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Wyoming Habitat Connectivity Initiative, Phase II

Highway Wildlife Crossing Improvements
TIGER IV Discretionary Grant Application

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Basic Project and Contact Information

Type of project: National Highway System and Other Rural Highway (Wildlife Habitat Connectivity Facilities)

Location of the Project: Sublette County in western Wyoming. The focus area is the US 189 corridor near Dry Piney Creek.

Congressional District: Wyoming at-large

Urban/Rural Designation: All work for this project will occur in rural areas. Sublette County, as indicated by the 2010 US Census, has a population of 10,247 people and a geographic size of 4,936 square miles. This equals approximately 2 persons per square mile.

Amount of grant requested for the project: \$15.25 million

Applicant for this Grant: Wyoming Department of Transportation

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DUNS Number for grantee and *first* tier sub-awardees: 8099160000

Project Priority: This project is the top priority project for the Wyoming Department of Transportation.



1.0 Project Description

This project will maintain, improve, and even restore seasonal range connectivity for many species of wildlife at a key location in Wyoming. The Wyoming Department of Transportation (WYDOT) will construct a series of fencing, underpass, and related improvements to allow deer, elk, pronghorn, moose, and other animals to traverse highway rights-of-ways safely.

Vital human safety improvements are also a key feature of this project. Collisions resulting from striking or attempting to avoid wildlife occur frequently in this area. Associated injuries, property damage, and even loss of life can be minimized by completing this project. In a 2007 report to Congress, the Federal Highway Administration stated that appropriately placed wildlife crossing structures and associated fencing have been shown to reduce wildlife-vehicle collisions by more than 80 percent.

This grant draws upon the strong historical government commitment to matching local interest in environmental preservation projects, as well as promoting the safety of citizens, and furthering the economic improvement of regional areas with nationally strategic importance. WYDOT believes this application meets all of the above criteria.

Antilocapra Americana, or the American Pronghorn, is its own specific species, found only in North America. Once numbering in the millions, much reduced herds still roam sections of the American West. With their unique pronged horns (true horns, not antlers) and the ability to achieve sustained speeds of 60 mph, the pronghorn is an American treasure to be preserved. Pronghorn move to and from Grand Teton National Park and southwest Wyoming in the longest large mammal migration in the lower 48 states—the last remnant of the great historic Yellowstone pronghorn migrations still functioning. Some animals will travel 175 miles one way, from the Gros Ventre Bench to wintering grounds in the Green River Basin. Certain points on the migratory route neck down to little more than one half mile wide, and these bottlenecks must be addressed to minimize current and future human impacts on animal movement. For an animal built for the great open spaces, this poses considerable navigational difficulties. And as stressed animals wander across highways, the carnage builds quickly.

The strategic ecological importance to North American wildlife in the portions of Wyoming served by these segments from US 191 to US 189 is immense. As the National Fish and Wildlife Foundation states in *Path of the Pronghorn: Upper Green River Valley, Wyoming*:

The area forms one-fifth of the Greater Yellowstone Ecosystem, holds the headwaters of the Green River, and contains healthy populations of big game, game birds, fish, and many of Wyoming's Species of Greatest Conservation Need. The area provides 81 percent of the crucial winter range for Wyoming's pronghorn, 60 percent of the crucial winter range for mule deer, and 42 percent of the crucial winter range for moose. Grizzly bear, wolves, black bear, and mountain lion are all found in the Upper Green. Private lands covering riparian areas and irrigated meadows along the Green River and its tributaries rise through mixed public-private sage uplands to aspen-conifer in the Bridger-Teton National Forest to form an interrelated mosaic of habitat used by most big game species at

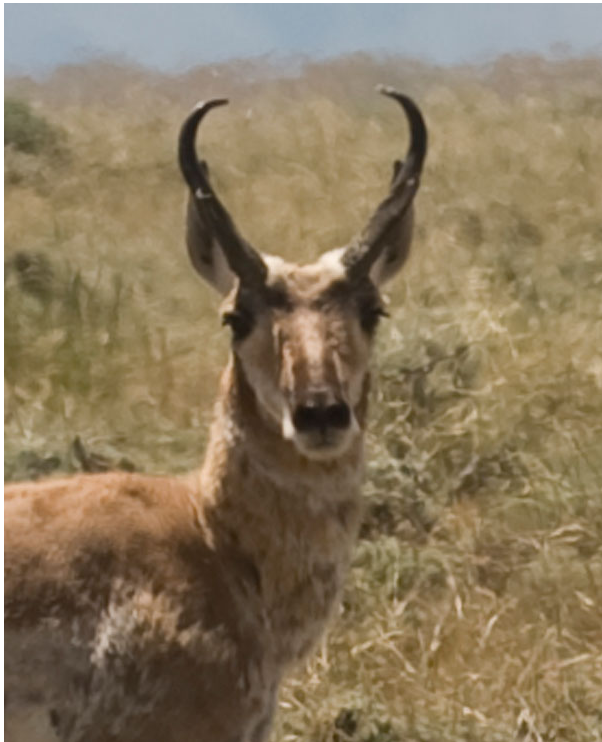
some point in their lifecycle. In 2008, the past director of the Wyoming Game and Fish Department declared the area the ‘crown jewel’ of the state’s wildlife.

This area has also been heavily impacted by oil and natural gas development in the Jonah Field, the Pinedale Anticline, and surrounding areas—making wildlife connectivity to less affected habitat even more crucial. Without these proposed structures, animal movement to crucial seasonal ranges will become increasingly difficult or may even cease. As this situation threatens both the health, and perhaps even continued existence, of wildlife populations and the local economy, significant action must be undertaken.

By improving connectivity at these locations, WYDOT and its project partners are increasing human and animal safety and providing wildlife species enhanced access to large portions of the state. This connectivity is critical to maintaining species diversity, movement, health, and viable gene pools. Crossings are integral to maintaining herds at population objective and migration routes to avoid species fragmentation. In addition to benefiting the natural environment, the project will help Wyoming’s two leading industries, energy and travel and tourism, both of which have been significantly impacted by recent economic conditions. As wildlife is important to the human inhabitants of the region as well, the project will also benefit livability in Wyoming and beyond.

The interdisciplinary approach, interagency cooperation, and improvements featured in this project are unique and can serve as a model for future large-scale habitat connectivity initiatives regionally and nationally.

In addition to WYDOT, a partial list of project partners and international supporters assembled since 2009 includes the following:



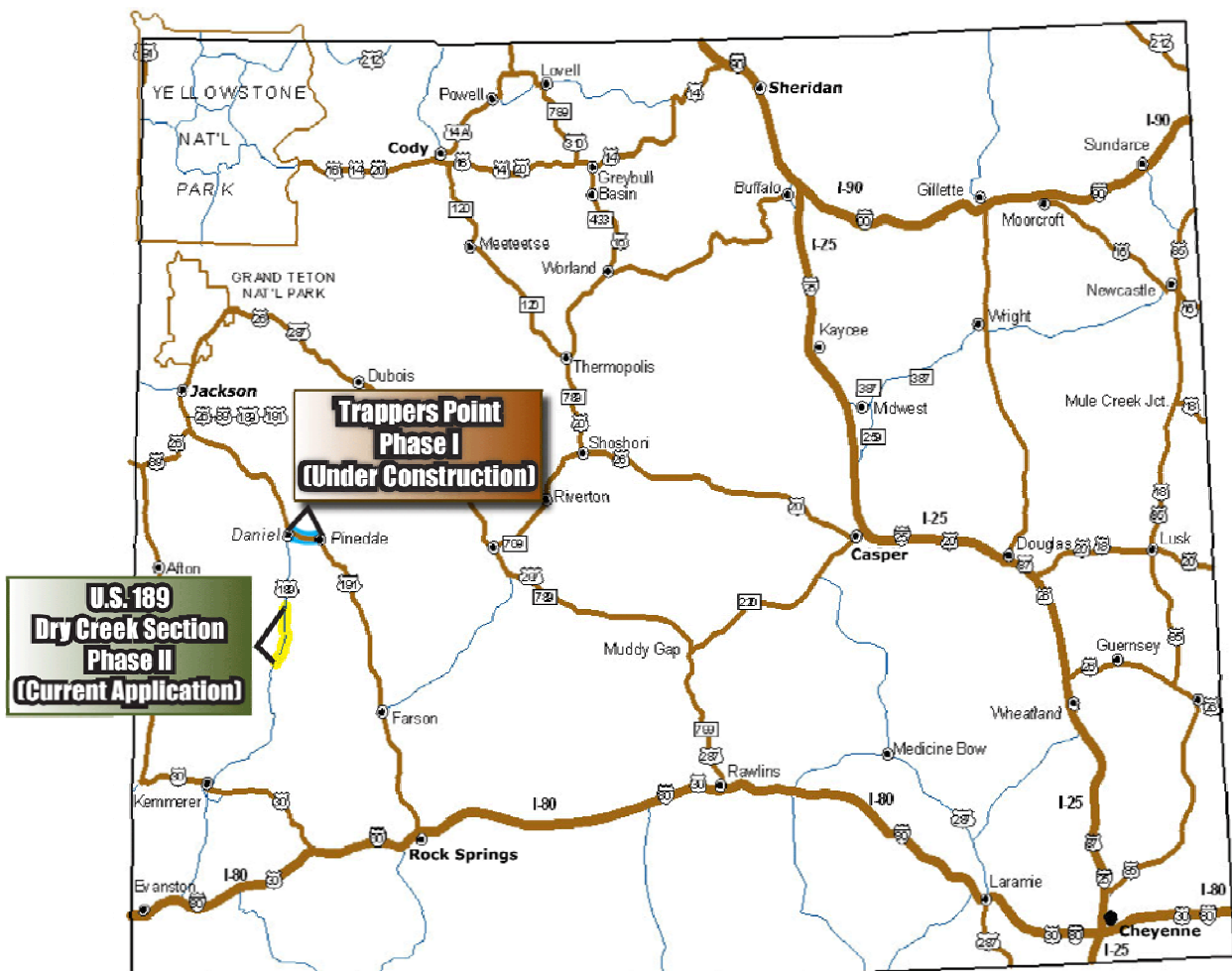
- *Biodiversity Conservation Alliance*
- *Defenders of Wildlife*
- *Encana Oil and Gas, USA, Inc.*
- *Farmers Insurance Group*
- *Greater Yellowstone Coalition*
- *Mountain West Farm Bureau*
- *National Fish and Wildlife Foundation*
- *National Wildlife Federation*
- *Rocky Mountain Elk Foundation*
- *US Bureau of Land Management*
- *US Fish and Wildlife Service*
- *US Forest Service*
- *Western Environmental Law Center*
- *Wildlife Conservation Society*
- *Wyoming Game and Fish Department*
- *Wyoming Landscape Conservation Initiative*
- *Wyoming Outdoor Council*
- *Wyoming Wildlife Federation*
- *Yellowstone to Yukon Conservation Initiative (Alberta, Canada)*

Deer tracks demonstrate a favorable response to a WYDOT wildlife corridor.

Proposed locations for project work are highlighted on the following map.



This map of Wyoming shows in highlight the approximate locations for improvements related to this wildlife connectivity project.



1.1 History

Construction and use of highway infrastructure and other transportation facilities have seriously affected wildlife migration patterns, and even basic migration ability, for many years. More recently, factors such as multi-lane, high-speed interstate highway systems, escalating traffic levels, and oil and natural gas development have increased migratory disruption. Wyoming is home to over half the world's pronghorn, and the construction of highways has created a barrier



for these animals. This situation has eliminated the ability of thousands of pronghorn to move in response to severe weather, in keeping with biological migration imperatives, and to maintain continuous geographic connectivity.

In many locations, wild animals have adapted by crossing roadways, exposing them to risk from vehicular traffic. Increasingly, vehicle versus animal collisions have become hazards to wildlife populations and highway travelers. In other areas, animals have curtailed or abandoned movement because they cannot find suitable passage. This situation denies species access to crucial habitat they need to maintain adequate population levels and limits public opportunity to view wildlife in its natural surroundings.

For more than a decade, the Wyoming Game and Fish Department and other resource agencies such as the US Bureau of Land Management, the US Fish and Wildlife Service, and the US Forest Service have promoted wildlife-friendly fences, underpasses, and other structures to make it easier for deer, pronghorn, elk, and other animals to negotiate highway facilities successfully and safely. In 2002 the Wyoming Game and Fish Department prioritized potential safety improvements and submitted them to WYDOT and the Federal Highway Administration. In the intervening years, WYDOT has undertaken some improvements from the 2002 list in conjunction with associated highway projects. At Nugget Canyon on US 30 in southwest Wyoming, for instance, underpasses, a bridge, and fencing improvements were made in 2003 and 2008. In 2009, as part of its American Recovery and Reinvestment Act of 2009 (ARRA) projects, WYDOT constructed a wildlife underpass on Wyoming Highway 789 near Baggs in Carbon County in south central Wyoming. At this underpass, in one 13-day period in early December, a camera recorded more than 1,100 crossings of deer migrating to winter feeding grounds.

On June 15, 2009, the US Departments of Interior, Agriculture, and Energy, as well as the Western Governors Association (WGA), signed a memorandum of understanding on wildlife

corridors. This document highlights the national significance of these corridors and demonstrates the action diverse federal agencies are taking to protect them.

According to the Federal Highway Administration, Office of International Programs, France was the first European country to utilize connectivity corridors, and this practice has spread to multiple European countries, with Slovenia, Germany, the Netherlands, and Switzerland using extensive habitat connectivity to preserve wildlife, protect citizens, and maintain safe transportation infrastructure. British Columbia and Alberta both feature high profile wildlife connectivity projects, but many other Canadian provinces have also incorporated them into infrastructure design. In the United States, nearly all 50 states have several regions that feature ways for wildlife to navigate highways.

As part of the overall Wyoming Habitat Connectivity Initiative, a \$10 million effort is currently underway at Trappers Point, adjacent to the Dry Piney Creek project phase proposed for funding in this application and serving the same mineral-rich areas of Sublette County. Work at Trappers Point includes construction of fences, underpasses and overpasses, and associated work to improve wildlife connectivity. Work at Trappers Point (Phase I) is slated for completion by the end of the 2012 construction season.

Project work at Dry Piney Creek will help realize the vision of restoring wildlife connectivity shared by wildlife resource agencies; animal and outdoor interest groups; Wyoming landowners, private citizens, and government officials; tourists and tourism advocates; the energy industry; and the Wyoming Department of Transportation.

1.2 Status of Existing Facilities

US 189—Dry Piney Creek Section (RM 86.0 to RM 101.5)

Existing right-of-way fence and structures in this section between La Barge and Big Piney, Wyoming, do not allow for safe migration of Wyoming Range mule deer, Sublette pronghorn, Piney elk, and Sublette moose. From 2006 to 2010, vehicle damages and related costs at Dry Piney totaled \$1,624,000. Additionally, the state sustained a five year wildlife loss of \$1,872,620 at this location alone.

The land is used predominantly for rangeland and energy development, with some agriculture along the Green River. Some land in the northern portion of the area is residential. This section of US 189 had an Average Annual Daily Traffic (AADT) volume as high as 2,997 in 2010. Gas field development in the area has precipitated a rise in overall traffic and also the volume of heavy truck traffic.

1.3 Connections with Existing Transportation Infrastructure

“Just as people need safe highways to move across the vast and beautiful lands of the American West, wildlife needs safe movement corridors to meet their basic survival requirements.” 2008, WGA Wildlife Corridors Initiative Report

Perhaps the most significant manner in which to consider connectivity for this project is from the viewpoint of wildlife. This project will connect habitat of regional, national, and even international importance for pronghorn and other mammals including deer and elk. For these and other creatures, the project's connectivity improvements are vital to continuing or restoring access to areas required to fulfill their basic life needs. Simply stated, wildlife crossings are necessary to preserve species diversity and other biological and ecological functions.

US 189 is part of the National Highway System and connects Interstate 80 with approaches to Grand Teton and Yellowstone National parks and the resort town of Jackson, Wyoming. The highway joins US 191 at Daniel to provide access to Wyoming's northwestern forests, wilderness areas, and national parks.



Although the focus of this grant application is primarily the safety of big game animals, it should be pointed out that a variety of smaller animals do frequently use wildlife corridors. In this still, a coyote makes a cold night crossing in south central Wyoming.

1.4 Proposed Improvements

All aspects of this project will be undertaken to ameliorate seasonal range and habitat connectivity across existing highway infrastructure, improve safety for vehicle occupants and animals, decrease negative environmental impact, and provide economic benefit. These proposed improvements are based on field observations and Geographical Information System (GIS) and other input from the Wyoming Game and Fish Department and other resource agencies as well as traffic and crash data gathered and analyzed by the Wyoming Department of

Transportation. Project work will consist of installing or upgrading fences and installing underpass facilities for animal use. To the extent possible, WYDOT has selected locations and improvements to minimize impacts outside the existing highway right-of-way. Proposed work and locations may vary from those described in this application, though, depending upon funding or other factors.

US 189—Dry Piney Creek Section (RM 86.0 to RM 101.5)
Proposed work on this section includes the following.

Dry Piney Creek Wildlife Connectivity Estimate, P114036 (10 Structures)

Item	Unit	Quantity	Price	Total
Deer Fence	FT	164000	\$ 4.39	\$ 719,960.00
Deer Brace Panels	EA	401	\$ 115.00	\$ 46,115.00
Deer End Panels	EA	559	\$ 167.50	\$ 93,632.50
Deer Ramps	EA	72	\$ 2,460.00	\$ 177,120.00
Deer Gates	EA	22	\$ 733.00	\$ 16,126.00
Cattleguards	EA	38	\$ 6,700.00	\$ 254,600.00
Unclassified Excavation	CY	249800	\$ 7.12	\$ 1,778,576.00
Crushed Base	TON	70294	\$ 21.95	\$ 1,542,953.30
Hot Plant Mix	TON	21230	\$ 83.70	\$ 1,776,951.00
Asphalt Binder (PG 64-28)	TON	1125.19	\$ 570.00	\$ 641,358.30
Hydrated Lime	TON	212.3	\$ 210.00	\$ 44,583.00
Structure	EA	10	\$ 330,000.00	\$ 3,300,000.00
Box Beam Guardrail	FT	4560	\$ 32.50	\$ 148,200.00
Box Beam End Terminal	EA	40	\$ 3,660.00	\$ 146,400.00
Traffic Control (10%)	LS			\$ 1,000,000.00
Miscellaneous (10%)	LS			\$ 1,000,000.00
Preliminary Engineering (10%)	LS			\$ 1,268,657.51
Construction Engineering (10%)	LS			\$ 1,268,657.51
Total				\$ 15,223,890.12

*Quantities were obtained from the estimate provided by Tony Laird, July 2009.
Estimate provided February 13, 2012, by Jennifer Hoffman.
Prices were used from the Trappers Point (Phase I) Wildlife Habitat Connectivity Project.*



This structure is an example of a simple span bridge underpass facility.

1.5 Project Separation

Throughout this application, information is provided for the project location, Dry Piney Creek. Because the project is able to be segmented, amounts of less than the total \$15.25 million requested can be used to advance this initiative.

2.0 Project Parties

The Wyoming Department of Transportation will administer this interdisciplinary connectivity project, which is strongly supported by the Wyoming Game and Fish Department and other state and federal resource agencies such as the US Bureau of Land Management, the US Forest Service, and the US Fish and Wildlife Service—as well as the National Fish and Wildlife Foundation. These groups have performed the studies, compiled the data, and prepared the background information used to select the locations and mitigation techniques for this project.

3.0 Grant Funds and Sources and Uses of Project Funds

The Wyoming Department of Transportation requests \$15.25 million in Transportation Investment Generating Economic Recovery (TIGER) IV discretionary funds to complete Phase II of this project. This amount represents 100 percent of the total needed.

4.0 Selection Criteria

4.1 Long Term Outcomes

Projects shall “reconstruct or upgrade....assets, that if left unimproved, threaten transportation network efficiency, mobility of goods or people, or economic growth...” Federal Register announcement

This project will have a significant impact on critical habitat connectivity for several animal species. Once lost, such connectivity will become extremely difficult—if not impossible—to reestablish. The long-term goal of this project is to protect connectivity so future generations of Americans, as well as international visitors, will have the chance to experience elk, moose, deer, pronghorn, and other animals that benefit from this initiative. Long term benefits must be considered from an animal as well as from a human perspective.

Facilitating continued connectivity will greatly improve the highway safety in the Dry Piney Creek project area. Damage costs and environmental impact will be greatly reduced. This will also aid the travel and tourism industries, maintain reliable national access to clean, American energy, assist counties affected by the current economy, and significantly improve livability conditions for animals and humans.

a. State of Good Repair

“Projects that minimize life-cycle costs.” Federal Register announcement

The enhancements from this project will help restore animal migration routes to historical conditions. This improvement for wildlife will facilitate safe and efficient maintenance operations for WYDOT personnel, who removed over 1,000 big game carcasses from the highway segments discussed in this application from 2006 to 2010. Travelers will also experience less delay and distraction caused by maintenance and law enforcement operations to clear serious animal-involved crashes (which occurred hundreds of times from 2006 to 2010) and animal carcasses.

Motorists will be less subject to road hazard from carcasses that have not yet been removed from the highway. Both law enforcement officers and maintenance workers can accomplish other tasks related to improving safety and keeping roadways in good repair.

This project is consistent with national, regional, state, and local efforts to improve habitat connectivity as evidenced by the support the overall project has received from resource agencies, industry, and interest groups both in the United States and Canada. It is also consistent with WYDOT's mission of providing a safe, high quality, and efficient transportation system. The project is appropriately capitalized upfront. WYDOT will use its state of the art asset management system and ongoing transportation funds to maintain the fences and underpasses for this project.

b. Economic Competitiveness

Projects shall "make improvements that increase the economic productivity of land, capital, or labor at specific locations...and measurably contribute over the long term to growth in the productivity of the American economy." Federal Register announcement

This project will provide significant benefit to energy and to travel and tourism—Wyoming's two most vital industries and thereby retain and even increase the productivity of the surrounding region. It will clearly foster economic growth, rising employment, and increased revenues, both at a state and national level.

The continued ability to access the energy reserves available in Sublette County, the location for the Dry Piney Creek improvements, is economically significant to Wyoming, the Rocky Mountain region, and the United States as a whole. These reserves provide many economic benefits. The BLM benefits financially from their leases. Energy research and extraction companies benefit. The availability of good jobs supports the local communities and also helps other states as the itinerant or migrant labor force spends money locally and also sends money to their home states.

This natural gas is a clean, quality source of needed energy, reducing America's dependence on foreign oil. In addition to heating homes and turning turbines, natural gas powers an increasing number of transit and other fleet vehicles throughout the nation. Natural gas will help keep the United States competitive in a global economy looking for cleaner, affordable, and local energy. Superb American energy, available to American companies and consumers, will continue to propel the economy forward and upward.



Improving wildlife egress from the Jonah and Pinedale Anticline areas in Sublette County will allow deer, elk, pronghorn, moose, and other species passage into the Shoshone and Bridger Teton national forests and other portions of the Greater Yellowstone Ecosystem. This improvement will facilitate continued oil and gas production from Jonah Field and the Pinedale Anticline. The importance of this energy activity is described in the following.

Sublette County, one of the fastest growing counties in the nation, grew by 73 percent between 2000 and 2010 according to the US Census Bureau. In 2007, Sublette County's assessed valuation was \$4.1 billion, fully 20 percent of the total assessed valuation of the entire state of Wyoming. Over 90 percent of Sublette County's assessed valuation was from minerals, chiefly oil and gas. The Jonah Field currently contains more than 650 wells, and most are currently producing. The Pinedale Anticline has more than 400 active production wells. This energy flows to industrial and residential users across the country and is crucial to the nation's overall economic health and international competitiveness. This economic activity is not transferable to other areas of the country. It is completely dependent upon the energy reserves found beneath Sublette County.

According to the Wyoming Business Council, travel and tourism is Wyoming's second leading industry. Travel spending has increased 4.8 percent in Wyoming every year since 1998. Statewide, travel and tourism is a \$2.6 billion industry and directly supported nearly 30,000 jobs in 2010. Also in 2010, Yellowstone National Park had 3.6 million recreational visitors, and Grand Teton National Park totaled 2.7 million. The Wyoming Business Council reports that travel's impact to Sublette County in 2010 was \$42.7 million in spending, with earnings of \$14.6 million for 450 jobs and total tax receipts of \$1.3 million. Wildlife viewing and related activities are important to many of these visitors, as well as to others who visit Wyoming and the surrounding region annually.

Adequate habitat connectivity within Wyoming is obviously integral to this vital economic activity. This connectivity is important to the state and the region as a whole—not just within Sublette County and the surrounding area.

The Wyoming Department of Transportation is applying for this grant to lead by example. Economic growth and wildlife health and security are not mutually exclusive, even in the rural West. To this end, essential wildlife habitat connectivity serves the needs of animals and humans alike, without fostering the negative spirit bred by excluding either wildlife or economic concerns.



Curious deer inspect the camera before utilizing a safe passage under a highway.

c. Livability

Livability for the immediate community involves an appreciation for wildlife. This necessitates adequate connectivity for the local wild animals. It is not negotiable if they are to survive. There is an inherent value in wildlife recognized by state and federal governments, national and international interests, and most importantly, by local inhabitants, as well as visitors from afar. For humans, the ability to experience and enjoy wildlife retains a deeply significant social and cultural value that cannot be monetized meaningfully. Nonetheless, it is apparent that wildlife plays a role in human happiness, well being, and sometimes survival. Many cultures place an emphasis on helping wildlife species adapt and prosper. In America, there is a long historical record of conservation groups from across the ideological spectrum striving to preserve our unique wildlife and lands. The amount of support the Wyoming Habitat Connectivity Initiative has received from wildlife conservation groups, outdoor enthusiasts, sportsmen, energy industry interests, insurance agencies, academics, and scientists, as evidenced by their participation and letters of support, is a testament to both the importance of wildlife and this specific connectivity initiative. A major objective of TIGER IV and this project is creating or improving wildlife habitat connectivity. The project will serve environmental sustainability by protecting wildlife, promoting local and international understanding and enjoyment of wildlife within natural surroundings, and preserving the value of natural resources in the community at large.

Without this initiative, anticipated monetary losses at this location will total nearly \$35 million in the next 50 years. In 2008, the U.S. Department of Transportation assigned the value of \$5.8 million to a statistical life. Each fatal incident that might occur within this designated project area, if left unimproved, would add an additional \$5.8 million to the \$35 million loss. Fortunately, the features in this project have been proven to reduce wildlife versus vehicle incidents by 80 percent. In so much as livability may have a value placed upon it, the anticipated savings from an 80 percent reduction in wildlife – vehicle accidents are substantial. Wyoming and all involved parties will save approximately \$27.9 million in wildlife losses, vehicle damages, and injury to property or persons over the 50 year project lifespan.

Coordinated Transportation and Land Use Planning Effort

By considering the needs of wildlife, the economic benefits of the travel and tourism and energy sectors, and the requirements for usable highway transportation infrastructure, this initiative represents coordinated transportation and land use planning efforts. The roles various interests have played in developing and overseeing this project are explored elsewhere in this application.

This project is an excellent example of the delicate, but determined compromises and working solutions being forged throughout the new West as a sensitivity to environmental concerns unites with economic and local requirements.

d. Environmental Sustainability

Access to Clean, Efficient Energy

The economic significance to Wyoming and the nation of the natural gas found in the region where this project will occur is discussed in Section 4.1.b. of this application. That section also describes how providing wildlife egress from the Jonah Field and Pinedale Anticline areas will help domestic energy production continue.

Improved Energy Efficiency

The network of wildlife crossings to be built in this project will improve energy efficiency and reduce greenhouse gas emissions. The following direct and indirect results of animal versus vehicle collisions create increased energy expenditures:

- *Travel delays that result after a collision,*
- *Travel for law enforcement personnel to attend to a collision,*
- *Travel for emergency services to attend to human injuries or fatalities,*
- *Vehicle repair services,*
- *Travel for vehicle towing, and*
- *Travel to remove and dispose of animal carcasses.*

Energy expenditures from these factors have been increasing over time as the incidents of animal versus vehicle collisions rise. The net benefit of energy efficiency and reduction in

greenhouse gases attributable to this project will quickly outweigh the energy used to construct and maintain it.

Environmental Maintenance, Protection, and Enhancement

Clearly, environmental protection and enhancement is at the heart of this initiative. As discussed in the *Federal Register* notices announcing the Tiger IV grant competition, improving habitat connectivity is a means of protecting and enhancing the environment.

The Wyoming Game and Fish Department has estimated the numbers of game animal wildlife users for the crossings to be installed for this project. These estimates should be considered approximate, but, as shown on the following table, they illustrate the impact the project will have.

Project	Species and Estimated User Number
US 189—Dry Piney Creek Section	Mule deer 3,000
	Pronghorn 300 to 500
	Elk 100 to 150
	Moose 50 to 100

As the US Fish and Wildlife Service comments, “maintaining functioning ecosystems is important to the conservation of all species.” The following nongame species will also benefit from this wildlife crossing project in the identified locations.

Project	Animals Benefiting
US 189—Dry Piney Creek Section	Pygmy rabbit habitat on both sides; movement of mid-sized carnivores possible, including furbearers; maintain connectivity of nongame mammals.

e. Safety

This project will dramatically increase safety for both humans and animals. The Federal Highway Administration has stated that appropriately placed wildlife crossing structures and associated fencing have been shown to reduce wildlife-vehicle collisions by more than 80 percent. During the period from 2006 to 2010, on the Dry Piney Creek Section, crashes involving property damage of \$1.6 million occurred. In addition to vehicle versus animal collisions, solo vehicle and vehicle versus vehicle incidents caused by animal avoidance are expected to diminish. These improvements will reduce property damage and human injury and loss of life. Additionally, maintenance personnel, who removed \$1.8 million worth of dead wildlife (2006-2010) from the highway segments discussed in this application, may expect decreased exposure to risk. Fewer carcasses will remain on roadways as a hazard to motorists. Safety improvements related to state of good repair factors, discussed in Section 4.1.a., are also anticipated.



As discussed throughout this application, wildlife will gain safer routes across highway facilities to access crucial habitats.

These reductions have a human emotional safety benefit as well. Persons suffer trauma when they are injured, or view other people or animals hurt or killed. The opportunity for trauma can be diminished by reducing the number of collisions between vehicles and wildlife.

Again, the FHWA believes wildlife – vehicle accidents reduce by roughly 80 percent when appropriate habitat connectivity is in place. This initiative would provide safe, modern corridors for wildlife, such as the deer passing under the highway, pictured above.

f. Benefit Cost Discussion

Many of the monetary benefits from this project relate directly to safety improvements in reduced costs for loss of wildlife and wildlife-associated traffic collisions. These costs have been examined for Dry Piney Creek, the project location, for the five-year period from 2006 to 2010, the last year comprehensive statistical details are available.

From these costs, one-year averages for wildlife loss and wildlife associated crashes were computed. These were then multiplied by the 50-year expected life of the project to arrive at an overall projection of losses directly attributable to animal-vehicle collisions on the roadway. All costs are shown in current dollars.



Reported Crash Cost	
2006:	\$1,070,100.00
2007:	\$252,300.00
2008:	\$92,800.00
2009:	\$69,600.00
2010:	\$139,200.00
<hr/>	
5 Year Total:	\$1,624,000.00
Year Average:	\$324,800.00
50 Year Estimate:	\$16,240,000.00

Wildlife Cost	
2006:	\$459,000.00
2007:	\$256,000.00
2008:	\$190,500.00
2009:	\$340,120.00
2010:	\$627,000.00
<hr/>	
5 Year Total:	\$1,872,620.00
Year Average:	\$374,524.00
50 Year Estimate:	\$18,726,200.00

5 Year Crash Cost:	\$1,624,000.00
Year Average:	\$324,800.00
50 Year Estimate:	\$16,240,000.00
<hr/>	
5 Year Wildlife Cost:	\$1,872,620.00
Reported:	\$183,000.00
Unreported:	\$1,689,620.00
Year Average:	\$374,524.00
50 Year Estimate:	\$18,726,200.00

Combined Crash and Wildlife Cost	
2006:	\$1,529,100.00
2007:	\$508,300.00
2008:	\$283,300.00
2009:	\$409,720.00
2010:	\$766,200.00
<hr/>	
5 Year Total:	\$3,496,620.00
Year Average:	\$699,324.00
50 Year Estimate:	\$34,966,200.00

The four tables in this section show animal and crash costs for Dry Piney Creek. **According to these data, over a 50-year period, a projected estimate of \$18,726,200 of wildlife will be lost. During this time, a projected \$16,240,000 in crash costs will occur. These figures produce a projected combined crash and wildlife cost of \$34,966,200 over 50 years.**

Crash information comes from the Wyoming Department of Transportation's crash analysis data.

WYDOT has adopted a slightly modified version of the Relative Disutility Factors by Injury Severity level (MAIS) from "Treatment of the Economic Value of a Statistical Life in Departmental Analyses," USDOT (2008) for assigning an economic value for crashes. The WYDOT modified scale has been used for this application. The scale uses a value of \$11,600 per crash, and this figure has been used in the analysis for this project unless another total is known (such as in the case of serious injuries). Unreported crashes (cases in which carcasses are present but no collision has been reported) are not included in the costs.

Monetary values for wildlife have been assigned by the Wyoming Game and Fish Department. These values range from \$3,000 for a pronghorn to \$7,500 for a moose. Total

numbers of animal losses are derived from two sources. First are losses associated with reported crashes. The second source of loss occurs as the result of unreported incidents, which nonetheless result in a carcass on or near the highway. WYDOT maintenance forces must then retrieve and log these animals. Other animals may be injured on the highway and then exit the right-of-way before perishing. No record exists for these incidents, and they are not considered here.

Summary Statement

Using FHWA's findings of an 80 percent reduction attributable to installation of wildlife crossing structures, the improvements from this initiative will result in a savings of \$27,972,960 in wildlife and crash costs over the 50-year life of the project. This savings far outstrips the \$15,250,000 investment needed to complete project work at Dry Piney Creek.

Data used to furnish the information for these tables may be viewed at the following location: <http://www.dot.state.wy.us/wydot/>

4.2 Job Creation and Economic Stimulus

This project is anticipated to create at least 60 full time construction and trade positions for approximately 1.5 years. The rippling effect across 3 rural communities will be a positive economic stimulus. The Wyoming Department of Transportation will also follow all guidelines and requirements to ensure that low income workers and small and disadvantaged business enterprises can compete for work and that all civil rights and equal opportunity laws are followed.

Project schedule

The Dry Piney Creek segment of the Wyoming Habitat Connectivity Initiative is ready to proceed in the spring of 2013 and can be finished in two construction seasons. The anticipated completion date is the fall of 2014.

Environmental approvals

The necessary federal and state requirements for the categorical exclusion on this initiative will be met in time for the project to proceed by spring 2013. The categorical exclusion for Dry Piney Creek is anticipated for completion by November 2012. The documents will be available electronically at the following: <http://www.dot.state.wy.us/wydot/>

Legislative approvals

All anticipated legislative approvals for this project have been secured.

State and local planning

This project is currently listed in the Wyoming *State Transportation Improvement Program* (STIP).

Technical feasibility

This project is technically feasible. The fences and other structures to be used are standard department designs for such facilities modified as appropriate to accommodate wildlife. All crossing facilities and locations have been selected and designed in consultation with the Wyoming Game and Fish Department and other resource agency experts.

The Department will also use the expertise it has gained from other wildlife connectivity initiatives. Through experience and consultation with the Wyoming Game and Fish Department and others, WYDOT has learned which facilities are appropriate in a given location. Experience gained from installing and studying connectivity improvements—including underpasses, a bridge, and fences—made in 2003 and 2008 in Nugget Canyon on US 30 in southwest Wyoming and on WYO 789 north of Baggs in 2009—will also be useful. On-going studies are evaluating the effectiveness of these improvements. Cameras monitoring the bridge and underpasses at Nugget Canyon captured 12,661 deer using the structures between December 16, 2008, and June 8, 2009. Phase I, at Trappers Point, is currently under construction and is moving quickly toward completion.

Financial feasibility

The Wyoming Habitat Connectivity Initiative and improvements made as a result of the project will be administered by the Wyoming Department of Transportation. As a state DOT, the department has extensive experience maintaining transportation infrastructure. WYDOT will maintain these facilities using transportation funding.

4.3 Innovation

Though wildlife crossing structures have been installed at more than 700 locations in the Western United States (according to the Western Governors Association), their use is still considered innovative and progressive. The structures constructed for this project will integrate unique design features to make them compatible with the needs of a number of large mammals including moose, elk, deer, and pronghorn. WYDOT has worked with various resource agency partners such as the Wyoming Game and Fish Department to complete these designs. The experience gained from this initiative, and the study of how animals use the various crossing structures, will provide data that can be applied to the ongoing international move toward extensive habitat connectivity.



4.4 Partnership

Jurisdictional and stakeholder collaboration

This initiative is the result of years of data collection and analysis by the Wyoming Department of Transportation, the Wyoming Game and Fish Department, the US Forest Service, the US Bureau of Land Management, the US Fish and Wildlife Service, and the National Fish and Wildlife Foundation. This work represents the contribution of these various organizations.

Disciplinary integration

This project enjoys significant collaboration and support from various state and federal resource agencies and non-profit organizations. An interagency habitat connectivity working group was convened to coordinate the project with representatives from the Wyoming Department of Transportation, the Wyoming Game and Fish Department, the US Forest Service, the US Bureau of Land Management, and the US Fish and Wildlife Service. These agencies have provided research data and expertise to determine the best locations for the improvements this project will undertake. They have participated in reconnaissance to confirm appropriate locations and will continue to gather data concerning the project's effect on improving wildlife connectivity.

5.0 Project Readiness and NEPA

The necessary federal and state requirements for the categorical exclusion on this initiative will be met in time for the project to proceed by spring 2013. The categorical exclusion for Dry Piney Creek is anticipated for completion by November 2012.

6.0 Federal Wage Rate Certification

The Wyoming Department of Transportation certifies that it will comply with the requirements of subchapter IV of chapter 31 of title 40, United States Code, as required by the Fiscal Year 2012 Continuing Appropriations Act.



John F. Cox, Director
Wyoming Department of Transportation

March 19, 2012

Date

7.0 Material Changes to the Pre-Application

The project application makes no material changes to the information found in the pre-application.

8.0 Confidential Information

This grant application does not contain confidential information.

9.0 Letters of Support and Supplemental Project Materials

Before this application was submitted, the Wyoming Department of Transportation and the Wyoming Game and Fish Department received written support from 55 organizations including non-profits, state and federal agencies, Congressional offices, and corporations for the Wyoming Habitat Connectivity Initiative. The response indicates the high level of support for this initiative.

These letters, and any received after submittal, may be viewed under the TIGER tab through the following link: <http://www.dot.state.wy.us/wydot>

Additional supporting materials, such as detail maps for proposed project locations and benefit cost data are also available through this link.



A previously built Wyoming wildlife corridor protects another herd of deer – and the motorists above – and gives local wildlife a safe, environmentally responsible, and practical route of travel.

The following list emphasizes the tremendous support this proposal has generated.

Wyoming Department of Transportation Wildlife Habitat Connectivity Supporters

American Wildlands
Archery Trade Association
Association of Fish and Wildlife Agencies
Association of Zoos and Aquariums
Bear Trust International
Biodiversity Conservation Alliance
BLM
Boone and Crockett Club
Catch-A-Dream Foundation
Center for Large Landscape Conservation
Congressional Sportsmen's Foundation
Defenders of Wildlife
Ducks Unlimited
Encana Oil and Gas, USA, Inc.
Farmers Insurance Group
Greater Yellowstone Coalition
Houston Safari Club

Izaak Walton League of America
Mountain West Farm Bureau
Mule Deer Foundation
Mutual Insurance Company
Nat'l Association of Conservation Districts
Nat'l Fish and Wildlife Foundation
Nat'l Forest Foundation
Nat'l Parks Conservation Association
Nat'l Rifle Association
Nat'l Shooting Sports Foundation
Nat'l Wild Turkey Federation
Nat'l Wildlife Federation
Nat'l Wildlife Refuge Association
North American Grouse Partnership
Pheasants Forever
Pope & Young Club

Public Lands Foundation
QEP Energy Company
Quail Forever
Rocky Mountain Elk Foundation
Shell Oil Company
Texas Wildlife Association
The Wildlife Society
Theodore Roosevelt Conservation Partnership
USDA
US Fish and Wildlife Service
USFS
Western Environmental Law Center
Whitetails Unlimited
Wild Sheep Foundation
Wildlife Conservation Society
Wildlife Forever
Wildlife Management Institute
Wyoming Game and Fish Department
Wyoming Landscape Conservation Initiative
Wyoming Outdoor Council
Wyoming Wildlife Federation
Yellowstone to Yukon Conservation Initiative (Alberta, Canada)

