NBR			
			176	1,051	231			
			1,458					

173	12.0%	1,436
1,035	72.1%	
228	15.9%	
3	12.0%	22
16	72.1%	
3	15.9%	
176	12.0%	1,458
1,051	72.1%	
231	15.9%	

1,319	1,458
0	**0**
1,319	1,458

			1,319					
			22	1,247	50			
			SBR	SBT	SBL			
73	52	EBL	**US 50 & Kahle Drive**			WBR	5	**53**
	0	EBT				WBT	0	
	21	EBR				WBL	48	
			NBL	NBT	NBR			
			53	1,401	62			
			1,516					

1,316	1,516
0	**0**
1,316	1,516

0	0.0%	1,276
1,013	79.4%	
263	20.6%	
0	0.0%	40
32	79.4%	
8	20.6%	
0	0.0%	1,316
1,045	79.4%	
271	20.6%	

			1,316					
			0	1,045	271			
			SBR	SBT	SBL			
0	0	EBL	**US 50 & Kingsbury Grade Road**			WBR	177	**499**
	0	EBT				WBT	0	
	0	EBR				WBL	322	
			NBL	NBT	NBR			
			0	1,339	516			
			1,855					

176	11.7%	1,505
1,329	88.3%	
0	0.0%	
1	11.7%	11
10	88.3%	
0	0.0%	
177	11.7%	1,516
1,339	88.3%	
0	0.0%	

1,367	1,855

SR 28 SB	1,228
SR 28 NB	1,086

				799					
			799	0	0				
			SBR	SBT	SBL				
1,405		0	EBL	SR 28 Off-Ramp/US 50 On-Ramp		WBR	0		
	1,205	1,205	EBT			WBT	606	606	
1,205		0	EBR			WBL	0		
			NBL	NBT	NBR				
			0	0	0				
				0					

1,205	0	1,205
606	0	606

			429		671			
				429				
			3	0	426			
			SBR	SBT	SBL			
	585	EBL	US 50 & SR 28			WBR	86	
1,205	620	EBT				WBT	603	689
	0	EBR				WBL	0	
			NBL	NBT	NBR			
			0	0	0			
				0				

1,046	0	1,046
689	0	689

				0					
			0	0	0				
			SBR	SBT	SBL				
	0	EBL	US 50 Off-Ramp/SR 28 On-Ramp			WBR	415		1,104
1,046	1,046	EBT				WBT	689	1,104	
	0	EBR				WBL	0		1,046
			NBL	NBT	NBR				
			0	0	0				
				0					

APPENDIX C – EXISTING SIGNAL TIMINGS

Carson City supplied the existing signal timings within **Appendix C** and include the following signalized intersections:

- US 50 and Zephyr Cove (Page C-1)
- US 50 and Elks Point Road (Page C-2)
- US 50 and Kahle Drive (Page C-3)
- US 50 and Kingsbury Grade Road (Page C-4)

These signal timings were used as an input within Synchro to calculate the existing LOS.

Controller Database Timing Sheet

Station: 1073 - Hwy 50 and Zephyr (Standard-5/13/2021 7:05:37 AM)

Type: NTCIP 76.x 2070 Ethernet **Firmware:** 76.15t

Created By: dfong **Modified By:** **Reviewed By:**

Phase Times and Options(1.1.1/1.1.2)																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
TABLE - 1																
Min Green	5	5	0	8	5	5	0	8	0	0	0	0	0	0	0	0
Gap Ext	2	2	0	3	2	4	0	3	0	0	0	0	0	0	0	0
Max1	25	60	0	45	25	60	0	30	0	0	0	0	0	0	0	0
Max2	15	60	0	30	25	60	0	20	0	0	0	0	0	0	0	0
Yellow Clr	4	4.8	3	3	4	4	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Red Clr	2	1.8	0	2.6	3	1.7	0	2.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Walk	0	7	0	7	0	7	0	0	0	0	0	0	0	0	0	0
Ped Clearance	0	28	0	25	0	19	0	0	0	0	0	0	0	0	0	0
Red Revert	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Added Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Before Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduce By	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Limit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Step	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Startup	RED	GREEN	RED	RED	RED	GREEN	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED
Enable	X	X	.	X	X	X	.	X	.	.	.	.	.	.	.	.
Auto Flash Entry	.	.	.	X	.	.	.	X	.	.	.	.	.	.	.	.
Auto Flash Exit	.	X	.	.	.	X	.	.	.	.	.	.	.	.	.	.
Non-Actuated 1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Non-Actuated 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lock Calls	.	.	.	.	.	.	.	.	X	X	X	X	X	X	X	X

Controller Database Timing Sheet

Station: 1074 - Hwy 50 & Elks Pt (Standard-3/22/2021 10:53:45 AM)

Type: NTCIP 76.x 2070 Ethernet **Firmware:**

Created By: dfong **Modified By:** **Reviewed By:**

Phase Times and Options(1.1.1/1.1.2)																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
TABLE - 1																
Min Green	5	6	0	5	5	6	0	5	0	0	0	0	0	0	0	0
Gap Ext	2	1.5	0	2	2	1.5	0	2	0	0	0	0	0	0	0	0
Max1	20	60	0	40	20	60	0	40	0	0	0	0	0	0	0	0
Max2	20	60	0	40	20	60	0	40	0	0	0	0	0	0	0	0
Yellow Clr	4.3	4.5	3	3.4	4.5	4.3	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Red Clr	2.5	1.4	0	2.1	2.6	1.4	0	3.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Walk	0	7	0	7	0	7	0	7	0	0	0	0	0	0	0	0
Ped Clearance	0	12	0	15	0	12	0	15	0	0	0	0	0	0	0	0
Red Revert	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Added Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Before Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduce By	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Limit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Step	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Startup	RED	GREEN	RED	RED	RED	GREEN	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED
Enable	X	X	.	X	X	X	.	X	.	.	.	.	.	.	.	.
Auto Flash Entry	.	.	.	X	.	.	.	X	.	.	.	.	.	.	.	.
Auto Flash Exit	.	X	.	.	.	X	.	.	.	.	.	.	.	.	.	.
Non-Actuated 1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Non-Actuated 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lock Calls	.	.	.	.	.	.	.	.	X	X	X	X	X	X	X	X

Controller Database Timing Sheet

Station: 1075 - Hwy 50 & Kahle (Standard-3/22/2021 10:43:55 AM)

Type: NTCIP 76.x 2070 Ethernet **Firmware:**

Created By: dfong **Modified By:** **Reviewed By:**

Phase Times and Options(1.1.1/1.1.2)																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
TABLE - 1																
Min Green	5	5	0	5	5	5	0	5	0	0	0	0	0	0	0	0
Gap Ext	2	2	0	2	2	2	0	2	0	0	0	0	0	0	0	0
Max1	15	60	0	20	15	60	0	20	0	0	0	0	0	0	0	0
Max2	15	60	0	20	15	60	0	20	0	0	0	0	0	0	0	0
Yellow Clr	3.7	3.6	3	3	3.6	3.7	3	3.2	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Red Clr	1.8	1.3	0	1.8	1.9	1.9	0	2.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Walk	0	7	0	0	0	7	0	7	0	0	0	0	0	0	0	0
Ped Clearance	0	12	0	0	0	12	0	15	0	0	0	0	0	0	0	0
Red Revert	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Added Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Before Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduce By	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Limit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Step	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Startup	RED	GREEN	RED	RED	RED	GREEN	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED
Enable	X	X	.	X	X	X	.	X	.	.	.	.	.	.	.	.
Auto Flash Entry	.	.	.	X	.	.	.	X	.	.	.	.	.	.	.	.
Auto Flash Exit	.	X	.	.	.	X	.	.	.	.	.	.	.	.	.	.
Non-Actuated 1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Non-Actuated 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lock Calls	.	.	.	.	.	.	.	.	X	X	X	X	X	X	X	X

Controller Database Timing Sheet

Station: 1076 - Hwy 50 Kingsbury (Standard-3/22/2021 10:32:16 AM)

Type: NTCIP 76.x 2070 Ethernet **Firmware:**

Created By: dfong **Modified By:** **Reviewed By:**

Phase Times and Options(1.1.1/1.1.2)																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
TABLE - 1																
Min Green	5	10	0	5	0	10	0	0	0	0	0	0	0	0	0	0
Gap Ext	2	2	0	1.5	0	2	0	0	0	0	0	0	0	0	0	0
Max1	35	55	0	45	0	55	0	0	0	0	0	0	0	0	0	0
Max2	35	55	0	45	0	55	0	0	0	0	0	0	0	0	0	0
Yellow Clr	3.4	3.3	3	4.3	3	3.3	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Red Clr	2.7	2.3	0	2.3	0	2.3	0	0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Walk	0	7	0	7	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clearance	0	10	0	10	0	0	0	0	0	0	0	0	0	0	0	0
Red Revert	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Added Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Before Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduce By	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Limit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Step	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Startup	RED	GREEN	RED	RED	RED	GREEN	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED
Enable	X	X	.	X	.	X	.	.	.	.	.	.	.	.	.	.
Auto Flash Entry	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.
Auto Flash Exit	.	X	.	.	.	X	.	.	.	.	.	.	.	.	.	.
Non-Actuated 1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Non-Actuated 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lock Calls	.	.	.	.	.	.	.	.	X	X	X	X	X	X	X	X

APPENDIX D – SYNCHRO OUTPUTS

The provided Synchro reports within **Appendix D** include the LOS and queue lengths for the following intersections:

- US 50 and SR 28
  - HCM 6 – Page D-1
  - Synchro Default – Page D-6
  - Queue Table – D-19
    - Queues in red are longer than the existing queue storage
- US 50 and Zephyr Cove
  - HCM 6 – Page D-2
  - Synchro Default – Pages D-7, D-8, D-9
  - Queue Table – D-19
    - Queues in red are longer than the existing queue storage
- US 50 and Elks Point Road
  - HCM 6 – Page D-3
  - Synchro Default – Pages D-10, D-11, D-12
  - Queue Table – D-19
    - Queues in red are longer than the existing queue storage
- US 50 and Kahle Drive
  - HCM 6 – Page D-4
  - Synchro Default – Pages D-13, D-14, D-15
  - Queue Table – D-19
- US 50 and Kingsbury Grade Road
  - HCM 6 – Page D-5
  - Synchro Default – Pages D-16, D-17, D-18
  - Queue Table – D-19
    - Queues in red are longer than the existing queue storage

Intersection	
Int Delay, s/veh	4933.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	585	620	603	86	426	3
Future Vol, veh/h	585	620	603	86	426	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	636	674	655	93	463	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	748	0	-	0	2311	374
Stage 1	-	-	-	-	702	-
Stage 2	-	-	-	-	1609	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	856	-	-	-	~ 32	623
Stage 1	-	-	-	-	~ 453	-
Stage 2	-	-	-	-	~ 149	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	856	-	-	-	~ 8	623
Mov Cap-2 Maneuver	-	-	-	-	~ 8	-
Stage 1	-	-	-	-	~ 116	-
Stage 2	-	-	-	-	~ 149	-

Approach	EB	WB	SB
HCM Control Delay, s	9.9	0	$ 26684.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	856	-	-	-	8
HCM Lane V/C Ratio	0.743	-	-	-	58.288
HCM Control Delay (s)	20.3	-	-	-	$ 26684.6
HCM Lane LOS	C	-	-	-	F
HCM 95th %tile Q(veh)	6.9	-	-	-	60.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	172	0	186	3	61	0	239	836	48	37	1097	137
Future Volume (veh/h)	172	0	186	3	61	0	239	836	48	37	1097	137
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	1.00		1.00	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	187	0	202	3	66	0	260	909	52	40	1192	149
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	327	0	336	142	407	0	283	1892	108	61	1331	166
Arrive On Green	0.22	0.00	0.22	0.22	0.22	0.00	0.16	0.55	0.55	0.03	0.42	0.42
Sat Flow, veh/h	1153	0	1547	1176	1870	0	1781	3410	195	1781	3170	395
Grp Volume(v), veh/h	187	0	202	3	66	0	260	474	487	40	666	675
Grp Sat Flow(s),veh/h/ln	1153	0	1547	1176	1870	0	1781	1777	1829	1781	1777	1788
Q Serve(g_s), s	12.6	0.0	11.1	0.2	2.7	0.0	13.6	15.3	15.3	2.1	32.9	33.3
Cycle Q Clear(g_c), s	15.3	0.0	11.1	15.5	2.7	0.0	13.6	15.3	15.3	2.1	32.9	33.3
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.11	1.00		0.22
Lane Grp Cap(c), veh/h	327	0	336	142	407	0	283	985	1014	61	746	750
V/C Ratio(X)	0.57	0.00	0.60	0.02	0.16	0.00	0.92	0.48	0.48	0.65	0.89	0.90
Avail Cap(c_a), veh/h	487	0	524	283	631	0	283	985	1014	113	746	750
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.2	0.0	33.3	42.3	30.0	0.0	39.2	12.8	12.8	45.1	25.5	25.6
Incr Delay (d2), s/veh	1.6	0.0	1.7	0.1	0.2	0.0	32.8	1.7	1.6	4.3	15.3	15.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	4.3	0.1	1.2	0.0	8.2	5.7	5.9	1.0	15.6	15.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.8	0.0	35.0	42.3	30.2	0.0	72.0	14.5	14.4	49.4	40.8	41.4
LnGrp LOS	D	A	D	D	C	A	E	B	B	D	D	D
Approach Vol, veh/h		389			69			1221			1381	
Approach Delay, s/veh		36.4			30.7			26.7			41.3	
Approach LOS		D			C			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	59.0		26.3	22.0	46.3		26.3				
Change Period (Y+Rc), s	6.0	* 6.6		* 5.7	7.0	* 6.6		* 5.7				
Max Green Setting (Gmax), s	6.0	* 49		* 32	15.0	* 40		* 32				
Max Q Clear Time (g_c+I1), s	4.1	17.3		17.3	15.6	35.3		17.5				
Green Ext Time (p_c), s	0.0	3.6		1.6	0.0	3.5		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			34.6									
HCM 6th LOS			C									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	16	202	181	26	44	176	1051	231	44	936	44
Future Volume (veh/h)	30	16	202	181	26	44	176	1051	231	44	936	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	33	17	220	197	28	48	191	1142	251	48	1017	48
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	51	16	431	58	0	431	220	1508	329	62	1489	70
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.12	0.52	0.52	0.03	0.43	0.43
Sat Flow, veh/h	0	59	1551	0	0	1551	1781	2884	629	1781	3449	163
Grp Volume(v), veh/h	50	0	220	225	0	48	191	700	693	48	524	541
Grp Sat Flow(s),veh/h/ln	59	0	1551	0	0	1551	1781	1777	1736	1781	1777	1835
Q Serve(g_s), s	0.0	0.0	13.9	0.0	0.0	2.7	12.3	36.2	37.1	3.1	27.8	27.8
Cycle Q Clear(g_c), s	32.5	0.0	13.9	32.5	0.0	2.7	12.3	36.2	37.1	3.1	27.8	27.8
Prop In Lane	0.66		1.00	0.88		1.00	1.00		0.36	1.00		0.09
Lane Grp Cap(c), veh/h	68	0	431	58	0	431	220	929	908	62	767	792
V/C Ratio(X)	0.74	0.00	0.51	3.89	0.00	0.11	0.87	0.75	0.76	0.78	0.68	0.68
Avail Cap(c_a), veh/h	68	0	431	58	0	431	319	929	908	125	767	792
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.9	0.0	35.5	58.4	0.0	31.4	50.3	21.9	22.1	56.0	26.8	26.8
Incr Delay (d2), s/veh	31.1	0.0	0.4	1342.9	0.0	0.0	12.0	5.6	6.1	7.6	4.9	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	5.4	23.3	0.0	1.0	6.1	15.2	15.3	1.5	12.1	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.9	0.0	35.9	1401.3	0.0	31.5	62.3	27.6	28.2	63.5	31.6	31.5
LnGrp LOS	E	A	D	F	A	C	E	C	C	E	C	C
Approach Vol, veh/h		270			273			1584			1113	
Approach Delay, s/veh		43.9			1160.5			32.0			33.0	
Approach LOS		D			F			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.9	67.0		39.0	21.5	56.3		39.0				
Change Period (Y+Rc), s	6.8	* 5.9		* 6.5	7.1	* 5.9		6.5				
Max Green Setting (Gmax), s	8.2	* 61		* 33	20.9	* 48		31.5				
Max Q Clear Time (g_c+I1), s	5.1	39.1		34.5	14.3	29.8		34.5				
Green Ext Time (p_c), s	0.0	4.4		0.0	0.1	2.8		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	128.4
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	0	21	48	0	5	53	1401	62	50	1247	22
Future Volume (veh/h)	52	0	21	48	0	5	53	1401	62	50	1247	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.99		0.96	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	57	0	23	52	0	5	58	1523	67	54	1355	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	156	7	34	222	0	126	81	2287	100	78	2353	42
Arrive On Green	0.08	0.00	0.08	0.08	0.00	0.08	0.05	0.66	0.66	0.04	0.66	0.66
Sat Flow, veh/h	946	83	415	1372	0	1517	1781	3463	152	1781	3571	63
Grp Volume(v), veh/h	80	0	0	52	0	5	58	779	811	54	674	705
Grp Sat Flow(s),veh/h/ln	1444	0	0	1372	0	1517	1781	1777	1838	1781	1777	1857
Q Serve(g_s), s	3.8	0.0	0.0	0.0	0.0	0.2	2.6	21.1	21.4	2.4	16.6	16.7
Cycle Q Clear(g_c), s	4.3	0.0	0.0	2.3	0.0	0.2	2.6	21.1	21.4	2.4	16.6	16.7
Prop In Lane	0.71		0.29	1.00		1.00	1.00		0.08	1.00		0.03
Lane Grp Cap(c), veh/h	197	0	0	222	0	126	81	1174	1214	78	1171	1223
V/C Ratio(X)	0.41	0.00	0.00	0.23	0.00	0.04	0.72	0.66	0.67	0.69	0.58	0.58
Avail Cap(c_a), veh/h	492	0	0	488	0	420	150	1174	1214	132	1171	1223
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.5	0.0	0.0	34.6	0.0	33.7	37.6	8.2	8.2	37.6	7.5	7.5
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.2	0.0	0.0	4.4	3.0	2.9	4.1	2.1	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.0	1.0	0.0	0.1	1.2	7.1	7.4	1.1	5.5	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.0	0.0	0.0	34.8	0.0	33.7	42.0	11.2	11.2	41.7	9.5	9.5
LnGrp LOS	D	A	A	C	A	C	D	B	B	D	A	A
Approach Vol, veh/h		80			57			1648			1433	
Approach Delay, s/veh		36.0			34.7			12.2			10.7	
Approach LOS		D			C			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	58.3		12.5	9.1	58.2		12.5				
Change Period (Y+Rc), s	5.5	* 5.6		* 5.9	* 5.5	* 5.6		5.9				
Max Green Setting (Gmax), s	5.9	* 53		* 23	* 6.7	* 51		22.1				
Max Q Clear Time (g_c+I1), s	4.4	23.4		6.3	4.6	18.7		4.3				
Green Ext Time (p_c), s	0.0	8.8		0.2	0.0	7.1		0.1				
Intersection Summary												
HCM 6th Ctrl Delay			12.6									
HCM 6th LOS			B									
Notes												

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	322	177	1339	516	271	1045
Future Volume (veh/h)	322	177	1339	516	271	1045
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	350	192	1455	561	295	1136
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	407	472	2004	869	321	2807
Arrive On Green	0.12	0.12	0.56	0.56	0.18	0.79
Sat Flow, veh/h	3456	1585	3647	1541	1781	3647
Grp Volume(v), veh/h	350	192	1455	561	295	1136
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1541	1781	1777
Q Serve(g_s), s	13.1	12.8	40.0	33.0	21.5	13.0
Cycle Q Clear(g_c), s	13.1	12.8	40.0	33.0	21.5	13.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	407	472	2004	869	321	2807
V/C Ratio(X)	0.86	0.41	0.73	0.65	0.92	0.40
Avail Cap(c_a), veh/h	481	506	2004	869	416	2807
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.2	37.1	21.3	19.8	53.3	4.3
Incr Delay (d2), s/veh	11.5	0.2	2.3	3.7	19.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	12.0	16.6	12.3	11.3	4.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	68.7	37.3	23.6	23.5	72.7	4.7
LnGrp LOS	E	D	C	C	E	A
Approach Vol, veh/h	542		2016			1431
Approach Delay, s/veh	57.6		23.6			18.7
Approach LOS	E		C			B

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	29.9	80.1		22.2		110.0
Change Period (Y+Rc), s	* 6.1	5.6		* 6.6		5.6
Max Green Setting (Gmax), s	* 31	67.4		* 18		104.4
Max Q Clear Time (g_c+I1), s	23.5	42.0		15.1		15.0
Green Ext Time (p_c), s	0.3	10.1		0.4		6.5

Intersection Summary						
HCM 6th Ctrl Delay			26.5			
HCM 6th LOS			C			

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	585	620	603	86	426	3
Future Volume (vph)	585	620	603	86	426	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.981		0.999	
Flt Protected	0.950				0.953	
Satd. Flow (prot)	1770	3539	3472	0	1773	0
Flt Permitted	0.950				0.953	
Satd. Flow (perm)	1770	3539	3472	0	1773	0
Link Speed (mph)		50	50		45	
Link Distance (ft)		528	425		386	
Travel Time (s)		7.2	5.8		5.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	636	674	655	93	463	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	636	674	748	0	466	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	R NA	Left	Right	Left	Right
Median Width(ft)		24	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type: Other	
Control Type: Unsignalized	
Intersection Capacity Utilization 85.6%	ICU Level of Service E
Analysis Period (min) 15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	172	0	186	3	61	0	239	836	48	37	1097	137
Future Volume (vph)	172	0	186	3	61	0	239	836	48	37	1097	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		50	50		0	255		0	175		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98	1.00				1.00			1.00	
Frt			0.850					0.992			0.983	
Flt Protected		0.950		0.950			0.950			0.950		
Satd. Flow (prot)	0	1770	1583	1770	1863	0	1770	3505	0	1770	3469	0
Flt Permitted		0.714		0.531			0.950			0.950		
Satd. Flow (perm)	0	1330	1551	986	1863	0	1770	3505	0	1770	3469	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			172					7			15	
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		316			221			1030			944	
Travel Time (s)		8.6			6.0			15.6			14.3	
Confl. Peds. (#/hr)			5	5					5			
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	187	0	202	3	66	0	260	909	52	40	1192	149
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	187	202	3	66	0	260	961	0	40	1341	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	37.6	37.6	37.6	13.7	13.7		12.0	41.6		11.0	31.7	
Total Split (s)	37.6	37.6	37.6	37.6	37.6		22.0	55.4		12.0	45.4	
Total Split (%)	35.8%	35.8%	35.8%	35.8%	35.8%		21.0%	52.8%		11.4%	43.2%	
Maximum Green (s)	32.0	32.0	32.0	31.9	31.9		15.0	48.8		6.0	39.7	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.8		4.0	4.0	
All-Red Time (s)	2.6	2.6	2.6	2.7	2.7		3.0	1.8		2.0	1.7	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.6	5.6	5.7	5.7		7.0	6.6		6.0	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	4.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	7.0	7.0	7.0					7.0			7.0	
Flash Dont Walk (s)	25.0	25.0	25.0					28.0			19.0	
Pedestrian Calls (#/hr)	5	5	5					5			5	
Act Effct Green (s)		19.0	19.0	18.9	18.9		15.1	54.3		5.7	39.9	
Actuated g/C Ratio		0.21	0.21	0.20	0.20		0.16	0.59		0.06	0.43	
v/c Ratio		0.68	0.44	0.01	0.17		0.90	0.47		0.37	0.89	
Control Delay		46.6	10.2	27.3	30.0		74.0	14.2		54.1	34.1	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		46.6	10.2	27.3	30.0		74.0	14.2		54.1	34.1	
LOS		D	B	C	C		E	B		D	C	
Approach Delay		27.7			29.9			26.9			34.7	
Approach LOS		C			C			C			C	
90th %ile Green (s)	32.0	32.0	32.0	31.9	31.9		15.0	48.8		6.0	39.7	
90th %ile Term Code	Ped	Ped	Ped	Hold	Hold		Max	MaxR		Max	MaxR	
70th %ile Green (s)	22.2	22.2	22.2	22.1	22.1		15.0	48.8		6.0	39.7	
70th %ile Term Code	Gap	Gap	Gap	Hold	Hold		Max	MaxR		Max	MaxR	
50th %ile Green (s)	17.8	17.8	17.8	17.7	17.7		15.0	48.8		6.0	39.7	
50th %ile Term Code	Gap	Gap	Gap	Hold	Hold		Max	MaxR		Max	MaxR	
30th %ile Green (s)	14.7	14.7	14.7	14.6	14.6		15.0	60.8		0.0	39.7	
30th %ile Term Code	Gap	Gap	Gap	Hold	Hold		Max	Hold		Skip	MaxR	
10th %ile Green (s)	10.5	10.5	10.5	10.4	10.4		15.0	60.8		0.0	39.7	
10th %ile Term Code	Gap	Gap	Gap	Hold	Hold		Max	Hold		Skip	MaxR	
Stops (vph)		150	36	3	45		197	493		35	1004	
Fuel Used(gal)		3	1	0	1		8	15		1	29	
CO Emissions (g/hr)		187	72	2	46		535	1020		75	2000	
NOx Emissions (g/hr)		36	14	0	9		104	198		15	389	
VOC Emissions (g/hr)		43	17	1	11		124	236		17	464	
Dilemma Vehicles (#)		0	0	0	0		0	44		0	64	
Queue Length 50th (ft)		101	14	1	32		148	173		22	356	
Queue Length 95th (ft)		170	68	9	65		#348	305		62	#637	
Internal Link Dist (ft)		236			141			950			864	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)			50	50			255			175		
Base Capacity (vph)		463	652	342	646		288	2061		115	1507	
Starvation Cap Reductn		0	0	0	0		0	0		0	0	
Spillback Cap Reductn		0	0	0	0		0	0		0	0	
Storage Cap Reductn		0	0	0	0		0	0		0	0	
Reduced v/c Ratio		0.40	0.31	0.01	0.10		0.90	0.47		0.35	0.89	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 92.4
Natural Cycle: 105
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 30.6 Intersection LOS: C
Intersection Capacity Utilization 81.0% ICU Level of Service D
Analysis Period (min) 15
90th %ile Actuated Cycle: 105
70th %ile Actuated Cycle: 95.2
50th %ile Actuated Cycle: 90.8
30th %ile Actuated Cycle: 87.7
10th %ile Actuated Cycle: 83.5
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: US 50 & Zephyr Cove

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	16	202	181	26	44	176	1051	231	44	936	44
Future Volume (vph)	30	16	202	181	26	44	176	1051	231	44	936	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		75	0		95	115		0	240		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00	0.98		0.99	0.98		0.99			1.00	
Frt			0.850			0.850		0.973			0.993	
Flt Protected		0.968			0.958		0.950			0.950		
Satd. Flow (prot)	0	1803	1583	0	1785	1583	1770	3419	0	1770	3508	0
Flt Permitted		0.681			0.717		0.950			0.950		
Satd. Flow (perm)	0	1264	1545	0	1327	1545	1770	3419	0	1770	3508	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			220			153		32			5	
Link Speed (mph)		35			25			45			45	
Link Distance (ft)		504			456			949			973	
Travel Time (s)		9.8			12.4			14.4			14.7	
Confl. Peds. (#/hr)	5		5	5		5			5			5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	17	220	197	28	48	191	1142	251	48	1017	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	50	220	0	225	48	191	1393	0	48	1065	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8						
Detector Phase	4	4	4	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0		5.0	6.0	
Minimum Split (s)	27.5	27.5	27.5	28.5	28.5	28.5	12.1	24.9		11.8	24.7	
Total Split (s)	38.0	38.0	38.0	38.0	38.0	38.0	28.0	67.0		15.0	54.0	
Total Split (%)	31.7%	31.7%	31.7%	31.7%	31.7%	31.7%	23.3%	55.8%		12.5%	45.0%	
Maximum Green (s)	32.5	32.5	32.5	31.5	31.5	31.5	20.9	61.1		8.2	48.3	
Yellow Time (s)	3.4	3.4	3.4	3.0	3.0	3.0	4.5	4.5		4.3	4.3	
All-Red Time (s)	2.1	2.1	2.1	3.5	3.5	3.5	2.6	1.4		2.5	1.4	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.5	5.5		6.5	6.5	7.1	5.9		6.8	5.7	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.5		2.0	1.5	
Recall Mode	None	None	None	None	None	None	None	Max		None	Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	15.0	15.0	15.0	15.0	15.0	15.0		12.0			12.0	
Pedestrian Calls (#/hr)	5	5	5	5	5	5		5			5	
Act Effct Green (s)		23.1	23.1		22.1	22.1	15.4	62.5		6.9	51.0	
Actuated g/C Ratio		0.21	0.21		0.20	0.20	0.14	0.58		0.06	0.47	
v/c Ratio		0.19	0.44		0.83	0.11	0.76	0.70		0.42	0.64	
Control Delay		36.5	7.4		66.3	0.5	64.7	20.5		63.5	25.7	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		36.5	7.4		66.3	0.5	64.7	20.5		63.5	25.7	
LOS		D	A		E	A	E	C		E	C	
Approach Delay		12.8			54.8			25.8			27.3	
Approach LOS		B			D			C			C	
90th %ile Green (s)	32.5	32.5	32.5	31.5	31.5	31.5	20.9	61.1		8.2	48.3	
90th %ile Term Code	Hold	Hold	Hold	Max	Max	Max	Max	MaxR		Max	MaxR	
70th %ile Green (s)	28.5	28.5	28.5	27.5	27.5	27.5	19.3	61.1		8.2	49.9	
70th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Gap	MaxR		Max	Hold	
50th %ile Green (s)	23.9	23.9	23.9	22.9	22.9	22.9	16.1	61.1		7.4	52.3	
50th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Gap	MaxR		Gap	Hold	
30th %ile Green (s)	19.6	19.6	19.6	18.6	18.6	18.6	13.2	61.1		6.1	53.9	
30th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Gap	MaxR		Gap	Hold	
10th %ile Green (s)	13.4	13.4	13.4	12.4	12.4	12.4	9.1	64.3		0.0	48.3	
10th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Gap	Hold		Skip	MaxR	
Stops (vph)		35	22		191	0	163	877		42	721	
Fuel Used(gal)		1	1		4	0	5	24		1	20	
CO Emissions (g/hr)		54	84		303	12	380	1688		96	1417	
NOx Emissions (g/hr)		11	16		59	2	74	328		19	276	
VOC Emissions (g/hr)		13	20		70	3	88	391		22	329	
Dilemma Vehicles (#)		1	0		0	0	0	57		0	40	
Queue Length 50th (ft)		29	0		154	0	132	364		33	290	
Queue Length 95th (ft)		64	60		246	0	219	539		77	448	
Internal Link Dist (ft)		424			376			869			893	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)			75			95	115			240		
Base Capacity (vph)		384	622		390	563	345	1991		135	1658	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.13	0.35		0.58	0.09	0.55	0.70		0.36	0.64	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 108.1
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 27.7 Intersection LOS: C
Intersection Capacity Utilization 74.8% ICU Level of Service D
Analysis Period (min) 15
90th %ile Actuated Cycle: 120
70th %ile Actuated Cycle: 116
50th %ile Actuated Cycle: 110.6
30th %ile Actuated Cycle: 105
10th %ile Actuated Cycle: 89.1

Splits and Phases: 3: US 50 & Elks Point Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	0	21	48	0	5	53	1401	62	50	1247	22
Future Volume (vph)	52	0	21	48	0	5	53	1401	62	50	1247	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	80		0	205		0	175		0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99		0.99	0.98			1.00			1.00	
Frt		0.961			0.850			0.994			0.997	
Flt Protected		0.966		0.950			0.950			0.950		
Satd. Flow (prot)	0	1718	0	1770	1546	0	1770	3513	0	1770	3526	0
Flt Permitted		0.786		0.766			0.950			0.950		
Satd. Flow (perm)	0	1391	0	1419	1546	0	1770	3513	0	1770	3526	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		91			134			7			3	
Link Speed (mph)		15			15			35			35	
Link Distance (ft)		389			251			1042			831	
Travel Time (s)		17.7			11.4			20.3			16.2	
Confl. Peds. (#/hr)	5		5	5		5			5			5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	0	23	52	0	5	58	1523	67	54	1355	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	80	0	52	5	0	58	1590	0	54	1379	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.8	9.8		27.9	27.9		10.5	23.9		10.5	24.6	
Total Split (s)	28.0	28.0		28.0	28.0		12.2	57.6		11.4	56.8	
Total Split (%)	28.9%	28.9%		28.9%	28.9%		12.6%	59.4%		11.8%	58.6%	
Maximum Green (s)	23.2	23.2		22.1	22.1		6.7	52.7		5.9	51.2	
Yellow Time (s)	3.0	3.0		3.2	3.2		3.6	3.6		3.7	3.7	
All-Red Time (s)	1.8	1.8		2.7	2.7		1.9	1.3		1.8	1.9	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.8		5.9	5.9		5.5	4.9		5.5	5.6	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)				7.0	7.0			7.0			7.0	
Flash Dont Walk (s)				15.0	15.0			12.0			12.0	
Pedestrian Calls (#/hr)				5	5			5			5	
Act Effct Green (s)		10.3		9.5	9.5		6.2	59.9		5.7	56.5	
Actuated g/C Ratio		0.12		0.11	0.11		0.07	0.72		0.07	0.68	
v/c Ratio		0.32		0.32	0.02		0.44	0.63		0.45	0.58	
Control Delay		9.4		38.9	0.2		50.2	11.4		52.1	11.8	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		9.4		38.9	0.2		50.2	11.4		52.1	11.8	
LOS		A		D	A		D	B		D	B	
Approach Delay		9.4			35.5			12.8			13.4	
Approach LOS		A			D			B			B	
90th %ile Green (s)	23.1	23.1		22.0	22.0		6.7	52.7		5.9	51.2	
90th %ile Term Code	Hold	Hold		Ped	Ped		Max	MaxR		Max	MaxR	
70th %ile Green (s)	10.1	10.1		9.0	9.0		6.7	52.7		5.9	51.2	
70th %ile Term Code	Hold	Hold		Gap	Gap		Max	MaxR		Max	MaxR	
50th %ile Green (s)	8.6	8.6		7.5	7.5		6.7	52.7		5.9	51.2	
50th %ile Term Code	Hold	Hold		Gap	Gap		Max	MaxR		Max	MaxR	
30th %ile Green (s)	7.2	7.2		6.1	6.1		6.0	63.4		0.0	51.2	
30th %ile Term Code	Hold	Hold		Hold	Hold		Gap	Hold		Skip	MaxR	
10th %ile Green (s)	0.0	0.0		0.0	0.0		0.0	67.7		0.0	67.0	
10th %ile Term Code	Skip	Skip		Skip	Skip		Skip	Dwell		Skip	Dwell	
Stops (vph)		11		42	0		51	787		47	687	
Fuel Used(gal)		0		1	0		1	20		1	16	
CO Emissions (g/hr)		32		39	1		93	1421		83	1107	
NOx Emissions (g/hr)		6		8	0		18	277		16	215	
VOC Emissions (g/hr)		7		9	0		21	329		19	257	
Dilemma Vehicles (#)		0		0	0		0	67		0	63	
Queue Length 50th (ft)		0		26	0		29	250		27	207	
Queue Length 95th (ft)		31		58	0		76	508		#79	412	
Internal Link Dist (ft)		309			171			962			751	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)				80			205			175		
Base Capacity (vph)		456		379	512		143	2532		126	2397	
Starvation Cap Reductn		0		0	0		0	0		0	0	
Spillback Cap Reductn		0		0	0		0	0		0	0	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.18		0.14	0.01		0.41	0.63		0.43	0.58	

Intersection Summary

Area Type: Other
Cycle Length: 97
Actuated Cycle Length: 83.2
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 13.4 Intersection LOS: B
Intersection Capacity Utilization 63.1% ICU Level of Service B
Analysis Period (min) 15
90th %ile Actuated Cycle: 96.9
70th %ile Actuated Cycle: 83.9
50th %ile Actuated Cycle: 82.4
30th %ile Actuated Cycle: 80.3
10th %ile Actuated Cycle: 72.6
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: US 50 & Kahle Drive

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	322	177	1339	516	271	1045
Future Volume (vph)	322	177	1339	516	271	1045
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	190	0		285	200	
Storage Lanes	2	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor	0.98	0.97		0.96		
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3365	1541	3539	1515	1770	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		20		484		
Link Speed (mph)	35		35			35
Link Distance (ft)	1052		1119			1042
Travel Time (s)	20.5		21.8			20.3
Confl. Peds. (#/hr)	5	5		5		
Confl. Bikes (#/hr)		5		5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	350	192	1455	561	295	1136
Shared Lane Traffic (%)						
Lane Group Flow (vph)	350	192	1455	561	295	1136
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	24		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane	Yes					Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (ft)	20	20	100	20	20	100
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Turn Type	Prot	pm+ov	NA	Perm	Prot	NA
Protected Phases	4	1	2		1	6
Permitted Phases		4		2		
Detector Phase	4	1	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	10.0	10.0	5.0	10.0
Minimum Split (s)	23.6	11.1	22.6	22.6	11.1	15.6
Total Split (s)	25.0	37.0	73.0	73.0	37.0	110.0
Total Split (%)	18.5%	27.4%	54.1%	54.1%	27.4%	81.5%
Maximum Green (s)	18.4	30.9	67.4	67.4	30.9	104.4
Yellow Time (s)	4.3	3.4	3.3	3.3	3.4	3.3
All-Red Time (s)	2.3	2.7	2.3	2.3	2.7	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.1	5.6	5.6	6.1	5.6
Lead/Lag		Lead	Lag	Lag	Lead	
Lead-Lag Optimize?		Yes	Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0		7.0	7.0		
Flash Dont Walk (s)	10.0		10.0	10.0		
Pedestrian Calls (#/hr)	5		5	5		
Act Effct Green (s)	16.7	42.9	72.6	72.6	25.7	104.4
Actuated g/C Ratio	0.13	0.32	0.54	0.54	0.19	0.78
v/c Ratio	0.82	0.37	0.75	0.54	0.87	0.41
Control Delay	72.6	28.3	27.9	5.3	76.3	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.6	28.3	27.9	5.3	76.3	5.2
LOS	E	C	C	A	E	A
Approach Delay	56.9		21.6			19.9
Approach LOS	E		C			B
90th %ile Green (s)	18.4	30.9	67.4	67.4	30.9	104.4
90th %ile Term Code	Max	Max	MaxR	MaxR	Max	MaxR
70th %ile Green (s)	18.4	30.3	68.0	68.0	30.3	104.4
70th %ile Term Code	Max	Gap	Hold	Hold	Gap	MaxR
50th %ile Green (s)	18.0	26.8	71.5	71.5	26.8	104.4
50th %ile Term Code	Gap	Gap	Hold	Hold	Gap	MaxR
30th %ile Green (s)	15.9	23.0	75.3	75.3	23.0	104.4
30th %ile Term Code	Gap	Gap	Hold	Hold	Gap	MaxR
10th %ile Green (s)	12.9	17.7	80.6	80.6	17.7	104.4
10th %ile Term Code	Gap	Gap	Hold	Hold	Gap	MaxR
Stops (vph)	306	112	1021	62	256	306
Fuel Used(gal)	10	3	26	5	8	11
CO Emissions (g/hr)	664	224	1824	363	571	788
NOx Emissions (g/hr)	129	44	355	71	111	153
VOC Emissions (g/hr)	154	52	423	84	132	183
Dilemma Vehicles (#)	0	0	39	0	0	39
Queue Length 50th (ft)	154	104	516	32	250	147
Queue Length 95th (ft)	209	159	658	121	349	181
Internal Link Dist (ft)	972		1039			962

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Turn Bay Length (ft)	190			285	200	
Base Capacity (vph)	473	578	1928	1045	410	2771
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.33	0.75	0.54	0.72	0.41

Intersection Summary

Area Type: Other
Cycle Length: 135
Actuated Cycle Length: 133.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 25.8 Intersection LOS: C
Intersection Capacity Utilization 77.2% ICU Level of Service D
Analysis Period (min) 15
90th %ile Actuated Cycle: 135
70th %ile Actuated Cycle: 135
50th %ile Actuated Cycle: 134.6
30th %ile Actuated Cycle: 132.5
10th %ile Actuated Cycle: 129.5

Splits and Phases: 5: US 50 & Kingsbury Grade Road

TABLE X: US 50 QUEUE LENGTHS - EXISTING CONDITIONS																									
US 50 Intersection	Time	Eastbound						Westbound						Northbound						Southbound					
		Left-Turn Bays			Right-Turn Bays			Left-Turn Bays			Right-Turn Bays			Left-Turn Bays			Right-Turn Bays			Left-Turn Bays			Right-Turn Bays		
		Number of Lanes	Queue Storage (ft)	Queue Length (ft) at Peak Hour	Number of Lanes	Queue Storage (ft)	Queue Length (ft) at Peak Hour	Number of Lanes	Queue Storage (ft)	Queue Length (ft) at Peak Hour	Number of Lanes	Queue Storage (ft)	Queue Length (ft) at Peak Hour	Number of Lanes	Queue Storage (ft)	Queue Length (ft) at Peak Hour	Number of Lanes	Queue Storage (ft)	Queue Length (ft) at Peak Hour	Number of Lanes	Queue Storage (ft)	Queue Length (ft) at Peak Hour	Number of Lanes	Queue Storage (ft)	Queue Length (ft) at Peak Hour
Nevada State Route 28	**2020 Fall, Saturday, 1 PM - 2 PM**	**1**	**115**	**173**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zephyr Cove	**2020 Fall, Saturday, 3 PM - 4 PM**	-	-	-	**1**	**50**	**68**	1	50	9	-	-	-	**1**	**255**	**348**	-	-	-	1	175	62	-	-	-
Elks Point Road	**2019 Fall, Saturday, 4 PM - 5 PM**	-	-	-	1	75	60	-	-	-	1	95	0	**1**	**115**	**219**	-	-	-	1	240	77	-	-	-
Kahle Drive	**2019 Fall, Saturday, 4 PM - 5 PM**	-	-	-	-	-	-	1	80	58	-	-	-	1	205	76	-	-	-	1	175	79	-	-	-
Kingsbury Grade Road	**2019 Fall, Saturday, 4 PM - 5 PM**	-	-	-	-	-	-	**2**	**190**	**209**	-	-	-	-	-	-	1	285	121	**1**	**200**	**349**	-	-	-
Source: Wood Rodgers, May 2021																									

APPENDIX E – NDOT SPEED STUDIES

The NDOT Speed Studies within **Appendix E** all occur along the same stretch of US 50 from Douglas County Mile Post 0.9 to Douglas County Mile Post 1.4, a distance of 0.5-miles. The speed studies are in chronological order and include:

- Speed Study 1, 03/08/2016 – No Variable Speed Limit Sign – Pages E-1, E-2, E-3, E-4
- Speed Study 2, 11/17/2016 – Variable Speed Limit Sign – Pages E-5, E-6, E-7, E-8, E-9
- Speed Study 3, 12/27/2017 – Variable Speed Limit Sign – Pages E-10, E-11, E-12, E-13, E-14
- Speed Study 4, 08/31/2018 – Variable Speed Limit Sign – Pages E-15, E-16, E-17, E-18, E-19

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

MEMORANDUM

3/8/2016

TO: **Denise Inda, Chief Traffic Operations Engineer**

FROM: **Randy Travis, Data Administrator Division Head** RT

SUBJECT: **Speed Study US-50 Stateline, Douglas County**

In response to a request from your office, a Minimum Speed Study was conducted on the subject roadway. Analysis of the speed data for the segment produced the following results:

1. Segment

Site Data: This study area is a 4 lane *Rural Principal Arterial – Other* roadway that begins at Kahle Dr. (MP DO-0.9) and continues east to the end of the 35 MPH zone (MP DO-1.4) for a segment length of 0.5 miles. This segment is a 35 MPH speed zone both directions.

Field Data:

Posted Speed Limit	35 MPH
85th Percentile Speed	44 MPH
Pace	35-45 MPH
% in the pace	73%
50th Percentile speed	39 MPH (mean)

Mitigating Factors:
None.

Objective Analysis: The following is objective analysis using predetermined formulae and field data to aid in determination of speed limits. This information is used by the engineer as a factor when determining appropriate speed limits; however, it is not the only information considered. Determination of speed limits is practice of engineering, requires consideration of many variables and mitigating factors, and is subject to the discretion of the Traffic Engineer. *The use of the Refined Study Analysis data is used as a guide only in determining roadside characteristics relative to speed.*

Analysis Method	Theoretical Limit
85th Percentile Speed[1]	44 MPH
Minimum Study Analysis[2]	43 MPH
US Limits 2[3]	40 MPH

CRASH DATA:

A 3-year crash rate (08/2012-08/2015) was computed for the study area and indicated the following:

Segment:	
Total Crashes	6
Fatal Crashes	0
Crashes Per MVMT[4]	0.50

Comparison rates for Rural Principal Arterial – Other roads in the state are 0.48 per million vehicle miles traveled. Attached you will find the Crash Rates for your review.

The information in this report is based on the application of data collected to standard evaluation criteria. Final recommendations by the Chief Traffic Engineer must consider conditions unique to the area, which may include other criteria in addition to the standard evaluation criteria.

Should you require clarification, additional information, or would like to review either the raw data or analysis of the data, please contact Mark Wooster at (775) 888-7156 or Lisa Wood at (775) 888-7382.

RDT:lw

Attachments: Crash Rates
Map

cc: Hoang Hong, Principal Operations Engineer
Ismael Garza, Assistant Chief Traffic Operations Engineer

1. ITE Speed Zoning Guidelines, Published by ITE, ITE Committee 4M-25, date unknown
2. Speed Zone Methodology, Traffic Institute, Northwestern University, date unknown
3. USLimits2 Expert System for Recommending Speed Limits in Speed Zones, USDOT FHWA, March 2012
4. MVMT = Million Vehicle Miles Travelled

CRASH RATES

US50
PRINCIPAL ARTERIAL RURAL

SEGMENT	NUMBER OF YEARS	AADT	SEGMENT LENGTH (MILES)	PDO CRASHES	PDO RATE	INJURY CRASHES	INJURY RATE	FATAL CRASHES	FATAL RATE	TOTAL CRASHES	TOTAL RATES	TOTAL INJURIES	TOTAL INJURY RATE	TOTAL FATALITIES	TOTAL FATALITY RATE
1	3	22100	0.50	2	0.17	4	0.33	0	0.00	6	0.50	6	0.50	0	0.0000

CRASH RATES PER MILLION VEHICLE MILES

COMPARISON RATES - 2013

	PDO CRASHES	PDO RATE	INJURY CRASHES	INJURY RATE	FATAL CRASHES	FATAL RATE	TOTAL CRASHES	TOTAL RATES	TOTAL INJURIES	TOTAL INJURY RATE	TOTAL FATALITIES	TOTAL FATALITY RATE
PRINCIPAL ARTERIAL RURAL	459	0.31	236	0.16	8	0.01	703	0.48	340	0.23	11	0.007512

US-50 Stateline, Douglas County

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

MEMORANDUM

11/17/2016

TO: **Denise Inda, Chief Traffic Operations Engineer**

FROM: **Mark Wooster, Traffic Information Division Assistant Chief** MSW

SUBJECT: **Speed After Study US-50 Stateline, Douglas County**

In response to a request from your office, a Speed After Study was conducted on the subject roadway. Analysis of the speed data for the segment produced the following results:

1. Segment

Site Data: This study area is a 4 lane *Rural Principal Arterial – Other* roadway that begins at Kahle Dr. (MP DO-0.9) and continues east to the end of the 35 MPH zone (MP DO-1.4) for a segment length of 0.5 miles. This segment is a 35 MPH speed zone both directions.

Field Data:

Posted Speed Limit	35 MPH
85th Percentile Speed	41 MPH
Pace	30-40 MPH
% in the pace	75%
50th Percentile speed	37 MPH (mean)

Mitigating Factors:
None.

Objective Analysis: The following is objective analysis using predetermined formulae and field data to aid in determination of speed limits. This information is used by the engineer as a factor when determining appropriate speed limits; however, it is not the only information considered. Determination of speed limits is practice of engineering, requires consideration of many variables and mitigating factors, and is subject to the discretion of the Traffic Engineer. *The use of the Refined Study Analysis data is used as a guide only in determining roadside characteristics relative to speed.*

Analysis Method	**Theoretical Limit**
85th Percentile Speed[1]	41 MPH
Minimum Study Analysis[2]	40 MPH
US Limits 2[3]	40 MPH

CRASH DATA:

A 3-year crash rate (08/2012-08/2015) was computed for the study area and indicated the following:

Segment:	
Total Crashes	6
Fatal Crashes	0
Crashes Per MVMT[4]	0.50

Comparison rates for Rural Principal Arterial – Other roads in the state are 0.48 per million vehicle miles traveled. Attached you will find the Crash Rates for your review.

The information in this report is based on the application of data collected to standard evaluation criteria. Final recommendations by the Chief Traffic Engineer must consider conditions unique to the area, which may include other criteria in addition to the standard evaluation criteria.

Should you require clarification, additional information, or would like to review either the raw data or analysis of the data, please contact Mark Wooster at (775) 888-7156 or Lisa Wood at (775) 888-7382.

MJW:lw

Attachments: Crash Rates
Map

cc: Rodney Schilling, Assistant Chief Traffic Operations Engineer
Hoang Hong, Principal Operations Engineer

1. ITE Speed Zoning Guidelines, Published by ITE, ITE Committee 4M-25, date unknown
2. Speed Zone Methodology, Traffic Institute, Northwestern University, date unknown
3. USLimits2 Expert System for Recommending Speed Limits in Speed Zones, USDOT FHWA, March 2012
4. MVMT = Million Vehicle Miles Travelled

CRASH RATES

US50

PRINCIPAL ARTERIAL RURAL

SEGMENT	NUMBER OF YEARS	AADT	SEGMENT LENGTH (MILES)	PDO CRASHES	PDO RATE	INJURY CRASHES	INJURY RATE	FATAL CRASHES	FATAL RATE	TOTAL CRASHES	TOTAL RATES	TOTAL INJURIES	TOTAL INJURY RATE	TOTAL FATALITIES	TOTAL FATALITY RATE
1	3	22100	0.50	2	0.17	4	0.33	0	0.00	6	0.50	6	0.50	0	0.0000

***CRASH RATES PER MILLION VEHICLE MILES**

COMPARISON RATES - 2013

	PDO CRASHES	PDO RATE	INJURY CRASHES	INJURY RATE	FATAL CRASHES	FATAL RATE	TOTAL CRASHES	TOTAL RATES	TOTAL INJURIES	TOTAL INJURY RATE	TOTAL FATALITIES	TOTAL FATALITY RATE
PRINCIPAL ARTERIAL RURAL	459	0.31	236	0.16	8	0.01	703	0.48	340	0.23	11	0.007512

US-50 Stateline, Douglas County

Speed Study US-50 Stateline, Douglas County

Before & After Comparison

Segment	Before	After
Posted Speed Limit	35 MPH	35 MPH
85th Percentile Speed	44 MPH	41 MPH
Pace	35-45 MPH	30-40 MPH
% in the pace	73%	75%
50th Percentile speed	39 MPH	37 MPH

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

MEMORANDUM

12/27/2017

TO: **Denise Inda, Chief Traffic Operations Engineer**

FROM: **Mark Wooster, Traffic Information Division Assistant Chief**

SUBJECT: **Speed After Study US-50 Stateline, Douglas County**

In response to a request from your office, a Speed After Study was conducted on the subject roadway. Analysis of the speed data for the segment produced the following results:

1. Segment

Site Data: This study area is a 4 lane *Urban Principal Arterial – Other* roadway that begins at Kahle Dr. (MP DO-0.9) and continues east to the end of the 35 MPH zone (MP DO-1.4) for a segment length of 0.5 miles. This segment is a 35 MPH speed zone both directions.

Field Data:

Posted Speed Limit	35 MPH
85th Percentile Speed	42 MPH
Pace	30-40 MPH
% in the pace	73%
50th Percentile speed	37 MPH (mean)

Mitigating Factors:
None.

Objective Analysis: The following is objective analysis using predetermined formulae and field data to aid in determination of speed limits. This information is used by the engineer as a factor when determining appropriate speed limits; however, it is not the only information considered. Determination of speed limits is practice of engineering, requires consideration of many variables and mitigating factors, and is subject to the discretion of the Traffic Engineer. *The use of the Refined Study Analysis data is used as a guide only in determining roadside characteristics relative to speed.*

Analysis Method	Theoretical Limit
85th Percentile Speed[1]	42 MPH
Minimum Study Analysis[2]	40 MPH
US Limits 2[3]	40 MPH

CRASH DATA:

A 3-year crash rate (06/2014-06/2017) was computed for the study area and indicated the following:

Segment:	
Total Crashes	14
Fatal Crashes	0
Crashes Per MVMT[4]	1.11

Comparison rates for Urban Principal Arterial – Other roads in the state are 3.11 per million vehicle miles traveled. Attached you will find the Crash Rates for your review.

The information in this report is based on the application of data collected to standard evaluation criteria. Final recommendations by the Chief Traffic Engineer must consider conditions unique to the area, which may include other criteria in addition to the standard evaluation criteria.

Should you require clarification, additional information, or would like to review either the raw data or analysis of the data, please contact Mark Wooster at (775) 888-7156 or Lisa Wood at (775) 888-7382.

MJW:cdw:lw

Attachments: Crash Rates
Map
Before & After Comparison

cc: Rodney Schilling, Assistant Chief Traffic Operations Engineer
Hoang Hong, Principal Operations Engineer

1. ITE Speed Zoning Guidelines, Published by ITE, ITE Committee 4M-25, date unknown
2. Speed Zone Methodology, Traffic Institute, Northwestern University, date unknown
3. USLimits2 Expert System for Recommending Speed Limits in Speed Zones, USDOT FHWA, March 2012
4. MVMT = Million Vehicle Miles Travelled

CRASH RATES

US50

URBAN PRINCIPAL ARTERIAL - OTHER

SEGMENT	NUMBER OF YEARS	AADT	SEGMENT LENGTH (MILES)	PDO CRASHES	PDO RATE	INJURY CRASHES	INJURY RATE	FATAL CRASHES	FATAL RATE	TOTAL CRASHES	TOTAL RATES	TOTAL INJURIES	TOTAL INJURY RATE	TOTAL FATALITIES	TOTAL FATALITY RATE
1	3	23,000	0.50	10	0.79	4	0.32	0	0.00	14	1.11	5	0.40	0	0.0000

COMPARISON RATES - 2016

URBAN PRINCIPAL ARTERIAL - OTHER	PDO CRASHES	PDO RATE	INJURY CRASHES	INJURY RATE	FATAL CRASHES	FATAL RATE	TOTAL CRASHES	TOTAL RATES	TOTAL INJURIES	TOTAL INJURY RATE	TOTAL FATALITIES	TOTAL FATALITY RATE
	5,498	1.63	4,943	1.47	53	0.02	10,494	3.11	7,874	2.34	58	0.0170

CRASH RATES PER MILLION VEHICLE MILES

US-50 Stateline, Douglas County

Speed Study US-50 Stateline, Douglas County

Before & After Comparison

Field Data	Before	*After	*After
Date	**Mar-16**	**Nov-16**	**Dec-17**
Posted Speed Limit	35 MPH	35 MPH	35 MPH
85th Percentile Speed	44 MPH	41 MPH	42 MPH
Pace	35-45 MPH	30-40 MPH	30-40 MPH
% in the pace	73%	75%	73%
50th Percentile speed	39 MPH	37 MPH	37 MPH

* This is after instaliing Variable Speed Limit Signs on June 20, 2016.

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

MEMORANDUM

8/31/2018

TO: **Denise Inda, Chief Traffic Operations Engineer**

FROM: **Mark Wooster, Traffic Information Division Assistant Chief**

SUBJECT: **Speed After Study US-50 Stateline, Douglas County**

In response to a request from your office, a Speed After Study was conducted on the subject roadway. Analysis of the speed data for the segment produced the following results:

1. Segment

Site Data: This study area is a 4 lane *Urban Principal Arterial – Other* roadway that begins at Kahle Dr. (MP DO-0.9) and continues east to the end of the 35 MPH zone (MP DO-1.4) for a segment length of 0.5 miles. This segment is a 35 MPH speed zone both directions.

Field Data:

Posted Speed Limit	35 MPH
85th Percentile Speed	48 MPH
Pace	38-47 MPH
% in the pace	68%
50th Percentile speed	43 MPH (mean)

Mitigating Factors:
None.

Objective Analysis: The following is objective analysis using predetermined formulae and field data to aid in determination of speed limits. This information is used by the engineer as a factor when determining appropriate speed limits; however, it is not the only information considered. Determination of speed limits is practice of engineering, requires consideration of many variables and mitigating factors, and is subject to the discretion of the Traffic Engineer. *The use of the Refined Study Analysis data is used as a guide only in determining roadside characteristics relative to speed.*

Analysis Method	Theoretical Limit
85th Percentile Speed[1]	48 MPH
Minimum Study Analysis[2]	46 MPH
US Limits 2[3]	50 MPH

CRASH DATA:

A 3-year crash rate (01/2015-01/2018) was computed for the study area and indicated the following:

Segment:

Total Crashes	14
Fatal Crashes	0
Crashes Per MVMT[4]	1.25

Comparison rates for Urban Principal Arterial – Other roads in the state are 3.11 per million vehicle miles traveled. Attached you will find the Crash Rates for your review.

The information in this report is based on the application of data collected to standard evaluation criteria. Final recommendations by the Chief Traffic Engineer must consider conditions unique to the area, which may include other criteria in addition to the standard evaluation criteria.

Should you require clarification, additional information, or would like to review either the raw data or analysis of the data, please contact Mark Wooster at (775) 888-7156 or Lisa Wood at (775) 888-7382.

MJW:cdw:lw

Attachments: Crash Rates
Map
Before & After Comparison

cc: Rodney Schilling, Assistant Chief Traffic Operations Engineer
Hoang Hong, Principal Operations Engineer

1. ITE Speed Zoning Guidelines, Published by ITE, ITE Committee 4M-25, date unknown
2. Speed Zone Methodology, Traffic Institute, Northwestern University, date unknown
3. USLimits2 Expert System for Recommending Speed Limits in Speed Zones, USDOT FHWA, March 2012
4. MVMT = Million Vehicle Miles Travelled

CRASH RATES

US50 SEG. MM 0.87 - 1.37
Urban Principal Arterial - Other

SEGMENT	NUMBER OF YEARS	AADT	SEGMENT LENGTH (MILES)	PDO CRASHES	PDO RATE	INJURY CRASHES	INJURY RATE	FATAL CRASHES	FATAL RATE	TOTAL CRASHES	TOTAL RATES	TOTAL INJURIES	TOTAL INJURY RATE	TOTAL FATALITIES	TOTAL FATALITY RATE
1	3	20,400	0.50	11	0.98	3	0.27	0	0.00	14	1.25	3	0.27	0	0.0000

COMPARISON RATES - 2016

	PDO CRASHES	PDO RATE	INJURY CRASHES	INJURY RATE	FATAL CRASHES	FATAL RATE	TOTAL CRASHES	TOTAL RATES	TOTAL INJURIES	TOTAL INJURY RATE	TOTAL FATALITIES	TOTAL FATALITY RATE
Urban Principal Arterial - Other	5,498	1.63	4,943	1.47	53	0.02	10,494	3.11	7,874	2.34	58	0.0170

CRASH RATES PER MILLION VEHICLE MILES

US-50 Stateline, Douglas County

Speed Study US-50 Stateline, Douglas County

Before & After Comparison

Field Data	Before	*After	*After	*After
Date	**Mar-16**	**Nov-16**	**Dec-17**	**Aug-18**
Posted Speed Limit	35 MPH	35 MPH	35 MPH	35 MPH
85th Percentile Speed	44 MPH	41 MPH	42 MPH	48 MPH
Pace	35-45 MPH	30-40 MPH	30-40 MPH	38-47 MPH
% in the pace	73%	75%	73%	68%
50th Percentile speed	39 MPH	37 MPH	37 MPH	43 MPH

* This is after installing Variable Speed Limit Signs on June 20, 2016.

APPENDIX F – US 50 CORRIDOR CRASH CHARACTERISTICS

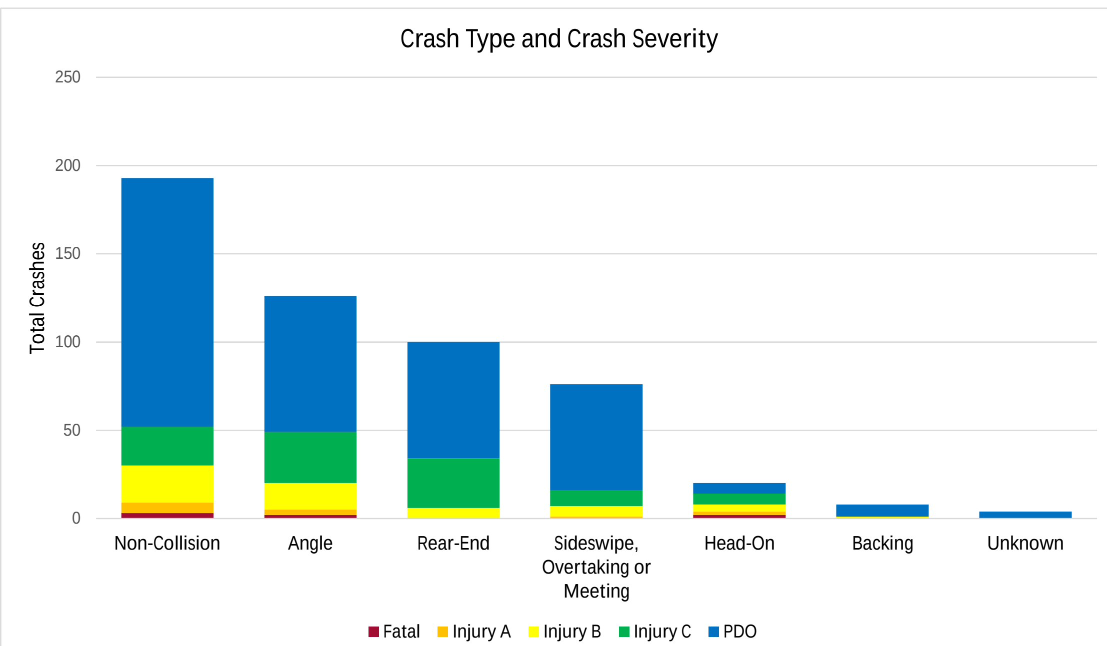
Appendix F contains a detailed breakdown of the US 50 corridor crashes by:

- Crash Type
- Vehicle Factors
- Driver Factors
- Most Harmful Event
- Driver Age
- Weather Conditions
- Lighting Conditions
- Day of Week
- Time of Day
- Month of Year

Corridor Crash Analysis
January 01, 2015 to December 31, 2019
US 50: State Line to MP 12.36

Overall Crash Data			Pedestrian		Pedal Cycle		Motorcycle		Bus	
Fatal	7	1.3%	0	0.0%	0	0.0%	1	12.5%	0	0.0%
Injury A	12	2.3%	4	28.6%	0	0.0%	2	25.0%	0	0.0%
Injury B	53	10.1%	5	35.7%	1	16.7%	4	50.0%	0	0.0%
Injury C	94	17.8%	2	14.3%	4	66.7%	1	12.5%	0	0.0%
Property Damage Only (PDO)	361	68.5%	3	21.4%	1	7.1%	0	0.0%	0	0.0%
Total	527	100%	14	100% (2.7%)	6	100% (1.1%)	8	100% (1.5%)	0	0% (0%)

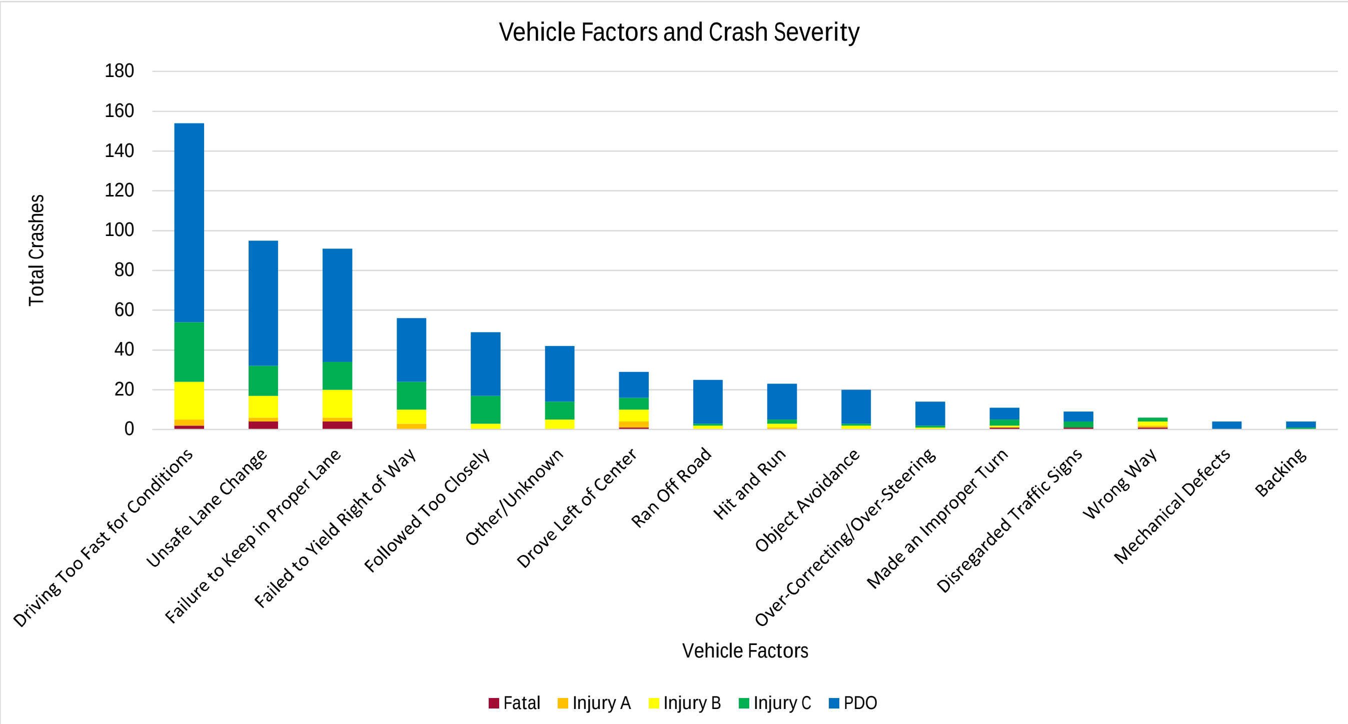
Crash Type	Fatal and Injury					*PDO*	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
Non-Collision	3	6	21	22	52	141	193
	1.6%	3.1%	10.9%	11.4%	26.9%	73.1%	36.6%
Angle	2	3	15	29	49	77	126
	1.6%	2.4%	11.9%	23.0%	38.9%	61.1%	23.9%
Rear-End	0	0	6	28	34	66	100
	0.0%	0.0%	6.0%	28.0%	34.0%	66.0%	19.0%
Sideswipe, Overtaking or Meeting	0	1	6	9	16	60	76
	0.0%	1.3%	7.9%	11.8%	21.1%	78.9%	14.4%
Head-On	2	2	4	6	14	6	20
	10.0%	10.0%	20.0%	30.0%	70.0%	30.0%	3.8%
Backing	0	0	1	0	1	7	8
	0.0%	0.0%	12.5%	0.0%	12.5%	87.5%	1.5%
Unknown	0	0	0	0	0	4	4
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.8%
Total Crashes	7	12	53	94	166	361	527



Corridor Crash Analysis
January 01, 2015 to December 31, 2019
US 50: State Line to MP 12.36

Vehicle Factors*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Driving Too Fast for Conditions	2	3	19	30	54	100	154
	1.3%	1.9%	12.3%	19.5%	35.1%	64.9%	29.2%
Unsafe Lane Change	4	2	11	15	32	63	95
	4.2%	2.1%	11.6%	15.8%	33.7%	66.3%	18.0%
Failure to Keep in Proper Lane	4	2	14	14	34	57	91
	4.4%	2.2%	15.4%	15.4%	37.4%	62.6%	17.3%
Failed to Yield Right of Way	0	3	7	14	24	32	56
	0.0%	5.4%	12.5%	25.0%	42.9%	57.1%	10.6%
Followed Too Closely	0	0	3	14	17	32	49
	0.0%	0.0%	6.1%	28.6%	34.7%	65.3%	9.3%
Other/Unknown	0	0	5	9	14	28	42
	0.0%	0.0%	11.9%	21.4%	33.3%	66.7%	8.0%
Drove Left of Center	1	3	6	6	16	13	29
	3.4%	10.3%	20.7%	20.7%	55.2%	44.8%	5.5%
Ran Off Road	0	0	2	1	3	22	25
	0.0%	0.0%	8.0%	4.0%	12.0%	88.0%	4.7%
Hit and Run	0	1	2	2	5	18	23
	0.0%	4.3%	8.7%	8.7%	21.7%	78.3%	4.4%
Object Avoidance	0	0	2	1	3	17	20
	0.0%	0.0%	10.0%	5.0%	15.0%	85.0%	3.8%
Over-Correcting/Over-Steering	0	0	1	1	2	12	14
	0.0%	0.0%	7.1%	7.1%	14.3%	85.7%	2.7%
Made an Improper Turn	1	0	1	3	5	6	11
	9.1%	0.0%	9.1%	27.3%	45.5%	54.5%	2.1%
Disregarded Traffic Signs	1	0	0	3	4	5	9
	11.1%	0.0%	0.0%	33.3%	44.4%	55.6%	1.7%
Wrong Way	1	1	2	2	6	0	6
	16.7%	16.7%	33.3%	33.3%	100.0%	0.0%	1.1%
Mechanical Defects	0	0	0	0	0	4	4
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.8%
Backing	0	0	0	1	1	3	4
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	0.8%
Unsafe Lane Change/Backing	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Reckless Driving	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Exceeded Speed Limit	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	14	15	75	116	220	412	632
Total Crashes	7	12	53	94	166	361	527

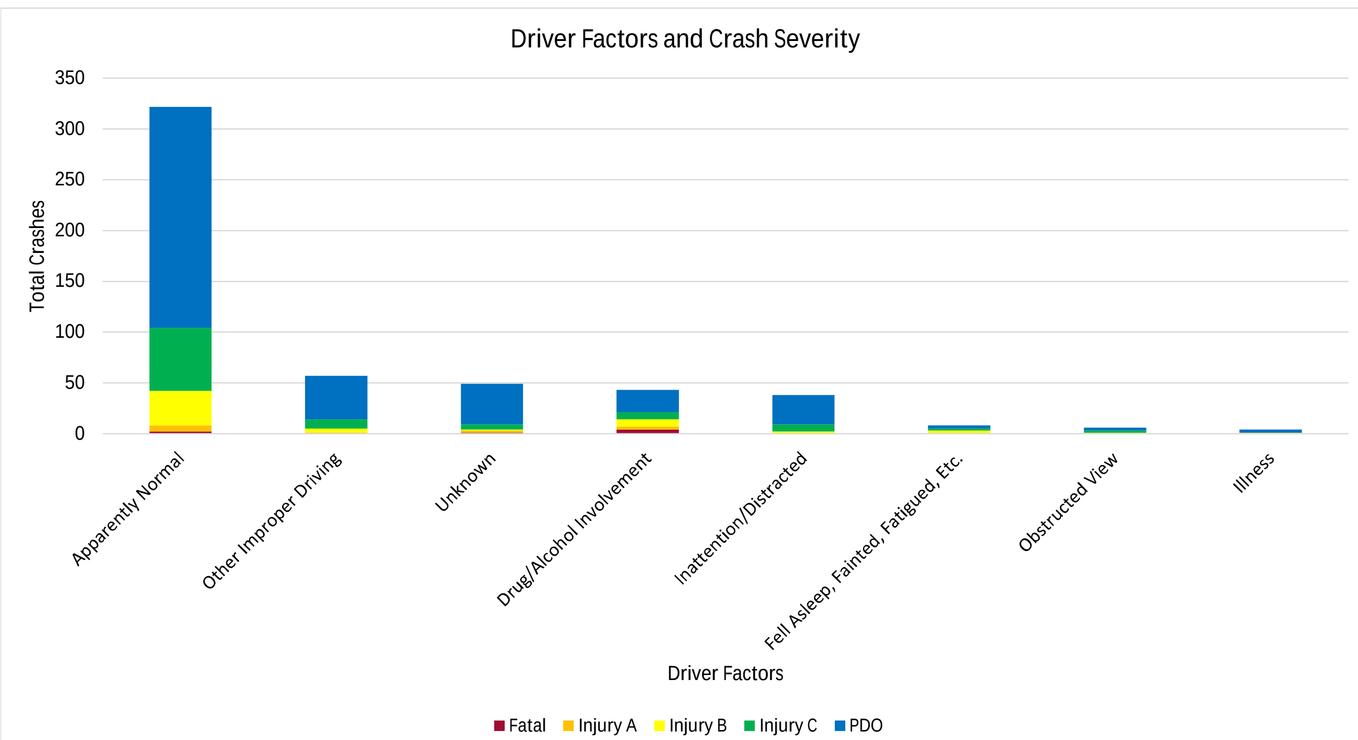
*Note: Vehicle factors are based on Vehicle 1 (V1) inputs. Blank entries are included in the Other/Unknown factor.


Vehicle Factors and Crash Severity
Total Crashes
180
160
140
120
100
80
60
40
20
0
Driving Too Fast for Conditions
Unsafe Lane Change
Failure to Keep in Proper Lane
Failed to Yield Right of Way
Followed Too Closely
Other/Unknown
Drove Left of Center
Ran Off Road
Hit and Run
Object Avoidance
Over-Correcting/Over-Steering
Made an Improper Turn
Disregarded Traffic Signs
Wrong Way
Mechanical Defects
Backing
Vehicle Factors
Fatal
Injury A
Injury B
Injury C
PDO

Corridor Crash Analysis
January 01, 2015 to December 31, 2019
US 50: State Line to MP 12.36

Driver Factors*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Apparently Normal	2	6	34	62	104	218	322
	0.6%	1.9%	10.6%	19.3%	32.3%	67.7%	61.1%
Other Improper Driving	0	1	4	9	14	43	57
	0.0%	1.8%	7.0%	15.8%	24.6%	75.4%	10.8%
Unknown	1	2	1	5	9	40	49
	2.0%	4.1%	2.0%	10.2%	18.4%	81.6%	9.3%
Drug/Alcohol Involvement	4	3	7	7	21	22	43
	9.3%	7.0%	16.3%	16.3%	48.8%	51.2%	8.2%
Inattention/Distracted	0	0	2	7	9	29	38
	0.0%	0.0%	5.3%	18.4%	23.7%	76.3%	7.2%
Fell Asleep, Fainted, Fatigued, Etc.	0	0	3	2	5	3	8
	0.0%	0.0%	37.5%	25.0%	62.5%	37.5%	1.5%
Obstructed View	0	0	1	2	3	3	6
	0.0%	0.0%	16.7%	33.3%	50.0%	50.0%	1.1%
Illness	0	0	1	0	1	3	4
	0.0%	0.0%	25.0%	0.0%	25.0%	75.0%	0.8%
Total Instances	7	12	53	94	166	361	527
Total Crashes	7	12	53	94	166	361	527

*Note: Driver factors are based on Vehicle 1 (V1) inputs. Blank entries are included in the Other/Unknown factor.

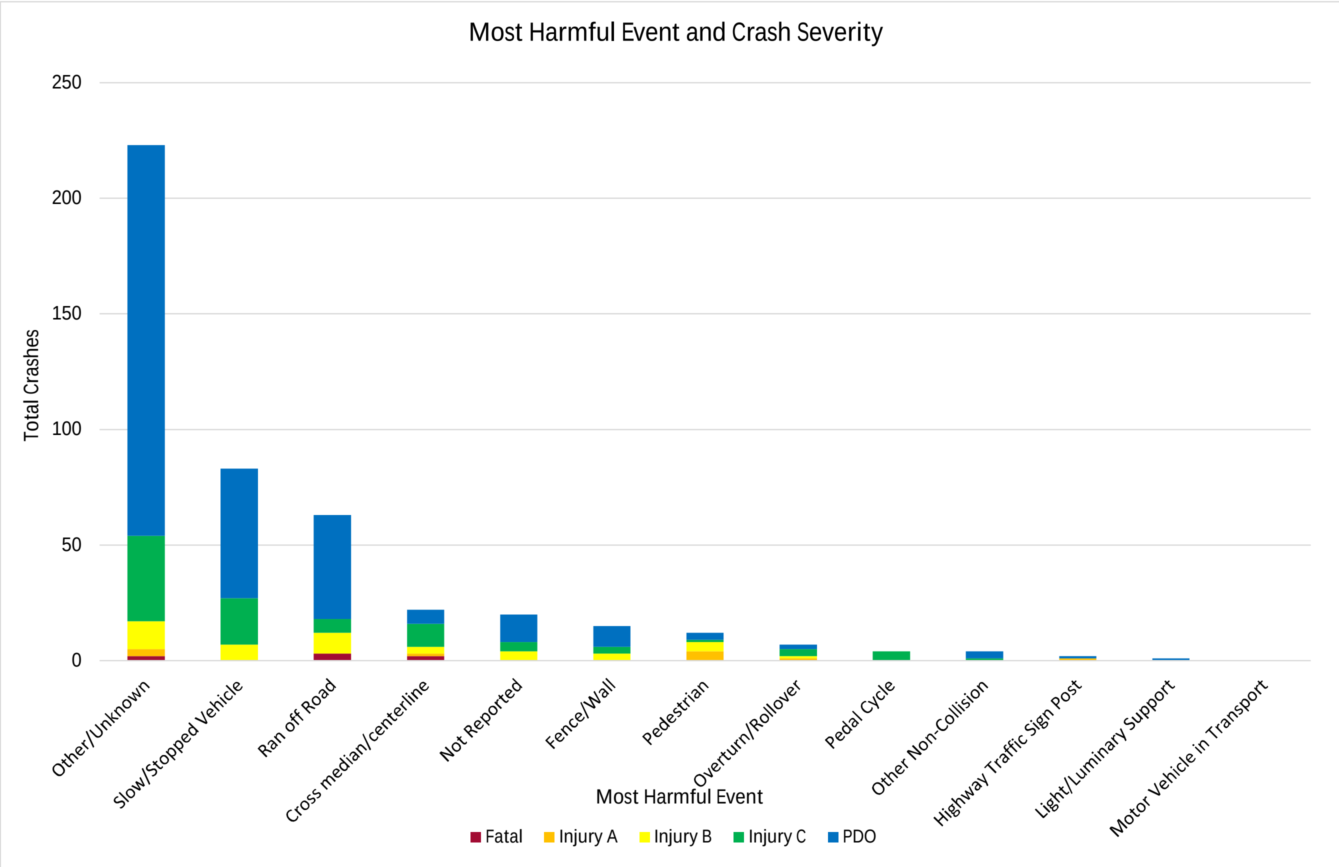


Corridor Crash Analysis
January 01, 2015 to December 31, 2019
US 50: State Line to MP 12.36

Most Harmful Event*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Other/Unknown	2	3	12	37	54	169	223
	0.9%	1.3%	5.4%	16.6%	24.2%	75.8%	42.3%
Slow/Stopped Vehicle	0	0	7	20	27	56	83
	0.0%	0.0%	8.4%	24.1%	32.5%	67.5%	15.7%
Ran off Road	3	0	9	6	18	45	63
	4.8%	0.0%	14.3%	9.5%	28.6%	71.4%	12.0%
Cross median/centerline	2	1	3	10	16	6	22
	9.1%	4.5%	13.6%	45.5%	72.7%	27.3%	4.2%
Not Reported	0	0	4	4	8	12	20
	0.0%	0.0%	20.0%	20.0%	40.0%	60.0%	3.8%
Fence/Wall	0	0	3	3	6	9	15
	0.0%	0.0%	20.0%	20.0%	40.0%	60.0%	2.8%
Pedestrian	0	4	4	1	9	3	12
	0.0%	33.3%	33.3%	8.3%	75.0%	25.0%	2.3%
Overturn/Rollover	0	1	1	3	5	2	7
	0.0%	14.3%	14.3%	42.9%	71.4%	28.6%	1.3%
Pedal Cycle	0	0	0	4	4	0	4
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.8%
Other Non-Collision	0	0	0	1	1	3	4
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	0.8%
Highway Traffic Sign Post	0	1	0	0	1	1	2
	0.0%	50.0%	0.0%	0.0%	50.0%	50.0%	0.4%
Light/Luminary Support	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.2%
Motor Vehicle in Transport	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fixed Object	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	7	12	53	94	166	361	527

*Note: Most harmful event is based on Vehicle 1 (V1) input. Blank entries in most harmful event defer to the first listing in Vehicle 1 (V1) all events. Blank entries in both most harmful event and all events are included in the Other/Unknown category. Since there were no entries for the most harmful event the first event in all events was used.

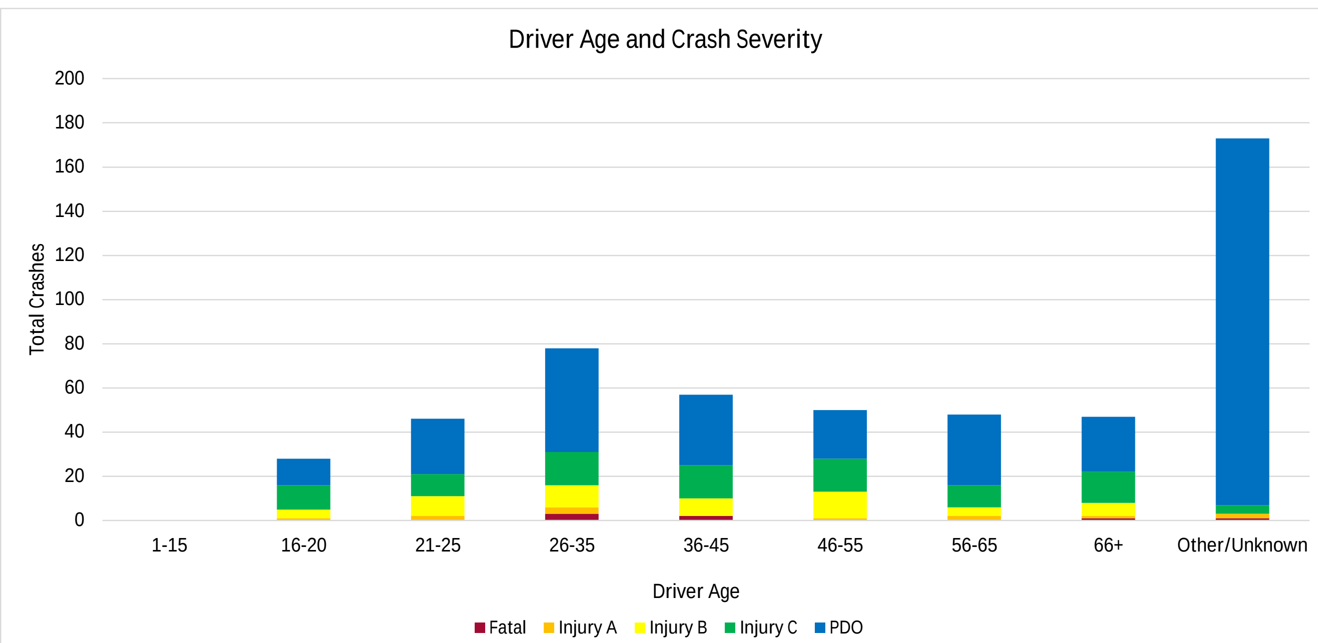
Corridor Crash Analysis
January 01, 2015 to December 31, 2019
US 50: State Line to MP 12.36



Corridor Crash Analysis
January 01, 2015 to December 31, 2019
US 50: State Line to MP 12.36

Driver Age*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
1-15	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
16-20	0	1	4	11	16	12	28
	0.0%	3.6%	14.3%	39.3%	57.1%	42.9%	5.3%
21-25	0	2	9	10	21	25	46
	0.0%	4.3%	19.6%	21.7%	45.7%	54.3%	8.7%
26-35	3	3	10	15	31	47	78
	3.8%	3.8%	12.8%	19.2%	39.7%	60.3%	14.8%
36-45	2	0	8	15	25	32	57
	3.5%	0.0%	14.0%	26.3%	43.9%	56.1%	10.8%
46-55	0	1	12	15	28	22	50
	0.0%	2.0%	24.0%	30.0%	56.0%	44.0%	9.5%
56-65	0	2	4	10	16	32	48
	0.0%	4.2%	8.3%	20.8%	33.3%	66.7%	9.1%
66+	1	1	6	14	22	25	47
	2.1%	2.1%	12.8%	29.8%	46.8%	53.2%	8.9%
Other/Unknown	1	2	0	4	7	166	173
	0.6%	1.2%	0.0%	2.3%	4.0%	96.0%	32.8%
Total Crashes	7	12	53	94	166	361	527

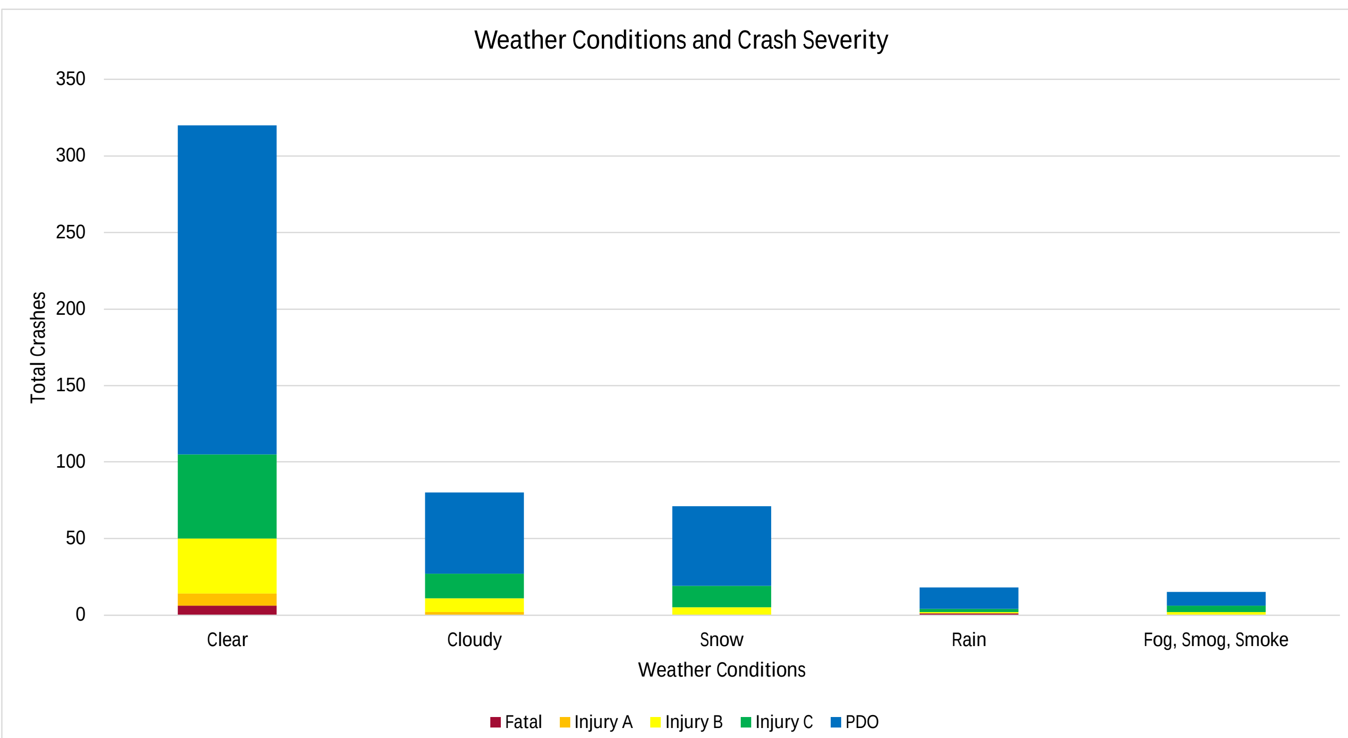
*Note: Driver age is based on Vehicle 1 (V1) input. Blank entries are included in the Other/Unknown category.



Kimley»Horn

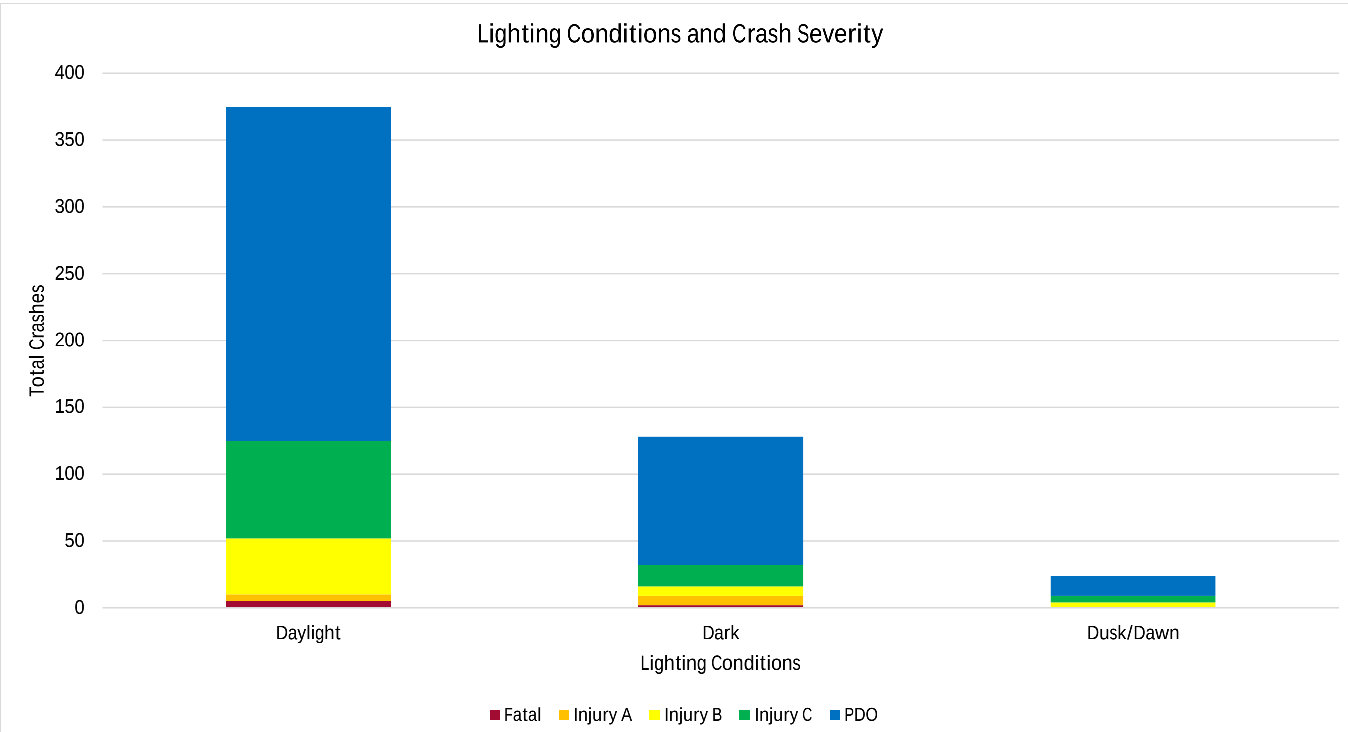
Corridor Crash Analysis
January 01, 2015 to December 31, 2019
US 50: State Line to MP 12.36

Weather Conditions							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Clear	6	8	36	55	105	215	320
	1.9%	2.5%	11.3%	17.2%	32.8%	67.2%	60.7%
Cloudy	0	2	9	16	27	53	80
	0.0%	2.5%	11.3%	20.0%	33.8%	66.3%	15.2%
Snow	0	0	5	14	19	52	71
	0.0%	0.0%	7.0%	19.7%	26.8%	73.2%	13.5%
Rain	1	0	1	2	4	14	18
	5.6%	0.0%	5.6%	11.1%	22.2%	77.8%	3.4%
Fog, Smog, Smoke	0	0	2	4	6	9	15
	0.0%	0.0%	13.3%	26.7%	40.0%	60.0%	2.8%
Blowing sand, soil, dirt, snow	0	0	0	1	1	11	12
	0.0%	0.0%	0.0%	8.3%	8.3%	91.7%	2.3%
Unknown	0	2	0	2	4	6	10
	0.0%	20.0%	0.0%	20.0%	40.0%	60.0%	1.9%
Severe Crosswinds	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.2%
Total Instances	7	10	53	92	143	361	527
Total Crashes	7	12	53	94	166	361	527



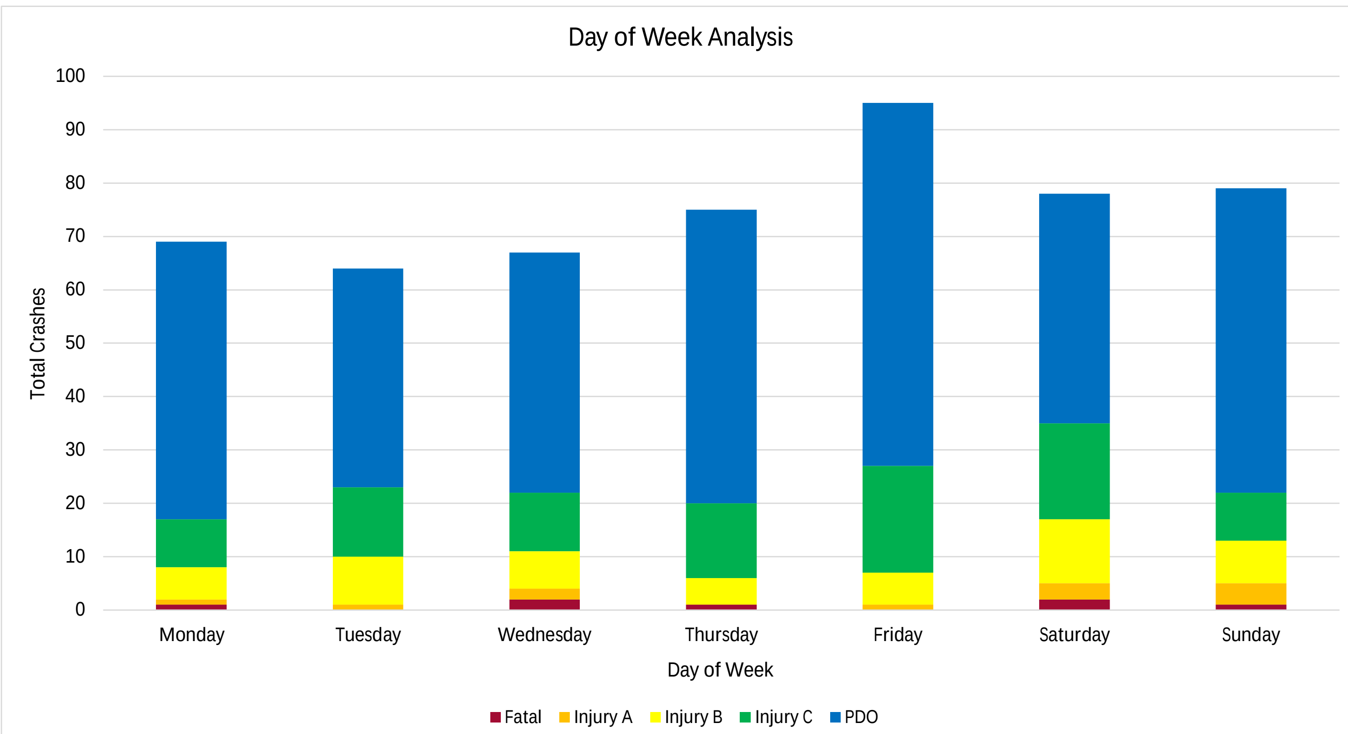
Corridor Crash Analysis
January 01, 2015 to December 31, 2019
US 50: State Line to MP 12.36

Lighting Conditions							
	Fatal and Injury					*PDO*	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
Daylight	5	5	42	73	125	250	375
	1.3%	1.3%	11.2%	19.5%	33.3%	66.7%	71.2%
Dark	2	7	7	16	32	96	128
	1.6%	5.5%	5.5%	12.5%	25.0%	75.0%	24.3%
Dusk/Dawn	0	0	4	5	9	15	24
	0.0%	0.0%	16.7%	20.8%	37.5%	62.5%	4.6%
Total Crashes	7	12	53	94	166	361	527



Corridor Crash Analysis
January 01, 2015 to December 31, 2019
US 50: State Line to MP 12.36

Day of Week							
	Fatal and Injury					PDO	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
Monday	1	1	6	9	17	52	69
	1.4%	1.4%	8.7%	13.0%	24.6%	75.4%	13.1%
Tuesday	2	2	9	13	26	41	64
	3.1%	3.1%	14.1%	20.3%	40.6%	64.1%	12.1%
Wednesday	0	1	7	11	19	45	67
	0.0%	1.5%	10.4%	16.4%	28.4%	67.2%	12.7%
Thursday	1	4	5	14	24	55	75
	1.3%	5.3%	6.7%	18.7%	32.0%	73.3%	14.2%
Friday	0	0	6	20	26	68	95
	0.0%	0.0%	6.3%	21.1%	27.4%	71.6%	18.0%
Saturday	0	0	12	18	30	43	78
	0.0%	0.0%	15.4%	23.1%	38.5%	55.1%	14.8%
Sunday	0	0	8	9	17	57	79
	0.0%	0.0%	10.1%	11.4%	21.5%	72.2%	15.0%
Total Crashes	4	8	53	94	159	361	527

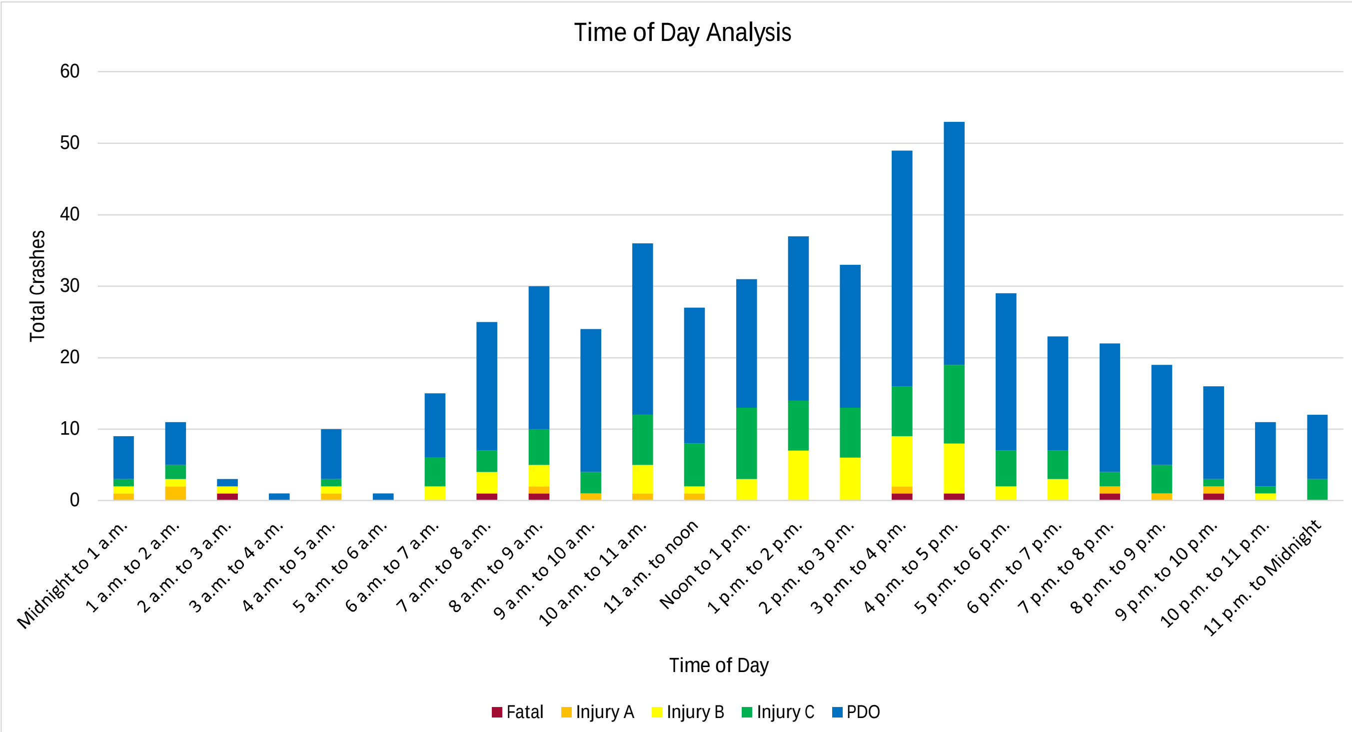


Kimley»Horn

Corridor Crash Analysis
January 01, 2015 to December 31, 2019
US 50: State Line to MP 12.36

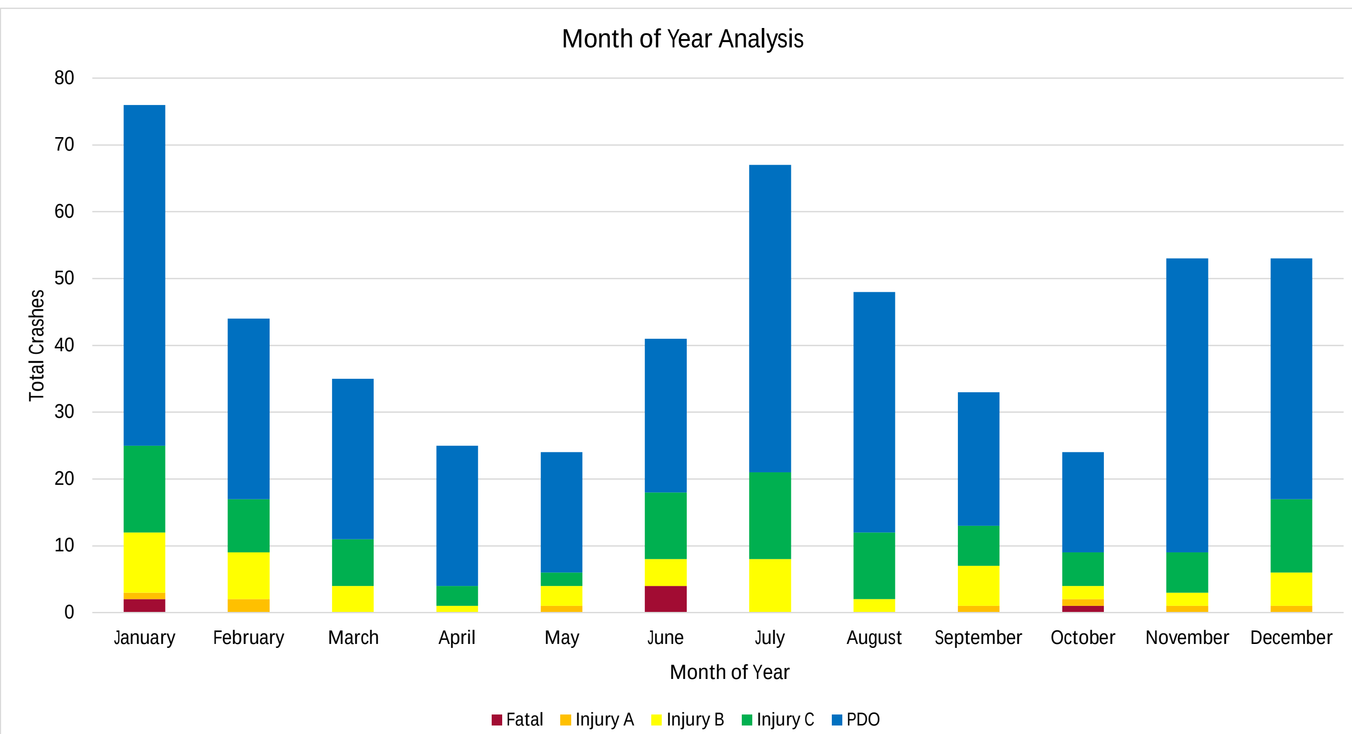
Time of Day							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Midnight to 1 a.m.	0	1	1	1	3	6	9
	0.0%	11.1%	11.1%	11.1%	33.3%	66.7%	1.7%
1 a.m. to 2 a.m.	0	2	1	2	5	6	11
	0.0%	18.2%	9.1%	18.2%	45.5%	54.5%	2.1%
2 a.m. to 3 a.m.	1	0	1	0	2	1	3
	33.3%	0.0%	33.3%	0.0%	66.7%	33.3%	0.6%
3 a.m. to 4 a.m.	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.2%
4 a.m. to 5 a.m.	0	1	1	1	3	7	10
	0.0%	10.0%	10.0%	10.0%	30.0%	70.0%	1.9%
5 a.m. to 6 a.m.	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.2%
6 a.m. to 7 a.m.	0	0	2	4	6	9	15
	0.0%	0.0%	13.3%	26.7%	40.0%	60.0%	2.8%
7 a.m. to 8 a.m.	1	0	3	3	7	18	25
	4.0%	0.0%	12.0%	12.0%	28.0%	72.0%	4.7%
8 a.m. to 9 a.m.	1	1	3	5	10	20	30
	3.3%	3.3%	10.0%	16.7%	33.3%	66.7%	5.7%
9 a.m. to 10 a.m.	0	1	0	3	4	20	24
	0.0%	4.2%	0.0%	12.5%	16.7%	83.3%	4.6%
10 a.m. to 11 a.m.	0	1	4	7	12	24	36
	0.0%	2.8%	11.1%	19.4%	33.3%	66.7%	6.8%
11 a.m. to noon	0	1	1	6	8	19	27
	0.0%	3.7%	3.7%	22.2%	29.6%	70.4%	5.1%
Noon to 1 p.m.	0	0	3	10	13	18	31
	0.0%	0.0%	9.7%	32.3%	41.9%	58.1%	5.9%
1 p.m. to 2 p.m.	0	0	7	7	14	23	37
	0.0%	0.0%	18.9%	18.9%	37.8%	62.2%	7.0%
2 p.m. to 3 p.m.	0	0	6	7	13	20	33
	0.0%	0.0%	18.2%	21.2%	39.4%	60.6%	6.3%
3 p.m. to 4 p.m.	1	1	7	7	16	33	49
	2.0%	2.0%	14.3%	14.3%	32.7%	67.3%	9.3%
4 p.m. to 5 p.m.	1	0	7	11	19	34	53
	1.9%	0.0%	13.2%	20.8%	35.8%	64.2%	10.1%
5 p.m. to 6 p.m.	0	0	2	5	7	22	29
	0.0%	0.0%	6.9%	17.2%	24.1%	75.9%	5.5%
6 p.m. to 7 p.m.	0	0	3	4	7	16	23
	0.0%	0.0%	13.0%	17.4%	30.4%	69.6%	4.4%
7 p.m. to 8 p.m.	1	1	0	2	4	18	22
	4.5%	4.5%	0.0%	9.1%	18.2%	81.8%	4.2%
8 p.m. to 9 p.m.	0	1	0	4	5	14	19
	0.0%	5.3%	0.0%	21.1%	26.3%	73.7%	3.6%
9 p.m. to 10 p.m.	1	1	0	1	3	13	16
	6.3%	6.3%	0.0%	6.3%	18.8%	81.3%	3.0%
10 p.m. to 11 p.m.	0	0	1	1	2	9	11
	0.0%	0.0%	9.1%	9.1%	18.2%	81.8%	2.1%
11 p.m. to Midnight	0	0	0	3	3	9	12
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	2.3%
Total Crashes	7	12	53	94	166	361	527

Corridor Crash Analysis
January 01, 2015 to December 31, 2019
US 50: State Line to MP 12.36



Corridor Crash Analysis
January 01, 2015 to December 31, 2019
US 50: State Line to MP 12.36

Month of Year							
	Fatal and Injury					PDO	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
January	2	1	9	13	25	51	76
	2.6%	1.3%	11.8%	17.1%	32.9%	67.1%	14.4%
February	0	1	7	8	16	27	43
	0.0%	2.3%	16.3%	18.6%	37.2%	62.8%	8.2%
March	0	0	4	7	11	24	35
	0.0%	0.0%	11.4%	20.0%	31.4%	68.6%	6.6%
April	0	0	1	3	4	21	25
	0.0%	0.0%	4.0%	12.0%	16.0%	84.0%	4.7%
May	0	1	3	2	6	18	24
	0.0%	4.2%	12.5%	8.3%	25.0%	75.0%	4.6%
June	4	1	4	10	19	23	42
	9.5%	2.4%	9.5%	23.8%	45.2%	54.8%	8.0%
July	0	1	8	13	22	46	68
	0.0%	1.5%	11.8%	19.1%	32.4%	67.6%	12.9%
August	0	1	2	10	13	36	49
	0.0%	2.0%	4.1%	20.4%	26.5%	73.5%	9.3%
September	0	1	6	6	13	20	33
	0.0%	3.0%	18.2%	18.2%	39.4%	60.6%	6.3%
October	1	3	2	5	11	15	26
	3.8%	11.5%	7.7%	19.2%	42.3%	57.7%	4.9%
November	0	2	2	6	10	44	54
	0.0%	3.7%	3.7%	11.1%	18.5%	81.5%	10.2%
December	0	0	5	11	16	36	52
	0.0%	0.0%	9.6%	21.2%	30.8%	69.2%	9.9%
Total Crashes	7	12	53	94	166	361	527



APPENDIX G – US 50 INTERSECTION CRASH CHARACTERISTICS

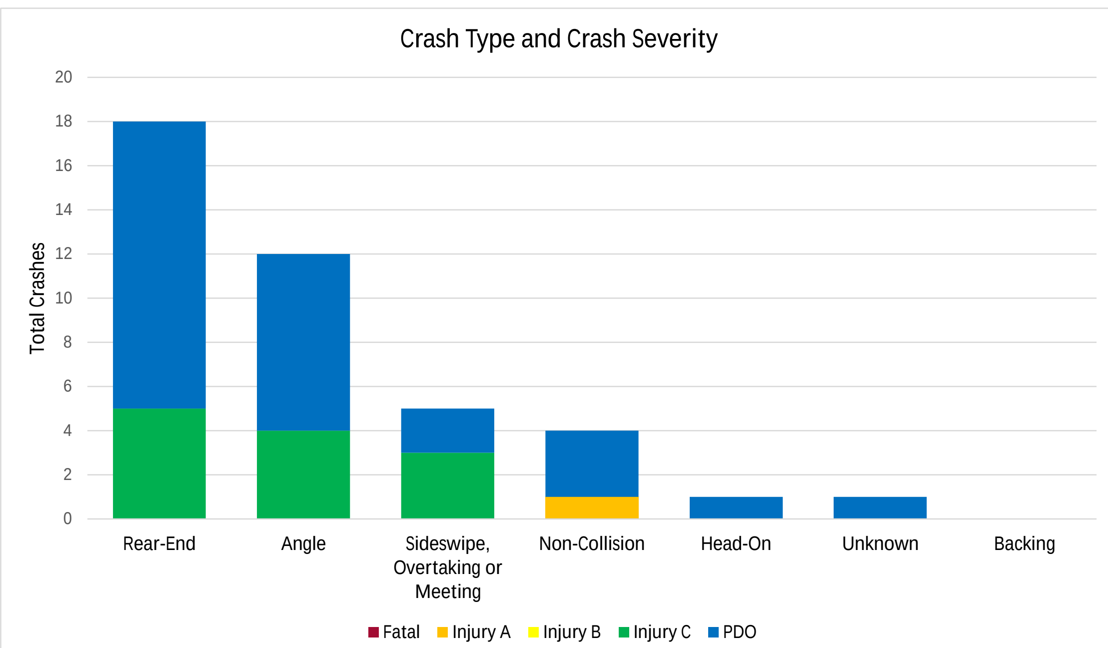
Appendix G contains a detailed breakdown of the six (6) analyzed intersections by:

- Crash Type
- Vehicle Factors
- Driver Factors
- Most Harmful Event
- Driver Age
- Weather Conditions
- Lighting Conditions
- Day of Week
- Time of Day
- Month of Year

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Lake Parkway

Overall Crash Data			Pedestrian		Pedal Cycle		Motorcycle		Bus	
Fatal	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury A	1	2.4%	1	100.0%	0	0.0%	0	0.0%	0	0.0%
Injury B	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury C	12	29.3%	0	0.0%	1	100.0%	1	100.0%	0	0.0%
Property Damage Only (PDO)	28	68.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	41	100%	1	100% (2.4%)	1	100% (2.4%)	1	100% (2.4%)	0	0% (0%)

Crash Type							
	Fatal and Injury					*PDO*	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
Rear-End	0	0	0	5	5	13	18
	0.0%	0.0%	0.0%	27.8%	27.8%	72.2%	43.9%
Angle	0	0	0	4	4	8	12
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	29.3%
Sideswipe, Overtaking or Meeting	0	0	0	3	3	2	5
	0.0%	0.0%	0.0%	60.0%	60.0%	40.0%	12.2%
Non-Collision	0	1	0	0	1	3	4
	0.0%	25.0%	0.0%	0.0%	25.0%	75.0%	9.8%
Head-On	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.4%
Unknown	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.4%
Backing	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	1	0	12	13	28	41



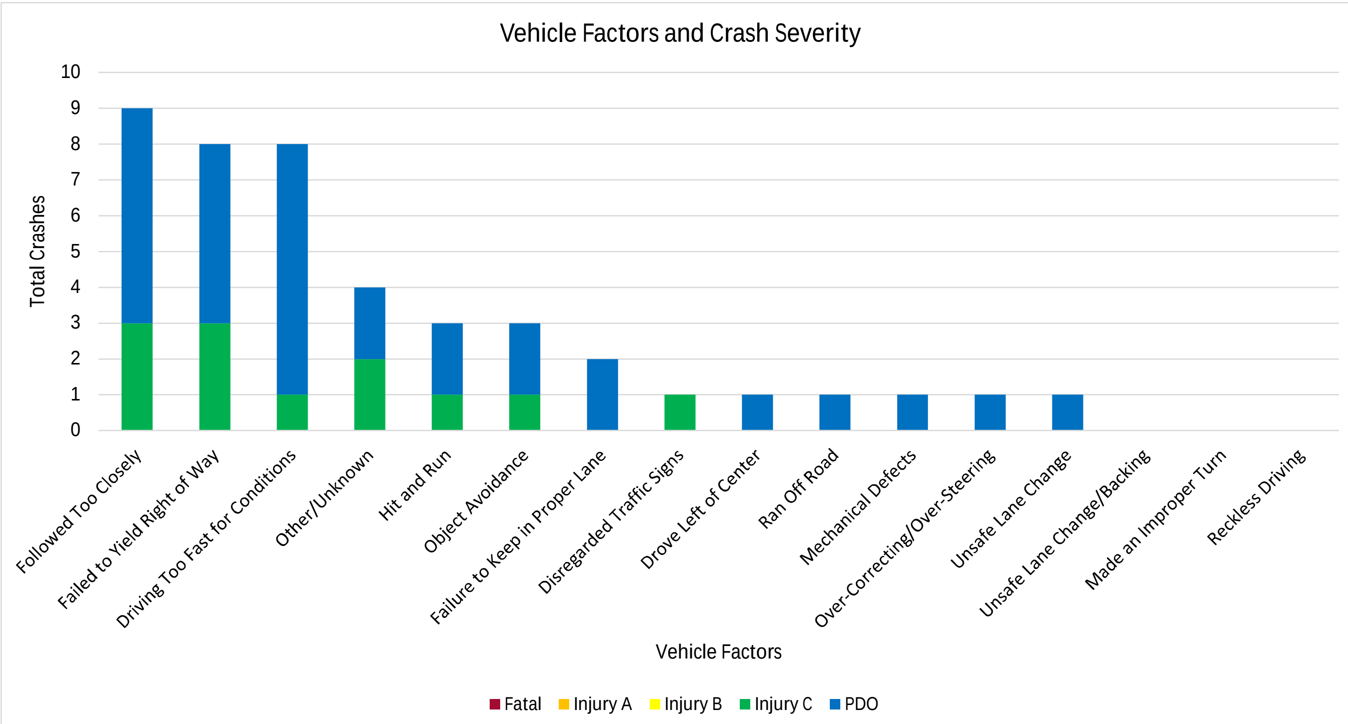
Kimley»Horn

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Lake Parkway

Vehicle Factors*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Followed Too Closely	0	0	0	3	3	6	9
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	22.0%
Failed to Yield Right of Way	0	0	0	3	3	5	8
	0.0%	0.0%	0.0%	37.5%	37.5%	62.5%	19.5%
Driving Too Fast for Conditions	0	0	0	1	1	7	8
	0.0%	0.0%	0.0%	12.5%	12.5%	87.5%	19.5%
Other/Unknown	0	0	0	2	2	2	4
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	9.8%
Hit and Run	0	0	0	1	1	2	3
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	7.3%
Object Avoidance	0	0	0	1	1	2	3
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	7.3%
Failure to Keep in Proper Lane	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	4.9%
Disregarded Traffic Signs	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	2.4%
Drove Left of Center	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.4%
Ran Off Road	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.4%
Mechanical Defects	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.4%
Over-Correcting/Over-Steering	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.4%
Unsafe Lane Change	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.4%
Unsafe Lane Change/Backing	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Made an Improper Turn	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Reckless Driving	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Exceeded Speed Limit	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wrong Way	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Backing	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	0	0	0	12	12	31	43
Total Crashes	0	1	0	12	13	28	41

*Note: Vehicle factors are based on Vehicle 1 (V1) inputs. Blank entries are included in the Other/Unknown factor.

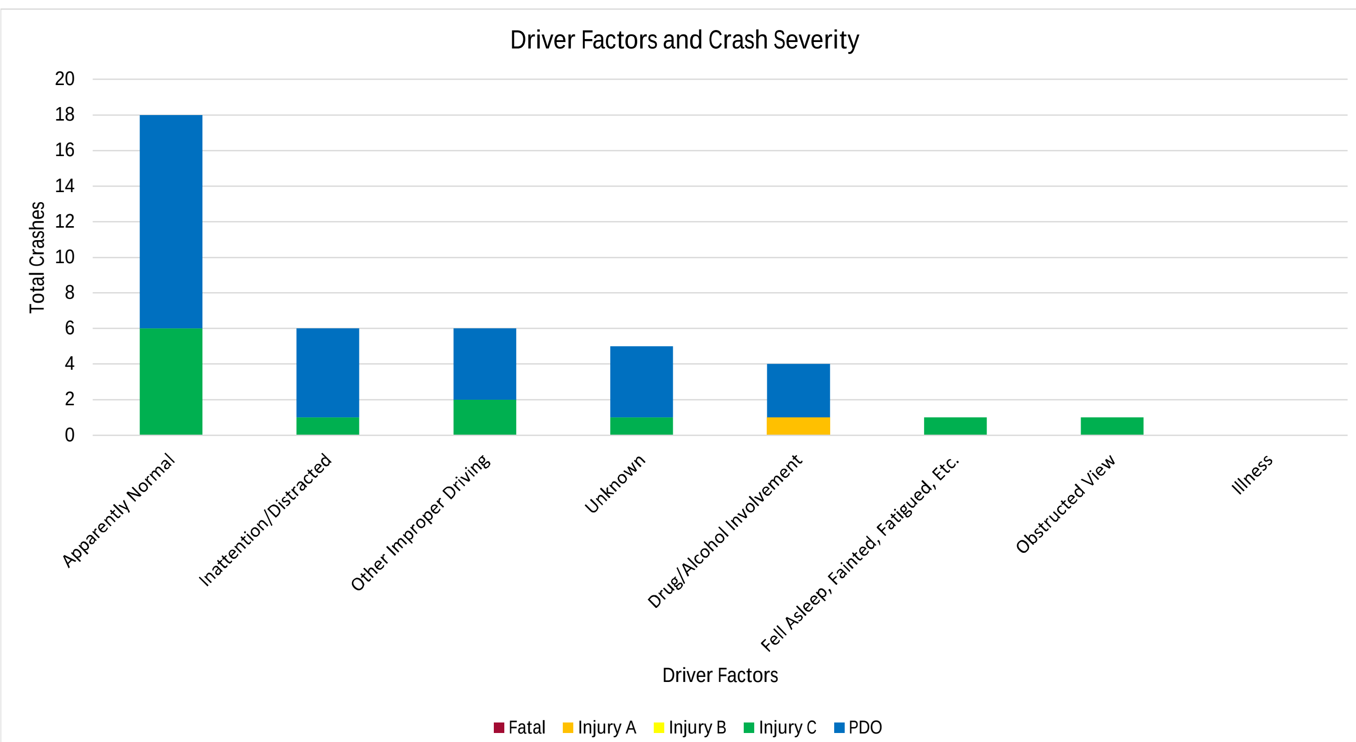
Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Lake Parkway



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Lake Parkway

Driver Factors*							
	Fatal and Injury					PDO	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
Apparently Normal	0	0	0	6	6	12	18
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	43.9%
Inattention/Distracted	0	0	0	1	1	5	6
	0.0%	0.0%	0.0%	16.7%	16.7%	83.3%	14.6%
Other Improper Driving	0	0	0	2	2	4	6
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	14.6%
Unknown	0	0	0	1	1	4	5
	0.0%	0.0%	0.0%	20.0%	20.0%	80.0%	12.2%
Drug/Alcohol Involvement	0	1	0	0	1	3	4
	0.0%	25.0%	0.0%	0.0%	25.0%	75.0%	9.8%
Fell Asleep, Fainted, Fatigued, Etc.	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	2.4%
Obstructed View	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	2.4%
Illness	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	0	1	0	12	13	28	41
Total Crashes	0	1	0	12	13	28	41

*Note: Driver factors are based on Vehicle 1 (V1) inputs. Blank entries are included in the Other/Unknown factor.

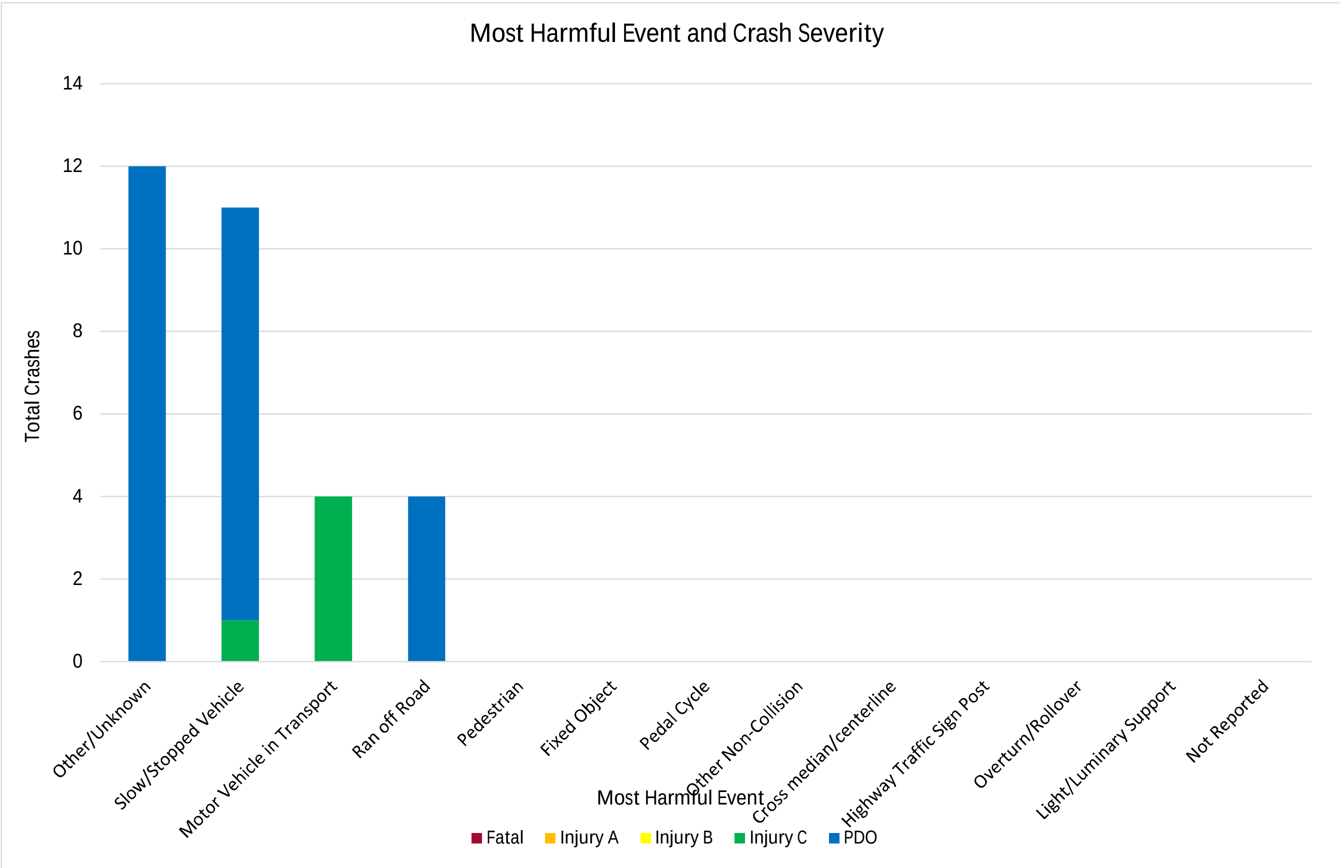


Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Lake Parkway

Most Harmful Event*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Other/Unknown	0	0	0	0	0	12	12
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	29.3%
Slow/Stopped Vehicle	0	0	0	1	1	10	11
	0.0%	0.0%	0.0%	9.1%	9.1%	90.9%	26.8%
Motor Vehicle in Transport	0	0	0	4	4	0	4
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	9.8%
Ran off Road	0	0	0	0	0	4	4
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	9.8%
Pedestrian	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fixed Object	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pedal Cycle	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Non-Collision	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cross median/centerline	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Highway Traffic Sign Post	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Overturn/Rollover	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Light/Luminary Support	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Not Reported	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fence/Wall	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	1	0	12	13	28	41

*Note: Most harmful event is based on Vehicle 1 (V1) input. Blank entries in most harmful event defer to the first listing in Vehicle 1 (V1) all events. Blank entries in both most harmful event and all events are included in the Other/Unknown category. Since there were no entries for the most harmful event the first event in all events was used.

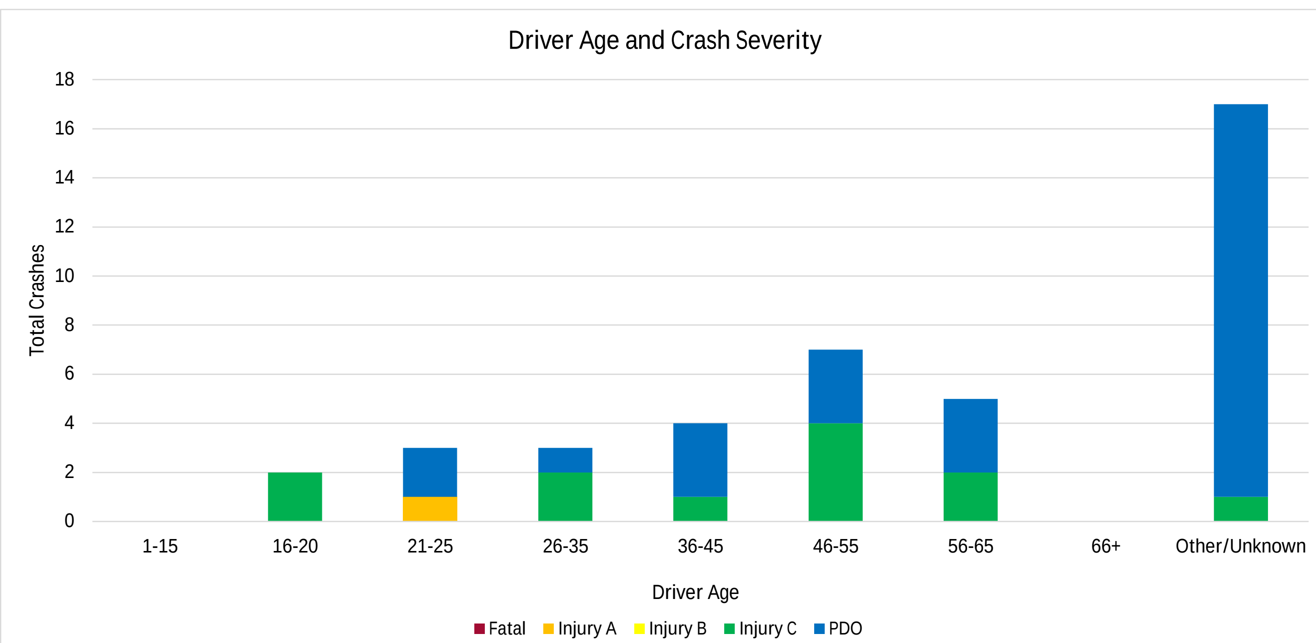
Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Lake Parkway



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Lake Parkway

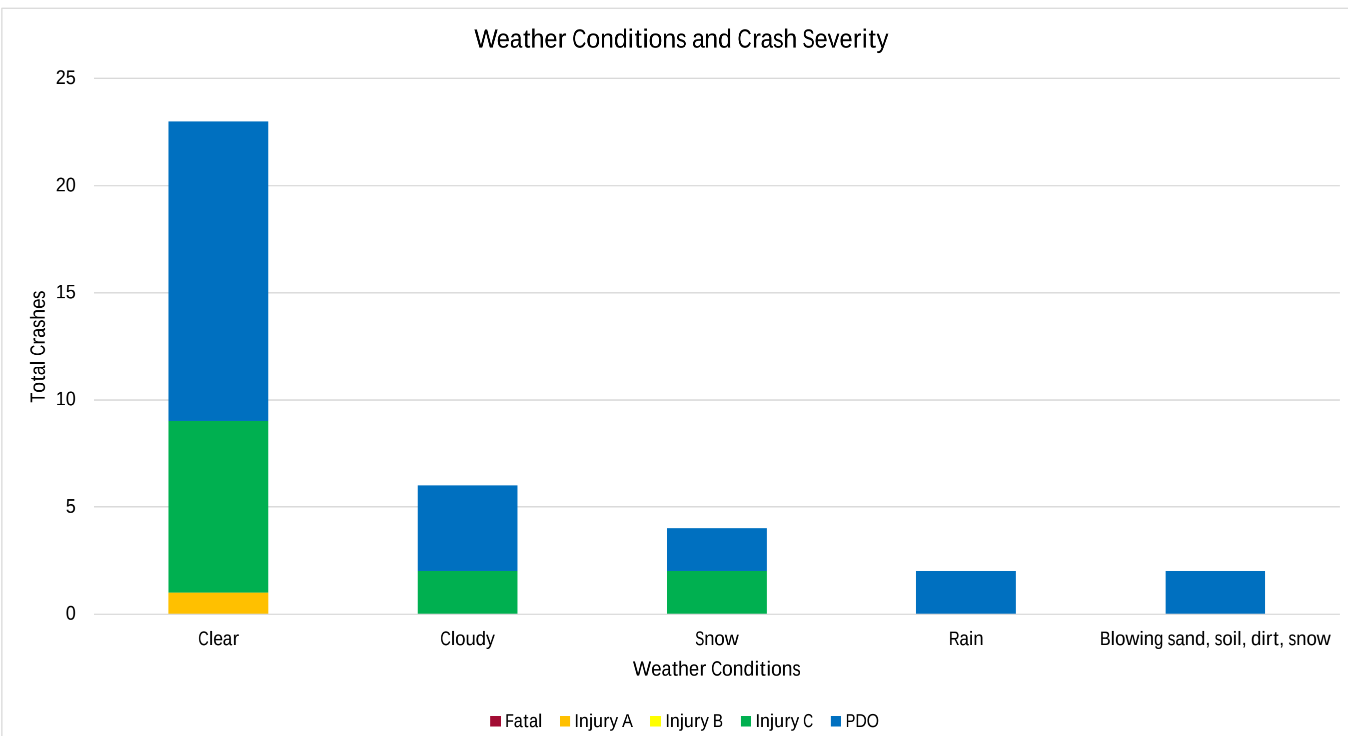
Driver Age*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
1-15	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
16-20	0	0	0	2	2	0	2
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	4.9%
21-25	0	1	0	0	1	2	3
	0.0%	33.3%	0.0%	0.0%	33.3%	66.7%	7.3%
26-35	0	0	0	2	2	1	3
	0.0%	0.0%	0.0%	66.7%	66.7%	33.3%	7.3%
36-45	0	0	0	1	1	3	4
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	9.8%
46-55	0	0	0	4	4	3	7
	0.0%	0.0%	0.0%	57.1%	57.1%	42.9%	17.1%
56-65	0	0	0	2	2	3	5
	0.0%	0.0%	0.0%	40.0%	40.0%	60.0%	12.2%
66+	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other/Unknown	0	0	0	1	1	16	17
	0.0%	0.0%	0.0%	5.9%	5.9%	94.1%	41.5%
Total Crashes	0	1	0	12	13	28	41

*Note: Driver age is based on Vehicle 1 (V1) input. Blank entries are included in the Other/Unknown category.



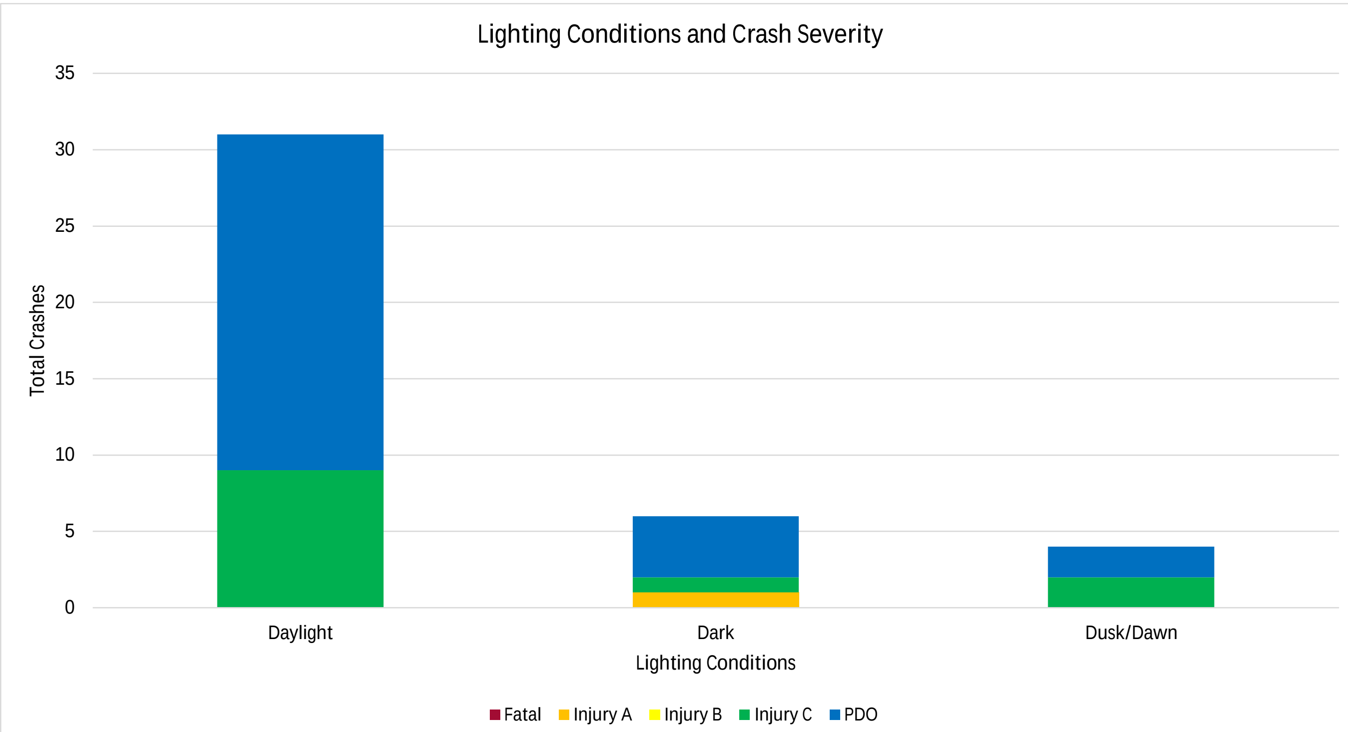
Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Lake Parkway

Weather Conditions							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Clear	0	1	0	8	9	14	23
	0.0%	4.3%	0.0%	34.8%	39.1%	60.9%	56.1%
Cloudy	0	0	0	2	2	4	6
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	14.6%
Snow	0	0	0	2	2	2	4
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	9.8%
Rain	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	4.9%
Blowing sand, soil, dirt, snow	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	4.9%
Fog, Smog, Smoke	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	4.9%
Severe Crosswinds	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.4%
Unknown	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.4%
Total Instances	0	1	0	12	11	28	41
Total Crashes	0	1	0	12	13	28	41



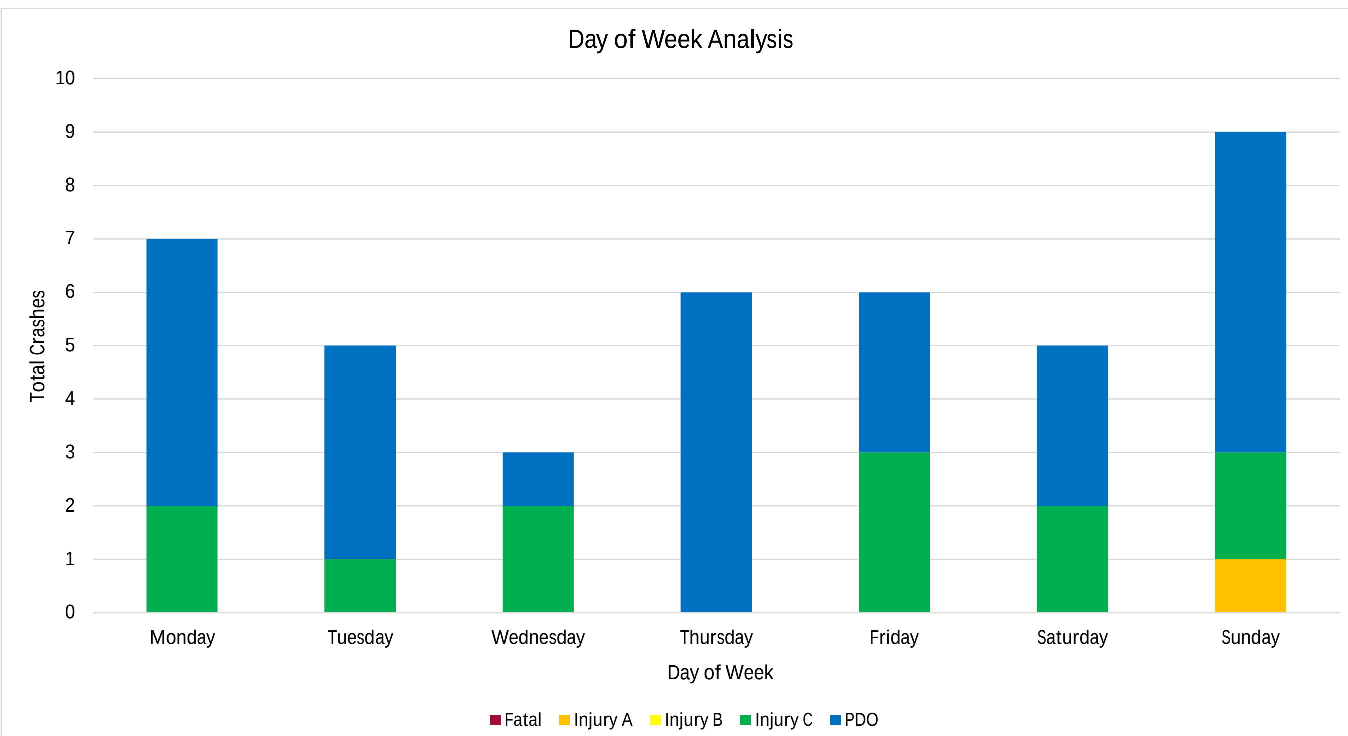
Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Lake Parkway

Lighting Conditions							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Daylight	0	0	0	9	9	22	31
	0.0%	0.0%	0.0%	29.0%	29.0%	71.0%	75.6%
Dark	0	1	0	1	2	4	6
	0.0%	16.7%	0.0%	16.7%	33.3%	66.7%	14.6%
Dusk/Dawn	0	0	0	2	2	2	4
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	9.8%
Total Crashes	0	1	0	12	13	28	41



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Lake Parkway

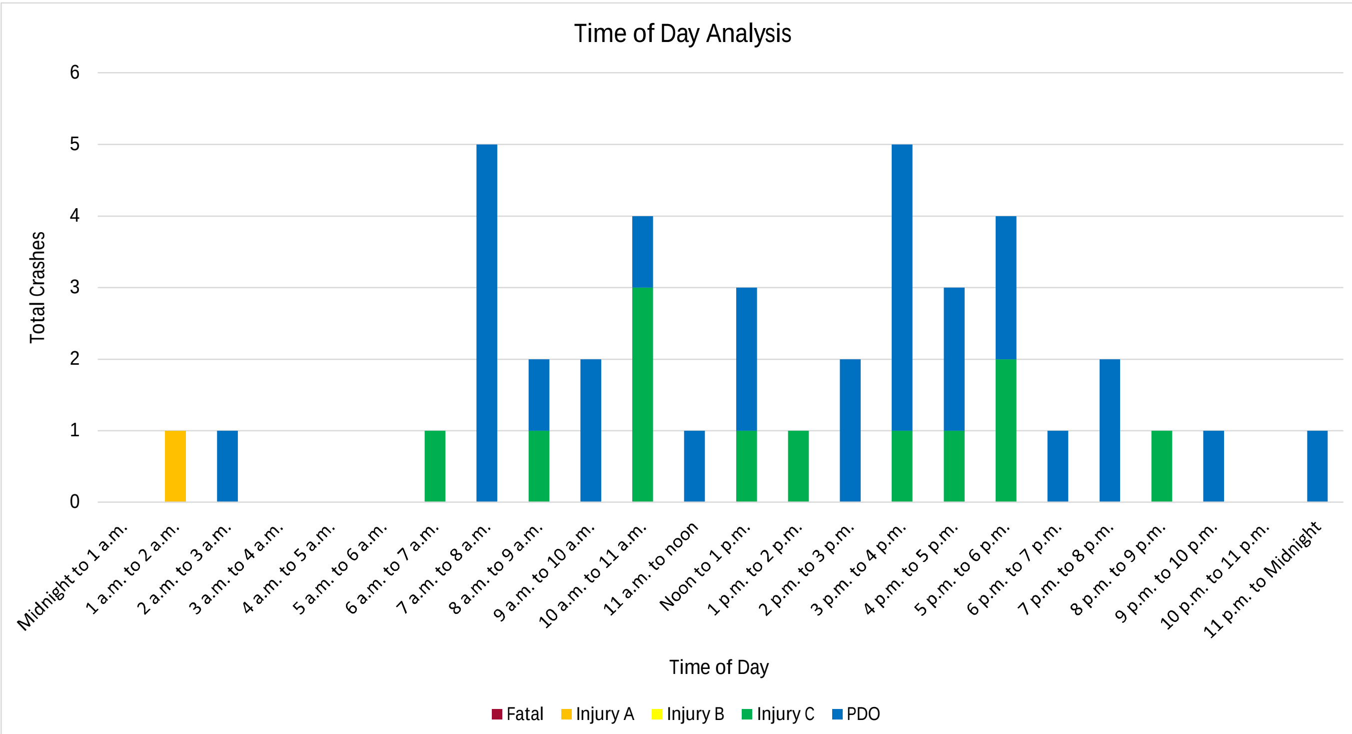
Day of Week	Fatal and Injury					PDO	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
Monday	0	0	0	2	2	5	7
	0.0%	0.0%	0.0%	28.6%	28.6%	71.4%	17.1%
Tuesday	0	0	0	1	1	4	5
	0.0%	0.0%	0.0%	20.0%	20.0%	80.0%	12.2%
Wednesday	0	0	0	2	2	1	3
	0.0%	0.0%	0.0%	66.7%	66.7%	33.3%	7.3%
Thursday	0	1	0	0	1	6	6
	0.0%	16.7%	0.0%	0.0%	16.7%	100.0%	14.6%
Friday	0	0	0	3	3	3	6
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	14.6%
Saturday	0	0	0	2	2	3	5
	0.0%	0.0%	0.0%	40.0%	40.0%	60.0%	12.2%
Sunday	0	0	0	2	2	6	9
	0.0%	0.0%	0.0%	22.2%	22.2%	66.7%	22.0%
Total Crashes	0	1	0	12	13	28	41



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Lake Parkway

Time of Day							
	Fatal and Injury					PDO	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
Midnight to 1 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1 a.m. to 2 a.m.	0	1	0	0	1	0	1
	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%	2.4%
2 a.m. to 3 a.m.	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.4%
3 a.m. to 4 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4 a.m. to 5 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5 a.m. to 6 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6 a.m. to 7 a.m.	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	2.4%
7 a.m. to 8 a.m.	0	0	0	0	0	5	5
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	12.2%
8 a.m. to 9 a.m.	0	0	0	1	1	1	2
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	4.9%
9 a.m. to 10 a.m.	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	4.9%
10 a.m. to 11 a.m.	0	0	0	3	3	1	4
	0.0%	0.0%	0.0%	75.0%	75.0%	25.0%	9.8%
11 a.m. to noon	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.4%
Noon to 1 p.m.	0	0	0	1	1	2	3
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	7.3%
1 p.m. to 2 p.m.	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	2.4%
2 p.m. to 3 p.m.	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	4.9%
3 p.m. to 4 p.m.	0	0	0	1	1	4	5
	0.0%	0.0%	0.0%	20.0%	20.0%	80.0%	12.2%
4 p.m. to 5 p.m.	0	0	0	1	1	2	3
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	7.3%
5 p.m. to 6 p.m.	0	0	0	2	2	2	4
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	9.8%
6 p.m. to 7 p.m.	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.4%
7 p.m. to 8 p.m.	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	4.9%
8 p.m. to 9 p.m.	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	2.4%
9 p.m. to 10 p.m.	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.4%
10 p.m. to 11 p.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11 p.m. to Midnight	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.4%
Total Crashes	0	1	0	12	13	28	41

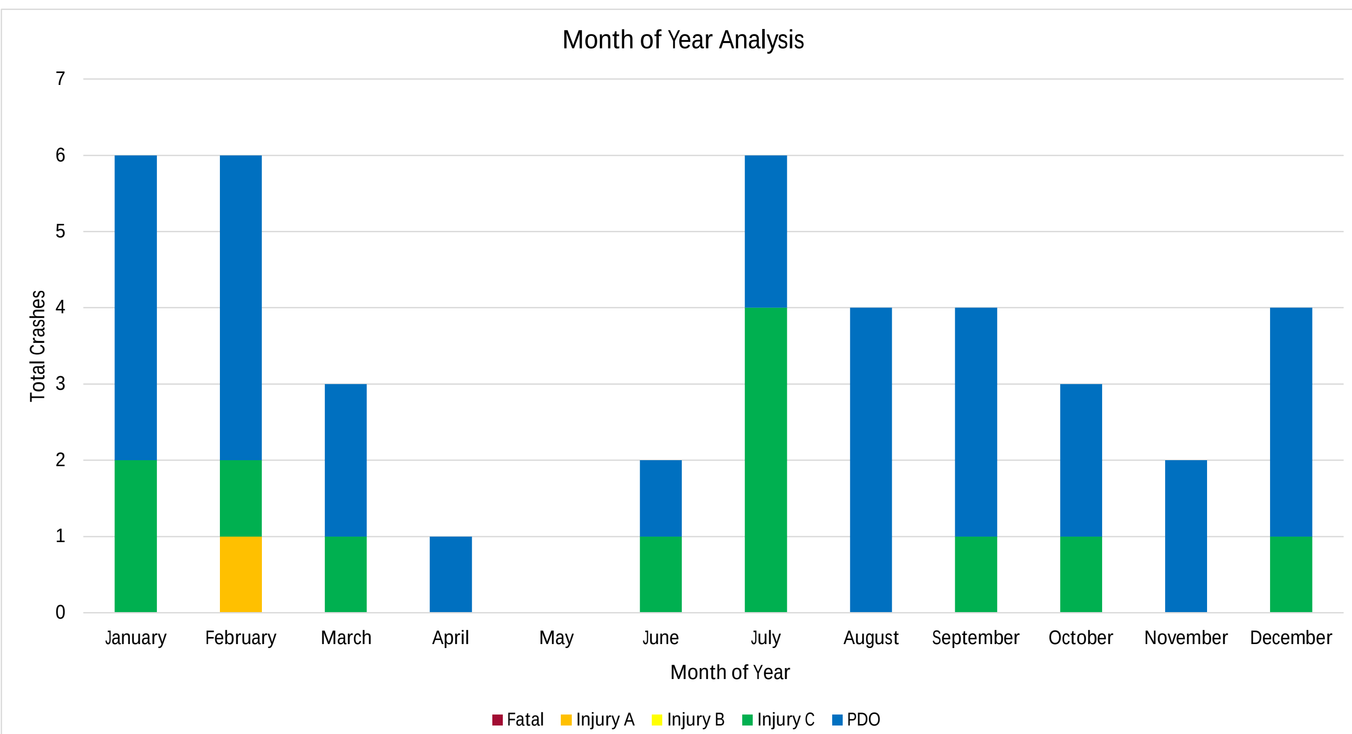
Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Lake Parkway



Kimley»Horn

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Lake Parkway

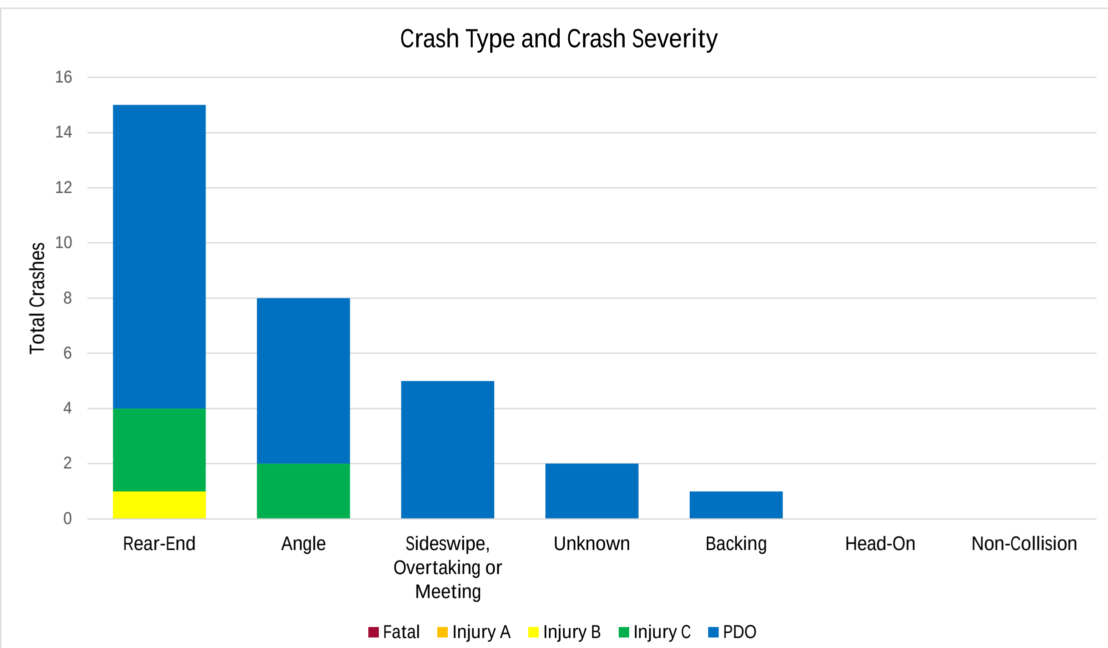
Month of Year							
	Fatal and Injury					PDO	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
January	0	0	0	2	2	4	6
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	14.6%
February	0	0	0	1	1	4	5
	0.0%	0.0%	0.0%	20.0%	20.0%	80.0%	12.2%
March	0	0	0	1	1	2	3
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	7.3%
April	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.4%
May	0	1	0	0	1	0	1
	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%	2.4%
June	0	0	0	1	1	1	2
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	4.9%
July	0	0	0	4	4	2	6
	0.0%	0.0%	0.0%	66.7%	66.7%	33.3%	14.6%
August	0	0	0	0	0	4	4
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	9.8%
September	0	0	0	1	1	3	4
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	9.8%
October	0	0	0	1	1	2	3
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	7.3%
November	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	4.9%
December	0	0	0	1	1	3	4
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	9.8%
Total Crashes	0	1	0	12	13	28	41



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 207 (Kingsbury Grade)

Overall Crash Data			Pedestrian		Pedal Cycle		Motorcycle		Bus	
Fatal	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury A	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury B	1	3.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury C	5	16.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Property Damage Only (PDO)	25	80.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	31	100%	0	0% (0%)	0	0% (0%)	0	0% (0%)	0	0% (0%)

Crash Type							
	Fatal and Injury					*PDO*	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
Rear-End	0	0	1	3	4	11	15
	0.0%	0.0%	6.7%	20.0%	26.7%	73.3%	48.4%
Angle	0	0	0	2	2	6	8
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	25.8%
Sideswipe, Overtaking or Meeting	0	0	0	0	0	5	5
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	16.1%
Unknown	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	6.5%
Backing	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
Head-On	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Non-Collision	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	0	1	5	6	25	31

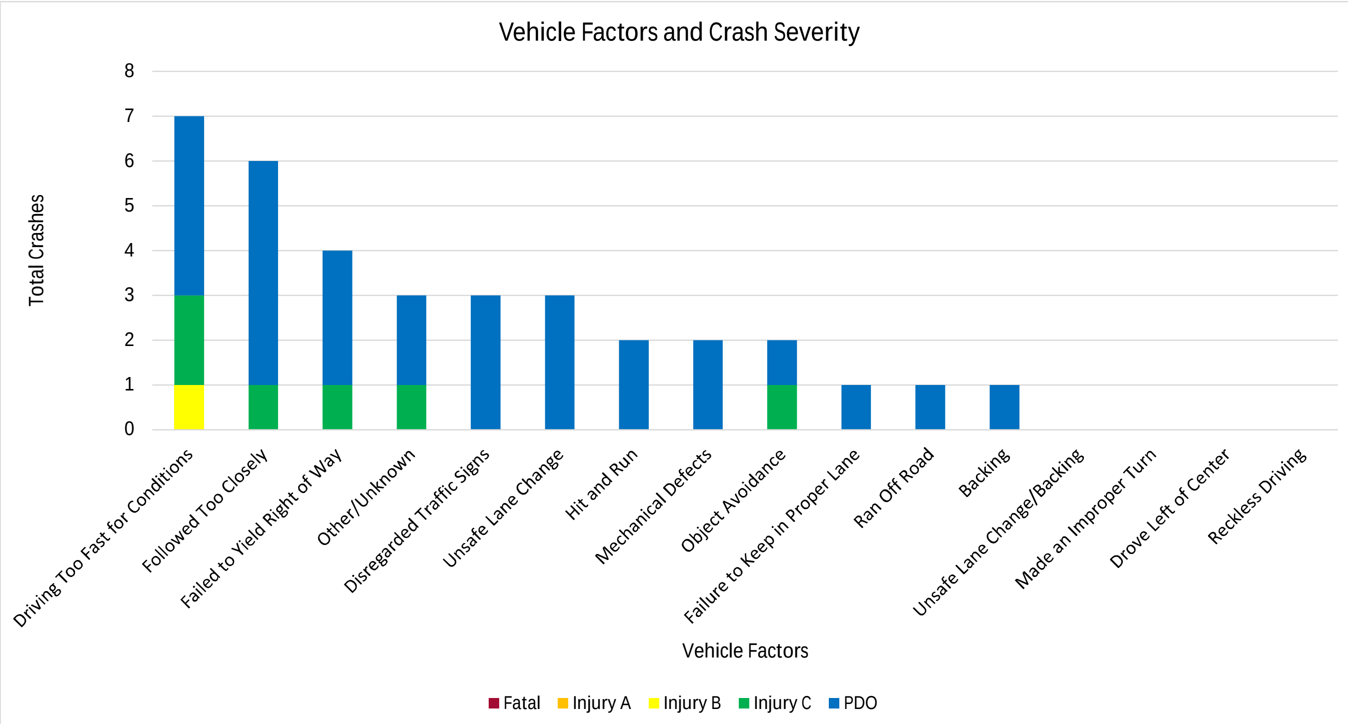


Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 207 (Kingsbury Grade)

Vehicle Factors*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Driving Too Fast for Conditions	0	0	1	2	3	4	7
	0.0%	0.0%	14.3%	28.6%	42.9%	57.1%	22.6%
Followed Too Closely	0	0	0	1	1	5	6
	0.0%	0.0%	0.0%	16.7%	16.7%	83.3%	19.4%
Failed to Yield Right of Way	0	0	0	1	1	3	4
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	12.9%
Other/Unknown	0	0	0	1	1	2	3
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	9.7%
Disregarded Traffic Signs	0	0	0	0	0	3	3
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	9.7%
Unsafe Lane Change	0	0	0	0	0	3	3
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	9.7%
Hit and Run	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	6.5%
Mechanical Defects	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	6.5%
Object Avoidance	0	0	0	1	1	1	2
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	6.5%
Failure to Keep in Proper Lane	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
Ran Off Road	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
Backing	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
Unsafe Lane Change/Backing	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Made an Improper Turn	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Drove Left of Center	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Reckless Driving	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Exceeded Speed Limit	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wrong Way	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Over-Correcting/Over-Steering	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	0	0	1	6	7	28	35
Total Crashes	0	0	1	5	6	25	31

*Note: Vehicle factors are based on Vehicle 1 (V1) inputs. Blank entries are included in the Other/Unknown factor.

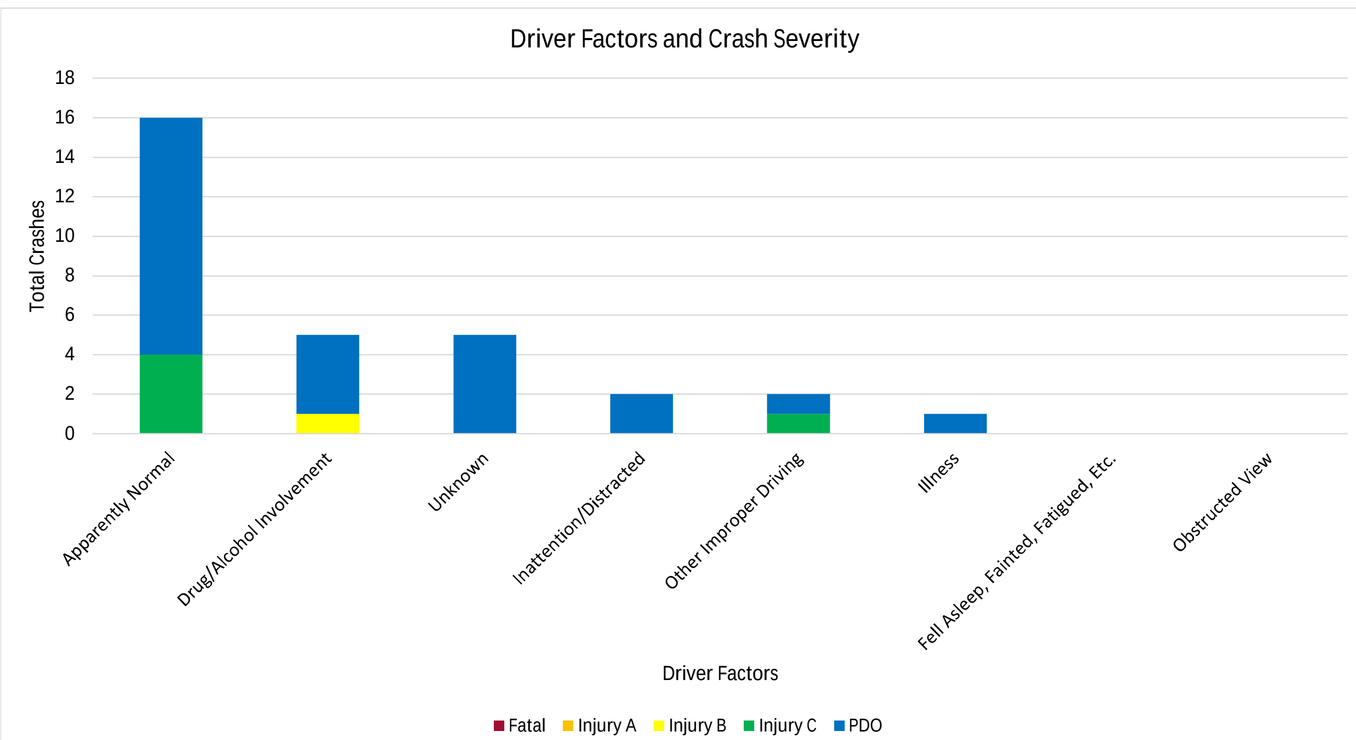
Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 207 (Kingsbury Grade)



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 207 (Kingsbury Grade)

Driver Factors*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Apparently Normal	0	0	0	4	4	12	16
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	51.6%
Drug/Alcohol Involvement	0	0	1	0	1	4	5
	0.0%	0.0%	20.0%	0.0%	20.0%	80.0%	16.1%
Unknown	0	0	0	0	0	5	5
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	16.1%
Inattention/Distracted	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	6.5%
Other Improper Driving	0	0	0	1	1	1	2
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	6.5%
Illness	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
Fell Asleep, Fainted, Fatigued, Etc.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Obstructed View	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	0	0	1	5	6	25	31
Total Crashes	0	0	1	5	6	25	31

*Note: Driver factors are based on Vehicle 1 (V1) inputs. Blank entries are included in the Other/Unknown factor.

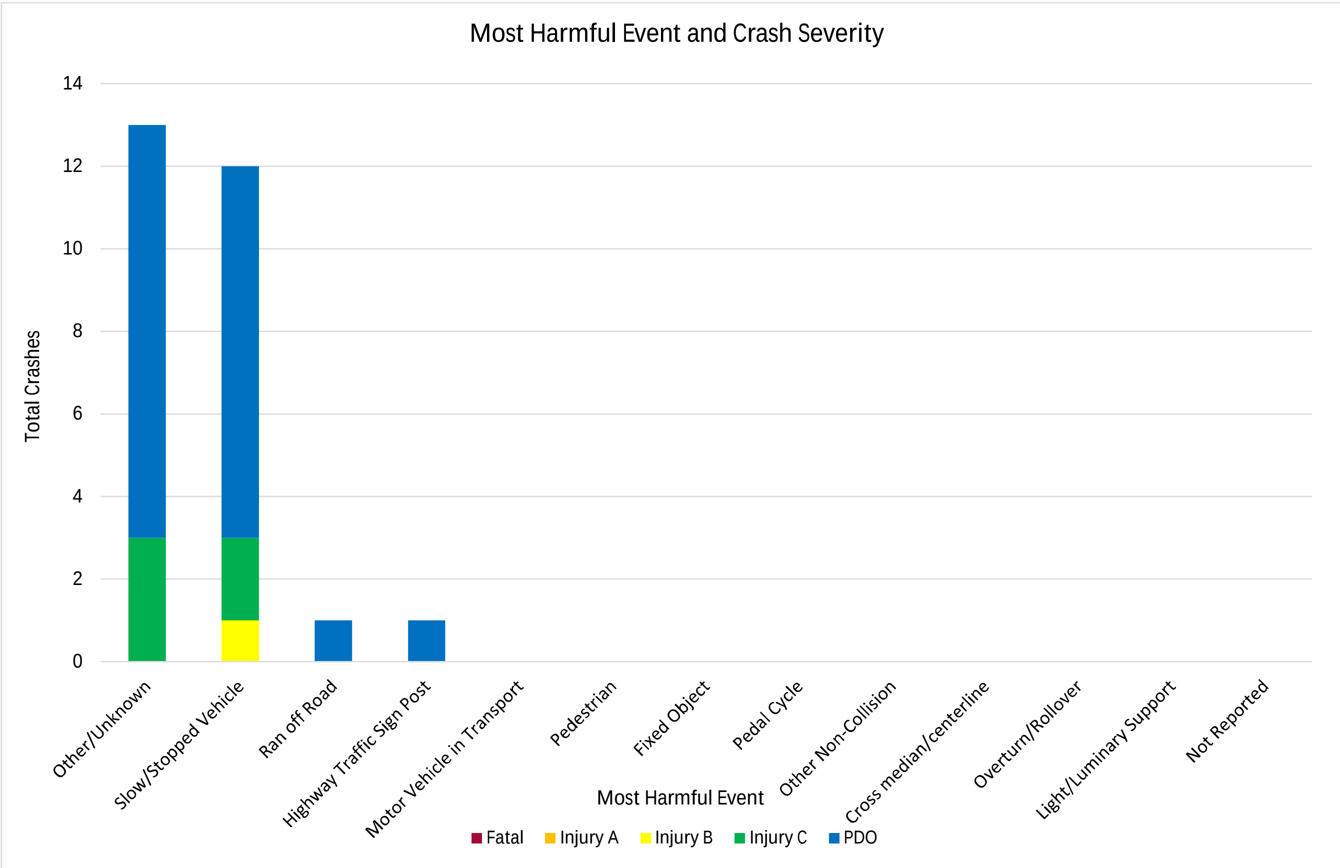


Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 207 (Kingsbury Grade)

Most Harmful Event*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Other/Unknown	0	0	0	3	3	10	13
	0.0%	0.0%	0.0%	23.1%	23.1%	76.9%	41.9%
Slow/Stopped Vehicle	0	0	1	2	3	9	12
	0.0%	0.0%	8.3%	16.7%	25.0%	75.0%	38.7%
Ran off Road	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
Highway Traffic Sign Post	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
Motor Vehicle in Transport	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pedestrian	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fixed Object	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pedal Cycle	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Non-Collision	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cross median/centerline	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Overturn/Rollover	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Light/Luminary Support	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Not Reported	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fence/Wall	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	0	1	5	6	25	31

*Note: Most harmful event is based on Vehicle 1 (V1) input. Blank entries in most harmful event defer to the first listing in Vehicle 1 (V1) all events. Blank entries in both most harmful event and all events are included in the Other/Unknown category. Since there were no entries for the most harmful event the first event in all events was used.

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 207 (Kingsbury Grade)

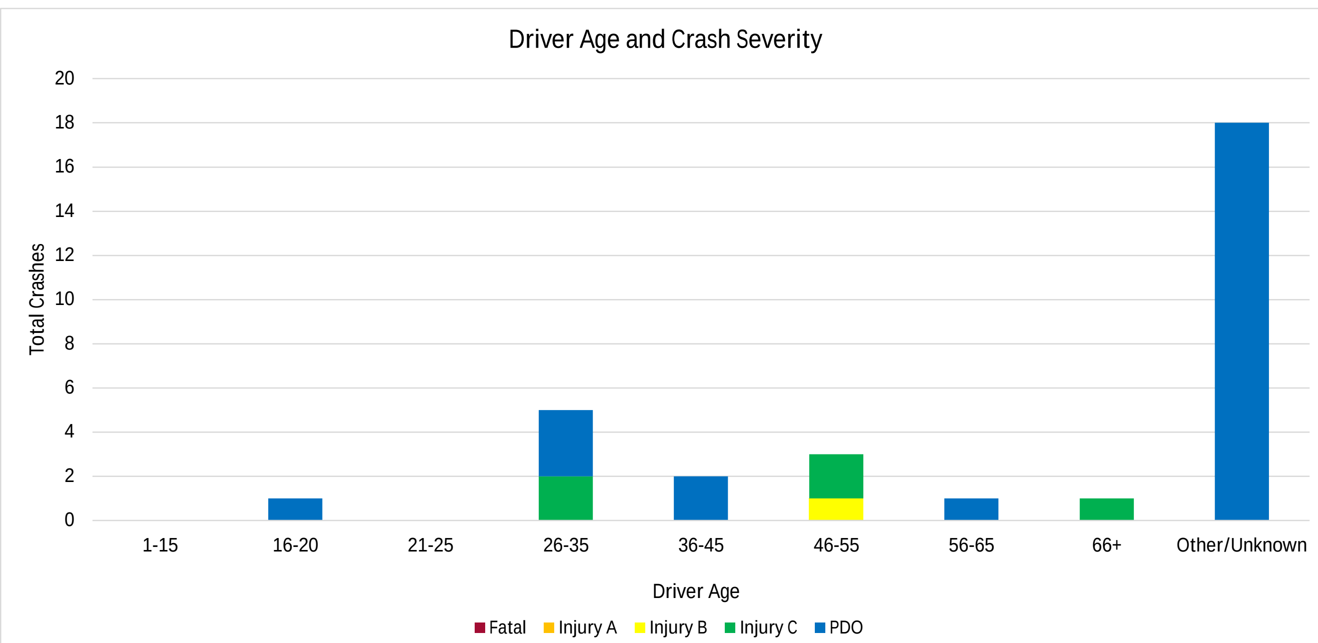


Kimley»Horn

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 207 (Kingsbury Grade)

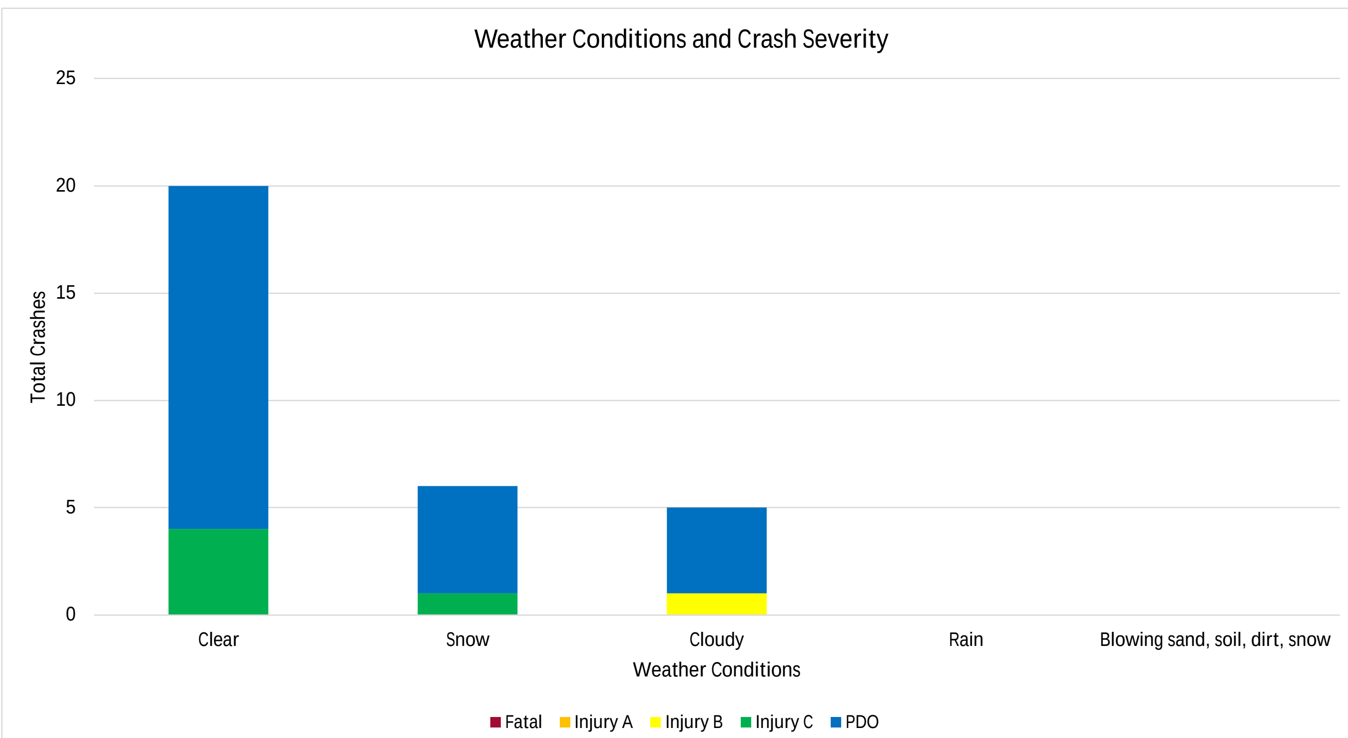
Driver Age*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
1-15	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
16-20	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
21-25	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
26-35	0	0	0	2	2	3	5
	0.0%	0.0%	0.0%	40.0%	40.0%	60.0%	16.1%
36-45	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	6.5%
46-55	0	0	1	2	3	0	3
	0.0%	0.0%	33.3%	66.7%	100.0%	0.0%	9.7%
56-65	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
66+	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	3.2%
Other/Unknown	0	0	0	0	0	18	18
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	58.1%
Total Crashes	0	0	1	5	6	25	31

*Note: Driver age is based on Vehicle 1 (V1) input. Blank entries are included in the Other/Unknown category.



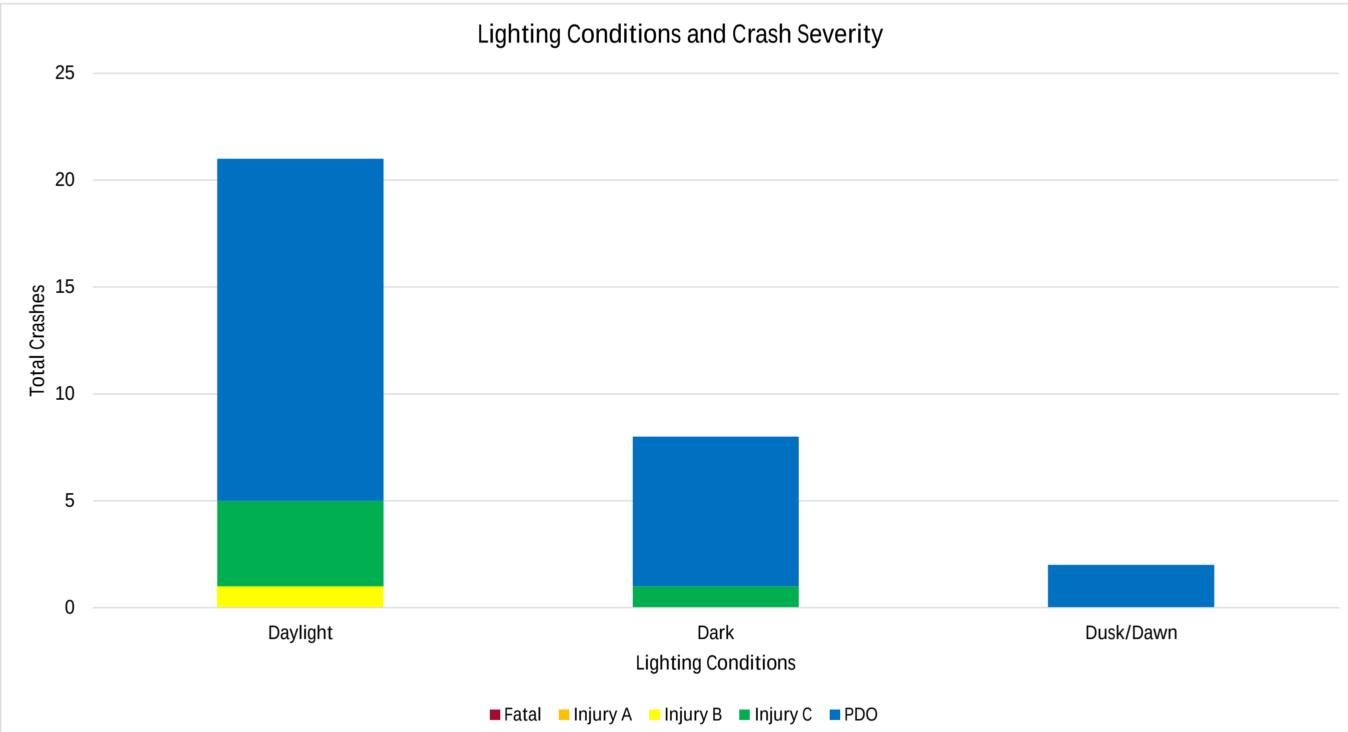
Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 207 (Kingsbury Grade)

Weather Conditions							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Clear	0	0	0	4	4	16	20
	0.0%	0.0%	0.0%	20.0%	20.0%	80.0%	64.5%
Snow	0	0	0	1	1	5	6
	0.0%	0.0%	0.0%	16.7%	16.7%	83.3%	19.4%
Cloudy	0	0	1	0	1	4	5
	0.0%	0.0%	20.0%	0.0%	20.0%	80.0%	16.1%
Rain	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Blowing sand, soil, dirt, snow	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fog, Smog, Smoke	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Severe Crosswinds	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	0	0	1	5	5	25	31
Total Crashes	0	0	1	5	6	25	31



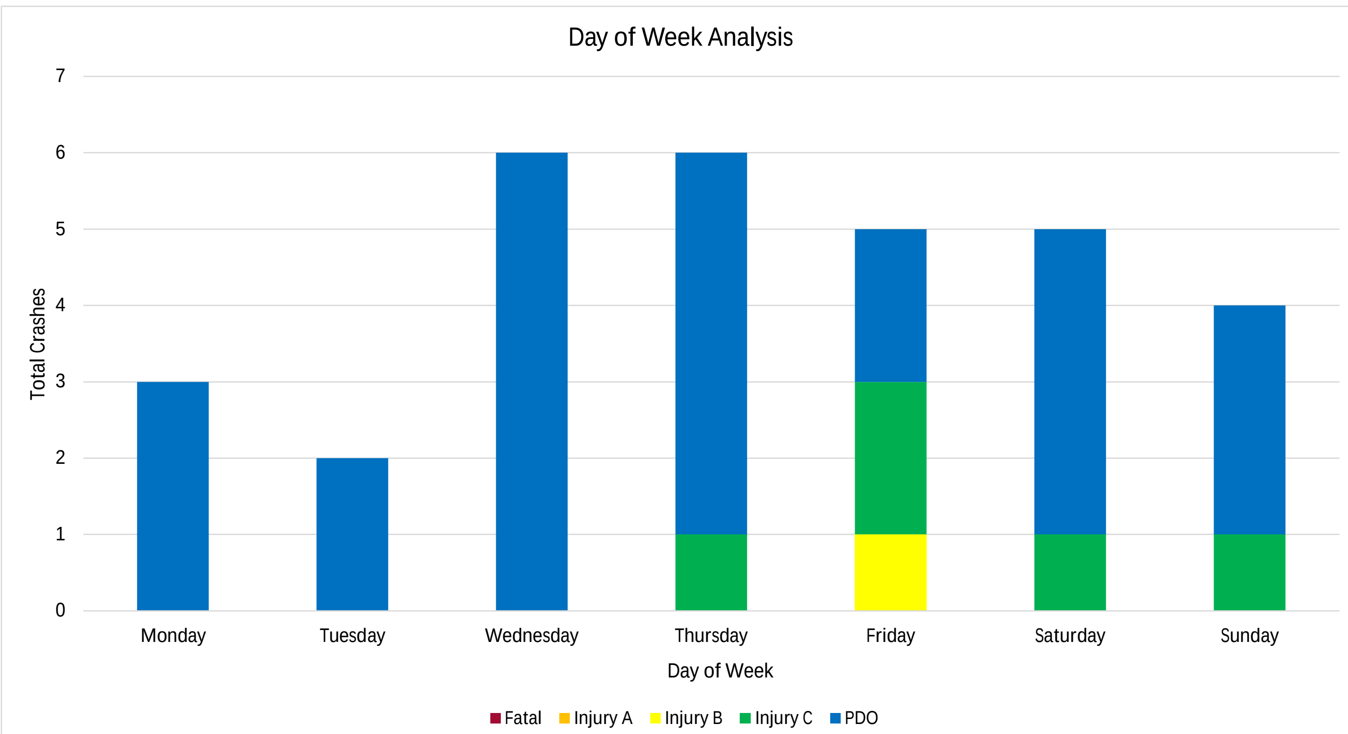
Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 207 (Kingsbury Grade)

Lighting Conditions								
	Fatal and Injury						PDO	Total
		Fatal	Injury A	Injury B	Injury C	Sum		
Daylight		0	0	1	4	5	16	21
		0.0%	0.0%	4.8%	19.0%	23.8%	76.2%	67.7%
Dark		0	0	0	1	1	7	8
		0.0%	0.0%	0.0%	12.5%	12.5%	87.5%	25.8%
Dusk/Dawn		0	0	0	0	0	2	2
		0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	6.5%
Total Crashes		0	0	1	5	6	25	31



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 207 (Kingsbury Grade)

Day of Week							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Monday	0	0	0	0	0	3	3
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	9.7%
Tuesday	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	6.5%
Wednesday	0	0	0	0	0	6	6
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	19.4%
Thursday	0	0	0	1	1	5	6
	0.0%	0.0%	0.0%	16.7%	16.7%	83.3%	19.4%
Friday	0	0	1	2	3	2	5
	0.0%	0.0%	20.0%	40.0%	60.0%	40.0%	16.1%
Saturday	0	0	0	1	1	4	5
	0.0%	0.0%	0.0%	20.0%	20.0%	80.0%	16.1%
Sunday	0	0	0	1	1	3	4
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	12.9%
Total Crashes	0	0	1	5	6	25	31

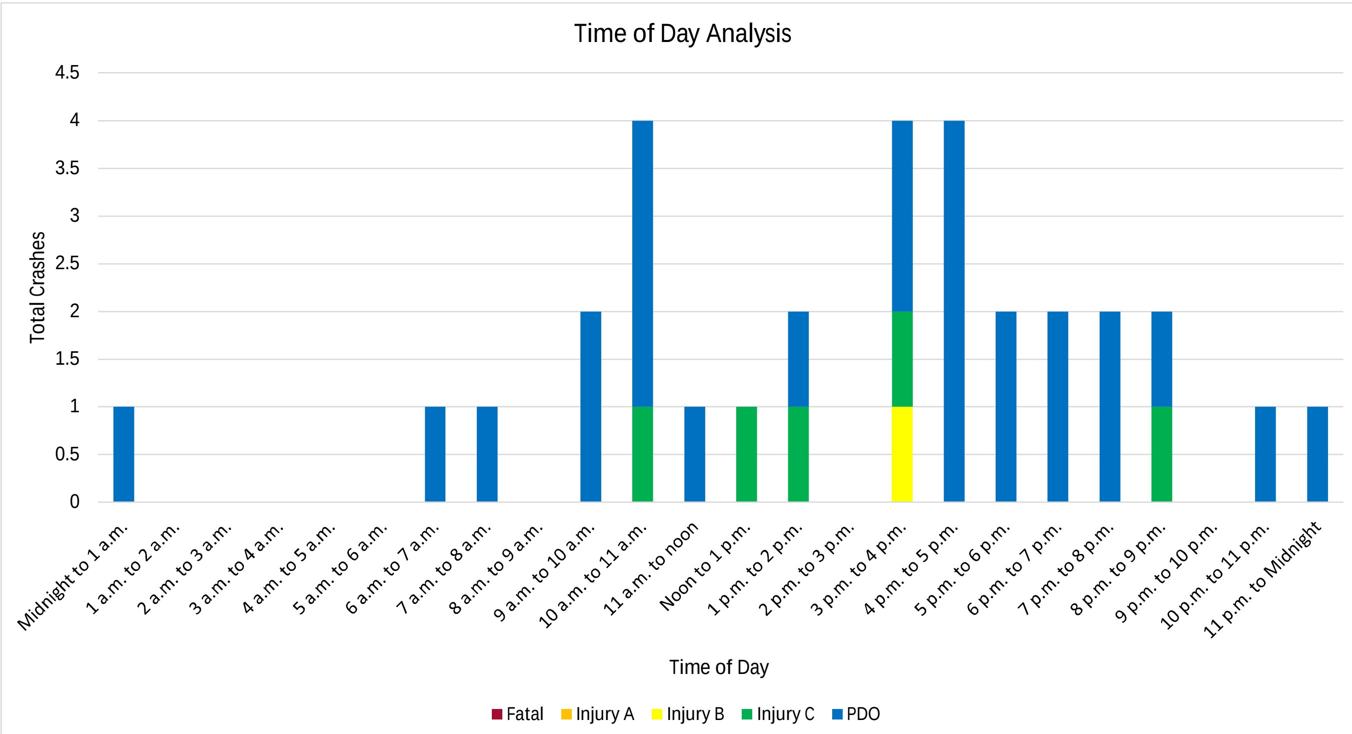


Kimley»Horn

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 207 (Kingsbury Grade)

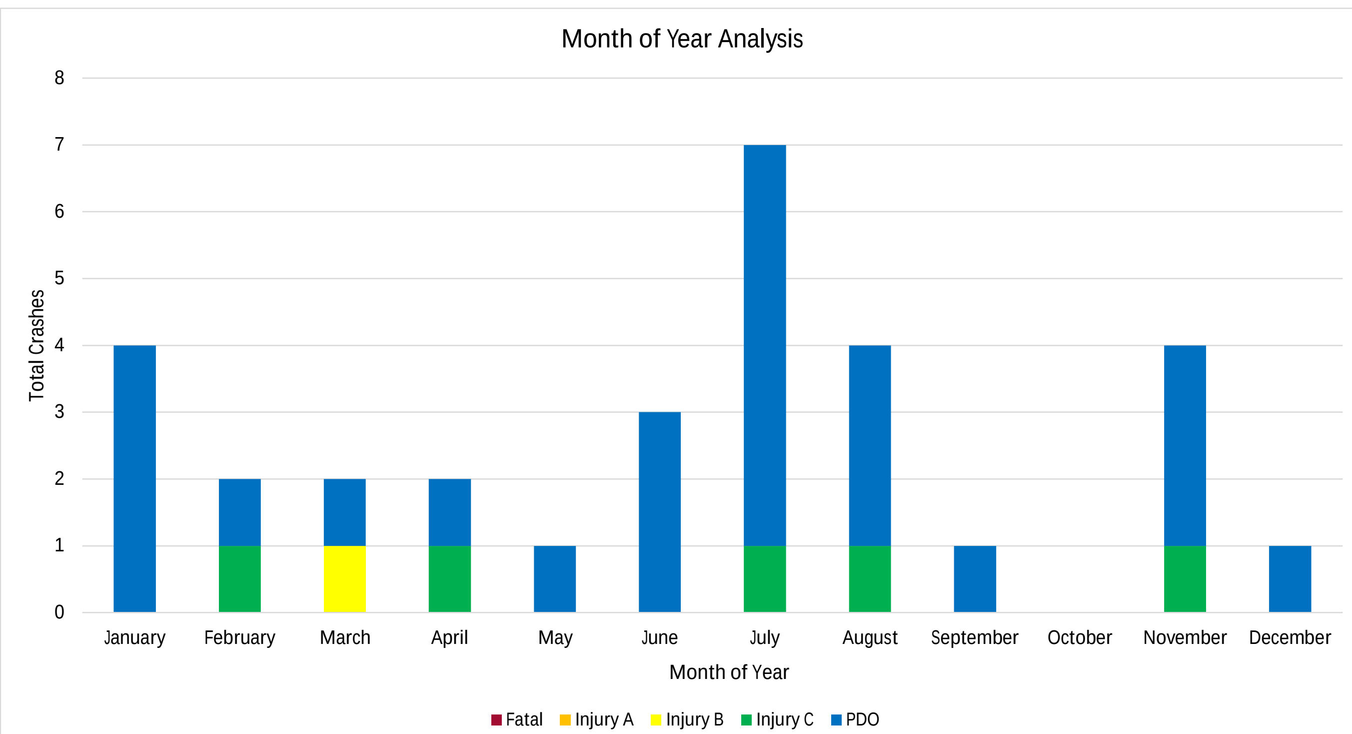
Time of Day							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Midnight to 1 a.m.	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
1 a.m. to 2 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2 a.m. to 3 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3 a.m. to 4 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4 a.m. to 5 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5 a.m. to 6 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6 a.m. to 7 a.m.	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
7 a.m. to 8 a.m.	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
8 a.m. to 9 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9 a.m. to 10 a.m.	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	6.5%
10 a.m. to 11 a.m.	0	0	0	1	1	3	4
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	12.9%
11 a.m. to noon	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
Noon to 1 p.m.	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	3.2%
1 p.m. to 2 p.m.	0	0	0	1	1	1	2
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	6.5%
2 p.m. to 3 p.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3 p.m. to 4 p.m.	0	0	1	1	2	2	4
	0.0%	0.0%	25.0%	25.0%	50.0%	50.0%	12.9%
4 p.m. to 5 p.m.	0	0	0	0	0	4	4
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	12.9%
5 p.m. to 6 p.m.	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	6.5%
6 p.m. to 7 p.m.	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	6.5%
7 p.m. to 8 p.m.	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	6.5%
8 p.m. to 9 p.m.	0	0	0	1	1	1	2
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	6.5%
9 p.m. to 10 p.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10 p.m. to 11 p.m.	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
11 p.m. to Midnight	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
Total Crashes	0	0	1	5	6	25	31

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 207 (Kingsbury Grade)



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 207 (Kingsbury Grade)

Month of Year							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
January	0	0	0	0	0	4	4
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	12.9%
February	0	0	0	1	1	1	2
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	6.5%
March	0	0	1	0	1	1	2
	0.0%	0.0%	50.0%	0.0%	50.0%	50.0%	6.5%
April	0	0	0	1	1	1	2
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	6.5%
May	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
June	0	0	0	0	0	3	3
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	9.7%
July	0	0	0	1	1	6	7
	0.0%	0.0%	0.0%	14.3%	14.3%	85.7%	22.6%
August	0	0	0	1	1	3	4
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	12.9%
September	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
October	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
November	0	0	0	1	1	3	4
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	12.9%
December	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%
Total Crashes	0	0	1	5	6	25	31

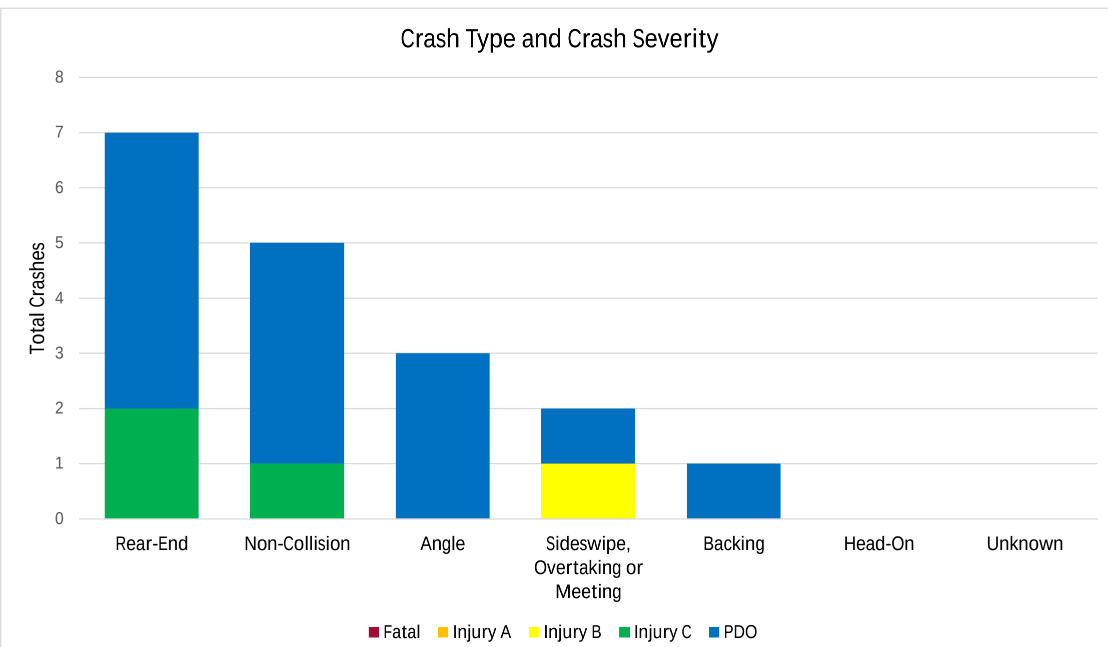


Kimley»Horn

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Kahle Drive

Overall Crash Data			Pedestrian		Pedal Cycle		Motorcycle		Bus	
Fatal	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury A	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury B	1	5.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury C	3	16.7%	1	50.0%	1	50.0%	0	0.0%	0	0.0%
Property Damage Only (PDO)	14	77.8%	1	50.0%	1	50.0%	0	0.0%	0	0.0%
Total	18	100%	2	100% (11.1%)	2	100% (11.1%)	0	0% (0%)	0	0% (0%)

Crash Type							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Rear-End	0	0	0	2	2	5	7
	0.0%	0.0%	0.0%	28.6%	28.6%	71.4%	38.9%
Non-Collision	0	0	0	1	1	4	5
	0.0%	0.0%	0.0%	20.0%	20.0%	80.0%	27.8%
Angle	0	0	0	0	0	3	3
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	16.7%
Sideswipe, Overtaking or Meeting	0	0	1	0	1	1	2
	0.0%	0.0%	50.0%	0.0%	50.0%	50.0%	11.1%
Backing	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
Head-On	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	0	1	3	4	14	18



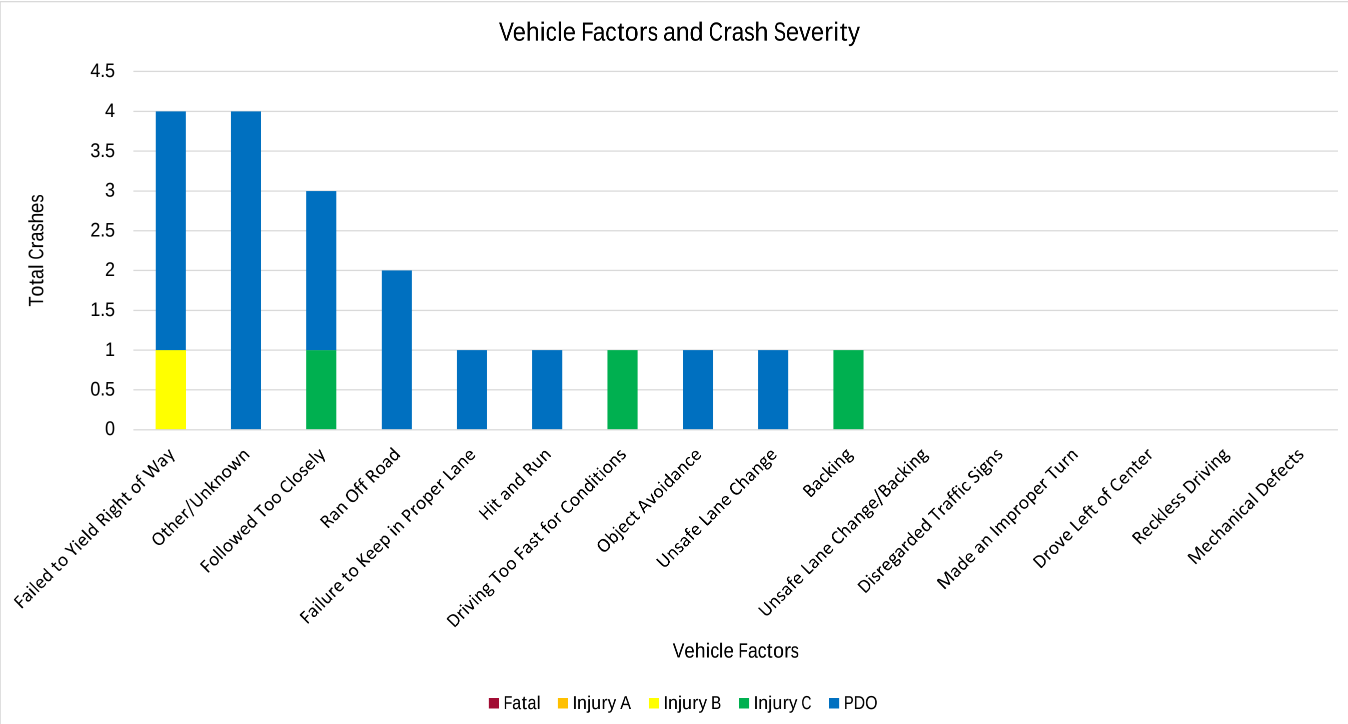
Kimley»Horn

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Kahle Drive

Vehicle Factors*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Failed to Yield Right of Way	0	0	1	0	1	3	4
	0.0%	0.0%	25.0%	0.0%	25.0%	75.0%	22.2%
Other/Unknown	0	0	0	0	0	4	4
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	22.2%
Followed Too Closely	0	0	0	1	1	2	3
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	16.7%
Ran Off Road	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	11.1%
Failure to Keep in Proper Lane	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
Hit and Run	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
Driving Too Fast for Conditions	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	5.6%
Object Avoidance	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
Unsafe Lane Change	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
Backing	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	5.6%
Unsafe Lane Change/Backing	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Disregarded Traffic Signs	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Made an Improper Turn	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Drove Left of Center	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Reckless Driving	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mechanical Defects	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Exceeded Speed Limit	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wrong Way	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Over-Correcting/Over-Steering	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	0	0	1	3	4	15	19
Total Crashes	0	0	1	3	4	14	18

*Note: Vehicle factors are based on Vehicle 1 (V1) inputs. Blank entries are included in the Other/Unknown factor.

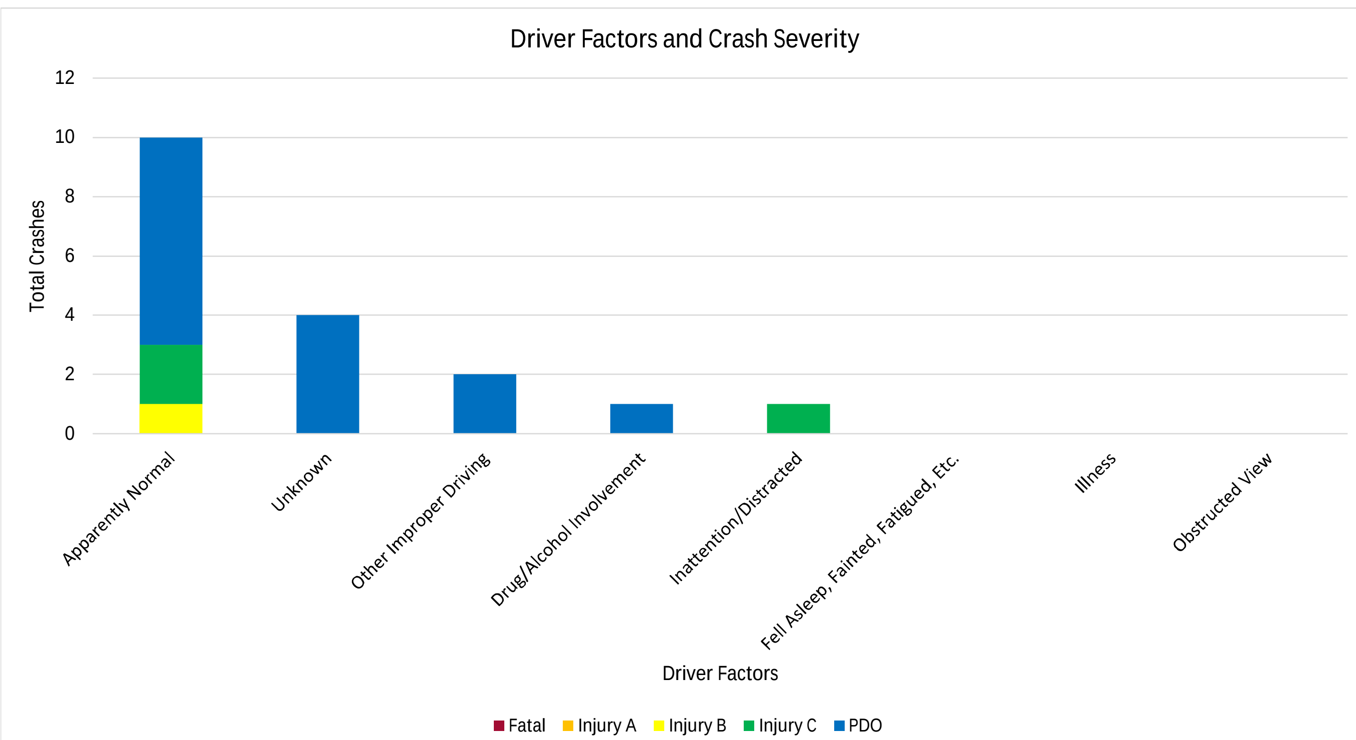
Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Kahle Drive



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Kahle Drive

Driver Factors*							
	Fatal and Injury					PDO	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
Apparently Normal	0	0	1	2	3	7	10
	0.0%	0.0%	10.0%	20.0%	30.0%	70.0%	55.6%
Unknown	0	0	0	0	0	4	4
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	22.2%
Other Improper Driving	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	11.1%
Drug/Alcohol Involvement	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
Inattention/Distracted	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	5.6%
Fell Asleep, Fainted, Fatigued, Etc.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Illness	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Obstructed View	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	0	0	1	3	4	14	18
Total Crashes	0	0	1	3	4	14	18

*Note: Driver factors are based on Vehicle 1 (V1) inputs. Blank entries are included in the Other/Unknown factor.



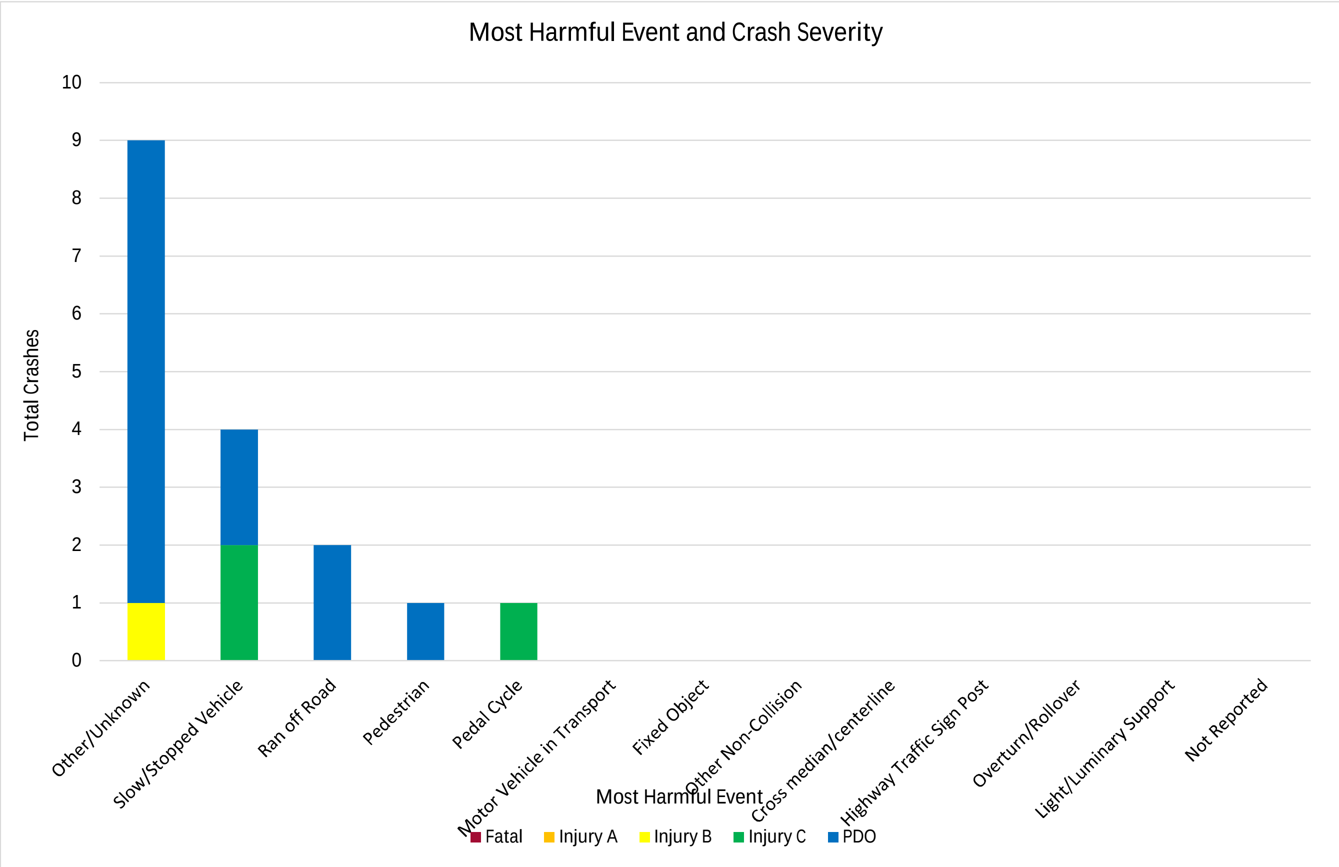
Kimley»Horn

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Kahle Drive

Most Harmful Event*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Other/Unknown	0	0	1	0	1	8	9
	0.0%	0.0%	11.1%	0.0%	11.1%	88.9%	50.0%
Slow/Stopped Vehicle	0	0	0	2	2	2	4
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	22.2%
Ran off Road	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	11.1%
Pedestrian	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
Pedal Cycle	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	5.6%
Motor Vehicle in Transport	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fixed Object	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Non-Collision	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cross median/centerline	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Highway Traffic Sign Post	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Overturn/Rollover	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Light/Luminary Support	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Not Reported	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fence/Wall	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	0	1	3	4	14	18

*Note: Most harmful event is based on Vehicle 1 (V1) input. Blank entries in most harmful event defer to the first listing in Vehicle 1 (V1) all events. Blank entries in both most harmful event and all events are included in the Other/Unknown category. Since there were no entries for the most harmful event the first event in all events was used.

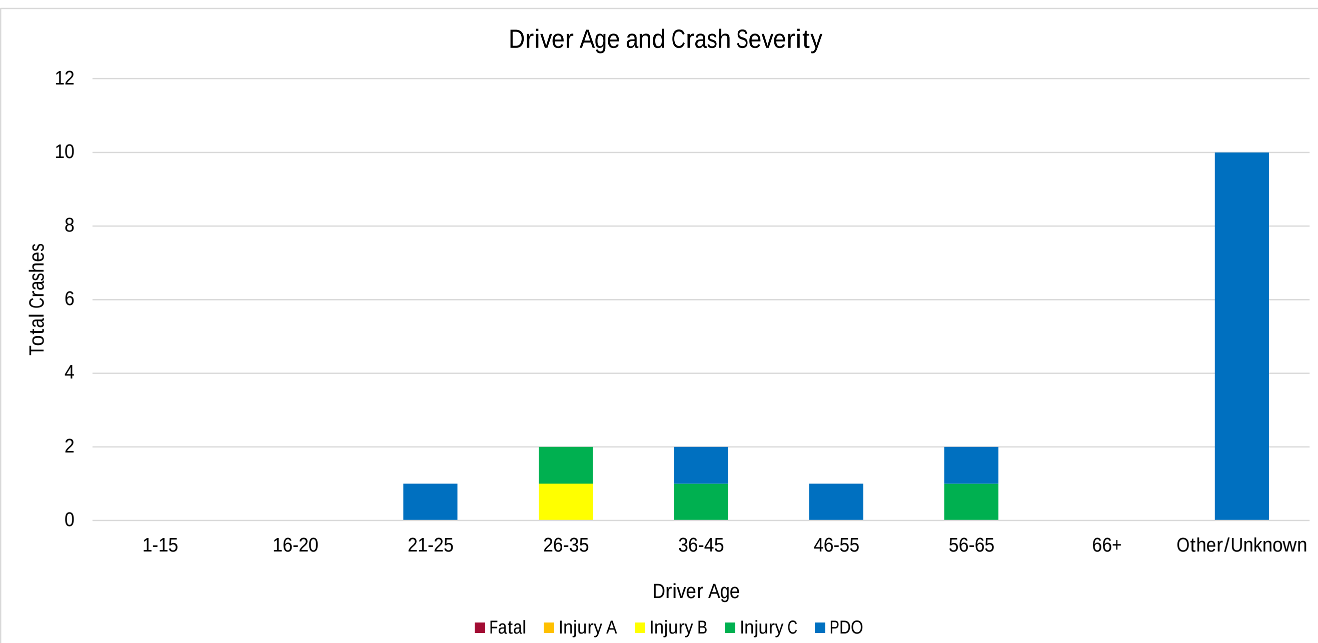
Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Kahle Drive



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Kahle Drive

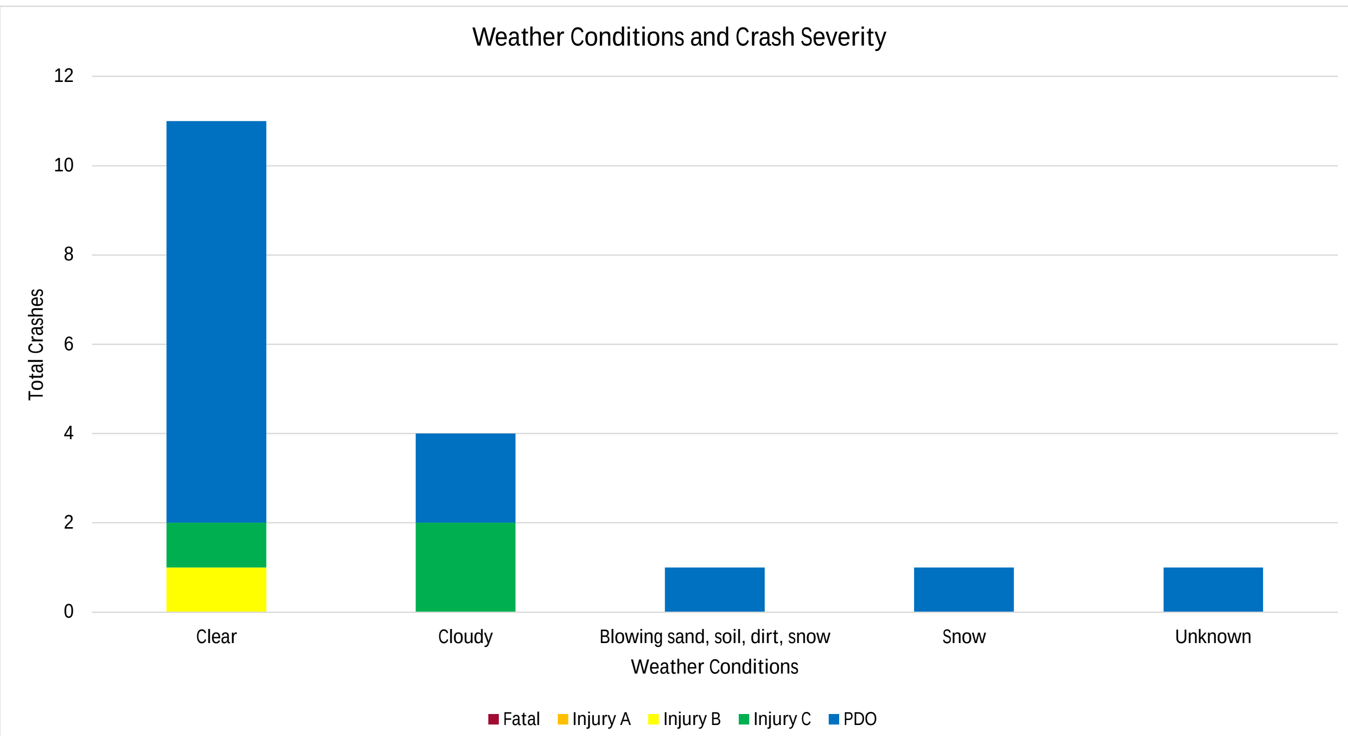
Driver Age*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
1-15	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
16-20	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
21-25	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
26-35	0	0	1	1	2	0	2
	0.0%	0.0%	50.0%	50.0%	100.0%	0.0%	11.1%
36-45	0	0	0	1	1	1	2
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	11.1%
46-55	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
56-65	0	0	0	1	1	1	2
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	11.1%
66+	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other/Unknown	0	0	0	0	0	10	10
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	55.6%
Total Crashes	0	0	1	3	4	14	18

*Note: Driver age is based on Vehicle 1 (V1) input. Blank entries are included in the Other/Unknown category.



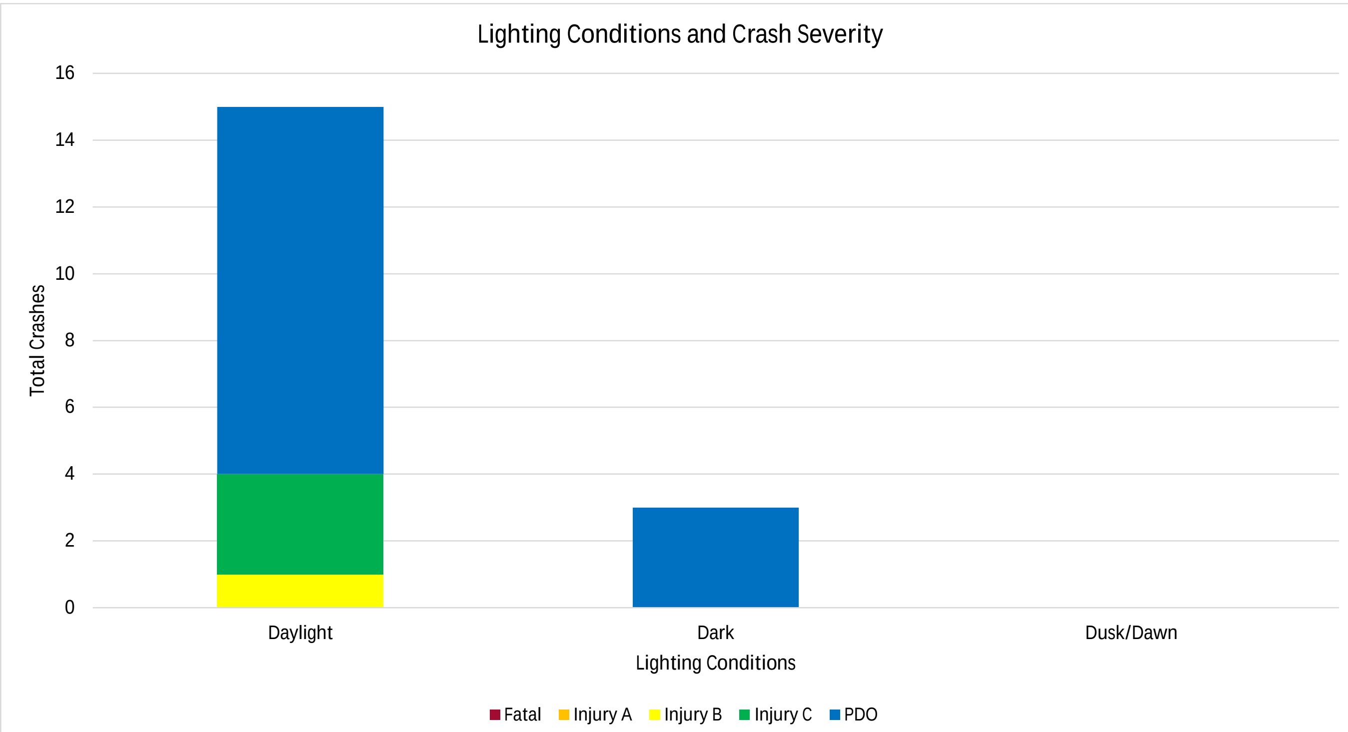
Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Kahle Drive

Weather Conditions							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Clear	0	0	1	1	2	9	11
	0.0%	0.0%	9.1%	9.1%	18.2%	81.8%	61.1%
Cloudy	0	0	0	2	2	2	4
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	22.2%
Blowing sand, soil, dirt, snow	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
Snow	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
Unknown	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
Rain	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fog, Smog, Smoke	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Severe Crosswinds	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	0	0	1	3	4	14	18
Total Crashes	0	0	1	3	4	14	18



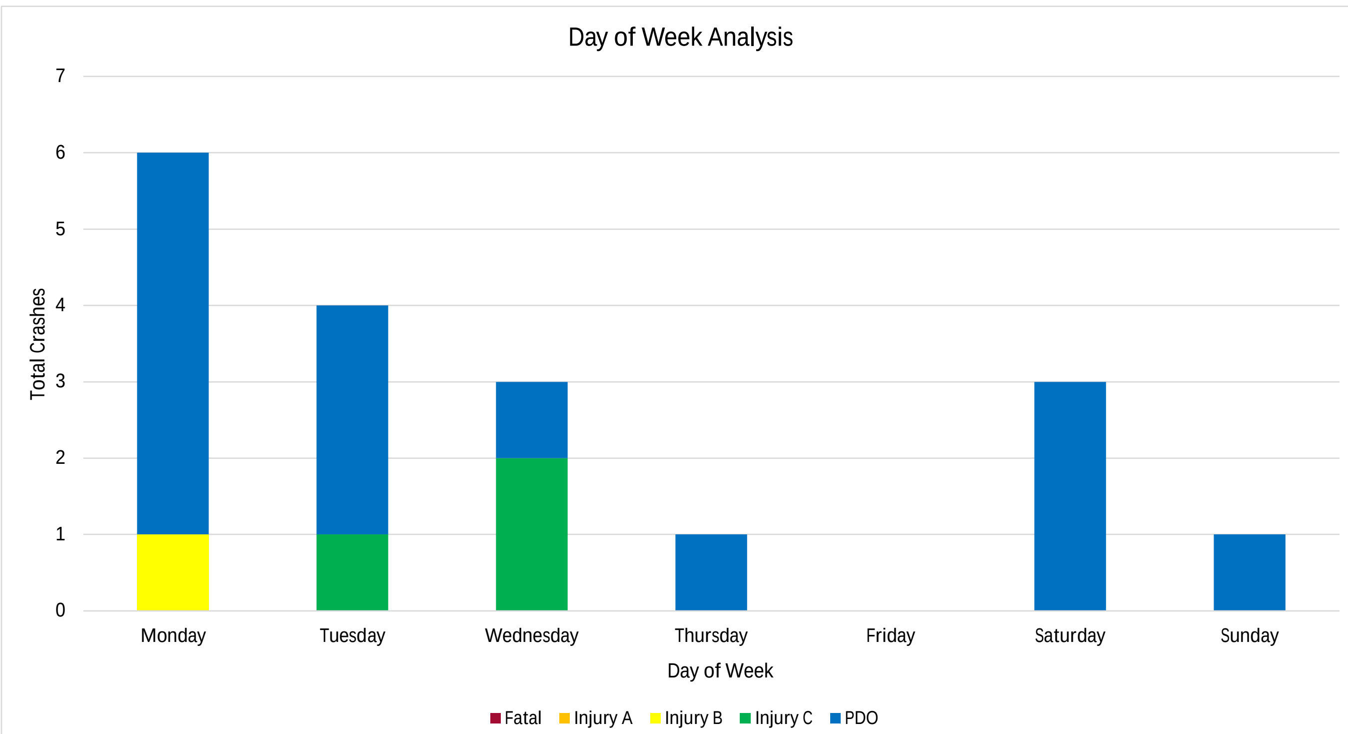
Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Kahle Drive

Lighting Conditions							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Daylight	0	0	1	3	4	11	15
	0.0%	0.0%	6.7%	20.0%	26.7%	73.3%	83.3%
Dark	0	0	0	0	0	3	3
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	16.7%
Dusk/Dawn	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	0	1	3	4	14	18



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Kahle Drive

Day of Week							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Monday	0	0	1	0	1	5	6
	0.0%	0.0%	16.7%	0.0%	16.7%	83.3%	33.3%
Tuesday	0	0	0	1	1	3	4
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	22.2%
Wednesday	0	0	0	2	2	1	3
	0.0%	0.0%	0.0%	66.7%	66.7%	33.3%	16.7%
Thursday	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
Friday	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Saturday	0	0	0	0	0	3	3
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	16.7%
Sunday	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
Total Crashes	0	0	1	3	4	14	18

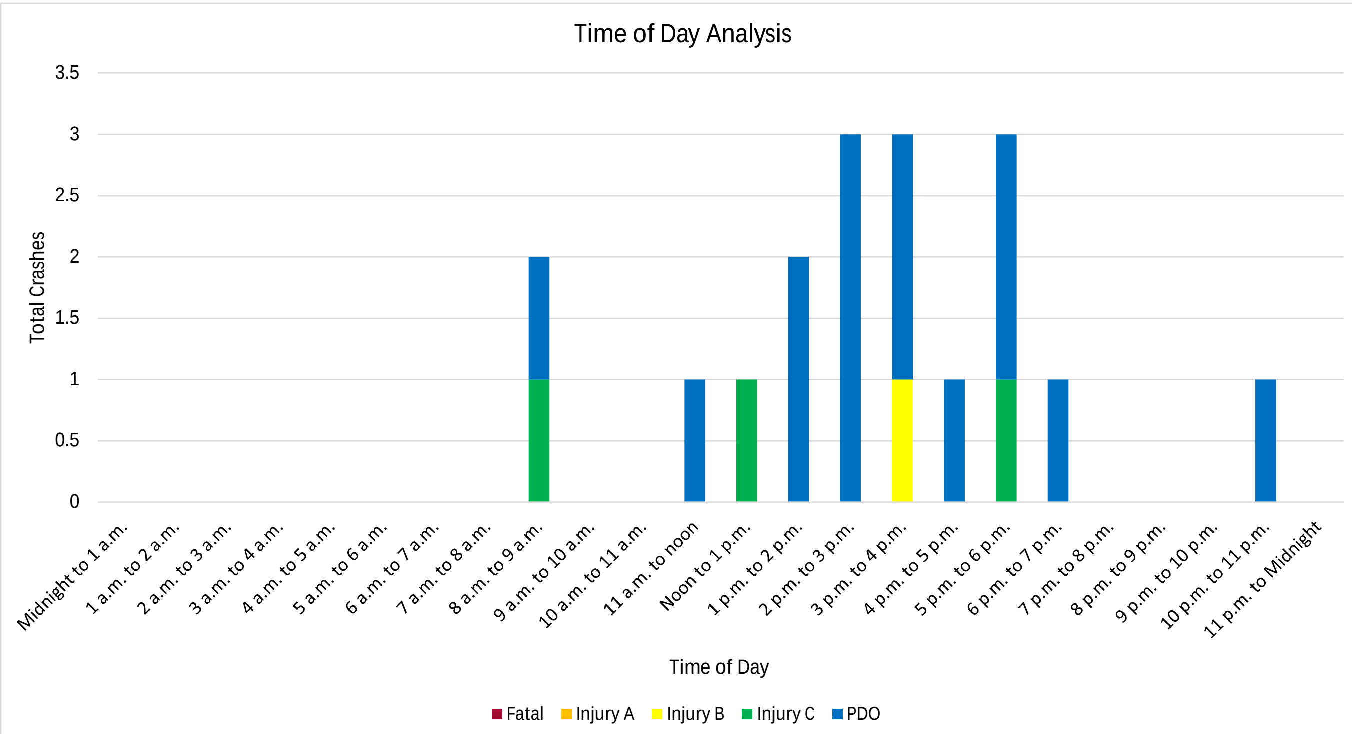


Kimley»Horn

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Kahle Drive

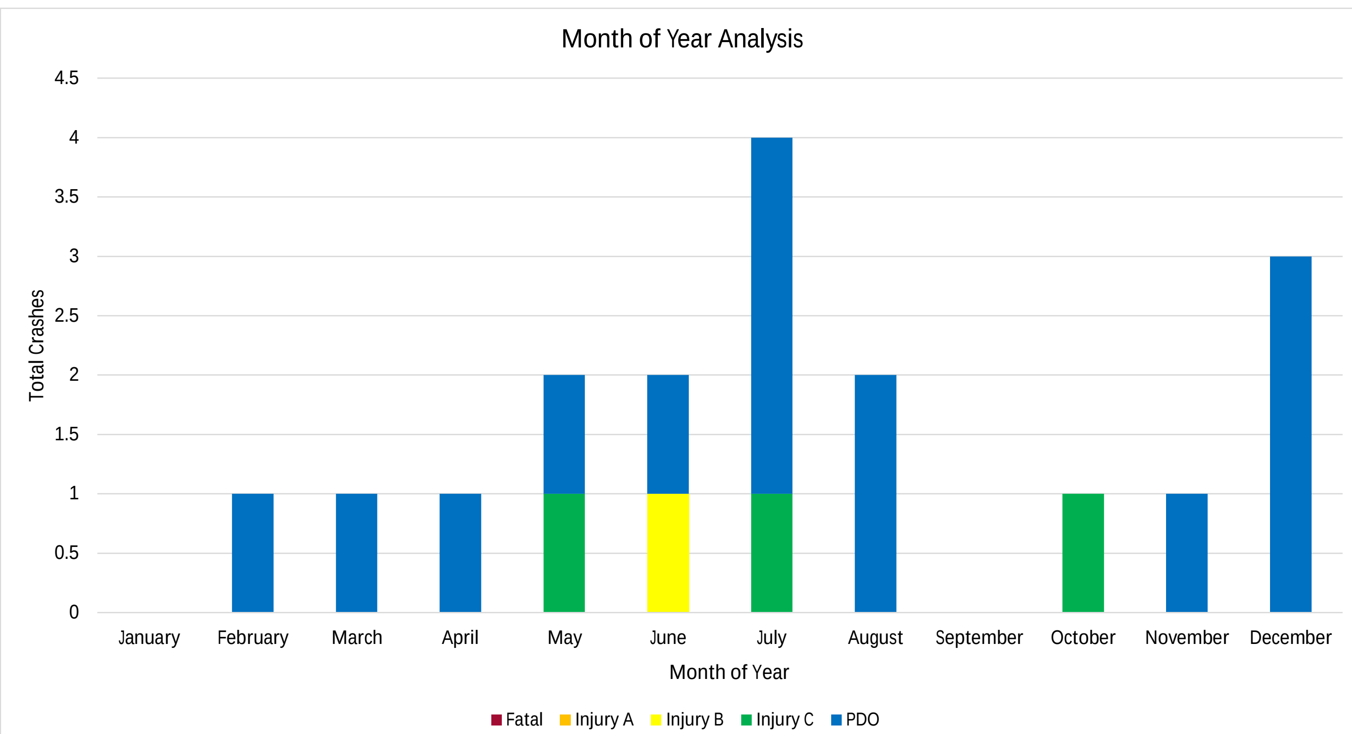
Time of Day							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Midnight to 1 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1 a.m. to 2 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2 a.m. to 3 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3 a.m. to 4 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4 a.m. to 5 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5 a.m. to 6 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6 a.m. to 7 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7 a.m. to 8 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8 a.m. to 9 a.m.	0	0	0	1	1	1	2
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	11.1%
9 a.m. to 10 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10 a.m. to 11 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11 a.m. to noon	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
Noon to 1 p.m.	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	5.6%
1 p.m. to 2 p.m.	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	11.1%
2 p.m. to 3 p.m.	0	0	0	0	0	3	3
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	16.7%
3 p.m. to 4 p.m.	0	0	1	0	1	2	3
	0.0%	0.0%	33.3%	0.0%	33.3%	66.7%	16.7%
4 p.m. to 5 p.m.	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
5 p.m. to 6 p.m.	0	0	0	1	1	2	3
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	16.7%
6 p.m. to 7 p.m.	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
7 p.m. to 8 p.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8 p.m. to 9 p.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9 p.m. to 10 p.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10 p.m. to 11 p.m.	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
11 p.m. to Midnight	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	0	1	3	4	14	18

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Kahle Drive



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Kahle Drive

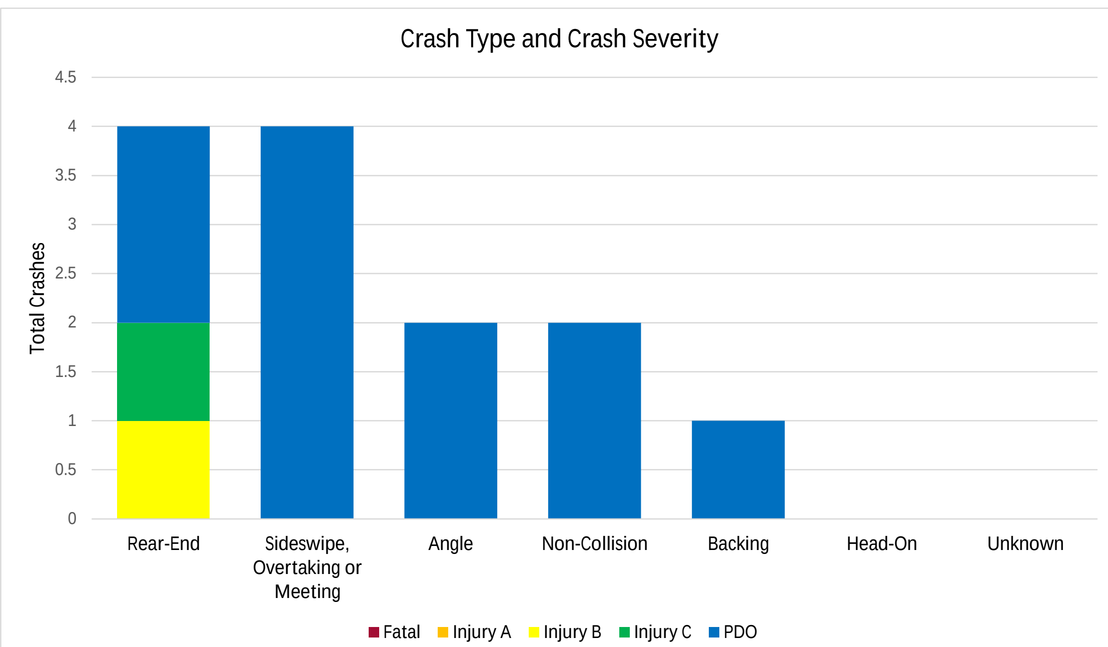
Month of Year							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
January	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
February	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
March	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
April	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
May	0	0	0	1	1	1	2
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	11.1%
June	0	0	1	0	1	1	2
	0.0%	0.0%	50.0%	0.0%	50.0%	50.0%	11.1%
July	0	0	0	1	1	3	4
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	22.2%
August	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	11.1%
September	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
October	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	5.6%
November	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	5.6%
December	0	0	0	0	0	3	3
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	16.7%
Total Crashes	0	0	1	3	4	14	18



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Elks Point Road

Overall Crash Data			Pedestrian		Pedal Cycle		Motorcycle		Bus	
Fatal	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury A	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury B	1	7.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury C	1	7.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Property Damage Only (PDO)	11	84.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	13	100%	0	0% (0%)	0	0% (0%)	0	0% (0%)	0	0% (0%)

Crash Type	Fatal and Injury					PDO	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
Rear-End	0	0	1	1	2	2	4
	0.0%	0.0%	25.0%	25.0%	50.0%	50.0%	30.8%
Sideswipe, Overtaking or Meeting	0	0	0	0	0	4	4
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	30.8%
Angle	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	15.4%
Non-Collision	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	15.4%
Backing	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
Head-On	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	0	1	1	2	11	13



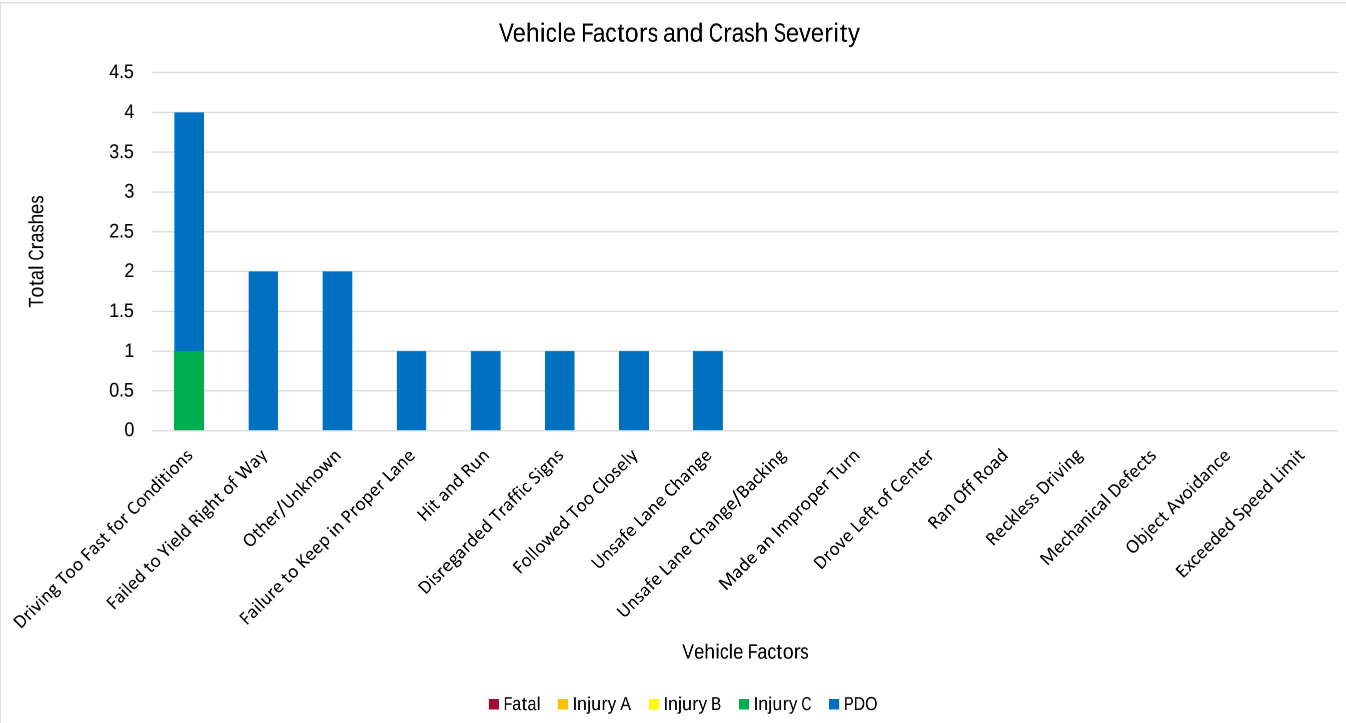
Kimley»Horn

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Elks Point Road

Vehicle Factors*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Driving Too Fast for Conditions	0	0	0	1	1	3	4
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	30.8%
Failed to Yield Right of Way	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	15.4%
Other/Unknown	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	15.4%
Failure to Keep in Proper Lane	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
Hit and Run	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
Disregarded Traffic Signs	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
Followed Too Closely	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
Unsafe Lane Change	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
Unsafe Lane Change/Backing	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Made an Improper Turn	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Drove Left of Center	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ran Off Road	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Reckless Driving	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mechanical Defects	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Object Avoidance	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Exceeded Speed Limit	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wrong Way	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Over-Correcting/Over-Steering	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Backing	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	0	0	0	1	1	12	13
Total Crashes	0	0	1	1	2	11	13

*Note: Vehicle factors are based on Vehicle 1 (V1) inputs. Blank entries are included in the Other/Unknown factor.

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Elks Point Road

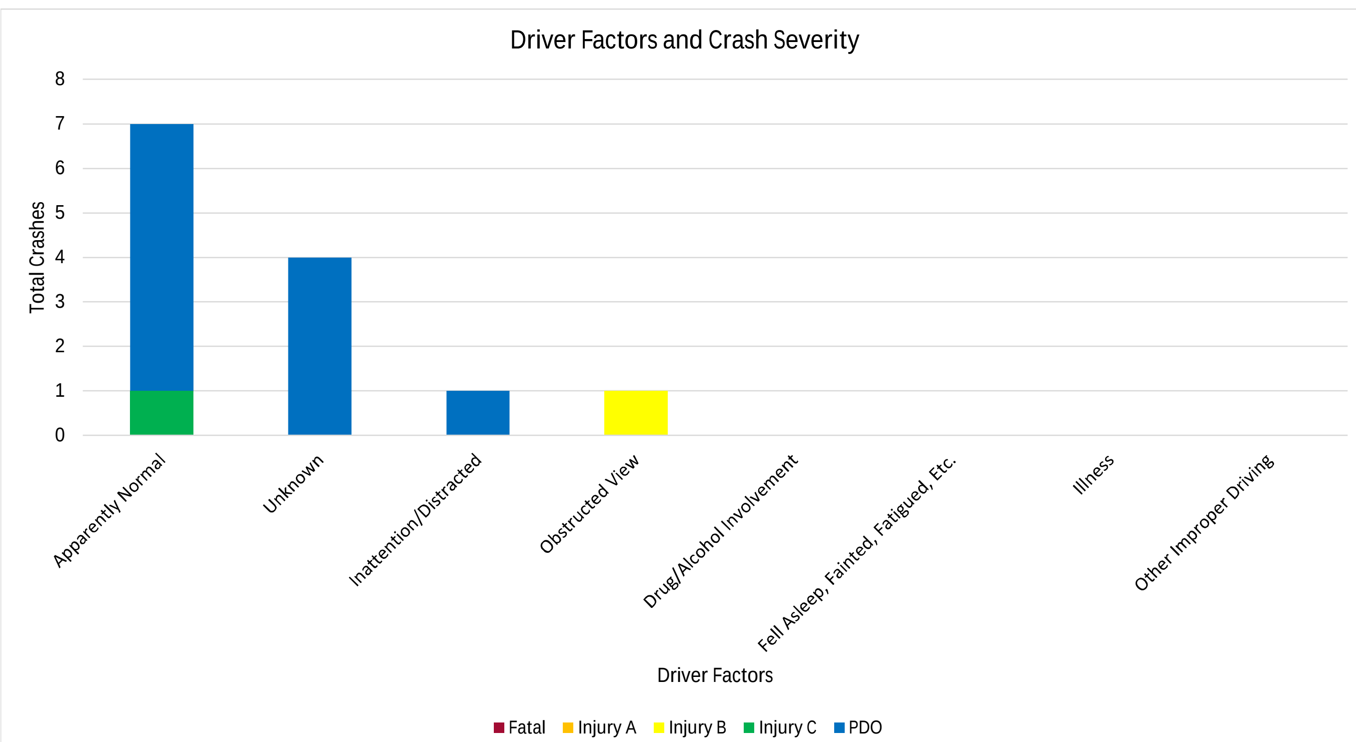


Kimley»Horn

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Elks Point Road

Driver Factors*							
	Fatal and Injury					PDO	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
Apparently Normal	0	0	0	1	1	6	7
	0.0%	0.0%	0.0%	14.3%	14.3%	85.7%	53.8%
Unknown	0	0	0	0	0	4	4
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	30.8%
Inattention/Distracted	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
Obstructed View	0	0	1	0	1	0	1
	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	7.7%
Drug/Alcohol Involvement	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fell Asleep, Fainted, Fatigued, Etc.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Illness	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Improper Driving	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	0	0	1	1	2	11	13
Total Crashes	0	0	1	1	2	11	13

*Note: Driver factors are based on Vehicle 1 (V1) inputs. Blank entries are included in the Other/Unknown factor.

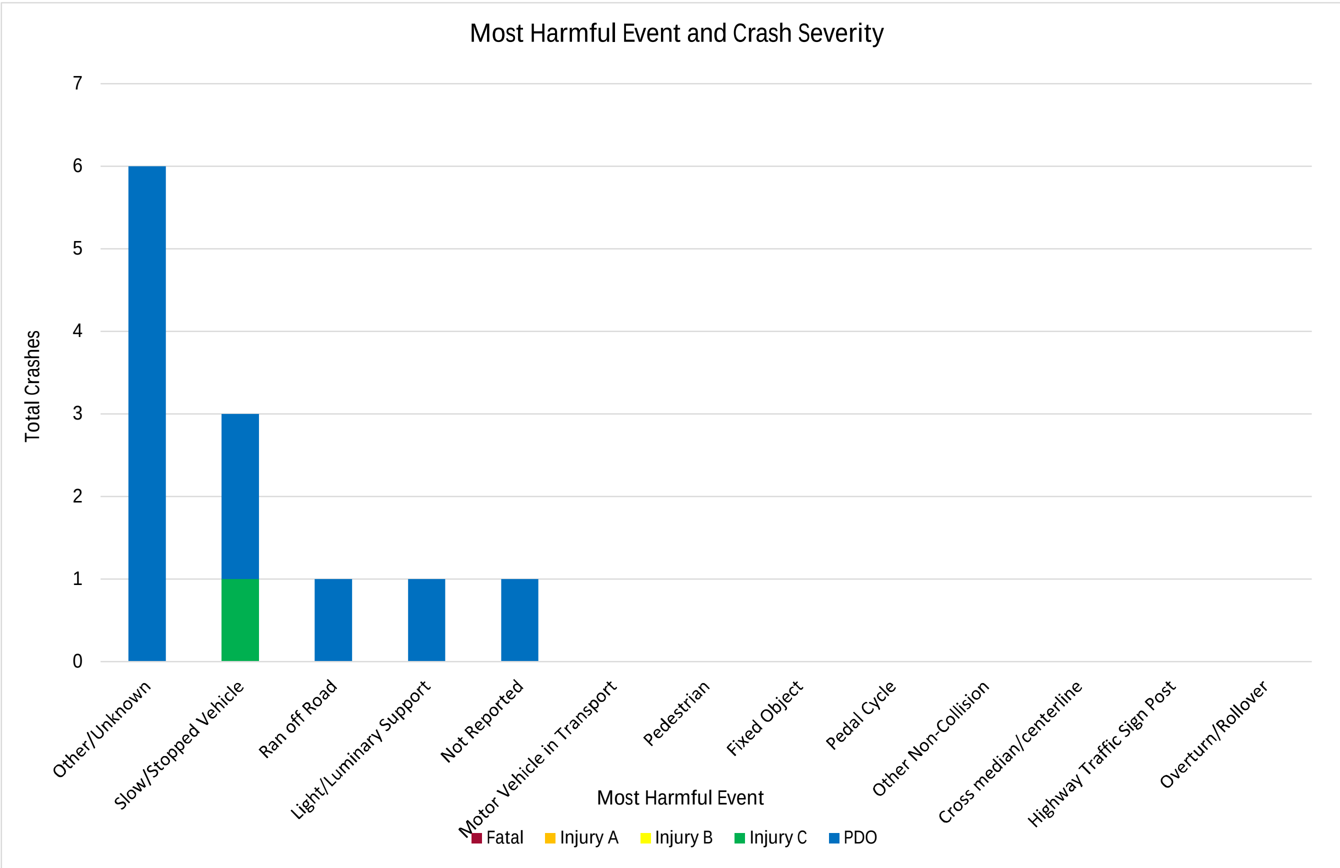


Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Elks Point Road

Most Harmful Event*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Other/Unknown	0	0	0	0	0	6	6
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	46.2%
Slow/Stopped Vehicle	0	0	0	1	1	2	3
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	23.1%
Ran off Road	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
Light/Luminary Support	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
Not Reported	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
Motor Vehicle in Transport	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pedestrian	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fixed Object	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pedal Cycle	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Non-Collision	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cross median/centerline	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Highway Traffic Sign Post	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Overturn/Rollover	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fence/Wall	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	0	1	1	2	11	13

*Note: Most harmful event is based on Vehicle 1 (V1) input. Blank entries in most harmful event defer to the first listing in Vehicle 1 (V1) all events. Blank entries in both most harmful event and all events are included in the Other/Unknown category. Since there were no entries for the most harmful event the first event in all events was used.

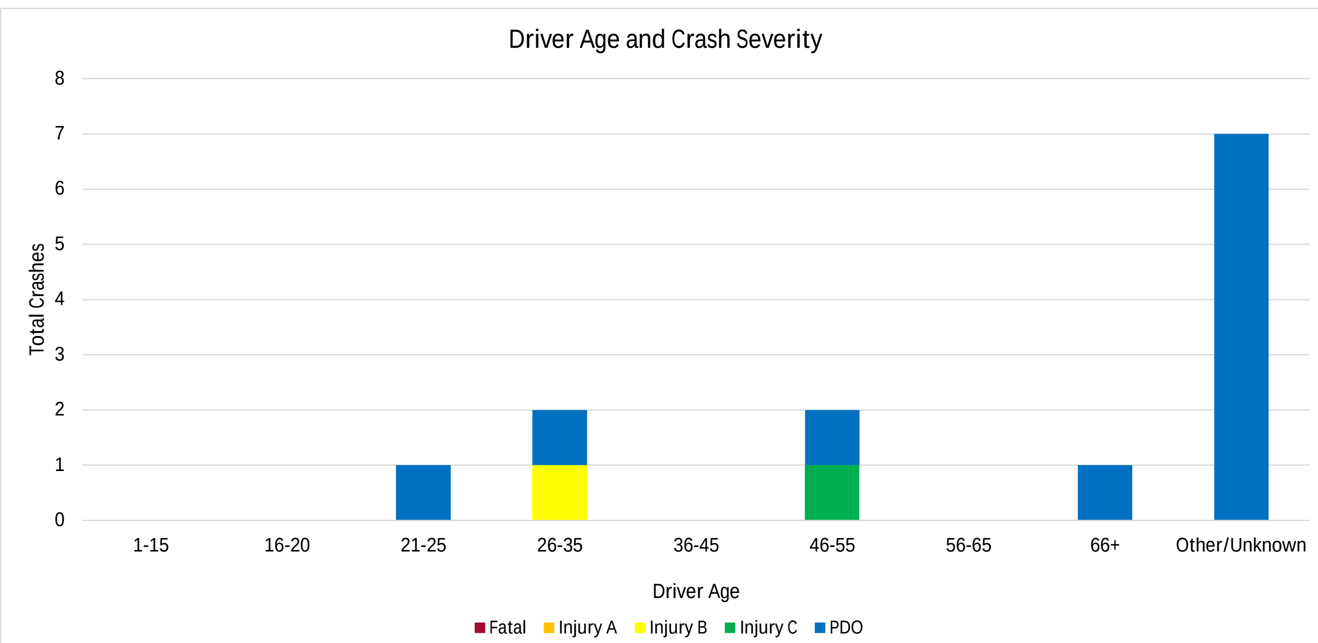
Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Elks Point Road



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Elks Point Road

Driver Age*							
	Fatal and Injury					PDO	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
1-15	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
16-20	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
21-25	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
26-35	0	0	1	0	1	1	2
	0.0%	0.0%	50.0%	0.0%	50.0%	50.0%	15.4%
36-45	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
46-55	0	0	0	1	1	1	2
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	15.4%
56-65	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
66+	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
Other/Unknown	0	0	0	0	0	7	7
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	53.8%
Total Crashes	0	0	1	1	2	11	13

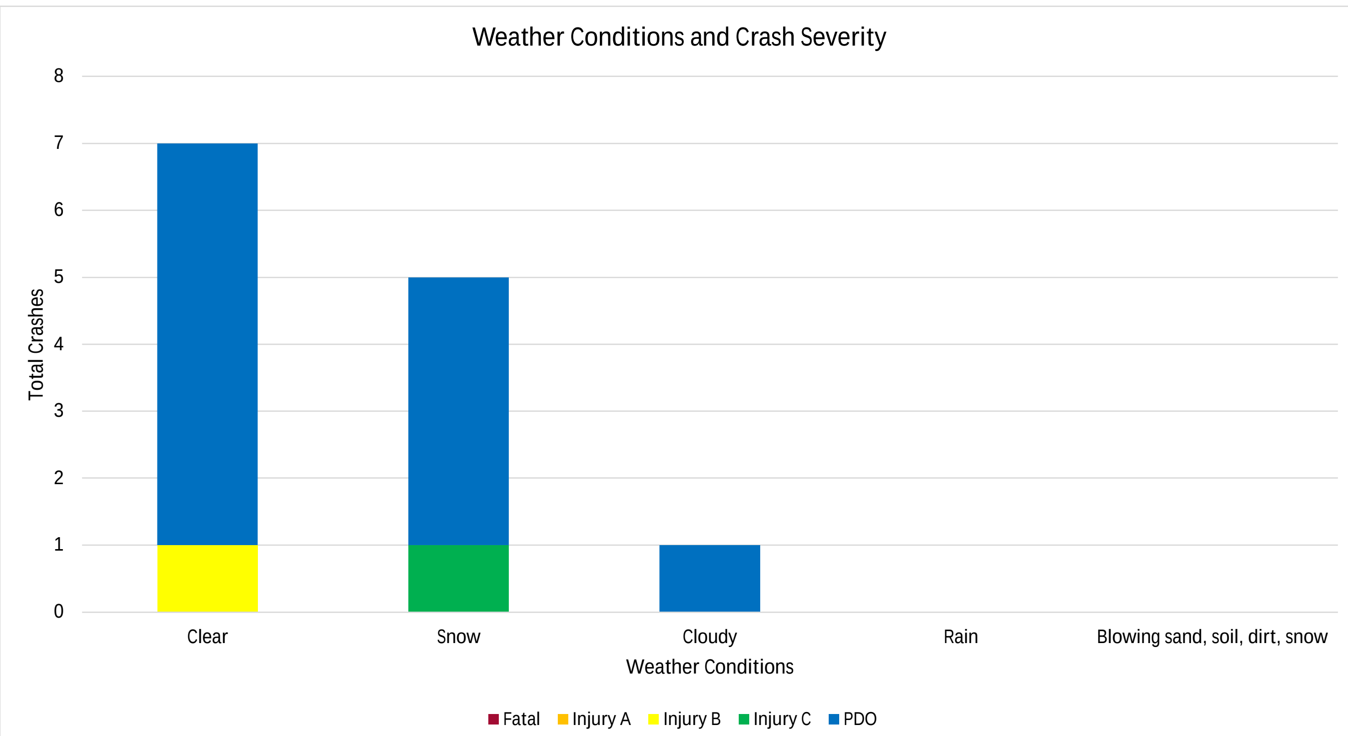
*Note: Driver age is based on Vehicle 1 (V1) input. Blank entries are included in the Other/Unknown category.



Kimley»Horn

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Elks Point Road

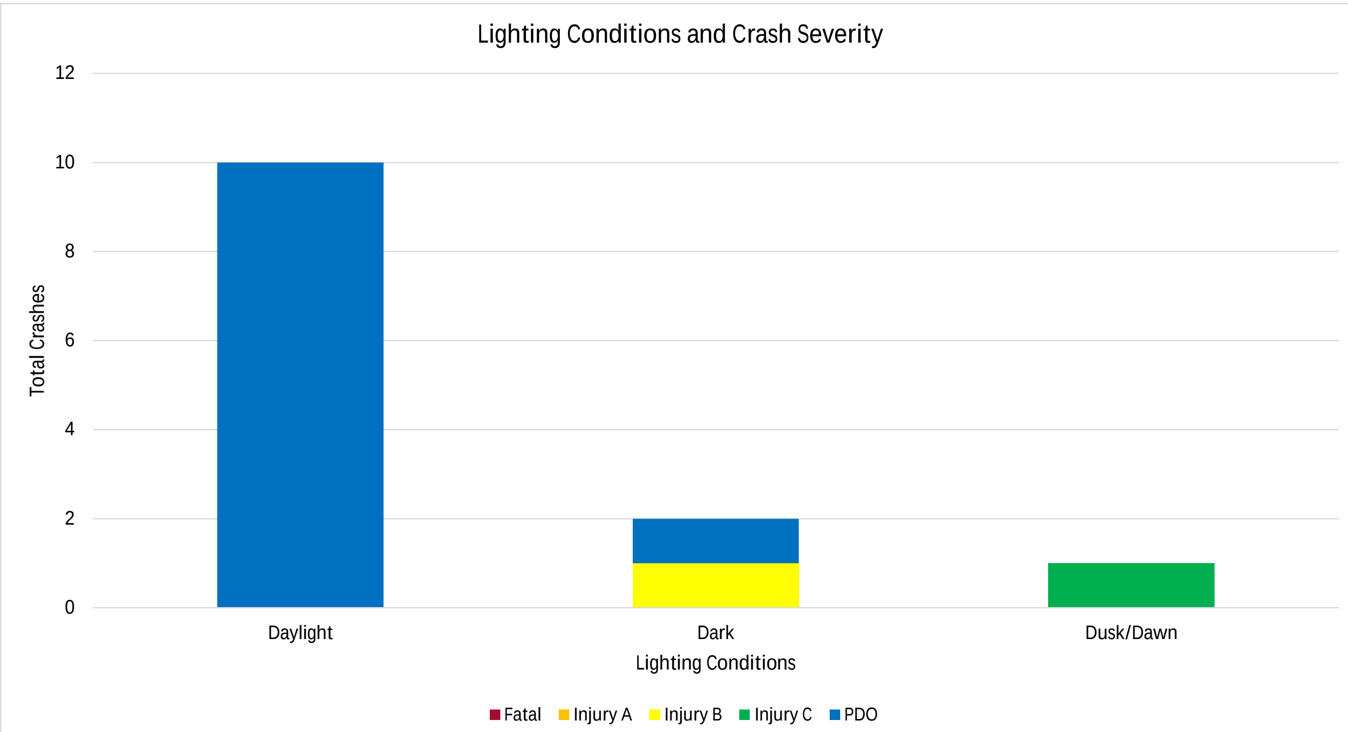
Weather Conditions							
	Fatal and Injury					PDO	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
Clear	0	0	1	0	1	6	7
	0.0%	0.0%	14.3%	0.0%	14.3%	85.7%	53.8%
Snow	0	0	0	1	1	4	5
	0.0%	0.0%	0.0%	20.0%	20.0%	80.0%	38.5%
Cloudy	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
Rain	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Blowing sand, soil, dirt, snow	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fog, Smog, Smoke	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Severe Crosswinds	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	0	0	1	1	2	11	13
Total Crashes	0	0	1	1	2	11	13



Kimley»Horn

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Elks Point Road

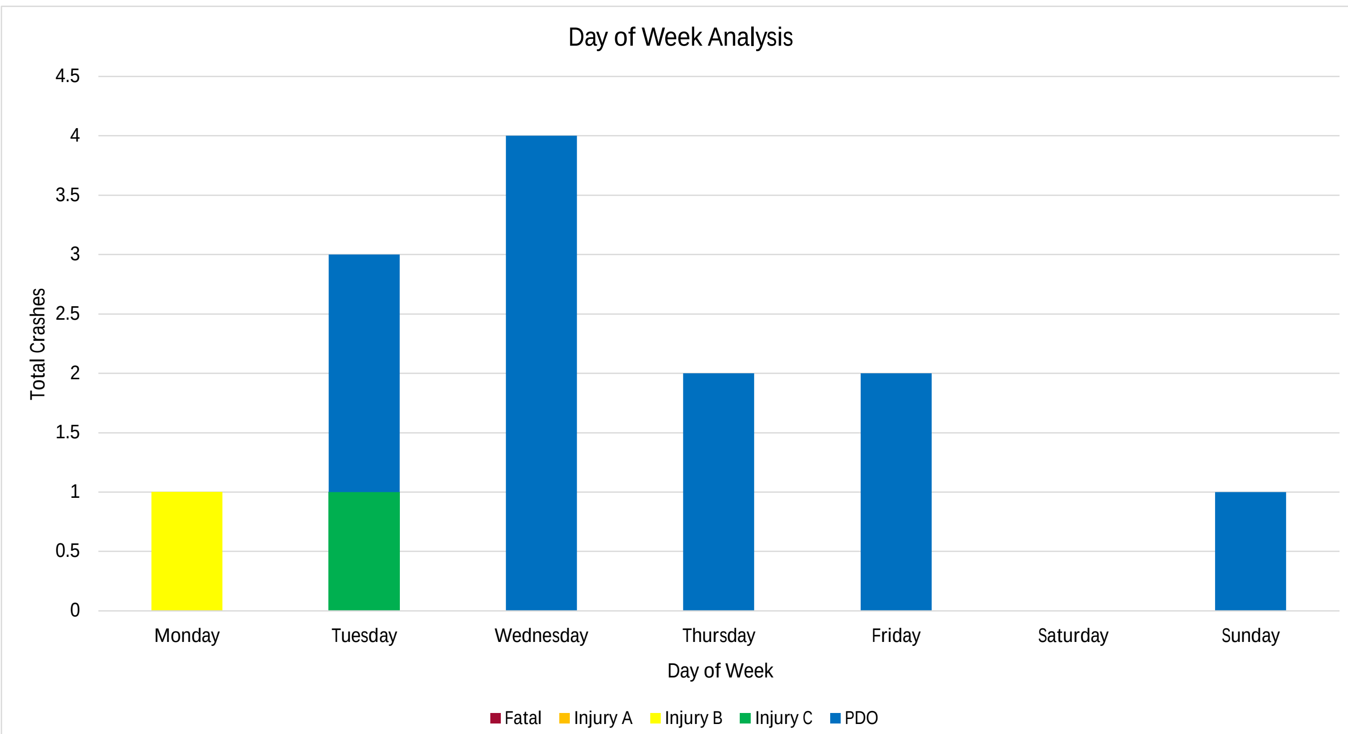
Lighting Conditions							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Daylight	0	0	0	0	0	10	10
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	76.9%
Dark	0	0	1	0	1	1	2
	0.0%	0.0%	50.0%	0.0%	50.0%	50.0%	15.4%
Dusk/Dawn	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	7.7%
Total Crashes	0	0	1	1	2	11	13



Kimley»Horn

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Elks Point Road

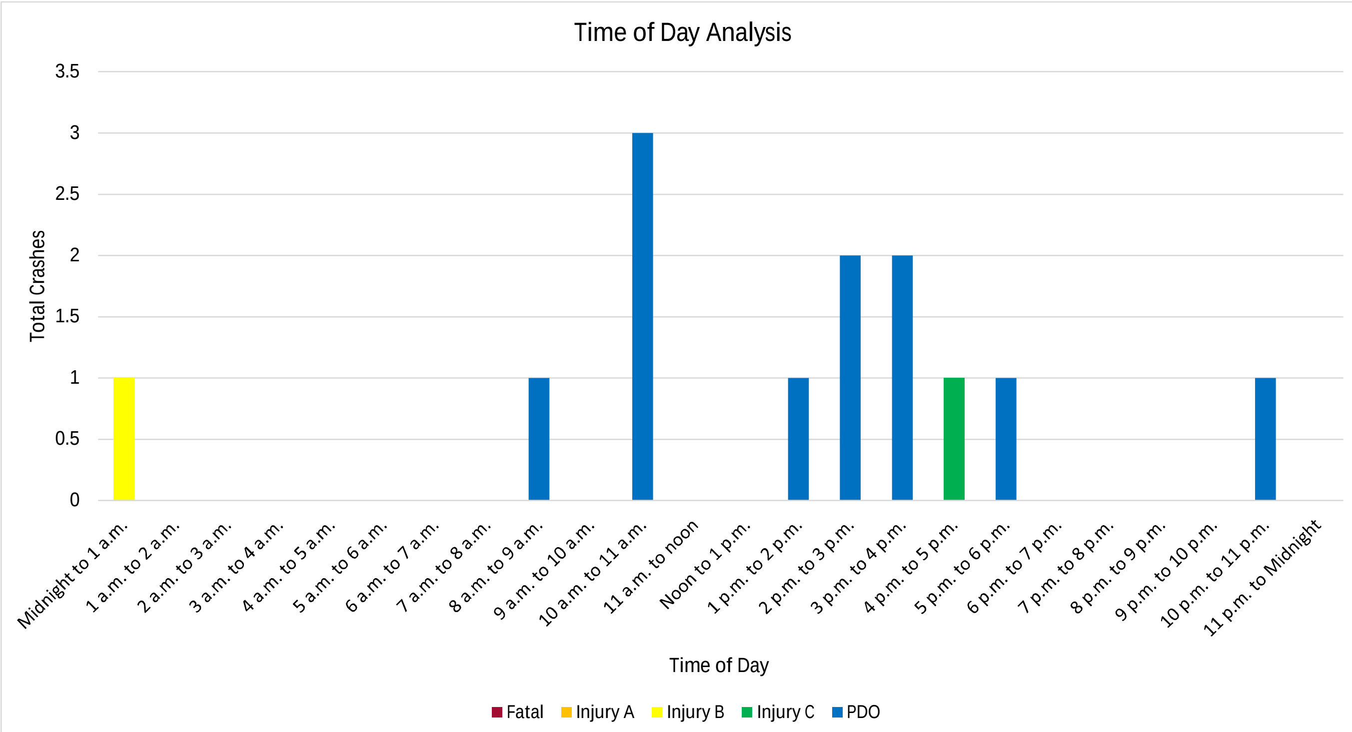
Day of Week							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Monday	0	0	1	0	1	0	1
	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	7.7%
Tuesday	0	0	0	1	1	2	3
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	23.1%
Wednesday	0	0	0	0	0	4	4
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	30.8%
Thursday	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	15.4%
Friday	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	15.4%
Saturday	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sunday	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
Total Crashes	0	0	1	1	2	11	13



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Elks Point Road

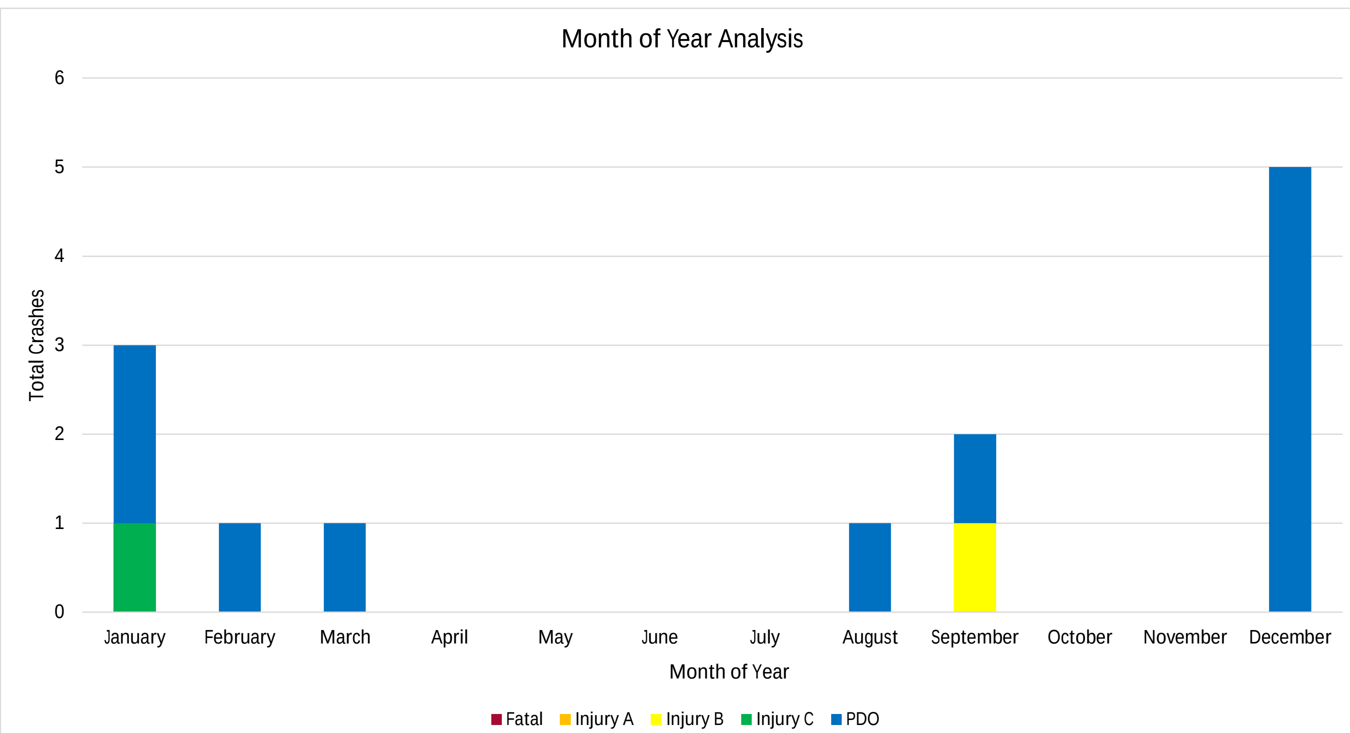
Time of Day							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Midnight to 1 a.m.	0	0	1	0	1	0	1
	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	7.7%
1 a.m. to 2 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2 a.m. to 3 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3 a.m. to 4 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4 a.m. to 5 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5 a.m. to 6 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6 a.m. to 7 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7 a.m. to 8 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8 a.m. to 9 a.m.	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
9 a.m. to 10 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10 a.m. to 11 a.m.	0	0	0	0	0	3	3
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	23.1%
11 a.m. to noon	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Noon to 1 p.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1 p.m. to 2 p.m.	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
2 p.m. to 3 p.m.	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	15.4%
3 p.m. to 4 p.m.	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	15.4%
4 p.m. to 5 p.m.	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	7.7%
5 p.m. to 6 p.m.	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
6 p.m. to 7 p.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7 p.m. to 8 p.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8 p.m. to 9 p.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9 p.m. to 10 p.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10 p.m. to 11 p.m.	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
11 p.m. to Midnight	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	0	1	1	2	11	13

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Elks Point Road



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Elks Point Road

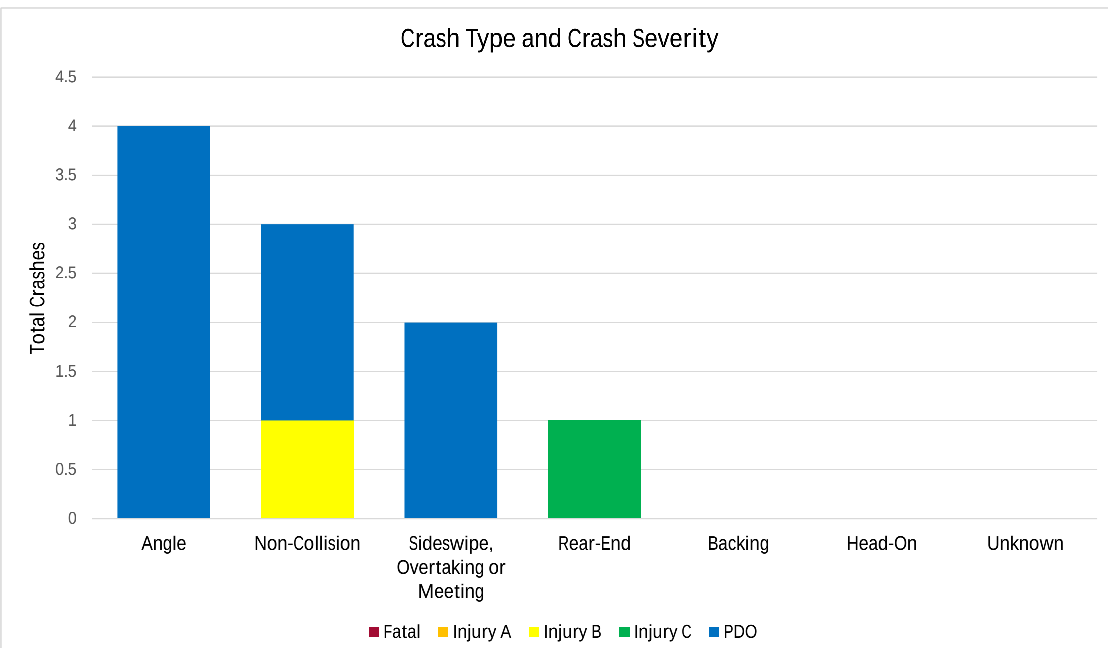
Month of Year							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
January	0	0	0	1	1	2	3
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	23.1%
February	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
March	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
April	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
May	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
June	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
July	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
August	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	7.7%
September	0	0	1	0	1	1	2
	0.0%	0.0%	50.0%	0.0%	50.0%	50.0%	15.4%
October	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
November	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
December	0	0	0	0	0	5	5
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	38.5%
Total Crashes	0	0	1	1	2	11	13



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Warrior Way

Overall Crash Data			Pedestrian		Pedal Cycle		Motorcycle		Bus	
Fatal	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury A	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury B	1	10.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%
Injury C	1	10.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Property Damage Only (PDO)	8	80.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	10	100%	1	100% (10%)	0	0% (0%)	0	0% (0%)	0	0% (0%)

Crash Type	Fatal and Injury					PDO	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
Angle	0	0	0	0	0	4	4
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	40.0%
Non-Collision	0	0	1	0	1	2	3
	0.0%	0.0%	33.3%	0.0%	33.3%	66.7%	30.0%
Sideswipe, Overtaking or Meeting	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	20.0%
Rear-End	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	10.0%
Backing	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Head-On	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	0	1	1	2	8	10



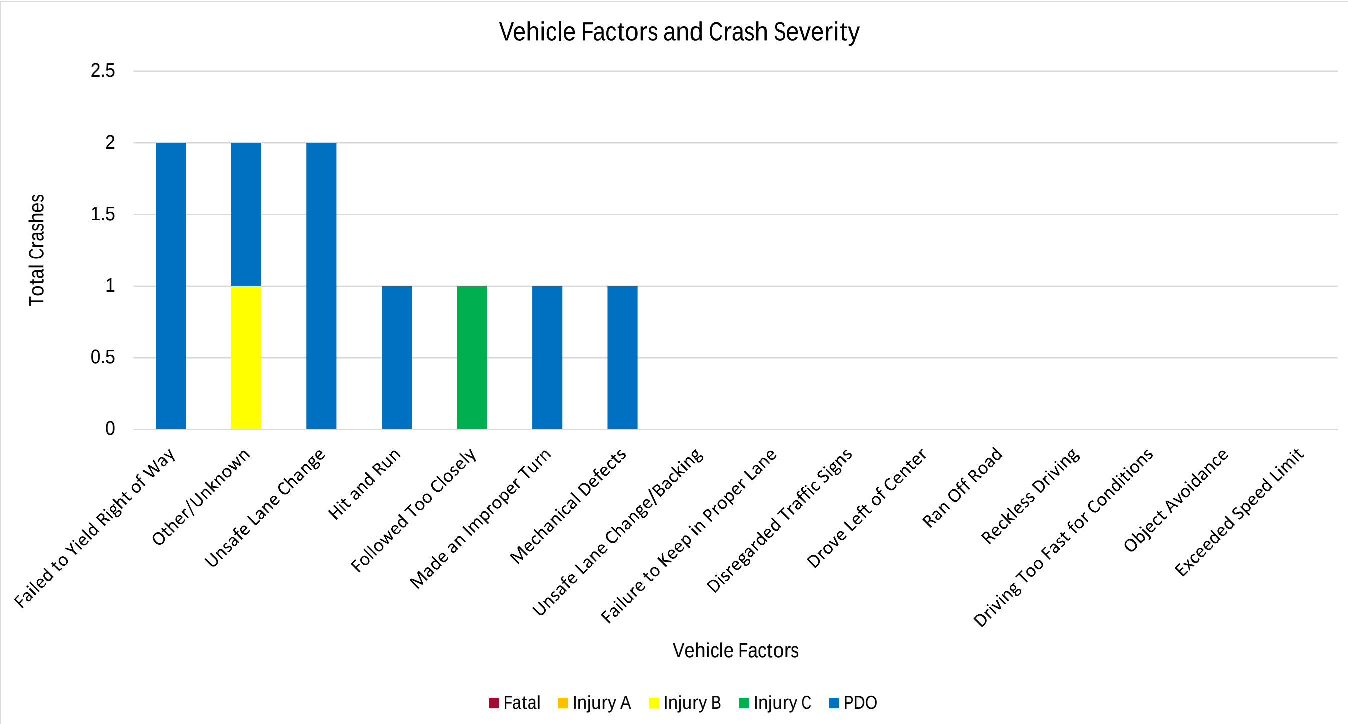
Kimley»Horn

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Warrior Way

Vehicle Factors*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Failed to Yield Right of Way	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	20.0%
Other/Unknown	0	0	1	0	1	1	2
	0.0%	0.0%	50.0%	0.0%	50.0%	50.0%	20.0%
Unsafe Lane Change	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	20.0%
Hit and Run	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.0%
Followed Too Closely	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	10.0%
Made an Improper Turn	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.0%
Mechanical Defects	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.0%
Unsafe Lane Change/Backing	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Failure to Keep in Proper Lane	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Disregarded Traffic Signs	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Drove Left of Center	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ran Off Road	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Reckless Driving	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Driving Too Fast for Conditions	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Object Avoidance	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Exceeded Speed Limit	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wrong Way	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Over-Correcting/Over-Steering	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Backing	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	0	0	1	1	2	8	10
Total Crashes	0	0	1	1	2	8	10

*Note: Vehicle factors are based on Vehicle 1 (V1) inputs. Blank entries are included in the Other/Unknown factor.

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Warrior Way

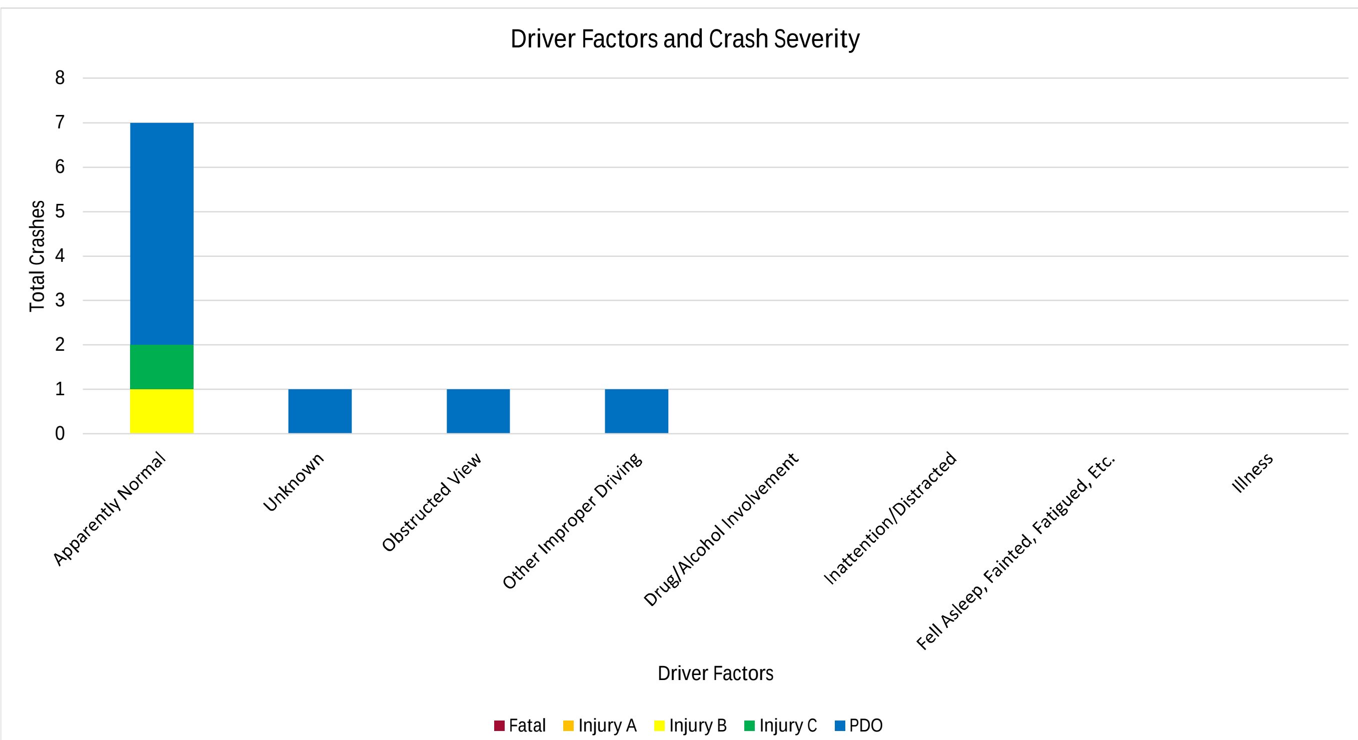


Kimley»Horn

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Warrior Way

Driver Factors*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Apparently Normal	0	0	1	1	2	5	7
	0.0%	0.0%	14.3%	14.3%	28.6%	71.4%	70.0%
Unknown	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.0%
Obstructed View	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.0%
Other Improper Driving	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.0%
Drug/Alcohol Involvement	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Inattention/Distracted	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fell Asleep, Fainted, Fatigued, Etc.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Illness	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	0	0	1	1	2	8	10
Total Crashes	0	0	1	1	2	8	10

*Note: Driver factors are based on Vehicle 1 (V1) inputs. Blank entries are included in the Other/Unknown factor.

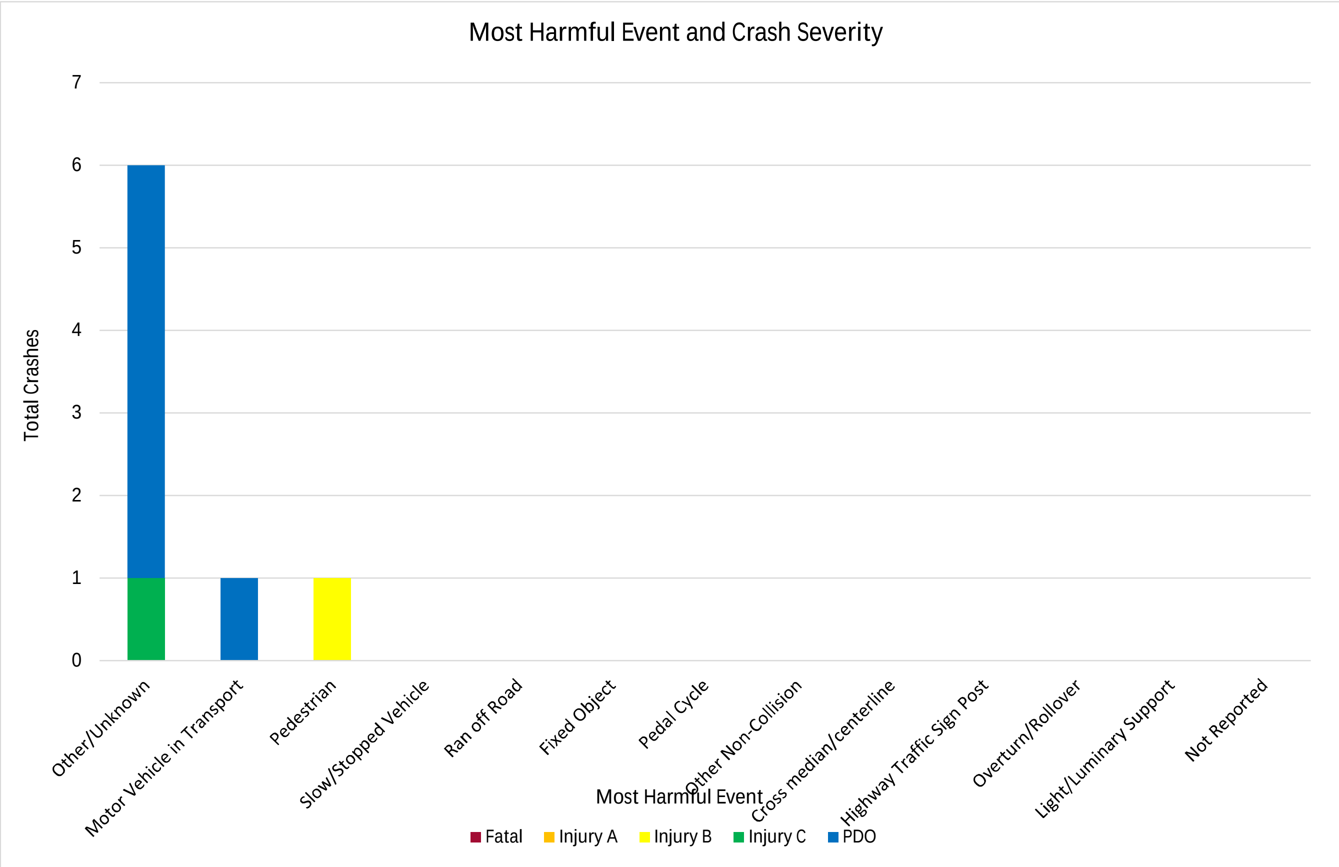


Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Warrior Way

Most Harmful Event*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Other/Unknown	0	0	0	1	1	5	6
	0.0%	0.0%	0.0%	16.7%	16.7%	83.3%	60.0%
Motor Vehicle in Transport	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.0%
Pedestrian	0	0	1	0	1	0	1
	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	10.0%
Slow/Stopped Vehicle	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ran off Road	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fixed Object	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pedal Cycle	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Non-Collision	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cross median/centerline	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Highway Traffic Sign Post	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Overturn/Rollover	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Light/Luminary Support	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Not Reported	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fence/Wall	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	0	1	1	2	8	10

*Note: Most harmful event is based on Vehicle 1 (V1) input. Blank entries in most harmful event defer to the first listing in Vehicle 1 (V1) all events. Blank entries in both most harmful event and all events are included in the Other/Unknown category. Since there were no entries for the most harmful event the first event in all events was used.

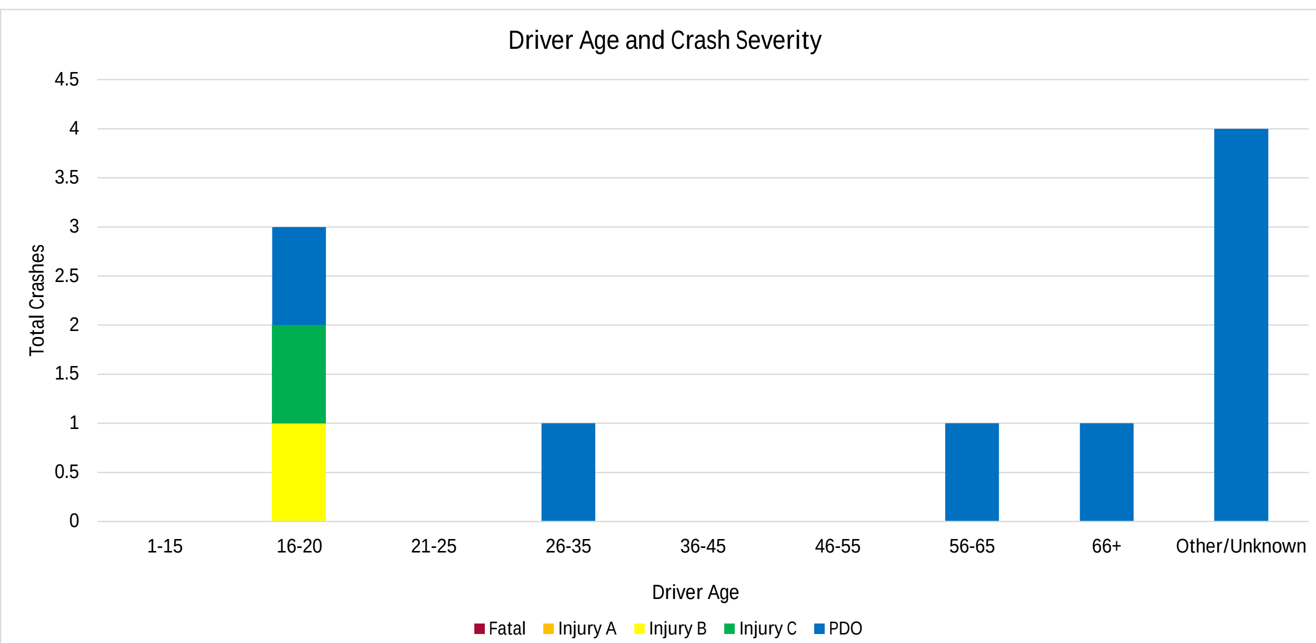
Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Warrior Way



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Warrior Way

Driver Age*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
1-15	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
16-20	0	0	1	1	2	1	3
	0.0%	0.0%	33.3%	33.3%	66.7%	33.3%	30.0%
21-25	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
26-35	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.0%
36-45	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
46-55	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
56-65	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.0%
66+	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.0%
Other/Unknown	0	0	0	0	0	4	4
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	40.0%
Total Crashes	0	0	1	1	2	8	10

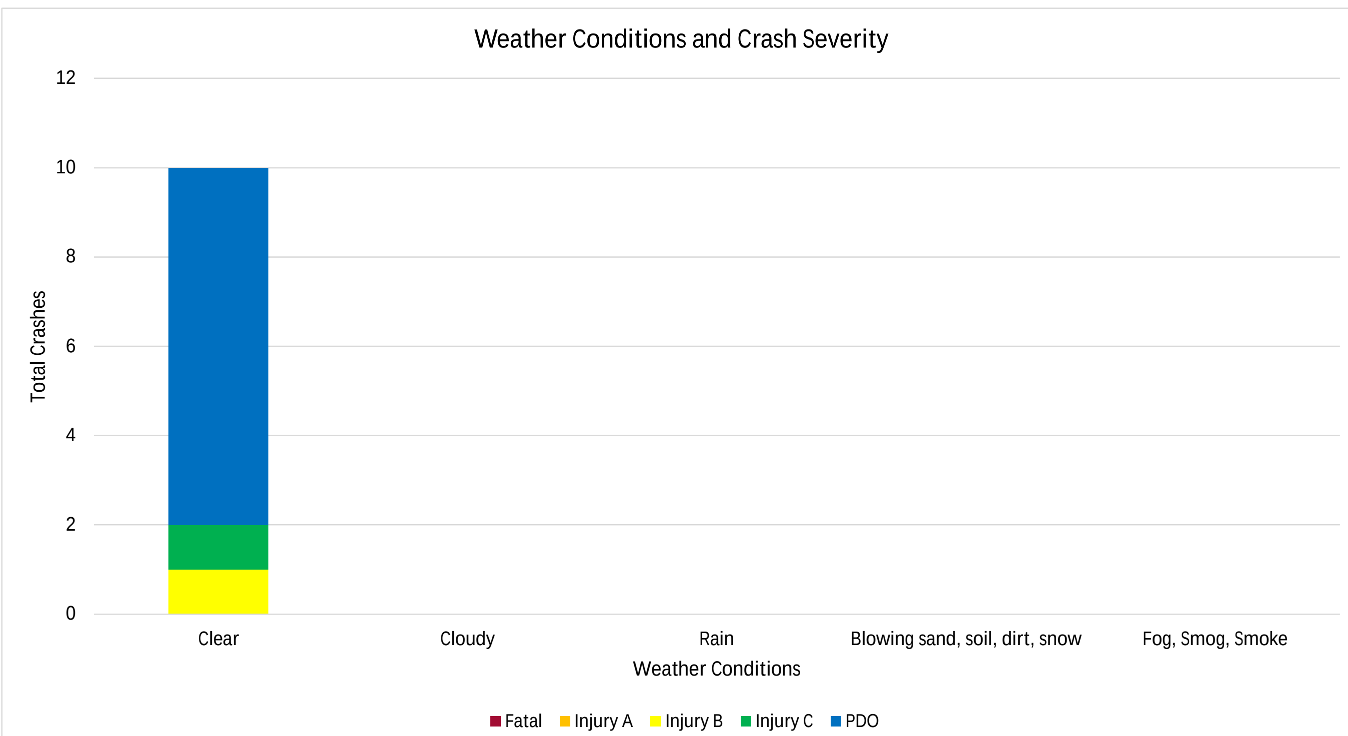
*Note: Driver age is based on Vehicle 1 (V1) input. Blank entries are included in the Other/Unknown category.



Kimley»Horn

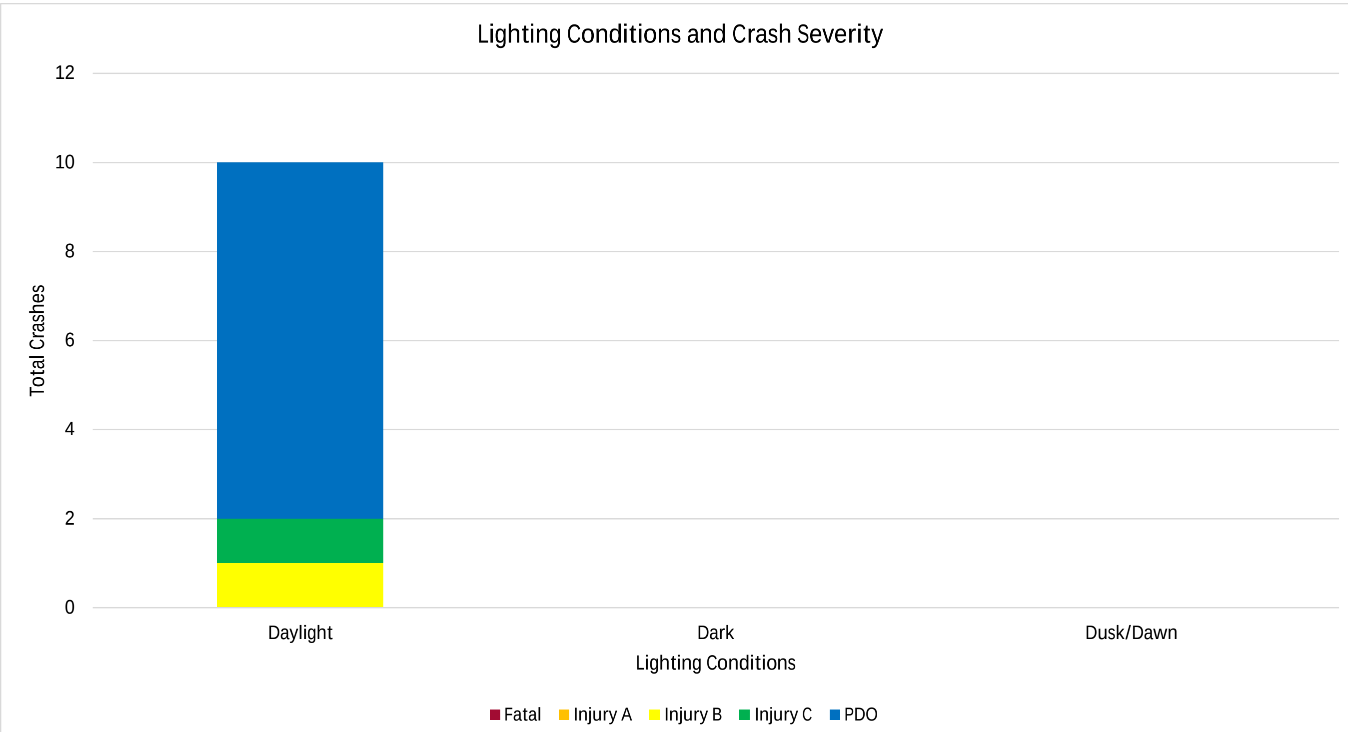
Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Warrior Way

Weather Conditions							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Clear	0	0	1	1	2	8	10
	0.0%	0.0%	10.0%	10.0%	20.0%	80.0%	100.0%
Cloudy	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rain	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Blowing sand, soil, dirt, snow	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fog, Smog, Smoke	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Severe Crosswinds	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Snow	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	0	0	1	1	2	8	10
Total Crashes	0	0	1	1	2	8	10



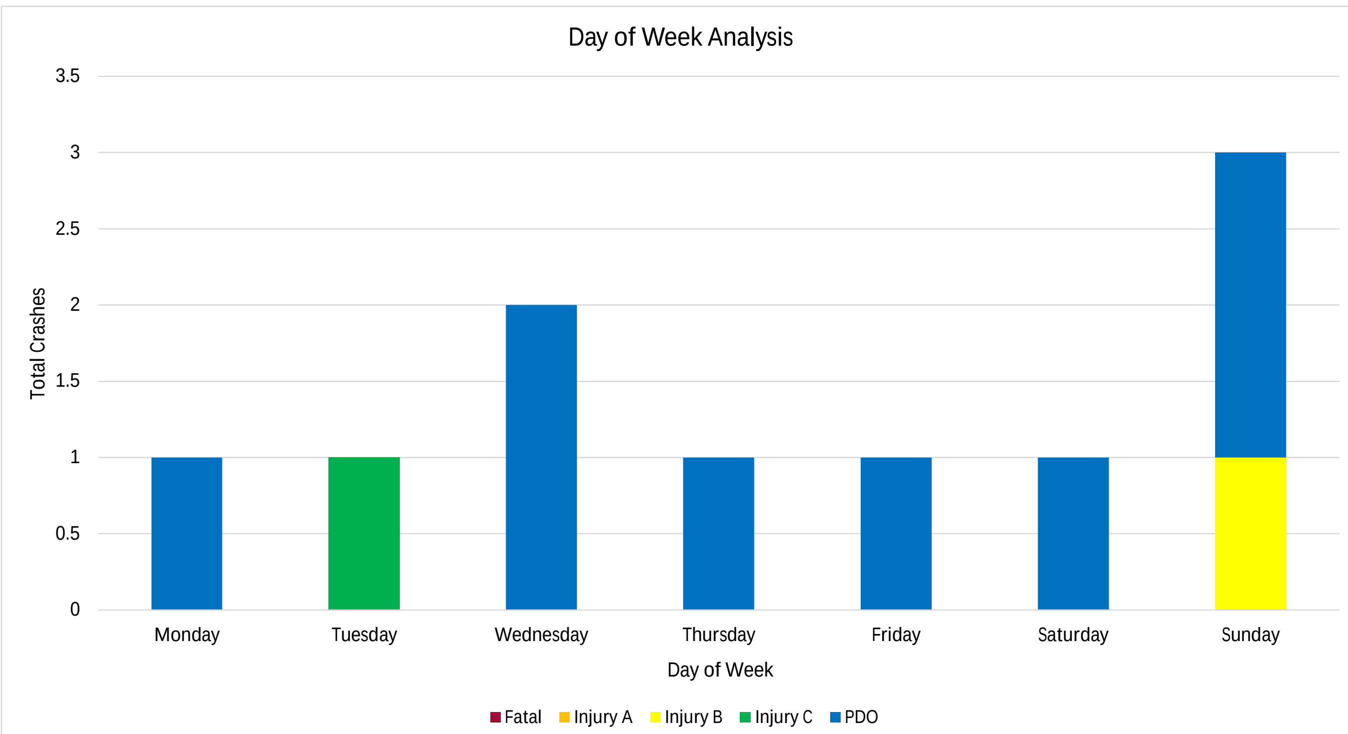
Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Warrior Way

Lighting Conditions							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Daylight	0	0	1	1	2	8	10
	0.0%	0.0%	10.0%	10.0%	20.0%	80.0%	100.0%
Dark	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dusk/Dawn	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	0	1	1	2	8	10



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Warrior Way

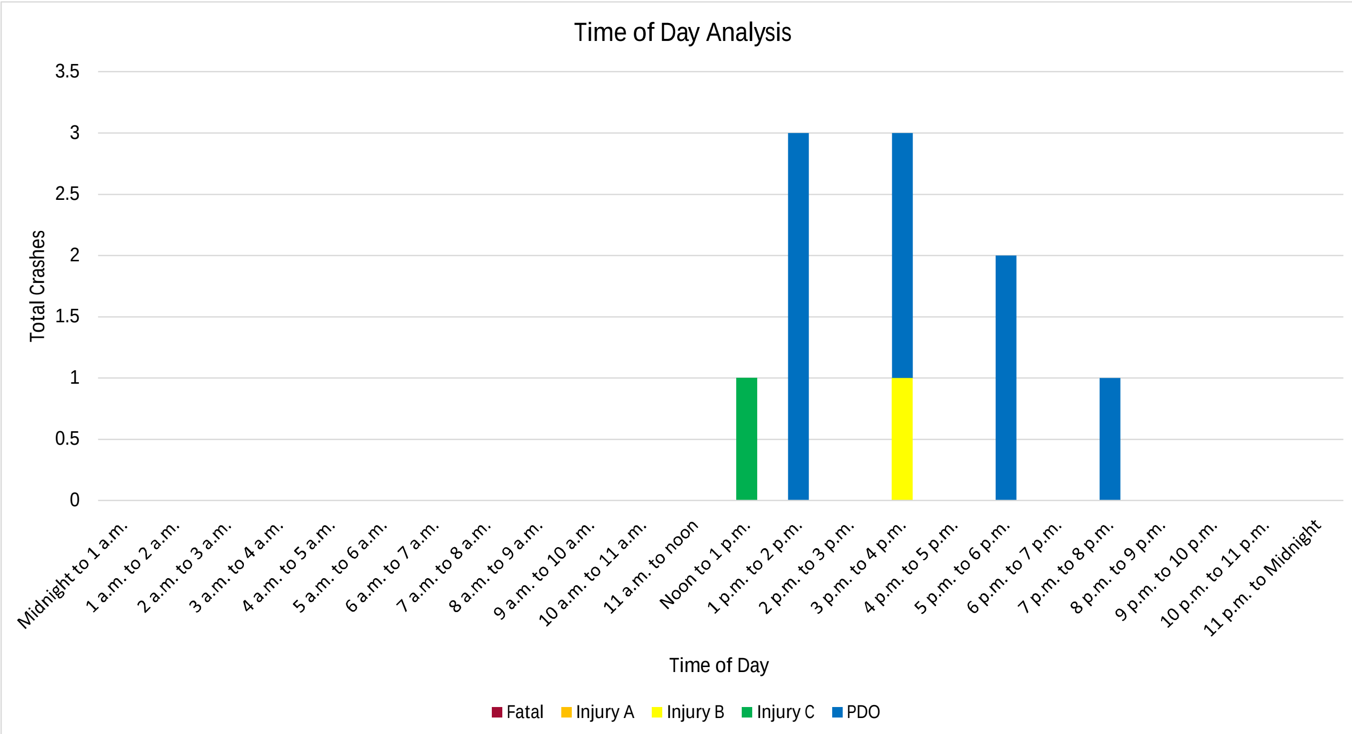
Day of Week							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Monday	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.0%
Tuesday	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	10.0%
Wednesday	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	20.0%
Thursday	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.0%
Friday	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.0%
Saturday	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.0%
Sunday	0	0	1	0	1	2	3
	0.0%	0.0%	33.3%	0.0%	33.3%	66.7%	30.0%
Total Crashes	0	0	1	1	2	8	10



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Warrior Way

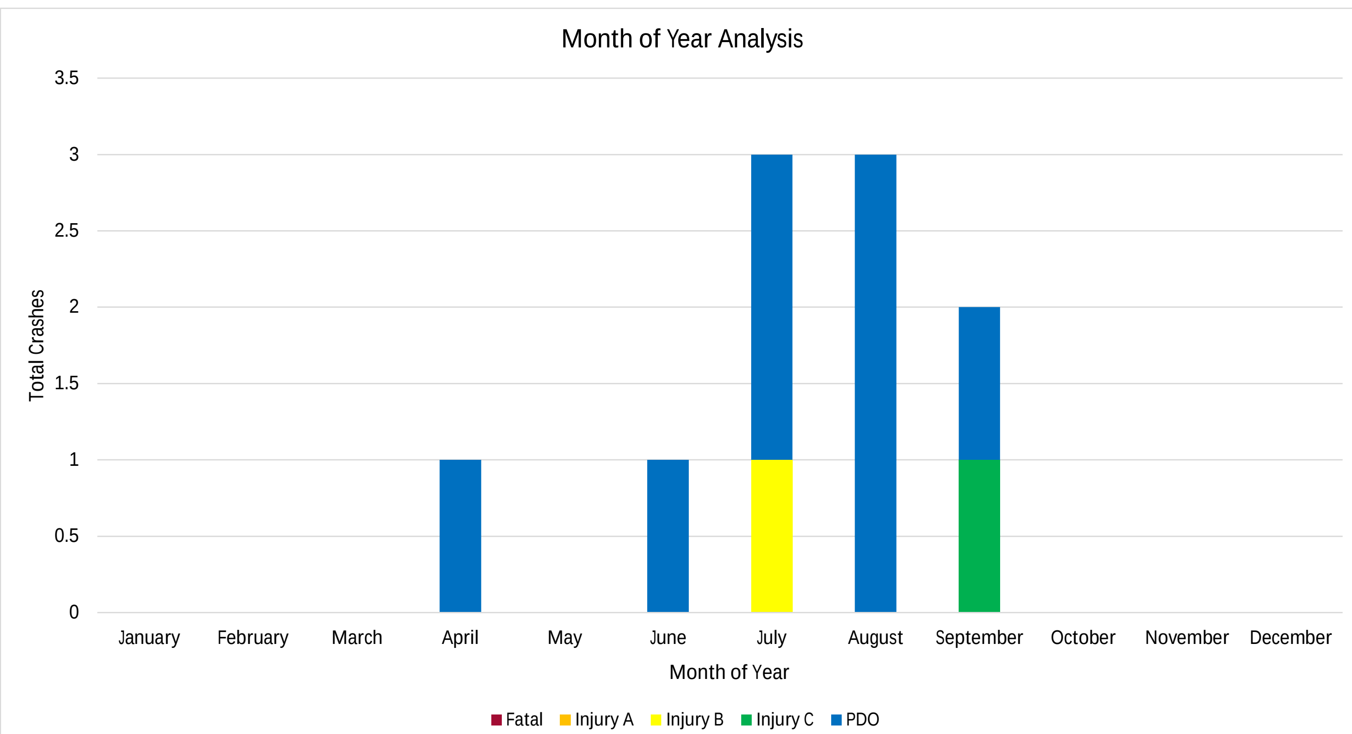
Time of Day							
	Fatal and Injury					PDO	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
Midnight to 1 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1 a.m. to 2 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2 a.m. to 3 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3 a.m. to 4 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4 a.m. to 5 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5 a.m. to 6 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6 a.m. to 7 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7 a.m. to 8 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8 a.m. to 9 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9 a.m. to 10 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10 a.m. to 11 a.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11 a.m. to noon	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Noon to 1 p.m.	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	10.0%
1 p.m. to 2 p.m.	0	0	0	0	0	3	3
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	30.0%
2 p.m. to 3 p.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3 p.m. to 4 p.m.	0	0	1	0	1	2	3
	0.0%	0.0%	33.3%	0.0%	33.3%	66.7%	30.0%
4 p.m. to 5 p.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5 p.m. to 6 p.m.	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	20.0%
6 p.m. to 7 p.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7 p.m. to 8 p.m.	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.0%
8 p.m. to 9 p.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9 p.m. to 10 p.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10 p.m. to 11 p.m.	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11 p.m. to Midnight	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	0	1	1	2	8	10

Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Warrior Way



Intersection Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and Warrior Way

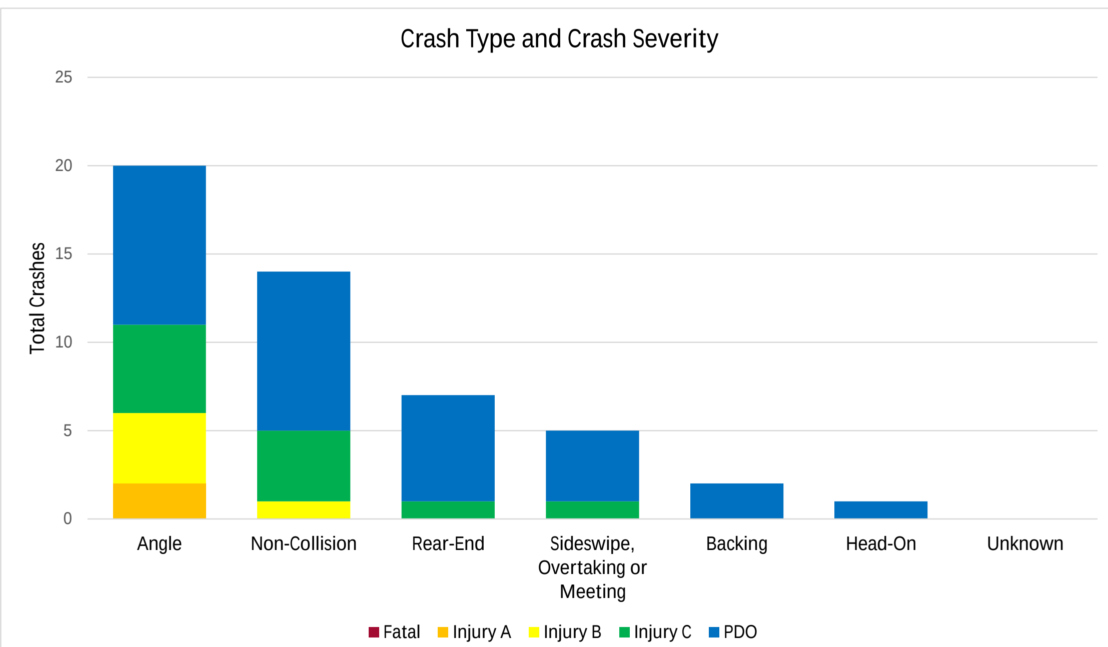
Month of Year							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
January	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
February	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
March	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
April	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.0%
May	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
June	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.0%
July	0	0	1	0	1	2	3
	0.0%	0.0%	33.3%	0.0%	33.3%	66.7%	30.0%
August	0	0	0	0	0	3	3
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	30.0%
September	0	0	0	1	1	1	2
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	20.0%
October	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
November	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
December	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	0	1	1	2	8	10



Corridor Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 28

Overall Crash Data			Pedestrian		Pedal Cycle		Motorcycle		Bus	
Fatal	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury A	2	4.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Injury B	5	10.2%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Injury C	11	22.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Property Damage Only (PDO)	31	63.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	49	100%	0	0% (0%)	0	0% (0%)	1	100% (2%)	0	0% (0%)

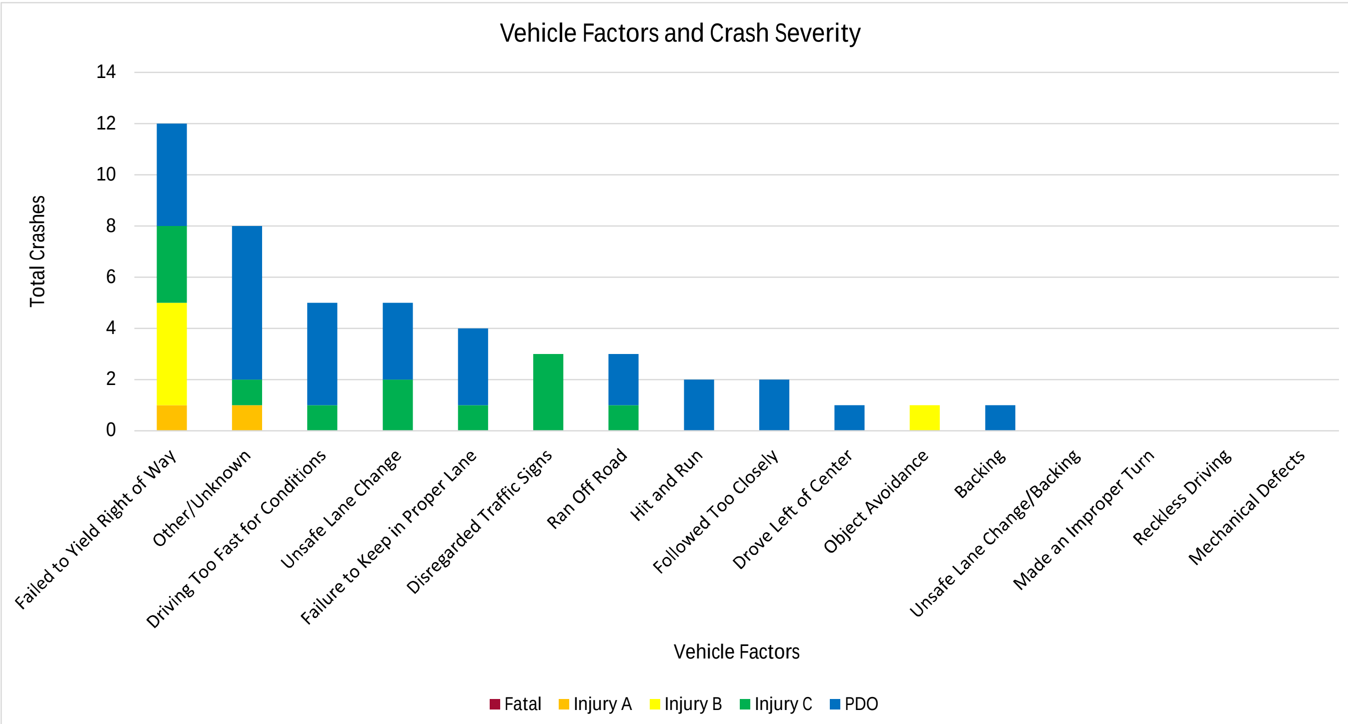
Crash Type							
	Fatal and Injury					PDO	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
Angle	0	2	4	5	11	9	20
	0.0%	10.0%	20.0%	25.0%	55.0%	45.0%	40.8%
Non-Collision	0	0	1	4	5	9	14
	0.0%	0.0%	7.1%	28.6%	35.7%	64.3%	28.6%
Rear-End	0	0	0	1	1	6	7
	0.0%	0.0%	0.0%	14.3%	14.3%	85.7%	14.3%
Sideswipe, Overtaking or Meeting	0	0	0	1	1	4	5
	0.0%	0.0%	0.0%	20.0%	20.0%	80.0%	10.2%
Backing	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	4.1%
Head-On	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.0%
Unknown	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	2	5	11	18	31	49



Corridor Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 28

Vehicle Factors*							
	Fatal and Injury					PDO	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
Failed to Yield Right of Way	0	1	4	3	8	4	12
	0.0%	8.3%	33.3%	25.0%	66.7%	33.3%	24.5%
Other/Unknown	0	1	0	1	2	6	8
	0.0%	12.5%	0.0%	12.5%	25.0%	75.0%	16.3%
Driving Too Fast for Conditions	0	0	0	1	1	4	5
	0.0%	0.0%	0.0%	20.0%	20.0%	80.0%	10.2%
Unsafe Lane Change	0	0	0	2	2	3	5
	0.0%	0.0%	0.0%	40.0%	40.0%	60.0%	10.2%
Failure to Keep in Proper Lane	0	0	0	1	1	3	4
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	8.2%
Disregarded Traffic Signs	0	0	0	3	3	0	3
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	6.1%
Ran Off Road	0	0	0	1	1	2	3
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	6.1%
Hit and Run	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	4.1%
Followed Too Closely	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	4.1%
Drove Left of Center	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.0%
Object Avoidance	0	0	1	0	1	0	1
	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	2.0%
Backing	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.0%
Unsafe Lane Change/Backing	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Made an Improper Turn	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Reckless Driving	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mechanical Defects	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Exceeded Speed Limit	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wrong Way	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Over-Correcting/Over-Steering	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	0	2	5	12	19	28	47
Total Crashes	0	2	5	11	18	31	49

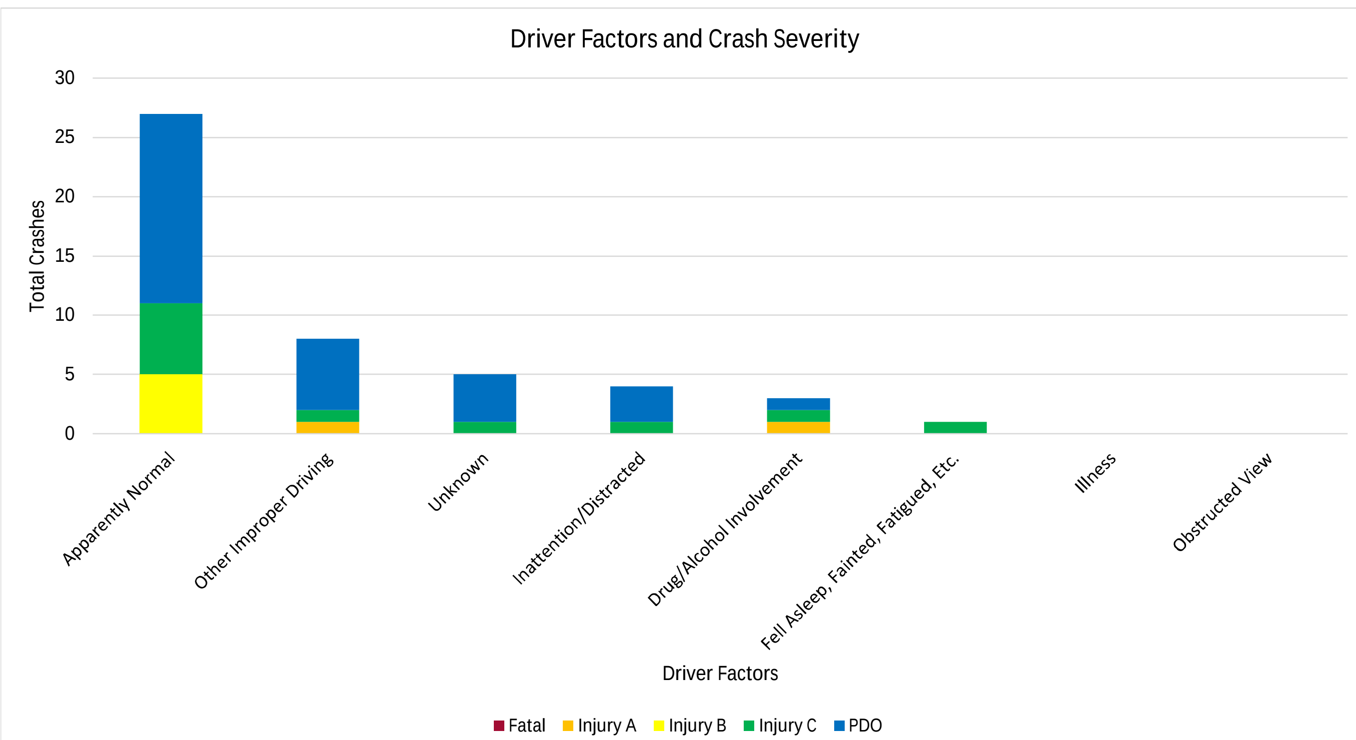
*Note: Vehicle factors are based on Vehicle 1 (V1) inputs. Blank entries are included in the Other/Unknown factor.


Vehicle Factors and Crash Severity
Total Crashes
14
12
10
8
6
4
2
0
Failed to Yield Right of Way
Other/Unknown
Driving Too Fast for Conditions
Unsafe Lane Change
Failure to Keep in Proper Lane
Disregarded Traffic Signs
Ran Off Road
Hit and Run
Followed Too Closely
Drove Left of Center
Object Avoidance
Backing
Unsafe Lane Change/Backing
Made an Improper Turn
Reckless Driving
Mechanical Defects
Vehicle Factors
Fatal
Injury A
Injury B
Injury C
PDO

Corridor Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 28

Driver Factors*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Apparently Normal	0	0	5	6	11	16	27
	0.0%	0.0%	18.5%	22.2%	40.7%	59.3%	55.1%
Other Improper Driving	0	1	0	1	2	6	8
	0.0%	12.5%	0.0%	12.5%	25.0%	75.0%	16.3%
Unknown	0	0	0	1	1	4	5
	0.0%	0.0%	0.0%	20.0%	20.0%	80.0%	10.2%
Inattention/Distracted	0	0	0	1	1	3	4
	0.0%	0.0%	0.0%	25.0%	25.0%	75.0%	8.2%
Drug/Alcohol Involvement	0	1	0	1	2	1	3
	0.0%	33.3%	0.0%	33.3%	66.7%	33.3%	6.1%
Fell Asleep, Fainted, Fatigued, Etc.	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	2.0%
Illness	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Obstructed View	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	0	2	5	11	18	30	48
Total Crashes	0	2	5	11	18	31	49

*Note: Driver factors are based on Vehicle 1 (V1) inputs. Blank entries are included in the Other/Unknown factor.

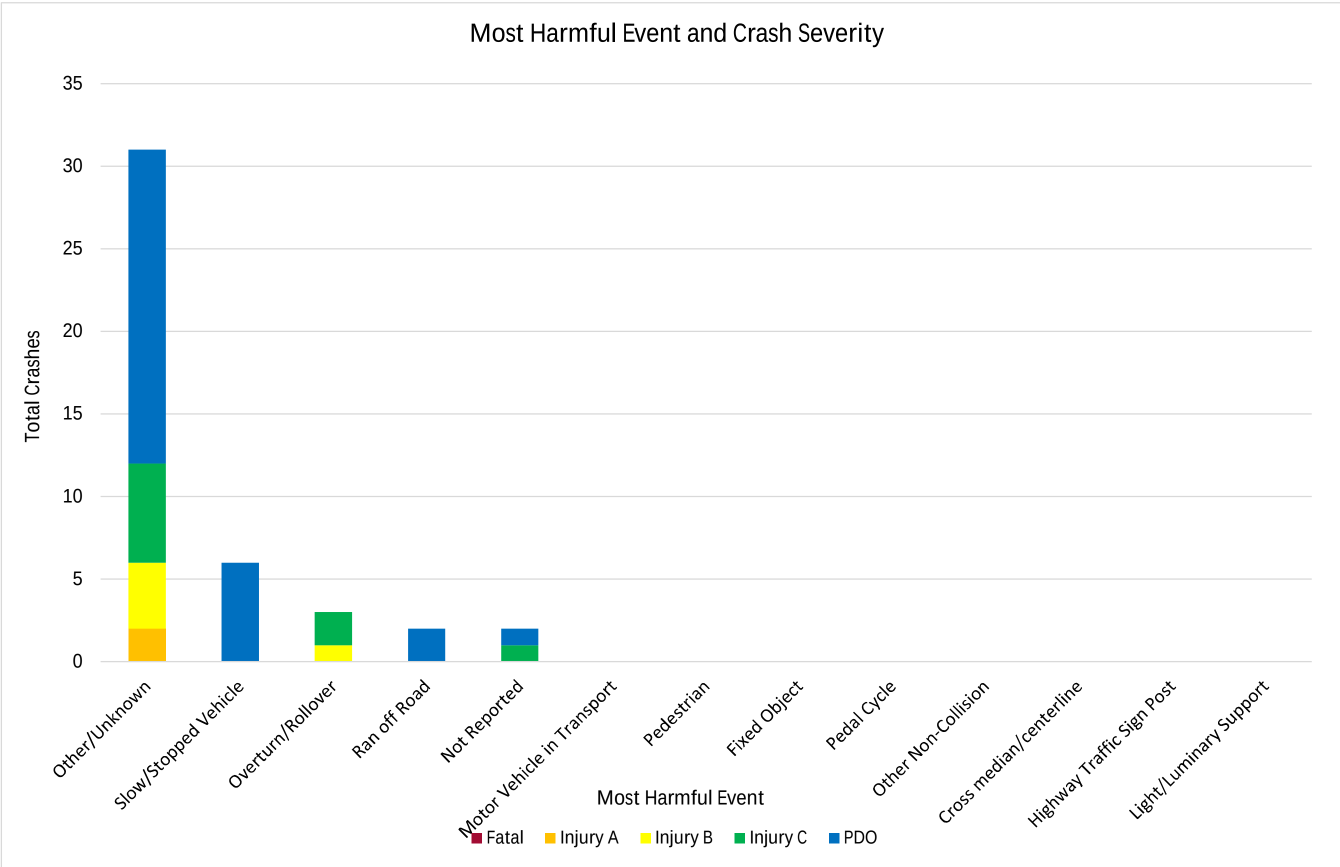


Corridor Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 28

Most Harmful Event*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Other/Unknown	0	2	4	6	12	19	31
	0.0%	6.5%	12.9%	19.4%	38.7%	61.3%	63.3%
Slow/Stopped Vehicle	0	0	0	0	0	6	6
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	12.2%
Overturn/Rollover	0	0	1	2	3	0	3
	0.0%	0.0%	33.3%	66.7%	100.0%	0.0%	6.1%
Ran off Road	0	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	4.1%
Not Reported	0	0	0	1	1	1	2
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	4.1%
Motor Vehicle in Transport	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pedestrian	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fixed Object	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pedal Cycle	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Non-Collision	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cross median/centerline	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Highway Traffic Sign Post	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Light/Luminary Support	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fence/Wall	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes	0	2	5	11	18	31	49

*Note: Most harmful event is based on Vehicle 1 (V1) input. Blank entries in most harmful event defer to the first listing in Vehicle 1 (V1) all events. Blank entries in both most harmful event and all events are included in the Other/Unknown category. Since there were no entries for the most harmful event the first event in all events was used.

Corridor Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 28

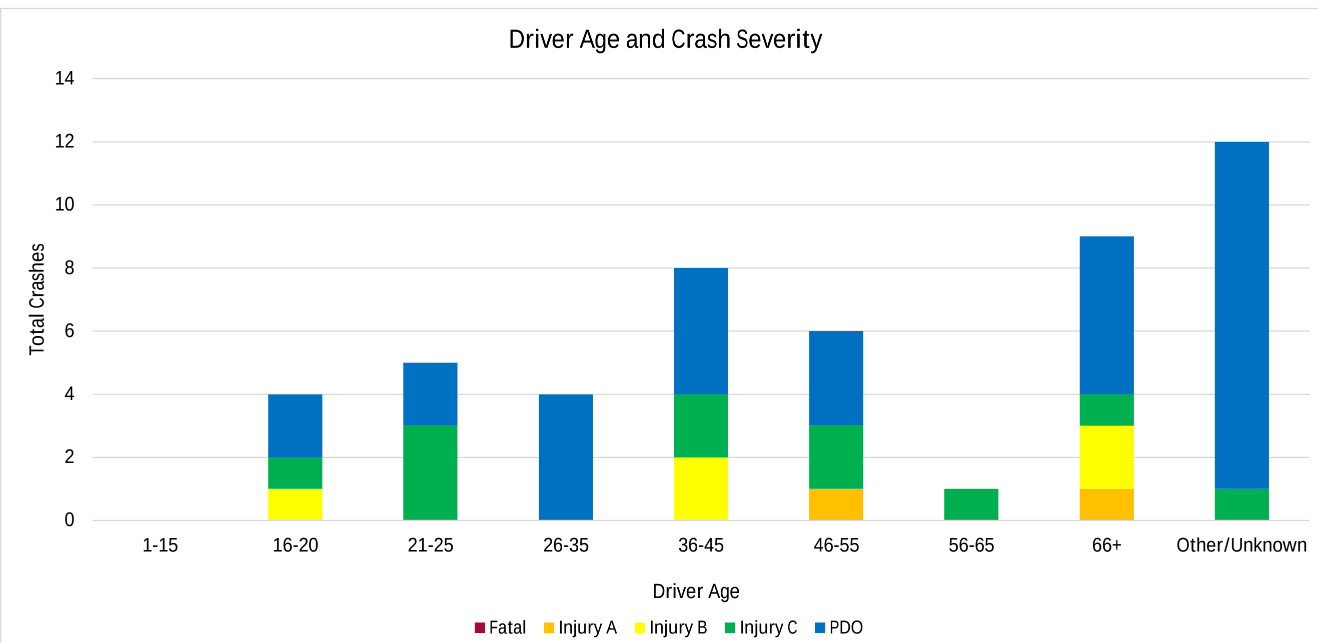


Kimley»Horn

Corridor Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 28

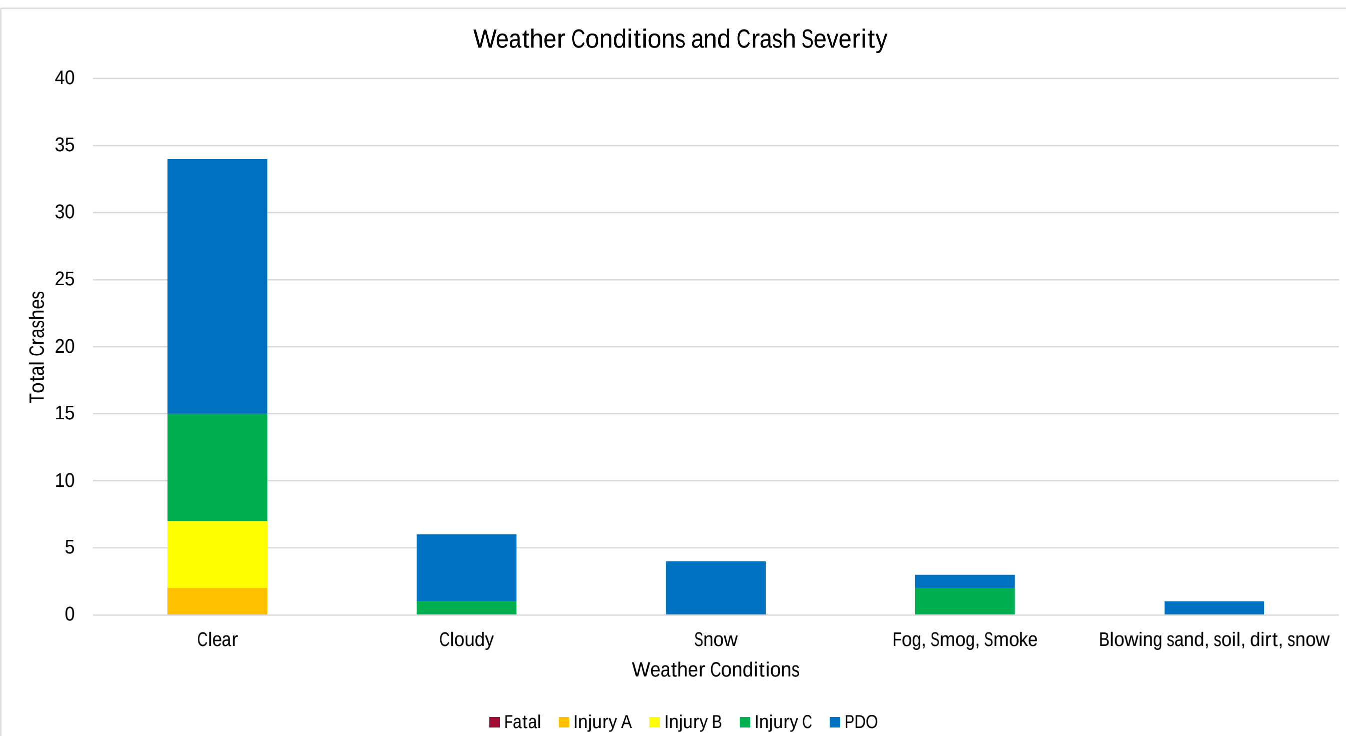
Driver Age*							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
1-15	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
16-20	0	0	1	1	2	2	4
	0.0%	0.0%	25.0%	25.0%	50.0%	50.0%	8.2%
21-25	0	0	0	3	3	2	5
	0.0%	0.0%	0.0%	60.0%	60.0%	40.0%	10.2%
26-35	0	0	0	0	0	4	4
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	8.2%
36-45	0	0	2	2	4	4	8
	0.0%	0.0%	25.0%	25.0%	50.0%	50.0%	16.3%
46-55	0	1	0	2	3	3	6
	0.0%	16.7%	0.0%	33.3%	50.0%	50.0%	12.2%
56-65	0	0	0	1	1	0	1
	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	2.0%
66+	0	1	2	1	4	5	9
	0.0%	11.1%	22.2%	11.1%	44.4%	55.6%	18.4%
Other/Unknown	0	0	0	1	1	11	12
	0.0%	0.0%	0.0%	8.3%	8.3%	91.7%	24.5%
Total Crashes	0	2	5	11	18	31	49

*Note: Driver age is based on Vehicle 1 (V1) input. Blank entries are included in the Other/Unknown category.



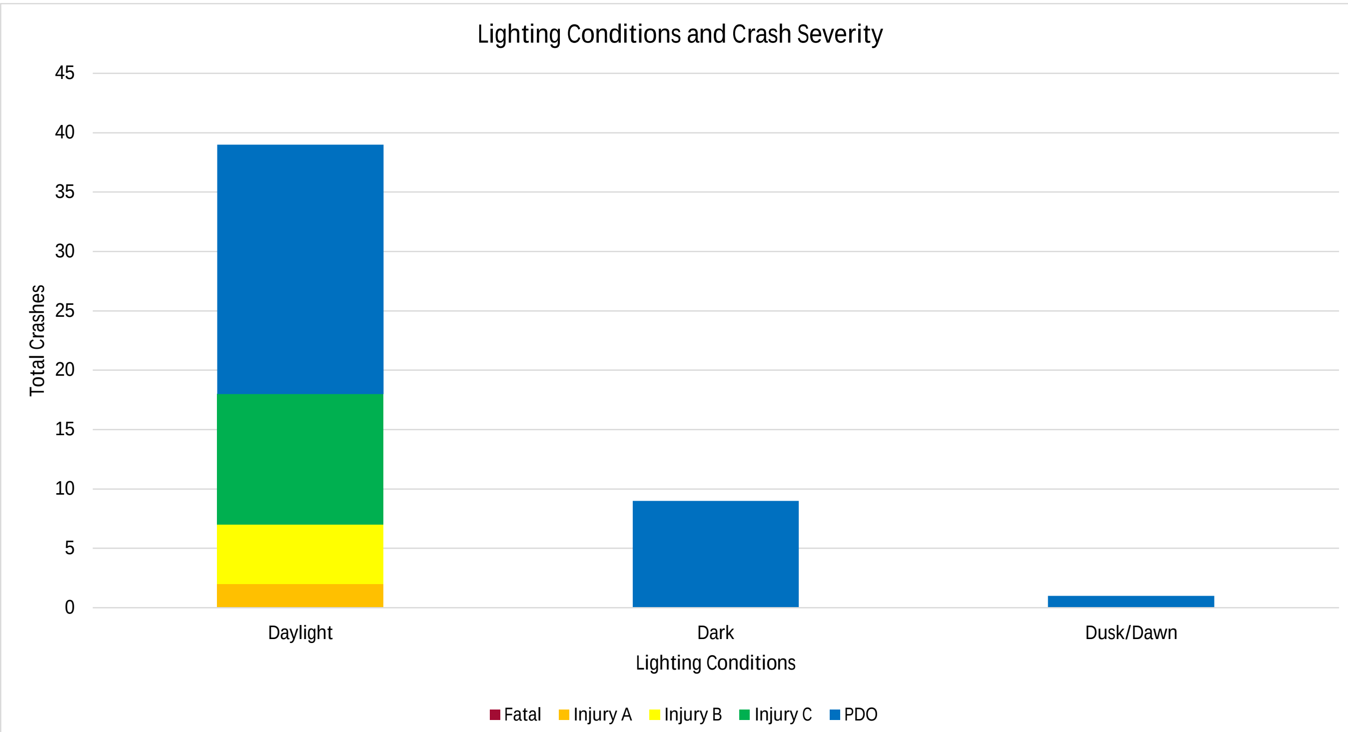
Corridor Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 28

Weather Conditions							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Clear	0	2	5	8	15	19	34
	0.0%	5.9%	14.7%	23.5%	44.1%	55.9%	69.4%
Cloudy	0	0	0	1	1	5	6
	0.0%	0.0%	0.0%	16.7%	16.7%	83.3%	12.2%
Snow	0	0	0	0	0	4	4
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	8.2%
Fog, Smog, Smoke	0	0	0	2	2	1	3
	0.0%	0.0%	0.0%	66.7%	66.7%	33.3%	6.1%
Blowing sand, soil, dirt, snow	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.0%
Unknown	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.0%
Rain	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Severe Crosswinds	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Instances	0	2	5	11	18	31	49
Total Crashes	0	2	5	11	18	31	49



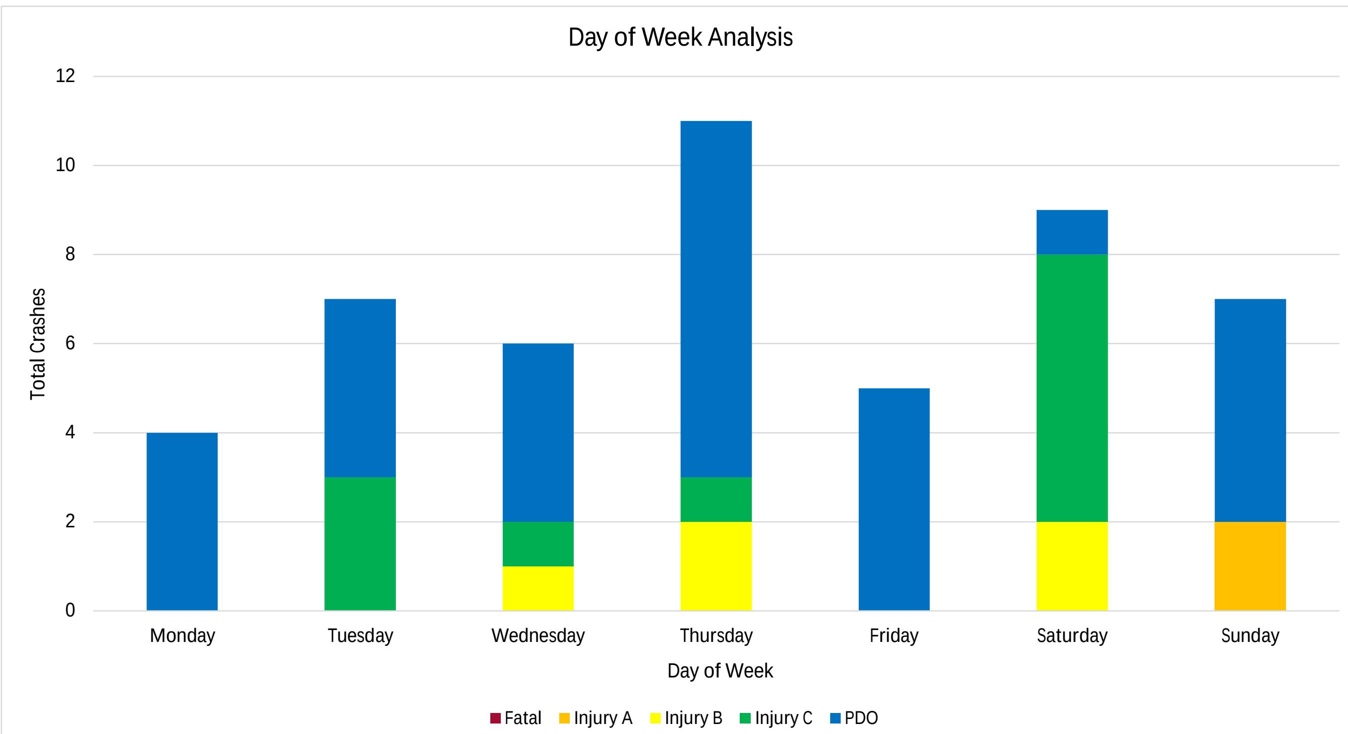
Corridor Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 28

Lighting Conditions							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
Daylight	0	2	5	11	18	21	39
	0.0%	5.1%	12.8%	28.2%	46.2%	53.8%	79.6%
Dark	0	0	0	0	0	9	9
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	18.4%
Dusk/Dawn	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.0%
Total Crashes	0	2	5	11	18	31	49



Corridor Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 28

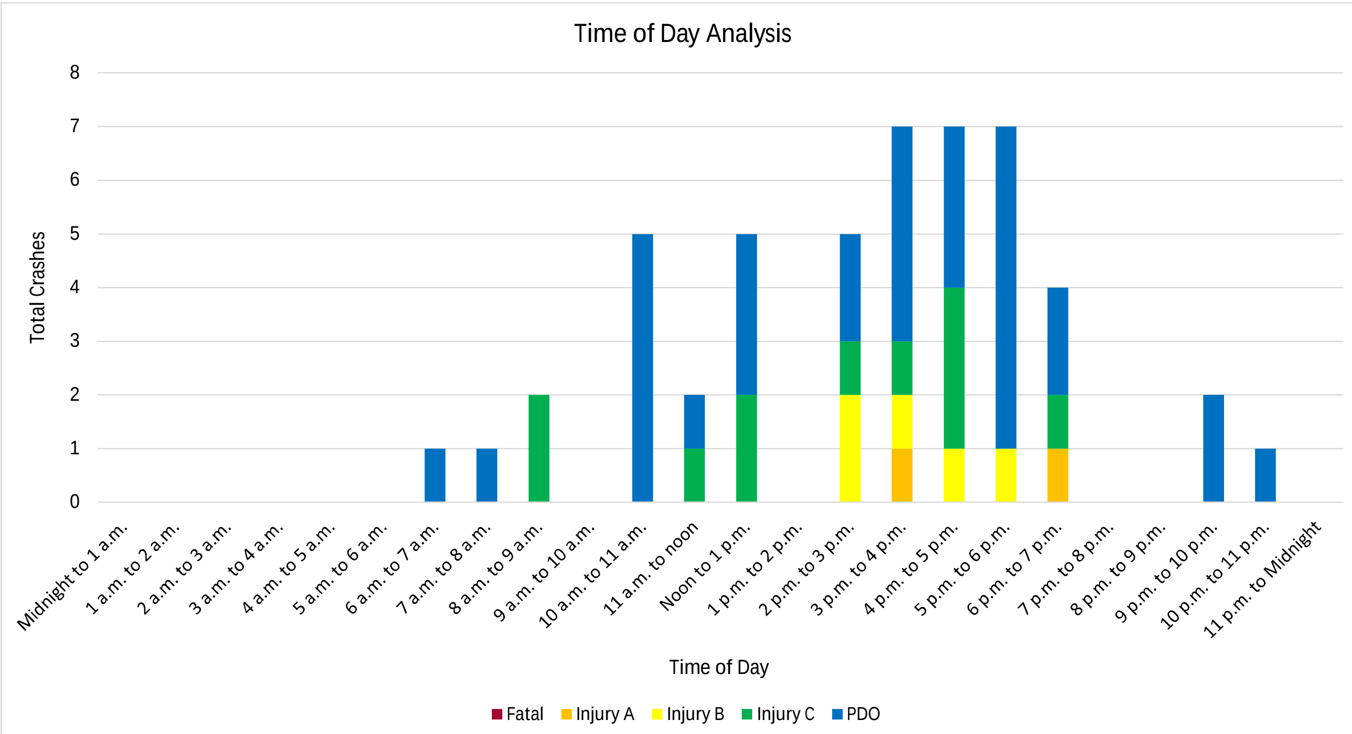
Day of Week							
	Fatal and Injury					PDO	Total
	Fatal	*Injury A*	*Injury B*	*Injury C*	*Sum*		
Monday	0	0	0	0	0	4	4
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	8.2%
Tuesday	0	0	0	3	3	4	7
	0.0%	0.0%	0.0%	42.9%	42.9%	57.1%	14.3%
Wednesday	0	0	1	1	2	4	6
	0.0%	0.0%	16.7%	16.7%	33.3%	66.7%	12.2%
Thursday	0	2	2	1	5	8	11
	0.0%	18.2%	18.2%	9.1%	45.5%	72.7%	22.4%
Friday	0	0	0	0	0	5	5
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.2%
Saturday	0	0	2	6	8	1	9
	0.0%	0.0%	22.2%	66.7%	88.9%	11.1%	18.4%
Sunday	0	0	0	0	0	5	7
	0.0%	0.0%	0.0%	0.0%	0.0%	71.4%	14.3%
Total Crashes	0	2	5	11	18	31	49



Corridor Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 28

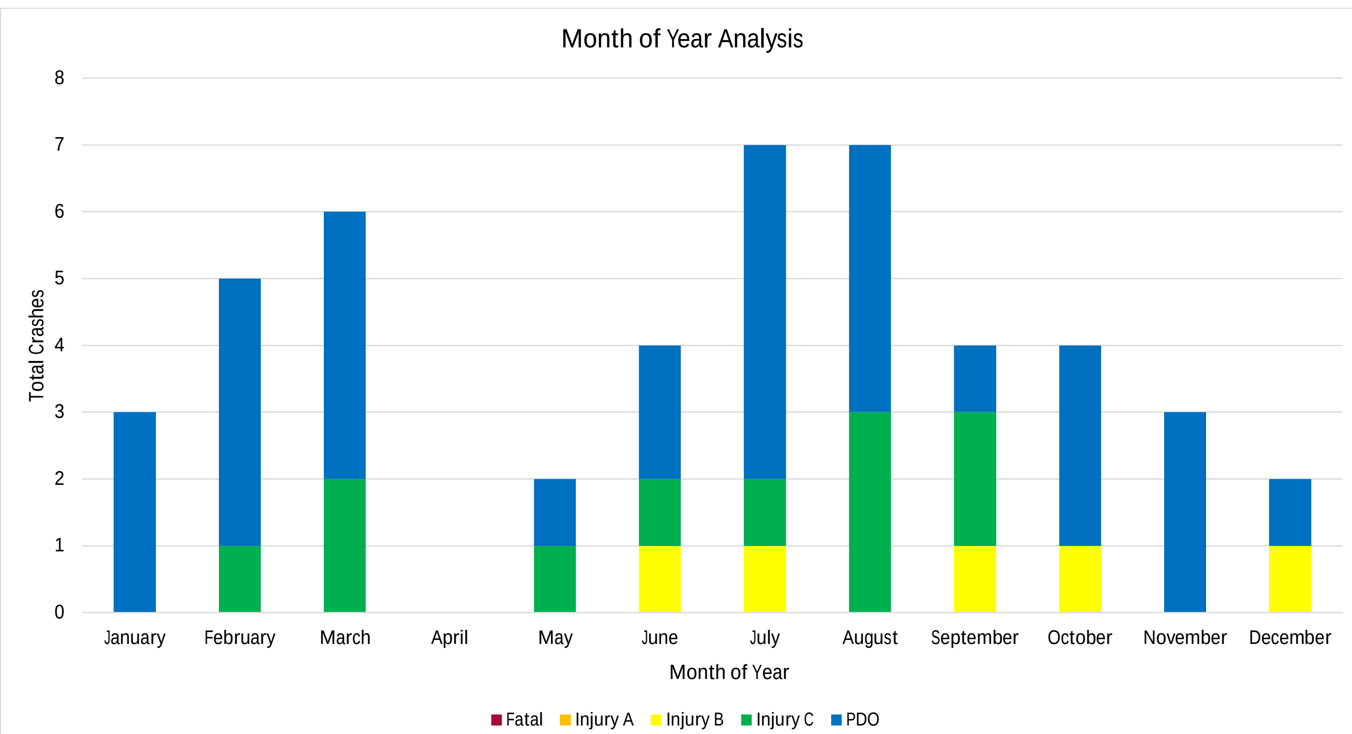
Time of Day								
		Fatal and Injury					PDO	Total
		Fatal	Injury A	Injury B	Injury C	Sum		
Midnight to 1 a.m.		0	0	0	0	0	0	0
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1 a.m. to 2 a.m.		0	0	0	0	0	0	0
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2 a.m. to 3 a.m.		0	0	0	0	0	0	0
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3 a.m. to 4 a.m.		0	0	0	0	0	0	0
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4 a.m. to 5 a.m.		0	0	0	0	0	0	0
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5 a.m. to 6 a.m.		0	0	0	0	0	0	0
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6 a.m. to 7 a.m.		0	0	0	0	0	1	1
		0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.0%
7 a.m. to 8 a.m.		0	0	0	0	0	1	1
		0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.0%
8 a.m. to 9 a.m.		0	0	0	2	2	0	2
		0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	4.1%
9 a.m. to 10 a.m.		0	0	0	0	0	0	0
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10 a.m. to 11 a.m.		0	0	0	0	0	5	5
		0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	10.2%
11 a.m. to noon		0	0	0	1	1	1	2
		0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	4.1%
Noon to 1 p.m.		0	0	0	2	2	3	5
		0.0%	0.0%	0.0%	40.0%	40.0%	60.0%	10.2%
1 p.m. to 2 p.m.		0	0	0	0	0	0	0
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2 p.m. to 3 p.m.		0	0	2	1	3	2	5
		0.0%	0.0%	40.0%	20.0%	60.0%	40.0%	10.2%
3 p.m. to 4 p.m.		0	1	1	1	3	4	7
		0.0%	14.3%	14.3%	14.3%	42.9%	57.1%	14.3%
4 p.m. to 5 p.m.		0	0	1	3	4	3	7
		0.0%	0.0%	14.3%	42.9%	57.1%	42.9%	14.3%
5 p.m. to 6 p.m.		0	0	1	0	1	6	7
		0.0%	0.0%	14.3%	0.0%	14.3%	85.7%	14.3%
6 p.m. to 7 p.m.		0	1	0	1	2	2	4
		0.0%	25.0%	0.0%	25.0%	50.0%	50.0%	8.2%
7 p.m. to 8 p.m.		0	0	0	0	0	0	0
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8 p.m. to 9 p.m.		0	0	0	0	0	0	0
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9 p.m. to 10 p.m.		0	0	0	0	0	2	2
		0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	4.1%
10 p.m. to 11 p.m.		0	0	0	0	0	1	1
		0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	2.0%
11 p.m. to Midnight		0	0	0	0	0	0	0
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Crashes		0	2	5	11	18	31	49

Corridor Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 28



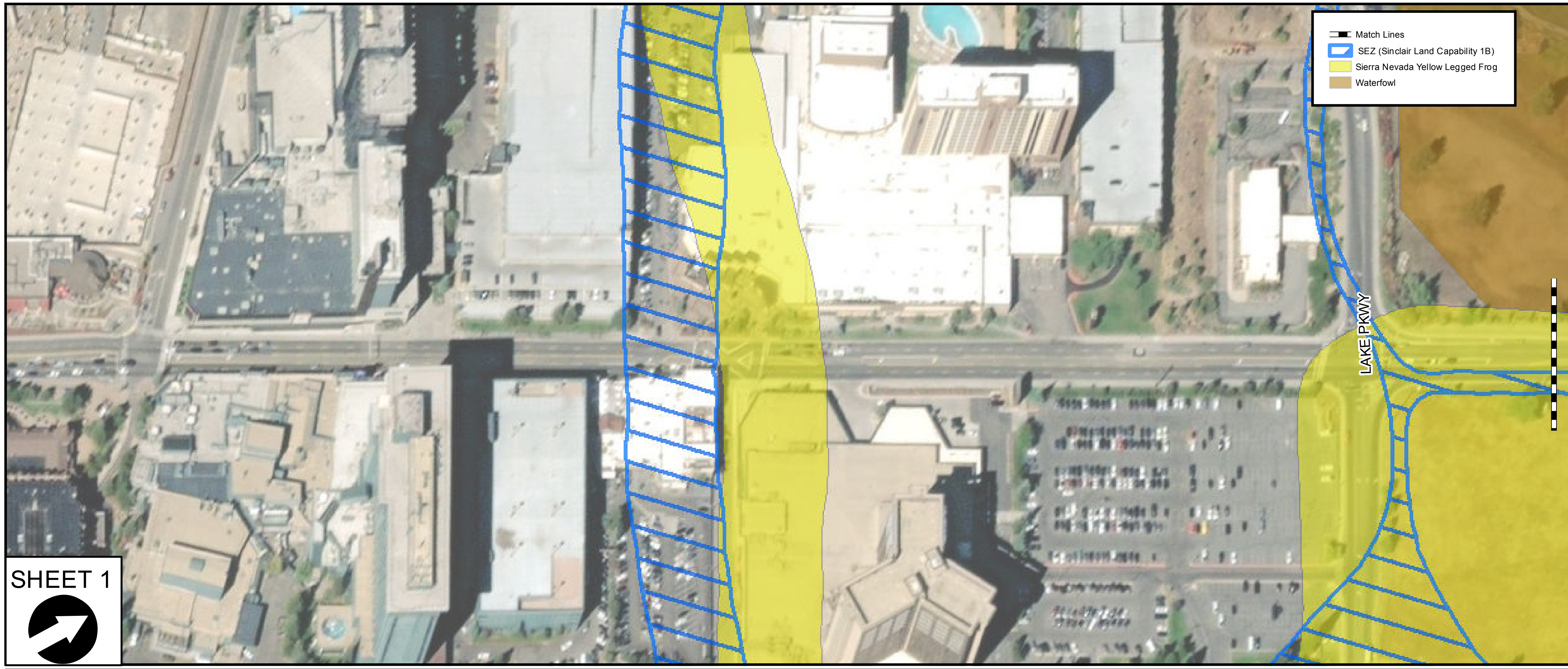
Corridor Crash Analysis
January 1, 2015 - December 31, 2019
US 50 and SR 28

Month of Year							
	Fatal and Injury					PDO	Total
	Fatal	Injury A	Injury B	Injury C	Sum		
January	0	1	0	0	1	3	4
	0.0%	25.0%	0.0%	0.0%	25.0%	75.0%	8.2%
February	0	0	0	1	1	4	5
	0.0%	0.0%	0.0%	20.0%	20.0%	80.0%	10.2%
March	0	0	0	2	2	4	6
	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	12.2%
April	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
May	0	0	0	1	1	1	2
	0.0%	0.0%	0.0%	50.0%	50.0%	50.0%	4.1%
June	0	1	1	1	3	2	5
	0.0%	20.0%	20.0%	20.0%	60.0%	40.0%	10.2%
July	0	0	1	1	2	5	7
	0.0%	0.0%	14.3%	14.3%	28.6%	71.4%	14.3%
August	0	0	0	3	3	4	7
	0.0%	0.0%	0.0%	42.9%	42.9%	57.1%	14.3%
September	0	0	1	2	3	1	4
	0.0%	0.0%	25.0%	50.0%	75.0%	25.0%	8.2%
October	0	0	1	0	1	3	4
	0.0%	0.0%	25.0%	0.0%	25.0%	75.0%	8.2%
November	0	0	0	0	0	3	3
	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	6.1%
December	0	0	1	0	1	1	2
	0.0%	0.0%	50.0%	0.0%	50.0%	50.0%	4.1%
Total Crashes	0	2	5	11	18	31	49



APPENDIX H – ENVIRONMENTAL RESOURCE MAPS

Appendix H contains maps illustrating limits and locations of available environmental resources and thresholds.



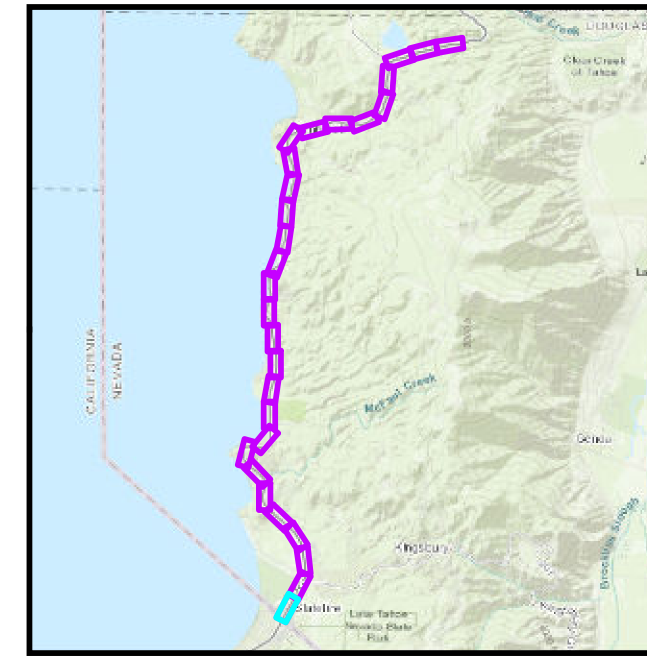


FIGURE 1
US 50 STUDY AREA
STATLINE TO SPOONER SUMMIT
ENVIRONMENTAL CONSIDERATIONS

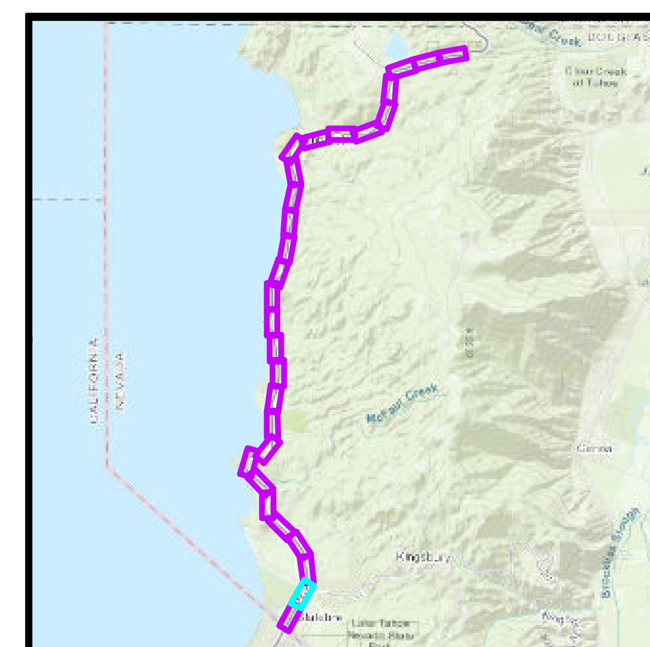
US 50

LAKE TAHOE, NV

MAY, 2021

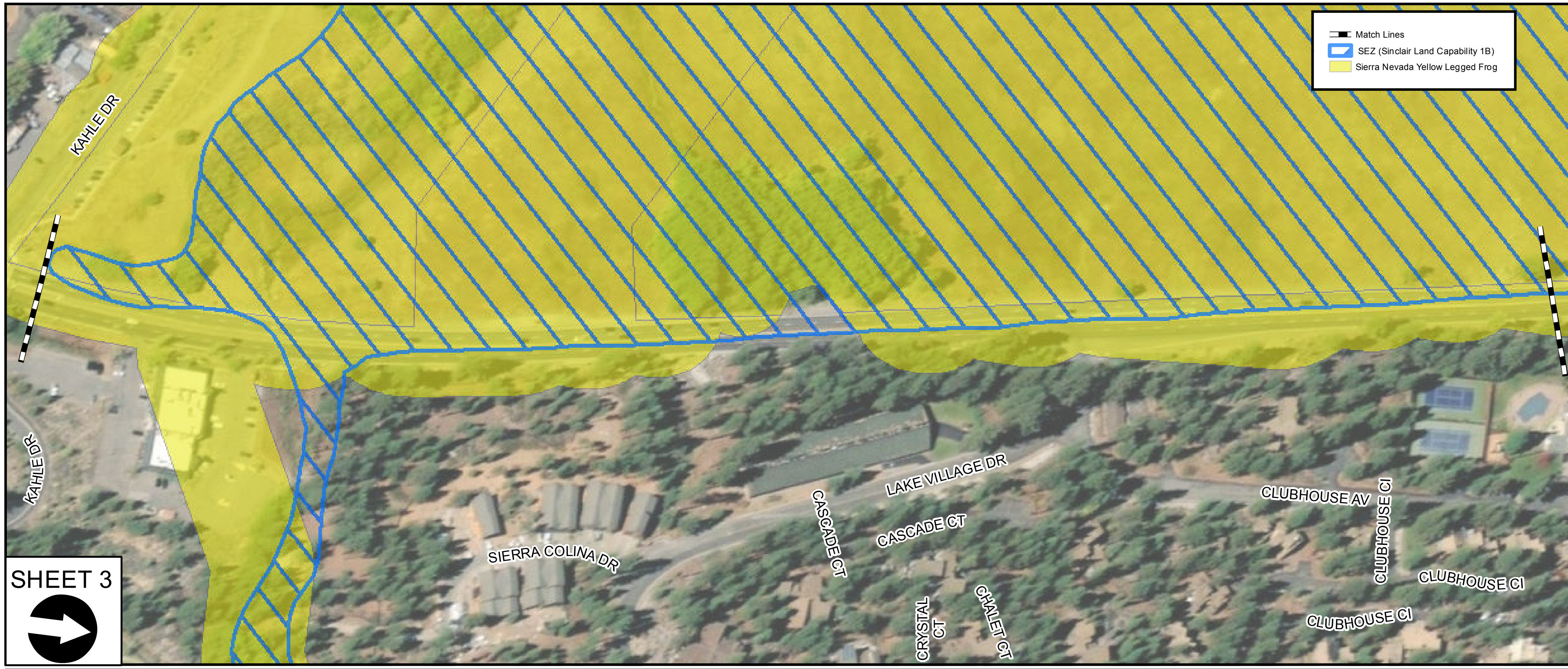
0 100 200

FEET



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

J:\Jobs\8833_NDOT_US50\NDOT_US50_OA\GIS\Tasks\Environmental_Stacked_20210513_V1.mxd 5/14/2021 3:03:10 PM sbarrow



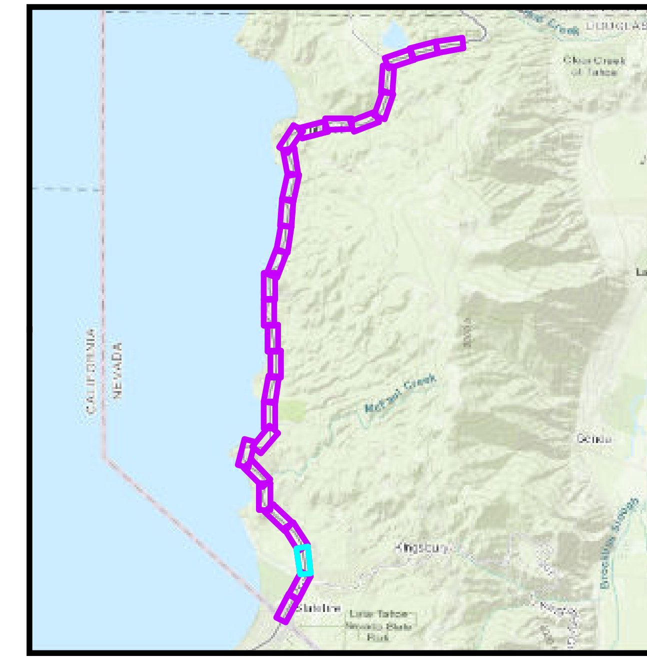
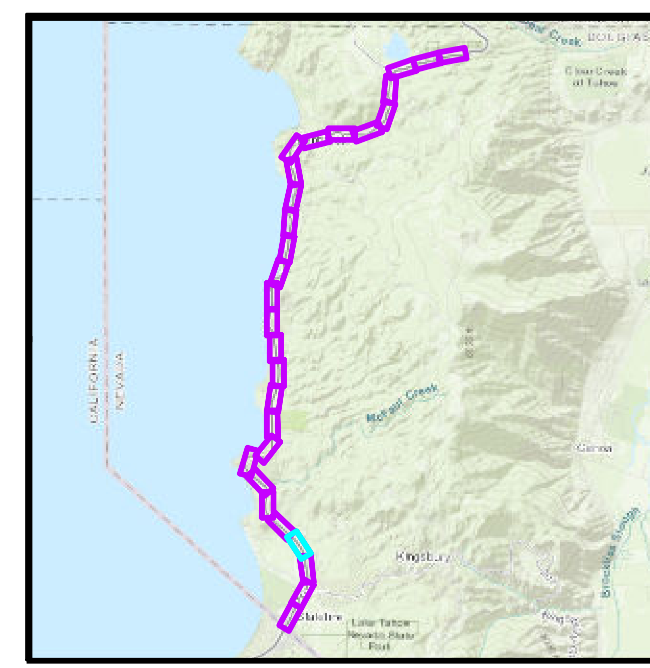


FIGURE 2
US 50 STUDY AREA
STATLINE TO SPOONER SUMMIT
ENVIRONMENTAL CONSIDERATIONS
US 50
LAKE TAHOE, NV
MAY, 2021

0 100 200
FEET



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

J:\Jobs\8833_NDOT_US50\NDOT_US50_OA\GIS\Tasks\Environmental_Stacked_20210513_V1.mxd 5/14/2021 3:03:25 PM sbarrow

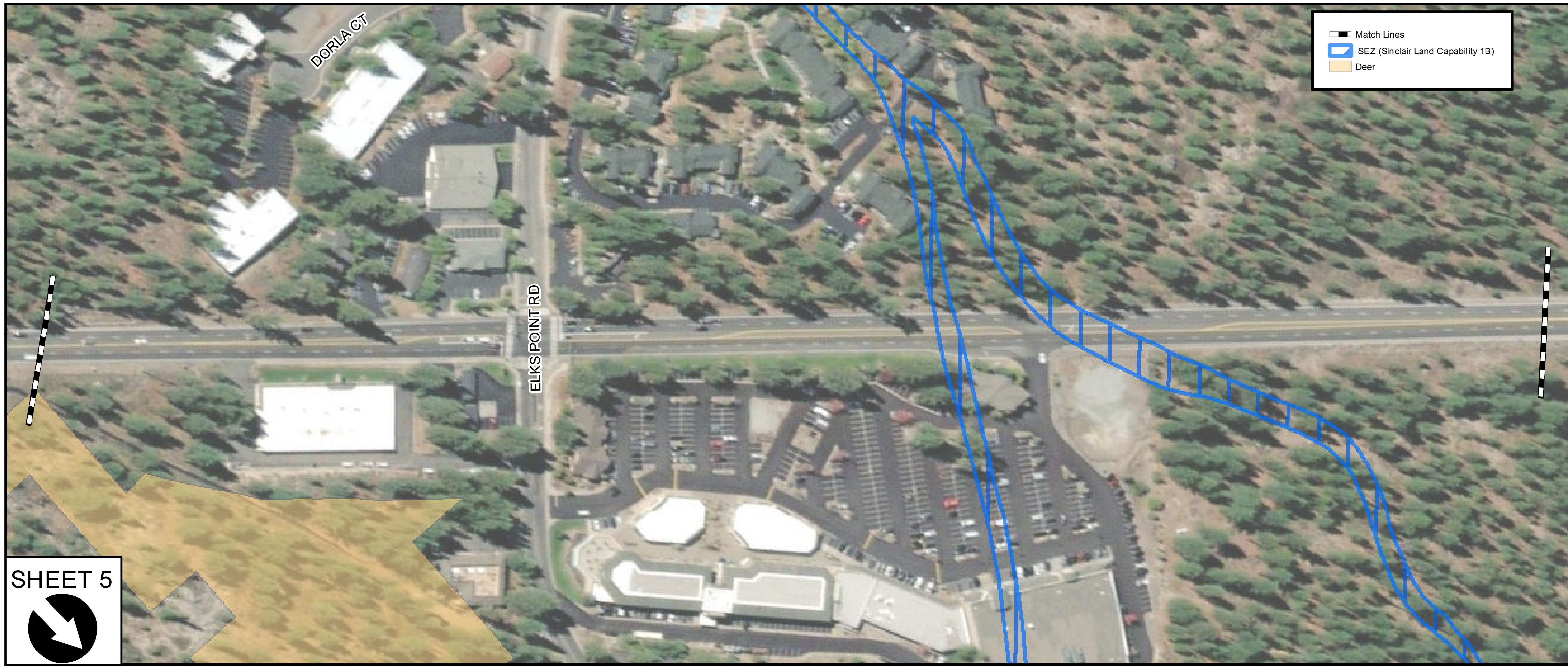
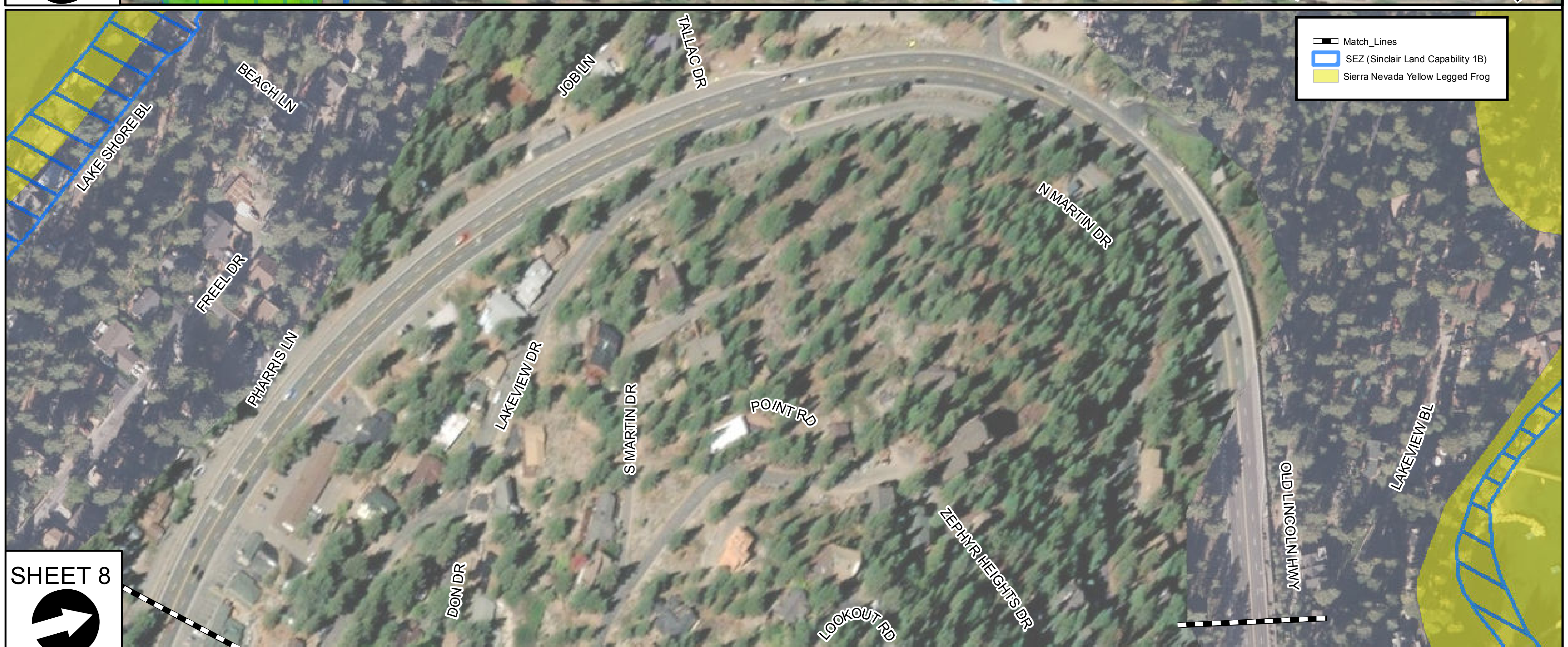


FIGURE 3
US 50 STUDY AREA
STATLINE TO SPOONER SUMMIT
ENVIRONMENTAL CONSIDERATIONS

US 50
LAKE TAHOE, NV
MAY, 2021

0 100 200
FEET

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066



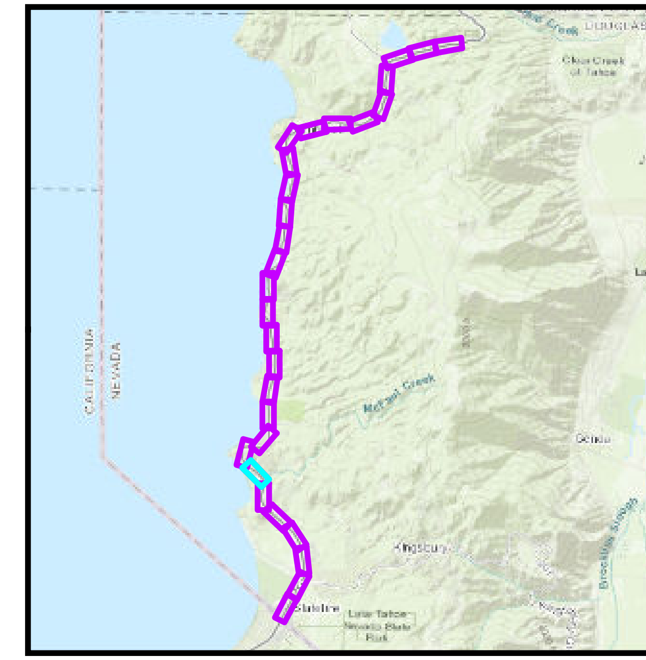
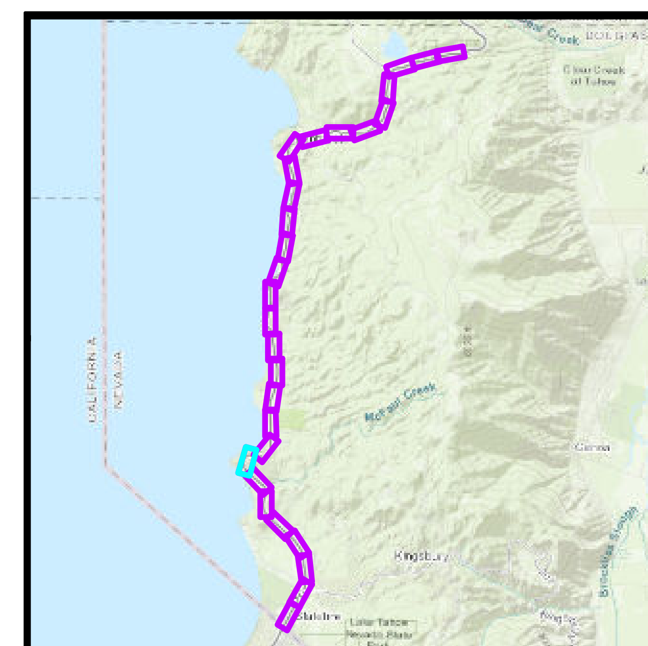


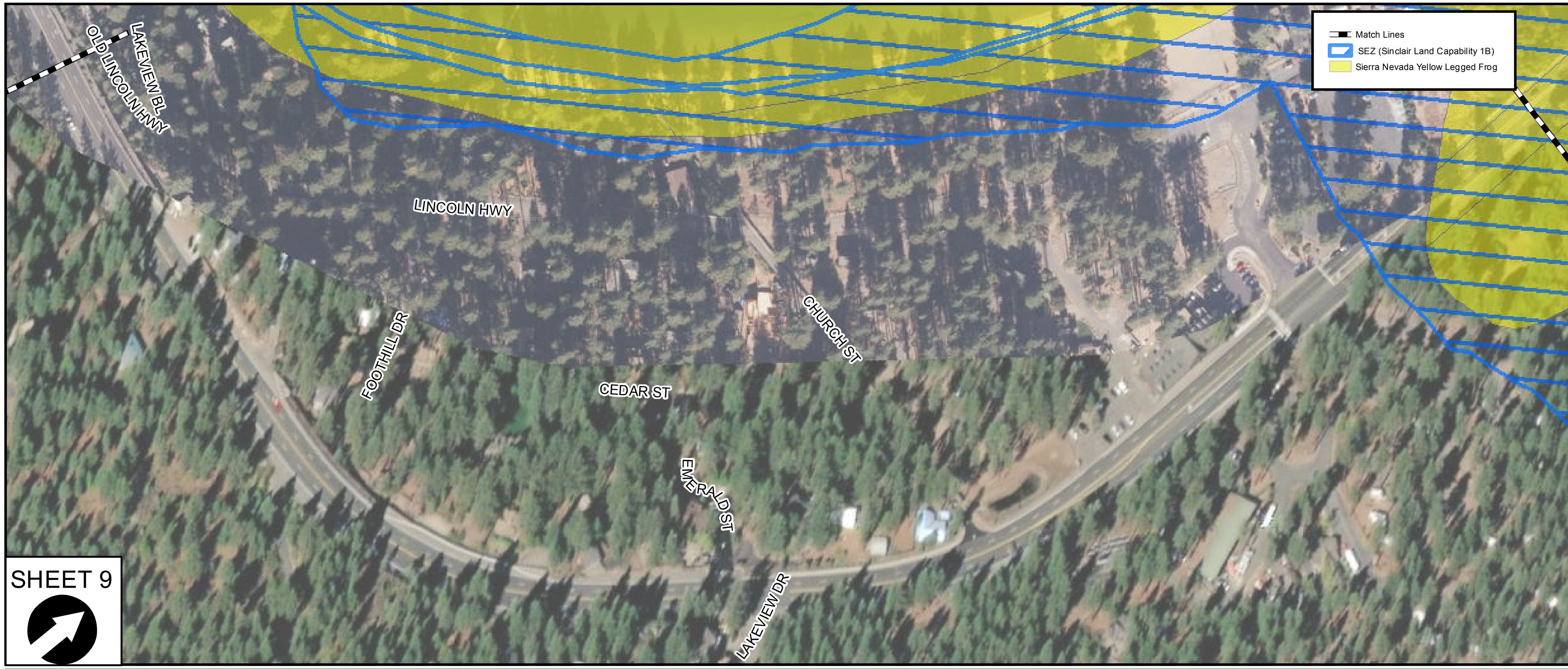
FIGURE 4
US 50 STUDY AREA
STATLINE TO SPOONER SUMMIT
ENVIRONMENTAL CONSIDERATIONS
US 50
LAKE TAHOE, NV
MAY, 2021

0 100 200
FEET



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard Tel: 775.823.4068
Reno, NV 89502 Fax: 775.823.4066

J:\Jobs\8833_NDOT_US50\NDOT_US50_OA\GIS\Tasks\Environmental_Stacked_20210513_V1.mxd 5/14/2021 3:03:54 PM sbarrow



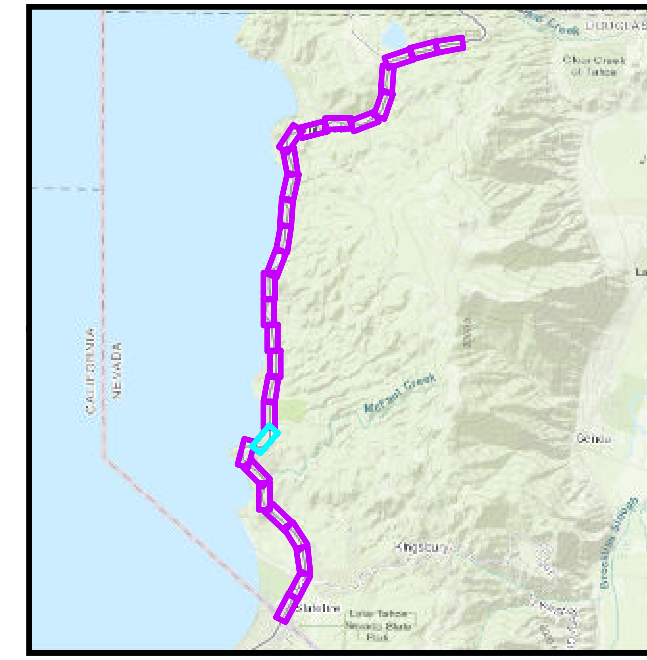
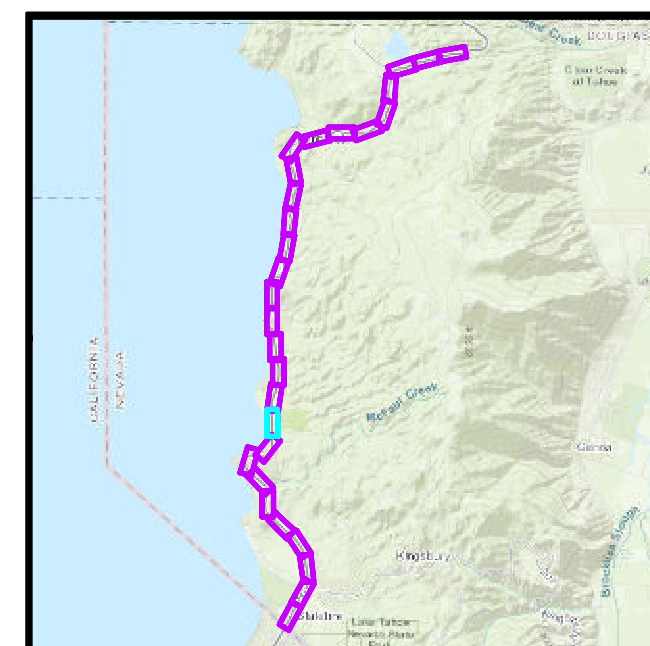


FIGURE 5
US 50 STUDY AREA
STATLINE TO SPOONER SUMMIT
ENVIRONMENTAL CONSIDERATIONS
US 50
LAKE TAHOE, NV
MAY, 2021

0 100 200
FEET



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

J:\Jobs\8833_NDOT_US50\NDOT_US50_OA\GIS\Tasks\Environmental_Stacked_20210513_V1.mxd 5/14/2021 3:04:07 PM sbarrow

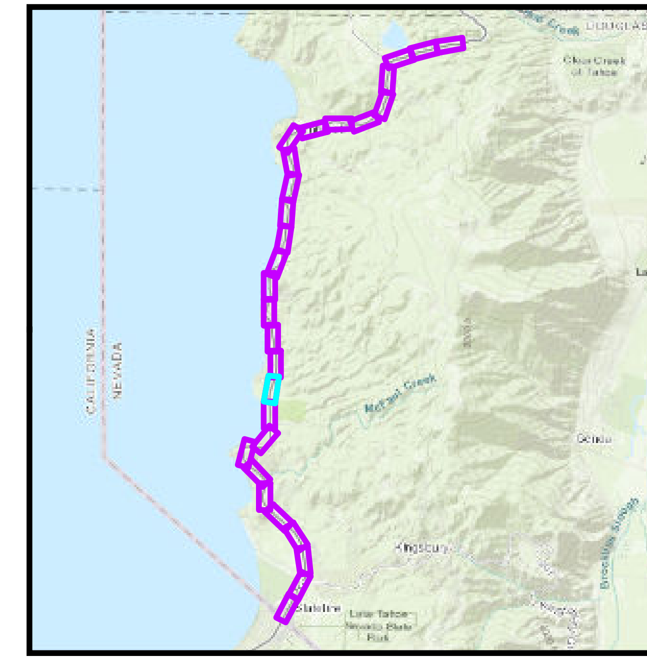
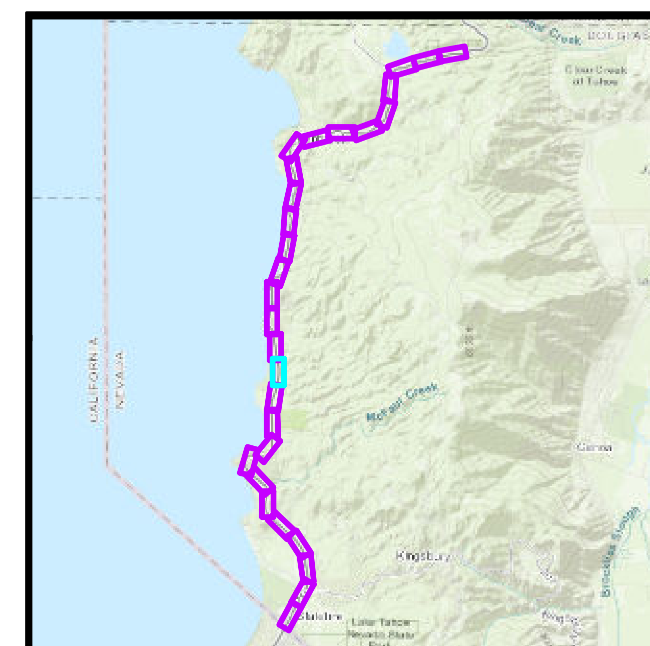


FIGURE 6
US 50 STUDY AREA
STATLINE TO SPOONER SUMMIT
ENVIRONMENTAL CONSIDERATIONS
US 50
LAKE TAHOE, NV
MAY, 2021

0 100 200
FEET



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

J:\Jobs\8833_NDOT_US50\NDOT_US50_OA\GIS\Tasks\Environmental_Stacked_20210513_V1.mxd 5/14/2021 3:04:20 PM sbarrow

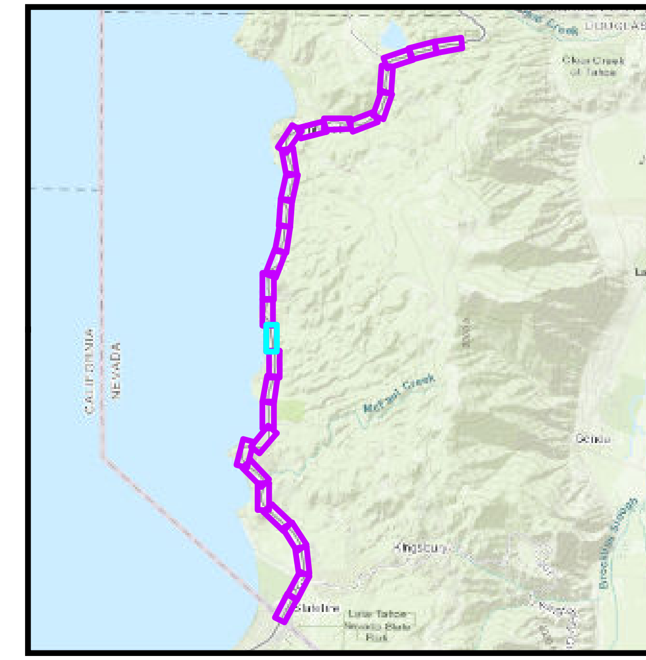


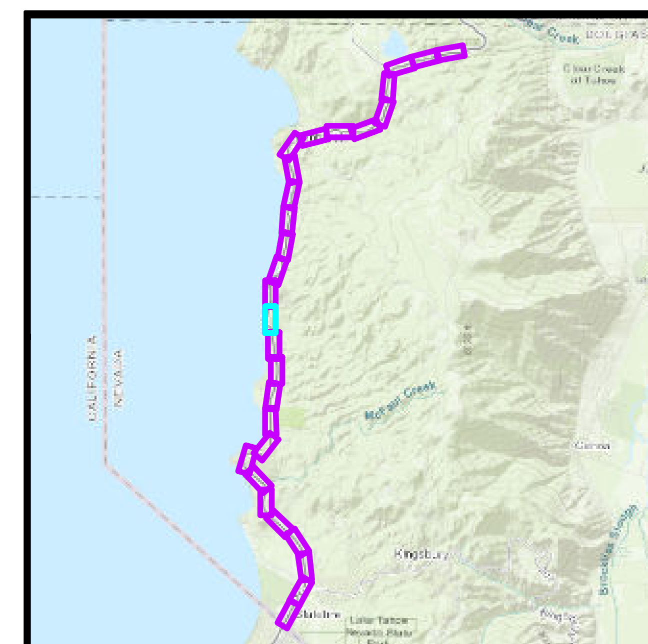
FIGURE 7
US 50 STUDY AREA
STATLINE TO SPOONER SUMMIT
ENVIRONMENTAL CONSIDERATIONS

US 50

LAKE TAHOE, NV

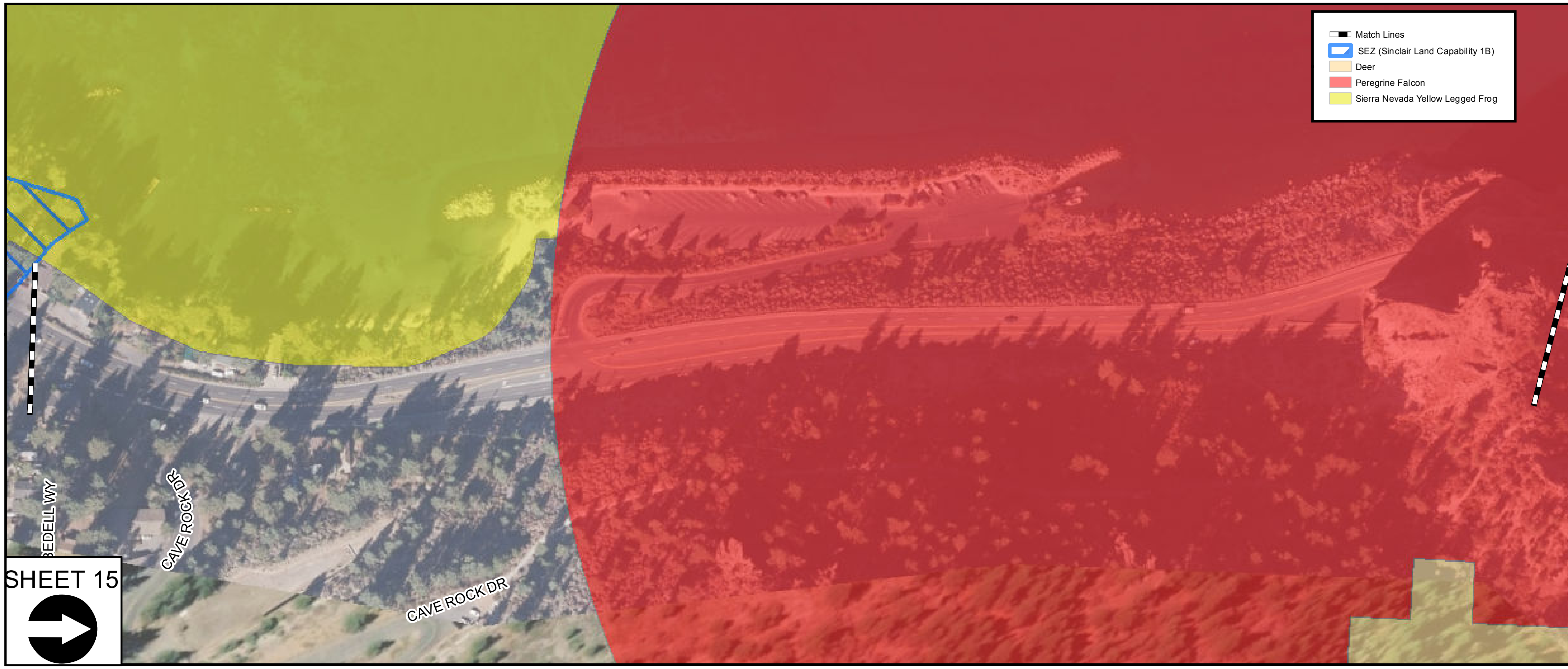
MAY, 2021

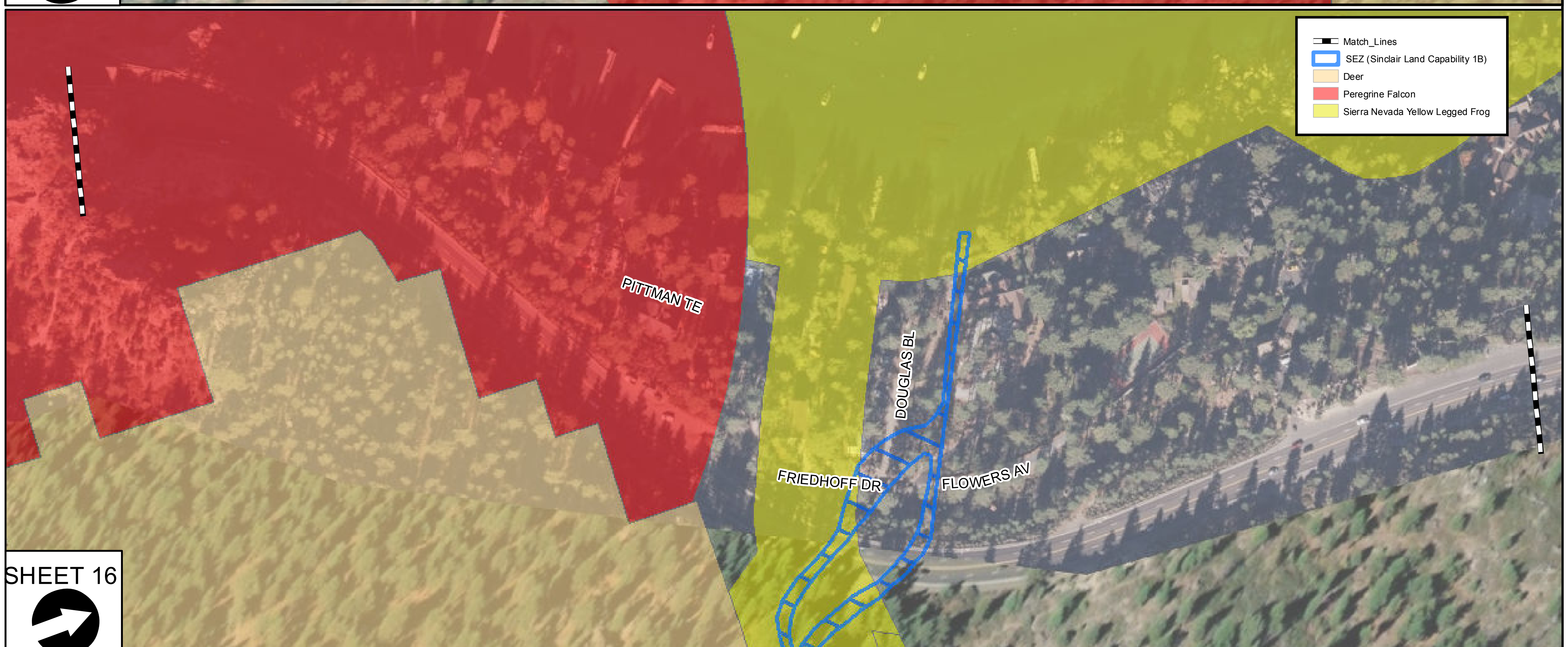
0 100 200
FEET



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard Tel: 775.823.4068
Reno, NV 89502 Fax: 775.823.4066

J:\Jobs\8833_NDOT_US50\NDOT_US50_OA\GIS\Tasks\Environmental_Stacked_20210513_V1.mxd 5/14/2021 3:04:32 PM sbarrow





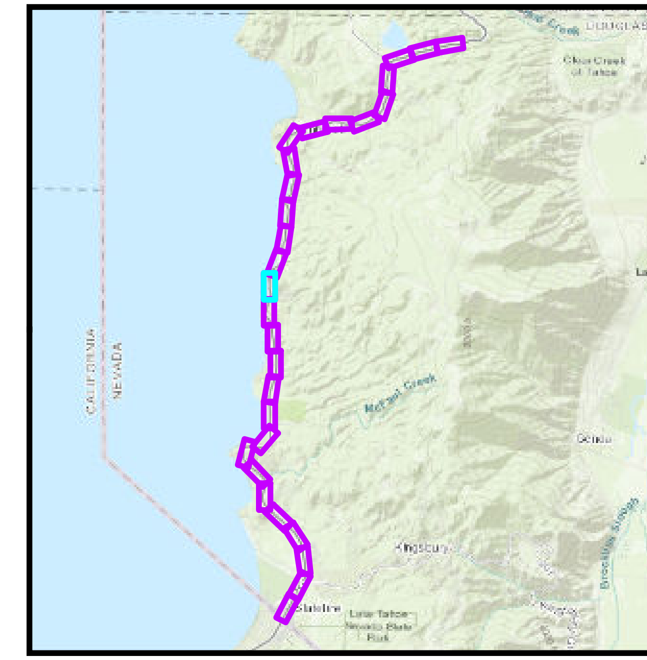
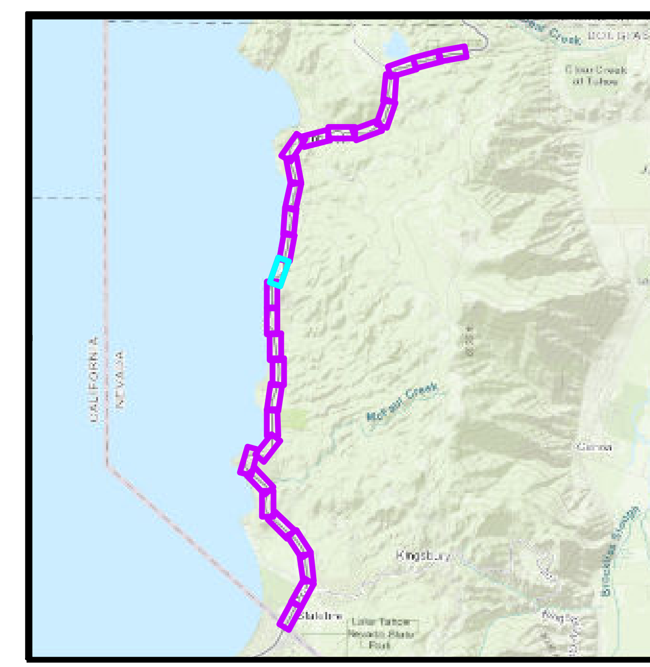


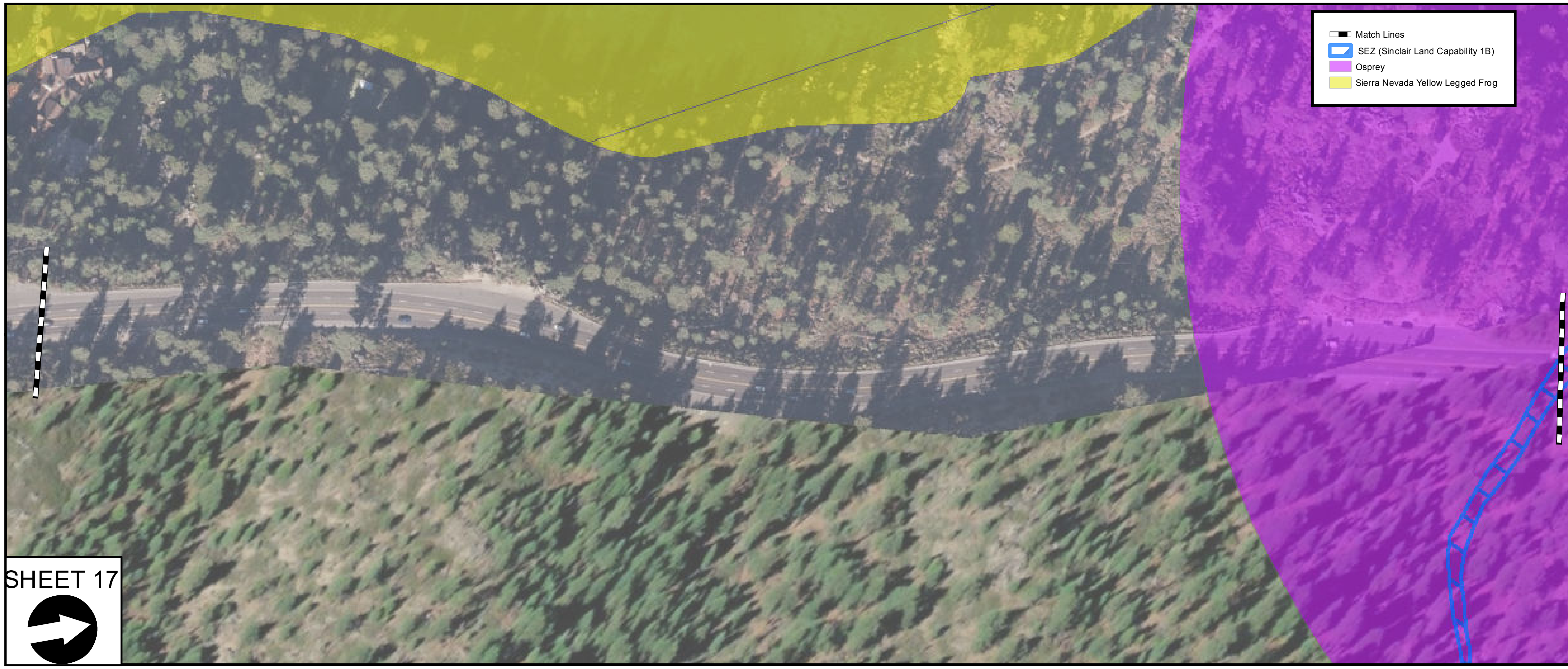
FIGURE 8
US 50 STUDY AREA
STATLINE TO SPOONER SUMMIT
ENVIRONMENTAL CONSIDERATIONS
US 50
LAKE TAHOE, NV
MAY, 2021

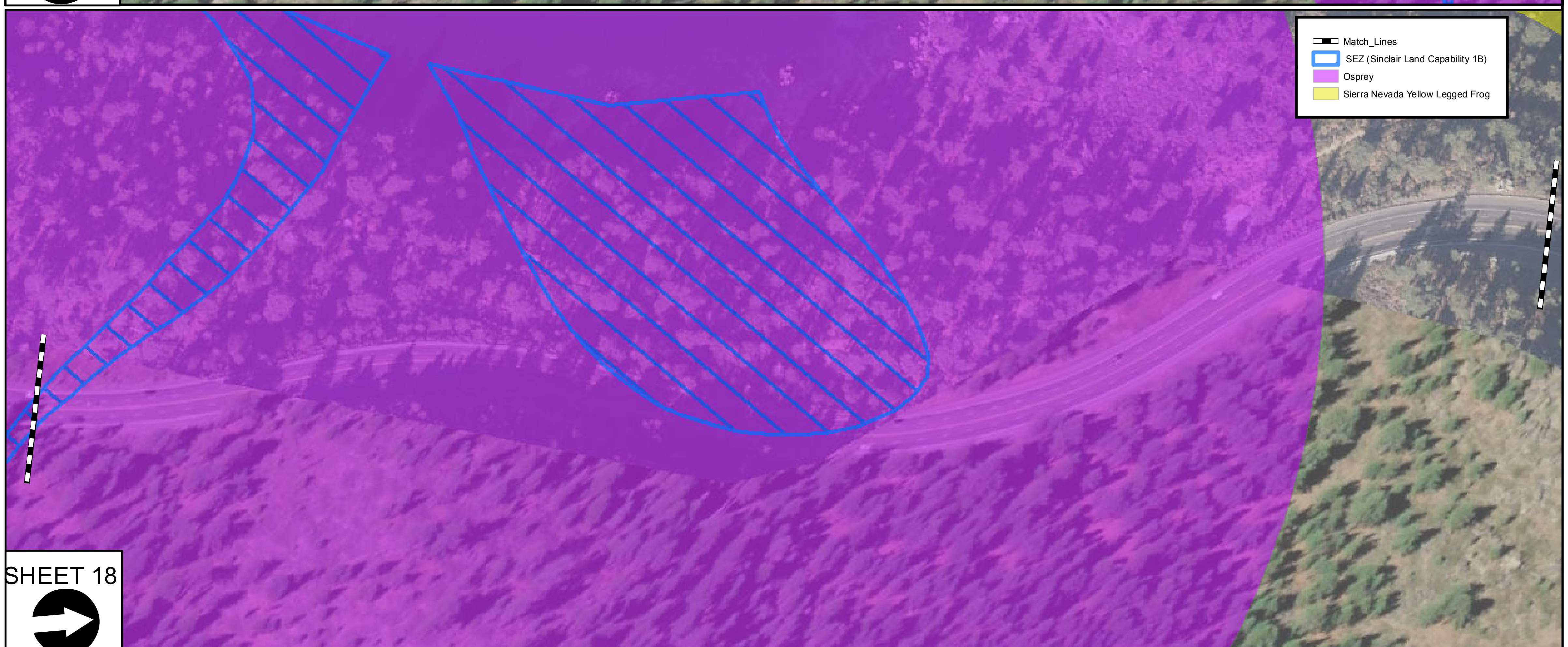
0 100 200
FEET



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard Tel: 775.823.4068
Reno, NV 89502 Fax: 775.823.4066

J:\Jobs\8833_NDOT_US50\NDOT_US50_OA\GIS\Tasks\Environmental_Stacked_20210513_V1.mxd 5/14/2021 3:04:44 PM sbarrow





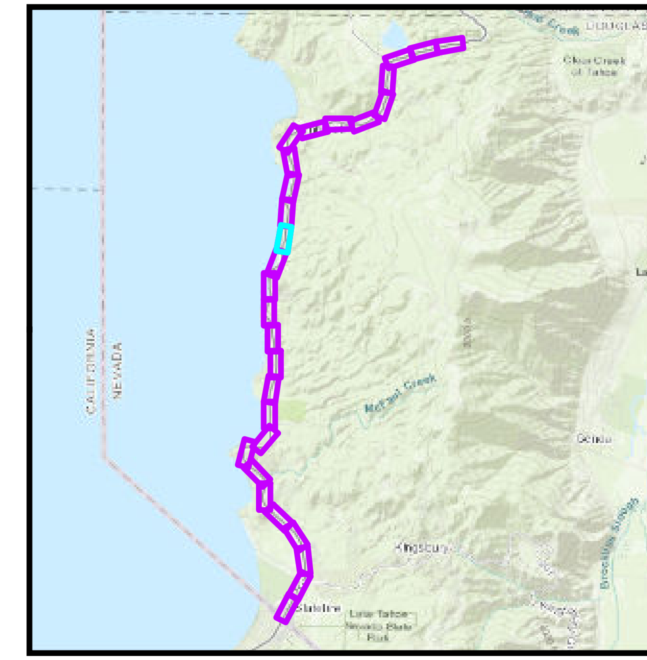
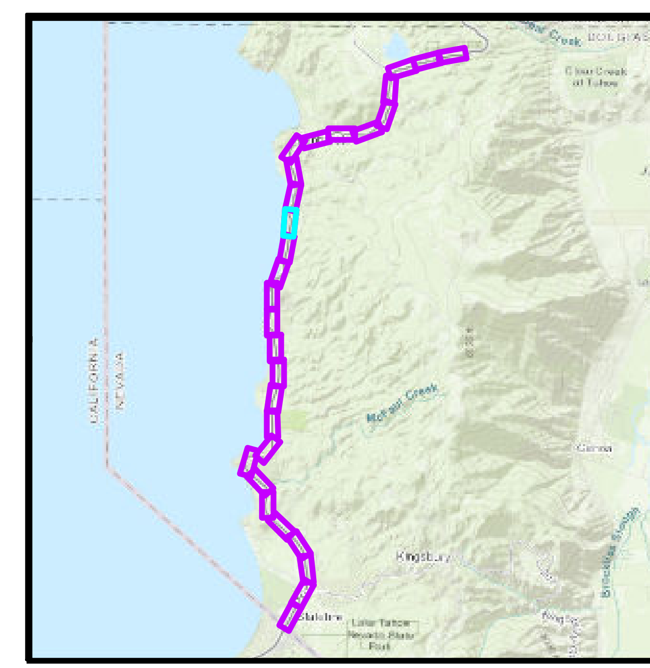


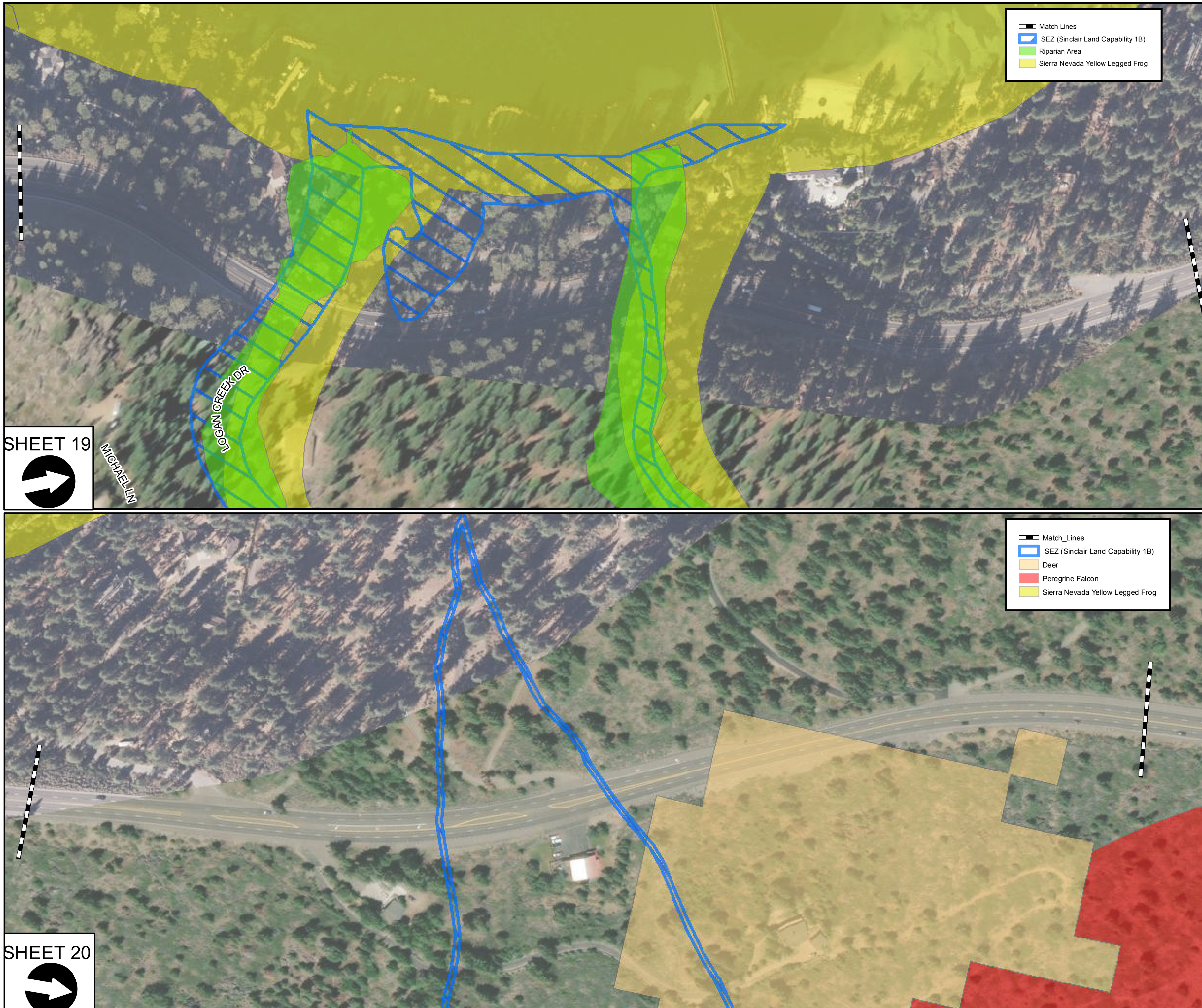
FIGURE 9
US 50 STUDY AREA
STATLINE TO SPOONER SUMMIT
ENVIRONMENTAL CONSIDERATIONS
US 50
LAKE TAHOE, NV
MAY, 2021

0 100 200
FEET



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

J:\Jobs\8833_NDOT_US50\NDOT_US50_OA\GIS\Tasks\Environmental_Stacked_20210513_V1.mxd 5/14/2021 3:04:57 PM sbarrow



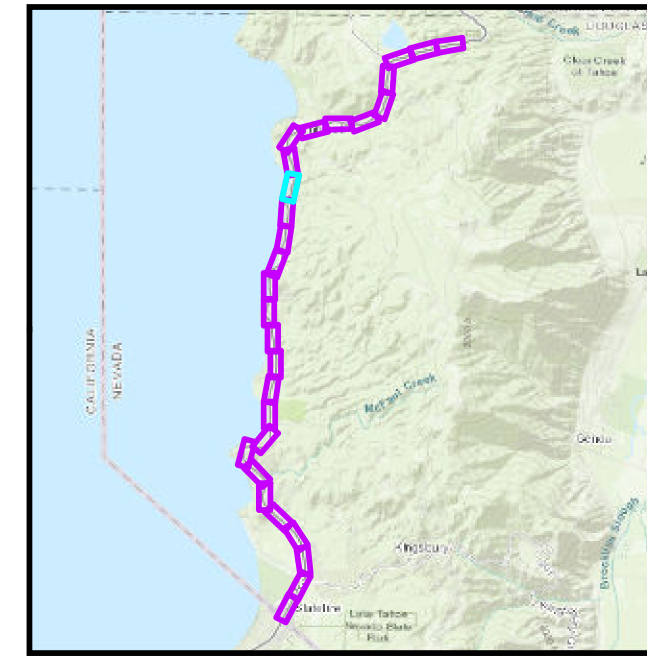


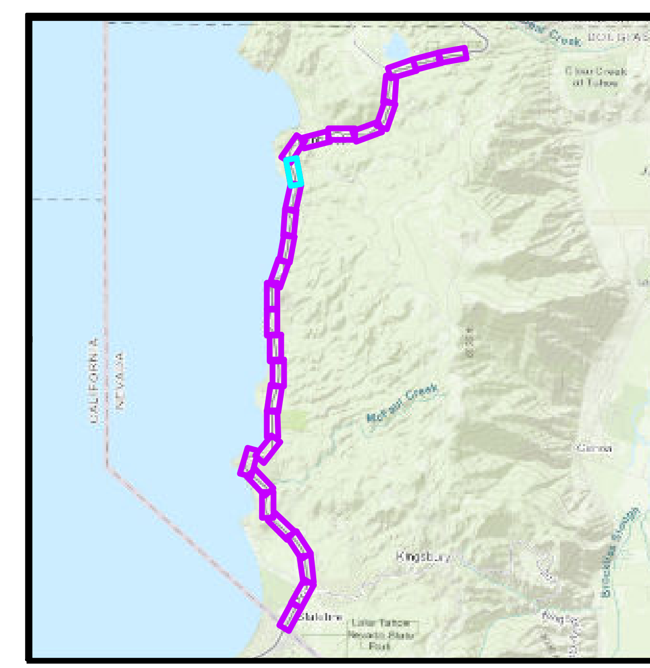
FIGURE 10
US 50 STUDY AREA
STATLINE TO SPOONER SUMMIT
ENVIRONMENTAL CONSIDERATIONS

US 50

LAKE TAHOE, NV

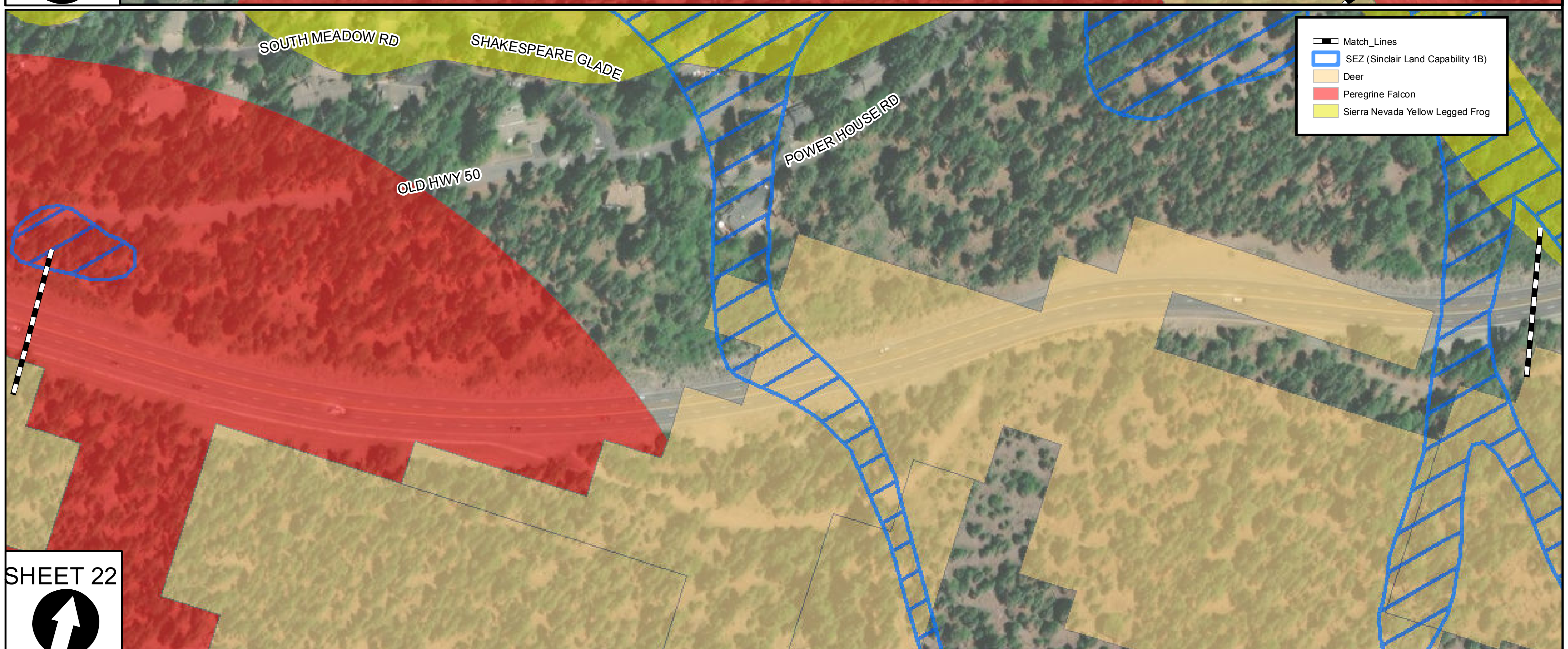
MAY, 2021

0 100 200
FEET



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

J:\Jobs\8833_NDOT_US50\NDOT_US50_OA\GIS\Tasks\Environmental_Stacked_20210513_V1.mxd 5/14/2021 3:05:10 PM sbarrow



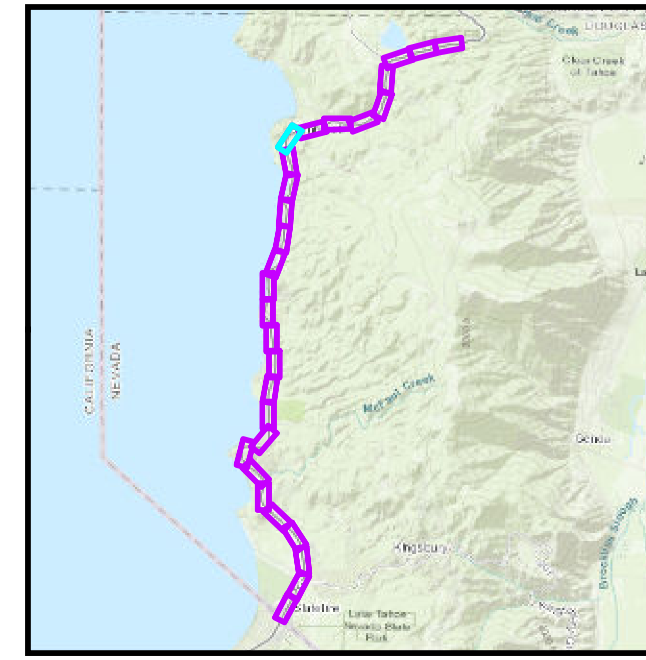


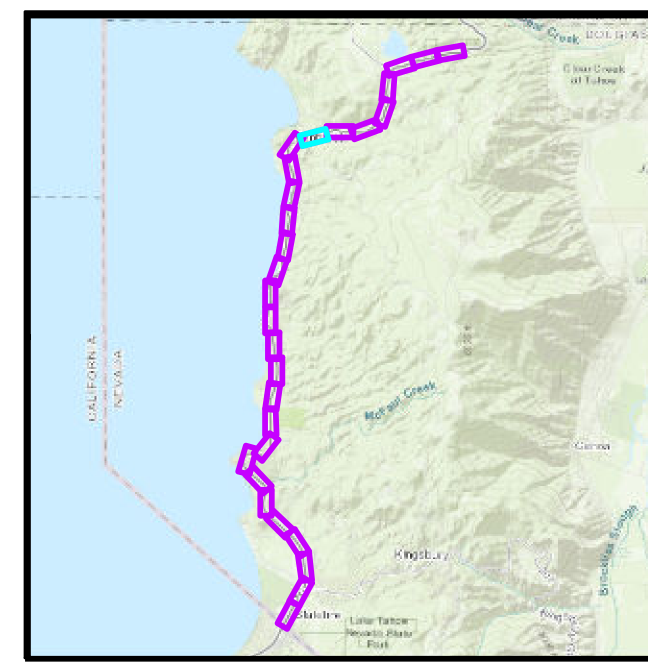
FIGURE 11
US 50 STUDY AREA
STATLINE TO SPOONER SUMMIT
ENVIRONMENTAL CONSIDERATIONS

US 50

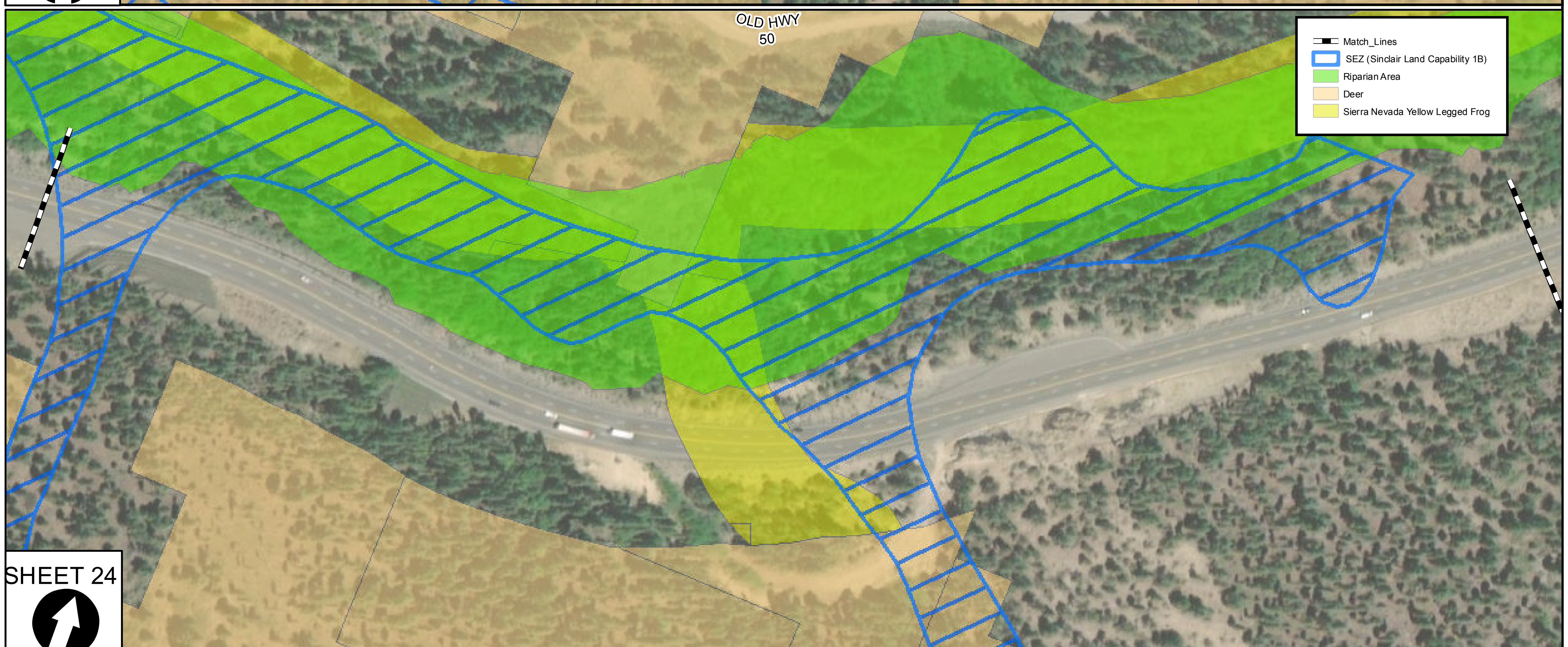
LAKE TAHOE, NV

MAY, 2021

0 100 200
FEET



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066



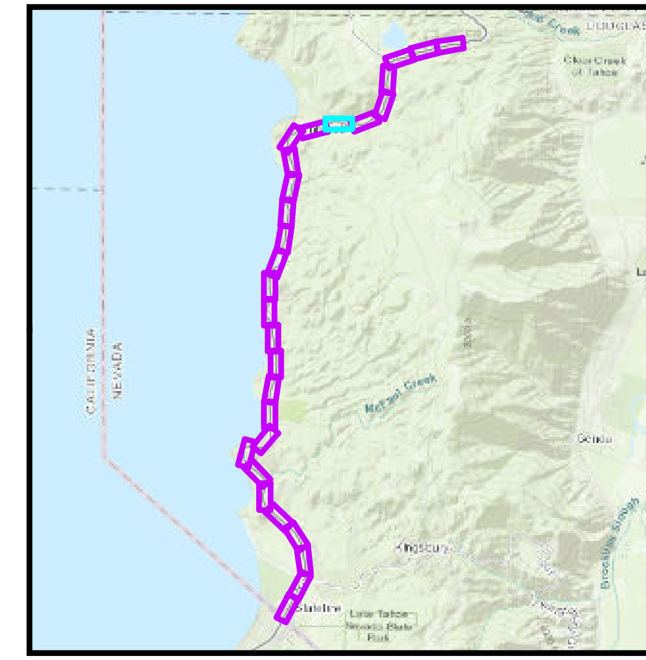
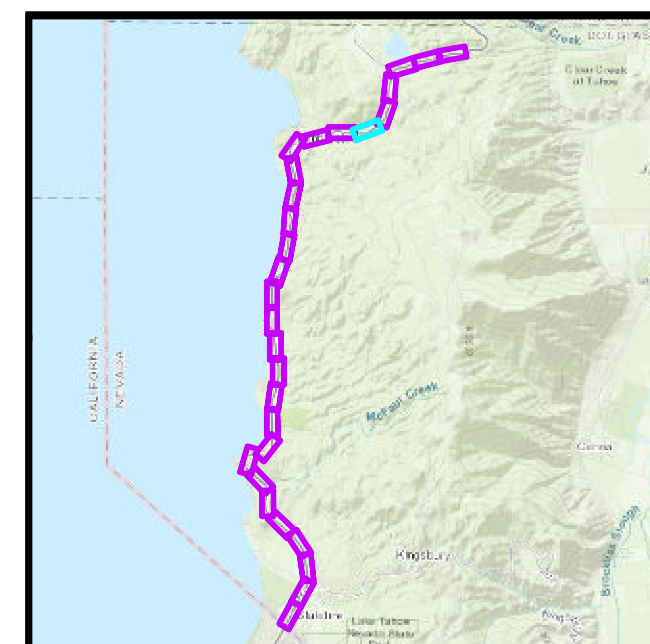


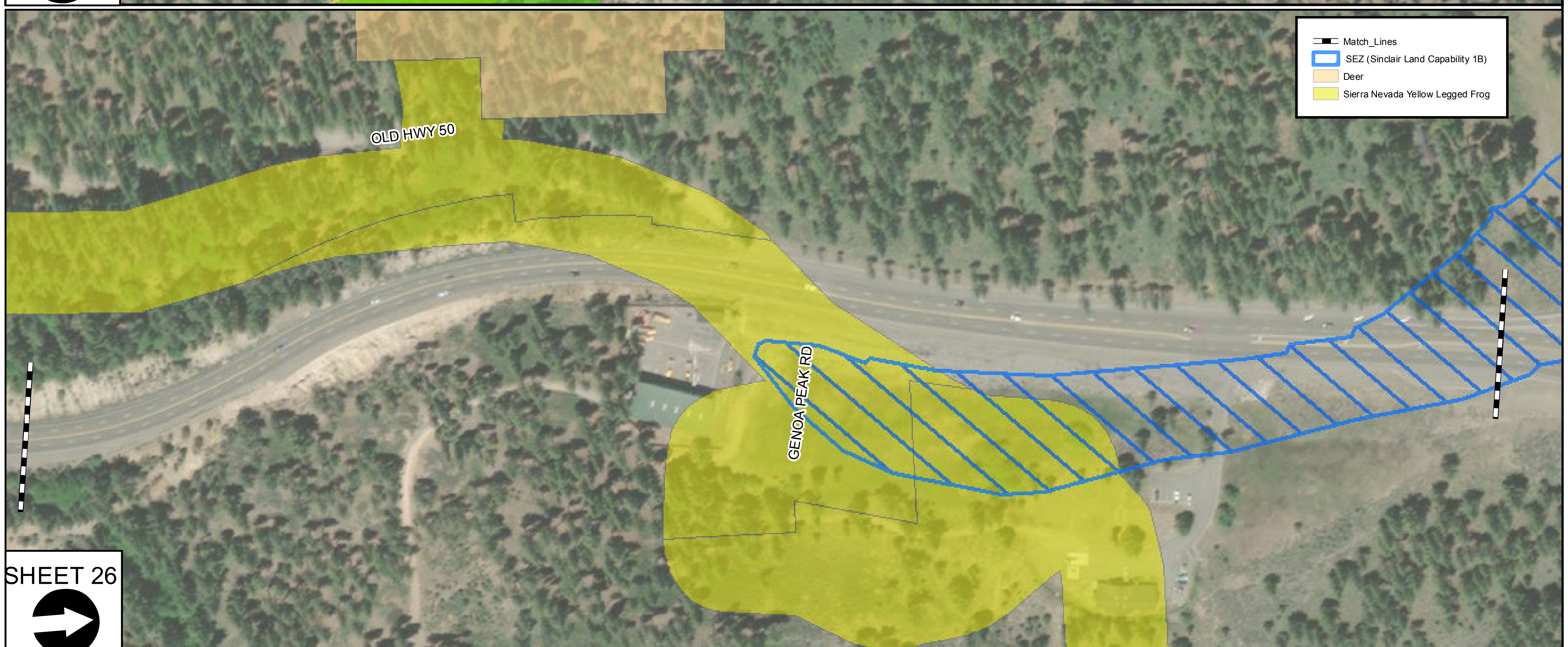
FIGURE 12
US 50 STUDY AREA
STATLINE TO SPOONER SUMMIT
ENVIRONMENTAL CONSIDERATIONS
US 50
LAKE TAHOE, NV
MAY, 2021

0 100 200
FEET



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

J:\Jobs\8833_NDOT_US50\NDOT_US50_OA\GIS\Tasks\Environmental_Stacked_20210513_V1.mxd 5/14/2021 3:05:36 PM sbarrow



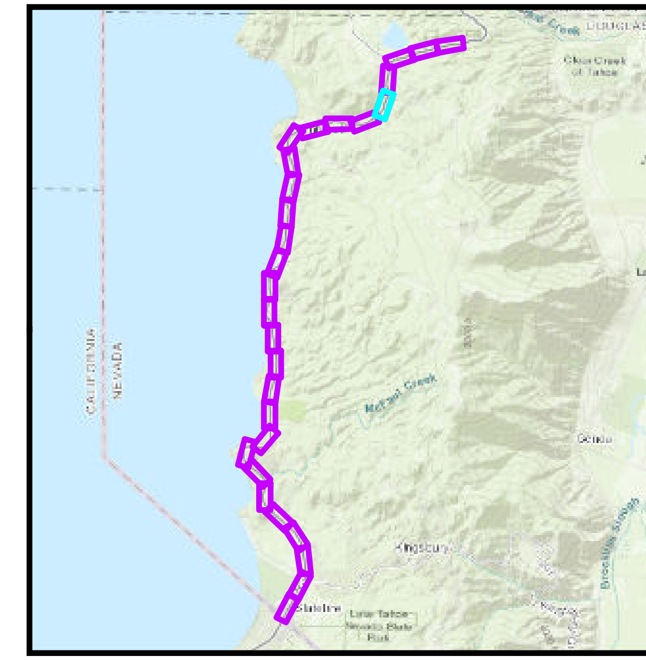
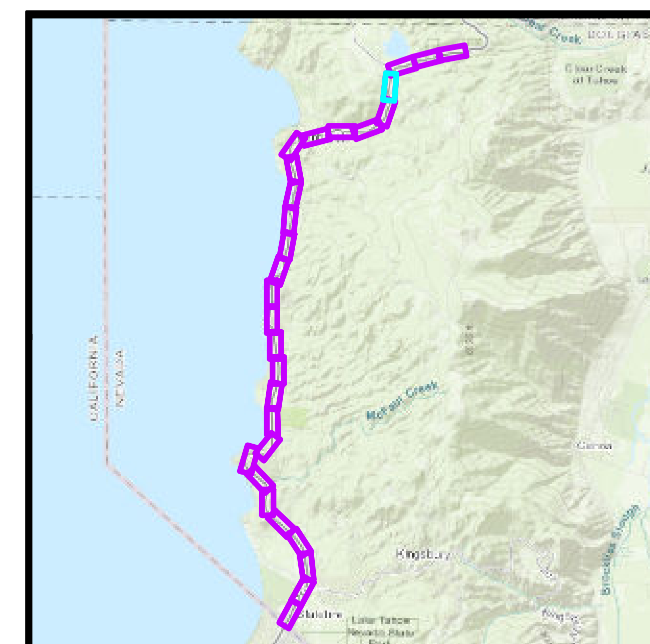


FIGURE 13
US 50 STUDY AREA
STATLINE TO SPOONER SUMMIT
ENVIRONMENTAL CONSIDERATIONS

US 50

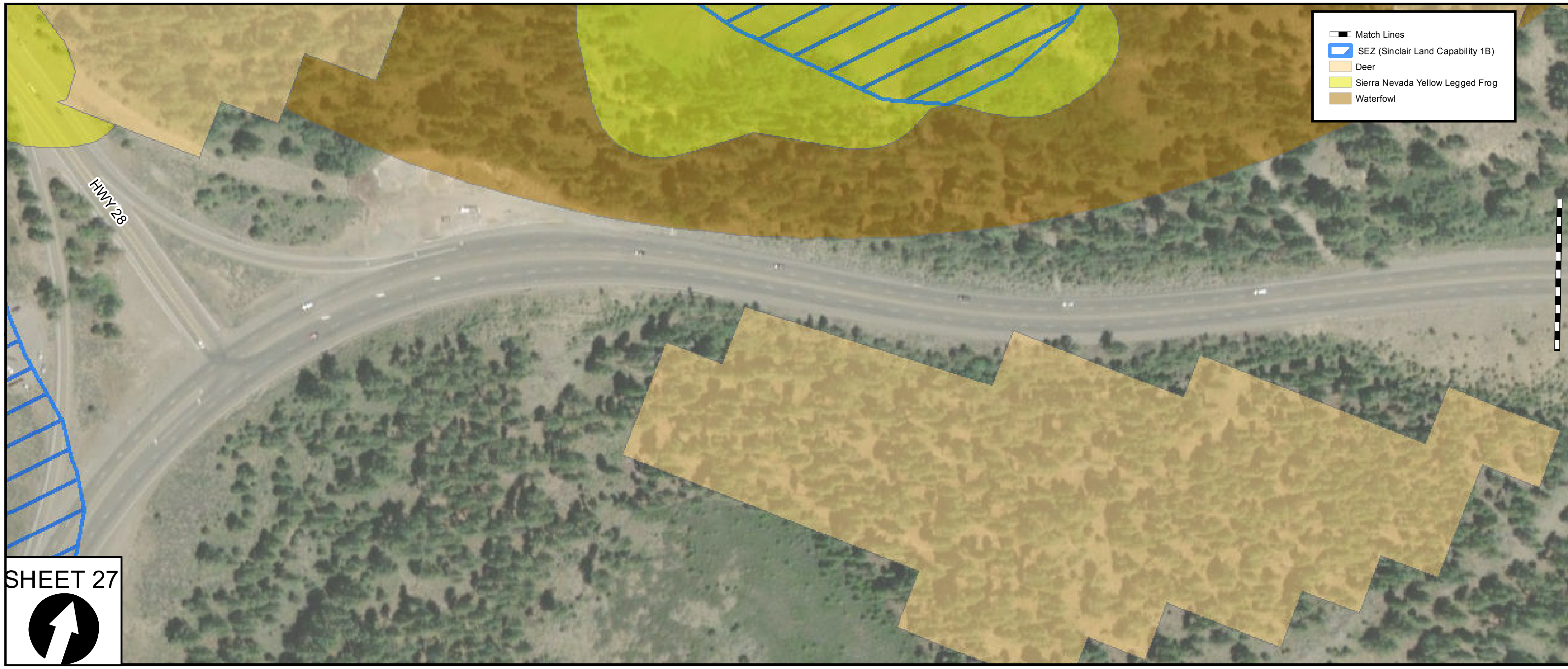
LAKE TAHOE, NV
MAY, 2021

0 100 200
FEET



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

J:\Jobs\8833_NDOT_US50\NDOT_US50_OA\GIS\Tasks\Environmental_Stacked_20210513_V1.mxd 5/14/2021 3:05:49 PM sbarrow



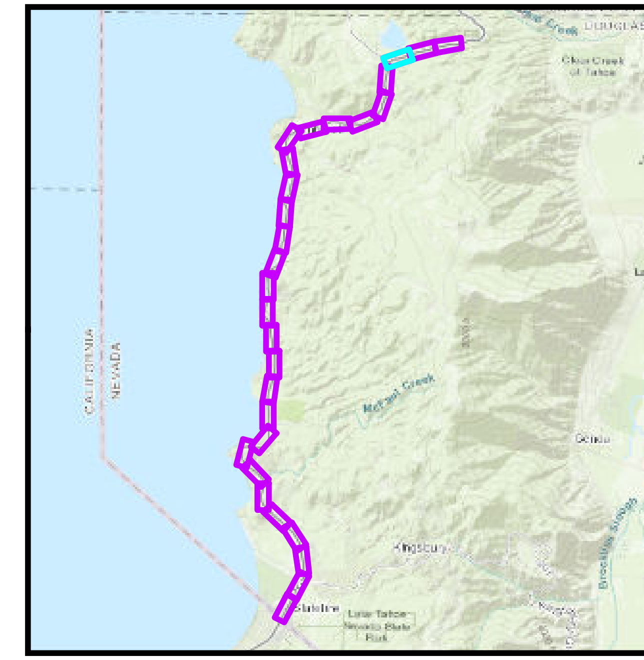
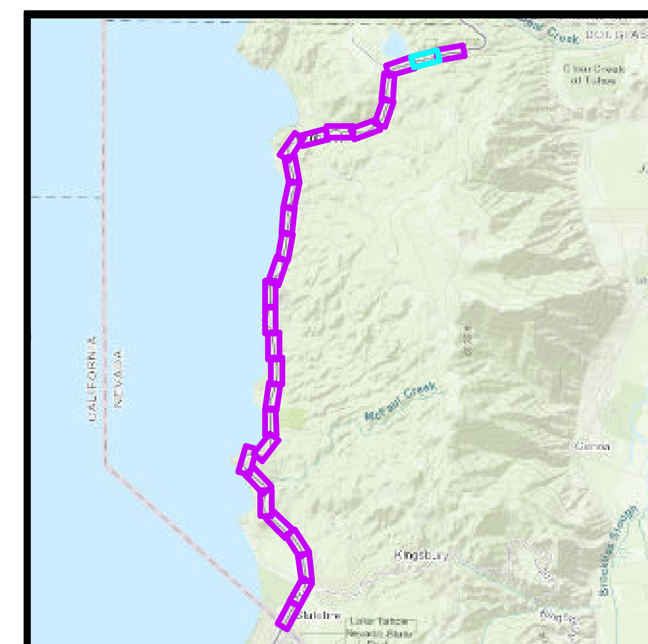


FIGURE 14
US 50 STUDY AREA
STATLINE TO SPOONER SUMMIT
ENVIRONMENTAL CONSIDERATIONS
US 50
LAKE TAHOE, NV
MAY, 2021

0 100 200
FEET



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

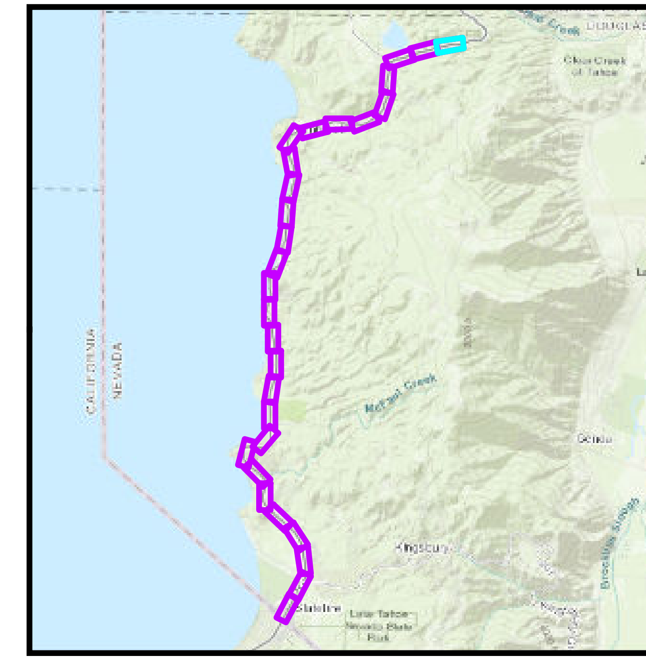


FIGURE 15
US 50 STUDY AREA
STATLINE TO SPOONER SUMMIT
ENVIRONMENTAL CONSIDERATIONS

US 50

LAKE TAHOE, NV
MAY, 2021

0 100 200
FEET

- Match_Lines
- Deer
- Sierra Nevada Yellow Legged Frog
- Waterfowl

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

APPENDIX I – ITS SUMMARY

Appendix I contains a memorandum summarizing the existing Intelligent Transportation Systems network

Memorandum

To: Bryan Gant, Wood Rodgers
From: Erin Ehlinger
Date: April 18, 2021
Re: DRAFT US 50 Corridor Management Plan: Intelligent Transportation Systems Existing Conditions Summary

This memo provides an overview of the existing intelligent transportation systems (ITS) infrastructure managing traffic operations on US 50 from the California State Line on the south to Milepost 13.26 (Nevada State Route 28) in Douglas County.

Four Core ITS Elements

ITS requires four core elements to be aligned to function well, and produce the desired operations. The four elements are shown in Figure 1, below. Needs for each of the four core ITS elements will be developed in future project phases, based on the stakeholder's operations goals. The four core ITS elements are:

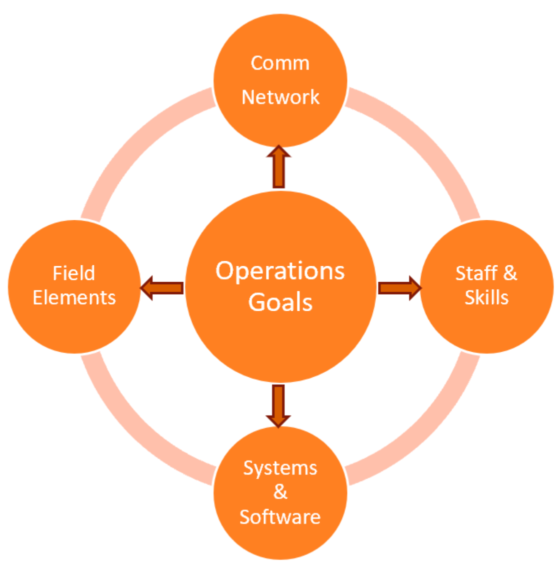


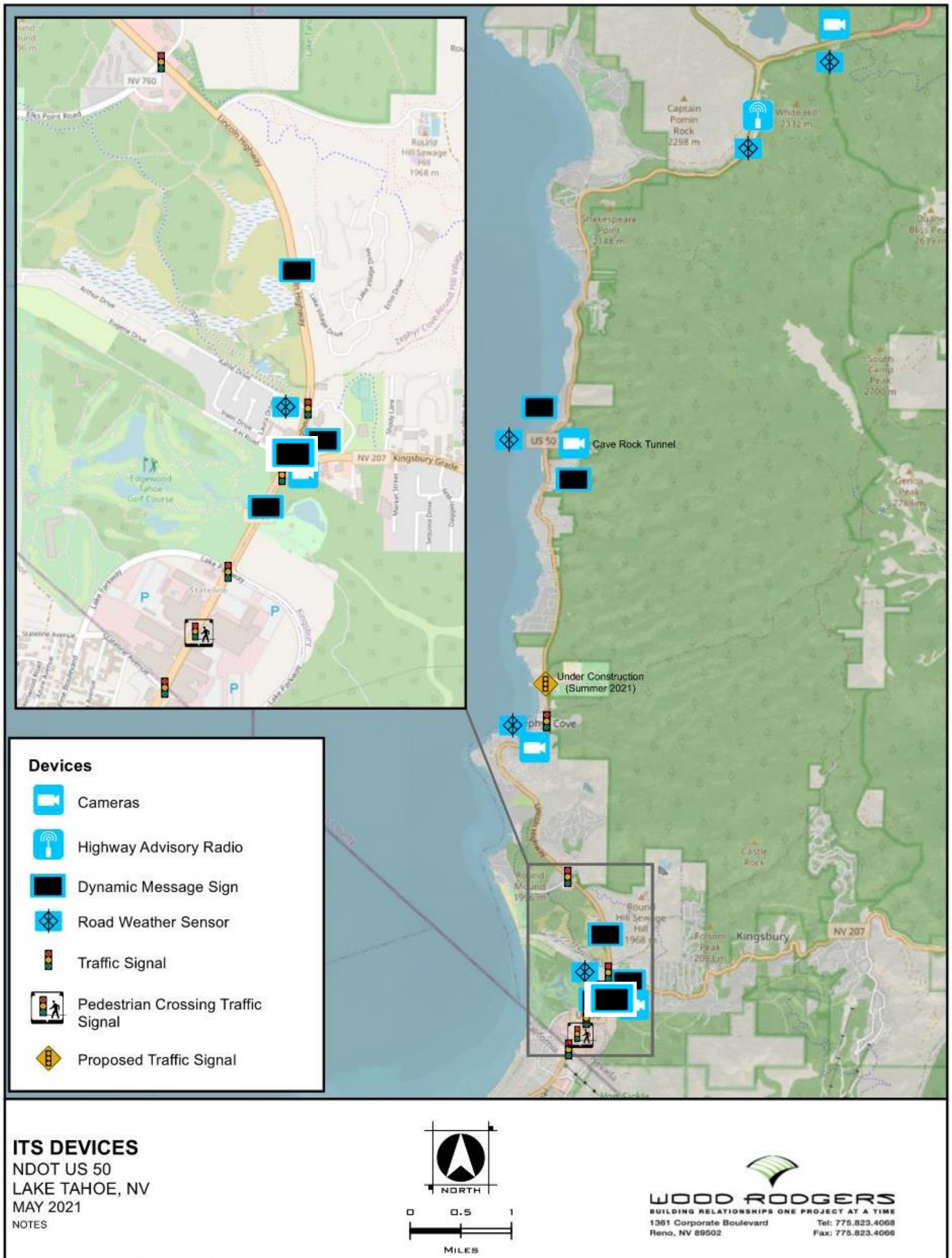
Figure 1: The Four Core ITS Elements

- **Field Elements:** including traffic signal controllers and associated equipment, CCTV cameras, Dynamic Message Signs (DMS), Road Weather Information Systems (RWIS) and multimodal detection, and other technologies.
- **Communications Network:** The media (fiber, cellular or other), equipment and software to manage communications from a central point to the field, and between ITS elements.
- **Systems and Software:** The "brains" that manage the technologies including traffic signal control, system health monitoring, video management, CCTV camera control, traveler information, and other functions.
- **Staff and Skills:** The staff hours and skills needed to operate and maintain the ITS elements. This element is not addressed in this study, but are the key to ensuring that ITS operates as needed.

Staff and skills are not specifically addressed in this study. It is noted herein to indicate that they are a critical part of delivering ITS.

Inventory – Field Devices

Figure 2 shows the existing ITS field elements.



R:\Jobs\8833_NDOT_US50\NDOT_US50_OA\GIS\Tasks\US_50_ITS_DevicesEE_Edits.mxd 5/18/2021 2:35:28 PM clopez

Figure 2: Existing ITS Field Elements

Traffic Signals

There are nine existing and one soon to be constructed traffic signals in the corridor, one operated and maintained by Caltrans, with the remaining eight (including the new traffic signal) owned by NDOT, and operated and maintained under agreement by Douglas County.

Caltrans owned and operated traffic signal:

- US 50 at Stateline Avenue
  This traffic signal is interconnected to others to the south via twisted-pair cable. The group of signals is connected to the Caltrans TMC.

NDOT owned/Douglas County operated and maintained traffic signals (from south to north):

- US 50 at Hard Rock Hotel (a "half" signal for pedestrian crossing of US 50)
- US 50 at Lake Pkwy
- US 50 at Kingsbury Grade Rd
- US 50 at Kahle Dr
- US 50 at Zephyr Cove Resort
- US 50 at Warrior Way (to be installed Summer 2021) NDOT has indicated that this signal will also be operated and managed by Carson City, potentially under contract to Douglas County, but that agreement has not been finalized.

Detection:

- The signals operate using video detection, with presence detection at the STOP bars. There is no advanced or dilemma zone detection in place.
- There is pedestrian detection in place for all crossings. There are no accessible pedestrian systems in place.
- There is no cyclist-specific detection in place. Note that cyclists may be detected if they are in a travel lane with the existing video detection.
- The new traffic signal at Warrior Way will be equipped with induction loops and will include STOP bar and advanced detection. This intersection design does not currently include specific cyclist detection.

Signal Operation:

- All signals operate in fully actuated/free mode, using a single timing plan at all times (24X7X365). There is no interconnect between any signals managed by Douglas County.
- The operation plans for the Warrior Way signal have yet to be developed.

Equipment Condition:

- Traffic signal poles are over 50 years old, which exceeds the design life. In addition, design standards have changed over the years, and adding any new elements to traffic signal poles may exceed current design standards.

- The traffic signal heads (and where in place, illuminated signs) and LED modules are replaced when they fail, and many are beyond end-of-life.
- The traffic signal indications are subject to occlusion from snow and ice, and the existing signal head faces and visors should be modified to reduce this issue
- Detection systems are at end-of-life and likely would not support additional detection modes/approaches.
- Traffic signal cabinets are at not sized to accept additional equipment (e.g. fiber optic communications, additional detection channels).
- Traffic signal controllers are not at end-of-life, and operate using current firmware.
- Some signal control auxiliary equipment is at end-of-life and requires upgrade.
- There are no battery back-up systems in place, to enable operations in the case of power outages.

Communications:

- There are no communications from the existing traffic signals to any central location. Problems are discovered from citizen, police or other reports, and technicians are dispatched upon receipt of the report.
- The new traffic signal at Warrior Way will have cellular communications capabilities, and will be addressable from a remote location, if software to support such communication is available.

CCTV Cameras

There are four CCTV cameras in the study area:

NDOT CCTV are at locations as shown on Figure 2. These three cameras are connected to the Reno District Road Operations Center (ROC) located in Sparks. The images are used for traveler information (camera images can be found at https://nvroads.com/511-home), and for traffic incident management and road and traffic operations condition assessments. Communications are cellular.

Douglas County manages a video camera located at the intersection of US 50 at Kingsbury Grade Dr. The camera is used by Douglas County staff for road and traffic operations condition assessments. The communication media is microwave.

Dynamic Message Signs

NDOT owns and operates four DMS in the study area, all shown on Figure 2. DMS are used to post traffic information and road conditions including for construction, special events and temporary road closures.

- One located to provide information to northbound travelers, in advance of Kingsbury Grade Rd.
- One located to provide information to northbound travelers, in advance of Kahle Dr.
- One located to provide information to southbound travelers, in advance of Kahle Dr.
- Two (one NB and one SB) at the Cave Rock Tunnel portals. In addition to being available for the base uses noted above, they are used provide messages regarding the presence of cyclists in the tunnel (using automated video detection as well as a cyclist push button), and icy road conditions in the tunnel.

The DMS are also available for posting of any needed messages regarding road or traffic conditions or special events.

The DMS are connected to the Reno District Road Operations Center (ROC) located in Sparks via cellular communications.

NDOT also manages several portable DMS, which are used for shorter-term needs in the provision of traffic information and road conditions for construction, special events and temporary road closures. Douglas County has access to portable DMS as well.

Road Weather Sensors

NDOT owns and operates five RWIS in the study area, as shown on Figure 2. The RWIS are used to support maintenance operations, and the RWIS station data is provided to the public on the NDOT 511 web site. Also, as noted above, the RWIS in the Cave Creek Tunnel provide automated road condition warning information to the DMS located in advance of the two tunnel portals.

The RWIS are connected via NDOT's 800MHz radio system to NDOT's Reno District Road Operations Center (ROC) located in Sparks.

Highway Advisory Radio

A HAR is located north of Spooner Summit near the Spooner Summit maintenance yard. HAR are used to broadcast traveler information such as that relating to incidents, road conditions, construction, Amber and Silver alerts, and road restrictions. The HAR is connected via cellular communications to the NDOT District 2 Road Operations Center in Sparks. The HAR broadcast on AM 530, with blue signs located on US 50 advising drivers of the availability of information on this channel.

NDOT also owns a portable HAR, which can be deployed for short-term needs.

Other Existing Field Devices

- A radar-based speed feedback sign is located about ¼-mile north of Kahle drive, for northbound travelers. This is owned and maintained by NDOT.
- An overhead Rectangular Rapid Flashing Beacon (RRFB) is located at the pedestrian crossing north of Lake Shore Boulevard in the Marla Bay area. This RRFB is NDOT-owned and maintained by Douglas County.

Inventory – Systems and Software

NDOT has the following in place:

- A central Advanced Transportation Management Software (ATMS) platform that supports the remote management of RWIS, DMS, and HAR.
- FLIR Cameleon is used to support CCTV image capture and posting on the traveler information web site.
- NDOT maintains a statewide traveler information (511) website and phone system.
- NDOT also uses a software called ATMS.NOW for traffic signal system communications and operations, but this system is not used for the signals on US 50.

Douglas County does not currently use any central traffic signal management software.

Inventory – Communications

There are no wireline communications in place for ITS. All communications are wireless, and primarily cellular, with the exception of NDOT's use of the 800 MHz radio system to address RWIS stations. The appendix to the memo shows the current cellular coverage as publicly available – note that actual signal strength and data capabilities must be investigated at any site where cellular is proposed for communications.

Near-Term ITS Improvements

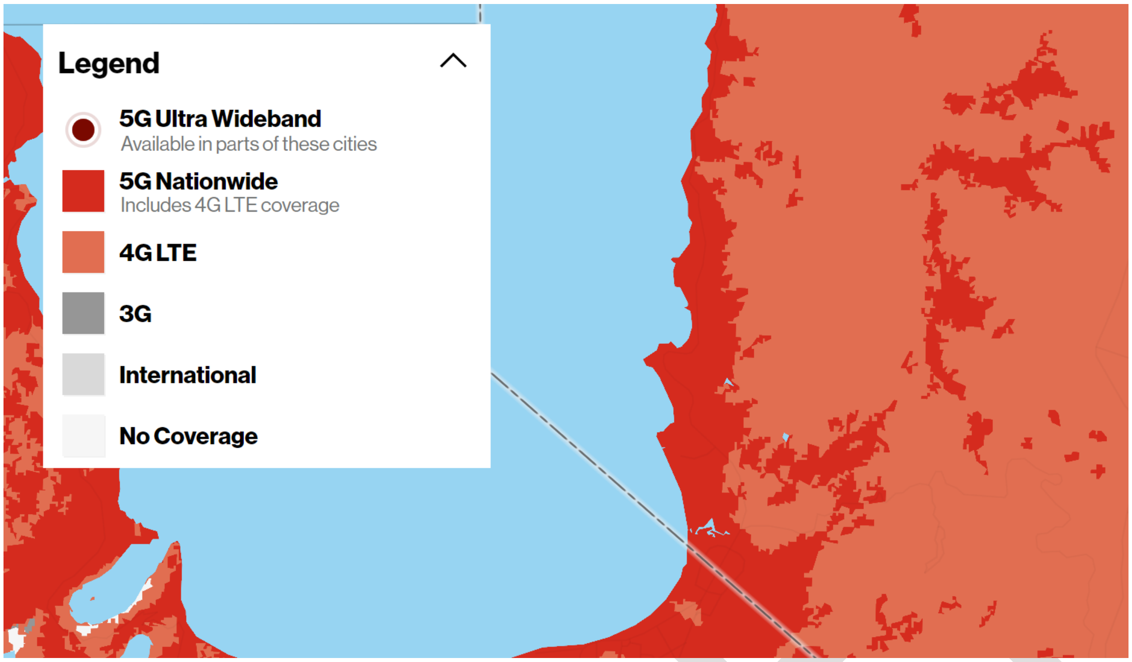
NDOT has begun a capital improvement mill & overlay, hydraulic and safety project on the US 50 Corridor, with the same project limits as this study. The project scope currently includes placing conduits for a future communications network. The project is currently scheduled to go to Ad in July 2023.

NDOT (in partnership with other agencies) is in the process of design and implementation of upgrades to the Nevada Statewide Radio System. The NSRS provides interoperable public safety radio communications to 40+ agencies and organizations around the state of Nevada. This upgrade will increase the capacity and capabilities of the NSRS. NDOT Region 2 installation completion, cutover and acceptance is planned for May 2022.

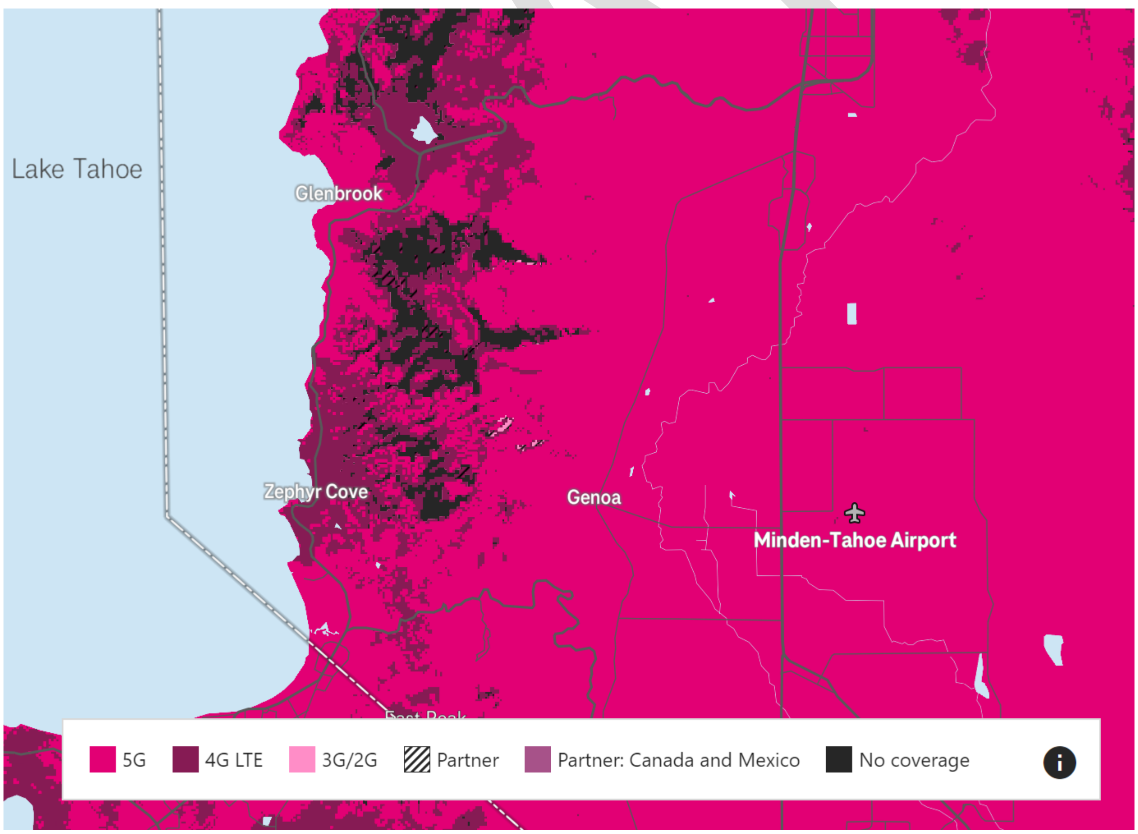
Concurrent Efforts

In addition to the efforts NDOT has put forth, the Tahoe Regional Planning Agency (TRPA) has invested in expanding ITS and technology in the Tahoe Basin. In 2015, the TRPA developed the Tahoe Basin ITS Strategic Plan to promote further deployment of the latest ITS technologies, keep up to date with technological advancements, and increase coordination with partner agencies. The report can be found here.

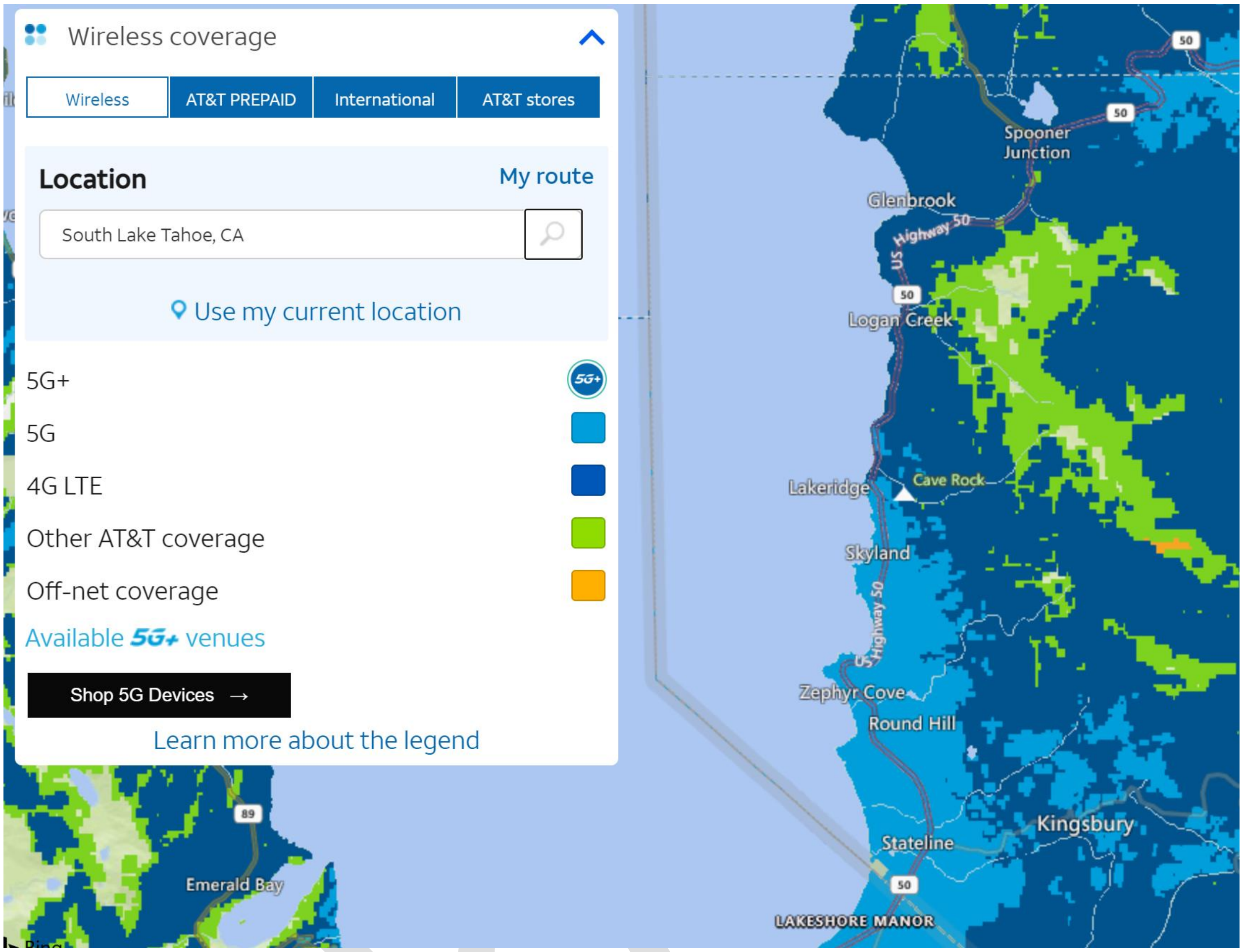
Additionally, the TRPA also initiated the Tahoe-Truckee Regional Plug-in Electric Vehicle Readiness Project. This plan was completed in 2017 and provides a roadmap to make the area ready to become a plug-in electric vehicle destination. Plan information can be found at tahoealternativefuels.com.



Verizon Existing Cellular Coverage



T-Mobile Existing Cellular Coverage



AT&T Existing Cellular Coverage

APPENDIX J – SUMMARY OF EXISTING POLICIES, PLANS, AND STUDIES

Appendix J contains a detailed summary of the existing policies, plans, and studies summarized in Section 5.

Transportation Plans

One Nevada Transportation Plan (2018, updated 2020)

The *One Nevada Transportation Plan* (ONTP) is NDOT's statewide long-range transportation plan. The ONTP addresses the statewide planning requirements under the federal surface transportation acts – Moving Ahead for Progress in the 21st Century and the Fixing America's Surface Transportation Acts. The ONTP implements a streamlined, performance-based multi-modal program to meet Nevada's current and future transportation needs. This plan provides a common foundation and policy framework for NDOT and its transportation partners to make more informed, transparent, and responsive transportation investment decisions.

The ONTP incorporates six critical goal areas that encompass an array of transportation issues and opportunities and reflect the priorities of Nevada's public and transportation partners. The six goal areas are:

- Enhance Safety: Continuously improve and promote safety on our transportation system for all modes.
- Preserve Infrastructure: Maintain the state's transportation assets to preserve investments.
- Optimize Mobility: Make strategic investments that enhance mobility opportunities, better connections, and transportation reliability expectations.
- Transform Economies: Improve the contribution of the transportation system to Nevada's economic competitiveness through a supportive and innovative transportation framework.
- Foster Sustainability: Develop a transportation network that reduces emissions while being environmentally, historically, culturally, and financially sustainable.
- Connect Communities: Enhance opportunity, livability, and quality of life through better connections, increased transportation choice, and supportive infrastructure for all modes.

In conjunction with these goals, the ONTP establishes performance targets and associated measures are reported regularly, aligning goals and performance objectives across NDOT to provide a common framework for decision-making. This linkage ensures that project-level decisions and performance values are consistent and that NDOT is driving towards meeting the goals above. Furthermore, this linkage informs investment priorities, maximizing the impacts and benefits of limited funding resources. To that end, NDOT is transitioning to a project prioritization strategy that spans the entire program, ensuring the goals and objectives of the ONTP are achieved over time. Proposed projects and identified planning needs are considered holistically to determine those that best improve performance and should be advanced for implementation. Recommendations made as part of the US50 CMP and other planning endeavors must compete within the ONTP framework to determine which, if any, are advanced through NDOT-administered funding programs.

Linking Tahoe Regional Transportation Plan (2020)

Visitation from outside the Region is the main driver of the Lake Tahoe Region's $5 billion annual economy, based largely on seasonal tourism and outdoor recreation. But it also puts metropolitan-level travel demands on the Region's limited and largely rural transportation system. During peak times of visitation, Tahoe's roads clog with traffic and parking demands exceed capacity at recreation sites. This seasonal influx of motorists has consequences for the environment, for local communities and their mobility, and for air and water quality. As neighboring cities from Reno and Carson City to Sacramento and San Francisco continue to grow, transportation pressures and challenges at Tahoe will only increase.

As the Tahoe Region's federally-designated metropolitan planning organization and the bi-state agency that California and Nevada created 50 years ago to manage growth, development, and land use in the Tahoe watershed, the TRPA-MPO plays a leading role in identifying solutions for the Region's transportation challenges. Every four years, TRPA-MPO evaluates and updates the plan for Tahoe's transportation system. The *2020 Linking Tahoe Regional Transportation Plan (RTP)* identifies a broad range of projects, programs, and strategies needed to comprehensively improve Tahoe's transportation system over the next 25 years.

The goals of the RTP include the following:

- Transit enhancements to double transit ridership in town
- Build paths, institute parking management, and provide transit service with the Regions two highest use recreation corridors:
    - State Route 89 and State Route 28

Relevant projects comprised in the RTP within the US 50 study area include:

- Advance the South Shore Community Revitalization Project on Tahoe's South Shore to reroute US 50 from the center of town to its edge and reimagine the community core as a gathering place for visitors and residents with connections to mountain and lakeside recreation, nearby neighborhoods, convenient parking, and free and frequent transit
- US 50 pavement rehabilitation beginning in the year 2021 to 2025

Linking Tahoe Active Transportation Plan (2016, updated 2018)

The *Linking Tahoe: Active Transportation Plan* (ATP) presents a guide for planning, designing, constructing, and maintaining a regional active transportation network that includes innovative infrastructure, support facilities, and awareness programs. The infrastructure network includes on-street bike facilities such as bike lanes, bike routes, and intersection designs that promote safety and convenient travel for bicycling and walking. The network also includes off-street, shared-use paths and sidewalks that appropriately integrate with the roadway and existing and planned land-use design. The ATP outlines goals, policies, and actions that support implementation of high priority projects and guides long-term planning that will transform Tahoe's transportation system. To support this process, the plan includes analysis of current conditions, provides data for future projects, and outlines levels of project priority. To help ensure feasible implementation, the ATP identifies potential funding sources and recommended designs to encourage consistent and safer access for all roadway users.

This plan seeks to improve the environment and quality of life in the Tahoe Region by increasing safe and convenient bicycle and pedestrian travel. Through a complete streets approach, this plan promotes transportation projects that accommodate the needs of all travelers when designing transportation improvements on and off roadways. Complete streets are designed and operated to facilitate safe, comfortable, and efficient travel for roadway users of all ages and abilities such as pedestrians, bicyclists, transit riders, motorists, commercial vehicles, and emergency vehicles. A complete streets approach also supports economic vitality by designing for aesthetic improvements, place-making, and by building natural partnerships between private, public, and community entities. This vison can be realized by creating a high-quality environment that makes active transportation more appealing than driving in the Tahoe Region and beyond.

Projects within the study area comprised in the *Linking Tahoe: Active Transportation Plan* include:

- Install bike lanes at SR 28 and US 50
- US 50 shared use path from Kahle to Elk's Point – Class-I Shared Use
- US 50 bike lanes from Stateline to Spooner Summit – Class-II Bike Lane
- Intersection improvements at US 50 and Kahle and US 50 and Warrior Way

Linking Tahoe Corridor Connection Plan (2017)

In recent years, Lake Tahoe is synonymous with "congestion," especially during summer and winter, peak recreation and visitation seasons. The 2017 Linking Tahoe: RTP is based, in part, on the research, analysis, and recommendations developed as part of the Linking Tahoe: Corridor Connection Plan (LTCCP), as well as the Linking Tahoe: Transit Master Plan (TMP). The RTP defines the policies, goals, and high-level implementation strategies. The LTCCP and TMP are detailed implementation approaches that support and inform the RTP. Together, they are intended to transform Tahoe from an auto-centric environment to a destination rich with multi-modal options for visitors, residents, and commuters.

The primary goals of these documents are to protect the fragile environment, foster a strong economy, and balance the impact of visitor vehicles with the need to preserve the quality of life for residents. A well thought-out and funded transportation system can make a major contribution to achieving these goals by supporting the region's current and future travel needs with reduced congestion, fewer vehicle miles traveled (VMT), and less environmental impact.

The LTCCP is a living guide for understanding the differences between the communities that comprise the Lake Tahoe Basin and the specific recommendations to implement a transportation system that can make the region's aspirations a reality. The LTCCP looks closely at travel patterns, using innovative data approaches to better understand how people travel to, through and within the Lake Tahoe Basin.

Linking Tahoe Transit Master Plan (2017)

The intent of this plan is to create a transit system that treats all users as locals whether they are here for a day or a lifetime. A transit system is about creating movement opportunities and when the system is designed for anyone, regardless of their location within the basin, providing that choice will create change. The only change should be in the amount of service provided not the number of routes. This change should be based on demand and reflect the changes in seasonal visitors and residents during summer, winter, and the off-peak seasons.

Another consideration is that a resort like Lake Tahoe has a much larger sphere of influence in terms of the visitor market than a non-resort community. As a result, transit must play a very different role with ebbs and flows based on visitor movements. It must also have a base system that allows daily commuters to get to work and home or local residents to buy groceries without using a car. Like peer resort areas, Lake Tahoe as a region must find ways to encourage visitors to eventually stop using cars in order to keep the area as attractive a place to live and visit as it is today.

Projects within the study area comprised in the *Complete Streets Master Plan* include:

- Short Term Projects are expected to start in 1-5 years
    - Transit Center Zephyr Cove – Create a bus turnaround
    - Route R1 Stateline to Reno International Airport – Add daily trips to Carson City
- Medium Term Projects are expected to start in 5-10 years

    - Transit Center Zephyr Cove – Add additional parking
    - Route R1 Stateline to Reno International Airport – Extend service to Reno International Airport
- Long Term Projects are expected to start in 10 plus years
    - Route R1 Stateline to Reno International Airport – Add trips based on demand

TTD Short Range Transit Plan & Operations Plan (2017)

The Short-Range Transit Plan (SRTP) will guide the development of the TTD's goals, objectives, and policies for the next five years of transit service within the Lake Tahoe Region. The SRTP is developed within the context of the long range transit plan, Linking Tahoe: Lake Tahoe Transit Master Plan (TMP), which is aimed at implementing a new vision for transit as "the vehicle for change in the Tahoe Region." The TMP is an implementation plan developed to achieve the transportation policies of the Lake Tahoe Region. The Tahoe Basin welcomes visitors to the area each year that, according to new, detailed cell phone data, account for 75-percent of all vehicle trips made internal to the Region. This magnitude of visitation translates into a considerable number of vehicles congesting our transportation network (35 million vehicle trips). There is growing consensus within the Basin that our infrastructure can no longer handle this volume of vehicles. With transit, there exists an opportunity to get a large number of these vehicles—along with those of our residents and commuters—off the road and onto transit and other modes where they can get safely and reliably to their respective destinations. With respect to the CMP corridor, the SRTP recommends service expansion to destinations west connecting to the existing transit center, increasing service and frequency.

US 50 South Shore Community Revitalization Project (2018)

The TTD is proposing the US 50/South Shore Community Revitalization Project, which is designed to improve the Tahoe Basin's transportation network while addressing affordable housing, community revitalization, and mobility needs, and contributing to environmental gains. The project has been contemplated in regional and local planning documents for decades and is one of the region's largest capital improvement projects. As proposed, the project would realign US 50, enabling the creation of a pedestrian-oriented, "Main Street" through the middle of the existing tourist core, where the highway is now located. Walking, bicycling, and reliable transit would be attractive and safe transportation options and community gathering places would be available in the tourist core. Commercial core revitalization is intended to increase visitor spending and catalyze adjacent private construction investment.

The project is not only intended to revitalize the South Shore of Lake Tahoe, but would also help implement the adopted Lake Tahoe Regional Plan and Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) by enhancing mobility in support of existing and planned projects, including the:

- Nevada Stateline-to-Stateline Bikeway, a shared-use path system that will ultimately extend the length of the Nevada side of the lake
- Harrison Avenue Improvement Project
- US 50 Water Quality and Bicycle and Pedestrian Improvement Project – Ski Run to Trout Creek
- Linear Park Multi-Use Trail
- Van Sickle Bi-State Park
- Transit shelter and service improvements
- Proposed, future South Tahoe Greenway shared-use path and Lake Tahoe Passenger Ferry Project

On April 24, 2017, TTD, TRPA-MPO, and the Federal Highway Administration (FHWA) distributed a Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS/EIS) to public agencies and the general public for review and comment. The Draft EIR/EIS/EIS evaluated five alternatives, consisting of four action or build alternatives (Alternatives B, C, D, and E) and one no-action alternative (Alternative A). (Note: The discussion under the header "Rationale for

Selecting Alternatives Considered in Detail" in Chapter 2, "Proposed Project and Project Alternatives," of this document, summarizes the reasons for selecting the alternatives evaluated in detail in the EIR/EIS/EIS.) Three action alternatives (Alternatives B through D) include realignment of US 50 on the mountain side of the tourist core, pedestrian and bicycle enhancements to improve connectivity and safety, conversion of existing US 50 to a local street, and construction of replacement housing for displaced residents. One action alternative (Alternative E) would construct a raised pedestrian walkway over the existing US 50 alignment within the portion of the tourist core between the resort casinos. The realignment alternatives also propose a pedestrian bridge that provides an additional connection between the tourist core and Van Sickle Bi-State Park.

NV Stateline to Stateline Bikeway Feasibility Study (2011)

The NV Stateline to Stateline Bikeway Feasibility Study (Feasibility Study) was the first major step forward in defining the opportunity for a premier separated bikeway and shared use facility circling Lake Tahoe, connecting the borders with California in North and South Lake Tahoe. The study area consists of many siting challenges, many of which are associated with the natural setting of the lake. These challenges include topography, stream crossings, narrow highways and traffic issues. The study serves as the final planning-level document for the overall bikeway, incorporating information developed in previous endeavors. Project-level design activities and environmental clearance for individual segments follow this study as evidenced by the South Demonstration Project and the Incline Village to Sand Harbor segment which have since been constructed.

The Feasibility Study forms the basis for alternatives considered and dismissed heading into the CMP analysis for much of the US 50 corridor. The intention is to build upon the Feasibility Study to inform the development of future project-level segments for design, environmental clearance and construction.

NDOT Complete Streets Policy (2017)

Complete Streets design is an approach or policy used within the transportation industry to promote street networks for all users, not just the accommodation of vehicles. Complete Streets include enhanced accommodation for people riding bicycles, walking, using transit, and other users, in addition to the traditional accommodation for vehicles. Over the past 50 years, the movement for planning and designing streets that serve more than automotive travel has grown from local policies to a national effort that is backed by groups such as the National Complete Streets Coalition, AASHTO, the U.S. Department of Transportation, and the National Association of City Transportation Officials (NACTO).

The purpose of implementing Complete Streets policies and design is to provide access to safe, comfortable, and convenient travel for all users, regardless of age, ability, income, race, or ethnicity. This access could include walking, driving, bicycling, skateboarding, and/or using public transportation.

Complete Streets are not one-size-fits-all, rather they tend to be designed to the intent of the corridor and community they serve. Depending upon the context and needs of users, the "complete" street could include sidewalks, enhanced pedestrian crossings, shared use paths, bikeways, wide outside travel lanes, median islands, narrower travel lanes, special transit amenities, and more. The context of the street is typically realized through deliberate analysis of land use, travel conditions, including all users, as well as stakeholder outreach throughout the community.

NDOT Landscape and Aesthetics Corridor Plan (2006)

Highways are among the most visible artifacts of our civilization. Our highways give form to our communities and impact us every day of our lives. They connect us to each other and to the places we have chosen to call home. They welcome our guests upon arrival and send them on their way when they leave. Because they affect our ecosystems

and the way our neighborhoods and places of business connect to each other, they influence the quality of life of every resident in the state.
The goal of this Master Plan is to establish a landscape and aesthetics program for the Nevada state highway system. The program will provide a vehicle for NDOT and Nevada's communities to improve the quality of life in the state by allowing us to beautify highways, improve the state's public image, welcome visitors, and contribute to a tourist-based economy. With careful attention, the landscape and aesthetics program can create highways that celebrate the state's many beautiful landscapes, as well as its diverse populations. The CMP corridor is specifically included in the Master Plan with design elements described in the “Lake of the Sky” section.

NV Stateline to Stateline Bikeway South Demonstration EA (2011)

Douglas County, Nevada proposes to construct the South Demonstration Project, a separated shared-use path located on the west side of US 50 between the Stateline casino core on the south and Round Hill Pines Beach on the north. The shared-use path would be approximately 3.2-miles in length, of which approximately 2.2-miles is proposed on National Forest System (NFS) lands managed by the United States Department of Agriculture (USDA) USFS-LTBMU. The remainder of the shared-use path would be constructed on private parcels owned by Edgewood Companies, or within an existing public right-of-way belonging to Douglas County, the Oliver Park General Improvement District (Oliver Park GID), or the NDOT. It is a goal of the project to construct a separated, shared-use path designed to meet American Association of State Highway and Transportation Officials (AASHTO) and Americans with Disabilities Act (ADA) standards to serve a broad spectrum of users. With a few exceptions, the proposed shared-use path would generally consist of a 10-foot-wide paved path with 2-foot-wide shoulders on both sides. Given the constraints of existing development west of US 50 in the area between 4-H Camp Road and Kahle Drive, the project would include an approximately 0.15-mile (800-foot) on-road section that includes bicycle lanes on Laura Drive. The final trail design would meet ADA design standards, but would require some variances from the AASHTO standards at isolated locations due to topographic and environmental constraints.

The existing parking area at the northwest corner of the Kahle Drive/US 50 intersection on NFS lands would be expanded to accommodate additional use of the Rabe Meadow area associated with the shared-use path. This parking lot would be expanded to approximately 12,000-square-feet and would accommodate 14 additional parking spaces. An additional kiosk, two picnic tables, bicycle racks, a bear-proof garbage can, and an up to six stall restroom building would also be added to the expanded lot.

The NV Stateline to Stateline Bikeway South Demonstration project was constructed and open to the public in 2018.

Stateline to Stateline Bikeway, Phase 3 Sand Harbor to Spooner Summit (2019)

This document analyzes proposed improvements to highway safety, infrastructure, summer recreation access, and scenic quality for the State Route (SR) 28 Scenic Byway corridor from Sand Harbor to Spooner Junction, including:

- Construction of approximately eight miles of shared-use path with associated facilities
- Improvements to the highway, including pullouts, signage, safety features, and erosion control measures
- Expansion of existing, and construction of new parking facilities
- Relocation of utilities, including effluent pipeline, communications, and electrical
- Construction of an Aquatic Invasive Species Inspection station
- Construction of stormwater mitigation features
- Elimination of highway shoulder parking
- Issuance of special use permits and DOT easement deeds

These actions would be implemented on the Lake Tahoe Basin Management Unit, also within the NDOT right-of-way, and within the Nevada Division of State Park's Lake Tahoe Nevada State Park, Sand Harbor, and Spooner Lake Management areas.

Projects within the study area comprised in the *Stateline-to-Stateline Bikeway, Phase 3 Sand Harbor to Summit* include:

- 250 space SR 28 Park-and-Ride lot proposed across from the Spooner State Park entrance
- Move the temporary TRPA-MPO boat inspection from a NDOT staging area to the new South Parking Lot

TRPA-MPO Lake Tahoe Safety Plan (2019)

The Lake Tahoe Region Safety Strategy (Safety Strategy) was developed in collaboration with the Tahoe Region's transportation partner agencies and stakeholder organizations. The process used to develop the Safety Strategy brought these stakeholder agencies together to consider data analysis findings, recommendations, projects, and changes in how transportation projects are developed. The overall intent is to collectively reduce crashes on Tahoe roadways. This analysis will be used by TRPA and its partner agencies to inform transportation project and policy decision-making. The desired outcome is to support local jurisdictions in identifying and implementing projects that reduce crash frequency and severity.

Projects within the study area comprised in the *TRPA-MPO Lake Tahoe Safety Plan* include:

- Install New Enhanced Crosswalks:
  - US 50 and Kahle Drive
  - US 50 and Kingsbury Grade Road
  - US 50 and Lake Parkway
- Install Sidewalks to Address Gaps
  - US 50 from Lake Parkway to Kingsbury Grade Road
  - US 50 to Kahle Drive to Visitor Center/Bus Stop
- Sidewalk widening on US 50, Pioneer Trail to Lake Parkway
- US 50 from Pioneer Trail to Lake Parkway – Reconfigure lanes from 5 to 3
- Remove channelized right-turn lanes at US 50 and Lake Parkway

NDOT Scoping Report(s) and Associated Public Outreach Comments

In 2017, the NDOT Scoping Division developed safety improvement concepts for the corridor, including a potential lane reduction on US 50. A public meeting and outreach effort was conducted in May of 2017 to receive feedback on the concepts. The public meeting did not go well and a majority of the public feedback was negative. A lot of the public comments regarding the improvements along the US 50 corridor were against the reduction of four lanes to two lanes. The public comments don't want to reduce lanes to accommodate bike lanes to east and west on US 50. The public comments also prefer the usage of signals rather than proposed roundabouts.

NDOT Road Safety Assessment (2016)

NDOT Traffic Safety Engineering authorized a Complete Streets-Focused Road Safety Assessment (RSA) to be conducted on US 50, between Stateline, Nevada and the intersection of SR 28. This specific RSA was initiated by the design team prior to construction of an upcoming project to convert this corridor into a "Complete Street". A complete street is designed to offer improved roadway usage to all users including motorists, motorcyclists, transit, bicyclists, and pedestrians. The purpose of this RSA is to identify potential road safety issues that currently exist and that could be considered when converted to a complete street layout and suggest countermeasures to mitigate those safety issues in future projects along the studied corridor.

Some of the issues identified by the NDOT RSA along US 50 are:

- The future US 50 South Shore Revitalization Project, by the TTD, will realign US 50 along Lake Parkway East, resulting in the reclassification of the current US 50 from Stateline Avenue to Lake Parkway as a local street. This will allow the street to be closed to vehicular traffic for special events.
- Install appropriate traffic control barriers at Stateline Avenue and at Lake Parkway with the future US 50 South Shore Revitalization Project to prevent unauthorized vehicular access to the casino corridor during events requiring street closure.
- Consider the installation of bus turnouts with the US 50 South Shore Revitalization Project.
- The “X” shaped crosswalk at the Hard Rock Hotel and Casino facilitates an “all walk” movement across the highway with diagonal and perpendicular crossings of US 50. The diagonal crossings are long and there are no diagonally facing heads on the traffic signal poles on the CVS and Montbleu corners. Pedestrians approaching the crosswalk from Harvey’s must take a circuitous route around a planter to access the crosswalk, and some pedestrians choose to enter the street rather than take that route. The planters restrict the width of sidewalk access to the crosswalks in front of the Hard Rock Hotel and Casino. There were 5 crashes at or near this crosswalk during the five-year study period.
- At the Lake Parkway intersection there is no crosswalk across US 50 on the north side of the intersection and no sidewalk on the east side of US 50, north of the intersection.
- Install signage directing eastbound pedestrians on the southeast corner of US 50/Lake Parkway East to cross US 50 because the sidewalk on the east side of US 50 ends at the intersection.
- Move the push button on the northwest corner of the Lake Parkway/US 50 intersection to the crosswalk side of the pole and add a pedestrian ramp to the island for push button access.
- The Lake Parkway intersection is planned for reconstruction as a roundabout with the future US 50 South Shore Revitalization Project, by TTD.
- Evaluate the sight distance at SR 207 pedestrian crosswalk with respect to eastbound vehicles on US 50 turning onto SR 207, and consider installing a separate right turn signal for vehicles turning from US 50 onto SR 207, prohibiting drivers from turning right during the pedestrian phase.
- At the SR 207 intersection with US 50, not all facilities are ADA compliant. Some pedestrian ramps lack detectable warnings and some pedestrian areas in the island undulate and are not clearly defined.
- The RSA team noticed westbound trucks on US 50 having difficulty making left turns onto Kingsbury Grade.
- The “Wrong Way” sign on westbound US 50 at SR 207 is partially blocked by tree branches.
- At the Kahle Drive/US 50 intersection there is no pedestrian ramp on the northeast corner of the intersection. All other curb ramps and the pedestrian push button access on all four corners are not ADA compliant.

- Per the Nevada Highway Patrol (NHP) representative of the RSA team, standing water and ice sometimes occur at the Lake Village Drive intersection with US 50. There are two drop inlets on the highway, one on each side of Lake Village Drive. The drop inlet on the south side is damaged. Both drop inlets have debris in them. The Portland Cement Concrete (PCC) curb and gutter on the south side of the intersection ends well short of the drop inlet on the south side.
- There is limited visibility for drivers turning onto US 50 from Lake Village Drive.
- At Elks Point Road, none of the pedestrian ramps and pedestrian push buttons are ADA compliant. The traffic signal poles on the southeast and southwest corners obstruct portions of the sidewalk.
- The Round Hill Pines intersection is near the crest of a vertical curve on US 50. This location has limited sight distance in both directions. The speed limit is 45 MPH, there is no left-turn lane at this location, and eastbound drivers have little time to react to a vehicle waiting in the fast lane to make a left turn.
- The school zone signage “September thru June” is inconsistent with the continuously operated flasher, the summertime use of the crosswalk by the general public, and the time of the school year.
- There is no sidewalk in the commercial area on the east side of US 50 between Lake View Drive and North Martin Drive.
- There is a paved turnout on the lake side of US 50, west of Zephyr Cove with “No Parking Any Time” signs at each end with left and right arrows. These signs face the road and appear to not be visible to drivers approaching the turnout.
- The Zephyr Cove resort is very popular in the summertime and has limited parking space. When the Resort parking areas are full or when vehicles arrive faster than they can be processed at the parking kiosk, NHP advised the RSA Team that vehicles queue back from the kiosk and onto US 50 in the westbound lanes.
- Many people park on the shoulder of US 50 in the vicinity of Warrior Way. Many parked vehicles are over the fog lines and people often cross the highway at random locations. Some potential reasons for parking on the side of the highway include the Zephyr Cove parking lot being full and drivers wanting to avoid the fee associated with using the Zephyr Cove parking facilities.
- There is a fire station located near the intersection of US 50 and Warrior Way. The fire department representative on the RSA team said that sometimes vehicles park in front of the station garage doors blocking emergency vehicles. Also, when traffic queues through this area it makes it difficult for the fire department to enter the highway to respond to emergencies.
- The NHP representative of the RSA team mentioned crashes in the vicinity of Tahoe Glen. There have been 6 crashes in this vicinity within the study period. Relatively high speeds and limited sight distances make left turns on and off of US 50 difficult in this area. The NHP representative of the RSA team indicated that boaters exiting the Cave Rock State Park sometimes turn right and then U-turn at Tahoe Glen to go east.
- The team observed a queue of vehicles on SR 28 waiting to turn left onto US 50. Potential reasons for the traffic back up could include drivers not knowing/understanding the geometry of the acceleration lane, drivers believing the acceleration lane is too short to accelerate to the speed of traffic, sight distance to the north being restricted by the curve and being unable to tell whether the eastbound US 50 driver is turning until their turn is in progress.

- There are two paved turnouts in the vicinity of the NDOT maintenance station on US 50 west of the SR 28 intersection. Per NHP representative of the RSA team, snow accumulates in the turnouts during repeated plowing and vehicles eventually must park in the outside travel lane to install and remove chains.
- Per NHP representative of the RSA team, the summer boat inspection area near the SR 28/US 50 intersection is used as parking for the snow park in the winter. Snow there is plowed to the edges of the pavement, and with each successive snowstorm the access road and parking become smaller. Vehicles end up parking on both sides of the road, making it too narrow for emergency vehicles to access.
- The Team observed that there is no gap in the two sets of double yellow stripes on US 50 at Spooner Summit that would provide for legal left-turns onto and off of the highway at the trailhead parking lots on both sides of the highway. Also, the Tahoe Rim Trail crosses the highway at this location, and there is no warning for motorists of potential hikers crossing the highway here.
- NDOT recently extended the north end of the westbound tunnel because of falling rock. However, team members indicated seeing a substantial amount of falling rock at the south end of the eastbound Cave Rock tunnel.

Round Hill Pines Resort Access Improvements

The proposed project is to improve safety for visitors entering and exiting the Round Hill Pines Resort from US 50 in Douglas County near Zephyr Cove, Nevada. There is a need to improve the safety due to the limited sight distance, unprotected movements across US 50, and vehicle queuing in the eastbound inside lane of US 50 during peak visitation periods. The objective of the project is also to minimize environmental and scenic quality and construct permanent water quality improvements.

- Existing Conditions
    - US 50
        - 48-foot wide paved width, includes four 12-foot lanes with varied width shoulders
        - 2020 average daily traffic (ADT) 20,812 with 3% trucks
        - NDOT reported 9 crashes between July 2009 and July 2017
    - Round Hill Pines Resort Access
        - One 12-foot wide travel lane with narrow shoulders
        - Curves make it difficult for recreational vehicles (RVs), buses, and trailers
        - Sight distance issues at intersection with US 50
- Proposed Improvements
    - Phase 1 improvements completed in 2018 and consisted of relocating parking areas and building improvements
    - Phase 2 improvements consist of relocating the connector roads, parking areas, and maintenance roads, as well as realigning the exiting multi-use path

Land Use and Area Plans

The following plans and studies focus on specific locations and relate to land use and other visioning efforts relevant to the corridor and/or the transportation system. It is important that the CMP build upon and support the work done to date to ensure these visions are achieved.

City of South Lake Tahoe Parks, Trails and Recreation Master Plan (2014)

This Master Plan represents a coordinated effort to align recreation resources and obtain community support to enhance recreation facilities and services for the Eastern Slope of El Dorado County. The plan provides direction for enhancing recreation opportunities for residents and visitors by increasing collaborative efforts and focusing resources where they are most needed.

The South Shore of Lake Tahoe is known regionally, nationally, and internationally for its recreation opportunities. There is an understanding that recreation is critical to local prosperity, community livability, and the health and wellbeing of residents. However, the recession and downturn of the gaming industry has affected the amount of funding available to support existing parks and recreation operations, plus provide for increased recreation needs.

City of South Lake Tahoe Tourist Core Area Plan (2013)

This Area Plan provides more detailed direction than the City of South Lake Tahoe's General Plan and TRPA-MPO's 2012 Regional Plan. It addresses land use regulations, development and design standards, transportation, recreation, public services, and environmental improvements for the area. It encourages general improvement and enhancement for the built environment. This Area Plan provides a framework that will change the existing conditions into opportunities for redevelopment with a focus on achieving on-the-ground environmental improvements consistent with the City's General Plan and environmental threshold goals of the 2012 Regional Plan.

This Area Plan was prepared by the City of South Lake Tahoe in collaboration with TRPA-MPO to implement the City's General Plan and TRPA-MPO's 2012 Regional Plan. The Tourist Core Area Plan is developed on the foundation of the existing adopted Stateline/Ski Run Community Plan and incorporates other planning efforts such as the South Shore Vision Plan.

The *City of South Lake Tahoe Tourist Core Area Plan* proposes to install a pedestrian sidewalk along the east side of US 50 from Lake Parkway to Kingsbury Grade Road.

Douglas County South Shore Area Plan (2013)

The South Shore Area Plan was developed around the future US 50 South Shore Community Revitalization Project (Loop Road), which is a project that would allow for traffic to flow around the High-Density Tourist District and for the existing Highway 50 to be turned into a pedestrian-friendly Main Street. The bike and pedestrian plan for the South Shore Area Plan is consistent with Map 5 of the Conceptual Bicycle and Pedestrian Facilities of the 2012 TRPA-MPO Regional Plan.

Expanded Kahle Vision Plan (2019)

The success of the Lakeview Trail through Rabe Meadow has illustrated the desire for people to walk and bike to destinations. As the Tahoe Trail is completed around Lake Tahoe, additional shared use path connections will enhance the network of bikeways and further promote walking and biking. Between Lake Parkway and Kahle Drive, completion of the Tahoe Trail along Edgewood Tahoe's frontage will connect cyclists and pedestrians to the future Main Street redevelopment area. Enhanced bike lanes and the addition of a sidewalk along the east side of US 50 allows cyclists and pedestrians a designated place to bike and walk.

Some of the pedestrian facility-related improvements along US 50 are:

- US 50 Improvements

- Proposed bike lane on US 50 from the Hard Rock Hotel to Round Hill Village
- Proposed shared use path on west side of US 50 from Hard Rock Hotel to Lake Side Inn
- Proposed shared use path on east side of US 50 from Kahle Drive to Round Hill Village

Tahoe Main Street Management Plan (2020)

The Main Street Management Plan (MSMP) provides design guidance for the corridor and surrounding properties and includes a plan for a variety of transportation modes. Additionally, the MSMP defines the configuration, operation, and management of what will become the US 50 corridor to achieve the goals of adopted plans and include wayfinding and performance management components as part of a comprehensive plan for the new Main Street.
This MSMP covers the bi-state South Shore corridor from which the current US 50 will be located. It stretches from the intersection with Lake Parkway in Nevada to just beyond the intersection with Pioneer Trail in California. The existing corridor is the primary tourist core for South Lake Tahoe and Stateline, Nevada. The approximate 1.1-mile bi-state corridor currently exhibits two largely different streetscapes. The Nevada side consists of four hotels/casinos with traditional auto-oriented streetscape and vehicular access across pedestrian sidewalks. The California side has been largely redeveloped with a mixed-use pedestrian village containing retail, restaurants, vacation/resort style condos, and a gondola. Vehicular access across pedestrian sidewalks is limited.

The MSMP proposes to reroute US 50 around the town. Instead of running through the center of the town. US 50 is proposed to reroute to the east.

Some of the opportunities and recommendations in the MSMP for Main Street are:

- Pedestrian Opportunities
  - Provide landscape buffers for pedestrians throughout the corridor
  - Improve pedestrian comfort and safety with increased seating, increased width of sidewalks, and increased lighting
  - Reduce the number and width of travel lanes through the corridor
  - Connect pedestrian realm improvements beyond Main Street
- Pedestrian Recommendations
  - Increase sidewalk width through the Casino Core to a minimum of 8-feet
  - Add crosswalks throughout the corridor to decrease distance between crossing opportunities
  - Improve pedestrian experience with street trees and seating opportunities
  - Increase the amount of activated frontage along Main Street including outdoor dining opportunities
- Cyclist Opportunities
  - Establish consistent and designated bike lanes throughout the Main Street corridor
  - Consider speed differentials to create a safer street for cyclists
  - Connect to regional bike systems – Kahle, Van Sickle Bi-State Park, shared use path to Ski Run
  - Utilize landscape materials to buffer cycle facilities, where possible
  - Solve conflict with personal mobility devices (PMD’s), cyclists, and pedestrians
- Cyclist Recommendations
  - Implement one-way conventional bike lanes within the travel way in each direction
  - Implement shared-use path within pedestrian realm on the lake side of Main Street for shared-use by cyclists, PMD’s, and pedestrians.
  - Increase the quantity and quality of provisions for active transportation

- Transit Opportunities
    - Make transit a priority by providing dedicated bus pullouts
    - Provide more frequent transit service that runs 24/7 to regional hubs
    - Provide transit connections to support multi-modal transportation
    - Incorporate circulator or intra-zone shuttle-system
- Transit Recommendations
    - Implement shared transit lane into reduced travel way with clearly marked bus loading and unloading areas that are ADA compliant
    - Provide covered bus shelters for transit riders
    - Implement event center circulator route during peak seasons
- Vehicle Opportunities
    - Encourage the shifting of traffic away from the corridor
    - Reduce quantity and size of vehicle access points and curb cuts on Main Street.
    - Encourage vehicle departures to Lake Parkway Avenue and new Highway 50
    - Provide adequate access to parking via Main Street
- Vehicle Recommendations
    - Reduce travel lanes to one in each direction with center turn lanes at key intersections
    - Provide vehicle access to major destinations via Main Street, except during events
    - Reduce ingress/egress point widths by 50% and direct departures to Lake Parkway and new Highway 50
    - Provide access to all parking areas via Main Street and secondary routes
    - Provide rideshare drop-off/pick-ups in both Nevada and California
- Main Street Opportunities
    - Establish anchors to enhance the sense of arrival
    - Promote connectivity to surrounding destinations
    - Draw visitors along the street by encouraging outdoor dining and activated street frontage throughout the corridor
- Main Street Recommendations
    - Establish open space or potential redevelopment anchors at gateways into the corridor to enhance the sense of arrival
    - Activate ground levels throughout the corridor and provide flexible event space
    - Increase the amount of gathering space and opportunities for interaction along the corridor
    - Extend Main Street design to secondary routes that provide connection to key destinations

Montbleu Events Center

The event center will be built adjacent to the Montbleu Resort and Casino located on the southeast corner of US 50 and Lake Parkway. It consists of 4,200 seats for various exhibitions and events. It is expected the event center will result in a significant increase in new vehicle trips and miles traveled. A multilane roundabout is proposed to be built at the intersection of US 50 and Lake Parkway.

Zephyr Cove Revised Access Plan

A roundabout is proposed to be built at the intersection of US 50 and at the drive of the Zephyr Cove RV Park and Campground.

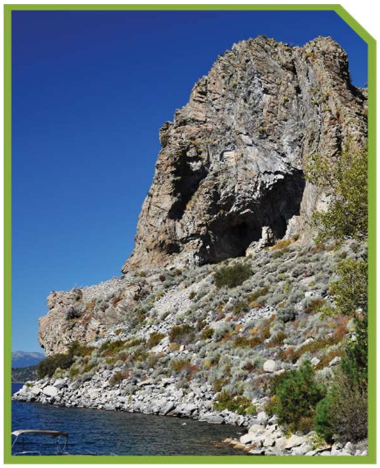
Cave Rock Road Boat Ramp Parking Plan

The Cave Rock Tunnel is proposed to be improved with the addition of bike lanes. At the boat ramp, a crosswalk along with a solar powered pedestrian beacon will also be added.

US 50 East Shore

Corridor Management Plan

Future Study Scenarios and Considerations



August 2022

Prepared for:

Nevada DOT
SAFE AND CONNECTED

Prepared by:

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Blvd
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

TABLE OF CONTENTS

TABLES

FIGURES

APPENDIX

ACRONYMS AND ABBREVIATIONS

&	And
#	Number
AADT	Annual Average Daily Traffic
CMP	Corridor Management Plan
hr	hour
Max	Maximum
Min.	Minimum
min	minutes
MPO	Metropolitan Planning Organization
NB	Northbound
NDOT	Nevada Department of Transportation
N/A	Not Applicable
Pass.	Passengers
RTP	Regional Transportation Plan
SB	Southbound
TRPA-MPO	Tahoe Regional Planning Agency – Metropolitan Planning Organization
TTD	Tahoe Transportation District
TWLTL	Two-Way-Left-Turn-Lane
US	United States
US 50	United States Route 50
USFS-LTBMU	United States Forest Service – Lake Tahoe Basin Management Unit

SECTION 1 | BACKGROUND

The US 50 East Shore Corridor Management Plan (CMP) will assess and evaluate needs along the 13-mile corridor within the Lake Tahoe Basin and be consistent with existing Tahoe Regional Planning Agency – Metropolitan Planning Organization (TRPA-MPO) plans, goals, objectives, as well as goals described in the Lake Tahoe Compact. The CMP will identify a mobility vision, objectives, performance measurements, and improvement strategies for the corridor, based on existing regional plans, stakeholder input, and sound technical assessment. In addition, the corridor vision will focus on recognizing regional economic development objectives, the unique seasonal and massive visitor-driven fluctuations in use, local planning and project development activities, and serving to guide the project development process. The study will examine potential multimodal solutions, local and regional transit services, and innovative transportation and mobility strategies. The CMP will be developed cooperatively with the TRPA-MPO, Tahoe Transportation District (TTD), United States Forest Service – Lake Tahoe Basin Management Unit (USFS-LTBMU), and the Nevada Department of Transportation (NDOT) among other local and state partners.

Figure 1: US 50 East Shore Study Area

1.1 Study Area

The US 50 CMP corridor in Nevada begins at the crest of the Carson Range at Spooner Summit and extends south and west to Stateline Avenue, extending through Douglas County. The corridor encompasses the unincorporated communities of Stateline, Zephyr Cove, Round Hill Village, Skyland, Lakeridge, and Glenbrook along the eastern shore and links to the incorporated municipality of South Lake Tahoe, California. A map of the US 50 East Shore study area is illustrated in **Figure 1**.

1.2 Document Purpose

The purpose of this document is to develop and describe transportation scenarios across modes. The scenarios are broad considerations of what may be feasible and how solutions to address transportation challenges in the US 50 CMP corridor could be approached. The scenarios are NOT alternatives but rather inform alternative development in the next phases of the US 50 CMP. These scenarios are not intended to accurately and completely depict US 50 CMP alternatives but are intended to spur thought around what may be feasible when developing specific alternatives later in the study process.

The TRPA *Linking Tahoe Regional Transportation Plan* (RTP) is the long-range transportation plan for the Lake Tahoe planning area. The RTP vision is for a transportation system that is interconnected, inter-regional, and sustainable, connecting people and places in ways that reduce reliance on the private automobile. The RTP recognizes the region has three distinct user types. To ensure the CMP successfully serves each of these types, it will refer to these user groups and their needs when developing scenarios. The user groups can be defined as follows:

Everyday Tahoe

Trips associated with the Everyday Tahoe user group include typical routine trips around everyday life such as commute trips, trips to/from work and/or school and running errands around town. These trips are usually short, less than two miles and, based on the TRPA RTP, account for 51-percent of all trips made within the Tahoe Region.

Discover Tahoe

Trips resulting from the Discover Tahoe user group reflect longer distance trips from residents and visitors alike to recreation destinations around the Tahoe Region. According to the TRPA RTP, the Discover Tahoe trips account for 38-percent made to, through and within Tahoe.

Visit Tahoe

Visit Tahoe user group trips are long-distance to/from the Tahoe area from the overall Northern California and Nevada region. This includes connecting airports such as the Reno-Tahoe International Airport. Visit Tahoe trips account for 11-percent of all Tahoe area trips according to the TRPA RTP.

The proportion of trips within the overall Lake Tahoe region by user group is illustrated in **Figure 2**. The resultant total mode share is shown in **Figure 3** and similarly represents mode share within the overall Lake Tahoe planning area, as noted in the RTP, and is considered to be representative for the mode share of travel within this corridor also.

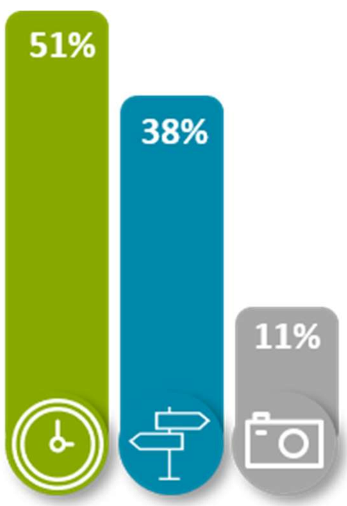


Figure 2: Travel Share by User
Source: TRPA RTP

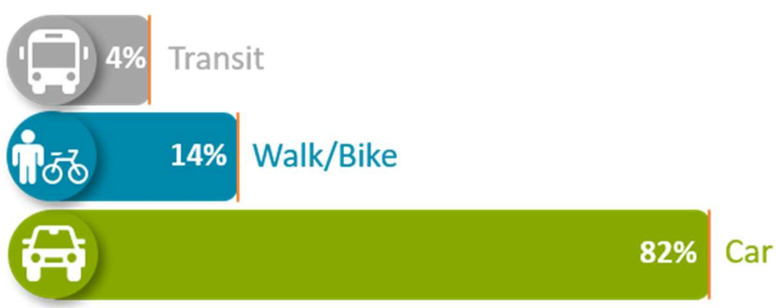


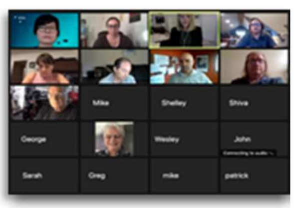
Figure 3: RTP Cumulative Tahoe Basin Mode Share

SECTION 2 | A FUTURE OF INCREASED DEMAND

Over the past decade, the demand for outdoor recreation has continued to increase, bringing more and more travelers to Tahoe. The US 50 corridor has a number of visitor attractions, outdoor recreation areas, and a large tourist bed base that attract both day and long-term visitors. These attractions include areas such as Nevada Beach, Round Hill Pines Resort, Zephyr Cove Resort, the Casino Core and Heavenly Village area. Below is a list of recent factors that have influenced an increase in trip generation for the US 50 corridor and will likely continue to do so into the future:

Northern Nevada's diversifying economy: This has brought an expanded employment base to the Reno/Carson area, less than an hour away from Lake Tahoe. California residents relocating to enjoy lower costs of living and a different pace of life has equated to more day users visiting Lake Tahoe. Development requirements and restrictions in the Tahoe Basin preclude much of this growth from spilling into Tahoe communities and the vast majority of growth occurs within a two-hour drive.

Climate Change: Warmer weather in Tahoe has allowed for more outdoor recreation during the shoulder seasons, potentially sustaining higher visitor levels for a longer period of time. Peak seasons for summer, the season with the highest visitation, have been extended while peak winter ski seasons have been shorter. As the seasonality characteristics of Tahoe change, the demand for warm weather outdoor recreation continues to increase.



The COVID 19 pandemic: Urban and suburban dwellers flocked to outdoor destinations to be active and break the monotony of indoor lockdowns. Destinations such as Lake Tahoe attracted swarms of visitors who, under normal times, may have stayed closer to home and opted for other forms of entertainment. Beyond visitation, many urban residents, after months of working from home, took advantage of remote work options to move out of cities to more rural and active destinations.

As a result of the factors mentioned above, some of the current and long-term challenges include:

- Shoulder seasons see less of a drop-off in activity with residents and visitors actively recreating at popular sites, not seasonally, but as weather and conditions permit. Tahoe will always be a seasonal destination; however, longer shoulder seasons make for more consistent visitation throughout the year as weather and conditions allow, resulting in more year-round activity.
- The increase in resident and visitor recreation creates parking demand that outstrips what is feasible to reasonably provide.
- Massive fluctuations in traffic volumes between peak daily visitation times, such as summer weekends and holidays, and typical weekday travel strain the transportation system.
- Overall peak traffic volumes would reasonably be expected to be above expectations, increasing the need for improvements and alternate modes faster than can be implemented.
- Increased tourism activity increases the need for service workers which typically commute in from nearby communities due to housing availability and affordability.
- Lack of bicycle, pedestrian, and transit options to and within the corridor aggravates an already strained transportation system.

SECTION 3 | CORRIDOR OPPORTUNITIES AND SCENARIOS

The opportunities and scenarios described in this section build upon a modal feasibility analysis and provide a range of future transportation outcomes. These scenarios could occur completely or in part depending on what the future holds, funding availability, and agency decisions. While there is a universe of opportunities for different transportation scenarios, after consulting with study partners, listening to public concerns, reviewing the *Linking Tahoe Regional Transportation Plan*, the *Linking Tahoe Corridor Connection Plan,* and the *Transit Master Plan*, as well as existing corridor conditions, three major scenarios were developed around the primary corridor improvements opportunities.

The primary corridor opportunities identified in Section 3.1 include: Reimagine US50 to Balance Needs and Safety, Expand Transit Service and Operations, Complete the Tahoe East Shore Trail, and Parking Relocation and Management Strategies. These opportunities can be implemented at varying levels as described under each of the three major scenarios. The scenarios identified in Section 3.2 include 1) Recreation Area Focus, which assumes a low transit investment with improvements focused around recreation areas; 2) Transit as a Priority, which assumes a medium transit investment with higher frequencies and improved highway access to residential areas; and 3) Multimodal Priority, which assumes a high transit investment, and highway improvements to support multimodal use. It is assumed that scenarios are a starting point and will meld together into various alternatives as the corridor management plan evolves.

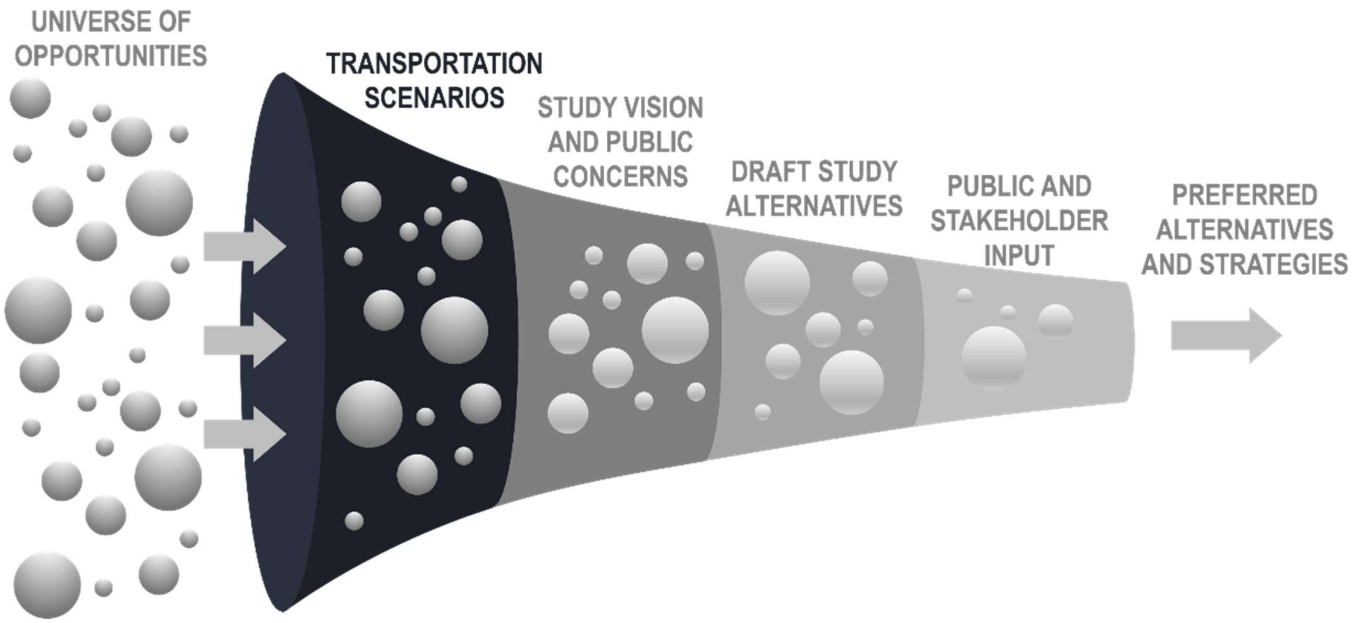


Figure 4: Scenario and Alternative Development Process

3.1 Key Corridor Opportunities

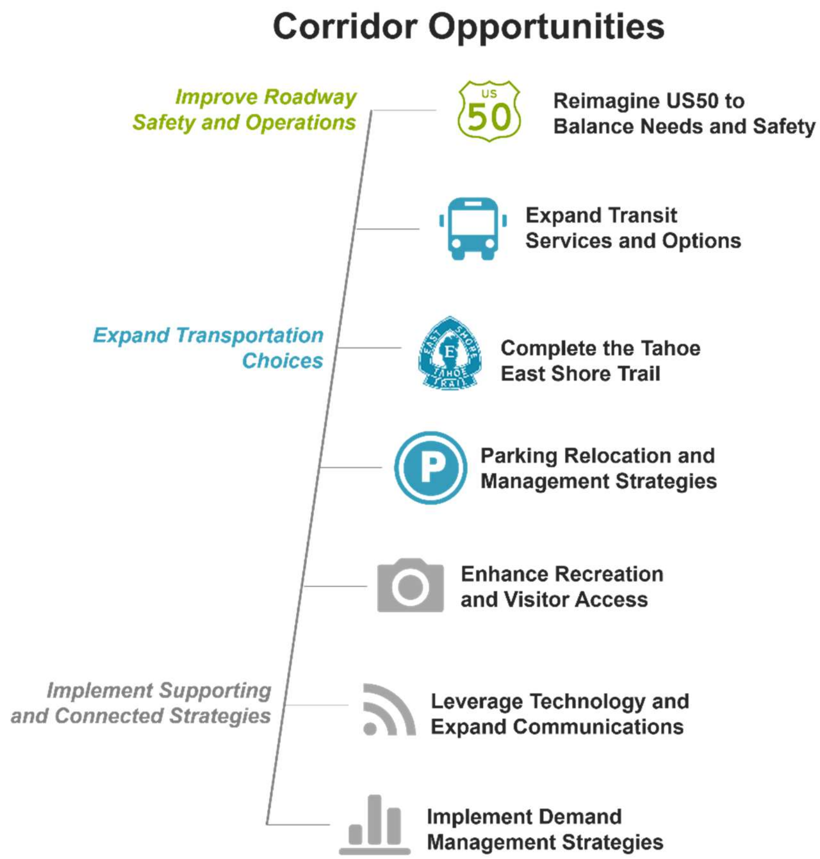


Figure 5: Corridor Opportunities Analyzed Herein (Colored)

The primary opportunities for improving the corridor are based around **improving roadway safety and operations** and **expanding transportation choices**. These corridor improvements must serve a range of functions including primary access to the Tahoe East Shore and casino core, key access to east shore recreation, and the only access to neighborhoods, schools, and businesses. Roadway operations and safety improvements include looking at how the highway functions and where changes can be made to improve access to residential, commercial, and recreational areas while also looking at opportunities to incorporate pedestrian, bicycle, and transit improvements and parking management strategies in the corridor roadway footprint. Some strategies, like relocating parking to off-highway locations, provide multiple benefits, improve safety and highway operations, and also incentivize use of multimodal options. Other opportunities, such as the use of technology and demand management strategies could improve the corridor and will be addr e roadway alternatives have been evaluated (**Figure 5**).

The car is the dominant mode share for the US50 corridor, given the lack of transit and bike and pedestrian facilities, poor connectivity between multimodal options, and the inter-regional nature of the road. Regardless of the scenario, managing vehicular demand at recreation sites is an ever-important task as demand continues to exceed vehicle capacity during peak periods at many of the recreation areas within the corridor. Creating connected, reliable, and easy-to-use multimodal opportunities is key to addressing these demands. Parking management systems can distribute demand throughout the day at off-highway parking locations to improve overall capacity while also helping incentivize the use of other transportation choices. These strategies can support adaptive corridor management opportunities where existing capacity is used more efficiently to address dynamic needs and peak periods.

Each of the primary opportunities: Reimagine US50, Expand Transit, Complete the Tahoe East Shore Trail, and Parking Relocation and Management are addressed in greater detail below and on the following pages.

Reimagine US50 to Improve Safety and Access:

Expanding the existing paved US50 corridor is not feasible to accommodate safety and operational enhancements given constraints such as the existing development, topography, and the need to meet established environmental thresholds in the Lake Tahoe Basin. Therefore, safety and operational improvements must be accommodated within the existing developed US50 roadway corridor.

Note: The segment from Stateline to Kingsbury Grade (SR 207) was considered but not included in the analysis as it has improvements advancing through design for US50 South Shore Community Revitalization and Main Street Management projects, including multi-modal infrastructure on both sides of US 50.

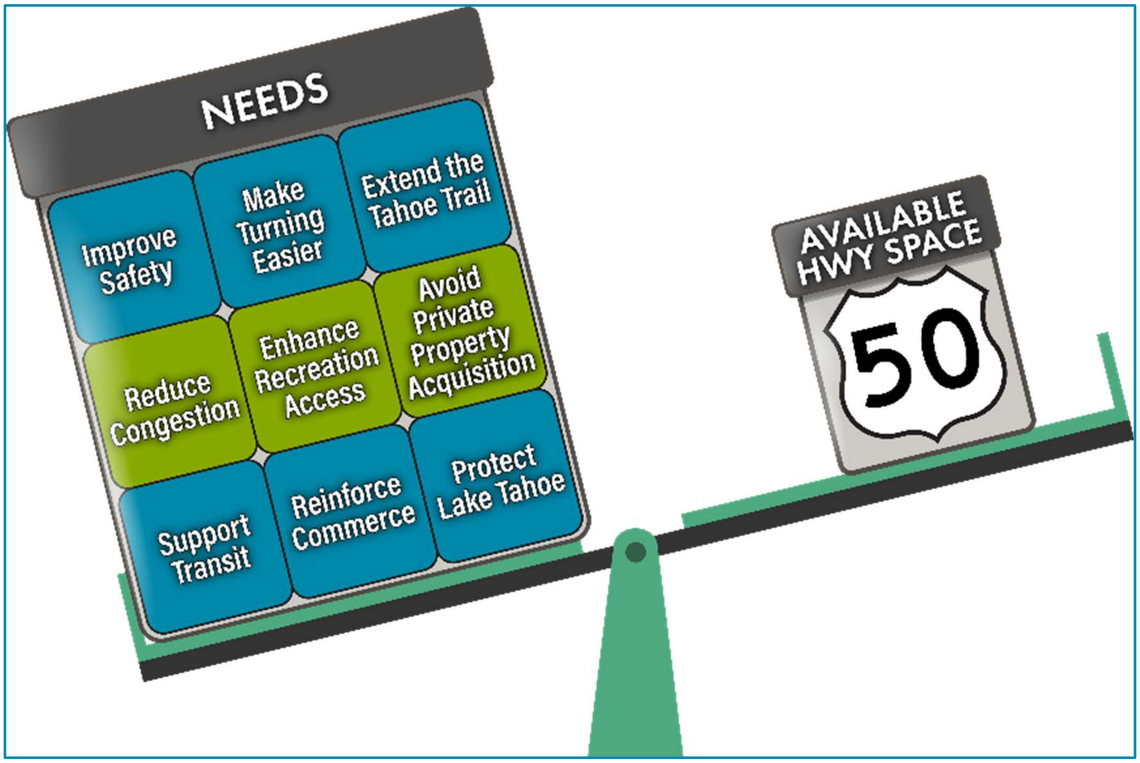


Figure 6: Balancing Needs Versus Available Space

Generally, the current four lane configuration, with a lack of dedicated turn pockets, and no bike and pedestrian facilities is outdated and only serves a single autocentric user group. Current national data sources show this type of configuration encourages higher speeds, has lead to a continual increase in crashes (including fatalities), and supports a higher demand of auto use versus multimodal use. Limited space available for transportation improvements coupled with a high demand for a variety of improvements, including but not limited to safer turn movements in/out of residential and recreation areas, adding bike and pedestrian facilities, and relocating on-highway parking will require a balanced approach. Balancing the highway space to maximize the benefits realized from space reallocation, as illustrated in **Figure 6,** will require looking at alternatives within the corridor and analyzing the performance of each.

Looking at the specific opportunities within this corridor, the space reallocation could be used for the following purposes by mode:

- **Vehicular Mode** – Incorporate turn lanes and acceleration/deceleration lanes to/from cross-streets and driveways, where additional space allows, a consistent concern among corridor residents.
- **Bicycle/Pedestrian Modes** – Accommodating the Tahoe East Shore Trail along the corridor is a priority that has been identified in multiple planning documents for decades in order to provide a safe facility for both bicyclists and pedestrians. Look at gaps in more direct bike and pedestrian links in the urban core areas such as Stateline to Kingsbury Grade and Kahle to Elks Point Road.
- **Transit** – Integrate transit-supportive infrastructure, like bus pullouts and transit stops, where appropriate, and help integrate transit with relocated parking that is moved from US50 to off-highway locations.

A conceptual traffic analysis of US 50 was completed to understand the feasibility to repurpose US50 to accommodate the opportunities described above. Planning-level analysis for potential roadway reconfigurations typically compares horizon-year vehicle volumes against Average Annual Daily Traffic (AADT) thresholds. This is a simple and effective method, but it assumes an equal number of lanes in both directions. A planning-level analysis focused on lane capacities was used to consider opportunities with an unequal number of lanes in each direction, which could occur through permanent changes or through demand-driven adaptive lane management. The analysis used cellphone and navigation data to calculate current average daily traffic volumes to capture the influence the COVID-19 pandemic had on the roadway; both 2019 and 2020 were analyzed. The analysis results found that mid-day Saturdays from September through November 2020 provided the highest average use and are used to compare to volumes projected in the future year 2045. Future year analysis also considers the potential for an unequal number of lanes in each direction (e.g., two lanes north and one lane south). These volumes are shown in **Table 1**.

Table 1: US50 East Shore CMP Vehicle Scenarios

Segment	2020 SB	2020 NB	NDOT Min. Growth	2045 SB	2045 NB	Max Flow 1+TWLTL	Max Flow 1 Lane
Segment 1: Glenbrook	1224	1159	0.5%	1387	1313	1700	1500
Segment 2: Cave Rock	1180	1189	0.5%	1337	1347	1700	1500
Segment 3: Skyland	1127	1176	0.5%	1277	1332	1700	1500
Segment 4: Round Hill	1388	1271	0.5%	1572	1440	1700	1500
Segment 5: Kingsbury	1802	1811	0.5%	2041	2051	1700	1500

Future 2045 vehicle volumes were extracted from the TRPA travel demand model for the model years 2018 and 2045, and a ratio method calculation was applied to generate future 2045 volumes. The volumes between the two years (2018 and 2045) were found to have little to no growth, which is below the NDOT Traffic Operations Division's minimum required 0.5-percent annual growth rate. Therefore, future 2045 volumes were determined by applying the minimum 0.5-percent annual growth rate to the 2020 directional volumes. The resulting 2045 directional volumes are shown in **Table 1**.

To determine the potential for changes to vehicle lanes, whether permanent or adaptively, the projected future 2045 directional volumes are compared against AADT thresholds for one-lane and one-lane with a two-way-left-turn-lane (TWLTL) options. A one-lane threshold of 1,500 vehicles per hour is assumed while a threshold of 1,700 vehicles per hour is assumed for the one-lane with a TWLTL option to account for increases in efficiency when separating turning traffic. The 2045 northbound and southbound directional volumes are compared against these thresholds to determine potential feasibility as shown in **Figure 7**.

As can be seen in the figure, both northbound and southbound directional thresholds are not exceeded from Spooner Summit south to the Round Hill Pines Resort. From Round Hills Pines to Kingsbury Grade thresholds for both one-lane and one-lane with a TWLTL are exceeded.

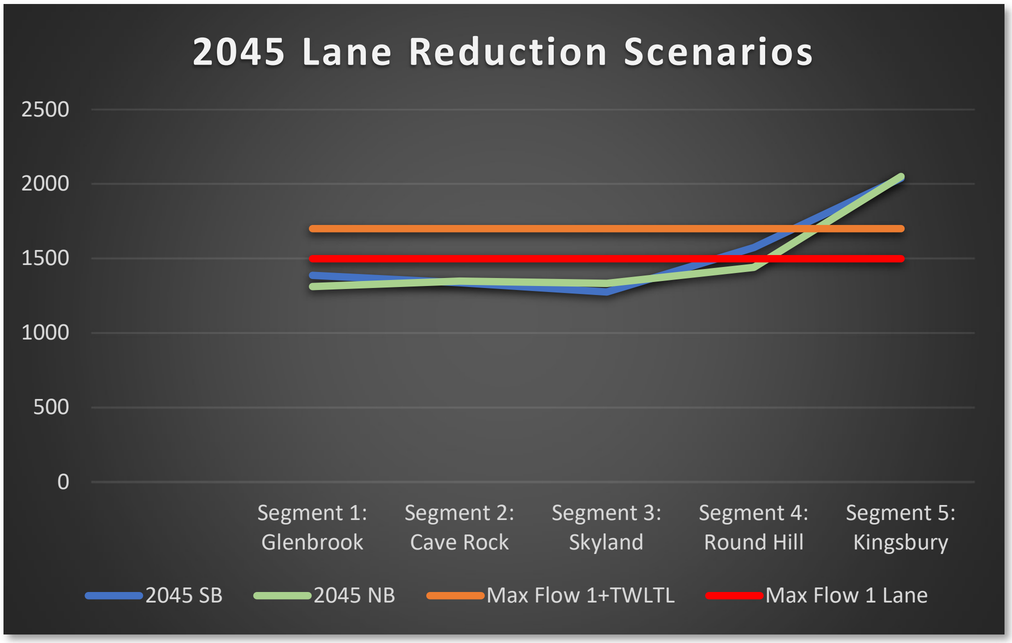


Figure 7: 2045 Reconfiguration Scenarios

From a volumetric standpoint, this provides approximately 11 miles of corridor where lane repurposing is feasible in both the northbound and southbound directions. Repurposing a vehicle lane provides space that could be used to improve the safety and performance of the roadway, improve access to residential, commercial, and recreational areas, and to build the Tahoe East Shore Trail.

Note: It is recognized that this feasibility analysis is a planning-level analysis based on general traffic capacity thresholds. A detailed traffic operations analysis is required to determine with a high degree of certainty how lane reduction alternatives would perform for this corridor and is beyond the scope of the current study. NDOT may or may not elect to conduct such an analysis and as is typical, may focus operational analyses to controlled intersections.

Based on the analysis, two potential roadway reconfigurations may be considered part of alternatives development: 1) a single lane reduction in one direction, or 2) a lane reduction in both directions coupled with a TWLTL. When considering the first option, a single lane reduction in one direction, a southbound direction lane is used in order to maintain two lanes northbound for emergency evacuation purposes: qualitative review of evacuation data from the Caldor Fire in August of 2021 suggests a single lane would perform adequately.

The two repurposing options were analyzed to determine their potential corridor safety improvement, the potential reduction in crashes, and the effect on travel time. This analysis does not include potential crash reduction from the implementation of turn lanes. Speed is also a major safety factor, and lane reductions are effective at reducing vehicle speeds. Vehicle speeds were estimated by coding each repurposing strategy into the NDOT Statewide Travel Demand Model (year 2040) between Glenbrook and Elks Point Road (logical segments within the model) and extracting the model's average speed and travel time to traverse the corridor from Spooner Summit to the California State Line. The results of these analyses are shown in **Figure 8**.

It is recognized that repurposing is but one roadway improvement strategy that can be considered. Other strategies such as narrowing lanes, adding shoulders, operational and intersection improvements, etc. are all feasible roadway improvements that will all also be considered in conjunction with potential repurposing. These options will be considered later in the study as part of alternatives development.

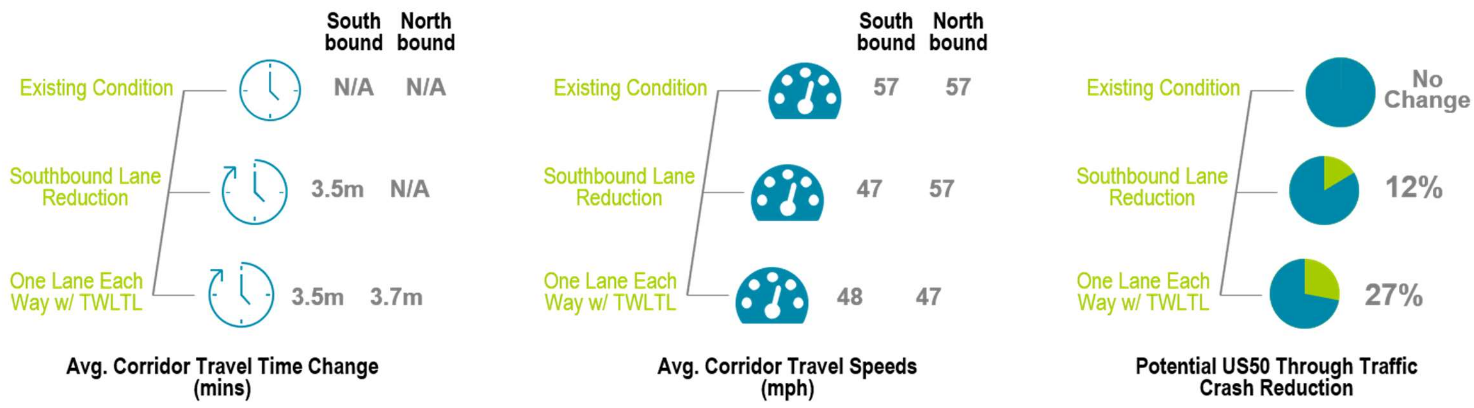


Figure 8: Reimagined US50 Potential Performance Metrics

Expand Transit Services and Options: With strategies as far ranging as regional service, micro transit, shuttles, and water borne ferries/taxies, transit offers the most opportunity to consider a range of options. As such, a range of transit service scenarios were developed and analyzed. The transit scenarios incorporate strategies within each of the five service types outlined in the Tahoe Transportation District (TTD) *Linking Tahoe Transit Master Plan (2017)*. TTD is one of the few transit providers in the region, providing the majority of service for South Lake Tahoe and the US 50 Corridor. The plan outlines a vision for expanding frequent, convenient, and reliable service in the service area. The *Linking Tahoe Transit Master Plan* includes a range of investment scenarios; however, much has changed since 2017 with many routes having been eliminated or consolidated due to funding shortfalls. Therefore, relevant strategies were used to analyze transit feasibility options that apply to the US 50 corridor based on current transit operations across all service types and potential public-private transit services (**Figure 9**). Strategies can be mixed-and-matched. The five service types and associated strategies are outlined below and a look at how transit affects user groups shown in **Figure 10**.

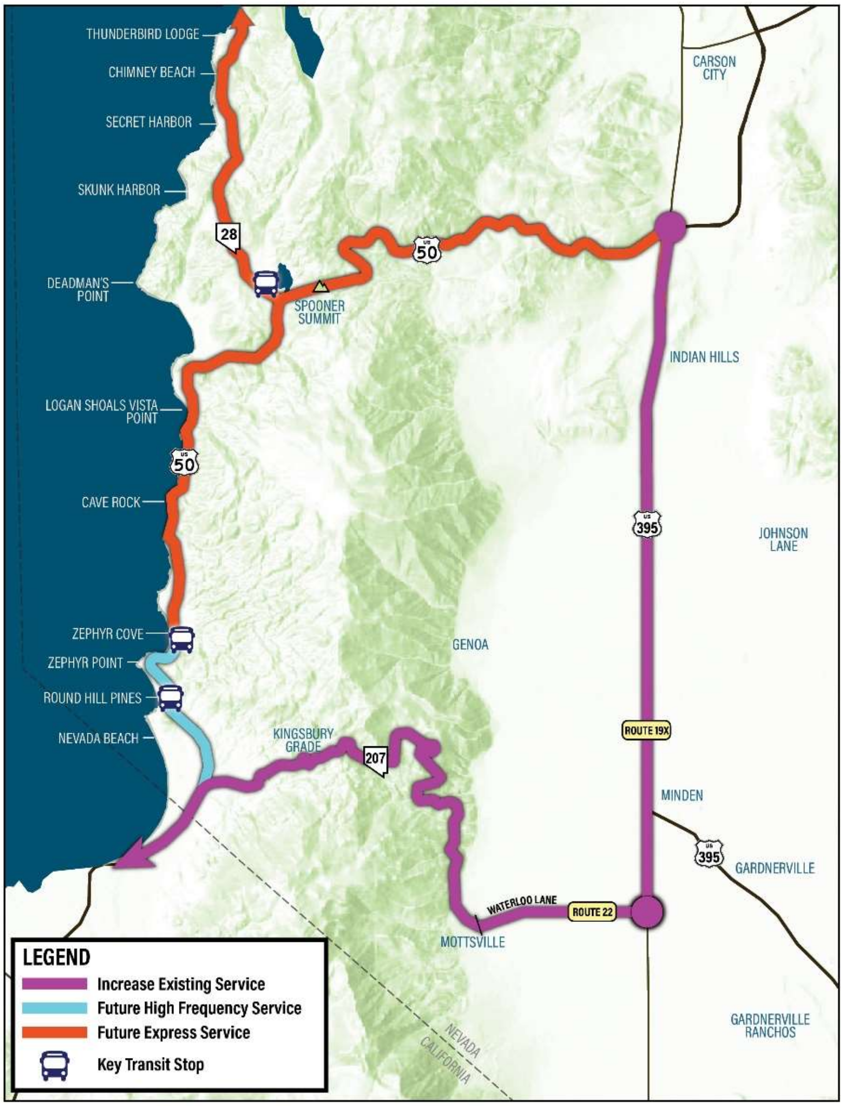


Figure 9: Transit Service Overview

Expand Transit Services and Options… Who Benefits?

Everyday Tahoe & Discover Tahoe: Better, more reliable connections to employment centers and recreational destinations, less reliance on private vehicles, less visitor traffic, and opportunities to avoid limited parking.

Visit & Discover Tahoe: Improved access to recreation through a continuous multi-use path and transit to popular destinations on the east shore.

Figure 10: Transit Benefits by User Group

Frequent Service – Urban core fixed route transit with frequencies of around 20 minutes or less.

Strategies:

- **Increase frequency and service hours on US50 routes 55/22** – Route 55 provides frequent local service from the South Y Transit Center to the Kingsbury Transit Center, with 15 stops in South Lake Tahoe. The service currently runs at a 60-minute frequency. The Stateline Transit Center and Kingsbury Transit Center stops service the study corridor. Route 22 provides both local and regional service from the Stateline and Kingsbury Transit Centers to Kingsbury and the Douglas County Community and Senior Center respectively. Route 22 consists of a total of seven stops, four total stops for local service, running at 60 to 120-minute frequencies, and five total stops for regional service, running at 120-minute frequencies during peak hours only. Transit scenarios include opportunities to increase the frequency and service hours on these established routes.

Frequent Service… Who Benefits?

Everyday Tahoe & Discover Tahoe: Increased access to local services and recreation, less visitor traffic on the roads

Visit Tahoe: Increased access to recreation, leave the car parked

- **Local Service** – Fixed routes serving neighborhoods and to urban cores with 30-to-60-minute frequencies.

Strategies:

- **Add service to Spooner Summit and Zephyr Cove** – Connecting the resort corridor (Stateline area) to major recreation destinations will encourage visitors to leave their car behind and use transit to access recreation. This will not only reduce congestion on the highways it will also reduce parking demand at recreation destinations -- improving safety as oftentimes, parking spills onto the highways.
- **TTD proposed ferry shuttle to Zephyr Cove** – Transit service by water provides another opportunity to move visitors around Tahoe without their car. Moving people by water provides a lot of benefits of not putting transit into the congestion on the highways making this a more reliable service. It also entices visitors to use transit as this is also viewed as an attraction for visitors to experience Lake Tahoe by boat.
- **Water taxi service to Round Hill Pines and Zephyr Cove** – Water taxi service, provided through private service to Round Hill Pines, provides an on-demand service to move users by water. Expanding this private service to more destinations on the east shore provides more travel choices and can build greater confidence in transit service.

Local Service… Who Benefits?

Everyday Tahoe & Discover Tahoe: Increased access to local services and recreation

Visit Tahoe: Increased access to recreation

- **Community Service** – Fixed or circulation service operating in a small zone, providing on-demand service to recreation hot spots and urban centers (5-to-30-minute frequencies).

Strategies:

- **Free fixed route from Round Hill Pines and Zephyr Cove to the tourist core (Stateline)** – Making transit free, frequent, and reliable between the visitor bed base and major recreation destinations along US 50 will entice visitors to leave their car behind helping to reduce both highway and parking congestion throughout the corridor. Implementing this service could also provide benefits for local residents who would also have access to the service. Locating transit stops that can be convenient for both locals and visitors should be considered.

- **Increase frequency of existing ski shuttle (winter only)** – Providing free and frequent ski shuttles for winter use serves both visitors and locals. This greatly reduces the need for people to park at the ski resort helping to reduce congestion created by the recreation demand.

Community Service… Who Benefits?

Everyday Tahoe & Discover Tahoe: Increased access to recreation

Visit Tahoe: Increased access to recreation, leave the car parked

- **Microtransit** – On-demand, technology-enabled multi-passenger transport on dynamically generated routes.

Strategies:

- **On-demand Microtransit from Round Hill Pines and Zephyr Cove to/from resort corridor –** Visit Tahoe and Discover Tahoe users make most of their trips in Tahoe by car, contributing to congestion and parking demand. Frequent and convenient micro-transit service can reduce these users need to drive. Microtransit will also help create visitor confidence that if they arrive to Tahoe by transit they can move around freely.

Micro Transit Service… Who Benefits?

Everyday Tahoe & Visit Tahoe: Increased access to recreation, leave the car parked

- **Regional Service** – Fixed route express, or commuter routes connect the north and south shores of Lake Tahoe and to nearby cities: Reno/Sparks, Carson, Gardnerville/Minden.

Strategies:

- **Re-establish route 21x to Carson City –** Route 21x previously provided peak hour express commuter service with 6 daily trips (3 in the morning and 3 in the afternoon) between Carson City and the Stateline Transit Center. Based on 2015-2016 data, 21x served over 25,000 rides per year (service was eliminated in 2016 due to funding). Re-establishing this connection is key to providing transit service to many of the employees who work in corridor and the south shore but cannot afford to live in Tahoe. Weekly commuter service with increased service hours during peak visitation could serve employees and day visitors, and provide connection with future SR 28 transit service, connecting Carson City to the north shore and its recreation areas.
- **Increase route 22 to Minden/Gardnerville –** Route 22 provides limited service between Minden/Gardnerville and the Stateline Transit Center during peak commute hours only. Increasing this route during peak visitation could help reduce congestion created by recreation demand.
- **Increase route 19x to Minden/Carson –** Route 19X provides limited express commuter service between Carson City, Minden/Gardnerville and the Stateline Transit Center during the mid-day only. Increasing route 19x during peak visitation could help reduce congestion created by recreation demand.

Regional Service… Who Benefits?

Everyday Tahoe: Increased access to work for commuters

Discover Tahoe: Increased access to recreation

Visit Tahoe: Increased access to recreation

- **Day and resident user service from Sacramento, Stockton, Reno, Carson City, and airports combined with park-n-ride –** The majority of day visitors to Tahoe come from Sacramento or the Reno/Carson Valley areas. Adding new service aimed at day users and expanding existing services such as El Dorado Transit coupled with park-n-ride lots at key destinations outside of the Tahoe Basin will create an easy-to-use service. When paired with frequent, local, community, and microtransit strategies ensures visitors can move around Tahoe without a car once they arrive.

Based on the Transit Strategies described in the previous pages, three overall transit scenarios (**Table 2)** are considered with each scenario representing different levels of transit services resulting in various mode share opportunities: Scenario 1 (1-percent), Scenario 2 (4-percent), and Scenario 3 (9-percent). The **Table 2** analysis quantifies feasible ridership for each scenario which would result in fewer vehicular trips in the corridor. The strategies that make up these scenarios will be further analyzed and flushed out in the alternatives analysis phase of the CMP.

Table 2: US50 East Shore CMP Transit Scenarios

Strategies by Service Type	Scenario 1			Scenario 2			Scenario 3		
Frequent Service									
Transit Strategies	**Frequency (min)**	**Pass./Hr**	**Daily Load**	**Frequency (min)**	**Pass./Hr**	**Daily Load**	**Frequency (min)**	**Pass./Hr**	**Daily Load**
1. Increase frequency and service hours on US50 routes 55/22	60	50	400	30	100	800	15	200	1600
Local Service									
Transit Strategies	**Frequency (min)**	**Pass./Hr**	**Daily Load**	**Frequency (min)**	**Pass./Hr**	**Daily Load**	**Frequency (min)**	**Pass./Hr**	**Daily Load**
1. Add service to Spooner Summit and Zephyr Cove	N/A			60	50	400	30	100	800
2. Water taxi service to Round Hill Pines and Zephyr Cove	N/A			40	18	144	20	36	288
3. TTD proposed ferry service to Round Hill Pines and Zephyr Cove	N/A			90	8	64	45	16	128
Community Service									
Transit Strategies	**Frequency (min)**	**Pass./Hr**	**Daily Load**	**Frequency (min)**	**Pass./Hr**	**Daily Load**	**Frequency (min)**	**Pass./Hr**	**Daily Load**
1.Free fixed route from Round Hill Pines and Zephyr Cove to resort corridor (Stateline)	N/A			60	30	240	20	90	720
2. Increase frequency of existing ski shuttle (winter only)	60	30	240	30	60	480	20	90	720
Microtransit									
Transit Strategies	**Frequency (min)**	**Pass./Hr**	**Daily Load**	**Frequency (min)**	**Pass./Hr**	**Daily Load**	**Frequency (min)**	**Pass./Hr**	**Daily Load**
1. On-demand microtransit from Round Hill Pines and Zephyr Cove to/from resort corridor	N/A			60	6	48	20	18	144
Regional Service									
Transit Strategies	**Frequency (min)**	**Pass./Hr**	**Daily Load**	**Frequency (min)**	**Pass./Hr**	**Daily Load**	**Frequency (min)**	**Pass./Hr**	**Daily Load**
1. Re-establish route 21x to Carson City	N/A			90	33	267	60	50	400
2. Increase route 22 to Minden/Gardnerville	60	25	200	45	33	267	30	50	400
3. Increase route 19x to Minden/Carson	120	12.5	100	90	17	133	60	25	200
4. Day user service from Sacramento, Stockton, Reno, Carson, and airports combined with park-n-ride	1440	4	100	240	63	500	120	125	1000
Total Daily Summer Loads (Full)			1040			2863			5680
Total Daily Summer Loads (80% Capacity)			832			2290			4544
Equivalent Trips Removed			396			1091			2164

Notes: 1) Passengers per hour refers to total potential capacity. 2) Daily load refers to maximum possible daily load.

Complete the Tahoe East Shore Trail: For the pedestrian and bicycle modes, the *Nevada Stateline-to-Stateline Bikeway Feasibility Study (2011)* analyzed feasibility and use of the Tahoe Trail in this corridor. The study defined the opportunity for a separated, paved pedestrian and bicycle path circling Lake Tahoe. It forms the basis for alternatives considered in this plan and informs alternative development in the next phase of the plan, when the potential path alignment will be determined.

Figure 11: US50 Corridor Tahoe East Shore Trail Overview

Since the study was completed, segments of the Tahoe Trail have been constructed from Incline Village to Sand Harbor and from Round Hill Pines to South Lake Tahoe, and the Sand Harbor to Spooner Summit section, has recently received environmental approval and is advancing into design, the final step before construction. An overview of the existing and proposed Tahoe East Shore Trail in the corridor is shown in **Figure 11**.

These successes have provided several lessons learned:

- Where demand is high, transit, trails, and parking management must work together to provide transportation options when demand exceeds capacity
- The Tahoe Trail will have different users along different segments.
- Bicycle and pedestrian facilities are important to meet regional environmental and vehicle miles traveled goals and thresholds
- Gaps to connecting trails and sidewalks must also be completed to enhance access for recreation areas, neighborhoods, and commercial centers.
- Expanding technologies, such as electric bikes and scooters are increasing the range of non-auto travel the average user can make - and these technologies are gaining acceptance for use in National Forest lands.
- The Tahoe Trail is key to improving recreation access management.

Tahoe East Shore Trail… Who Benefits?

Everyday Tahoe, Discover Tahoe, & Visit Tahoe
Increased access to recreation without the car

The remaining segments of the Tahoe East Shore Trail within the study corridor will be further detailed as part of the alternative development process.

Parking Relocation and Management Strategies: On-highway shoulder parking is one of the largest safety issues in the corridor and is typically concentrated around recreation areas as recreation demand exceeds on-highway parking capacity at these areas. Off-highway parking areas connected with transit and the Tahoe Trail creates opportunity for balancing parking capacity at the recreation areas while also providing alternative ways for visitors and residents to access recreation when parking areas are full (**Figure 12**). Management strategies play a key role in helping manage parking and ensuring the on-highway parking does not continue. These strategies include:

- Balance among recreation area access, on-site parking, off-highway parking nodes, and multimodal connectivity – i.e. parking for the off-peak with transit helping during peaks.
- Once alternatives to on-highway parking are implemented, enforcement and education are key to ensuring residents and visitors understand how to access the recreation areas safely.
- Parking management and integration of technology – incentivize visitors to use parking during off-peak and the use of multimodal options, advance notice of parking capacity, and advertise multimodal option
- Look for opportunities for shared parking to maximize benefits with minimal disturbance.

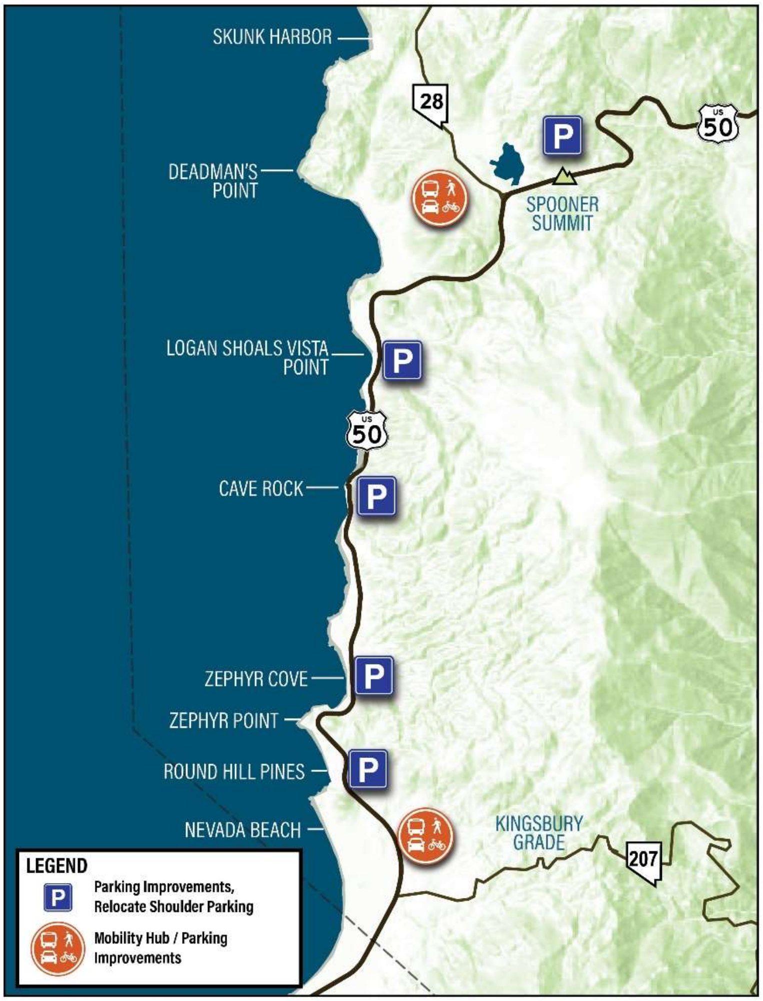


Figure 12: Parking Management Opportunities

Relocate Shoulder Parking… Who Benefits?

Everyday Tahoe & Discover Tahoe: Safer access to recreation

3.2 Corridor Improvement Scenarios

Three scenarios were developed to manage transportation and mobility improvements in the corridor that integrate the corridor opportunities. These scenarios are not intended to suggest binary choices but rather the range of outcomes that could be realized based on the level of implementation of strategies. Each scenarios describes the resultant impact on vehicular, bicycle (bike)/pedestrian (ped) and transit modes, as well as parking. While not a transportation mode, parking is intrinsically tied to mode choice and is a key supporting strategy that will be considered during alternative development. The scenarios could be blended to develop alternatives in the next phase of this CMP.

The scenarios are evaluated qualitatively with some quantitative data in order to understand their potential for improving the corridor. As the CMP planning process continues, alternatives will be developed based on the opportunities and scenarios. These alternatives will be quantitatively evaluated more deeply, tested against policy decisions, reviewed for likely funding opportunities, and evaluated for cost/benefit. Below are a range of opportunities and scenarios that should be considered as alternatives are developed later in the study.

1) Recreation Area Focus Scenario:

Transit continues to lack funding and service remains limited in most of the corridor, with modest increases in frequency of existing transit routes (only serving segments 5 and 6) , and through private shuttles provided by concessionaires for only their visitor's use. Highway improvements and lane repurposing are focused around recreation area entrances, major intersections, and constrained locations along the corridor, and at safety hot spots. Off-highway parking areas are expanded to the extent feasible around recreation areas. The Tahoe Trail provides connectivity between residential areas, visitor bed base and recreation areas. While this helps recreational areas deal with peak demand periods, it leaves gaps in multimodal connectivity.

- ✓ **Focus on safety improvements at major intersections and lane repurposing along constrained sections**
- ✓ **Address safety hot spots, and community access near recreation areas**
- ✓ **Complete Tahoe East Shore Trail**
- ✓ **Expand Transit:** Low Transit Investment Scenario
  - Increase frequency on existing routes
  - Private shuttle service to recreation areas
- ✓ **Relocate Shoulder Parking to Off-Highway Locations:** Relocate shoulder parking by expanding off-highway parking at a maximum capacity assuming minimal transit service. Implement parking fee system.

Scenario 1… Who Benefits?

Everyday Tahoe: Safer turn movements into residential at limited locations. Safer access to recreation areas. Increased transit service.

Discover Tahoe, Visit Tahoe: Increased access to safer recreation locations with less dependence on the car

2) Transit as a Priority Scenario: Focus on transit improvements at recreation areas and trailheads, key residential locations, and commute options out of the basin. Parking lot expansion at Zephyr Cove to better manage on-highway parking removal and support transit, and improvements to promote park-n-ride areas. Highway improvements and reconfigurations are focused around recreation area entrances and major intersections along the corridor, and at safety hot spots. While this approach drastically improves transit, gaps remain in the bicycle and pedestrian network, specifically lacking first-and-last mile connections.

- ✓ **Focus on access improvements to neighborhoods through roadway improvements and lane repurposing**
- ✓ **Address safety hot spots, and community access near recreation areas**
- ✓ **Complete Tahoe East Shore Trail**
- ✓ **Expand Transit:** Medium Transit Investment Scenario
  - Increase frequency
  - New service with focus on serving recreation and residential areas and regional transit services

Scenario 2… Who Benefits?

Everyday Tahoe: Safer turn movements into residential at select locations. Safer access to recreation. Increased transit service.

Discover Tahoe, Visit Tahoe: Increased access to safer recreation with some options to avoid the car

- ✓ **Relocate Shoulder Parking to Off-Highway Locations:** Relocate shouldering parking by expanding off-highway parking based on shoulder season demand with transit covering peak periods. Implement parking fee system.

3) Multimodal Priority Scenario: Corridor improvements will be focused around multimodal connectivity with higher frequency service to recreation areas, and the commercial core. Highway lane repurposing will support the Tahoe Trail and transit circulation while improving access to residential areas. Regional transit service will also be expanded.

- ✓ **Focus on multimodal access**
- ✓ **Lane repurposing to accommodate improved safety at intersections and driveways**
- ✓ **Address safety hot spots and community access near recreation areas**
- ✓ **Fully Complete Tahoe East Shore Trail**
- ✓ **Connect other trails and sidewalks to the Tahoe East Shore Trail**

Scenario 3… Who Benefits?

Everyday Tahoe: Safer turn movements into residential throughout. Safer access to recreation. Robust transit options.

Discover Tahoe, Visit Tahoe: Maximum access to safer recreation with a range of options to avoid the car

- ✓ **Expand Transit:** High Transit Investment Scenario
  - Increase frequency
  - New services expanded throughout the corridor including new water services
  - Expanded regional connectivity

- ✓ **Relocate Shoulder Parking to Off-Highway Locations:** Relocate shouldering parking by expanding off-highway parking and providing more frequent transit services. Off-highway parking is provided at lower capacity as transit is providing the majority of the access. Focus on park-n-ride lots (mobility hubs) at corridor bookends. Implement parking fee system with higher rates for parking at recreation areas, include reservation systems.

Mode Share by Scenario

Mode share for each of the scenarios is qualitatively illustrated in **Figure 13**. These potential outcomes help inform alternative development and selection during the US 50 CMP and suggest that investments across all modes are likely to experience demand regardless of foreseeable future outcomes. Basically, an all-of-the-above approach to mobility investments is warranted.

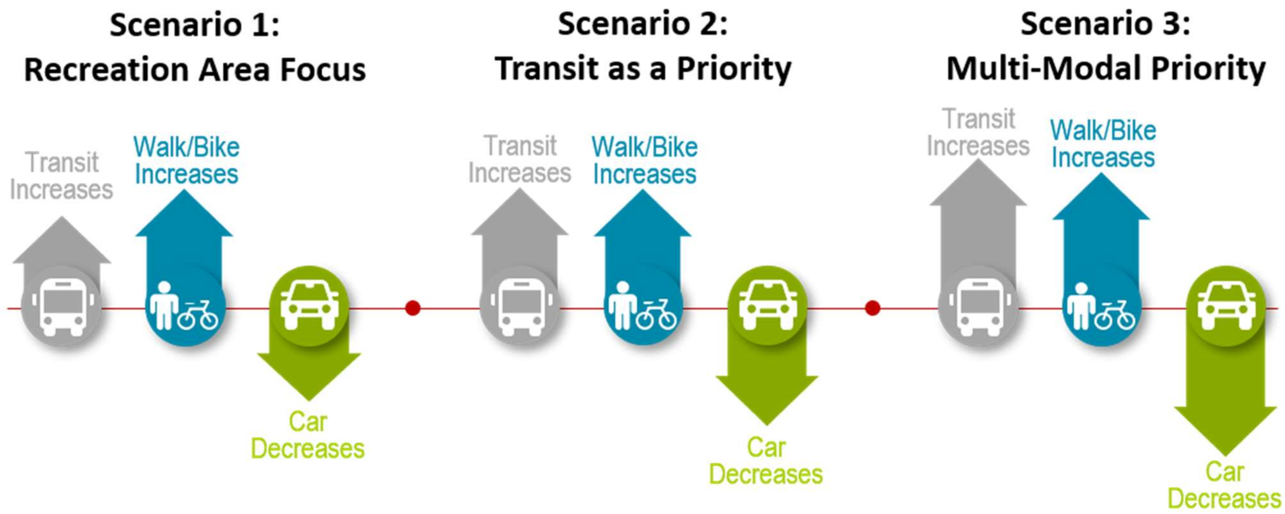


Figure 13: Qualitative Impact of Scenarios on Mode Share

3.3 Comparison to Study Goals

A total of six US50 East Shore CMP goals have been developed to help guide the study and support the study vision. A cross-check of the scenarios from Section 3.2 against these goals helps inform the development of scenarios and selection of an alternative in the CMP. A qualitative comparison of the scenarios against the study goals is provided in **Table 3**.

Table 3: Scenarios to Study Goals Comparison

	Improve Safety	Protect Lake Tahoe	Enhance the Visitor Experience	Expand Multimodal Transportation Choices	Promote Economic Vitality	Promote and Enhance Agency Collaboration and Management
Scenario 1: Recreation Area Focus	Improvements focused on intersections and spot locations only	Vehicle impacts persist given limited transit alternatives	Tahoe Trail a benefit, yet limited options to access recreation	Additional mode choices with limited transit opportunities	New infrastructure supports increased demand	Collaboration around parking management and the Tahoe Trail
Scenario 2: Transit as a Priority	Improvements focused on access points and spot locations only	Vehicle impacts lessen given medium transit investment	Tahoe Trail a benefit, with new options to access recreation	Additional mode choices with medium transit opportunities	New infrastructure supports increased demand	Collaboration around parking management, transit and the Tahoe Trail
Scenario 3: Multimodal Priority	Improvements focused on overall corridor safety	Vehicle impacts lessen given high transit investment	Tahoe Trail a benefit, with several options to access recreation	Robust mode choice with high transit opportunities	New infrastructure best supports increased demand	Collaboration around parking management, transit and the Tahoe Trail

SECTION 4 | CONCLUSION

The corridor opportunities and scenarios, combined with the corridor vision and goals, and public input, provide an overall framework for further discussion with stakeholders and the public to arrive at alternative recommendations for the CMP. The recommendations will be further analyzed by stakeholders and through a public review process as shown in **Figure 14**.

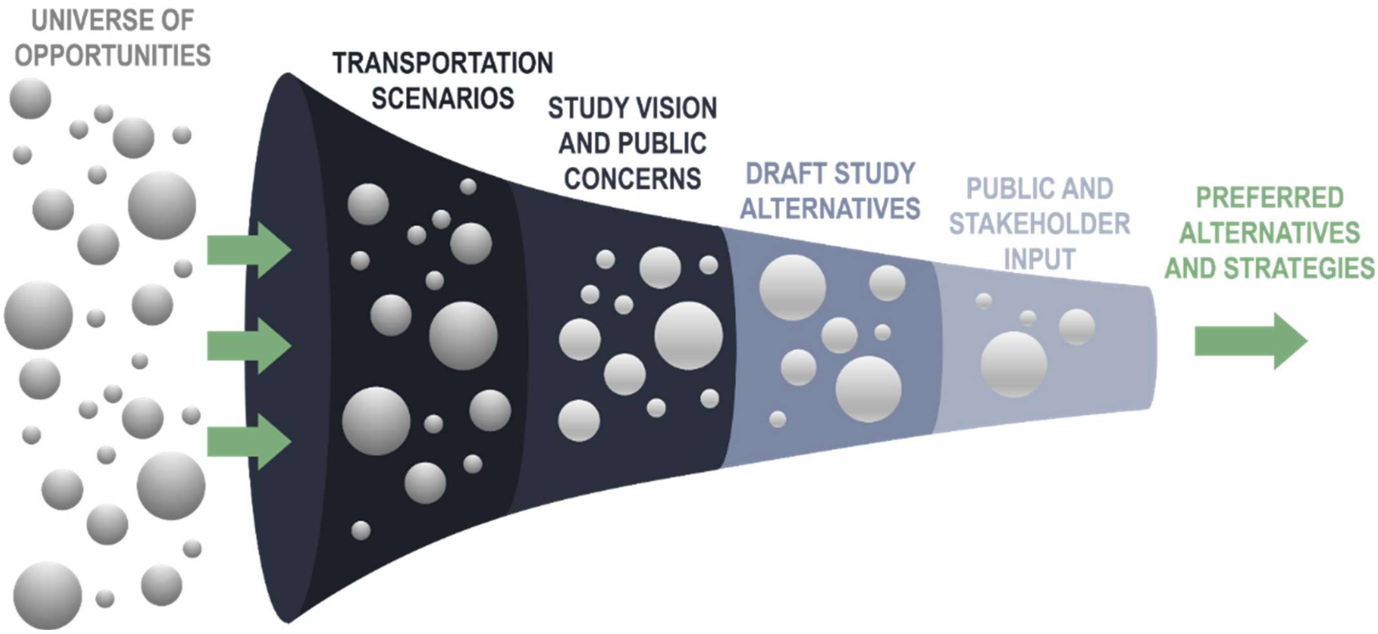


Figure 14: Alternatives and Corridor Management Development Process

As part of identifying corridor opportunities and gathering input through the initial public and stakeholder workshops, initial concepts to help create balance of need versus space have been developed. Lane repurposing have been a hot topic for all user groups and will remain a hot topic as striking a balance between need versus space continues to be looked at through the alternatives analysis phase of the corridor management plan. The maps included on the following page depict where achieving balance within the current highway configuration becomes a challenge, which accounts for 4.5 miles or approximately 35-percent of the corridor. Looking at lane repurposing in these general areas, illustrated in **Figure 15**, will continue to be further refined through the alternatives analysis and brought back to the public and stakeholders for further input.

- Excessive downhill speeds
- High crash and fatality location
- Change in land use
- Incorporate Tahoe Trail

- Limited right-of-way
- Numerous driveways and cross-streets
- Crashes associated with high speeds and turning
- High recreation demand (Cave Rock S.P.)
- Incorporate Tahoe Trail

- Limited right-of-way
- Numerous driveways and cross-streets, bad sight distance
- Crashes associated with high speeds and turning
- Extreme recreation demand
- Incorporate Tahoe Trail

Figure 15: Roadway Reconfiguration Opportunity Zones

APPENDIX A – Travel Demand Model 2018 and 2045 Forecasts

Appendix A contains maps illustrating AADT volumes by segment from the TRPA travel demand model for the years 2018 and 2045

2018 Forecast AADT Volumes

2045 Forecast AADT Volumes

US 50 EAST CORRIDOR MANAGEMENT PLAN RECREATION ACCESS MEMORANDUM

September 30, 2022

Prepared by

DESIGNWORKSHOP

128 Market Street, Suite 3E | Stateline, Nevada 89449 | 775.588.5929

OVERVIEW

Corridor Recreation Areas

With over 24 million person trips per year, recreational travel at Lake Tahoe is the main cause for congestion along highways that function as the primary arteries in and out of the Tahoe Basin and access routes to popular recreation destinations and resorts. During the peak seasons in Tahoe (summer and winter), the recreational demand exceeds the resources of both the transportation network and the recreational destinations. As visitor uses spill over into the highway corridor, travel lanes become congested and turn into parking lots as recreationists search for roadside parking.

The US 50 Corridor is a hot spot for visitors and recreation enthusiasts. In the summer, recreation hotspots include Nevada Beach, Zephyr Cove Resort, and Cave Rock State Park. Stateline, where the Nevada and California portions of US 50 merge, is home to the Tahoe Resort Casinos providing the Basin's largest bed base, nightlife attractions, and nearby year-round recreation, including Heavenly Mountain Resort which offers both winter skiing and summer mountain recreation activities. The Tahoe South Events Center is under construction at the intersection of US 50 and Lake Parkway. The venue will host conventions, special events, and entertainment for up to 6,000 people. As part of the project approvals, a microtransit shuttle system and a coordinated, parking management system was developed to serve residents and visitors.

The Nevada portion of the US 50 Corridor is the main access route for travelers arriving from the Reno-Tahoe International Airport and provides a key linkage from the neighboring cities of Reno and Carson to the Resort. The California portion of US 50 also provides key linkages from Sacramento and the Bay Area to the Stateline Casino Resorts.

The Experience

Entering the Lake Tahoe Basin along US 50 from the east, entry signage is present to welcome travelers. As described in the existing conditions memo, highlights of recreation access areas from Spooner summit and extending to Glenbrook include the following:

- Tahoe Rim Trail
- Hiking, biking and equestrian trails
- Spooner Lake State Park
- Sledding (located near the US 50/SR 28 intersection, the sled hill is not a formally designated use area for sledding)

The corridor plays an important role in connecting people to the scenic Tahoe landscape. Westbound travelers see their "first view" of the crystal blue Lake Tahoe waters as they descend the summit and drive toward Glenbrook.

Located between Glenbrook and Cave Rock in Segment 2, Logan Shoals provides a scenic recreation pull-off. Used as a pull-out for motorists and as a wedding venue for others, the parking area often fills in the summer. Cave Rock Lake Tahoe Nevada State Park is located in Segment 3 and offers a boat ramp, picnic tables, a small beach area, and kayak launch. Cave Rock is considered a sacred site to the Washoe Tribe who regularly hold ceremonies at the site.

Segment 4 extends from Skyland to Round Hill Pines Resort and has the highest intensity of recreation use. Recreation sites include Zephyr Cove Resort, the Dreyfus Estate, Zephyr Cove County Park, and Round Hill Pines Resort. Options to address the roadside/shoulder parking that is associated with access to Zephyr Cove Resort and beach access are described in this memo.

South and west of Round Hill Pines Resort, Nevada Beach and Nevada Beach Campground are accessed from Elks Point Road. Parking along the road can spill back onto US 50. This parking demand could be addressed by reconfiguring the roadside parking layout along Elks Point Road and considering shared parking options with the Round Hill Shopping Center on peak holidays. At Kahle Drive, people access the Lakeview Trail at Rabe Meadows Trailhead. Opportunities to enhance overall connectivity exist in this area.

The southern-most segment links Kingsbury Grade Road (SR 207) to the casino core at Stateline, Nevada prior to entering South Lake Tahoe, California. Shared-use path segments, sidewalks, and streetscape improvements are proposed for this area.

Recommendations Summary

Spooner Summit Recreation Parking

- » **Connect trailheads** to transit
- » **Relocate trailer parking** to USFS Fire Station lot
- » **Consider a pedestrian hybrid beacon** to facilitate pedestrian movement across the highway

"First Look" Vista Point

- » **Formalize pull-out** with roadside signage, striped parking, striped buffer separation, interpretive signage and fencing.

Logan Shoals Vista Point

- » **Formalize pull-out** with striped parking, one-way entry/exit, signage, raised curb separation, shuttle/transit parking, trail connection to restroom. Incorporate a transit pull-off at the site.

Zephyr Cove Roadside Parking

- » **Relocate roadside parking to a new off-highway facility.** To address demands for recreation access, a combination of expanding the existing resort parking and providing a new, off-highway parking facility east of the highway is recommended.
- » **Utilize a portion** of the Douglas County opportunity parcel for a future transit maintenance facility.
- » **Provide northbound and southbound transit pull-offs** to service the resort area.
- » **Connect parking areas to recreation destination** by a shared-use path trail system that aligns with desire lines. Utilize fencing where needed to direct users to signalized or grade separated crossings of US 50.

Kahle Drive Recreation Connections

- » **Link the Lower Kingsbury Area to Kahle Drive** with an improved network of trails and sidewalks to create a greater sense of being a hub for lively-mixed use development and outdoor recreation.
- » **Create a paved, off-highway shared use path** connecting residents and visitors from the Casino Resort core to the Lakeview Trail, Nevada Beach, and east to Round Hill and Round Hill Pines Resort; also, along the length of US Highway 50 from the intersection with Lake Parkway to Elks Point Road.
- » **Establish a connected shared-use path system** by completing linkages and connecting Kahle Community Park to the Lakeview Trail.

Nevada Beach Parking Enhancement

- » **Reorganize the informal parallel parking** along Elks Point Road into angle parking.
- » **Develop a small traffic circle** or roundabout near the end of Elks Point Road to allow motorists space to turn around.

SPOONER SUMMIT RECREATION PARKING AND "FIRST LOOK" VISTA POINT

Tahoe Rim Trail Trailheads

Access to the renowned Tahoe Rim Trail is found just west of the summit into Lake Tahoe. Designated parking to access the trail is found on both the north and south sides of the highway. Trailer parking is currently designated for the south side of the highway.

Parking to access the popular trail often spills out along the highway. Pedestrians cross the highway in order to access the trail segment they wish to hike that day.

Recommendations

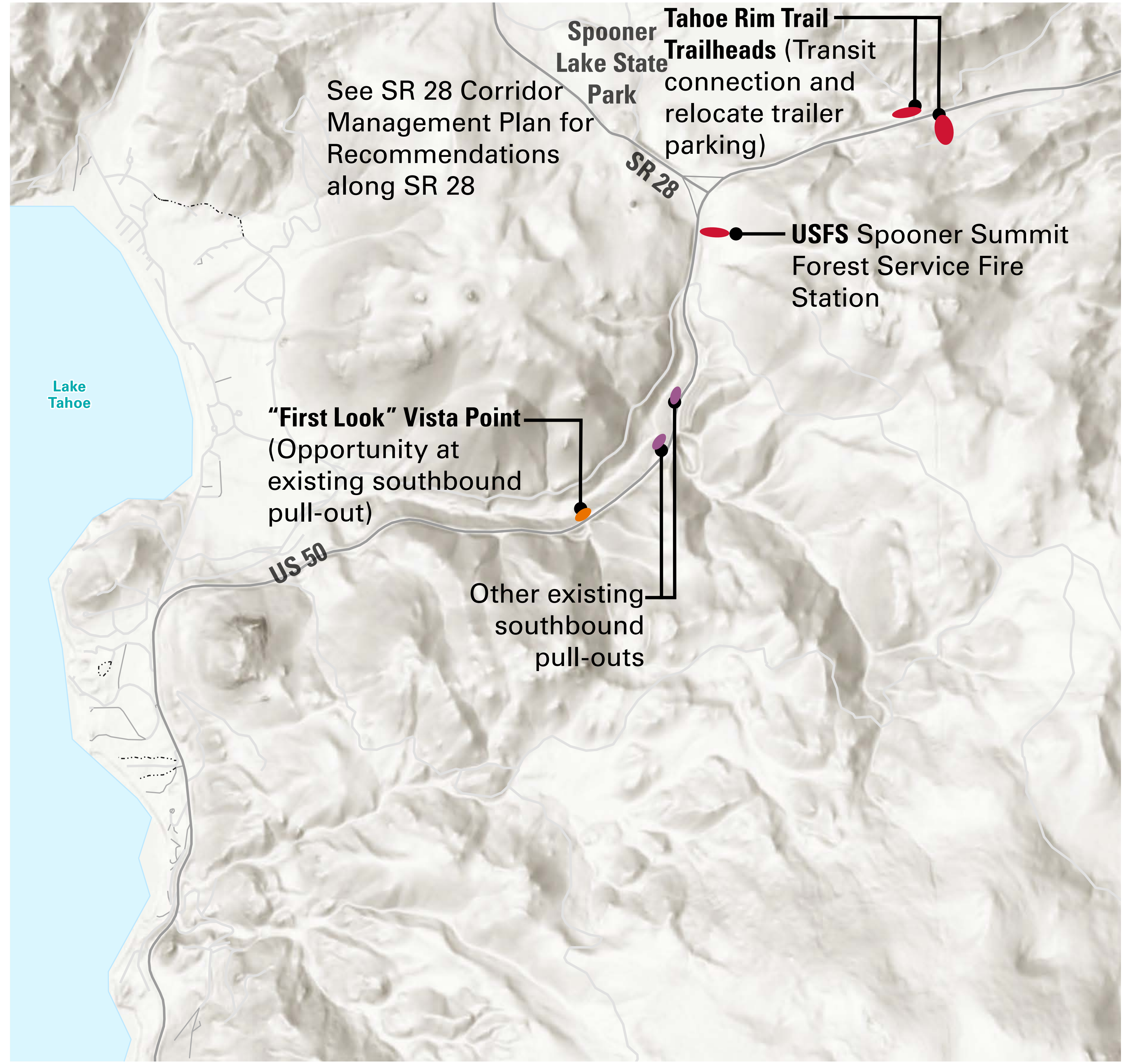
- **Connect trailheads** to transit
- **Relocate trailer parking** to USFS Fire Station lot
- **Consider a pedestrian hybrid beacon** to facilitate pedestrian movement across the highway

"First Look" Vista Point

Four pull-outs exist along the south/eastbound lane of US 50 as it drops from Spooner summit into the Lake Tahoe Basin. As the highway bends toward the lake, the third pull-out offers travelers an opportunity to stop and take in their first glimpse of the Lake, framed by the Sierras and towering pines.

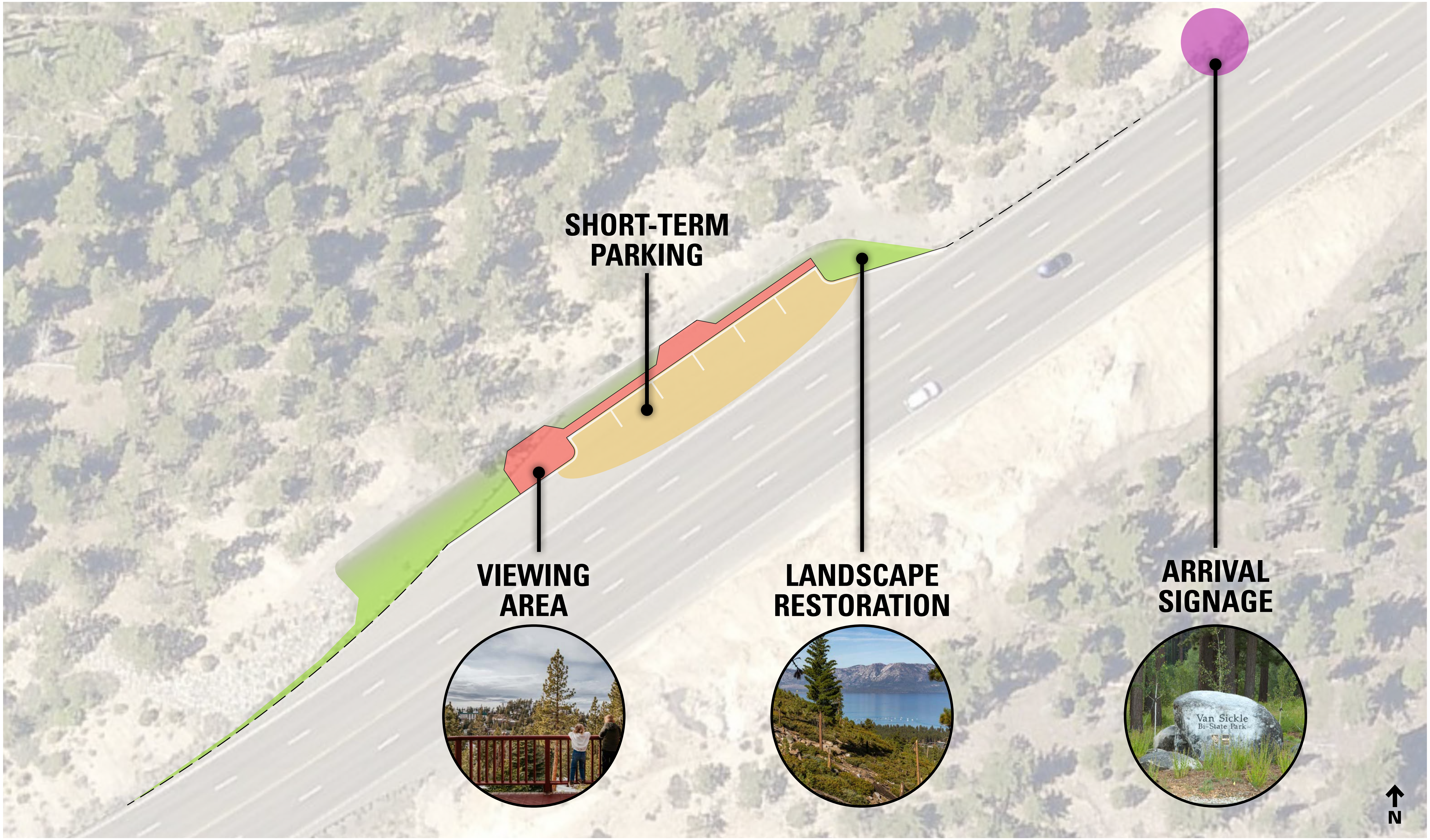
Recommendations

- **Formalize pull-out** with roadside signage, striped parking, striped buffer separation, interpretive signage and fencing.



Site Map of Tahoe Rim Trail Parking and First Look Vista Point Opportunity Site

“FIRST LOOK” VISTA POINT CONCEPTUAL DIAGRAM



“FIRST LOOK” VISTA POINT ENHANCEMENTS

Logan Shoals Vista Point

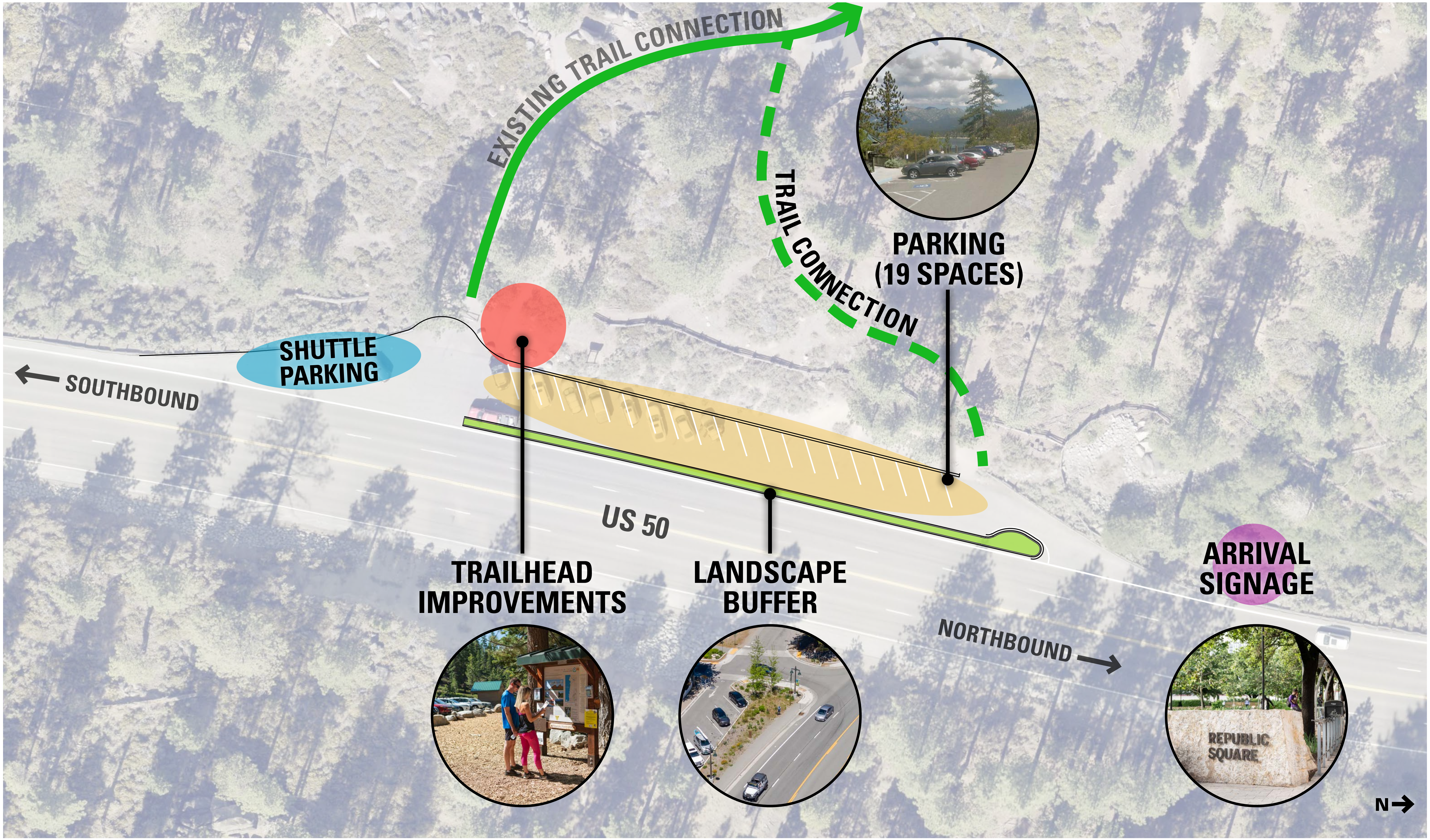
Located north of Cave Rock on USFS lands, the vista point has informal shoulder parking, restrooms, and a paved path to the overlook. It is used by motorists stopping to take a short walk, enjoy the view, or use the facilities and for intimate wedding ceremonies with a total of 18 guests. Parking is limited and can quickly fill on a busy day. Organizing the parking area and enhancing the trail connections can improve the overall function and flow of the site. The conceptual diagram and perspective rendering shown on the following two pages depicts the proposed recommendations for the site.

Recommendations

- **Formalize pull-out** with striped parking, one-way entry/exit, signage, raised curb separation, shuttle/transit parking, trail connection to restroom.

Existing Conditions at Logan Shoals Vista Point

LOGAN SHOALS VISTA POINT CONCEPTUAL DIAGRAM



LOGAN SHOALS VISTA POINT ENHANCEMENTS

Zephyr Cove Resort Recreation Access

Shoulder parking for beach access during the summer lines both sides of US 50 near Zephyr Cove Resort. Beach-goers walk along the highway with gear and children in tow. Car doors open into traffic and people often step into travel lanes to remove coolers, rafts, and other items from their vehicles. NDOT has plans for a new traffic signal at Warrior Way which will provide a second, designated crosswalk for recreation access. Relocating the parking that occurs along the highway to an off-highway location is needed.

Parking Demand

Utilizing the methodology developed for the SR 28 Corridor Management Plan and the SR 89 Recreation Corridor Management Plan, the number of roadside parking spaces was determined. The recommendation is to then to provide an off-highway parking area with trail connectivity to the Resort and restrict and enforce a no-parking zone along the highway within a mile of the resort.

The total number of parking spaces that need to be relocated is 223 as shown in the diagram on the facing page. This number was calculated by analyzing the potential locations for parking along the highway. A length of 22 feet per vehicle was used for locations where there was a minimum of 10 feet of shoulder width (paved or unpaved). The opportunity site evaluated to accommodate the relocated parking is further described later in this memo.

Opportunity site for off-site recreation parking to relocate roadside parking to a nearby, off-highway location.

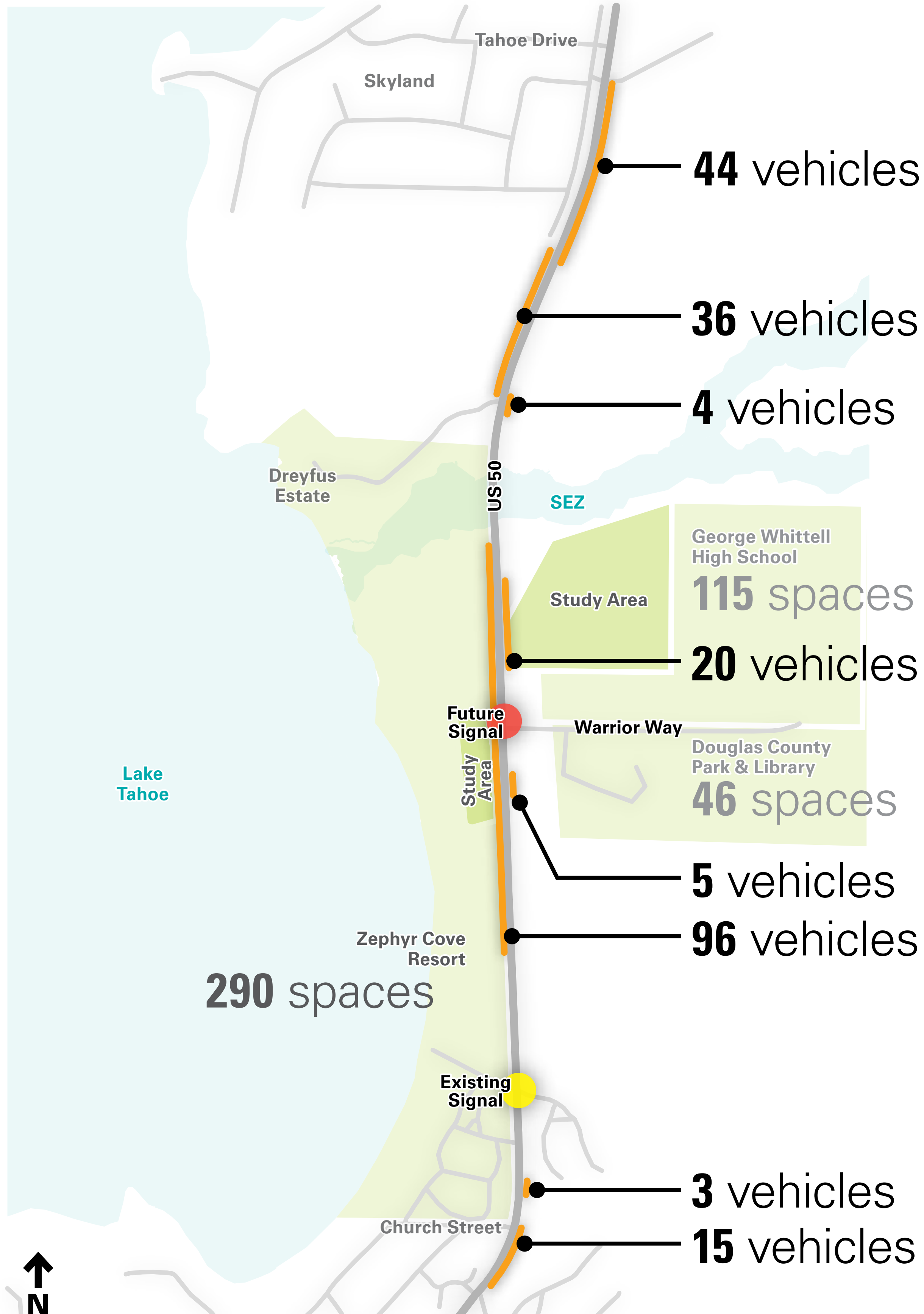
ZEPHYR COVE RESORT RECREATION ACCESS PARKING DEMANDS

Zephyr Cove Corridor Existing Parking

223 roadside parking spaces

290 existing on-site facilities parking spaces

161 existing off-site facilities parking spaces



Roadside parking spaces were evaluated 1.05 miles north and 0.2 miles south of the existing Zephyr Cove Resort parking entrance.

A length of 22 feet per vehicle was used to define the number of spaces, based upon observed average spacing per parallel parked vehicle.

USFS AND DOUGLAS COUNTY OPPORTUNITY SITE TO SHIFT ROADSIDE PARKING

Opportunity Areas for Relocated Roadside Parking

A desirable site for relocating the roadside parking should be within walking distance of the recreation site or connected to the site by transit. Two opportunity areas are (1) located to the North of the existing resort parking area, and (2) on the Douglas County Parcel, East of US 50 and adjacent to the proposed vehicular road that would connect Highway 50 and Warrior Way.

The first (1) opportunity area would function as an expansion of the existing parking area west of US 50. The opportunity to expand parking in this area should ensure that the recreation uses in the area is not compromised and that trees and other environmental considerations are preserved.

The second (2) opportunity area would be located on the east side of US 50 across from the recreation site. In addition to the planned intersection improvements and pedestrian crossing at Warrior Way, trail connectivity from the parking to the recreation area could be further enhanced by creating and under crossing of US 50.

Douglas County Parcel

Douglas County owns a parcel located between George Whittell High School and US 50. The site has potential to provide off-highway parking as well as a maintenance and storage facility for transit vehicles. The need for a dedicated maintenance and storage area for transit vehicles is a critical element for enhancing transit services in the Lake Tahoe Region. Therefore, any off-highway parking options need to maintain a portion of the site for the maintenance facility. Vehicular circulation to the off-highway parking should be separated from the maintenance area and school.

Access, Safety and Connectivity

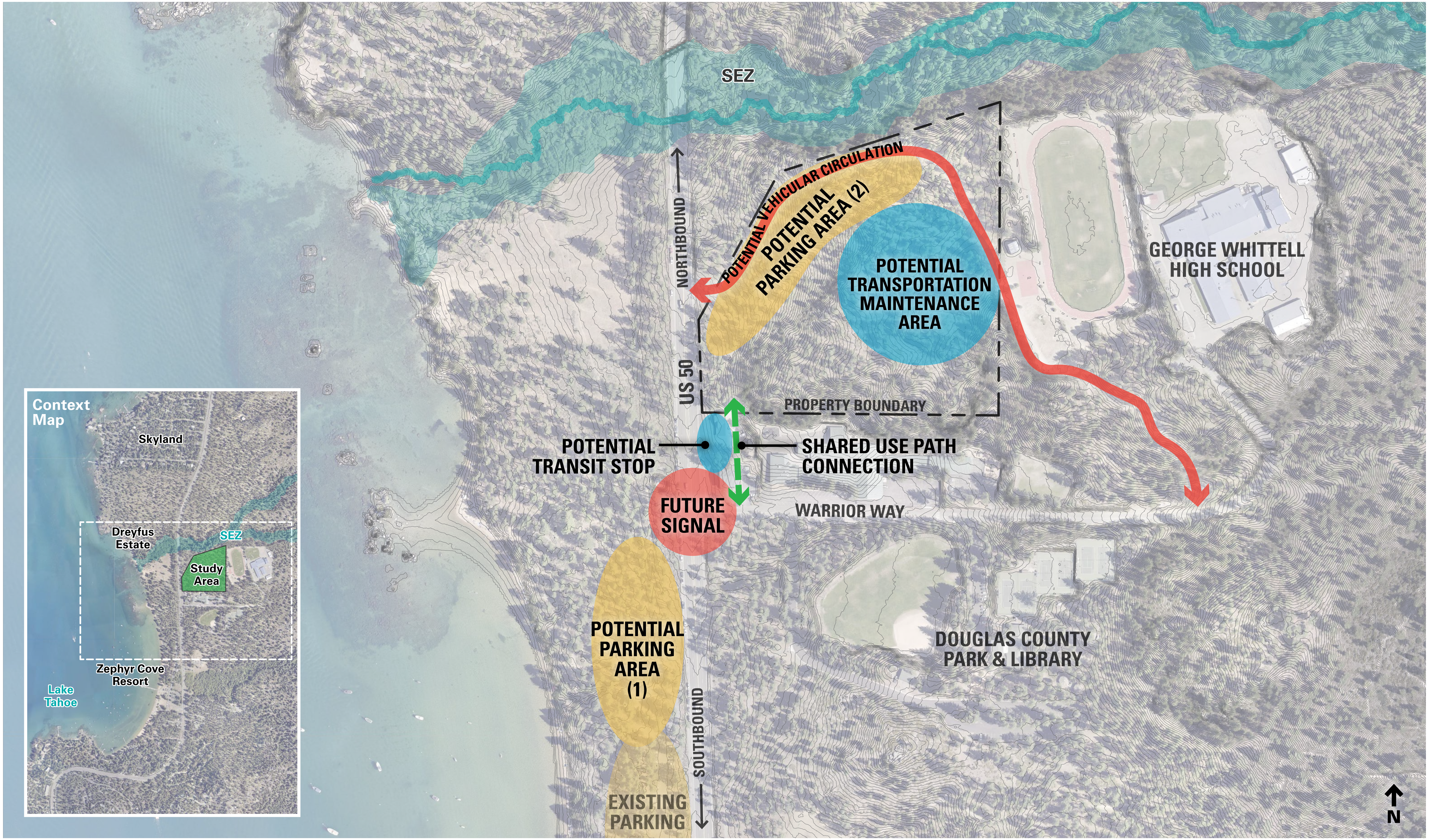
The opportunity areas outlined and show on the diagram on the following page are only successful if access and connectivity are provided to the recreational amenities in the area. A key component to the safety and connectivity will be the future signal at Warrior Way and US 50, allowing pedestrians and cyclists to cross US 50 safely and access recreational amenities at Zephyr Cove Resort.

A northbound transit stop should be provided for the site. A potential location of the stop is shown north of Warrior Way and south of the potential parking. A shared use path and sidewalks can then bring people safely to the signalized crossing.

View of potential parking area for relocated roadside parking

View of potential area for transit maintenance facility

USFS AND DOUGLAS COUNTY OPPORTUNITY SITE TO SHIFT ROADSIDE PARKING



Douglas County Opportunity Site Developable Land Study

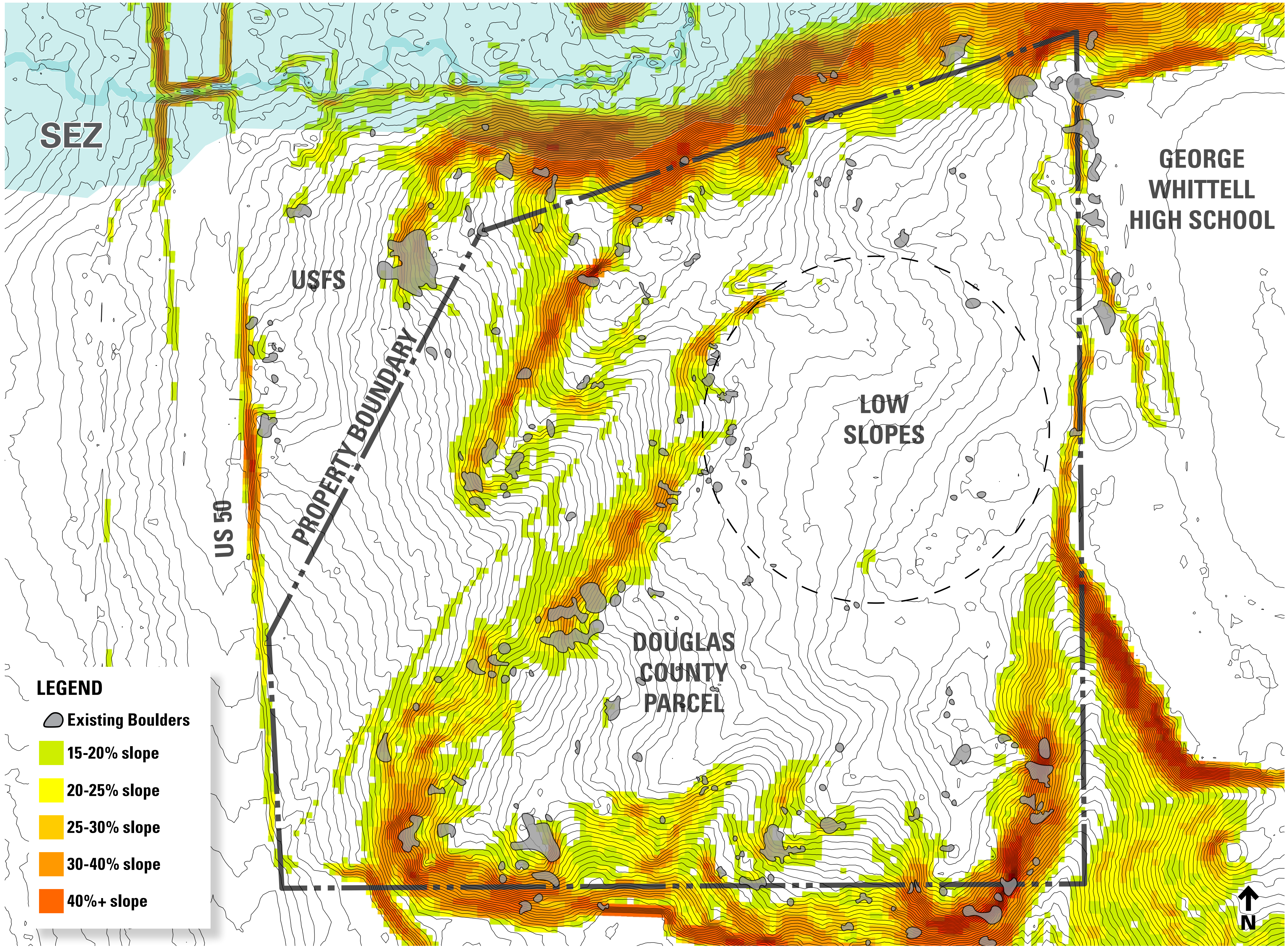
Site Analysis

The Douglas County opportunity site is bordered by a creek and SEZ to the north, the George Whittell High School on the east, Warrior Way and steep slope conditions on the south, and US 50 and a USFS parcel on the west.

The majority of the site has slopes below the 15-20% range, making it suitable for development, from a grading and drainage perspective, for parking expansion, roads, and a transit maintenance facility. The transit facility should be located in areas of low slopes (0-10%) to minimize grading and construction costs.

Significant boulder outcroppings are located throughout the parcel. The boulders occur primarily in areas of steeper slopes. Combined, the terrain and the boulders divide the parcel into a lower (western) area and an upper (eastern) buildable site.

Almost four acres of the site will be reserved for the Transit Maintenance Facility. The remaining two acres of the site can be considered be dedicated to additional parking for recreational users.



Zephyr Cove Resort Parking Expansion

77 spaces

The existing off-highway parking at Zephyr Cover resort could be extended to the north, paralleling US 50. Utilizing a design approach similar to the existing parking, the layout should preserve existing trees where possible.

Although additional high capability lands are available within the resort boundary, the potential parking expansion must balance the need to use the site for recreation amenities and events.

Running parallel to the highway allows the resort to maximize recreation space along the shoreline of Lake Tahoe. The parking expansion also responds to environmental considerations; large trees, boulders, etc.

The terminus of the parking expansion would be a roundabout, which ties into the planned traffic signal at US 50 and Warrior Way.

In total, 77-80 spaces could be relocated from roadside shoulder parking and accommodated by expanding the existing parking within the resort.

The relocation of the remaining 146-143 spaces are considered as part of three parking options illustrated in the following Concepts A, B, and C.

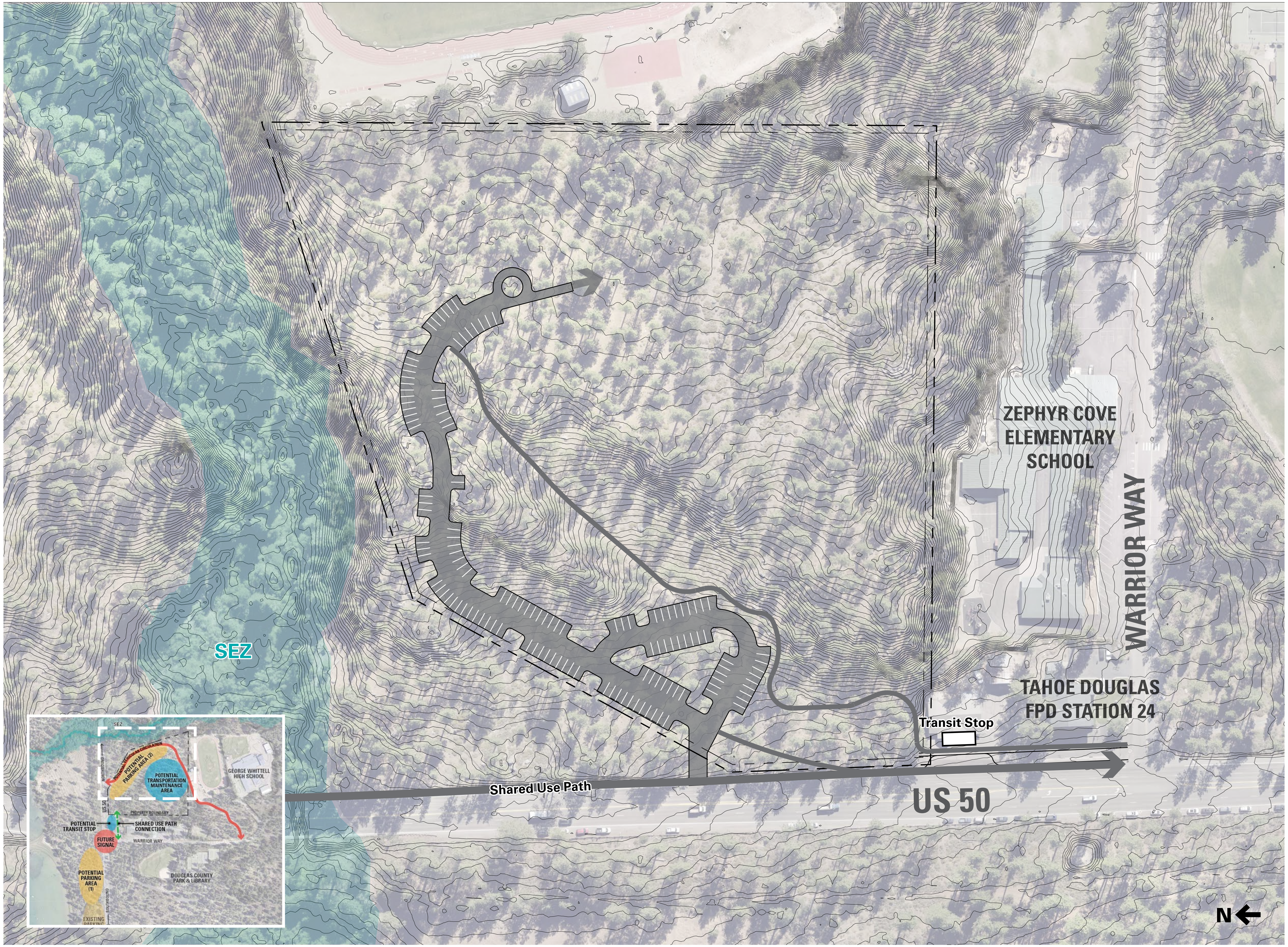
Douglas County Off-Street Parking Area

150 spaces

Concept A

The following bullets summarize improvements for Concept A:

- 150 off-highway parking spaces
- Parking layout works around large boulders and creates pods of parking where grades allow
- Transit stop located adjacent to the Tahoe Douglas Fire Protection District Station 24
- Shared use path along US 50
- Trail connection to existing pedestrian facilities, proposed shared use path, and future traffic signal at Warrior Way and US 50
- Vehicular access into the site is approximately 550 feet from the Warrior Way intersection. Access could be designed to be solely on the Douglas County parcel, if needed
- Opportunity to reduce the amount of parking on the eastern portion of the site is reduced with this concept, given that it provides the fewest spaces of the three concepts



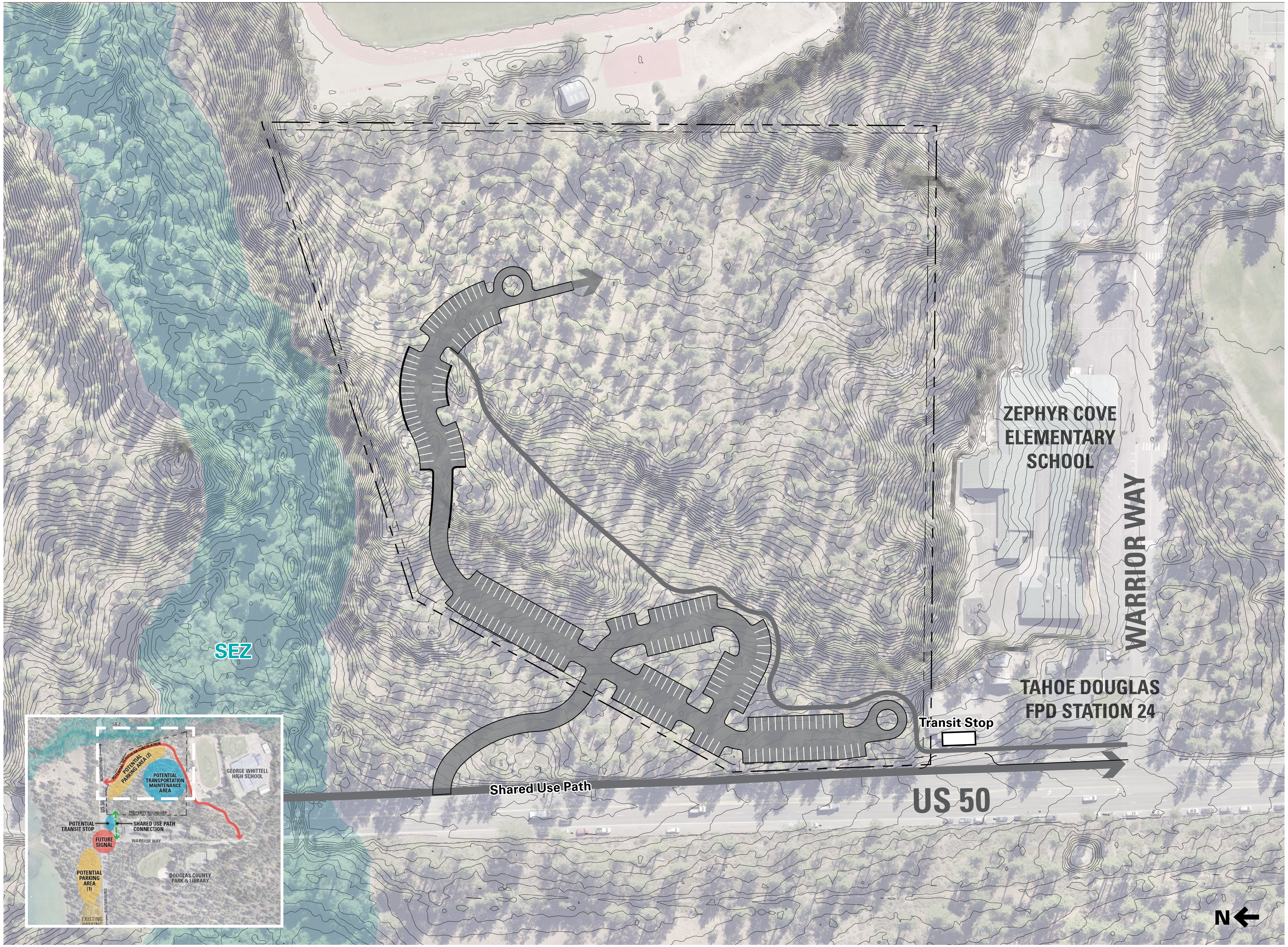
Douglas County Off-Street Parking Area

187 spaces (167 spaces without easternmost bay)

Concept B

The following bullets summarize improvements for Concept B:

- 187 off-highway parking spaces
- Parking layout works around large boulders and creates pods of parking where grades allow
- Transit stop located adjacent to the Tahoe Douglas Fire Protection District Station 24
- Shared use path along US 50
- Trail connection to existing pedestrian facilities, proposed shared use path, and future traffic signal at Warrior Way and US 50
- Vehicular access into the site is approximately 725 feet from the Warrior Way intersection, but requires an access agreement through USFS lands
- The additional distance between the Warrior Way intersection and the parking access is desirable from a transportation planning perspective
- There is an opportunity to reduce the amount of parking shown on the eastern portion in order to maximize space for a future transit facility while still meeting the overall desired number of relocated shoulder parked vehicles



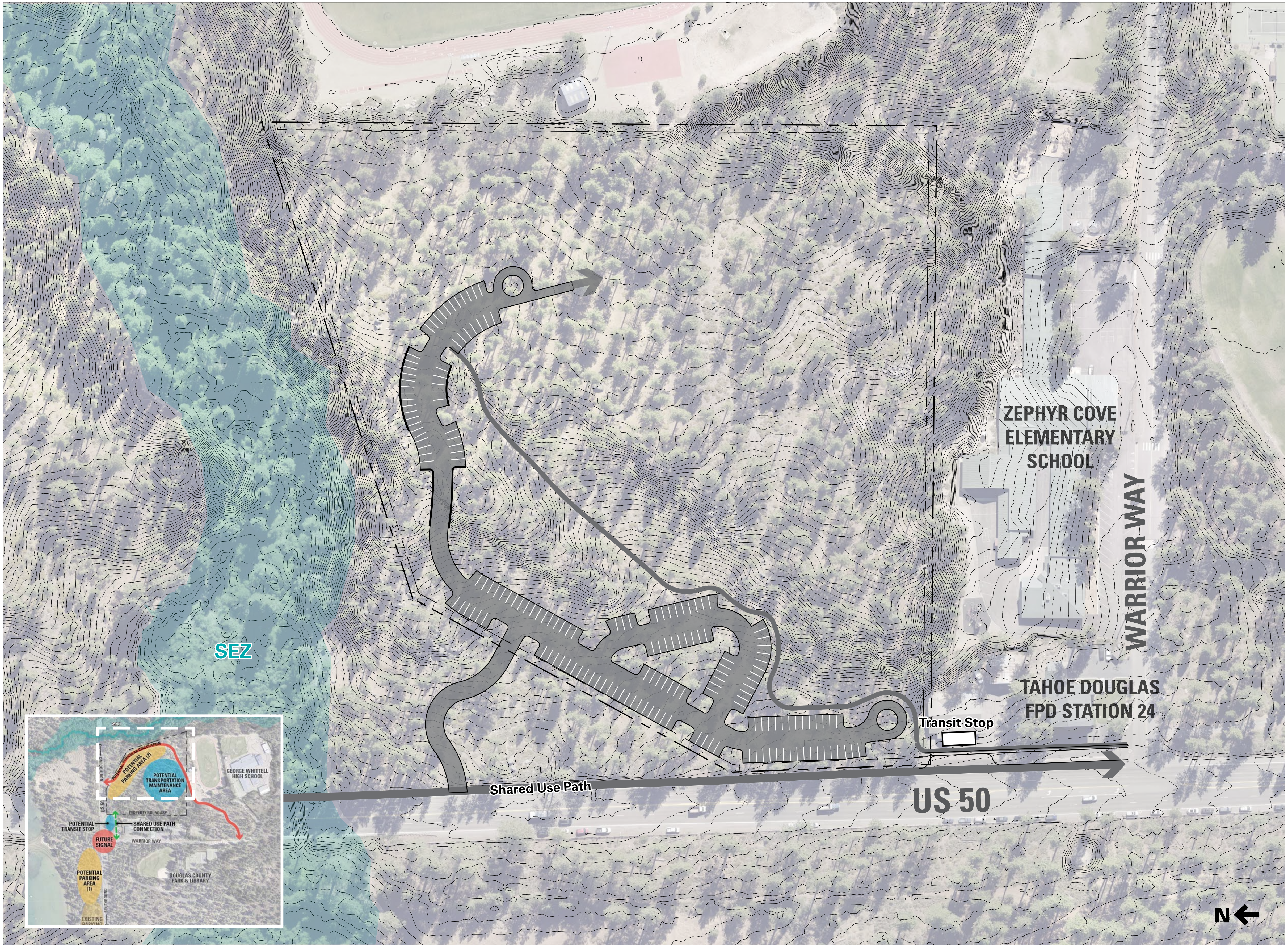
Douglas County Off-Street Parking Area

188 spaces

Concept C

The following bullets summarize improvements for Concept C:

- 188 off-highway parking spaces
- Parking layout works around large boulders and creates pods of parking where grades allow
- Transit stop located adjacent to the Tahoe Douglas Fire Protection District Station 24
- Shared use path along US 50
- Trail connection to existing pedestrian facilities, proposed shared use path, and future traffic signal at Warrior Way and US 50
- Vehicular access into the site is approximately 750 feet from the Warrior Way intersection, but requires an access agreement through USFS lands
- The additional distance between the Warrior Way intersection and the parking access is desirable from a transportation planning perspective
- There is an opportunity to reduce the amount of parking shown on the eastern portion in order to maximize space for a future transit facility while still meeting the overall desired number of relocated shoulder parked vehicles



Zephyr Cove Corridor Parking Relocation

Recommendation

- To address demands for recreation access, a combination of expanding the existing resort parking and providing a new, off-highway parking facility east of the highway is recommended. Of the three concepts for the Douglas County parcel, Concept B provides flexibility to reduce the number of spaces that may conflict with a future transit maintenance facility, while still accommodating the number of vehicles needing to be relocated.
- Utilize a portion of the Douglas County opportunity parcel for a future transit maintenance facility.
- Provide northbound and southbound transit pull-offs to service the resort area.
- Connect parking areas to recreation destination by a shared-use path trail system that aligns with desire lines. Utilize fencing where needed to direct users to signalized or grade separated crossings of US 50.

Table 1: Summary of Relocated Roadside Parking Spaces

	EXISTING PARKING COUNT SUMMARY	RELOCATED PARKING COUNT SUMMARY
Roadside Parking Spaces	223	0
Existing On-Site Facility Parking Spaces	290	290
New On-Site Facility Parking Spaces (USFS Opportunity Site)	0	60-77
New Off-Site Facility Parking Spaces (Douglas County Opportunity Site Concept B)	0	167 (without easternmost parking bay)
TOTAL	513	517-534

Opportunity site for future transit maintenance facilities

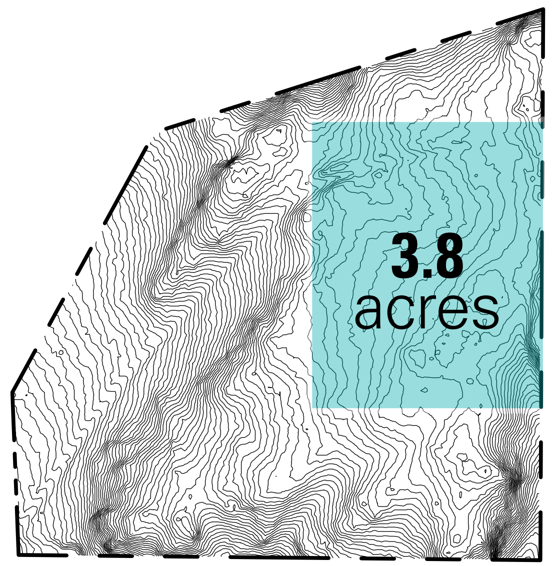
Transit Maintenance Facility Opportunity Site

Approximately 3.8 acres of contiguous developable land was able to be reserved on the study parcel for a future transit maintenance facility. This available acreage may be less than what is fully desired by the Tahoe Transportation District (TTD) but is a significant step toward meeting a critical need in the region. For comparison, the program, size and layout of two other facilities were reviewed.

Those two facilities include:

1. The Napa Valley Transportation Authority Vine Transit Bus Maintenance Facility, and
2. Northern Virginia Transportation Authority Western Operations Center.

The total size of the comparison facilities is greater than what is available on the Douglas County parcel. The program of bus storage area, maintenance space, administrative offices, and employee parking will be further advanced as part of a separate project.



Zephyr Cove Property

Approximate developable land area

Napa Valley Transportation Authority
Vine Transit Bus Maintenance Facility

Northern Virginia Transportation Authority
Western Operations Center

3.8 acres of contiguous developable land

4.7 acre site

93 bus spaces (sizes vary)

75 employee & visitor parking spaces

13.6 acre site

118 bus spaces

203 employee & visitor parking spaces

NEVADA BEACH RECREATION ACCESS

Nevada Beach Recreation Parking

Nevada Beach is accessed by bike or by foot from the Lam Watah Nature Trail and by car through the entry station at the west end of Elks Point Road. An adjacent campground has over 50 reservable sites that allow users to walk from their campsite to the beach.

In addition to the on-site parking available within the day use area, users also park along Elks Point Road and walk to the beach and picnic areas. The roadside parking occurs both when on-site parking is full and when there are on-site spaces available and visitors do not want to pay for parking.

As described in the Existing Conditions Memo, during peak visitation, parking for Nevada Beach can exceed the capacity of both the on-site lots and the informal roadside parking along Elks Point Road. Vehicles can create congestion along US 50 and park in nearby commercial areas.

Recommendation

There is an opportunity to reorganize the parking along Elks Point Road. The informal parallel spaces can be designed into angled parking. This can increase the ability to meet recreation demands and create a uniform system of paid parking both within the day use area and along the roadway.

In order to improve traffic flows for angled parking, it is also recommended that a small traffic circle or roundabout be developed near the end of Elks Point Road. This will allow motorists space to turn around and access the angled spaces.

Round Hill Pines Resort Access Project

USFS, Nevada Department of Transportation, U.S. Department of Transportation Federal Highway Administration, and TRPA have been working together to improve safety for visitors entering and exiting the Round Hill Pines Resort from US 50. Phase 1 improvements included relocation of parking areas and building enhancements and were completed in 2018.

Phase 2 improvements were under construction in 2022. These enhancements include relocating the intersection at US 50, enhanced parking, relocating the maintenance road, and realigning the shared-use path. This project is underway and will improve the accessibility of motorists, pedestrians, and cyclists.

67 existing on-street parallel parking spaces

Roadside parking spaces were evaluated one-half mile east of the existing Nevada Beach Day Use Area parking entrance.

A length of 22 feet per vehicle was used to define the number of spaces, based upon observed average spacing per parallel parked vehicle.

NEVADA BEACH RECREATION ACCESS | PROPOSED ANGLED PARKING ALONG ELKS POINT ROAD

Proposed angled parking and traffic circle near day-use entry kiosk

Existing image of parallel parking area

NEVADA BEACH RECREATION ACCESS | PROPOSED ANGLED PARKING ALONG ELKS POINT ROAD

KAHLE DRIVE RECREATION CONNECTIONS

Shared-Use Path Connections

Gaps in the mobility and trail system show a need for trail connections from the Lakeview Trail east to the Kahle Community Center and parallel to US 50 from Lake Parkway north to the Round Hill Village Shopping Center/Elks Point Road. Pedestrian connections are also needed along the east side of US 50 between Lake Parkway and Kingsbury Grade. The Kahle Drive/US 50 intersection has been identified as a priority for safety and mobility enhancements.

The success of the Lakeview Trail through Rabe Meadow has shown people's desire to walk and bike to destinations. As the Tahoe Trail is completed around Lake Tahoe, additional shared use path connections will enhance the network of bikeways and further promote walking and biking. Between Lake Parkway and Kahle Drive, completion of the Tahoe Trail along Edgewood Tahoe's frontage will connect cyclists and pedestrians to the future Main Street redevelopment area. Enhanced bike lanes and the addition of a sidewalk along the east side of US 50 allows cyclists and pedestrians a designated place to bike and walk.

Between Kahle Drive and Elks Point Road, a shared use path offers residents on the east side of US 50 a separated, off-highway option for walking and biking. The route would connect to the existing Lakeview Trail and would create a loop trail opportunity for both transportation and recreation opportunities.

Additional trail connections should be made from Kahle Community Park to the Lakeview Trail. Mobility enhancements for the Kahle Drive/US 50 intersection are also proposed. These recommendations are illustrated in the diagrams and perspectives on this page and the following pages.

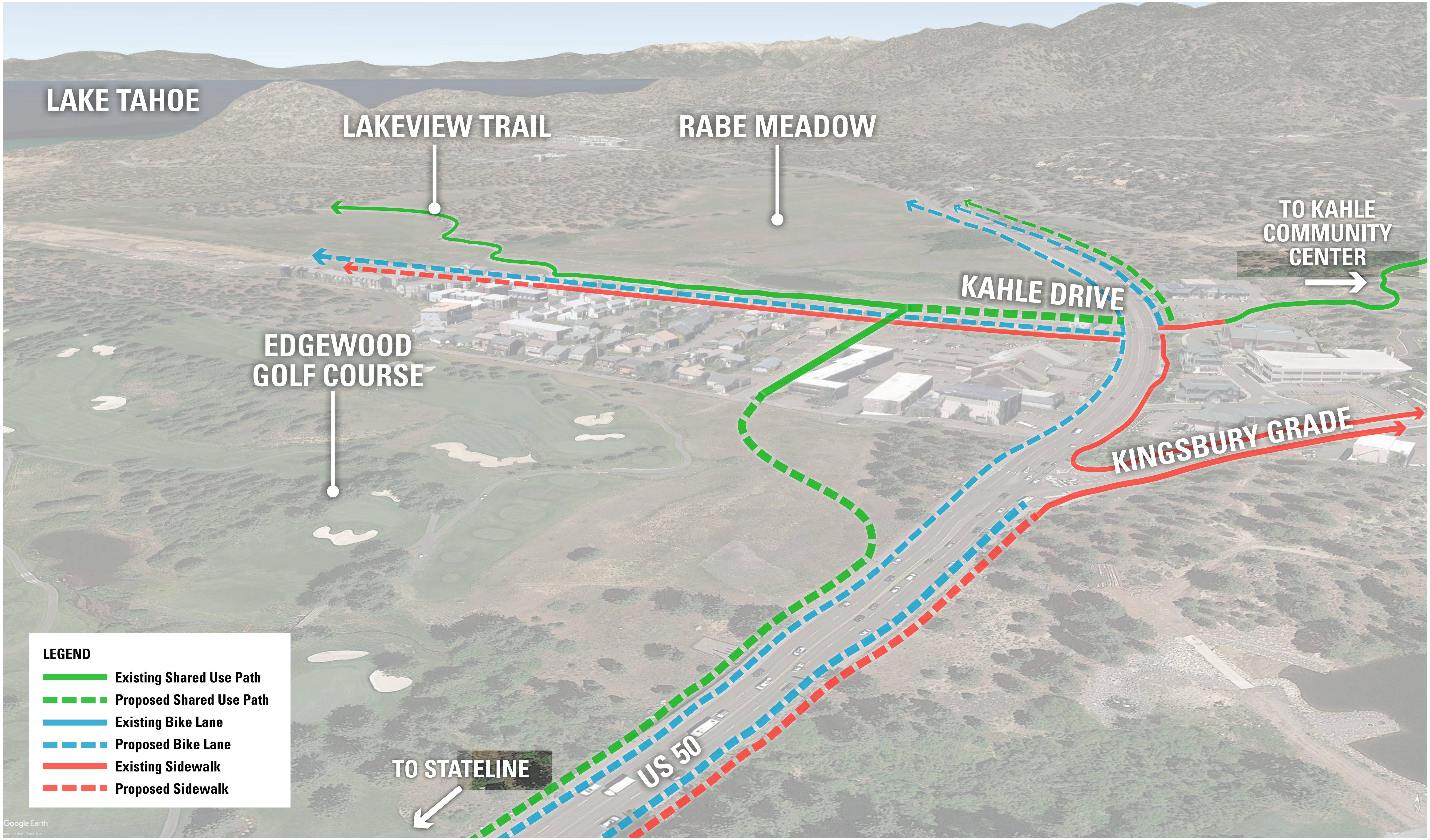
Recommendations

- **Link the Lower Kingsbury Area to Kahle Drive** with an improved network of trails and sidewalks to create a greater sense of being a hub for lively-mixed use development and outdoor recreation.
- **Create a paved, off-highway shared use path** connecting residents and visitors from the Casino Resort core to the Lakeview Trail, Nevada Beach, and east to Round Hill and Round Hill Pines Resort; also, along the length of US Highway 50 from the intersection with Lake Parkway to Elks Point Road.
- **Establish a connected shared-use path system** by completing linkages and connecting Kahle Community Park to the Lakeview Trail.

Conceptual streetscape and mobility enhancements along the east side of US 50

Conceptual shared use path and sidewalk along US 50 from Lake Parkway to Kahle Drive

KAHLE DRIVE RECREATION CONNECTIONS | EXISTING AND PROPOSED



KAHLE DRIVE RECREATION CONNECTIONS CONCEPTUAL DIAGRAM