

2017 Idaho Federal Lands Access Program

Proposal ID #: **ID-FY17-**
(For WFL Use Only)

(To be completed jointly by Federal Land Manager and State/County/Local/Tribal Government)

Project Name	SH-21 MP 19.32 Wildlife Overpass at Cervidae Peak
Route Name/Number	SH-21
Federal Land(s) Accessed (Show on Map)	United States Forest Service Boise National Forest (USFS-BNF), Bureau of Land Management (BLM), Army Corps of Engineers (USACE) and Idaho Fish and Game (via Pittmann-Robertson Act) --- Reference Attachment Section - Maps for Referenced Destinations and Land Ownership.
Agency (ies) with Title to Road, Bridge, Trail or Transit System	Idaho Transportation Department (ITD)
Agency (ies) with Title to Enhancement Facility	ITD, USFS-BNF, BLM, USACE, IDFG
Agency (ies) with Maintenance Responsibility for Road, Bridge, Trail or Transit System	ITD
Agency (ies) with Maintenance Responsibility for Enhancement Facility	ITD, USFS-BNF, BLM, USACE, IDFG
Type of Proposal	<input type="checkbox"/> Capital Improvements <input type="checkbox"/> Transit <input type="checkbox"/> Safety Only <input checked="" type="checkbox"/> Enhancement <input type="checkbox"/> Planning <input type="checkbox"/> Surface Preservation <input type="checkbox"/> Research
Key Items of Work (check all that apply)	<input type="checkbox"/> Paving <input checked="" type="checkbox"/> Earthwork <input checked="" type="checkbox"/> Major Concrete Structures <input type="checkbox"/> Bridges <input type="checkbox"/> Major Culverts <input type="checkbox"/> Road Base or Surface Course <input type="checkbox"/> Roadside Safety Structures <input type="checkbox"/> Planning Study <input type="checkbox"/> Bicycle/Pedestrian Facilities <input checked="" type="checkbox"/> Safety Enhancements <input type="checkbox"/> Chip Seal <input type="checkbox"/> Transit Facilities or Operations <input type="checkbox"/> Ancillary Parking Areas, Pullouts/Interpretive Sites <input type="checkbox"/> Major Drainage Improvements <input checked="" type="checkbox"/> Other (specify) <u>Wildlife O-pass (provide habitat connectivity & reduce WVC mortality)</u>
Proposed Work Summary	<p>Construction of a 150-ft wildlife overpass at MP 19.32 and approximately 12,500 linear feet of 8-ft high big game exclusion fence paralleling SH-21. The exclusion fence will include access and maintenance gates as needed. The fence will tie/match back into existing fence improvements that end near MP 18.5. Install 11 jump-outs to allow animals trapped between fence lines adequate escape routes out.</p> <p>Install big game cameras at both passage ends and mid-section to capture and observe animal usage.</p> <p>Refer to the Attachment Section for an aerial map depicting project location and proposed work --- Aerial of Proposed SH-21 Wildlife Overpass with Fencing Project and Existing SH-21 Wildlife Underpass with Fencing).</p>

<p>Primary Visitor Destinations (Show on Map)</p>	<p>United States Forest Service - Boise National Forest (BNF) The BNF is 2.612 million acre forest in which SH-21 runs straight through the heart of the forest for over 80 miles. The BNF is both a primary day-use recreation area as well as an overnight destination. SH-21 provides direct and indirect access to over 750,000 outdoor enthusiasts that recreate within the BNF (i.e. from Idaho and elsewhere).</p> <p>Lucky Peak Lake and Dam (Lucky Peak State Park)--- Lucky Peak Dam and Lake is owned and managed by the United States Army Corps of Engineers (USACE) and encompasses 8000 acres of public lands and water (including the 2,800 + acre Lucky Peak Lake). Lucky Peak Dam and Lake is a primary day-use recreation destination in the region. It also has developed camping locations that serve for overnight use (so it can be considered an overnight destination as well).</p> <p>The Boise River Wildlife Management Area (BRWMA)--- The Boise River Wildlife Management Area (BRWMA) is a 47,000 acre wildlife preserve that is located east and adjacent to the City of Boise. The BRWMA surrounds SH-21 and Lucky Peak Lake and is a primary day-use recreation destination. SH-21 directly supports the BRWMA and the City of Boise's Ridge to Rivers overall trail system (which includes the BRWMA) providing access to a minimum of 30,000 users annually.</p> <p>Sawtooth National Recreation Area (SNRA) --- The Sawtooth NRA includes the Sawtooth Wilderness, White Clouds Wilderness, and the Hemingway-Boulders Wilderness areas as well as portions of the Sawtooth National Forest (SNF) and Salmon-Challis National Forest (SCNF) and consists of 756,000 acres of scenic mountain and river country. The SNRA is both a primary day-use recreation area as well as an overnight destination. Current Data indicates SH-21 helps provide access to over 1 million visitors annually to the SNRA .</p> <p>Reference Attachment Section - Maps for Referenced Destinations and Land Ownership.</p>			
<p>High Use Federal Recreation Sites and/ or Federal Economic Generators (Show on Map)</p>	<p>Lucky Peak Lake and Dam (Lucky Peak State Park)--- SH-21 provides access to almost a million visitors a year to those that want to recreate at Lucky Peak Dam and Lake. Recreational opportunities at Lucky Peak Dam and Lake which are directly accessed or serviced by SH-21 include but are not limited to boating, swimming, jet-skiing, camping, fishing, hunting, hiking, frisbee disc-golf, watching wildlife, picnicking and just relaxing. Current data indicates SH-21 provides access and service to 45 plus miles of shoreline, a marina, (13) recreational access pullouts/parking areas, (3) boat launch sites, (2) developed campgrounds and numerous picnic areas and boat docks.</p> <p>Boise River Wildlife Management Area--- Current data indicates that SH-21 provides access to (13) recreational access pullouts/parking areas, 7 trail-heads and 2 information/educational observation sites. SH-21 provides access to a minimum of 30,000 trail users annually. In addition, SH-21 and the BRWMA directly and indirectly support sportsmen and hunters of southwest Idaho that utilize game management unit (GMU) 39 for over 80,000 hunter days annually (i.e. the BRWMA lies entirely within GMU 39).</p> <p>United States Forest Service (includes BNF, SNF and SCNF) and Sawtooth National Recreation Area (SNRA)--- See Boise National Forest SH-21 Federal Lands Access Assessment and Summary in the Attachment Section. This is in response to the onsite field review (June 19th, 2017) FLAP TAG Informational Requests.</p>			
<p>Project Termini (Location)</p>		<p>Mile Posts</p>	<p>Latitude (Decimal Degrees)</p>	<p>Longitude (Decimal Degrees)</p>
	<p>Begin</p>	<p>MP 19.6</p>	<p>43 . 37' 04.85" N</p>	<p>115 . 59' 29.81" W</p>
	<p>End</p>	<p>MP 17.3</p>	<p>43 . 35' 39.31" N</p>	<p>115 . 59' 39.41" W</p>
	<p>Nearest Town</p>	<p>Boise</p>	<p>Fed Congressional District</p>	<p>Idaho 1 & 2</p>
<p>Estimated Total Project Costs</p>		<p>\$2,977,392.00</p>		
<p>Funds Requested from Federal Lands Access Program</p>		<p>\$2,757,392.00</p>		

Project Length (miles)	1.3	County	Boise County
Required Local Match (7.34%)	\$220,000.00	From	ITD - D3, USFS - BNF, IDFG , Yellowstone to Yukon Conservation Initiative, Center for Large Landscape Conservation, Idaho Deer Alliance and Rocky Mountain Elk Foundation
Other Funding Contributions to Project		From	

Acres of Federal Land Accessed by the Project

>1.5 million acres of habitat linkage & landscape connectivity for mule deer, elk & other wildlife that reside within the BRWMA & the BNF/SN

Functional Classification of the Roadway (Show official designations of route)	<input type="checkbox"/> National Highway System	<input type="checkbox"/> Major Collector	<input type="checkbox"/> Local Road
	<input checked="" type="checkbox"/> Arterial	<input type="checkbox"/> Minor Collector	

Traffic Volumes	Current				20 Year Projections		Basis for Projections? (e.g. Transportation Plan, population growth rate...)
	Actual Counts		Estimated				
	Start of Project	End of Project	Start of Project	End of Project	Start of Project	End of Project	
Average Daily Traffic (ADT) on Highway	7571	3890			10410	5350	Population Growth
Seasonal Average Daily Traffic (peak season) (SADT) on Highway	8234	4031			11320	5545	Population Growth
% Trucks	7%	7%			8%	8%	Population Growth
% Federal Land Related	65 to 70 %	65 to 70 %			65 to 70 %	65 to 70 %	Lucky Peak Lake & Dam / BNF

Comments

SH-21 traffic volumes vary widely with winter weekdays as low as 4000 daily vehicles and summer weekends as heavy as 9870 daily vehicles. While there are no origin-destination studies of traffic on SH-21 to determine the percentage (%) of Federal lands related traffic. An estimation may be built using two sources --- ITD sourced 2016 Annual Average Daily Traffic (AADT) on highways and local roads between SH-21/Diversion Dam and SH-21/Robie Creek (i.e. near MP 7 to MP 22 respectively) and USDA Visitor Use Report for Boise NF collected FY 2014. ITD has automated traffic recorders at SH-21/Diversion Dam and SH-21/Robie Creek. This FLAP project proposal is located entirely within this portion of the SH-21 corridor. The distribution of traffic was used to proportionately apportion visitation estimates at the Federal lands with documented visitation estimates. Lucky Peak Lake and Dam, BNF and the BRWMA are primary day-use and overnight recreation destinations. Approximately 70% of SH-21 traffic from between the Diversion Dam to Robie Creek Rd disperse to recreational destinations afforded by those Federal lands. During the time frames of late spring through fall, Federal lands related traffic is expected to be greater than 70%. During the time frames of late fall, winter and early spring, Federal lands related traffic is expected to be less than 60%, but above 50%. In addition, BNF estimates that relative to SH-21 and travelers surveyed to sites in and around the Boise National Forest. A majority of visits, greater than 66% were associated with recreational visits, likely associated with opportunities provided by the Boise National Forest.

See Boise National Forest SH-21 Federal Lands Access Assessment and Summary in the Attachment Section.

	NBI Structure Number	Dimensions (Overall Length x Width)	Bridge Type	No. of Spans	NBIS Sufficiently Rating (1-100)
+ -					

Problem Statement: What purpose does this transportation facility serve? What is the need for this project? Who will this project serve (such as skiers, communities, hikers...)? What are the conditions requiring relief? Describe the consequences if these conditions are not addressed. Describe physical and functional deficiencies, anticipated changes in use, safety problems, capacity issues, bridge deficiencies, pavement or surface conditions, etc.

What purpose does this transportation facility serve?
SH-21, also known as the as the Ponderosa Pine Scenic Byway, it is a critical north-south transportation facility. It serves Boise and the collective communities of the Treasure Valley which have a combined urban area population approaching 700,000. SH-21 is the official "Gateway to the Boise National Forest" and famed "Sawtooth National Recreation Area" for southwest Idahoans accessing the wealth and opportunities public lands of north-central Idaho afford. Federal land and recreational destinations served and accessed via SH-21 were

described earlier in the Primary Visitor Destination section as well as in the High Use Federal Recreation Sites and/or Federal Economic Generators section. For additional information see the Boise National Forest SH-21 Federal Lands Access Assessment and Summary in the Attachment Section.

SH-21 plays an essential role in allowing the people of Idaho and elsewhere critical access and opportunity to use Federal lands for numerous outdoor and recreational related activities, including but not limited to camping, hiking/backpacking, fishing, boating and canoeing, rafting, observing nature, hunting, photography, mountain biking/bicycling, paragliding, skiing, snowmobiling and atv/ohv use. Communities located on SH-21 and within the Boise, Sawtooth and Salmon-Challis National Forests such as Idaho City, Atlanta, Lowman and Stanley and elsewhere depend on the expenditures of recreationists and tourists for their economic and social livelihoods. Likewise, participants who use the Federal lands of the Boise, Sawtooth and Salmon-Challis National Forests for recreational purposes and needs also depend on the aforementioned communities to provide supporting services such as restaurants, groceries, gas, lodging and other services. In many cases, SH-21 is the primary transportation corridor that empowers safe and efficient travel and access to those communities and recreation destinations that the public lands of the Boise, Sawtooth and Salmon-Challis National Forests afford.

Furthermore, SH-21 has a high economic impact for the forest communities and natural resource industries that depend on Federal lands. SH-21 and Federal lands provide access and service to a variety of forest products (timber materials, firewood, mining and other forest products), commercial outfitting and guide use (hunting, recreational access and use, rafting, boating, road and trail use), and culturally associated uses. One example of the importance of SH-21 involves the Pioneer Fire salvage logging. Over the course of the next couple of years (estimated to start 2017 and continue through 2018), SH-21 will be an essential highway facilitating over 35,000 acres of logging with an estimated 25 to 30 million board feet of lumber to be harvested. SH-21 will play a critical role in safely and efficiently transporting and delivering that lumber from the Boise National Forest to sawmills in Idaho and to out of State destinations located as far away as La Grande and Elgin, Oregon. Economic value potential of the proposed logging, could be as high as \$25,000,000. SH-21 directly supports forest communities and their economic opportunity and viability.

SH-21 plays a critical and essential role in providing access to Federal lands and in maintaining economic, tourism and recreational opportunities and viability.

What is the need for this project and what are the conditions requiring relief?

The National Highway Traffic Safety Administration reported that 158 people were killed and over 10,000 injured in car crashes involving animals in 2014. According to State Farm Insurance, the average property damage claim for deer-vehicle collisions between July 1, 2014 and June 30, 2015 was \$3,995.08 nationwide, with costs varying depending on the type of vehicle and severity of damage. The average property damage claim for elk-vehicle collisions are even higher. These costs are just related to property damage and lost usage of vehicles caused by wildlife vehicle collisions (WVCs). Costs are much higher when considering the entire repercussions caused by WVCs. Implications also include short and long term injuries, safety and maintenance challenges on our highways/roadways, the loss of valuable wildlife resources (i.e... loss of commerce/recreational opportunities), reduced habitat and landscape connectivity and in an extreme worst case loss of human life.

In 2009 an economic analysis was conducted concerning WVCs occurring on SH-21 from approximately MP 10 to MP 21 (utilizing carcass data provided by IDFG/ITD). This analysis was used in part to examine the benefit of measures to prevent traffic from colliding with big game (mule deer and elk) on SH-21. Findings indicated that on an annual basis deer and elk collisions within the SH-21 corridor from near MP 10 to MP 21 cost motorists and citizens of Idaho hundreds of thousands dollars or more (Source: 2009 SH-21 Rocky Mountain Econometrics Analysis Report --- included in the Attachment Section). The costs of traffic colliding with wildlife on SH-21 from MP 17.4 to MP 20.4 was documented at over \$3,000,000 in costs to Idahoans---based on a 30+ yr time interval from mid 1970's to 2010.

In 2014, ITD Office of Highway Safety funded and conducted Research Report 229: Methodology for Prioritizing Appropriate Mitigation Actions to Reduce Wildlife Vehicle Collisions on Idaho Highways. The report findings documented the SH-21 corridor from MP 10 to MP 21 as a high risk area for WVCs. Recent crash data from 2011 to 2015 indicated 16 reported wild-animal crashes, 3 of which caused injuries. Of total crashes occurring by "type" within that same SH-21 corridor (MP 10 to MP 21), 21% of total reported crashes are directly related to WVCs with deer and elk. This project would occur between MP 19 and MP 20 which tied for the highest number of deer and elk WVC crashes in the corridor---at this location elk tend to cross over SH-21 at higher frequencies than other locations within the SH-21 corridor. The 2011 thru 2015 crash data for SH-21 MP 10 - MP 21 is included in the Attachment Section for reference.

During 2016; IDFG/ITD carcass data documented removal of 77 deer and elk carcasses as a result of WVCs on SH-21 from MP 10 through MP 22 (Source: <http://boisestatepublicradio.org/post/idaho-experts-look-canada-ways-stop-wildlifevehicle-collisions#stream/0>). The documented data vindicates both the 2009 Rocky Mountain Econometrics Report as well as Report 229's findings that the SH-21 corridor from MP 10 to MP 21 has a high propensity for WVCs with deer and elk.

The high numbers of collisions between vehicles and wildlife within this corridor of SH-21 are due to a number of factors including, but not limited to:

- An overall gradual increase in traffic volumes as a result of urban development, an ever-expanding wildland/urban interface and a corresponding increase in demand and need to access Federal lands and the uses Federal lands provide (i.e. increased vehicular and

commercial traffic use SH-21) over a 30+/yr time span;

- Limited sight distance due to the natural terrain and steep topography of the landscape in relation to the roadway alignment of SH-21 through the corridor;
- Concrete jersey rail and metal guardrail (often used for rockfall mitigation and for drifting/straying vehicles at steep descending slopes on this portion of SH-21) can act as barriers/obstructions to wildlife and driver visibility;
- Weather elements effect wildlife movement patterns and motorists visibility (i.e... snow/rain);
- SH-21 corridor lies within a critical habitat linkage area for deer, elk, antelope and other wildlife, and;
- The propensity of wildlife to move and/or migrate within their historic home range, from summer range to winter range and vice versa primarily within Federal lands of the B-SNF, BRWMA and adjacent public lands.

This project hopes to accomplish a reduction in the extent of unnecessary and unwanted wildlife-vehicular mortality while maintaining and enhancing habitat and landscape connectivity (via increased permeability through additional safe passage opportunities) in the SH-21 corridor area of concern defined in previous studies (MP 10 to MP 21).

Describe the consequences if these conditions are not addressed?

The recurring site of road-killed mule deer, elk and other wildlife carcasses laying on the shoulders and pavement of SH-21 is not becoming to the objectives of the SH-21 Ponderosa Scenic Byway. Ironically, it is these same deer, elk, pronghorn antelope and other wildlife that people seek for wildlife watching, hunting or other wildlife-related recreation opportunities found in the Federal lands that are being decimated through WVCs on SH-21. Impacts caused by increased vehicular and commercial traffic as well as widening within the SH-21 transportation corridor extend beyond the immediate loss of wildlife resources via WVCs and include but are not limited to reduced landscape permeability (i.e... barrier effect), reduced genetic capacity and exchange, habitat loss and increased habitat fragmentation to the BNF/SNF, BRWMA and adjacent public lands. In order to maintain the character and identity of the scenic byway and sustain Federal lands and supported resources which SH-21 serves; we cannot continue to sacrifice transportation for wildlife and we cannot continue to sacrifice wildlife for transportation.

Who will this project serve?

This project serves all commuters of SH-21 and the wildlife that need permeability across SH-21 to access, move and/or migrate within their historic home range. It serves to retain in perpetuity, critical habitat linkages and landscape connectivity (i.e. from summer range to winter range and vice versa) within the Federal lands of the BNF/SNF, BRWMA and adjacent public lands so that these resources can be sustained in perpetuity.

Describe physical and functional needs and deficiencies, safety/capacity issues as it relates to the proposed project.

ITD contemplated many factors in relation to alternatives and/or preventative mitigation treatment measures considered for this project proposal. These factors included:

- 1) Existing Property Ownership --- This is a Federal Lands Access Program project proposal, ITD and USFS-BNF wanted the location to be of most benefit to the people that use SH-21 for travel and access to Federal Lands and to the resources and uses of those Federal Lands (i.e. mule deer, elk, pronghorn antelope and other wildlife) which they depend upon.
- 2) ITD Crash Data and IDFG/ITD Carcass Data and Economic Costs/Benefits--- Looked at the most current ITD crash data from 2011 to 2015 from MP 10 –MP 21. Looked at over 30 + years of collected IDFG/ITD carcass data. ITD SH-21 crash data indicated that two locations had a high propensity for reported WVC crashes. These locations occurred between MP 16 to MP 17 and MP 19 to MP 20, with each location having 4 reported crashes. Corresponding IDFG and ITD carcass data collected over 30 years indicates MP 19 to MP 20 and MP 16 to MP 17 has the highest concentration of collected road-killed carcasses within the entire SH-21 corridor of concern (i.e. MP 10 –MP 21). Reference the Attachment Section and Maps---SH-21 Carcass Data to a Tenth of a Mile.
- 3) IDFG Telemetry and GIS Tracking Data --- Documented movement and migration patterns of mule deer and elk. Reference the Attachment Section and Maps --- GMU 39 Mule Deer and Elk Migrations Between Boise National Forest and BRWMA.
- 4) Targeted Species to Reduce WVC's While Providing Habitat Connectivity --- Mule deer, elk, pronghorn antelope, mountain lion and black bear. Both mule deer and elk have large migrations that occur within the SH-21 corridor of concern (i.e. MP 10 –MP 21). Animal behavior relative to alternatives and/or preventative treatment mitigation measures is also a key component that needs to be assessed.
- 5) Topography and Existing Geophysical/Ecological Conditions --- Utilize and match into existing conditions as much as possible.
- 6) Construction Feasibility --- Does the project scope of improvements make logical sense, can it be done within a reasonable but efficient schedule, and can total costs be maintained to the allocated budget.
- 7) SH-21 Traffic Needs --- Must maintain traffic in both directions during construction with no detours and minimum delays. South of Mores Creek High Bridge (MP 17.2), SH-21 is often times three lanes wide. North of Mores Creek High Bridge, SH-21 is two lanes wide. In most potential locations there are no plausible traffic detours. Additional considerations include not creating dangerous or blunt-end situations for traffic and accommodating other users of SH-21 such as bicyclists.
- 8) Fire and Weather Elements --- Fencing must be able to withstand fires, snow and extreme weather conditions and accommodate clear zone needs of SH-21.
- 9) Maximize Opportunities to Utilize Existing Improvements --- Build upon the accomplishments of the existing SH-21 Wildlife Underpass at MP 18.2 and accompanying big game exclusion fence improvements.

10) Drainage/Maintenance Needs --- Minimize maintenance needs and account for drainage and erosion issues during construction and after construction. Insuring the stability of excavated areas, after construction is a concern.

In consideration and context to all of these factors, ITD/BNF/IDFG looked at a consortium of preventative mitigation treatment measures that could be implemented (also referenced as alternatives), these measures included:

- A prefabricated culvert such as a precast concrete culvert or a corrugated metal arch on concrete footings and construction of 8-ft high big game exclusion fencing. .
- A concrete bridge with pre-stressed girders, cast-in-place deck and abutments on a driven pile foundation and construction of 8-ft high big game exclusion fencing. .
- A geosynthetic reinforced soil-integrated bridge system (GRS-IBS) with reinforced soil foundation, abutments and integrated mechanical stabilized earthen wall approaches and construction of 8-ft high big game exclusion fencing.
- A concrete arch design utilizing modular precast components founded on concrete pedestal footings with wing-walls and retaining walls (i.e. fill) and construction of 8-ft high big game exclusion fencing. .
- Use of only an 8-ft big game exclusion fencing tied back into already in place preventative treatment measures --- existing SH-21 Wildlife Underpass at MP 18.2 and accompanying big game exclusion fence improvements

Use of only 8-ft big game exclusion fencing tied back into already-in-place preventative treatment measures would be the least expensive preventative mitigation treatment measure , would reduce vehicle-wildlife collision mortality and improve overall public safety if miles of fencing were constructed. However, the use of this preventative mitigation treatment with no other treatments would not meet the criteria of maintaining habitat connectivity. ITD/BNF/IDFG looked for existing SH-21 structures that could be used for passage/permeability by mule deer, elk and pronghorn antelope within the entire SH-21 corridor area of concern (MP 10 to MP 21). Only one facility exists that could be utilized and that was the Mores Creek High Bridge (bridge is located at MP 17.2). The previous SH-21 wildlife underpass with big game exclusion fence is already tied into the Mores Creek High Bridge (i.e. on the north side). The extent of private land ownership abutting up to SH-21 on the south side of the Mores Creek High Bridge (i.e. MP 10 to MP 17.2) limits the use of this alternative within that portion of the SH-21 corridor. Since there is no other existing culverts or bridges with sufficient height and width to facilitate the needed passage/permeability big game require for use and to which any big game exclusion fencing could be tied into. Maintaining habitat and landscape connectivity could not be met through this option as fencing by itself would be a barrier to big game movement needs and to accessing critical habitat. This alternative was no longer considered practical to solving the problem of reducing vehicle-wildlife mortality while maintaining habitat and landscape connectivity.

In consideration to the other alternatives analyzed for this FLAP application proposal:

- A prefabricated culvert such as a precast concrete culvert or a corrugated metal arch on concrete footings and construction of 8-ft high big game exclusion fencing.
- A geosynthetic reinforced soil-integrated bridge system (GRS-IBS) with reinforced soil foundation, abutments and integrated mechanical stabilized earthen wall approaches and construction of 8-ft high big game exclusion fencing.
- A concrete bridge with pre-stressed girders, cast-in-place deck and abutments on a driven pile foundation and construction of 8-ft high big game exclusion fencing.
- A concrete arch design utilizing modular precast components and concrete footings with wing-walls and short retaining walls (i.e. fill) and construction of 8-ft high big game exclusion fencing.

Locations considered for implementation of these preventative mitigation treatment measures entailed two requirements. First, sites considered necessitated having opportunities in the context of addressing the factors listed above. Second, sites had to have high confidence in their potential to address the problem and objectives of decreasing vehicle-wildlife mortality while maintaining habitat and landscape connectivity. Particular attention was given to the fact ITD SH-21 crash data indicated that two locations had a high propensity for reported WVC crashes. These locations occurred between MP 16 to MP 17 and MP 19 to MP 20, with each location having 4 reported crashes. Corresponding IDFG and ITD mule deer and elk carcass data collected over 30 years indicated both locations, MP 16.0 to MP 17.0 and MP 19.0 to MP 20.0, have high documented numbers of collected road-killed carcasses.

SH-21 MP 15.4 to MP 17.1

South of the Mores Creek High Bridge, ITD, BNF and IDFG analyzed the SH-21 corridor and site conditions from MP 15.5 to MP 17.1. Within this section of the SH-21 corridor, there are multiple locations where underpasses and overpasses could be accommodated, including the areas near MP 16.7, MP 16.1 to 16.2 and MP 15.4. A significant part of this section of the SH-21 corridor provides three lanes of traffic for passing opportunities. All proposed sites in consideration to use of preventative mitigation treatments, would need to account for three lanes of traffic during and after construction and/or existing pullouts and/or driveway approaches. Other than an overpass option, traffic needs would likely necessitate two phases of construction (i.e. for any sort of underpass option). However, the most problematic factor that limits finding realistic locations/sites for use of any preventative mitigation treatments is land ownership adjacent to and abutting up to SH-21 from MP 15.4 to near MP 16.7. As this portion of the SH-21 corridor has some existing development and extensive private land inholdings. If these private inholdings were to develop they would potentially limit the function and use of any implemented treatments. Thus, there is a necessity for property acquisition and/or permanent easements (i.e. conservation) to occur with all alternatives to insure success (either prior to or at the time of implementation). Property acquisition and/or permanent easements would have significant costs to any proposed project (i.e. several hundreds of thousands of dollars or more). Furthermore, all preventative mitigation treatment

measures would need to account for alternative transportation/mobility uses (i.e. potential mobility for bicyclists). Thus, the overall size of the mitigation treatment measures would need to be larger to facilitate such uses (i.e. more so than in a section of SH-21 that just had two lanes of traffic).

When these factors are assessed collectively (i.e. right-of-way needs, a need for larger structures and minimum of two phases of construction), there is indication of significant costs which limits construction feasibility and opportunity. In addition, risks from private land-use development also limits overall opportunity of success and benefits of any preventative treatment measures that would be implemented for purposes of solving the problem of reducing vehicle-wildlife mortality while maintaining habitat and landscape connectivity from MP 15.4 to MP 17.1. ITD, BNF and IDFG determined there may be better and more favorable locations somewhere else within the SH-21 corridor for use of preventative treatment measures to meet the projects objectives of decreased vehicle-wildlife mortality while maintaining habitat and landscape connectivity.

SH-21 MP 18.3 to MP 19.6

In contrast to locations considered south of the Mores Creek High Bridge, locations north of the Mores Creek High Bridge provide more favorable opportunities and benefits for use of underpass or overpass preventative treatment measures to address the project's objectives of decreased vehicle-wildlife mortality while maintaining habitat and landscape connectivity. SH-21 is primarily a two lane highway north of Mores Creek High Bridge from MP 17.2 to MP 21. Construction costs would be considerably less on a two-lane highway than on a three-lane highway. Federal and public land ownership consisting of lands owned by the USACE, BLM, USFS-BNF and IDFG about SH-21 from MP 17.2 to near MP 19.6 (beyond MP 19.6 to the north, there are some private land inholdings). These public lands are designated as critical habitat to be used by mule deer, elk, pronghorn antelope and other wildlife in perpetuity. Not having to buy right-of-way or permanent easements (conservation easements) saves significant costs and makes construction much more feasible. The existing ITD crash data indicates 4 WVC crashes were reported between MP 19.2 to MP 19.6. Corresponding carcass data indicates that between MP 19.0 to MP 19.6 ITD and IDFG personnel have removed more road-killed mule deer and elk carcasses than on any other similar portion of SH-21 (i.e. within the defined area of concern (i.e. MP 10 –MP 21). Furthermore historic telemetry and GIS collar data (provided by IDFG) indicate that the area is a movement and habitat linkage corridor for residential and migrating mule deer and elk, which have a high propensity to cross SH-21 within this portion of the corridor to access and use the lands owned by the USACE, BLM, USFS-BNF and IDFG as critical habitat (i.e. for forage, thermal cover and ETC.). This portion of the SH-21 corridor also affords the opportunity to build upon the accomplishments of the existing SH-21 Wildlife Underpass at MP 18.2 and accompanying big game exclusion fence improvements. Those existing improvements have demonstrated an 80% or greater reduction in WVCs since the preventative treatment measures have been implementation (i.e. since 2010). This is evidenced by that fact that no ITD wildlife-vehicle crashes have been reported from MP 17.3 to MP 18.5. Transportation engineers, biologists, land use/resource managers, environmental planners and other professionals believe that implementation of additional preventative mitigation measures can achieve those same results if the implementation of selected measures accounted for the factors listed above. For these reasons, efforts were concentrated north of the Mores Creek High Bridge between MP 19.0 to 19.6.

All of the above listed preventative mitigation measure alternatives were evaluated within this portion of the SH-21 corridor (MP 19.0 to MP 19.6) for potential use.

Three locations, MP 19.22, MP 19.32-19.35(referred to as 19.32) and MP 19.40 were considered.

MP 19.22

MP 19.22 occurs at an existing culvert that collects upslope drainage from a natural draw as well as SH-21 drainage. While the west side of SH-21 has adequate height from the existing roadway surface profile to the existing toe of the roadway fill to facilitate a pathway that permits safe passage for mule deer and elk, the east side does not. The east side of SH-21 descends to a relatively shallow depressed area that is sloped to an existing 24" culvert (i.e. to facilitate drainage). The eastern back edge of the shallow depressed area ascends steeply upslope (> 30 % grades). In order to place a precast concrete culvert, corrugated metal arch, GRS-IBS or concrete bridge structure, substantial excavation would have to occur on the east side of the fill for creating a passage way that is adequate for mule deer and elk usage (a minimum 16-ft of height is needed). The relatively deep excavation would require that any structure built be done in phases because of the limited width between the existing SH-21 alignment and the edge of the ascending slopes located on the east side of SH-21 but immediately north and south of the shallow depressed area. Both north and south bound traffic could be accommodated using a shoe-fly and/or sheet piles for shoring to construct the structure ½ at a time and traffic would alternate using the single lane. Use of a shoe-fly or sheet piles would likely require a relatively deep excavation and or fill which would add to overall cost.

Considerably more backfill and compaction would be required for a prefabricated culvert (i.e. precast concrete culvert or a corrugated metal arch) than a GRS-IBS or similar bridge structure. This would add substantial costs in consideration of such treatments. However the limiting issues for this location are not so much construction feasibility and costs. Instead the limiting issues are all maintenance related. In all cases, the extent of excavation to occur on the east side would create unstable and erodible slopes, because excavation would need to occur into the toe of the steep ascending slopes. The existing natural draw and corresponding drainage would become steeper as a result of the extent of excavation to occur on the east side. In this scenario the passage way would need to accommodate for not only the changing grades of the draw resulting from excavation, but also account for erosion from cuts into the toe of existing slopes and the existing drainage (i.e. have to accommodate for water and drainage). The primary concerns in this location would be ongoing maintenance in response to continual slope instability and erosion issues cause by excessive water and drainage. Implementation of preventative treatment measures at this location would require continual maintenance and add considerable long

term work load to State forces and on-going costs.

Furthermore, the deep excavation would not create a passageway that would be conducive for animals to "see through" particularly if they approached from the west side of SH-21 to go east. The lack of "grade" and "openness" due to cutting into the toe of the existing steep ascending slope on the east side of SH-21, would greatly reduce sight-distance and make the appearance that a large earthen wall is located immediately at the end of the passage way (i.e. as viewed from the approach side, through the passage way and under SH-21). Monitoring and associated studies from the US-95 Copeland wildlife underpasses located in northern Idaho indicate that elk may not use crossings that have limited sight distance. Finished conditions may invoke an animal behavior to avoid using the crossing and passage way because of "predator avoidance" and that the passage way looks and feels like a "one-way dead end". This would be a concern because usage for all targeted species is desired and success would be measured by how well any implemented treatment meets the projects objectives of decreased vehicle-wildlife mortality while maintaining habitat and landscape connectivity. While fencing would aid in forcing animals to use this location, its not a guarantee to insure animals use the underpass and location. Animals may prefer to do an "end-run" where the fencing terminates.

Based on all of the analyzed factors, a determination was made that his location cannot meet all of the required project objectives.

MP 19.35 and MP 19.4

These locations are adjacent to one another, but very much different in topography. MP 19.35 is an area where SH-21 traverses through two existing cut-fills on a natural ridgeline. MP 19.4 is immediately north and is a fill that occurs over the corresponding draw. At these locations, alternatives for an overpass and underpass were evaluated respectively for potential implementation.

19.4

A concrete bridge structure, GRS-IBS system or some form of prefabricated culvert (either a precast concrete culvert or corrugated metal arch) were consider for MP 19.4 At this location, the SH-21 profile and alignment sit atop a fill that bridges a large draw. The fill has very steep side slopes, exceeding greater than 30 to 40% grade through most of the draw. An existing 24" to 36" metal culvert also sits near the bottom of the draw and conveys a natural intermittent drainage as well as some SH-21 drainage through the draw and under SH-21 to the other side. Even with the existing drainage culvert, this location would facilitate a minimum 16-ft of height or more for the passage way. However, placement of some proposed alternatives may be limited in correlation to placement within the draw due to existing factors (this is discussed below).

Construction feasibility and options are aided via having two nearby large graded gravel turnout locations at MP 19.35 and MP 19.25. These locations provide ample equipment staging, materials storage and accessibility for construction needs which help facilitate construction.

The most challenging aspects to overcome in placement of any underpass alternative at this location are overcoming the combination of excessive steep side slopes and drainage issues within a confined and somewhat constrained work area. This is compounded even more since construction would be limited to the east side of SH-21. Construction feasibility and options on how to deal with traffic are limited. Both north and south bound traffic have to be maintained during construction. A shoe-fly is not a practical alternative to divert traffic at this location, as there is not enough room in the existing SH-21 fill to create a diversion lane via a shoe fly. Construction phasing would be mandatory to facilitate traffic needs and sheet-piling or similar shoring more than likely would be required to accommodate traffic and to facilitate constructing ½ of any proposed structure at a time. This would significantly increase costs and construction duration.

Its unknown whether a GRS-IBS (bridge) would be preferable over a more conventional concrete bridge or prefabricated culvert. While both a GRS-IBS and prefabricated structure can be constructed within in the same alignment and profile of SH-21. The prefabricated structure would require deep excavation and considerably more backfill and compaction than a GRS-IBS. All of which add to the cost and construction duration. If costs were the most important factor then a GRS-IBS bridge is more desirable than a concrete bridge or similar conventional bridge design because it can be constructed for 25 to 50% less costs and construction can be accelerated and therefore completed faster. In addition, a GRS-IBS design would provide the potential for a wider passage way and opening facilitating passage.

However, the biggest concern with using a GRS-IBS design would be the existing 24" to 36" metal culvert which conveys upslope drainage and runoff from SH-21 across and under SH-21 (i.e. east to west). Any design would need to avoid placing a GRS-IBS design near the pipe alignment/location (i.e. the existing culvert would need to be surveyed for location and functional condition). It is possible that the pipe is aligned and skewed in a manner that it limits where a GRS-IBS design could be placed within the existing SH-21 alignment and profile. These are unknown factors that have risks and costs associated with them and which could not be properly evaluated at this time. Like MP 19.22, placement of a GRS-IBS design must account for drainage and erosion because GRS-IBS designs are susceptible to faltering/failure under such conditions.

There is one glaring topographical flaw at 19.4 that none of the proposed underpass treatment alternatives can overcome. The grade and steepness of the existing fill is not conducive to facilitating animal passage and movement. There is no "natural approach" to traversing a steep fill with excessive side slope grades that are between 30% to 40% grade. The lack of having adequate approach distance insures poor "site distance" through any proposed treatment alternative.

Bill Ruediger provided feedback to ITD on why sight-distance was important in relation to the US-95 Copeland crossings and their struggles to be used by wildlife immediately (these crossings were constructed between 2003 and 2006). He indicated that, "Sight-

distance through the structure is whether animals approaching a crossing location (regardless of treatment alternative used) will be able to clearly see habitat on the far side (across the highway). The ability to see through the structure provides a necessary incentive for wildlife to go through the crossing, which they normally would have some degree of reluctance to do.”*

Monitoring of the existing SH-21 underpass at MP 18.2 indicated that having adequate sight distance through the structure as well as a large open passage way under the structure was critical in the immediate success of the crossing (i.e. being used by mule deer and elk). The structure and passage way could be seen on all ridge lines leading to it. This was important given that the structure had only limited fencing at the time it was completed. Mule deer, elk and other wildlife were able to see through the crossing and see habitat and cover as they approach the underpass from each direction because it was matched into an existing ridge line and not placed indiscriminately into a draw. The underpass at MP 18.2 was strategically placed and designed to fit into the natural setting so that animals could see what was on the other side as they approached and went into and under the structure from either side.

The MP 19.4 location and any proposed treatment alternative (if implemented) would not be able to facilitate sight-distance without placement of significant amounts additional fill. This is not practical given the deep elevation differences from the bottom of the draw, which is where the existing drainage culvert is located. The finished grade elevation of the passageway under any alternative (i.e. underpass structure) would have to match into the excessive side slope grades that are between 30% to 40% grade; thus adequate approach distance cannot be obtained to facilitate sight distance. Similar to the MP 19.22 location, finished conditions at MP 19.4 may invoke animal behavior that causes animals to avoid using the crossing and passage way because the passage way looks and feels “out-of-place”. Mule deer, elk, pronghorn antelope and other wildlife require being able to see through any wildlife crossing/passage way as they approach into the structure. This would be a concern at MP 19.4, because usage for all targeted species is desired and success would be measured by how well any implemented treatment meets the projects objectives of decreased vehicle-wildlife mortality while maintaining habitat and landscape connectivity. Although this location would be used by mule deer it would not necessarily be used by elk and is highly doubtful that it would be used by pronghorn antelope. One potential solution is to use additional fencing to be constructed at the same time with any crossing alternative structure. That would require fencing to extend beyond the proposed end point of MP 19.6 to approximately MP 20.3/20.4 to insure “no avoidance” or “end-run” of animals occurs where the fencing terminates. In essence, the additional fencing would be needed to “force” animals to use the crossing location. The additional fencing makes up for having an inadequate crossing location with approach “sight distance” limitations, but it is not a good option when other options exist that provide adequate sight distance and can account for behavioral needs (i.e. basic animal needs). This would have significant costs to the project, as past MP 19.6 we get into private land inholdings. This also indicates that any implemented treatments at this location may not meet the projects objectives of decreased vehicle-wildlife mortality while maintaining habitat and landscape connectivity. Building miles and miles of fence to “make” animals use a crossing location indicates a potential flaw in use of preventative treatment mitigation measures and location. It also suggests that another treatment alternative and location may be better to meet the project’s overall objectives.

MP 19.32

At MP 19.32, SH-21 traverses through two existing cut-fills on a natural ridge-line. Because of the existing topography and present geophysical conditions, underpass alternatives were not considered at this location. Only preventative treatment measures in the forms of an overpass/overcrossing were considered.

MP 19.32 facilitates use of either a Concrete Arch Design utilizing modular precast components and concrete pedestal footings or a GRS-IBS design with reinforced soil foundation, abutments and integrated mechanical stabilized earthen wall approaches. This location provides adequate room to accommodate construction staging and mobilization, storage of equipment and materials, the ability to maintain SH-21 traffic in both directions during construction and provides a practical site to construct an overpass between two cut-slopes that were originally one slope. Another significant factor is that drainage and maintenance issues like those exhibited at MP 19.4 and 19.22 are not nearly as big of factors at this location. This location actually sits at a high point which can be used to help facilitate drainage (i.e. to the existing culvert already mentioned and located at MP 19.4). While this location has some excavation involved, it is not to the extent as that which would occur at the MP 19.4 and 19.22 locations. Slope stability issues are not as big an issue at this location, which helps reduce overall maintenance and costs. This location is near two other graded gravel turnout locations at MP 19.2 and MP 19.0 which provide additional equipment staging, materials storage and accessibility for construction needs. MP 19.0 is a waste site for loose unconsolidated materials that come from adjacent SH-21 cut slope sloughing and rock fall. These unconsolidated materials can be used in backfill in conjunction with the overpass which will reduce overall costs and will also allow ITD to regain capacity of the waste area in a prime location.

In addition, this location has natural geologic and ecological features that make construction of an overpass practical for big game movement and migratory needs while maintaining and enhancing critical habitat and landscape connectivity on Federal lands. The location lies at a critical habitat linkage, where the sequence of a long and continuous set of mountain ridge-lines extending from the Sawtooth Mountains slowly descends and concludes at the Mores Creek Arm of Lucky Peak Reservoir. The culmination of ridge-lines and corresponding draws in the proximity of MP 19.32 are heavily used as a movement corridor by elk, mule deer, pronghorn antelope and other wildlife between winter range habitat located on the BRWMA and summer range habitat within the BNF/SNF and other adjacent public lands.

Spanning and reconnecting the cuts to recreate the “natural ridge-line” through a relatively large earthen vegetated expanse over SH-21 would provide the greatest amount of approach sight-distance. This location can be seen on many of the surrounding ridgelines leading

to it. The use of such a treatment facilitates in allowing mule deer, elk, pronghorn antelope and other wildlife in being able to visually see habitat over the entire passageway and accompanying approaches and from a long-distance within a natural ridgeline corridor unimpeded. A wider pathway over SH-21 reduces the visual and barrier effects cause by the extent of traffic and accompanying noise and light impacts. This provides a huge incentive and motivation for big game animals/herds to attain and access vital resources on either side of the highway. The expanse and openness of an overpass treatment is in stark contrast to the underpass alternatives considered at MP 19.4 and 19.22; both of which have poor sight-distance and may invoke an animal behavior to avoid using the crossing and passage way because of "predator avoidance" and that the passage way may look and feel like a "one-way dead end".

In conjunction with the previously built wildlife underpass at MP 18.2 and accompanying 8-ft exclusion fence in which this project will tie into, this alternative would reduce WVCs by as much as 80% from MP 17.2 to MP 19.6 once completed to full build-out. The actual effects of an 80% reduction in WVCs could be extended in the future to approximately MP 20.4 with additional phases of fencing and/or other preventative mitigation treatments. An overpass structure at MP 19.32 provides the greatest benefit to reducing wildlife-vehicle mortality while maintaining critical habitat linkages and enhancing overall permeability across the SH-21 corridor from MP 17.2 to MP 19.6 and beyond. Well established migratory and big game movement patterns for mule deer, elk, antelope and other wildlife will be protected and enhanced via increased permeability (i.e. safe passage opportunities) across Federal lands and for overall resource needs).

Conclusion of Analysis

Based on in-the-field analysis of SH-21 locations and proposed preventative mitigation treatment measures considered for each location. The ITD, USFS-BNF and IDFG determined a wildlife overpass at MP 19.32 with 8-ft high big game exclusion fencing was the best combination of preventative mitigation treatment measures to address the problem and objectives of decreasing vehicle-wildlife mortality while maintaining habitat and landscape connectivity within the SH-21 travel corridor of MP 17.2 to MP 19.6.

*Source: Ruedinger, Bill C., A Review of the Copeland Wildlife Crossing Structures on US-95, Idaho. Wildlife Consulting Resources. Missoula, Montana. 2008

Detailed Description of Proposed Capital Improvement, Enhancement, or Surface Preservation: Describe how the proposed project will address the problem. Describe the overall design concept, scope of work, any unusual design elements, design or operational standards, and any work affecting structures (bridges and major culverts). Include widths, surfacing type, surfacing depth, earthwork needs, roadside safety features, ancillary parking areas, signing improvements, bridge work, guardrail improvements, etc. Include optimum year work should be done and year work needs to be done no later than.

This project would build upon previous efforts to reduce WVCs while maintaining habitat linkages and landscape connectivity across SH-21 to and from the Federal lands of the BNF/SNF and BRWMA. The project proposes the following:

A Wildlife Overpass at MP 19.32 (preliminary and subject to change) was selected because this location provides adequate room to accommodate construction staging and mobilization, storage of equipment and materials, the ability to maintain SH-21 traffic in both directions during construction and provides a practical site to construct an overpass between two cut-slopes that were originally one slope. This location is also near two other graded gravel turnout locations at MP 19.2 and MP 19.0 which provide additional equipment staging, materials storage and accessibility for construction needs. MP 19.0 is a waste site for loose unconsolidated materials that come from adjacent SH-21 cut slope sloughing and rock fall. These unconsolidated materials can be used in backfill in conjunction with the overpass which will reduce costs and will also allow ITD to regain capacity of the waste area in a prime location. In addition, this location has natural geological and ecological features that make construction of an overpass practical for big game movement and migratory needs. The location lies at a critical habitat linkage, where the toe of a long extended mountain ridge-line extending from the Sawtooth Mountains comes down and meets the Mores Creek Arm of Lucky Peak Reservoir. This ridge-line and accompanying draws are heavily used as a movement corridor by elk, mule deer, antelope and other wildlife between winter range habitat located on the BRWMA and summer range habitat within the BNF/SNF and other adjacent public lands.

The proposed wildlife overpass would consist of:

150' Proposed Length

54' to 66' Proposed Structure Span Across SH-21

18 ft' Height clearance from SH-21 pavement surface elevation to bottom surface elevation of the structure (extend minimum 1-ft outside fog line); with and overall approximate 24' Proposed Height

The structure would incorporate a Concrete Arch Design utilizing modular precast components and concrete pedestal footings or Geosynthetic Reinforced Soil-Integrated Bridge System (GRS-IBS) with reinforced soil foundation, abutments and integrated mechanical stabilized earthen wall approaches. A waterproof geotextile would be placed over the entire concrete arch or deck span to ensure a watertight structure. A minimum span width of 54' allows for a two-lane highway with minimum 5-ft shoulders that could act as bike lanes. A greater span width and/or arch height may reduce amount of fill needs and account for future highway needs. Retaining walls, precast wing-walls or similar designs would be utilized on top and in conjunction with the concrete arch or abutments to help create the side flanged sections of the overpass as well as the earthen passage-way for the overpass and are estimated to be 75' (give or take) for each side. Backfill consisting of granular free draining and compactible soils/materials would be required over the arch and footings and/

or deck and abutments---extending out from the abutments/footings an adequate distance to ensure proper drainage. Native materials would be incorporated and compacted to create the remainder of the natural earthen passage for the retaining walls extended until matching into the existing cut-slopes. An existing unimproved gravel access located on the north side of the wildlife overpass would preferably be maintained and used for access and maintenance needs for the wildlife overpass and fencing needs. If it could no be retained it could be relocated to the south.

Installation of a minimum 10 infrared cameras to capture and observe big game usage of the overpass. Four cameras on each end of the passage; consisting of one camera for each side and facing towards the middle and two cameras in the middle and facing outward to each side of the passage. Two cameras would be placed in the middle of the overpass passage and facing outward to each side of the passage (additional cameras could be installed in the middle if needed).

Fence logistics would consist of:

- 12,500 ft +/- of 8' big game exclusions fence (from approximately MP 18.4/18.5 to MP 19.6)

Approximate fence specifications per 360' fence segment as follows (with variance for terrain complexities, amount of turns and ETC.):

- Alternate T-posts with concrete-anchored galvanized steel posts every 10 Ft or Three T-posts spaced 13.3 Ft between every two galvanized steel posts---concrete-anchored galvanized steel posts spaced every 40'---reference per ITD//BNF specs/plans which exhibit Schedule 80 and 40 ASTM Specs within plans for steel posts sizes, pipe wall thickness and required depth of placement---in addition incorporate ITD specs for zinc coating to inhibit rust.
- Two 360' long, 47" high field wire panels, stacked one on top of the other, secured to galv. steel posts and steel T-posts utilizing 3 strands of twisted/smooth 9 gauge or other smooth galvanized wire, @ 6", 52", and 98" high, between galv. steel posts as per per ITD/BNF specs/plans.
- Hog tie wire panels as exhibited on ITD/BNF specs/plans.
- Cap all galvanized steel posts.
- 11 Jump-outs (these allow escape exit points for big game that may be trapped in-between the fence lines that parallel SH-21) as exhibited on ITD/BNF specs/plans. Two of these would be in conjunction with the existing fence.
- Single-wire maintenance/access gates and one-way push gates will also be placed at designated locations for wildlife overpass and fence maintenance needs as well as for recreational needs.

The big game exclusion fence will be located a minimum of 20-ft from the existing SH-21 fog line to insure clear-zone requirements are met, at locations where metal guardrail or concrete jersey-rail exists fencing maybe be closer to the fog line as approved by the Engineer but will be located behind such barriers. To account for recreational and view shed needs ITD/BNF/IDFG/USACE and others will work together for an appropriate alignment that can maintain adequate recreational opportunities and unobstructed views of the Mores Creek Arm of Lucky Peak Lake while insuring SH-21 safety is accommodated. In some cases single-wire maintenance/access gates and one-way push gates will be utilized to maintain recreational opportunities.

Detailed Description of Proposed Transit Service: Provide operational details of the proposed service. What are specific destinations the route will serve? Is the service year-round or seasonal? What are the operating dates/service hours/day of week? Describe transit route details, including miles, number of stops, and variability in service operations. Describe any marketing, way finding, or other information that will be disseminated to promote service.

N/A

Detailed Description of Proposed Planning: Describe the details of this planning and the final product that will be developed. Would this planning effort support projects that could be submitted under future Federal Lands Access Program requests for proposals?

N/A

Detailed Description of Proposed Research: Describe the type of research and the final product for this effort. Describe the need for the research and how this research enhances safety, access or stainability.

N/A

Right-of-Way Acquisition: Describe which agency (agencies) has title for the project and how that title is documented. Describe which agency (agencies) has maintenance responsibilities for the project. Does new ROW need to be acquired? If so, how much, how many owners, and what is the anticipated time (months) to acquire all needed ROW? How does the applicant plan to acquire the ROW? Will coordination with any railroads be needed? What is your agency's experience acquiring ROW for federally-funded or assisted projects?

ITD is the owner of the Right-of-Way (ROW) in which there is 170' of ROW from centerline of SH-21 on the west side and 200' of ROW from centerline of SH-21 on the east side. No ROW is expected to be needed or purchased with this project. The abutting land is part of the BRWMA which is managed by the Idaho Department of Fish and Game but consists of land owned by the U.S. Forest Service, Army Corps of Engineers, Bureau of Land Management, Idaho Department of Fish and Game and Idaho Fish and Wildlife Foundation. This project would fit into the missions of the BRWMA and a prepared and signed agreement completed as needed for fence maintenance, ingress-egress access for placement to build any big game exclusion fence with jump-outs and/or for temporary/permanent construction easements related to project needs.

For those portions where work may occur on USACE lands. Construction easements, license agreements and environmental clearances will also be required on USACE lands. The USACE has indicated they would help in facilitation of any easements, license agreements and permitting needs(see Attachment Section for the USACE Letter of Support).

No coordination w/railroads is needed.

Utilities: Identify utilities in the roadway corridor or project site. Would relocation be needed? What agreements exist and who pays for relocation costs?

There are buried phone/fiber optic lines near the proposed project location. Depending on location these utilities may need to be relocated or may not need to be relocated as they run parallel to SH-21. It is possible that a sleeve could be installed and the phone/fiber optic lines placed within the sleeve.

Project is identified within the following (Check all that apply and show plan name)

<input checked="" type="checkbox"/> System Transportation Plan	FHWA Research Report 229: Methodology for Prioritizing Appropriate Mitigation Actions to Red
<input checked="" type="checkbox"/> Federal Land Management Plan	Boise/Sawtooth National Forest Land and Resources Management Plan/ IDFG 2016-2019 Strate
<input type="checkbox"/> Regional Transportation Plan	
<input checked="" type="checkbox"/> County Transportation System Plan	Consistent with Boise County Transportation Plan
<input type="checkbox"/> Tribal Transportation Plan	
Would the proposal require modification or amendments to any of these plans?	No

Which of the following environmental and social issues are within the project area?

	Yes	No	Unknown	Comments
Wetlands	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Project would occur in uplands within sage-steppe habitat.
Threatened & endangered Species	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	This project will have no effect on Threatened & Endangered species.
Other Fish & Wildlife Habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The project's heavy emphasis on habitat & landscape connectivity will benefit numerous other wildlife species including upland game birds, song birds, mountain lion, fox, coyote, jack rabbit and badger to name a few.
Wildlife Movement Corridors	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>This project will reduce WVCs while enhancing critical habitat linkages and landscape connectivity for wildlife. Objectives of the project include increasing permeability and safe passage opportunities within and across the SH-21 travel corridor and within Federal lands for motorists, big game and other wildlife.</p> <p>This project directly relates to the BNF/SNF and their wildlife resource objectives of identifying and prioritizing opportunities for restoration of habitat linkage to promote genetic integrity and wildlife species distribution. The selected location for the overpass and accompanying big game exclusion fence will benefit and function to maintain in perpetuity a large migration/big game movement corridor utilized by a herd of 6000 - 8,000 mule deer, 1,800 elk and hundreds of antelope. The referenced mule deer and elk are part of a larger herd of approximately 40,000 mule deer and 7,500 elk which respectively move between their summer ranges within the B/SNF to their winter ranges within the Boise/Danskin/Bennett Mountain Fronts. Past IDFG radio-telemetry and GIS tracking data indicate some mule deer and elk traverse distances of over 60 to 70 miles from their summer ranges in the B/SNF to the BRWMA to winter.</p> <p>The wildlife overpass and fencing would be located within Federal and public land ownership and lie predominantly within the BRWMA where conservation of critical habitat linkages and maintaining landscape connectivity is the primary intended use of the land.</p>
Wild & Scenic River	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Non-Attainment Air Quality Areas	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Cultural/Archeological/Historic Sites	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ITD conducted an Archaeological and Historic Resources Survey in 2009 that surveyed the proposed location for fencing and additional wildlife crossing locations. At that time ITD contacted the Shoshone-Bannock and Nez Perce tribes for input and feedback on the original project--they indicated support for that project. ITD expects the same for this project.
Public Parks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Wildlife Refuge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Project would occur within the BRWMA, a designated 47,000 acre critical habitat range for mule deer, elk, antelope and other wildlife. In any given year, the BRWMA supports up to 6000 - 8000 mule deer, 1,800 elk and hundreds of antelope.
Hazardous Materials	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Stream Encroachments	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Describe any other environmental or social issues that should be considered that are within the project area: Is the route included in an area receiving special management considerations for water quality, wildlife security, connectivity?

In 2010, a collaborative partnership evolved consisting of transportation agencies, land-use agencies, resource agencies, conservation and environmental non-governmental organizations and concerned citizens. The partnership signed an MOU that included Idaho Transportation Department, City of Boise, Boise County, Ada County, Ads County Highway District, Idaho Department of Fish and Game, and others with the purpose to work cooperatively towards finding and implementing solutions for the benefit of wildlife and motorists while maintaining public safety, historic habitat and migration connectivity on SH-21.

In 2014, ITD Office of Highway Safety funded and conducted Research Report 229: Methodology for Prioritizing Appropriate Mitigation Actions to Reduce Wildlife Vehicle Collisions on Idaho Highways. The report findings found and identified SH-21 as a top priority area for reducing WVCs while maintaining habitat and landscape connectivity.

This is supported by IDFG as a priority in their 2016-2019 Strategic Plan: Direction. In which State of Idaho goals include sustaining Idaho's fish and wildlife and the habitats upon which they depend upon. A primary objective is to increase the capacity of habitat to support fish and wildlife. Project would occur within Federal lands that are part of the BRWMA which is a designated 47,000 acre critical habitat range for mule deer, elk, antelope and other wildlife. In any given year, the BRWMA supports up to 6000 - 8000 mule deer, 1,800 elk and hundreds of antelope. This project would help facilitate in meeting those objectives.

Describe the range of attitudes, both support and opposition, that this proposed project may receive from organizations, the public and within your own agency: State the basis for this supposition and include coordination efforts and public involvement efforts completed to date. Will this proposal be your agency's priority and will staff resources be dedicated to assure completion?

Boise River Wildlife Linkage Partnership--- Not only has the project been identified in recent studies, MOU's and action plans; but it has long been a concern for the residents and local governments of Ada and Boise Counties, Boise City, IDFG, USFS, BLM, Idaho Deer Alliance, Mule Deer Foundation, Rocky Mountain Elk Foundation, private citizens and others. The location was previously identified by ITD and received input and broad support from an interdisciplinary group of scientists, engineers, land use agency resource specialists, economists, political scientists and the general public as the next best location to focus continuation of on-going efforts to reduce WVCs while maintaining critical habitat linkages and landscape connectivity within the SH-21 corridor. This project would match and tie into the north terminus of the completed SH-21 Wildlife Collision Avoidance project which built a wildlife underpass at MP 18.2 and multiple phases of 8-ft big game exclusion fence.

In 2013, Idaho Smart Growth awarded the Boise River Wildlife Linkage Partnership members the "Citizen Advocacy Award" for its contributions towards efforts to reduce VWC while maintaining habitat and landscape connectivity in conjunction to the SH-21 Wildlife Underpass and big game exclusion fence.

The lead agency for project delivery: The lead agency for project delivery will usually be the WFLHD. Project delivery consists of federal environmental compliance, design, construction contract advertisement, and construction contract administration. However the lead agency and participating agencies roles will be considered during proposal evaluation. Decisions regarding lead and participating agency roles will be based on the type of project, project complexity, and how the work is proposed to be delivered. The TAG may approach the project applicants during proposal evaluation to discuss project delivery. The WFLHD will still be responsible for stewardship and oversight of the project to assure compliance with federal requirements. The final decision for project delivery resides with the PDC.

****Transit Supplemental Questions:** *For Transit Proposals only*, please answer the following: If transit service is currently being provided to this Federal Land Management Agency unit or service has been provided in the past, please provide details about service parameters, ridership, cost per passenger, and any other pertinent information. What revenue will be collected to support the service? Describe fare pricing, discounts, pass programs, etc. Provide number, type, and age of current fleet. What is the daily number of riders estimated currently and/or at project completion? Describe how the proposed transit service will be financially sustainable with current and future sources of funding.

****Research Supplemental Questions:** *For Research Proposals only*, please answer the following: Please provide details on how this research is broad-based and not narrowly focused on a localized problem. Provide specific examples showing how this research product can be used across multiple agencies.



Cost Estimate for Capital Improvement, Enhancement, and Surface Preservation Projects

Fill-in estimates for appropriate items. Add items as needed. **Use Current Unit Prices.**

Quantity	Item	Unit Price	Unit	Total
0.2	Clearing and Grubbing	\$2,000.00	Acres	\$400.00
	Roadway Excavation		Cubic Yards	
1,300	Imported Borrow	\$40.00	Cubic Yards	\$52,000.00
3,000	Sub-Excavation	\$11.00	Cubic Yards	\$33,000.00
1	Water / Dust Abatement	\$5,000.00	Gallons	\$5,000.00
	Recycled Asphalt (milling, pulverizing, ripping)		Square Yards	
	Asphalt concrete pavement		Tons	
	Aggregate Base (may include stabilization)		Cubic Yards	
1,200	Aggregate Sub-Base	\$10.00	Cubic Yards	\$12,000.00
	Major Culverts		Each	
	Minor Culverts		Each	
5,000	Retaining Walls	\$40.00	Square Feet	\$200,000.00
500	Rip Rap & Slope Protection	\$20.00	Cubic Yards	\$10,000.00
1.5	Revegetation	\$7,500.00	Acres	\$11,250.00
	Signing		Square Feet	
	Pavement Marking		Linear Feet	
350	Roadside Safety (barriers, guardrail)	\$50.00	Linear Feet	\$17,500.00
1	Bridges	\$815,000.00	Square Feet	\$815,000.00
1	Traffic Control	\$50,000.00	Lump Sum	\$50,000.00
1	Utility Relocation	\$12,000.00	Lump Sum	\$12,000.00

Use table on the next page for additional items.

			Sub-Total	\$1,787,150.00
	Mobilization (As percentage of Sub-Total) Typically 10%, input estimated percentage in decimal form. For example: 0.10	0.1	Lump Sum	\$178,715.00
	Contingencies(As percentage of Sub-Total)Typically 30%, input estimated percentage in decimal form. For example: 0.30	0.3	Lump Sum	\$536,145.00
			Total Estimated Construction Cost	\$2,502,010.00
			Estimated Preliminary Engineering Costs (As a percentage of the Total Estimated Construction Cost) Typically 5 to 25 percent, depending upon project scope and complexity. Input estimated percentage in decimal form. For example: 0.15	0.1
	Estimated Right of Way		Acres	
			Total Estimated Preliminary Engineering Costs	\$250,201.00
			Estimated Construction Engineering Costs (As a percentage of the Total Estimated Construction Cost) Typically 5 to 20 percent, depending upon project scope and complexity. Input estimated percentage in decimal form. For example: 0.10	0.09
			Estimated Construction Engineering Costs	\$225,180.90
			Total Project Costs	\$2,977,391.90

Cost Estimate for Capital Improvement, Enhancement, and Surface Preservation Projects (Cont.)

Add items as needed. Use Current Unit Prices.

		Quantity	Item	Unit Price	Unit	Total
+	-	10	Cameras	\$750.00	Each	\$7,500.00
+	-	11	Jump-Outs	\$9,000.00	Each	\$99,000.00
+	-	13,000	8-Ft Exclusion Fencing	\$35.00	LF	\$455,000.00
+	-	1	SWPPP Best Management Practices and Stabilization	\$7,500.00	LS	\$7,500.00
Sub-Total						\$569,000.00

Comments:

Cost Estimate for Transit Projects

Add items as needed. Use Current Unit Prices.

		Quantity	Item	Unit Price	Unit	Total
+	-					
Total Project Costs						

Comments:

Cost Estimate for Planning and Research Projects

Add items as needed. Use Current Unit Prices.

		Quantity	Item	Unit Price	Unit	Total
+	-					
Total Project Costs						

Comments:

Required Local Contribution to Project: Describe the type and source of funds to provide the required 7.34% local match. Describe any soft match, in-kind match, or eligible Federal funds that will be used to satisfy the match requirement.

\$40,000 --- Would be provided by ITD D3 through cash (i.e...match may also be provided through assisting in materials geotechnical investigation, engineering, project management, environmental studies) or another form of discretionary funding (yet to-be-determined).

\$40,000 --- Would be provided by USFS-BNF through cash.

\$84,000 --- Would be provide by Idaho Fish and Game through eligible Pittman-Robertson Funds---these funds would require a 25% non-federal match.

\$60,000 --- Will come from Yellowstone to Yukon Conservation Initiative, Center for Large Landscape Conservation, Idaho Deer Alliance and Rocky Mountain Elk Foundation --- this will be leveraged for IDFG to access eligible Pittman-Robertson Funds.

Other Contributions to the Project: Describe any additional contributions secured or being sought to implement the project proposal. Does this opportunity possibly leverage other funds?

Numerous Conservation and Environmental Non-governmental Organizations (collectively referenced as NGO's) have expressed support in helping out with local match funding requirements---there is a distinct possibility of leveraging these NGO contribution's towards the IDFG Pittman-Robertson Funds (i.e... utilizing \$25,000 or more). The participatory NGO's which have committed support towards the local match requirements include:

Collectively the Yellowstone to Yukon Initiative and Center for Large Landscape Conservation have indicated in a signed letter, financial support of \$25,000.

Idaho Deer Alliance have indicated in a signed letter, financial support of \$15,000.

Rocky Mountain Elk Foundation have indicated through email correspondence they are interested in supporting the project and details are still be worked out at this time. In the past, RMEF has made annual contributions in the range of \$10 to \$20,000 for fencing efforts on SH-21.

Signed and dated letters are included in the Attachment Section --- Federal Land Agency, Conservation and Environmental Non-Governmental Organization Letters of Support.

How does the project relate to the following evaluation criteria?

1. SAFETY

Improvement of the Transportation Network for the safety of its users.

- a) How many and what type of crashes have occurred on the project site in the last five years? Describe the basis for your information and include reported accidents and anecdotal information. Provide crash data in tables and/or maps showing accident locations.
- b) How would the proposed project improvement unsafe conditions such as fatality sites, crash sites, inadequate sight distance, roadside hazards, poor vertical/horizontal alignment, hazardous intersections, inadequate lane and shoulders widths, etc?
- c) How does the proposed project address potentially unsafe locations such as where recreation use may create traffic conflicts with local or through traffic?
- d) How does the project address safety for a wide range of users (freight, destination motorists, touring motorists, bicyclists, pedestrians, public transportation)?
- e) What are the results/recommendations of any road safety audits conducted for the project?
- f) Is the project identified in a strategic safety plan?

a) The National Highway Traffic Safety Administration reported that 158 people were killed and over 10,000 injured in car crashes involving animals in 2014. According to State Farm Insurance, the average property damage claim for deer-vehicle collisions between July 1, 2014 and June 30, 2015 was \$3,995.08 nationwide, with costs varying depending on the type of vehicle and severity of damage. The average property damage claim for elk-vehicle collisions are even higher. These costs are just related to property damage and lost usage of vehicles caused by WVCs. Costs are much higher when considering the entire repercussions caused by WVCs. Implications also include short and long term injuries, safety and maintenance challenges on our highways/roadways, the loss of valuable wildlife resources (i.e. loss of commerce/recreational opportunities), reduced habitat and landscape connectivity and in an extreme worst cases loss of human life.

A recent economic analysis conducted in 2009 (utilizing carcass data provided by IDFG/ITD) indicated that on an annual basis deer and elk collisions within the SH-21 corridor from near MP 10 to MP 21 cost motorists and citizens of Idaho hundreds of thousands dollars or more (Source: 2009 SH-21 Rocky Mountain Econometrics Report --- included in the Attachment Section). The costs of traffic colliding with wildlife on SH-21 from MP 17.4 to MP 20.4 was documented at over \$3,000,000 in costs to Idahoans---based on a 30+ yr time interval from 1979 to 2010.

In 2014, ITD Office of Highway Safety funded and conducted Research Report 229: Methodology for Prioritizing Appropriate Mitigation Actions to Reduce Wildlife-Vehicle Collisions on Idaho Highways. The report findings documented the SH-21 corridor from MP 10 to MP 21 as a high risk area for WVCs. Recent crash data from 2011 to 2015 indicated 16 reported wild-animal crashes, 3 of which caused injuries. Of total crashes occurring by "type" within that same SH-21 corridor (MP 10 to MP 21), 21% of total reported crashes are directly related to WVCs with deer and elk. This project would occur between MP 19 and MP 20 which tied for the highest number of deer and elk WVC crashes in the corridor---at this location elk tend to cross over SH-21 at higher frequencies than other locations within the SH-21 corridor. The 2011 thru 2015 crash data for SH-21 MP 10 - MP 21 is included in the Attachment Section for reference.

During 2016; IDFG/ITD carcass data documented removal of 77 deer and elk carcasses as a result of WVCs on SH-21 from MP 10 through MP 22 (Source: <http://boisestatepublicradio.org/post/idaho-experts-look-canada-ways-stop-wildlifevehicle-collisions#stream/0>). The documented data vindicates both the 2009 Rocky Mountain Econometrics Report as well as Report 229's findings that the SH-21 corridor from MP 10 to MP 21 has a high propensity for WVCs with deer and elk.

The high numbers of collisions between vehicles and wildlife within this corridor of SH-21 are due to a number of contributing factors including, but not limited to:

- An overall gradual increase in traffic volumes over a 30+/yr time span;
- Limited sight distance due to the natural terrain and steep topography of the landscape in relation to the roadway alignment of SH-21 through the corridor;

- Concrete jersey rail and metal guardrail (often used for rockfall mitigation and for drifting/straying vehicles at steep descending slopes on this portion of SH-21) can act as barriers/obstructions to wildlife and driver visibility;
- Weather elements effect wildlife movement patterns and motorists visibility (i.e. snow/rain);
- SH-21 corridor lies within a critical habitat linkage area for deer, elk, antelope and other wildlife, and;
- The propensity of wildlife to move and migrate within their historic home range, from summer range to winter range and vice versa primarily within B/SNF, BRWMA and adjacent public lands.

Its important to note that the numbers documented and calculations of monetary values provided are conservative. There are several reasons for this. First deer and elk carcasses retrieved or removed are done strictly by IDFG, ITD and State Police forces within the SH-21 corridor and they make up the basis for documented carcass data and crash data. In many cases deer and elk are hit by a vehicle, but they survive the initial compact but die later on at an undetermined location and so their carcasses are not found by IDFG/ITD, thus it is not tallied or used for data purposes (i.e. not used for documentation in association to WVCs). Second, the recent State of Idaho roadkill salvage law requires citizens whom hit an animal and want to salvage the animal to file a salvage report to IDFG, not all residents of Idaho are doing the required reporting and/or if they are doing it providing reliable/useful information. Furthermore, this salvage data has yet to be fully incorporated into IDFG/ITD data asset formats (i.e. not used for documentation in association to WVCs). Third, evasive driver actions may avoid colliding with deer and elk but cause another type of accident crash such as an overturn to avoid obstacle. Lastly, there are always time, data and spatial lapses (human error) with regards to reporting carcass data and for that matter crash data. For instance, ITD maintenance forces do not always accurately report carcass data due to circumstances --- a maintenance driver maybe conducting rockfall monitoring and maintenance and a deer carcass may subsequently be removed but not documented because they simply forgot they had removed a carcass at x-location. As a result, sometimes maintenance forces forget to enter pertinent data (i.e. thus it is not used for documentation in association to WVCs). Cumulatively, these reasons exhibit a fairly considerable margin of error in association to the number of WVCs documented whether thru carcass data or crash data. The calculations of monetary values exhibited are likewise conservative.

b, c and d) It is estimated that once the project is completed an 80% reduction (or possibly higher) in WVCs is achievable within the immediate vicinity of full build-out (i.e. from the Mores Creek High Bridge MP 17.2 to MP 19.6). This reduction in WVCs can be expanded to approximately MP 20.4 with additional phases of fencing and/or with other WVC preventative treatment measures implemented. The reduction in WVCs leads to reduced loss of property (i.e. lost vehicle usage), reduced insurance claims (i.e. lower auto/health/property insurance premiums), saves our wildlife resources (i.e. deer, elk and other wildlife) and reduces maintenance costs. Saving the public a conservatively estimated \$100,000.00 or more annually. In addition, the reduction in WVCs creates an overall safer travel corridor for both motorists and wildlife. In the long-run this project will pay for itself through these cost savings.

Objectives include:

- 1) Creating a safer travel corridor by providing safe passage opportunities for both motorists, big game and other wildlife within the SH-21 corridor as well as the BRWMA, B/SNF and other adjacent public lands.
- 2) Reduced WVCs by as much as 80% from MP 17.2 to MP 19.5 once completed to full build-out. With additional phases of big game exclusion fencing and/or other preventative mitigation treatments, objectives of an 80% reduction could be expanded to MP 20.4. Reducing WVCs and carcasses on highways will help reduce injuries, loss of property and potential loss of life (towards zero deaths).
- 3) Fewer obstructions for both motorists and wildlife within the SH-21 travel corridor leads to greater mobility. Deer, elk and other wildlife on a highway or even a road-killed carcass are potential obstructions and a risk to motorists mobility and their safety.
- 4) Reduced maintenance costs and exposure to State of Idaho forces in retrieving/disposal of carcasses by minimizing the number of WVCs within the travel corridor. Every time State of Idaho forces are used to remove/dispose of carcasses, such an event places them in a compromised and dangerous situation, this project reduces those events.

e) N/A

f) In 2014, ITD Office of Highway Safety funded and conducted Research Report 229 (previously referenced above).

2. PRESERVATION

Improvement of the transportation infrastructure for economy of operation and maintenance.

- What is the current condition to the existing surfacing? If the surfacing is pavement, what is the Pavement Condition Index (PCI)? If the surface is gravel, what is the PASER rating? How would the project improve the surface condition?
- How would the project impact maintenance or operating costs? How will this project reduce these costs?
- If the proposal includes bridge work, how will the project extend the service life of the bridge? Would the proposal correct a "deficient" bridge?

N/A

3. RECREATION AND ECONOMIC

Development and utilization of the Federal Land and its resources.

- Describe any high use Federal recreation sites or Federal economic generators (as determined by the Federal Land Manager) that are accessed by this project. How many visitors access/use the site annually? How does the project enhance access to these sites? How does the proposal improve the visitor experience?
- Which Federal Lands are accessed by this project? How much Federal Land (acres) is accessed by the project? If multiple Federal Lands are accessed, itemize acreage by agency.

Enhancement of economic development at the local, regional, or national level, including tourism and recreational travel.

Note: Direct effects of implementing the project, i.e. construction employment will not be scored.

- Identify the community or communities economically dependent on the network, and the elements that comprise the economy (e.g. timber, tourism, etc.) How is the economy tied to the transportation network? How will the proposed project improve the transportation network and support the community's economic goals/needs or other economic plan?
- If the proposed project is located on a designated federal, state, or county scenic byway, identify the scenic byway and explain the anticipated benefit related to the byway. Would the project meet the needs identified in the Byway's management plan?

a and b)

Boise National Forest, Sawtooth National Forest and Salmon-Challis National Forest (including Sawtooth National Recreation Area)---

Over 3.92 million acres of national forest lands are accessed and served by SH-21, providing over 1.5 million outdoor enthusiasts from Idaho and elsewhere countless recreational opportunities (reference the Boise National Forest SH-21 Federal Lands Access Assessment and Summary in the Attachment Section). The data summarized in that supplemental report puts into context the assertion that a significant and substantial portion of traffic and travel on SH-21 is likely associated with users of federal lands and its resources. This assertion is based upon the fact that Federal lands accessed and served by SH-21 provide a variety of public access and utilization that include, but not limited to, recreational access and use (motorized and non-motorized use and access, camping, hiking, hunting, fishing, nature and wildlife watching, use and extraction of a variety of forest products (timber materials, firewood, other forest products), commercial outfitting and guide use (hunting, recreational access and use, rafting, boating, road and trail use), and culturally associated uses.

The data and information provided below is sufficient economic data for a few select recreation types and resource uses occurring on Federal lands immediate to and adjacent to the FLAP project proposal to indicate the relative utility and support SH-21 provides to those lands and resource uses. They are specific to wildlife-associated recreation on Federal lands and the resources (mule deer, elk and other wildlife) in which this project affects.

Boise National Forest---

The economics of wildlife-related recreation and tourism within the BNF and adjacent public lands pay major dividends to not only Idaho's economy but also the nation's economy. In 2015, IDFG data established 83,763 hunter days were spent by hunters seeking deer and elk within the 1.56 million acre unit 39 --- a hunting unit located mostly within the BNF, BRWMA and adjacent public lands (reference the Attachment Section and Maps --- GMU 39 Mule Deer and Elk Migrations Between Boise National Forest and BRWMA Zoomed-In (includes land ownership)). A 2011 report completed by U.S. Fish and Wildlife (i.e....2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation) and provided to the Idaho legislature stated that on average a hunter in Idaho spent \$96 a hunter day in trip expenditures. By multiplying the dollar per day amount by the number of hunting days the estimated value for hunting just in unit 39 is over \$8,041,248.00 annually (see Attachment Section for 2015 Estimated Hunter Economic Value Unit 39).

Lucky Peak Lake and Dam---

SH-21 provides access to almost a million visitors a year to those that want to recreate at Lucky Peak Lake and Dam, which encompasses 8000 acres of public lands and water (including the 2,800 + acre Lucky Peak Lake). Recreational opportunities at Lucky Peak Dam and Lake which are directly accessed or serviced by SH-21 include but are not limited to boating, swimming, jet-skiing, camping, fishing, hunting, hiking, frisbee disc-golf, watching wildlife, picnicking and just relaxing. Current data indicates SH-21 provides access and service to 45 plus miles of shoreline, a marina, (13) recreational access pullouts/parking areas, (3) boat launch sites and numerous picnic areas and boat docks. IDFG data indicates that in 2003 anglers alone made a total of 45,026 trips on Lucky Peak Reservoir and spent a total of \$3,243,925 on fishing expenditures. In 2011 anglers alone made a total of 45,273 trips on Lucky Peak Reservoir and spent a total of \$3,418,812 on fishing expenditures.

United States Fish and Wildlife Service ---

The 2011 report also established that the State of Idaho had 558,000 wildlife watcher participants with 281,000 of those participants taking a trip away from home with the "primary purpose" being activities such as photography, observing wildlife and the overall experience of "re-connecting with nature". These wildlife watcher participants spent on average \$22 per day in expenditures providing millions of dollars to Idaho's economy. Overall, the 2011 U.S. Fish and Wildlife Service report established that each year more than 838,000 people participated in wildlife-related recreation as it pertained to Idaho; 447,000 participants fished, 246,000 participants hunted and 558,000 participants participated in wildlife-watching activities. The overall Idaho economy benefits from \$1.6 billion in annual spending on wildlife-related recreation (USFWS 2011: <http://www.census.gov/prod/2013pubs/fhw11-id.pdf>).

NOTE: It is impossible to provide hard-core economic data on how the Federal lands, each type of recreation and/or resource use, and the access and service that SH-21 provides to each of those correlate to one another. What makes it so hard to go beyond a few specific examples is the fact that use of Federal lands by people, is not mutually exclusive to one location or specific type of recreation or resource use. People that use Federal lands and SH-21 don't just do wildlife-associated or related recreation, they may do other forms of recreation as well within the Boise National Forest, Lucky Peak Lake, BRWMA or other public lands and on the same day or as part of something larger (i.e. overnight). In this framework, some people may fish or hunt near Lucky Peak Lake or the BRWMA and then go camping on the BNF. Some may hike in the BNF and then decide to go for a ride to seek wildlife watching opportunities and activities (i.e. observing, photographing and ETC.). With the extent of Federal lands adjacent to SH-21 and the access and services SH-21 provides to such Federal lands, the recreational opportunities are many and varied. Thus, deriving economic value on a larger scale becomes difficult to assess when so many people are participating in so many types of recreation and using numerous resources all in one day. The "real value" of these Federal lands is the sustainable resources and uses derived from the lands collectively, which SH-21 provides direct access and service for fruition to use. They are inherently linked to one another and inherently more valuable when looked at cumulatively and not independently.

Furthermore, SH-21 has a high economic impact for the forest communities and natural resource industries that depend on Federal lands. SH-21 and Federal lands provide access and service to a variety of forest products (timber materials, firewood, mining and other forest products), commercial outfitting and guide use (hunting, recreational access and use, rafting, boating, road and trail use), and culturally associated uses. A case in point on the importance of SH-21 involves the Pioneer Fire salvage logging. Over the course of the next couple of years (estimated to start 2017 and continue through 2018), SH-21 will be an essential highway facilitating over 35,000 acres of logging with an estimated 70 million board feet of lumber to be harvested. SH-21 will play a critical role in safely and efficiently transporting and delivering that lumber from the Boise National Forest to sawmills in Emmett, Idaho and to out of State destinations located as far away as La Grande and Elgin, Oregon. Economic value potential of the proposed logging, could be as high as \$25,000,000. SH-21 directly supports forest communities and their economic opportunity and viability.

c) SH-21 plays a critical role in allowing the people of Idaho and elsewhere access and opportunity to use Federal lands for numerous outdoor and recreational related activities, including but not limited to camping, hiking/backpacking, fishing, boating and canoeing, rafting, observing nature, hunting, photography, mountain biking/bicycling, paragliding, skiing, snowmobiling and atv/ohv use. Communities located on SH-21 and within the Boise, Sawtooth and Salmon-Challis National Forests such as Idaho City, Atlanta, Lowman and Stanley and elsewhere depend on the expenditures of recreationists and tourists. These same communities also depend on SH-21 and the Forest lands providing access and opportunity for use, transport and delivery of forest products to the market. There is a high likelihood of connection between SH-21 and its traffic and the access and use of federal lands adjacent to that infrastructure in maintaining the economic and social viability and utility of these Forest communities.

Likewise, participants who use the Federal lands of the Boise, Sawtooth and Salmon-Challis National Forests for recreational purposes and needs also depend on the aforementioned communities to provide supporting services such as restaurants, groceries, gas, lodging and other services. In many cases, SH-21 is the only primary transportation corridor that empowers safe and efficient travel and access to those communities and recreation destinations that the public lands of the Boise, Sawtooth and Salmon-Challis National Forests afford. For the deer, elk and other wildlife that both hunters and wildlife watchers seek, to the food and services hunters and tourists want in communities like Idaho City or Lowman. SH-21 plays an essential role in providing and maintaining tourism and wildlife-related recreation opportunities while ensuring the goods and services wanted by all are brought to the doorsteps of communities located on SH-21.

SH-21 is a necessary and indispensable component for ensuring the continued viability of Forest communities economic and social livelihoods. Thus, there is a high degree of utility in providing for a safe and secure highway infrastructure, for which the proposed actions intend to provide, and which would support those referenced highway uses described above (i.e. in respect to high use recreation and economic generators occurring on USFS lands). Collectively, through the reduction of WVCs, reduced insurance claims (i.e... loss of property and medical expenses) and reduced direct and indirect loss of valuable wildlife resources and habitat; which are necessary to sustaining wildlife-related recreation. It is conservatively estimated that this project benefits will save the public hundreds of thousands of dollars annually while helping to insure sustaining economic and social viability of communities that rely on wildlife-related recreation for their livelihoods.

d) SH-21 is also known as the Ponderosa Pine Scenic Byway and gateway to Idaho's acclaimed Sawtooth and Boulder-White Cloud Mountains. In some cases the needs of people and wildlife coincide with one another and not for the benefits of health, safety and welfare for neither people nor wildlife. Overtime as SH-21 vehicular and commercial traffic has gradually increased and the highway widened to provide additional passing lanes for motorists; the extent of WVCs occurring has seen a steady and gradual rise in some portions of the SH-21 travel corridor. The recurring site of road-killed mule deer, elk and other wildlife carcasses laying on the shoulders and pavement of SH-21 is not becoming to the objectives of the SH-21 Ponderosa Pine Scenic Byway. Ironically, it is these same deer, elk and wildlife that people seek for wildlife watching, hunting or other wildlife-related recreation opportunities found in the B/SNF that are being decimated through WVCs on SH-21. Impacts caused by increased vehicular and commercial traffic as well as widening within the SH-21 transportation corridor extend beyond the immediate loss of wildlife resources via WVCs and include reduced landscape permeability (i.e... barrier effect), habitat loss and increased habitat fragmentation to the B/SNF and adjacent public lands. In order to sustain the character and identity of the scenic byway, we can not continue to sacrifice transportation for wildlife and we can not continue to sacrifice wildlife for transportation. This project is consistent with the objectives of the SH-21 Ponderosa Pine Scenic Byway Management Plan. It is for safety, cultural, natural, scenic and recreational qualities and to the benefit of Idaho's citizens and visitors that this project is proposed.

The wildlife overpass and accompanying big game exclusion fence would enhance critical habitat linkages while maintaining landscape connectivity to over 1.5 million acres of land located within the B/SNF, BRWMA and adjacent public lands. Increased permeability for mule deer, elk and other wildlife across the SH-21 travel corridor and within their home range enhances the resilience and functional status of the Federal and public lands in which these sustainable resources come from and which recreational and resource users of Federal and public lands depend on for hunting, wildlife-watching and other forms of recreation. This project enhances motorists safety, health and welfare within the SH-21 corridor by reducing WVCs by up to an estimated 80% within the defined termini of benefits (MP 17.2 to MP 19.6 --- which can be expanded to MP 20.4 with additional fencing phases). This project would also enhance sustainability of those wildlife resources that the U.S. Forest Service and IDFG manage and which wildlife-related recreation users depend upon. Furthermore, this project helps to insure sustaining economic and social viability of communities that rely on wildlife-related recreation for their livelihoods, which SH-21 plays a critical and enduring role in providing and maintaining accessibility to such recreational opportunities. This truly is a project that provides safety, mobility and continued economic opportunity benefits to the traveling public and communities dependent upon the services SH-21 provides.

4. MOBILITY

Continuity of the transportation network serving the Federal Land and its dependent communities.

- a) Is the road the sole access to the area? Will the proposed project mitigate the potential of the route closing?
- b) How would the proposed project improve the continuity of the transportation network? Which gaps or missing links would the proposed project address? What travel restrictions, bottlenecks, or size/load limits impede travel? What work has been completed on adjacent sections to create route continuity? How would the proposal support federal land related freight?
- c) Does the proposed project connect to a designated route on the Federal Land Management Agency's FLTP inventory? Are there any future improvements planned on the designated route?
- d) Identify all planning documents related to this project. Is the project specifically identified in any of these plans? What is the local or regional priority (high, medium, low) of the project considering the Federal Land, State or County network? How does this proposal fit with the Federal Land Management Plan? How does the proposal fit with the county comprehensive plan? How does the proposal fit with any Transportation System Plans or Corridor Plans? What are the consequences to the transportation system of not addressing these needs?

Mobility of the users of the transportation network and the goods and services provided.

- e) How would the proposed improvements reduce travel time and congestion, increase comfort and convenience for the federal land user?
- f) How would the proposed project improve the choices for alternative modes of travel (pedestrian, bike, bus, or rail)? Would the proposed project make any ADA improvements?
- g) What are the major traffic generators within the Federal Land for this route?

a) Communities within the Treasure Valley as well as Idaho City, Lowman, and Stanley are directly supported by SH-21. Many other communities utilize SH-21 for primary access in route to, including Atlanta, Centerville, Placerville and Pioneerville. SH-21 also provides direct recreational access and opportunities to the B/SNF, BRWMA and other adjacent public lands. Motorists and commercial access on

SH-21 will be maintained in full during construction with only occasional minor delays expected.

b) Maintaining Mobility---Achieving Sustainability:

Maintaining movement viability and safer passage for both motorists and wildlife is part of a larger efficient and more effective transportation system. Motorists and wildlife alike have to mitigate highways for their own every day needs. Wildlife on highways, particularly deer, elk, antelope, bears or other similarly sized animals pose a safety, health and welfare risk to motorists via WVCs. Wildlife carcasses on highways are a hazard to motorists mobility as well. Yet highways and related traffic types and volumes create a barrier to wildlife reducing their mobility and movement opportunities. These impacts have documented demographic effects, including the alteration of animal communities, the reduction of biological diversity, and the increased threat to loss of habitat use and in worst case scenarios even extinction. Reducing and/or minimizing direct and indirect loss of valuable wildlife resources via minimizing WVCs while maintaining critical habitat linkages and landscape connectivity ensures the biological and economic value of such resources is preserved. It maintains and improves the permeability, resilience and functional status of the Federal and public lands in which these sustainable resources come from and which recreational and resource users of Federal and public lands depend on for wildlife-associated recreation and other forms of recreation.

c) Yes, SH-21. No improvements (other than a bridge deck preservation) are proposed in the next 5 years within the immediate vicinity of the proposed project.

d) In 2014, ITD Office of Highway Safety funded and conducted Research Report 229: Methodology for Prioritizing Appropriate Mitigation Actions to Reduce Wildlife Vehicle Collisions on Idaho Highways. The report findings found and identified SH-21 as a top priority area for reducing WVCs while maintaining critical habitat linkages and landscape connectivity. This project would be the first project of its kind to address deficiencies noted in the report.

Project would occur primarily within ITD ROW with some fencing and jump-outs constructed on USACE and BNF owned and maintained lands which are part of the BRWMA. As indicated previously the BRWMA is designated and preserved for critical habitat for mule deer, elk, antelope and other wildlife. This is supported by IDFG as a priority in their 2016-2019 Strategic Plan: Direction. In which State of Idaho goals include sustaining Idaho's fish and wildlife and the habitats upon which they depend upon. A primary objective is to increase the capacity of habitat to support fish and wildlife.

e/f/g) Not Applicable

5. SUSTAINABILITY AND ENVIRONMENTAL QUALITY

Protection and enhancement of the rural environment associated with the Federal Land and its resources.

Note: It is assumed all projects will be constructed in accordance with all environmental regulations.

This scoring is for projects which enhance environmental goals.

- a) Describe how the proposed project contributes to the environmental goals and objectives of the Federal Land Management Plan or other applicable land management plan.
- b) How would the project enhance wildlife connectivity, wildlife habitat, and/or aquatic organism passage?
- c) How would the project enhance water quality, riparian and/or wetland function?
- d) Does the project use design, materials, or techniques that will exceed the minimum environmental requirements?
- e) Does the project contribute to improved environmental quality from GHG reduction?
- f) Would the project require unique mitigation for impacts?
- g) Would the project contribute to the use of sustainable energy sources for transportation?

a) Maintaining Mobility---Achieving Sustainability:

This project directly relates to B/SNF wildlife resources objectives of identifying and prioritizing opportunities for restoration of habitat linkage to promote genetic integrity and wildlife species distribution. Maintaining movement viability and safer passage for both motorists and wildlife is part of a larger efficient and more effective transportation system. Motorists and wildlife alike have to mitigate highways for their own every day needs. Wildlife on highways, particularly deer, elk, antelope, bears or other similarly sized animals pose a safety, health and welfare risk to motorists via WVCs. Wildlife carcasses on highways are a hazard to motorists mobility as well. Yet highways and related traffic types and volumes create a barrier to wildlife reducing their mobility and movement opportunities. These impacts have documented demographic effects, including the alteration of animal communities, the reduction of biological diversity, and the increased threat to loss of habitat use and in worst case scenarios even extinction. Reducing and/or minimizing direct and indirect loss of valuable wildlife resources via minimizing WVCs while maintaining critical habitat linkages and landscape connectivity ensures the biological and economic value of such resources is preserved. It maintains and improves the permeability, resilience and functional status of the Federal and public lands in which these sustainable resources come from and which recreational and resource users of Federal and public lands depend on for wildlife-associated recreation and other forms of recreation.

b) Project objectives include:

- 1) Creating a safer travel corridor by providing safe passage opportunities for both motorists, big game and other wildlife within

the SH-21 corridor as well as the BRWMA, B/SNF and other adjacent public lands.

- 2) Reduced WVCs by as much as 80% from MP 17.2 to MP 19.6 once completed to full build-out. With additional phases of big game exclusion fencing, objectives of an 80% reduction could be expanded to MP 20.4. Reducing WVCs and carcasses on highways will help reduce injuries, loss of property and potential loss of life (towards zero deaths) and reduces insurance claims (i.e. lower auto/health/property insurance premiums).
- 3) Reduced "barrier effect" of SH-21 caused by traffic and roadway impacts. Fewer obstructions for both motorists and wildlife leads to greater mobility. Ensuring mule deer, elk, antelope and other wildlife populations continue to have the needed permeability across their home range and the SH-21 corridor.
- 4) Enhance critical habitat linkages while improving landscape connectivity to approximately 1.5 million acres of Federal land located within the B/SNF, BRWMA and adjacent public lands. Enhances the ecological integrity (i.e. resilience and function) of these lands by reducing habitat fragmentation.
- 5) Providing large-scale landscape connectivity for big game populations will insure maintaining genetic interchange, demographic continuity and daily/seasonal movements.
- 6) Minimizing direct and indirect loss of valuable wildlife resources preserves and sustains the biological and economic value of these sustainable resources; from which users of Federal and public lands depend on for wildlife-related recreation and Forest communities which SH-21 services depend on for part of their economic and social livelihoods.
- 7) Reduced costs to State of Idaho forces in retrieving/disposal of carcasses by minimizing the number of WVCs within the travel corridor.
- 8) Reduced big game morality over a greater area by minimizing the end-run effect on the northern end of the MP 18.2 fence.

- c) N/A
- d) No
- E) No
- F) No
- G) No

2017 Idaho Federal Lands Access Program

JOINT ENDORSEMENT- This project is supported and endorsed by (add agency endorsements as needed)

Project Name	SH-21 MP 19.35 Wildlife Overpass at Cervidae Peak
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****Signatures are required from BOTH the Federal Land Management Agency being accessed and the State, County, Local, or Tribal Government. Print this page and sign legibly. After signing, scan to PDF, and attach.*