Project Description

A. DESCRIPTION OF PROJECT

Lake Tahoe is a travel destination to more than 15 million people each year because of its variety of attractions including some of the finest cuisine, golfing, skiing, camping, hiking, water sports, shopping, entertainment, and gaming; all nestled in an immaculate natural environment with sandy beaches, pristine waters, and remote wilderness. The Lake Tahoe Basin is located in the heart of the Sierra Nevada Mountain range, which is also home to numerous species of wildlife including mule deer, black bears, mountain lions, the Sierra marten, the Sierra Nevada red fox (an endangered species), and even an occasional wolf and wolverine. This large influx of visitors ultimately leads to interactions between humans and wildlife throughout the range, including on roads and on the trails. This interface of human and wildlife activities must be carefully managed to preserve natural resources while also reducing conflict and improving safety.

The Nevada Department of Transportation (NDOT) is submitting this grant application to fund planning, feasibility, environmental, and preliminary engineering work to determine the most appropriate location or locations for appropriate structure(s) that will remove pedestrians and wildlife from the road surface. The structure(s) will span the four lanes across US 50 near Spooner Summit, between Lake Tahoe and Carson City, Nevada.

The crossing(s) would provide direct connectivity between two popular segments of the Tahoe Rim and Clear Creek Trails. Spooner Summit also brings together several other recreational opportunities, including the Spooner Summit Trailhead, the Spooner Summit Snow Play Area, and the newly constructed Spooner Lake Visitor Center and Amphitheater. This convergence of wildlife habitat and human activity leads to a high potential for interaction between humans and animals, and possible avoidance by wildlife to areas with less driver visibility. Thus, another goal for the crossing(s) would be to provide direct habitat connectivity for wildlife within the only high elevation movement corridor on the eastern side of Lake Tahoe.

The area including and immediately adjacent to the project area has been identified on NDOT's top 25 hotspots for animal-vehicle collisions[1]. The structure(s) under consideration by this study would help prevent pedestrians from running across US 50 as well as Wildlife Vehicle Collisions (WVCs) by providing a grade-separated crossing opportunity for all users.

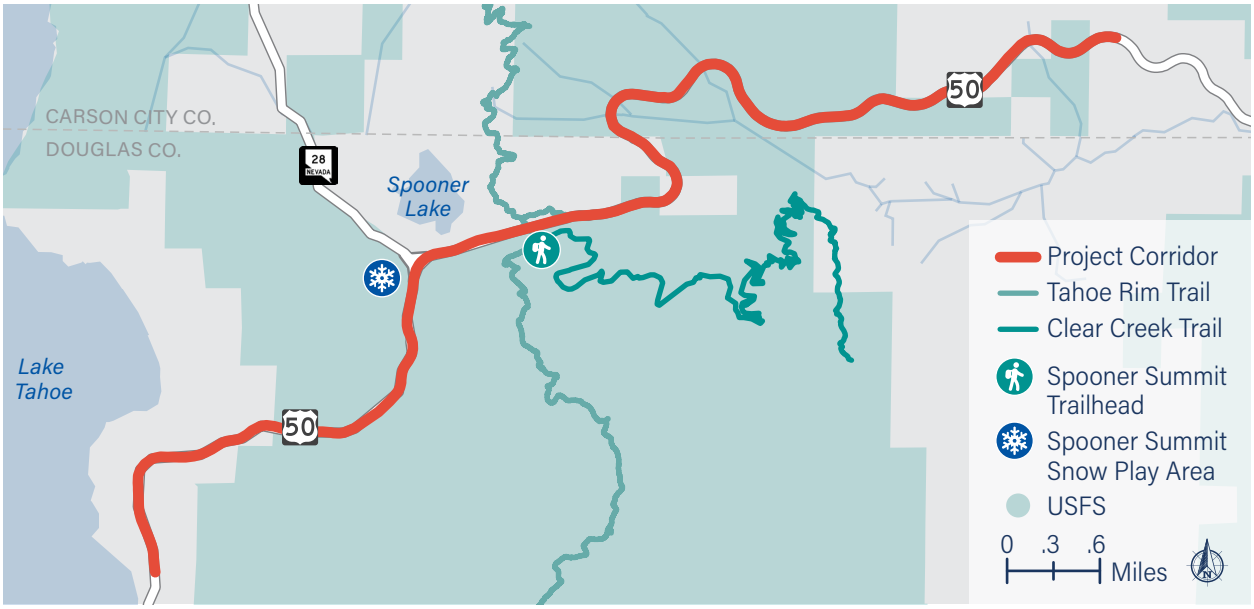
The structure(s) could either be in the form of multiple, single-use structures (e.g., separate wildlife and trail crossings) or a more innovative, multi-functional structure integrating a wildlife crossing and a multi-use trail.

B. DETAILED STATEMENT OF WORK

The proposed study will be divided into four main phases – 1) Research (conducted prior to RAISE grant activities), 2) Planning and Feasibility, 3) Preliminary Environmental Review, and 4) Preliminary Engineering. The primary goals of the first two phases of the study are to research and document the need for the structure(s); determine the optimal location(s) for the structure(s); and vet and document the full spectrum of feasible alternatives. Phases 3 and 4 will then further advance the study through a preliminary

1 *NDOT Research Report Number 603-16-803 (when livestock are removed from consideration)*

Exhibit 1: *Project Vicinity Map*



environmental review and preliminary engineering activities to lead expeditiously into future construction. The proposed phases of work are summarized below, with more detailed task descriptions provided in Appendix A.

Phase 1: Research

The Tahoe Rim Trail Association (TRTA) and Pathways for Wildlife will complete the fieldwork, data analysis, and report writing needed to complete Phase 1 of this study, which will focus on research activities. This work will be completed prior to commencing RAISE grant activities and will be funded by a grant from the Transportation Alternatives Program (TAP).

Phase 2: Feasibility

The feasibility portion of the study will outline key considerations for the location(s), structure type(s), and engineering design considerations for the crossing structure(s). As part of the feasibility portion of the study, we will use aerial mapping to gain a realistic view of the topography throughout the study area. Topography, along with animal and human movement patterns documented in Phase 1, will strongly influence site selection. Engineering considerations will need to be balanced with the needs of potential users, especially wildlife with existing movement patterns. Any construction within the sensitive Tahoe Region is subject to extensive community and environmental reviews, in partnership with the Tahoe Regional Planning Agency. This study will analyze environmental resources and develop alternatives that avoid or minimize adverse impacts.

Phase 3: Preliminary Environmental Review

As part of this study, NDOT will conduct a fatal flaw analysis to determine which environmental constraints (e.g., biological, cultural, land use, and hazardous materials) need to be investigated under a future NEPA process. This preliminary environmental work will support and facilitate a future NEPA determination.

Phase 4: Preliminary Engineering

The Preliminary Engineering (PE) component of this study will include five major tasks,

including a preliminary geotechnical evaluation; development of 30% wildlife crossing and multiuse trail layout plans; a structure type selection and cost estimate; a preliminary drainage analysis; and a preliminary constructability review. This work will be critical in preparing the agency to move efficiently into subsequent phases of design and ultimately construction.

C. CHALLENGES AND SOLUTIONS

CHALLENGE #1: A high prevalence of wildlife-vehicle collisions

Each year, WVCs result in more than 500 reported crashes across the state of Nevada, and an estimated 5,000 wildlife mortalities (based on a 10% reporting rate). These crashes cost the Nevada public nearly $20 million per year due to infrastructure damage, human injuries, loss of human and animal life, emergency response, traffic control, and travel delays. The estimated cost for **each crash**, assuming property damage only (PDO) for the vehicle along with the value of the deer[2], is $11,454. Many rural highways (in Nevada and across the country) have been constructed through deer migratory routes, further necessitating the need for safe crossings.

Solution

Wildlife crossings, including overpasses and underpasses, improve road safety and reduce WVCs by removing wildlife from the road surface, reconnecting habitat, improving connectivity, and providing a safe crossing location for wildlife. These crossings have been proven to reduce vehicle-animal collisions by more than 90%, making roads safer for both humans and wildlife.

CHALLENGE #2: Making efficient use of a significant infrastructure investment

Any type of crossing structure is a significant investment, requiring several years of planning, design, environmental clearance, and engineering, in addition to construction. Although their benefits have been shown to outweigh their costs in many cases, building such a structure is a commitment of time and taxpayer resources, and NDOT understands the need to make efficient use of such an investment.

Solution

The proposed crossing structure(s) would provide a safe crossing over US 50 for several species of animals, as well as non-motorized trail users including hikers, mountain bikers, and equestrians using the area's extensive trail system. This dual-purpose research approach makes practical use of staff time, and potentially construction of a single structure, in an innovative and cost-effective manner.

In addition to serving as a wildlife and pedestrian crossing, the structure(s) would also be rated for vehicular use to accommodate trucks used for wildland fire mitigation. This area is classified as having a severe wildfire risk over the next 30 years, including potential damage to homes, commercial properties, critical infrastructure, and social facilities[3]. The Caldor Fire of 2021 was one such example, burning nearly 222,000 acres, destroying over 1,000 structures, and resulting in 18 injuries

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2 The estimated value for a deer (passive use) in 2023$ is $5,886 based on NDOT Research Report No. 701-18-803 TO 1 Part 4. However, we recognize that the animal has intrinsic value beyond this economic estimate.

3 https://riskfactor.com/zip/89703/89703_fsid/fire

CHALLENGE #3: Educating visitors about wildlife

Human-wildlife conflict, including WVCs, is a real problem in many areas across the country, including Lake Tahoe. The proposed study area is centered around Spooner Summit - an area of high usage for both humans and wildlife. The area includes the popular Spooner Summit Trailhead, which provides access to the Tahoe Rim and Clear Creek Trails, along with several other recreational opportunities. The convergence of critical wildlife habitat and high human activity creates the potential for conflicts between humans and animals, as well as possible avoidance of the area by wildlife to areas with less driver visibility. Providing wildlife education is especially important in a high profile, high-visitation area like the Lake Tahoe Basin, which attracts over 15 million visitors per year.

Solution

The ultimate vision for the construction of this project is to integrate an educational recreation experience with a functional wildlife and trail crossing. The final project will have signage and wildlife cameras along the multi-use trail crossing to educate trail users about wildlife in the area and the need for safe crossings, providing an interpretive experience for trail users of all ages. Given the high visitation and visibility of the project, it brings the potential to help educate visitors about the need for wildlife crossings at national and international levels.

During the study, we will also engage in community and stakeholder outreach to garner support for the project through improved awareness of the toll of WVCs on humans and wildlife and how important connected habitats are in a developing community. Outreach will emphasize the need for and benefits of wildlife crossing structures, including examples of successful structures in other parts of the state and beyond.

D. PROJECT HISTORY

Implementation of the Spooner Summit Wildlife and Trail Crossing(s) would be a continuation of ongoing efforts and commitments by NDOT to reduce WVCs and improve pedestrian and bicycle safety across the state of Nevada. NDOT has been working to reduce wildlife-vehicle conflicts throughout the state for over a decade and has emerged as a national leader in both research and practice. NDOT first began installing wildlife crossings in 2010 and there are now more than 70 crossings throughout the state of Nevada along several interstates, highways, and state routes. These crossings include everything from small culvert crossings designed for the desert tortoise, to large underpasses and overpasses designed for various large mammals.

As detailed in NDOT Research Report 604-16-803: Prioritization of Wildlife-Vehicle Conflict in Nevada (June 2018), the agency has been taking a data-driven approach to identifying conflicts between wildlife and motorists on NDOT roads through scientific research, analyzing crash and wildlife data, and complex GIS modeling and mapping efforts.

Although observation and existing data suggests the need for a wildlife crossing in this location, additional research and monitoring is needed to confirm activities and further refine location(s). The proposed study will take a thorough and careful approach to documenting the need and choosing the optimal location(s) for the crossing structure(s).

This work will begin with the Phase 1 activities being completed by partner agencies TRTA and Pathways for Wildlife under TAP. During Phase 1, these agencies will catalogue, compile, and map existing data about safety,

roadway geometrics, traffic volumes, traffic speeds, wildlife habitat, topography, animal movement data, and trail usage through field visits and monitoring.

In addition to strong support from partner organizations TRTA and Pathways for Wildlife, the concept of this wildlife and pedestrian crossing has generated considerable enthusiasm among a variety of local and regional organizations. As part of our application (Appendix B), we have included letters of support from 9 partner organizations, who have identified the need to reduce wildlife conflicts with vehicles and encouraged NDOT to improve the safety of the US 50 corridor for both wildlife and people.

E. PROJECT LOCATION

The potential crossing(s) would be located along the 9.6-mile of stretch of US 50 shown in Exhibit 2, near Spooner Summit, between Lake Tahoe and Carson City, Nevada. This is considered a "rural" area. Due to the high prevalence of federal protected lands, this project is not located in census tracts designated as an Area of Persistent Poverty or Historically Disadvantaged Community.

Exhibit 2: *Project Location. The geospatial location of this project is 39.1043° N, 119.8972° W*