Island Park U.S. 20
Targhee Pass Environmental Assessment
Junction S.H. 87 to the Montana State Line

U.S. Department of Transportation
Federal Highway Administration

and the
Idaho Transportation Department
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U.S. 20 Targhee Pass Environmental Assessment
Junction S.H. 87 to the Montana State Line

Submitted pursuant to Public Law 91-190, the National Environmental Policy Act
by the
Idaho Transportation Department

and the
U.S. Department of Transportation
Federal Highway Administration
Idaho Division

Wendy Terlizzi
Environmental Section Manager
Idaho Transportation Department

John A. Perry
Field Operations Engineer
Federal Highway Administration
Idaho Division

For information regarding this project, please contact:
Derek Noyes, P.E. Project Manager
206 North Yellowstone Highway,
Rigby, ID 83442

To submit comments, visit the website at: https://islandparkus20.com/

Targhee Pass Study Team
(c/o The Langdon Group)
677 South Woodruff Avenue
Idaho Falls, ID 83401 (208) 220-5937
targheepass@langdongroupinc.com
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1 Purpose and Need

The Federal Highway Administration (FHWA) and Idaho Transportation Department (ITD) have prepared this environmental assessment (EA) to evaluate risks, benefits, opportunities, and costs associated with reconstruction of U.S. Highway 20 (U.S. 20) at Targhee Pass, specifically, the section of U.S. 20 between its junction with Idaho State Highway 87 (S.H. 87) and the Montana state line (mile post 402.1 to 406.3). The location is identified in Figure 1. This chapter provides information about the project background, purpose, needs, and issues to be analyzed.

1.1 Project Background


When the corridor plan (ITD, 2006) was first developed, much of the roadway within Idaho was falling behind in serving its function as a component of the National Highway System. Much of U.S. 20 within Idaho was a two-lane rural highway with 4–6-foot-wide shoulders. Improvements have been made to many of the segments of the corridor, with Targhee Pass among the final remaining sections to receive attention. At present, pavement condition in this segment of the corridor is beyond the help of routine repair and requires reconstruction and consideration of upgrades to meet design safety standards.

In October 2016, the Idaho Transportation Board approved use of federal funds for the Targhee Pass segment of U.S. 20 within Idaho to address identified roadway lifespan and safety issues. Because federal funding would be used, the FHWA is the lead federal agency for this EA, which has been prepared in accordance with requirements of the National Environmental Policy Act (NEPA) and the policies and procedures of the ITD. Alternatives for meeting the purpose and need are evaluated in this EA.

1.2 Project Purpose

The purpose of the proposed project is to improve roadway structural integrity, traffic flow, and safety of the Targhee Pass segment of U.S. 20 (mile post 402.1 to 406.3).

1.3 Project Needs

The FHWA and ITD have identified the following project needs for the proposed project:

- **Roadway Structure**: Pavement and foundation age exceed the expected life cycle of 40 years.
- **Traffic Flow**: Traffic flow is hindered at times by congestion and slower-moving vehicles in the eastbound (uphill) direction (toward the Montana state line).
- **Safety**: Crash data included in the traffic safety report (ITD, 2015) for Targhee Pass leading up to the proposed project indicate safety concerns related to road icing, blowing and drifting snow, and wildlife-vehicle collisions. Also, design standards for the National Highway System (AASHTO, 2011) are not currently met for stopping-sight distance and shoulder width.
Figure 1. Targhee Pass Project Vicinity Map
Each of the project needs is discussed in greater detail in the subsequent text, including references to supporting data and previous reports.

1.3.1 Roadway Structure

ITD’s inspections of pavement and subsurface conditions at Targhee Pass show the following:

- Poor drainage creates soft spots along the road, which allows frost heaving during winter.

- The aged road foundation is not suitable for long-term pavement stability.

The roadway has been in service for 57 years, which is beyond the expected life cycle of 40 years. Routine preventative pavement treatments to maintain ride and pavement integrity (e.g., filling potholes and sealcoating) fail early due to the worn-out ballast material. The road base is substandard and subsurface drainage is failing, as evidenced by frost heave and pavement cracking.

1.3.2 Traffic Flow

To identify this project need, data and projections were gathered and evaluated for average travel speed, percent time following, and level of service (ITD, 2015). Level of service is a qualitative scale rated from A to F and is used by transportation planners to evaluate the quality of traffic service for a given road. The *Highway Capacity Manual* (TRB, 2010) provides the following methodology for determining level of service for two-lane highways based on the class of highway:

- **Class I**: Highways where motorists expect to travel at relatively high speeds, with the highway serving as a major link in state or national highway networks.

- **Class II**: Highways where motorists do not necessarily expect to travel at high speeds; the highway serves as a scenic or recreational route, or passes through rugged terrain or through an area where sightseeing is common.

- **Class III**: Highways serving developed areas.

ITD’s traffic assessment evaluated the Targhee Pass segment of U.S. 20 as both a Class I and Class II highway. Table 1 relates level of service categories to criteria for average travel speed and percent time spent following for Class I and Class II highways. Level of service for Class I highways is determined by average travel speed or percent time spent following (the lower of the two measures). Level of service for Class II highways is determined by percent time spent following.
Existing and projected traffic on Targhee Pass (Table 2) is seasonally variable, with low traffic volumes in the winter (lowest in February—56 percent of the annual average) and high traffic volumes during the summer (highest in July—194 percent of the annual average). The average growth rate in traffic volume for the past 40 years has been 2.3 percent (ITD, 2015).

To determine needs for traffic-flow improvements, ITD completed a level-of-service analysis for the years 2022 and 2042 (ITD, 2015); Table 3 summarizes the results. Based on traffic counts, the analysis assumed 17 percent of traffic will consist of commercial-heavy vehicles, with these split between heavy trucks (5 percent) and slower-moving recreational vehicles like motorhomes and travel trailers (12 percent). Other assumptions of the analysis are described in the traffic assessment report (ITD, 2015). In 2022, the percent time spent following in the uphill direction is projected to average 73.8 percent, with July having a value of 89.5 percent. By 2042, the summer average travel speed (34.5 mph) and percent time spent following (91.4 percent) will be at levels that ITD would consider to be a failing level of service with the existing highway design.

---

### Table 1. Level of Service for Class I and Class II Two-lane (Rural) Highways

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Class I Highways</th>
<th>Class II Highways</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average Travel Speed (miles per hour)</td>
<td>Percent Time Spent Following</td>
</tr>
<tr>
<td>A</td>
<td>Greater than 55</td>
<td>Less than 35</td>
</tr>
<tr>
<td>C</td>
<td>45–50</td>
<td>Greater than 50–65</td>
</tr>
<tr>
<td>D</td>
<td>40–45</td>
<td>Greater than 65–80</td>
</tr>
<tr>
<td>E</td>
<td>Less than or equal to 40</td>
<td>Greater than or equal to 80</td>
</tr>
<tr>
<td>F</td>
<td>LOS F exists whenever demand flow in one or both directions exceed the capacity of the segment. Operating conditions are unstable, and heavy congestion exists on all classes of two-lane highway.</td>
<td></td>
</tr>
</tbody>
</table>

Source: TRB 2010

* Average percent of time that vehicles spend in platoons behind slow vehicles (headways of 3 seconds or less) due to inability to pass.

### Table 2. Targhee Pass Traffic Volumes

<table>
<thead>
<tr>
<th>Traffic Volume Data</th>
<th>Year</th>
<th>2012</th>
<th>2022</th>
<th>2042</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Daily Traffic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual</td>
<td></td>
<td>2,900</td>
<td>3,555</td>
<td>4,865</td>
</tr>
<tr>
<td>February</td>
<td></td>
<td>1,624</td>
<td>1,990</td>
<td>2,724</td>
</tr>
<tr>
<td>July</td>
<td></td>
<td>5,626</td>
<td>6,897</td>
<td>9,438</td>
</tr>
<tr>
<td>Design Hour Volume</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual</td>
<td></td>
<td>694</td>
<td>836</td>
<td>1,118</td>
</tr>
<tr>
<td>February</td>
<td></td>
<td>389</td>
<td>468</td>
<td>626</td>
</tr>
<tr>
<td>July</td>
<td></td>
<td>1,346</td>
<td>1,622</td>
<td>2,168</td>
</tr>
</tbody>
</table>

Source: ITD 2015
Table 3. Targhee Pass Projected Level of Service for 2022 and 2042

<table>
<thead>
<tr>
<th></th>
<th>Average Travel Speed (miles per hour)</th>
<th>Percent Time Spent Following</th>
<th>Level of Service b</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2022</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual</td>
<td>46.0</td>
<td>73.8</td>
<td>D</td>
</tr>
<tr>
<td>February</td>
<td>48.4</td>
<td>63.0</td>
<td>C</td>
</tr>
<tr>
<td>July</td>
<td>40.2</td>
<td>89.5</td>
<td>E</td>
</tr>
<tr>
<td><strong>2042</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual</td>
<td>44.1</td>
<td>81.8</td>
<td>E</td>
</tr>
<tr>
<td>February</td>
<td>47.2</td>
<td>67.0</td>
<td>D</td>
</tr>
<tr>
<td>July</td>
<td>34.5</td>
<td>91.4</td>
<td>F</td>
</tr>
</tbody>
</table>

Source: ITD 2015

a Average travel speed is lower than the posted speed limit and lower than “free flow” moving traffic. Leading up to the ITD 2015 traffic assessment, a traffic counter was placed at mile post 403.0 between September 2–9, 2014 and collected speeds of 19,700 vehicles. The average car was calculated at 64.0 miles per hour. The average truck speed was 60.6 miles per hour. Cars following slower vehicles or trucks are not counted in these “free-flowing” traffic counter numbers. Modeled average travel speed is the calculated average of all vehicles, regardless of whether or not they are free flow; when this includes vehicles following trucks and other slow vehicles, the average speed drops significantly. Thus, rather than reflecting the speed of free flowing traffic, average travel speed is a statistical indicator of traffic congestion related to level of service and an indicator of expected passing behavior for a segment of roadway.

b Level of service for Class I or Class II rural highway (see Table 1), whichever criterion was the lowest determination in the traffic assessment report (ITD, 2015).

In summary, the Targhee Pass segment of U.S. 20 is expected to continue to function as a rural highway through 2042, serving both as a major link in state and national highway systems (Class I highway) and a scenic/recreational route (Class II). Without improvement, the highway would see a decreasing level of service in future years, particularly during the summer season, reaching a failing level of service by 2042.

1.3.3 Safety

ITD completed a traffic and safety evaluation for Targhee Pass leading up to the proposed project (ITD, 2015). This evaluation utilized crash data from 2009 to 2013. Crash data came from Idaho’s statewide Crash Analysis Reporting System (WebCars). Of 66 reported crashes during that period, 41 resulted in property damage only, 25 resulted in injury, and there were no fatalities. Sixty of the 66 crashes involved a single vehicle and 50 occurred during wet or icy conditions. Sixteen of the 66 crashes involved wild animal collisions or a crash attributed to wild animal avoidance. In ITD’s 2015 assessment, three locations of high crash occurrence were evident:

- **Mile post 402.6 to 403.3**: Nine of the 16 wild animal collisions occurred here.
- **Mile post 403.7 to 404.3**: Nine crashes in ice/snow conditions and two animal collisions occurred here.
- **Mile post 405.2 to 405.8**: Nine crashes here occurred in icy/slushy conditions. This is an area of known drainage problems and near-surface groundwater (i.e., the Howard Spring area).

In several locations, shading of the roadway by hill cuts and tall trees contributes to icy conditions. ITD completed a shade analysis to identify locations where this occurs.
Additionally, ITD determined that stopping-sight distance around the largest curve in the project area is insufficient; the distance that a driver can see a stopped vehicle ahead is constrained by the hill on the inside of the curve. Also, the current shoulder width (5-feet) does not meet design standard (8-feet) for this type of road. These deficiencies are based on design standards for the National Highway System (AASHTO, 2011).

Additional years of crash data have become available since ITD completed the crash assessment for Targhee Pass in 2015. In Table 4, data for the 2009-2013 period are compared to the most recently available 5-year data period, 2012-2016. The more recent 5-year period had a lower total number of crashes (43) but a higher traffic volume; therefore, the crash rate per million vehicle miles travelled was lower 2012-2016, 1.79 per million vehicle miles, compared to the 2009-2013 period, 3.25 per million vehicle miles. The rate of reported wildlife-related crashes, 0.79 per million vehicle miles, remained the same. The overall crash rate per million vehicle miles for both of the 5-year periods exceeds the base rate for the type of road section, which is 0.95 crashes per million vehicle miles traveled.

Table 4. U.S. 20 Crash Rates for Overlapping Five-year Periods (2009-2013 and 2012-2016), Targhee Pass Segment (Mile Post 402.27 to 406.30)

<table>
<thead>
<tr>
<th></th>
<th>2009-2013</th>
<th>2012-2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total volume</td>
<td>5,037,000</td>
<td>5,949,500</td>
</tr>
<tr>
<td>Million vehicle miles traveled (MVM)</td>
<td>20.30</td>
<td>23.98</td>
</tr>
<tr>
<td>Total crashes</td>
<td>66</td>
<td>43</td>
</tr>
<tr>
<td>Crashes per MVM</td>
<td>3.25</td>
<td>1.79</td>
</tr>
<tr>
<td>Wildlife-related crashes</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>Wildlife-related crashes per MVM</td>
<td>0.79</td>
<td>0.79</td>
</tr>
<tr>
<td>Non-wildlife-related crashes</td>
<td>50</td>
<td>24</td>
</tr>
<tr>
<td>Non-wildlife-related crashes per MVM</td>
<td>2.46</td>
<td>1.00</td>
</tr>
</tbody>
</table>

An important change in ITD operations for the 2012-2016 period that has contributed to reduced crashes has been an improved winter road maintenance program, using salt treatments to reduce road ice (Figure 2). ITD now has a statewide winter storm mobility goal – 73 percent of the time mobility will not be significantly impeded during winter storms. District 6 has subsequently intensified winter road maintenance, reaching 70 percent in 2015 and nearly 80 percent in 2018. Additional information
regarding a recent safety evaluation of U.S. 20 is available in a technical report by Kittelson and Associates (2016).

### 1.4 Scoping

ITD conducted scoping to identify issues, alternatives, and additional goals and objectives to be evaluated in this EA.

Resource issues and concerns were identified through internal scoping and solicitation of comments from the public, resource agencies, and a stakeholder working group. ITD employed a suite of public-involvement methods to obtain input regarding issues to be evaluated in the EA. Throughout the phases of external scoping and alternatives development, ITD accepted comments by e-mail, postal mail, telephone, and a website (IslandParkUS20.com). Handwritten comments were also accepted at public meetings. Additional details regarding public involvement are presented in Chapter 4. All communications with the public, organizations, and resource agencies are archived in a database retained in ITD’s project record.

A scoping press release was issued by ITD on November 30, 2016. Agency and public scoping meetings were held in Island Park, Idaho, on December 15, 2016. Information provided included the study process, purpose, schedule, and geography of Targhee Pass. Preliminary statements of the purpose and need were provided along with descriptions of known issues to be evaluated. Comments were accepted through the following spring and summer. A total of 109 substantive comment letters were received between December 2016 and July 2017. ITD held two public meetings, one in July 2017 and one in August 2017, which were focused on developing alternatives. An additional 294 substantive comment letters were received from July through September 2017. Additional comments written on printed maps and oral comments were also received during the meetings. ITD developed a scoping report (ITD, 2018) to summarize issues derived from scoping. The scoping report was made available to the public on the website.

### 1.4.1 Additional Project Goals and Objectives

Through the scoping process, FHWA and ITD determined design elements for one or more alternatives would be considered for enhancing pedestrian and bicycle facilities and for enhancing wildlife movement.

#### 1.4.1.1 Enhancing Pedestrian and Bicycle Facilities

Enhancing pedestrian and bicycle facilities is a stated goal in the U.S. 20 Corridor Plan (ITD, 2006). The Corridor Plan includes adequate shoulder width and safe pedestrian crossings where appropriate. A separated bike and pedestrian path is not planned for the Targhee Pass segment of U.S. 20, but concerns about bike and pedestrian presence on Targhee Pass were raised in scoping (ITD, 2018). Therefore, FHWA and ITD decided that design elements for pedestrian and bicycle safety would be considered in the alternatives development process.

#### 1.4.1.2 Enhancing Wildlife Movement

In the corridor plan, ITD also identified wildlife movement as an environmental factor for alternative analysis when considering transportation improvements to U.S. 20 (ITD, 2006). In general, highway traffic can impede migratory, dispersal, and daily movements of wildlife (Forman et al., 2003; Huijser et al., 2008; Van der Ree et al., 2015).
In the corridor plan document (ITD, 2006), ITD recognized that, at a minimum, there was a need to improve driver awareness of wildlife movement across the highway. Wildlife movement research efforts have been pursued by ITD (Geodata Services, Inc., 2005; Andreasen et al., 2014; Cramer, 2016; Seidler, 2018) and are presently ongoing through a Memorandum of Understanding (ITD-IDFG, 2015) and a Cooperative Agreement (ITD-IDFG, 2017) between ITD and the Idaho Department of Fish and Game (IDFG). Information developed through these and other research efforts have identified Targhee Pass as an important wildlife movement area for daily and seasonal movements of elk, moose, mule deer, grizzly bear, and wolverine (Andreasen et al., 2014; Cramer, 2016; Seidler, 2018). Roadless areas to the north and south of Targhee Pass support numerous other species including: pronghorn, bison, white-tailed deer, black bear, and wolf. Targhee Pass bisects wildlife movements into and out of Yellowstone National Park as well as large scale regional movements of carnivores such as grizzly bear and wolverine (Cramer, 2016; Seidler, 2018).

Due to the importance of the area to wildlife, IDFG developed recommendations for the Targhee Pass segment of U.S. 20 (Seidler, 2018) that have been considered in the alternatives development process.

### 1.4.2 Impact Analysis Topics

The impact analysis, presented in Chapter 3, is organized by the following topics:

- **Geologic Hazards and Soil Disturbances:** Geotechnical investigations were completed during project development to determine slope stability, near-surface groundwater, and other potential constraints and design considerations for developing alternatives. Potential constraints and soil disturbances are described in Section 3.1.

- **Water Resources:** The area’s watershed supplies water to the local residences, and Howard Creek flows into Henry’s Lake, just below where it crosses S.H. 87. Potential impacts to water quality, floodplains, and wetlands are evaluated in Section 3.2.

- **Biological Resources:** The impact analysis addresses avoidance, minimization, and mitigation measures for federally listed species as well as other categories of state and federal special-status species. Available data and research literature are used to evaluate effects of alternatives on wildlife-vehicle collisions and migratory, dispersal, and daily movements of wildlife. Howard Creek is connected to Henry’s Lake, and Yellowstone cutthroat trout are a native species present in the Henry’s Lake watershed. Potential effects to the fishery are also evaluated. These evaluations are presented in Section 3.3.

- **Land Use and Transportation Planning:** Lands adjacent to Targhee Pass are private and public, which include public lands administered by the U.S. Forest Service—Caribou-Targhee National Forest (USFS) and the US Bureau of Land Management (BLM). Private lands adjacent to the corridor are located within unincorporated Fremont County. The intersection of U.S. 20 and S.H. 87 lies within incorporated Island Park, Idaho. Consistency with other federal, state, and local land use and transportation planning is evaluated in Section 3.4.
• **Traffic Noise:** FHWA regulations (23 CFR 772) and the ITD Noise Abatement Policy (ITD, 2011) require evaluation of traffic noise for sensitive land uses, which include residential, parks, picnic areas, outdoor restaurant areas, and others including some noise-sensitive interior environments such as libraries. A noise study was prepared for the Targhee Pass alternatives (Horrocks Engineers, 2018); the analysis is summarized in Section 3.5.

• **Visual Resources:** Targhee Pass is valued for its scenic quality and is partially located within the Caribou-Targhee National Forest, which has scenery management objectives associated with the Caribou-Targhee National 1997 Revised Forest Plan (Forest Plan) (USFS, 1997). Scenic impact is an important component of environmental quality that can be affected by transportation projects. Potential visual impacts to Targhee Pass are evaluated in Section 3.6.

• **Recreation Resources:** Winter and summer trail accesses are located in the area. Lands adjacent to Targhee Pass are used for recreation including snowmobiling, skiing, hunting, hiking, and wildlife watching. Impacts to recreation are evaluated in Section 3.7.

• **Social and Economic Context:** The highway is an integral component of the local economy and community. The Targhee Pass segment of US 20 is used by locals to commute and for the transport of goods and services across state lines. Tourists are drawn to the area for the wildlife, recreational, and scenic values offered here. Tourists who visit the area access local services (e.g., restaurants, lodging, and destinations) by using the U.S. 20 corridor. There are residential and other private property accesses and one subdivision, Big Horn Hills Estates. Potential impacts to the social and economic context are evaluated in Section 3.8.

• **Cultural Resources:** Transportation projects are required to avoid, minimize, and mitigate adverse effects to eligible historic resources, as well as to consult with Native American tribes. The Nez Perce Tribe and the Shoshone Bannock Tribe expressed interest in the EA and have been consulted throughout the NEPA process. Impact avoidance, minimizations, and consultation efforts are summarized in Section 3.9. Consultation is summarized in Chapter 4.

• **Section 4(f) Resources:** Under the 4(f) regulations, federal transportation projects must seek to avoid uses of public recreation facilities and historic properties. Potential 4(f) resources in the Targhee Pass project area are described and evaluated in Section 3.10.
2 Alternatives

This chapter describes the alternatives under consideration in this EA, as well as alternatives considered but not carried forward. Five alternatives were carried forward, including the No-Build Alternative (Alternative 1). Each of the four build alternatives (Alternatives 2, 3, 4, and 5) include the same highway design elements (roadway additions) but differ in how wildlife issues, described in Chapter 1, would be addressed.

2.1 Road Improvements Common to Build Alternatives

The following roadway improvements are included with all of the build alternatives (Alternatives 2, 3, 4, and 5):

- An additional travel lane in the uphill direction from S.H. 87 to the Montana State line
- Shoulder widening from 5-feet to 8-feet
- Hill cut to improve stopping sight distance
- Left- and right-turn lanes into Big Horn Hills Estates entrances
- Tree clearing to reduce shade
- Road subsurface reconstruction and drainage improvements

All of the roadway improvements would occur within the existing right-of-way/easement, illustrated in Figure 3, but some design elements (e.g., wildlife crossings, wildlife fence) for certain alternatives would require easements beyond the existing right-of-way; these are described later in this chapter. ITD owns right-of-way through the private land segment of Targhee Pass (lower half) and holds easements with the BLM and USFS through the federal land segment (upper half).

2.1.1 Road Widening and Hill Cut

Road widening would include an additional travel lane in the uphill (north/east) direction for the entire project length and increasing shoulder width on each side from 5-feet to 8-feet. Figure 4 illustrates a comparison of the typical existing cross-section to the typical cross-section with the proposed improvements.

Widening would require increasing hill cuts at a few locations, the largest being between mile post 404.1 and 404.7 (Figure 5). The increased hill cut at this location would improve safety by increasing the sight distance around the curve. The curvature of the road would also be modified for improved safety around this curve and others.

2.1.2 Turn Lanes

Turn lane additions are illustrated in Figure 6. Left and right turn lanes would be created at the two entrances into the Big Horn Hills Estates subdivision. According to ITD’s analysis (ITD, 2015), right- and left-turn lanes are warranted for both approaches into Big Horn Hills Estates. Turn lanes were determined to be warranted at these locations based on the future volume that could result from a complete build-out of this subdivision (101 lots).
Figure 3. Project Location and Right-of-Way
Figure 4. Typical Cross Sections

Existing and No-Build Alternative:
- One 12-foot lane each direction
- 5-foot shoulder each side
- Total 34-feet of pavement

Build Alternatives:
- Three 12-foot lanes
- 8-foot shoulder each side
- Total 52-feet of pavement

U.S. 20 Targhee Pass
Typical Cross Sections

Basemap: 2017 LiDar Ortho Images
Projection: Transverse Mercator
Map Date: 7/6/2018
Figure 5. Hill Cut and Road Realignment
Figure 6. Turn Lane Additions
The addition of a left-turn lane into the Howard Spring Picnic Site (from the downhill/westbound direction) was determined to be a warranted safety improvement (ITD, 2015). However, during the preliminary design process, a left-turn lane proved not practicable to construct. It would require substantial realignment of the road, which would result in elimination of the existing pull-out and other features at the picnic site. Widening the road would leave no space for parking within the existing highway right-of-way easement within the Caribou-Targhee National Forest. While the left-turn lane proved to be not practicable to construct, a right-turn deceleration lane into the picnic site would be constructed under any of the build alternatives.

2.1.3 Shade Reduction

Ice- and snow-covered roads were the leading circumstance contributing to crashes identified in the preliminary traffic assessment (ITD, 2015). ITD completed a shade analysis to identify locations where hill cuts and/or cutting back trees could increase the pavement’s exposure to sunlight and help reduce ice formation and persistence. The analysis examined the potential benefits of clearing tall vegetation (trees) within 100 feet of the centerline. In the lower half of the project area (mile posts 402.1 to 404.3), the right-of-way is at present mostly clear of trees, and the road is oriented north-south, so there is less road shading in this segment. Between mile post 404.3 and the Montana state line, the road turns to an east-west orientation, with more hill shading and tree cover within the right-of-way.

One improvement common to all of the build alternatives is selective tree removal in areas where it would best improve the pavement’s exposure to sunlight. This applies mainly to the upper half the project area, within the highway easement on the Caribou-Targhee National Forest. For alternatives with wildlife fencing, a path through the trees would need to be cleared. Trees would not be cut at the Howard Springs Picnic Site, except in the forest behind the site, and then only if wildlife fencing were included with a build alternative. For alternatives that do not have wildlife fence, ITD would conduct more tree clearing than for the alternatives with wildlife fence in order to increase the visibility of animals near the road.

2.1.4 Improved Road Base, Drainage, and Pavement Resurfacing

The new road base would be constructed using drainable aggregate with the depth to be determined during final design. Subsurface drainage and modifications of road curves would also be made to increase the design safety of the road. For subsurface drainage, ITD would install perforated pipes wrapped in a geotextile material and placed perpendicular to the centerline. This would move water out of the base material and into the adjacent ditch. After the road base material has been placed, pipes would be placed in 1-foot-wide trenches surrounded by drainable material. The spacing and size of the pipe would be determined based on need for given locations; typically, there would be larger-sized and more frequent pipe placement in low areas (sags) and fewer in high areas (slopes). Minor adjustments to the curvature of the road would be made, staying within the existing right-of-way. The new road would be paved with asphalt, with the grade and thickness to be determined in final design.

2.2 Ability to Meet Project Needs

Three categories of needs were identified in Chapter 1: (1) roadway structural deficiencies, (2) traffic flow, and (3) safety. These needs are sufficiently met with the proposed transportation improvements.

2.2.1 Roadway Structural Deficiencies

The proposed improvements would address the problems associated with the deficient roadway structure by adding an improved road base and drainage system underneath a newly paved road surface. In final
design, ITD will determine the material and thickness of roadway base and asphalt layers to meet service
life requirements.

2.2.2 Traffic Flow

Throughout U.S. 20 from Ashton Hill to the Montana state line, the expected future traffic volume within
the planning horizon (40 years) is not high enough to warrant investment in substantial capacity
improvement (such as a four- or five-lane cross section throughout). Instead, an alternating three-lane
cross-section was identified in the transportation plan (ITD, 2006) for sufficiently meeting safety and
capacity needs by reducing percent time spent following, and also reducing the occurrence of unsafe
passing around slower moving vehicles.

In terms of traffic flow for the Targhee Pass segment of U.S. 20, the lane addition in the uphill direction
would decrease percent time spent following and (to a lesser extent) increase average travel speed. ITD’s
2015 modeled traffic flow results (with and without a lane addition) are presented in Table 5.

Table 5. Targhee Pass Projected Level of Service for the No-Build Alternative and Build Alternatives, Year
2042

<table>
<thead>
<tr>
<th></th>
<th>Average Travel Speed (miles per hour) (^a)</th>
<th>Percent Time Spent Following</th>
<th>Level of Service (^b) Class I Highway (^c)</th>
<th>Class II Highway (^d)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Without Proposed Improvements (No-Build)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual</td>
<td>44.1</td>
<td>81.8</td>
<td>E</td>
<td>D</td>
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<tr>
<td>February</td>
<td>47.2</td>
<td>67.0</td>
<td>D</td>
<td>C</td>
</tr>
<tr>
<td>July</td>
<td>34.5</td>
<td>91.4</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td><strong>With Proposed Improvements (Build)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual</td>
<td>49.1</td>
<td>29.3</td>
<td>C</td>
<td>A</td>
</tr>
<tr>
<td>February</td>
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<td>C</td>
<td>A</td>
</tr>
<tr>
<td>July</td>
<td>38.4</td>
<td>31.3</td>
<td>E</td>
<td>A</td>
</tr>
</tbody>
</table>

Source: ITD 2015

\(^a\) Average travel speed is lower than the posted speed limit and lower than “free flow” moving traffic. Leading up to the ITD 2015 traffic assessment, a traffic counter was placed at mile post 403.0 between September 2–9, 2014 and collected speeds of 19,700 vehicles. The average car was calculated at 64.0 miles per hour. The average truck speed was 60.6 miles per hour. Cars following slower vehicles or trucks are not counted in these “free-flowing” traffic counter numbers. Modeled average travel speed is the calculated average of all vehicles, regardless of whether or not they are free flow; when this includes vehicles following trucks and other slow vehicles, the average speed drops significantly. Thus, rather than reflecting the speed of free flowing traffic, average travel speed is a statistical indicator of traffic congestion related to level of service and an indicator of expected passing behavior for a segment of roadway.

\(^b\) Level of service is a rating of traffic flow from A (high level of service/no traffic congestion) to F (failing level of service/high traffic congestion). Level of service C represents maximum free-flowing traffic capacity.

\(^c\) Class I is a rural highway that serves as a major link in state or national highway networks. Both average travel speed and percent time spent following are considered in determining level of service for Class I highways.

\(^d\) Class II is a rural highway that serves as a scenic or recreational route; only percent time spent following is considered in determining level of service for Class II highways.

As described in Chapter 1, Targhee Pass and U.S. 20 through Island Park serves as both a Class I rural
highway (a major link in state or national highway networks) and as a Class II rural highway (a scenic or
recreational route). ITD has considered level-of-service criteria for both of these classifications. With the
proposed improvements, the 2042 annual average percent time spent following would decrease from 81.8
percent to 29.3 percent, and the annual average travel speed would increase from 44.1 mph to 49.1 mph.
These values correspond to a level-of-service rating of C for a Class I highway and level-of-service rating
of A for a Class II highway. Average travel speed does not improve as much as percent time spent
following because the proposed improvements would not change the highway grade. Therefore, the speed
of slower-moving vehicles in the uphill direction is not expected to improve, but presence of the passing lane would allow faster-moving vehicles to pass, which would greatly reduce percent time spent following. This also contributes to the expected safety improvement previously mentioned due to the reduction of unsafe passing maneuvers.

During July 2042, the month with the highest traffic volume, a greater number of vehicles would spend time following slower-moving vehicles until they have opportunities to move into passing lanes, compared with months with lower traffic volumes. In modeling, the average travel speed for the month of July, 38.4 mph, corresponds to a level-of-service rating of E for Class I highways. However, the reduction in percent time spent following, from 91.4 percent to 31.3 percent, still corresponds to a level-of-service rating of A for a Class II highway.

As described in the ITD corridor plan for U.S. 20 (ITD, 2006), the highway is increasingly used for the purpose of moving freight. This corresponds to the purpose of a Class I rural highway (major link in state or national highway networks). However, the highway also continues to be and will continue to serve as a Class II rural highway (a scenic or recreational route). ITD’s goal in the corridor plan is to provide a balance between the two purposes.

As illustrated in Table 5, the proposed improvements adequately address the traffic-flow needs identified in the corridor plan (ITD, 2006) while preserving the character of the roadway as a rural highway that serves as both a Class I highway (major link in state or national highway network) and a Class II highway (scenic or recreational route). This is consistent with the goals identified in the corridor plan (ITD, 2006). The highway would continue to see summertime congestion (level of service E for Class I highway during the month of July), but the lane addition would provide sufficient congestion reduction to achieve a Class II level-of-service rating of A.

### 2.2.3 Safety

The fundamental design elements for improving safety include addition of a passing lane, shoulder widening, change in the horizontal alignment, and resurfacing. ITD utilizes a standardized method of evaluating safety benefits of these highway design elements; ITD’s safety evaluation of these roadway improvements estimates a crash-reduction factor of 60 percent.

Other safety improvements not included in the standardized crash-reduction assessment are reducing the road shade that contributes to persistence of ice and packed snow, improvement in sight distance, and the addition of right- and left-turn lanes at Big Horn Hills Estates entrances. Improvements for subsurface drainage will also reduce the amount of slush and ice on the roadway, and new pavement surface would improve tire traction. Measures to reduce wildlife-vehicle collisions differ by alternative; potential benefits of the respective measures for safety improvement are described later in this chapter.

### 2.2.4 Additional Project Objectives

Additional project objectives mentioned in Chapter 1 were considered for inclusion in one or more build alternatives as enhancements.

#### 2.2.4.1 Enhancing Pedestrian and Bicycle Facilities

As stated in Chapter 1, enhancing pedestrian and bicycle facilities is a stated goal of the U.S. 20 corridor plan (ITD, 2006). This includes adequate shoulder width and safe pedestrian crossings, where appropriate. The State of Idaho has designated U.S. 20 a bicycle route. A separated bike and pedestrian path is not planned for the Targhee Pass segment of U.S. 20, but shoulder widening on both sides of the
highway, included with the proposed improvements for any of the build alternatives, would benefit pedestrians and bicyclists and, therefore, would meet this objective.

2.2.4.2 Enhancing Wildlife Movement

As stated in Chapter 1, the corridor plan identifies wildlife movement as an important factor when considering transportation improvements to U.S. 20 (ITD, 2006). Based on research and professional recommendations (Geodata Services, Inc., 2005; Andreasen et al., 2014; Cramer, 2016; Seidler, 2018), as well as successful implementation of wildlife crossings in other locations (Huijser et al., 2016), ITD decided to include wildlife crossing structures with one or more build alternatives for analysis in this EA.

2.3 Alternatives Advanced for Detailed Analysis

Five alternatives were advanced for detailed analysis, including the No-Build Alternative and four build alternatives that differ by the types of wildlife design elements included. Project needs would be sufficiently addressed with the transportation improvements included with any of the build alternatives. Alternatives are therefore concerned with evaluating a range of enhancements for providing additional safety improvement to reduce wildlife-vehicle collisions and giving consideration to opportunities for enhancing wildlife movement.

2.3.1 Alternative 1: No-Build

The No-Build Alternative represents a future scenario in which ITD would make only maintenance improvements to Targhee Pass. ITD would replace and repair the existing pavement, but no improvements would be made to the road base, drainage, road geometry, turn lanes, shoulder width, or number of travel lanes. In addition to being a potential alternative that could be selected, the No-Build Alternative also represents the future transportation and environmental baseline scenario against which build alternatives are compared in this EA.

Proposed project needs identified in Chapter 1 would not be met under the No-Build Alternative. Needs for improvement to the roadway structure, replacement of road ballast, and surface drainage improvements would not be made. Not replacing the road ballast and adding drainage improvements would result in shorter life of expensive maintenance treatments, which would increase the need for and expense of maintenance compared with the lifespan of the roadway (40 years) if the needed improvements were made under one of the build alternatives.

Needs for improving safety would also not be met under the No-Build Alternative; crash rates would be expected to continue at least at the same rates as in the recent past but possibly rise with the increase in future traffic volume.

The actions for reducing wildlife-vehicle collisions that could be implemented under the No-Build Alternative would be actions that do not require construction-related ground disturbance. This would include continued use of portable variable message signs, which provide seasonal warning to drivers of wildlife presence. Signage could be deployed seasonally or year-round. Messages displayed, the number of signs used, and advisory speeds could be varied in efforts to increase effectiveness. However, standard warning signs and digital/variable message signs have not been correlated with a reliably predictable reduction in wildlife-vehicle collisions (Seidler, 2018; Huijser and McGowen, 2010).

Needs for improving traffic flow would not be met under the No-Build Alternative, resulting in the expected No-Build level-of-service ratings identified in Table 5. With the projected 2042 annual average
daily traffic volume, 4,865 (Table 2 in Chapter 1), percent time spent following is projected to rise to 81.8 percent and with the summer average daily traffic, 9,438, percent time spent following is projected to reach 91.4 percent.

Without shoulder widening, no improvements would be made for enhancing pedestrian and bicycle safety under the No-Build Alternative.

Under the No-Build Alternative, no enhancements would be made for improving wildlife movement.

2.3.2 Alternative 2: Wildlife Crossing Structures and Fence

In addition to the roadway improvements previously described, Alternative 2 would include wildlife fencing near the right-of-way boundary throughout the 4-mile segment of U.S. 20. Alternative 2 also includes three wildlife crossing structures. Such installations provide an estimated 83–87 percent reduction in wildlife-vehicle collision occurrence (Huijser and McGowen, 2010; Clevenger and Huijser, 2011; Rytwinski et al., 2016). Vehicle access points would use double cattle guards and/or electric mats to prevent wildlife from entering the enclosed roadway area. Fence-end treatments would also be used to exclude wildlife from highway areas and animal jump-outs would be installed to allow any wildlife within the fenced area to escape. Gates would be installed to allow recreational access (fishing, hiking, hunting, etc.) at various locations.

Vehicle access locations, access design, and pedestrian access locations would be determined during final design if Alternative 2 were selected for implementation. The determination of access locations and designs would be made by ITD in coordination with Fremont County, City of Island Park, Big Horn Hills Estates Property Owners Association, owners of other adjacent private lands, Native American tribes, USFS Ashton Ranger District, IDFG, and the U.S. Fish and Wildlife Service Chubbuck Field Office.

Proposed locations for wildlife crossing structures are at mile posts 402.8, 405.1, and 405.9, shown in Figure 7. These general crossing locations were based on recommendations from wildlife biologists (Andreasen et al., 2014; Cramer, 2016; Seidler, 2018), with adjustments to avoid sensitive resources and impacts (e.g., wetlands, cultural, utilities). All three of the wildlife-crossing structures would be overpasses with vegetated crossing surfaces; there are no locations at Targhee Pass where an underpass would be feasible to construct. The crossing structures at mile posts 405.1 and 405.9 would be located within the Caribou-Targhee National Forest, the third at mile post 402.8 would be located in an area of private lands. Exact locations could be modified during final design but would be in these general vicinities.

Wildlife fence example, U.S. 20 near Rigby, Idaho
Figure 7. Alternative 2 Wildlife Features
ITD and/or IDFG would need to obtain a conservation easement across private land for preserving wildlife access to the crossing structure (without development impeding access). The lands in question are zoned by Fremont County as part of a rural conservation area; presence of the crossing structure and easement for it would be compatible with the purposes of the rural conservation planning zone. ITD had preliminary discussions with the private landowners about the possibility of a conservation easement for a crossing structure should this be selected for implementation and the landowners were receptive to having additional discussion should that occur.

During final design, specific design features of crossing structures could be determined in coordination with the entities listed previously. Such features could include color and texture of concrete facing, vegetation on and near the crossing structure, and more. Wildlife fencing would be designed to exclude target animals (e.g., deer, elk, moose, bears, wolverine) from accessing the highway. Generally, this means wire-mesh fencing 7.5–10-foot high constructed with wood or metal posts. A buried apron could be included to reduce the potential of animals burrowing under the fence. If Alternative 2 were selected, ITD would also consult the previously listed parties regarding the design of fencing, vehicle access points, and pedestrian access points. Variations in fence material, color, posts, access gate design, and vehicle-crossing design are available and can be selected to be compatible with the setting.

A wildlife fence and associated structural features (animal jump-outs, vehicle accesses, fence end treatments, etc.) have an expected service life of 25 years, and would require annual inspection (to check for damage from fallen trees, animal burrowing, etc.). ITD manages structures for replacement at a 50-year interval. Wildlife structures for Targhee Pass would be included in ITD’s structures inventory and would be inspected at a regularly scheduled interval following standard practices.

Tree clearing under Alternative 2 would be limited to the areas where shade reduction would be a benefit for reducing ice formation on the pavement (select areas within the upper half of the project area), plus locations where wildlife fencing would be installed through standing forest. Clearing for the wildlife fence would be limited to 8- to 12-foot width. Other trees within the highway right-of-way would not be
removed; preserving trees within the right-of-way would also reduce the visual effect of the wildlife fence for the upper half of the project area, on the Caribou-Targhee National Forest. Wildlife fencing at the Howard Spring Picnic Site would be routed in the forest behind the picnic site and pedestrian access through the fence would be provided. The only tree clearing at the Howard Spring Picnic Site would be for the wildlife fence.

2.3.3 Alternative 3: Animal-Detection System

In addition to the roadway improvements described in Section 2.1, Alternative 3 would include installation of an animal-detection system throughout the 4-mile segment of U.S. 20. The system would alert drivers to the presence of animals. This alternative would not include wildlife fencing or crossing structures.

ITD would select a vendor that designs, installs, and monitors detection systems. A series of line-of-sight radar systems (as many as 12–14 systems) would be necessary to cover the 4-mile segment. Warning signs to drivers would be activated when wildlife is detected. Preliminary discussions with a vendor indicated that an animal-detection system for Targhee Pass could likely be installed using solar power alone. The sensors and solar panels would be mounted on 14–16-foot-tall metal poles. The poles would be mounted with a typical pole foundation (2-foot diameter by 4-foot depth). The poles would have a breakaway base to protect drivers during impact. These detection systems could potentially be moved if gaps in zone coverage were found or if other technical issues arose following the initial installation.

Radar activated animal-detection system example installation near Elko, British Columbia, Canada (Photo Copyright: Marcel Huijser, used with permission)
Real-time animal-detection systems are an ever-evolving technology and, as such, have had wide variation in effectiveness (33–97 percent) in accurately and consistently detecting animals and reducing wildlife-vehicle collisions (Huijser et al., 2016). The type of system being considered for Targhee Pass under Alternative 3 is a series of pole-mounted radar systems to detect animals on or near the roadway. The system may also utilize infrared cameras, temporarily or permanently, as a way to test and document the reliability of the radar system. Similar systems have been in use at two locations in British Columbia, Canada, since 2016. Early results there show that these systems have reduced average vehicle speeds when warning signs are activated and have reduced the number of animal collisions; however, longer-term monitoring is needed to be more confident in results (Sielecki, 2017). Other systems tested in the United States have had varying success in both reducing vehicle speed when warning signs are activated and in reducing wildlife-vehicle collisions (e.g., Dai et al., 2008; Huijser et al., 2017; Huijser et al., 2009b; Huijser et al., 2009c). A system tested along U.S. Highway 191 north of West Yellowstone, Montana was associated with 58–67 percent fewer large wild animal collisions than expected during the test period; however, the test period was only a single year and the researchers could not assess whether this reduction was significant (Huijser, et al., 2009c).

A detection system deployed at seven locations in Switzerland on seven different roadways between 1993 and 2002 netted 82 percent reduction in animal collisions compared to prior years (Mosler-Berger and Romer, 2003; Huijser, et al., 2009a). This system utilized LED signs that displayed messages only when animals were detected on the pavement within the detection zone. The system was used only during dusk-dawn hours, when human presence/activity along the roadside (pedestrians, bicycles, etc.) was lower; this prevented the system from giving too many false positive detections during hours when people were more active along the roadway and when animals were less active. When activated, the Swiss warning signs indicated a 40 kilometer per hour (25 mph) advisory speed limit through the detection zone (Mosler-Berger and Romer, 2003). Also, the system (from photographs) appears to have been deployed on narrow, winding roads in Switzerland with lower travel speeds and narrow shoulders; thus, these appear to have been used on roadways with lower design speeds compared to those of U.S. 20, U.S. 191, and other Western U.S. rural highways.

Considerations for increasing the effectiveness of a real-time animal-detection system include: placing the first warning sign 500–600 feet before the near end of the detection zone; installing activated warning signs throughout the detection zone; considering font size and other design characteristics to increase driver awareness; using LED warning signs that do not display messages unless wildlife is detected; and including driving speed advisories or mandatory speed limit reduction when warning signs are activated (Huijser et al., 2017; Huijser, pers. comm. 2018).

If selected for implementation at Targhee Pass, system effectiveness would be adaptive, requiring adjustments over a period of several years after the system was installed. Evaluating system effectiveness would require working with a qualified research organization/consultant with experience evaluating animal-detection systems. The recommended benchmarks (performance norms) for an animal-detection system are: the system should detect 91–95 percent or more of all large animals that approach the road; the false detection rate should not be greater than 6–10 percent; the system should result in a reduction

![Animal detection system warning sign example, U.S. 41 Florida (Photo Copyright: Marcel Huijser, used with permission)](image)
of 71–80 percent or more in wildlife-vehicle collisions (Huijser, et al., 2009b). If performance norms are not being met after a sufficient period of time to evaluate effectiveness (5-7 years), then ITD would consider system modifications or alternatives.

An estimated service life of an animal-detection system is 10 years (Huijser, pers. comm. 2018). However, entire systems or system components may end up being replaced more frequently as improved technology becomes available. Detection systems would have to be monitored on an ongoing basis to determine that components are functioning properly and promptly repaired to maintain effectiveness.

Under Alternative 3, more tree clearing would be required in the upper half of the project area within the right-of-way (compared to Alternative 2). This would facilitate detection of animals by the radar equipment. Trees would not be cleared at the Howard Spring Picnic Site to preserve the aesthetics of the site, and the parking pullout already provides a visual clear zone at the site.

### 2.3.4 Alternative 4: One Wildlife Crossing Structure and At-grade Wildlife Crosswalks

In addition to the road improvements described in Section 2.1, Alternative 4 would include wildlife fencing on both sides of the road, a single wildlife overpass crossing structure, and an undetermined number of wildlife “crosswalk” breaks in the fence that would allow animals to cross the highway at grade. The single wildlife overpass would be constructed on the Caribou-Targhee National Forest, most likely the crossing identified at mile post 405.1 for Alternative 2. In the lower half of the project area, a series of at-grade wildlife crosswalks would be installed. A wildlife crosswalk is a break in the wildlife fence that is bounded by electrified mats that constrain animals to the designated crosswalk space. Each wildlife crosswalk would include animal-detection technology to detect crossing animals and warning signage to alert approaching drivers of wildlife presence.

A crosswalk system in Arizona on S.R. 260 reduced elk collisions by 91 percent (Dodd and Gagnon, 2008). At that location, the wildlife crosswalk was installed in conjunction with a wildlife fence that also included two wildlife underpasses and a bridge location that also provided an opportunity for wildlife crossing. The crosswalk was not installed at a location where there was a high collision rate with elk prior to the installation of the wildlife fence; instead, the crosswalk was installed at a location near one of the fence ends in an effort to prevent fence end-run collisions by providing a break in the fence where animal detection technology would alert drivers when animals were present in or near the crosswalk. This highway was a 55 mph two lane roadway with a traffic volume of 8,700 AADT. Data collection found that the activated crossing signal was successful at reducing driver speed by 15-19 percent. Researchers
found that a key element of success was informing local travelers of the crosswalk location and function so that more drivers would be prepared to respond when signals were activated. They also observed that the highway had reduced traffic volumes during late night and early morning hours which they believe was essential to the success of the crosswalk as an at-grade crossing opportunity for wildlife; if traffic volumes remained relatively high throughout the night, they doubted that elk and deer would have risked crossing the road at the crosswalk location. The researchers did find that with the fence installation elk crossed the road much less frequently because there were fewer locations for them to be able to cross; however, the researchers concluded that movement of elk to both sides of the road was sufficient to maintain genetic diversity of the population (Gagnon et al., 2010).

For the Targhee Pass location, wildlife crosswalks would have fewer physical location constraints and lower per-unit construction costs than overpass crossing structures; ITD would likely install three or more wildlife crosswalks under Alternative 4. The locations and design would be determined during final design if this alternative were selected for implementation. A crosswalk system may require electric power supply for the electric mats, or possibly solar power could be sufficient.

Like animal-detection systems, electric mats are also an evolving technology. Current designs have durable materials and high load capacity ratings, and they are capable of being used in highway applications. Mats and electric components would have to be monitored on an ongoing basis to determine that they are functioning correctly; nonfunctioning components would have to be promptly replaced to assure effectiveness.

There would be fewer animal-detection systems needed compared to Alternative 3 because wildlife fencing would focus animal movement across the highway to designated locations. Wildlife detection systems at wildlife crosswalks would be expected to require less adaptive maintenance and monitoring compared to Alternative 3.

Wildlife fencing for Alternative 4 would be the same as described for Alternative 2, including periodic location of wildlife jump-outs, vehicle and pedestrian accesses, and fence end treatments. The difference would be installation of a series of at-grade wildlife crosswalks. Tree clearing under Alternative 4 would be the same as Alternative 2.

2.3.5 Alternative 5: Operational Wildlife-Vehicle Collision Reduction Strategies

Alternative 5 is a build alternative requiring a NEPA decision (because it includes the roadway improvements described in Section 2.1) but would include no permanently installed design elements for reducing wildlife-vehicle collisions.

Under Alternative 5, methods for reducing wildlife-vehicle collisions would consist entirely of operational measures such as variable message signs to alert drivers of potential wildlife presence on the highway. Such signage could be deployed seasonally or year-round. This could be independent of road construction and any NEPA decision; variable message signs have been used recently at Targhee Pass. Messages displayed, number of signs, and advisory speeds could be varied in efforts to increase effectiveness. However, standard warning signs and digital/variable message signs have not been correlated with a reliably predicable reduction in wildlife-vehicle collisions (Seidler, 2018; Huijser and McGowen, 2010). Wildlife fencing, wildlife
overpasses, and animal-detection systems would not be installed under Alternative 5.

Additional tree clearing would be completed within the highway right-of-way under Alternative 5 to increase the potential visibility of animals to drivers. This would be similar to tree clearing described for Alternative 3. Trees would not be cleared at the Howard Spring Picnic Site to preserve site aesthetics, and the parking pullout already provides a visual clear zone at the site.

2.4 Alternatives Considered but not Advanced

In addition to the inability to accommodate a left-turn lane at Howard Spring, other potential design elements were considered by ITD but determined to be:

- inconsistent with the corridor plan (ITD, 2006),
- inconsistent with the purpose and need,
- infeasible or impracticable to construct,
- outside of ITD’s jurisdiction, or
- independent of the decision to be made as a result of this EA.

Suggestions for design elements to be included in the project came from agency and public comments received during the scoping and alternatives development process described in Chapter 4 and the scoping report (ITD, 2018). Table 6 summarizes design elements that were considered but not included with any of the alternatives carried forward, along with a summary of the reasons they were not advanced.

Table 6. Alternative Design Elements Considered but not Advanced

<table>
<thead>
<tr>
<th>Alternative Design Elements</th>
<th>Reasons Not Advanced</th>
</tr>
</thead>
</table>
| Striped bike lane or separated bike path          | • Not part of the corridor plan.  
• Shoulder widening would sufficiently improve bike and pedestrian safety needs for the corridor.  
• Would need to be part of a larger regional connectivity plan (City of Island Park could sponsor a proposed action for a bike path, for example).  
• USFS does not currently have an option or plan to allow for a separated bike path. |
| Divided highway                                   | • Not a part of the corridor plan.  
• Capacity provided would exceed design year needs.  
• Divided highway is not recommended nor feasible from financial and environmental impact standpoints. |
| Shorter lane addition or no lane addition          | • Would not meet the project need to improve traffic flow. |
| Frontage road for residences                       | • Not a part of the corridor plan.  
• Safety improvement needs can be adequately addressed with turn-lane and access-control improvements. |
| Lower speed limit/greater enforcement of speed limit| • Lower speed is not called for in the Corridor Plan (ITD, 2006).  
• Speed enforcement lies outside ITD jurisdiction. |
| Routing of truck traffic to I-15, not allowing regional movement of freight, only local deliveries | Freight movement is a purpose of this federal highway as a component of the National Highway System and ITD’s freight plan. |
| Improvement at the top of the pass for traffic pulling over at the state line and associated pedestrian crossing activity | • Pullout space at the top of the pass is for snowplow turn-around and is not designed as or intended to be a public use area. Potentially developing the state line area as a visitor destination is beyond the scope of the project.  
• Raised median or other structural features to potentially control vehicle and pedestrian movement would interfere with snowplow turn-around.  
• Signage improvements here and elsewhere along the Targhee Pass segment of the corridor will be examined and included with any of the build alternatives as warranted. |
| Turn lanes at Targhee Creek Trailhead | Not warranted by turning traffic volume and insufficient physical space to accommodate turn lanes. |
| Provide for use of Howard Spring as a boat inspection station by Idaho Department of Agriculture or find alternative location | The boat inspection station was moved to a different location during the EA process. This can be completed independently of an EA decision. |
| Provide more turnouts (places for slow moving vehicles to let others pass) instead of a lane addition | Not effective for serving mobility needs or passing opportunity, does not reduce time spent following. |
| Create a recreation connector trail between Targhee Creek Trail and Continental Divide Trail | • This is a Fremont County and USFS issue (snowmachine/ATV trails).  
• There is an option to ride bicycles on highway with widened shoulder. |
| Parking at Targhee Creek Trailhead near highway/plowed (for cross-country skiers) | This is a BLM and/or USFS issue (recreation planning). Outside project scope. |
| Fremont County requested that ITD consider shifting travel lanes of U.S. 20 near the intersection with S.H. 87 to allow room for snowmobile grooming within a portion of the right-of-way. | Additional space could not be created at the requested location because it would require realignment of the highway through and below the intersection with S.H. 87, additional hill cut, and property impacts. These effects are not necessary for meeting the purpose and need of the project. Therefore, the request could not be reasonably accommodated. |
| In-vehicle collision avoidance technologies to reduce the occurrence of wildlife-vehicle collisions. | Advances in in-vehicle collision avoidance technologies are not an action to be taken by ITD or FHWA. These technologies are being developed independently of actions by highway agencies; ITD and FHWA have no control over timing of implementation or adaptations/changes to the technology to improve effectiveness. However, in-vehicle collision avoidance technology is relevant to the cumulative effects of any decision by ITD and FHWA and is therefore included in the consideration of cumulative effects (Chapter 3, Section 3.3.4). |
Other variations/combinations of wildlife-vehicle collision reduction designs such as: installing fencing without any crossing structures and no crosswalk gaps; installing a single wildlife crossing structure with fence and no wildlife crosswalk gaps; or installing wildlife fencing with at-grade wildlife crosswalk gaps only and no overpass wildlife crossing structures.

- Wildlife fencing throughout the 4 mile segment of U.S. 20 at Targhee Pass with no crossing structures or wildlife crosswalks was not considered because it would adversely affect wildlife movement.
- Other variations/combinations of wildlife-vehicle collision reduction design elements (fencing, crossing structures, animal-detection systems that have been considered as components of build alternatives (Alternative 2-5) could potentially be selected as the preferred alternative.

### 2.5 Alternatives Comparison

Build alternatives allow a range of solutions for addressing wildlife-vehicle collisions as a safety issue. All of the build alternatives include the same transportation improvements and, therefore, other than the potential for reducing wildlife-vehicle collisions, they each meet the project needs to the same degree, including enhancement for pedestrian and bicycle travel.

Alternatives differ in terms of estimated construction costs, operation and maintenance requirements, and the ability of each to accommodate wildlife movement. Table 7 provides a side-by-side comparison of these differences, inclusive of a summary of the environmental impacts, evaluated in Chapter 3.
Table 7. Alternatives Comparison

<table>
<thead>
<tr>
<th>RESOURCE/ISSUE</th>
<th>ALTERNATIVE 1</th>
<th>ALTERNATIVE 2</th>
<th>ALTERNATIVE 3</th>
<th>ALTERNATIVE 4</th>
<th>ALTERNATIVE 5</th>
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</thead>
<tbody>
<tr>
<td>Road Improvements</td>
<td>The No-Build Alternative represents a future scenario in which ITD would make only maintenance improvements to Targhee Pass.</td>
<td>Additional travel lane and shoulder widening throughout (4-miles), hill cut to improve stopping sight distance, left-and right-turn lanes into Big Horn Hills Estates entrances, tree clearing to reduce shade.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
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<tr>
<td>Wildlife design elements</td>
<td>Portable variable message signs, advisory speed reductions.</td>
<td>Wildlife fence throughout the 4-mile project length, both sides of road, three wildlife crossing overpass structures.</td>
<td>Animal movement detection system and activated driver warning, throughout 4-mile project length. No wildlife fencing.</td>
<td>Wildlife fence throughout the 4-mile project length, both sides of road, one wildlife crossing structure and multiple at-grade wildlife crosswalk breaks in the fence with movement detection and driver warning at each crosswalk.</td>
<td>Same as Alternative 1.</td>
</tr>
<tr>
<td>Transportation design features meeting the purpose and need</td>
<td>Replace existing pavement. Does not meet purpose and need.</td>
<td>Road base and subsurface drainage improvements, shoulder widening, eastbound lane addition, curve reduction/sight distance improvement, and turn lanes at Big Horn Hills Estates. Improvements meet purpose and need.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
</tr>
<tr>
<td>Cost: Road Improvements</td>
<td>One time construction cost: $2.5–$3.0 million.</td>
<td>One time construction cost: $13.0–$16.0 million. Annualized cost including construction, operation, and maintenance: $725,000.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
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<td>RESOURCE/ISSUE</td>
<td>ALTERNATIVE 1</td>
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<tr>
<td>reduction measures</td>
<td>(See Appendix A regarding benefit/cost ratio)</td>
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<tr>
<td>Operation and maintenance</td>
<td>• Construction cost is one-time pavement replacement without improvements to road base and subsurface drainage.</td>
<td>• Less frequent pavement repair and replacement with the proposed road improvements.</td>
<td>• Less frequent pavement repair and replacement with the proposed road improvements.</td>
<td>• Less frequent pavement repair and replacement with the proposed road improvements.</td>
<td>• Less frequent pavement repair and replacement with the proposed road improvements.</td>
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<tr>
<td>considerations</td>
<td>• Without the subsurface improvements, more frequent re-pavement would be necessary through the design year.</td>
<td>• Wildlife fence has expected service life of 25 years, requiring annual inspection and periodic repair throughout the service life. Structures would be inspected and repaired at scheduled intervals as part of ITD’s structures/bridges inventory and scheduled for replacement at a 50-year interval.</td>
<td>• Detection system is anticipated to be adaptive over the first several years, requiring adjustments to radar system detection ranges, possibly moving or adding detection systems to increase effectiveness. Expected 10-year service life, but may be replaced more frequently with evolving technology.</td>
<td>• Wildlife design elements comparable to Alternative 2 for life span and operation and maintenance needs. Wildlife detection systems at wildlife crosswalks anticipated to require less adaptive maintenance and monitoring compared to Alternative 3.</td>
<td>• No wildlife fencing, crossing structures, or animal-detection systems requiring operation and maintenance.</td>
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<tr>
<td>Geologic Hazards and Soil Disturbance</td>
<td>No impacts to geologic resources would occur and no geological impacts to the road are anticipated. No new impacts to soil resources would occur. Total existing disturbed area is 32.4 acres.</td>
<td>Expanded and realigned road prism would create new cut and fill slopes. Wildlife crossing structures and wildlife fence would require additional ground disturbance. Total acres of disturbed area is 49.4 acres.</td>
<td>Expanded and realigned road prism would create new cut and fill slopes. Total acres of disturbed area is 44.8 acres.</td>
<td>Expanded and realigned road prism would create new cut and fill slopes. Wildlife crossing structure and wildlife fence would require additional ground disturbance. Total acres of disturbed area is 47.6 acres.</td>
<td>Expanded and realigned road prism would create new cut and fill slopes. Total acres of disturbed area is 44.8 acres.</td>
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<tr>
<td>RESOURCE/ISSUE</td>
<td>ALTERNATIVE 1</td>
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<td><strong>Water Resources</strong></td>
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<tr>
<td>Water quality</td>
<td>Replacing pavement would not cause new long-term impacts, total impervious surface remains at 17 acres. Poor drainage continues to cause seasonal groundwater to pool on and around roadway.</td>
<td>9.1 acre increase (54%) in impervious surface within project corridor, but about 1.7% of the watershed. The majority of this watershed does not have impervious cover. Water quality would not be adversely affected by runoff.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
</tr>
<tr>
<td>Floodplains</td>
<td>The existing roadway encroaches in 100-year floodplain.</td>
<td>Floodplain permit may be necessary from Fremont County.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
</tr>
<tr>
<td>Wetlands</td>
<td>No effect.</td>
<td>0.023 acre permanent wetland impact. Temporary impacts for constructing retaining walls in two locations.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
</tr>
<tr>
<td>Stream Alteration</td>
<td>No effect.</td>
<td>Replacement of existing 200-foot long culvert at Howard Spring Picnic Site. No other work in the stream channel.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
</tr>
<tr>
<td><strong>Biological Resources</strong></td>
<td></td>
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<tr>
<td>Habitat loss</td>
<td>No effect.</td>
<td>Area within wildlife fencing not available to large and medium-sized mammals and area of additional pavement removed from vegetated areas. Conversion of some trees to grass/forb/shrub habitat. No adverse effects due to nearby available habitat.</td>
<td>Area of additional pavement removed from vegetated areas. Conversion of some trees to grass/forb/shrub habitat. No adverse effects due to nearby available habitat.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 3.</td>
</tr>
<tr>
<td>RESOURCE/ISSUE</td>
<td>ALTERNATIVE 1</td>
<td>ALTERNATIVE 2</td>
<td>ALTERNATIVE 3</td>
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</tr>
<tr>
<td>Habitat degradation</td>
<td>Increased traffic noise, ongoing human presence near highway.</td>
<td>Same as Alternative 1 plus additional temporary construction ground disturbance requiring restoration.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
</tr>
<tr>
<td>Wildlife-vehicle collisions</td>
<td>No project actions to reliably reduce the rate of wildlife-vehicle collisions.</td>
<td>Reduced by 83-87 percent.</td>
<td>Reduced by 33-97 percent.</td>
<td>Reduced by 83-87 percent.</td>
<td>Same as Alternative 1.</td>
</tr>
<tr>
<td>Wildlife movement</td>
<td>Increased effect to migration, dispersal, and daily movements of wildlife.</td>
<td>Net benefit to migration, dispersal, and daily movements of wildlife.</td>
<td>Little or no benefit to improved migratory, dispersal, and daily movements of wildlife.</td>
<td>Net benefit to migration, dispersal, and daily movements of wildlife.</td>
<td>Same as Alternative 1.</td>
</tr>
<tr>
<td>Fisheries</td>
<td>No adverse effect.</td>
<td>Same as Alternative 1.</td>
<td>Same as Alternative 1.</td>
<td>Same as Alternative 1.</td>
<td>Same as Alternative 1.</td>
</tr>
</tbody>
</table>

**Land Use and Transportation Planning**

<p>| National Forest Planning       | Consistent with general and specific area management direction and the Caribou-Targhee National Forest Travel Management Plan. | Same as Alternative 1.                                                            | Same as Alternative 2.                                                            | Same as Alternative 2.                                                            | Same as Alternative 2.                                                         |
| State Wildlife Action Plan and Grizzly Bear Conservation Strategy | Does not address objectives to reduce wildlife-vehicle collisions and improve highway permeability for wildlife movement. | Addresses objectives to reduce wildlife-vehicle collisions and improves highway permeability for wildlife movement. | Addresses objectives to reduce wildlife-vehicle collisions; does not improve highway permeability for wildlife movement. | Addresses objectives to reduce wildlife-vehicle collisions and improves highway permeability for wildlife movement but to a lesser degree than Alternative 2. | Does not address objectives to reduce wildlife-vehicle collisions and improve highway permeability for wildlife movement. |
| Fremont County Planning        | The roadway design and accesses are consistent with Fremont County General Plan. | Same as Alternative 1.                                                            | Same as Alternative 1.                                                            | Same as Alternative 1.                                                            | Same as Alternative 1.                                                         |
| City of Island Park Planning   | The roadway design is consistent with city zoning and does not affect business or residential access. | Same as Alternative 1.                                                            | Same as Alternative 1.                                                            | Same as Alternative 1.                                                            | Same as Alternative 1.                                                         |</p>
<table>
<thead>
<tr>
<th>RESOURCE/ISSUE</th>
<th>ALTERNATIVE 1</th>
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<th>ALTERNATIVE 3</th>
<th>ALTERNATIVE 4</th>
<th>ALTERNATIVE 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. 20 Corridor Plan</td>
<td>Does not address ITD safety, operational, or bicycle goals for corridor.</td>
<td>Addresses safety and operational goals of the Corridor Plan.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
</tr>
<tr>
<td>Access</td>
<td>No changes in designated accesses to private or public land access.</td>
<td>No change in designated accesses to private or public land access.</td>
<td>No changes in designated accesses to private or public land access.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
</tr>
<tr>
<td>Right-of-Way and Easements</td>
<td>No right-of-way acquisition or easements.</td>
<td>No right-of-way acquisition. Easements on private land and forest land for wildlife crossing structures and fencing needed.</td>
<td>No right-of-way acquisition or easements.</td>
<td>No right-of-way acquisition. Easements on forest land for wildlife fencing. Possibly easements needed for electric power transmission to wildlife crosswalks.</td>
<td>No right-of-way acquisition or easements.</td>
</tr>
<tr>
<td>Traffic Noise</td>
<td>Unnoticeable increase - average increase of 2.0 dBA across project corridor due to estimated increase in traffic volumes.</td>
<td>Slightly noticeable increase - average 3.7 dBA increase across project corridor with the greatest residential receptor increasing by 5.6 dBA (a noticeable increase). Abatement was not determined to be reasonable to implement.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
</tr>
<tr>
<td>Visual Resources</td>
<td>No change to the long-term visual character or visual quality.</td>
<td>Wildlife fencing and three overpass crossing structures would be visible to motorists, residents, and recreationalists. Overall changes would be compatible with the project setting as a travel corridor.</td>
<td>No significant change to the long-term visual character or visual quality.</td>
<td>Same as Alternative 2.</td>
<td>No significant change to the long-term visual character or visual quality.</td>
</tr>
<tr>
<td>RESOURCE/ISSUE</td>
<td>ALTERNATIVE 1</td>
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<tr>
<td>Recreation Resources</td>
<td>No changes to recreation resources in the project corridor.</td>
<td>Wildlife fencing would introduce a barrier and linear structure that does not currently exist although all existing vehicle access locations would be preserved and pedestrian access through the fence would be included at key locations.</td>
<td>No changes to recreation resources in the project corridor.</td>
<td>Same as Alternative 2.</td>
<td>No changes to recreation resources in the project corridor.</td>
</tr>
<tr>
<td>Social and Economic Context</td>
<td>Traffic volume increases without adding turning lanes would increase risk of crashes. No residential takes, no business relocations, no community facilities affected. Community cohesion and social interaction patterns are unchanged.</td>
<td>Positive social and economic effects as a result of transportation improvements that would increase safety and mobility in the area, decreasing risk of crashes and improving access. No residential takes, no business relocations, no community facilities affected. Wildlife crossing structures would reduce physical space surrounding travel lanes, affecting a small proportion of oversized load permits.</td>
<td>Same as Alternative 2 but no affect to oversize load routing.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2 but no affect to oversize load routing.</td>
</tr>
<tr>
<td>Cultural Resources</td>
<td>No historic properties affected.</td>
<td>Adverse effect.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
<td>Same as Alternative 2.</td>
</tr>
<tr>
<td>Section 4(f) Resources</td>
<td>No 4(f) use.</td>
<td>No 4(f) use.</td>
<td>No 4(f) use.</td>
<td>No 4(f) use.</td>
<td>No 4(f) use.</td>
</tr>
</tbody>
</table>
2.6 Avoidance and Minimization Summary

The following is a brief summary of avoidance and minimization measures, listed by the resource topic sections, which are evaluated in Chapter 3. Additional details are provided in each resource section of Chapter 3.

Geologic Hazards and Soil Disturbance

- Avoid unstable areas and minimize soil disturbance for the roadway final design. Include design for erosion and rockfall prevention for larger hill cut areas.
- Salvage disturbed soils for use in reclamation of disturbed areas.
- Develop a revegetation plan during final design in consultation with the USFS. Include best management practices to protect the soil and revegetate disturbed areas.

Water Resources

- Coordinate with Fremont County Planning and Zoning during final design to determine floodplain development permitting requirements.
- Submit Joint Permit Application to the U.S. Army Corps of Engineers (USACE) (Nationwide Wetland Permit) and Idaho Department of Water Resources (Stream Alteration Permit).
- Appropriate wetland plant species will be determined in consultation with the USFS during project final design. Wetland restoration will be included in the project revegetation plan. Enactment of the revegetation plan will ensure no net loss of wetland from pre-construction to post-construction.
- Develop Stormwater Pollution Prevention Plan and Obtain Construction General Permit.

Biological Resources

- Submit Project Pre-notification Form (ITD Form 0289) to the U.S. Fish and Wildlife Service (USFWS).
- Contractor responsibilities will include complying with the food storage order requirements of the Grizzly Bear Conservation Strategy (IGBC, 2016), obtaining environmental clearances for staging and source material areas, safeguarding migratory and special status birds.
- Before any trees are cut, an ITD-designated biologist will survey the areas for migratory bird nests. If nests are found, the tree with a nest cannot be removed until after August 1st to account for most re-nesting attempts. Nests that may be used in sequential years cannot be removed (e.g. raptor nests).
- Whitebark pine trees (5-needle pines), if found, will not be removed.
- Replant disturbed areas with native species. For alternatives that do not include wildlife fencing, select plant species that have reduced value for ungulate foraging to reduce the attractiveness of the right-of-way for ungulate use.

Land Use and Transportation

- The construction contractor would be required to develop a traffic management plan as part of the final design to minimize travel delays to the extent practicable.
- Tree cutting would require a timber purchase/assessment from the USFS.
- Alternative 2 would require easement on private lands for one of the wildlife crossing structures.
- Alternative 2 or 4 may require easement for an electrical powerline for wildlife electric mats, or power needs might be met with solar power.
• Alternative 2 would include one wildlife crossing structure that is located under the formally
defined visual approach zone for Henrys Lake Airport. Alternative 3 would include installing
posts for mounting animal-detection equipment; posts would not be taller than the existing
powerline that is adjacent to U.S. 20. Based on a preliminary assessment, neither the crossing
structure nor the animal-detection posts would intrude into the protected airspace; however, ITD
District 6 would need to complete Federal Aviation Administration (FAA) Form 7460-1 during
the final design process upon selection of Alternative 2 or 3 and would submit the completed
form to the ITD Aeronautics Division and Fremont County. The Aeronautics Division and
Fremont County would then determine if the project plan would require notification to the FAA
and response from the FAA prior to proceeding with construction.

Construction Noise

• To reduce the impact of construction noise, construction activity near residences would be
conducted only between 7:00 a.m. and 7:00 p.m. on weekdays (to the extent practicable); this
limitation could be adjusted if approved by the resident engineer.
• Mitigation of potential highway construction noise impacts shall incorporate low-cost, easy-to-
implement measures into project plans and specifications (equipment muffler requirements,
work-hour limits).

Visual Effects during Construction

• Construction activities would occur during daylight hours. If there is need for nighttime
construction at any point, the contractor would be directed to minimize fugitive light from
portable sources used for construction by using color-corrected halide lights that would be
operated at the lowest allowable wattage and height. Direct all lights downward toward work
activities and away from nearby residents to the maximum extent possible.
• The contractor would be required to restore construction staging areas after project completion to
minimize the impact on visual quality and landscape character by planting native plants on all
disturbed terrain.

Visual Effects of Wildlife Structures and Fence – Alternatives 2 and 4

• Apply aesthetic design treatments to the proposed wildlife crossing structures by using elements
such as form, line, texture, and style that complement the natural landscape, are aesthetically
pleasing, and as unobtrusive as possible.
• Use concrete materials that implement aesthetic design features, such as mimicking natural
material (e.g., stone or rock surfacing) and integral color to reduce visibility and to blend with the
surrounding landscape.
• Apply aesthetic design treatments to the wildlife fencing by using construction materials and
finishes that blend into the surrounding natural environment. Use wire mesh fencing.
• Minimize skylining fencing against the mountains from the perspective of the highway and
residences to the maximum extent possible. This can be achieved by taking advantage of natural
terrain where possible, or by installing the fencing behind natural visual barriers such as tree
lines.

Recreation Resources

• In project final design, ITD will coordinate with the USFS, IDFG, and Fremont County to
minimize travel delays and closure of the Howard Spring Picnic Site and, for alternatives
involving wildlife fence, to maintain vehicle and pedestrian access to the Caribou-Targhee National Forest.

Cultural Resources

- In final design, FHWA and ITD will consult with the Idaho SHPO to determine if the adverse effect can be practicably avoided. If not, then ITD would prepare a Determination of Adverse Effect. FHWA and ITD would then consult with Idaho SHPO, Native American Tribes, and other consulting parties to determine appropriate mitigation.
- Inadvertent discovery of human remains and other cultural materials during construction requires immediate reasonable protection of the items and suspension of construction activity. The contractor would be responsible to notify ITD upon discovery and ITD would consult with the Idaho SHPO to determine the appropriate course of action prior to resuming construction activity.

2.7 Preferred Alternative

Reasons for identifying a preferred alternative are based on:

- ITD’s and FHWA’s review of the environmental impacts presented in this EA,
- ITD’s and FHWA’s desire to give the public the opportunity to review and comment on the preferred alternative, and
- consultations with local officials during the EA process.

The following are reasons why ITD and FHWA are identifying Alternative 3 as the preferred alternative:

- Alternative 3 would not require easements on private and USFS lands; easements would be required for wildlife fencing and wildlife crossing structures (Alternatives 2 and 4).
- Alternative 3 would not require installation of cattleguards or electric mats and pedestrian access gates, such as entrances to Big Horn Hills Estates.
- Local elected officials have communicated that they do not support wildlife crossings and fencing as improvements for the U.S. 20 corridor.
- Implementing Alternative 3 would provide an opportunity to reduce wildlife-vehicle collisions on Targhee Pass. This would partially support objectives of the State Wildlife Action Plan (IDFG, 2015) and recommendations of the Grizzly Bear Conservation Strategy (IGBC, 2016) by reducing mortality. Fremont County Commissioners have indicated through a land use plan resolution (Fremont County Board of Commissioners, 2018) that they would support animal-detection systems for reducing wildlife-vehicle collisions.
- Targhee Pass has high seasonal variability in traffic volume. Major wildlife movements take place when traffic volumes are lower in off-tourism and recreation seasons. The permeability for wildlife movement has not been shown to be impacting large mammal populations.
- On a statewide and districtwide priority, the Targhee Pass location does not have the highest frequency of wildlife vehicle collisions (Cramer, 2014). With limited funding, priority locations that have a greater safety benefit should be implemented prior to wildlife crossing through the Targhee Pass area.
3 Affected Environment and Environmental Consequences

This chapter provides an analysis of the alternatives by resource topic. Each resource section begins with a description of the affected environment related to the resource topic, followed by an analysis of each alternative. Based on the analysis, appropriate avoidance and minimization measures and necessary permits are described, followed by a discussion of cumulative effects within each resource topic.

3.1 Geologic Hazards and Soil Disturbance

3.1.1 Affected Environment

The southern end of the Targhee Pass project area lies at the western base of the Madison Mountains, west of the Yellowstone Plateau and east of the Snake River Plain (Christensen, 2001). Targhee Pass extends to the north through the Madison Mountains to the Continental Divide at the Idaho-Montana state line.

Two bedrock formations are present at or near the surface. The oldest unit is The Mississippian Lodgepole Limestone member of the Madison Group (Witkind, 1975). A geotechnical evaluation was completed to evaluate alternative alignments, design features, and associated geotechnical risks. Geotechnical borings near mile post 404.5, also known as “curve 4,” encountered the Lodgepole Limestone member in borings at depths between 9 and 35 feet (Landslide Technology, 2017). The other bedrock formation is the Quaternary Huckleberry Ridge Tuff of the Yellowstone Group, a rock of volcanic origin. This formation is present to the west of U.S. 20 starting near mile post 402.75 and extending to approximately mile post 405.7, where it becomes present on both sides and beneath the road. Older, Cambrian-to-Permian formations are present to the west (Witkind, 1975). The geotechnical borings there encountered unconsolidated colluvium and remnants of Huckleberry Ridge Tuff as overburden on top of the two bedrock units (Landslide Technology, 2017). The flatter areas along the Howard Creek valley bottom are composed of colluvium, alluvial fans, stream alluvium, glacial till, and glacial outwash deposits (Witkind, 1975).

Landslide Technology (2017) mapped a small potential landslide near mile post 404.6 on the east side of the road. The suspected landslide has not adversely affected the highway in the past and is not likely to in the future as long as excavation operations that would disturb it are avoided (Landslide Technology, 2017).

Two faults are present: the Henrys Lake segment of the Centennial Fault, and the Madison Fault. Both of these faults are normal faults and their locations are mapped as approximate or concealed on the O’Neil and Christiansen (2002) geologic map. The Madison Fault crosses U.S. 20 approximately 500 feet to the south of the intersection of U.S. 20 and S.H. 87, while the Centennial Fault parallels and then crosses U.S. 20 starting at the intersection of S.H. 87 and extending approximately 1,000 feet to the north (Haller, 1994; Haller, “Fault number 643a” 2010; Haller, “Fault number 655a” 2010; Witkind, 1972; Witkind, 1975).

The central section of the Madison Fault showed offset during the 1959 Hebgen Lake earthquake (Haller, “Fault number 655a” 2010). The majority of the scarp on the southern section of the Madison Fault offset Holocene and late Pleistocene sediments (Pierce and Morgan, 1992). The Henrys Lake section of the Centennial Fault shows displacement of late Pleistocene and Holocene sediments (Johns et al., 1982). Potential effects of seismic activity will need to be considered during final design of the roadway alterations and realignments (Landslide Technology, 2017).
The Landslide Technology (2017) geotechnical report contains additional details about the geology and subsurface conditions including soil and substrate types, slope stability, and groundwater encountered during the geotechnical investigation, as well as discussion of cut and fill slope engineering, material balance, erosion control, and rockfall potential. They concluded the Targhee Pass project is geotechnically feasible. They included various recommendations to be incorporated into the final construction design (Landslide Technology, 2017).

The soils present at Targhee Pass (Figure 8) can be divided into two broad categories: soils formed on the hill slopes are colluvial while soils present in the valley bottom are alluvial (NRCS, 2018). The colluvial soils generally have a very thin layer of organic material and loam that becomes coarser with depth, grading to gravelly loam one or two feet below the surface. These soils were formed primarily from weathering of the bedrock materials and downslope creep with some contribution of airborne particles. The alluvial soils have formed from or on material transported by streams, primarily loam or gravelly loam. Near the intersection of S.H. 87 and near mile post 403 soils are comprised of peat, silt loam, and clay loam.

Most of the soils are classified as somewhat limited, and a small portion of them are classified as very limited for road construction. These limitations contribute to existing problems with road stability and drainage that could be improved by rebuilding the road base with imported materials and including new subsurface drainage features, which is proposed for the build alternatives.

### 3.1.2 Effects of the Alternatives related to Geologic Hazards and Soil Disturbance

Table 8 quantifies soil disturbance areas for existing conditions and for each of the alternatives.

#### 3.1.2.1 Alternative 1 No build

Under Alternative 1, no new cut slopes or soil disturbances would be created. There would be no disturbance of the identified unstable hillslope.

#### 3.1.2.2 Alternative 2

Under Alternative 2, construction of the expanded and realigned road prism would create new cut and fill slopes. Placement of retaining walls or similar structures would be used to mitigate slope stability issues for cut and fill slopes, where appropriate. Where practical, the final design would include Mechanically Stabilized Earth (MSE) walls, conventional concrete cantilever retaining walls and soil reinforcement (Landslide Technology, 2017). Disturbance of the identified unstable hillside has been avoided with the preliminary roadway design.

*Table 8. Soil Disturbance Areas for Existing Conditions and Alternatives*

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<thead>
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<td>0</td>
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</tr>
</tbody>
</table>
Island Park U.S. 20
Targhee Pass Environmental Assessment

Figure 8. Soils with Engineering Limitations for Roads

U.S. 20 Targhee Pass
Natural Resource Conservation Service
Soil Survey Geographic Database (SSURGO)

USDA NRCS Soil Surveys, Version 09/25/2017
ID758-Targhee National Forest, Idaho and Wyoming,
ID762-Fremont County, Idaho, Western Part
Projection: Mercator Auxiliary Sphere
Map Date: 7/19/2018
Design options for wildlife crossing structure foundations include shallow foundations on Geosynthetic Reinforced Structures (GRS), friction piles, and end-bearing piles. Fill slope angles could range from 1V:3H to 1V:2H if onsite materials are used to construct the embankments. Steeper slopes (up to 1V:1.5H) are possible with soil reinforcement or use of crushed rock fill material. Fill slopes angles for the highway would be similar (Landslide Technology, 2017).

Landslide Technology (2017) recommended the consideration of permanent slope mitigation for erosion and rockfall in the final design for the larger cut slopes in bedrock, including new products on the market that incorporate erosion control mats with double-twist rockfall mesh. These also allow for direct hydroseeding for revegetation.

Alternative 2 would require approximately 49.4 acres of soil disturbance from cut and fill slopes, wildlife crossing structures, and wildlife fences. Some of this disturbance would be within the existing paved area and current roadway footprint as subgrade materials are replaced for installation of drainage features and for replacement of the paved surface.

Soils placed on the wildlife overpasses and fill slopes would become revegetated within 1–2 years and the soil impacts related to the overpasses would be mitigated. Construction of the wildlife fences on slopes steeper than 15 degrees would disturb an estimated 1.2 acres as a result of creating cut and fill slopes for equipment access. The exposed soils, particularly on the disturbed slopes would be susceptible to erosion until control measures, such as straw blankets or mulch are installed and vegetation is reestablished.

3.1.2.3 Alternative 3

Alternative 3 would have the same roadway improvements and impacts as Alternative 2. Alternative 3 would include installation of an animal-detection system throughout the 4-mile segment of U.S. 20. Most or all animal-detection system components would be installed within the cut-fill area, and so there would be no soil disturbance for wildlife overpasses or fencing. Total soil disturbance would be approximately 44.8 acres. Exposed soils, particularly on the disturbed slopes would be susceptible to erosion until control measures, such as straw blankets or mulch, are installed and vegetation is reestablished.

3.1.2.4 Alternative 4

Alternative 4 would have the same roadway improvements and impacts as Alternatives 2 and 3. As with Alternative 2, Alternative 4 would include wildlife fencing throughout the 4-mile segment of U.S. 20. There would be only one wildlife overpass structure, so the total soil disturbance is less than that of Alternative 2, which is 47.6 acres. Exposed soils, particularly on the disturbed slopes, would be susceptible to erosion until control measures such as straw blankets or mulch are installed and vegetation is reestablished.

3.1.2.5 Alternative 5

Alternative 5 would have the same roadway improvements and impacts as Alternatives 2, 3, and 4. There would be no permanent installations for addressing wildlife-vehicle collisions under Alternative 5. The total soil disturbance would be 44.8 acres. Exposed soils, particularly on the disturbed slopes, would be susceptible to erosion until control measures, such as straw blankets or mulch are installed and vegetation is reestablished.
3.1.3 Avoidance, Minimization, and Necessary Permits

The proposed project’s final design would strive to avoid any identified unstable area such as the potential landslide areas. Industry-standard geotechnical engineering risk and safety calculations would be used to design the cut and fill slopes as well as to design retaining walls, overpasses, and other roadway features. Where possible, the footprint of the road and the size of the cut slopes would be minimized to reduce impacts. A seismic safety factor would be included into design for the cut and fill slopes to reduce the possibility of slope failure during seismic events.

The proposed project’s final design would strive to avoid any unnecessary soil disturbance. Existing topsoil within the disturbed areas would be salvaged and stockpiled for use in reclamation of the disturbed areas.

Landslide Technology (2017) recommended permanent slope mitigation for erosion and rockfall be considered in the final design for the larger rock cuts including new products on the market incorporate erosion control mats with double-twist rockfall mesh, that also allow for direct hydro-seeding for revegetation. These measures would help in the revegetation of the cut slopes to stabilize the soils and reduce erosion.

A revegetation plan would be developed during final design in consultation with the USFS and would include best management practices to protect the soil and revegetate disturbed areas, including:

- Fill materials would be selected from borrow areas that are free from noxious and invasive weeds.
- Bare soils and soil stockpiles would be monitored during construction operations and treated as needed to control noxious and invasive weeds.
- Stockpiles of topsoil would be protected from erosion.
- Temporary disturbance areas that have been restored would be monitored for noxious and invasive weeds and treated using the appropriate methods.
- Appropriate species for both upland and wetland disturbed areas would be determined in consultation with the USFS.

3.1.4 Cumulative Effects

The implementation of any of the build alternatives would incrementally add to the soil disturbance and soil productivity losses from soil being covered by pavement from past and future highway projects and other activities that disturb and cover the soils, such as residential and business development. The expansion of existing borrow areas or creation of new ones to provide materials for roadway construction would also cumulatively add to areas of soil removal and areas that are disturbed and unreclaimed for a long period of time.

3.1.5 Conclusions regarding Geologic Hazards and Soil Disturbance

Geology and soils of the Targhee Pass area present some limitations for road construction. These limitations have been accounted for in the preliminary design of alternatives to maximize the life of transportation improvements and other design features of the build alternatives.
3.2 Water Resources

Water resources include streams, groundwater recharge zones, floodplains, and riparian areas and wetlands.

3.2.1 Affected Environment

The Targhee Pass segment of U.S. 20 is located within the Howard Creek drainage. Howard Creek is a small tributary to Henrys Lake. Howard Creek is not identified by the Idaho Department of Environmental Quality as a public water supply (IDEQ 2018). However, the creek supports spawning Yellowstone cutthroat trout as well as riparian vegetation zones that help maintain water quality and provide habitat for a variety of wildlife species.

3.2.1.1 Hydrology

Howard Creek emerges from Howard Spring, located near the Idaho-Montana border near mile post 405.6 (Figure 9). The channel forms quickly past the spring and flows downhill approximately 660 feet toward the Howard Spring Picnic Site (Figure 10), where the USFS maintains a drinking fountain and water bottle-filling station that is supplied by the spring (Figure 11). The creek then flows alongside the highway pullout approximately 175 feet, where it is directed into a very long culvert, approximately 200 feet in length, passing underneath both the parking pullout area and the highway. It is a 24-inch culvert that is partially filled with accumulated sediment and gravel (Figure 12). The downstream-side highway embankment slope across from the pullout area exhibits erosion rills that appear related to pavement runoff due to sheet flow from the roadway on the north, and the super-elevation of the pavement at the embankment section (Landslide Technology, 2017). After crossing under the highway, the creek flows into a wetland and riparian complex area on the north side of the highway. The creek appears to braid and migrate through this wetland and riparian complex. Water supporting the wetland also comes from hillsides to the north and east and possibly additional springs within the riparian area.

Flows from various directions through the wetland/riparian complex converge into a defined channel near the lower end of the wetland, where both the creek and the highway pass through a narrow area before the large curve in the highway (MP 405.0 to 404.6). There are indications of past channel re-alignment near and adjacent to the road in this area (Landslide Technology, 2017). It appears that Howard Creek had been realigned through this area during construction of the highway many decades ago, and that portions of the original creek channel are overlain by the highway embankment footprint. As the landscape widens out below this point, the creek passes through a culvert under Targhee Creek Trailhead Road (MP 404.55) and then through a second culvert immediately downstream of the road crossing. The second culvert appears to be a legacy from a previous alignment of the Targhee Creek Trailhead Road. None of these culverts are part of the U.S. 20 highway infrastructure. Beyond the curve, several ephemeral drainages and springs join Howard Creek from the hillsides south and east of the channel as it continues westward toward Henrys Lake. There is another large wetland/riparian area and a series of ponds before the creek flows under S.H. 87 and then into Henrys Lake.

Groundwater is present and fluctuates seasonally. Groundwater monitoring wells have shown groundwater at 5 feet below the pavement in late fall, and the groundwater elevation would likely rise during the wetter periods of late winter and early spring (Landslide Technology, 2017). Springs, ponds, and seepage through cracks and joints in the road pavement indicate the presence of shallow groundwater, particularly between mile posts 405.3 and 405.6 (Howard Spring Picnic Site). Near-surface groundwater presents driving hazards (ponding, ice) as well as maintenance problems (erosion).
Figure 9. Water Resources
Figure 10. Howard Creek between Howard Spring and the Parking Pullout at the Howard Spring Picnic Site

Figure 11. Howard Spring Constructed Fountain and Footbridge
3.2.1.2 Floodplain

The Federal Emergency Management Agency (FEMA) creates maps of floodplain hazard areas as part of the National Flood Insurance Program. Portions of the Targhee Pass segment of U.S. 20 fall within a FEMA-mapped Zone A floodplain, which is adjacent to Howard Creek. This zone is included in Figure 9. FEMA defines Zone A floodplains as:

> Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply. (FEMA, 2017)

The 1-percent-annual-chance flood is commonly referred to as the 100-year flood. The Howard Creek floodplain has a designation date of December 6, 1977 and does not match with the existing path of Howard Creek in some places. The existing highway intersects the designated floodplain between approximately mile posts 404.1 and 404.8. The existing highway and adjacent hill slopes constrain the creek in this vicinity.

Executive Order 11988 Floodplain Management (May 24, 1977) directs federal agencies to avoid to the extent possible adverse impacts to floodplains and to avoid direct or indirect support of floodplain development.

3.2.1.3 Riparian Areas and Wetlands

Riparian areas and wetlands support vegetation that is adapted to and dependent on the surface and groundwater features found in an area. The Forest Plan (USFS, 1997) identifies these riparian and
wetland areas as Aquatic Influence Zones and includes management direction to preserve ecological functions and values of these features to the extent practicable.

The riparian vegetation areas in the Targhee Pass vicinity (Figure 13) have stands of Aspen (*Populus* spp.) and willow (*Salix* spp.), as well as resin birch shrubs (*Betula glandulosa*) and a few dispersed conifer species. Herbaceous wetland species include sedges (*Carex* spp.) and rushes (*Juncus* spp.), as well as various grasses and forbs growing below the shrub layer (Kagel, 2017; USFS, 2016c). Wetlands are typical in nature of other wetlands of this elevation and region, and contain a majority of native vegetation species with a mixture of nonnatives and weeds. Wetlands within the highway right-of-way were delineated in 2016 (Kagel, 2017) so that wetland impact avoidance could be included in preliminary design of alternatives.

### 3.2.1.4 Water Quality

Water quality issues include temperature impairment of Howard Creek and pavement runoff.

The State of Idaho has identified Howard Creek as having designated beneficial uses of supporting cold-water aquatic life including salmonid spawning as well as secondary contact recreation. Along with meeting the general surface water quality criteria, Howard Creek must meet numeric criteria for these designated beneficial uses. Full water quality standards are available from the Idaho Department of Environmental Quality website (IDEQ, 2018). In 2008, Howard Creek was identified as temperature-impaired and placed on the state’s 303(d) list of impaired waters (IDEQ, 2017). A Total Maximum Daily Load (TMDL) was created for the Upper Henrys Lake watershed in 2014, which addressed the temperature impairment on Howard Creek. The probable causes of the temperature impairment on Howard Creek were listed as grazing in the riparian area.

Pavement creates an impervious surface area that alters stormwater runoff quality, quantity, and timing. Pollutants from vehicles, atmospheric deposition, and road salt or gravel and sand applied during winter months accumulate on the road surface. Rainfall and snowmelt wash the pollutants off the road and onto adjacent soils, where the water moves through the soil to the stream or wetland, carrying the pollutants. In locations where the road is close to the stream, stormwater can carry pollutants directly into a waterbody. Fine sediments can clog spawning gravels, increase turbidity, and are considered a water quality issue (Novotny and Olem, 1999). Roadside vegetation provides some unknown degree of filtration and soil stabilization, but otherwise there are no specially designed stormwater filtration features associated with the Targhee Pass segment of U.S. 20.

### 3.2.2 Effects of the Alternatives on Water Resources

Relevant water resources issues include potential effects to stream alteration, floodplains, water quality, and wetlands.

#### 3.2.2.1 Alternative 1 No build

Under Alternative 1, the road would not be widened and drainage would not be improved. Potential impacts to water quality would result solely from construction activities related to periodic replacement of the pavement, and these would continue only for the duration of construction. Appropriate construction best management practices, erosion controls, and stormwater controls would mitigate these impacts.
Figure 13. Riparian Areas and Howard Creek
Poor drainage in locations where the seasonal groundwater table comes close to the surface during spring would continue. Such drainage issues cause rills and erosion adjacent to the road, which can become a source of fine sediment deposition to the creek. The culvert at Howard Spring Picnic Site would continue to collect sediment and would likely need to be replaced at some point.

Applying salts during winter would continue to have some impact to the soils, vegetation, and water quality in areas where dissolved salts wash into adjacent lands and streams. Pollutants from vehicles and other sources of atmospheric deposition would continue to collect on road surfaces and be washed off during rainfall and snowmelt events. Runoff from the road surface would continue to flow directly off the pavement to the roadside, which may be vegetated or bare. Any culverts that are undersized or are being undermined by erosion either under or around the culvert would continue to create erosion issues.

3.2.2.2 Alternative 2

During active road construction, dust, chemicals, oil, and petroleum products used in construction and maintaining equipment have the potential to emit, spill, or leak. Bare soil and opened and graded areas without vegetation or pavement are possible sources of sediment that may be transported to the creek with stormwater runoff. Such impacts have greater potential between mile posts 404 and 405, where Howard Creek is close to the road and adjacent to Howard Spring Picnic Site where the creek passes through a culvert under the highway. The potential impacts could be avoided, minimized, or offset through use of construction best management practices such as stormwater controls, sediment controls, erosion controls, spill prevention, avoiding work in the stream and floodplain, reducing area of exposed soil, and construction timing.

The FEMA-mapped floodplain shows portions of the existing highway intruding in the floodplain, between approximately mile posts 404.1 and 404.8; however, the floodplain mapping is not based on a measured Base Flood Elevation and does not match with the current path of Howard Creek in some locations. In the preliminary design, there are two locations where the roadway expansion would require placement of fill material on the Howard Creek side of the road. These floodplain encroachments could not be completely avoided because of the road geometry, but these have been minimized to the extent possible by using retaining walls to minimize the amount of required fill. The preliminary design includes two retaining walls, each approximately 700 feet in length. Due to the FEMA-mapped floodplain zone, a floodplain development permit from Fremont County may be necessary prior to construction. None of the project actions would directly or indirectly encourage floodplain development. Access to private property would not be improved except entrances to the Big Horn Hills Estates subdivision, which is not located in the floodplain.

There would likely be temporary wetland impacts associated with constructing the retaining walls, but no permanent wetland impact associated with the retaining walls; the preliminary design does not permanently impact wetlands associated with Howard Creek. There is only one small permanent wetland impact, which is the one near the Howard Spring Picnic Site (Figure 14). A small, emergent wetland area is located along the shoulder of the road just below the pullout for the picnic site. The roadway design includes widening at this location to add a turn lane into the pullout and to widen the shoulder. Wetland vegetation is likely supported in this small area by persistent water in the ditch, which may be the result of the high water table underneath the road (Landslide Technology, 2017) in this vicinity and possibly by overflow from Howard Creek where the creek makes a right-angle turn to flow into the culvert underneath the parking pullout. The potential wetland area to be filled is 0.023 acres and adjacent to the highway. Because it is a very small roadside wetland feature, it has low value for habitat and water quality functions. It is not connected with Howard Creek or the floodplain and does not serve any flood attenuation purpose. All wetlands associated with Howard Creek were successfully avoided in the road design.
Figure 14. Wetland Impacts

U.S. 20 Targhee Pass
Wetland Impacts

Existing Edge of Pavement
Future Edge of Pavement
Wetlands
Wetland Impacts

Wetlands delineated by Kagel Environmental, LLC 2017
Projection: Mercator Auxiliary Sphere
Map Date: 6/6/2018
Existing erosion rills and culvert sedimentation at Howard Spring Picnic Site would be addressed with the creation of an improved side slope, road base, and subsurface drainage features. Successful revegetation of the side slopes would provide filtration of runoff, though dissolved salts from applications of salt during winter cannot be filtered out of stormwater. The existing 24-inch culvert would be replaced. If determined to be practicable in final design, a 36-inch culvert would be installed.

The addition of a climbing lane, turning lanes, and shoulder widening would add 9.1 acres of impervious surface area to the watershed; wildlife overpasses would be vegetated and so would not add impervious surface.

Judging from Google Earth imagery, there are few to no tall trees on the north side of the road in places where the stream is close to the road. Therefore, it is unlikely that planned tree removal adjacent to the road would have any measurable impact on stream water temperatures.

3.2.2.3 Alternative 3

Alternative 3 would have the same water resources impacts as Alternative 2.

3.2.2.4 Alternative 4

Alternative 4 would have the same water resources impacts as Alternative 2.

3.2.2.5 Alternative 5

Alternative 5 would have the same water resources impacts as Alternative 2.

3.2.3 Avoidance, Minimization, and Necessary Permits

Floodplain encroachment has been avoided to the extent possible in the preliminary design. None of the project actions under any of the alternatives would facilitate or encourage development in the floodplain. FHWA and ITD would coordinate with Fremont County Planning and Zoning during final design to determine floodplain development permitting requirements.

The jurisdictional wetland delineation report (Kagel, 2017) was submitted to USACE and the USACE provided a preliminary jurisdictional determination in February 2017, identifying the areas within the right-of-way that the USACE considers to be jurisdictional wetlands (USACE, 2017). The only stream crossing in the project area that would be affected by the project is replacement of the Howard Creek culvert at the Howard Spring Picnic Site. For wetland impacts and stream alteration, a Joint Permit Application would be prepared and submitted to the USACE and the Idaho Department of Water Resources.

Mitigation measures to offset the removal of less than 0.1 acre of wetlands would consist of replanting of wetland areas with native wetland vegetation, in accordance with Executive Order 11990—Protection of Wetlands. Impacted areas are located on the Caribou-Targhee National Forest. Appropriate wetland plant species will be determined in consultation with the USFS during project final design. Wetland restoration will be included in the project revegetation plan. Enactment of the revegetation plan will ensure no net loss of wetland from pre-construction to post-construction.

To protect water quality, the contractor would be responsible for following requirements of a National Pollution Discharge Elimination System (NPDES) Construction General Permit until the soil stabilized and temporary sediment and erosion control measures are removed.
3.2.4 Cumulative Effects

Some studies show that water quality and hydrologic impacts occur when a watershed reaches 10–20 percent impervious surface area (Polycarpou, 2010). The existing highway covers approximately 17 acres; with a build alternative, impervious surface area would be increased by about 9.1 acres for a total of 26.1 acres. With this increase, the highway would occupy about 1.7 percent of the 2.39 square-mile (1,530 acres) watershed. Other impervious cover in the watershed includes existing and future homes and driveways at the Big Horn Hills Estates subdivision. With the increased road surface area, ITD would incrementally increase the quantity of salts applied to the highway for winter maintenance. The only other potential road development in the watershed would be additional access roads and driveways at Big Horn Hills Estates. Runoff from the highway and expanded subdivision would contribute incrementally to sediment and pollutants reaching the stream. However, the majority of the watershed would remain undeveloped; contaminant levels would not be expected to reach levels that impair beneficial uses in the watershed.

3.2.5 Conclusions regarding Impacts to Water Resources

With appropriate and necessary construction best management practices, spill prevention, and other measures, adverse short-term impacts to water quality and quantity would be reduced. With appropriate permits and successful implementation of best management practices, none of the build alternatives would cause long-term adverse changes to water quality or quantity. During final design, FHWA and ITD will need to coordinate with Fremont County regarding compliance with floodplain development, submit a Joint Permit application for wetlands and stream alteration, and develop a Stormwater Pollution Prevention Plan and Construction General Permit application. A revegetation plan will be developed during final project design that will include revegetation of impacted wetlands. The revegetation plan will be developed in coordination with the USFS.

3.3 Biological Resources

This section describes the affected biological environment and evaluates impacts of alternatives on vegetation, fish, and wildlife, including threatened and endangered species.

3.3.1 Affected Environment

Targhee Pass is located in an area of high habitat value for wildlife, supporting iconic species associated with Yellowstone National Park as well as rare species unique to subalpine and montane ecoregions.

3.3.1.1 Habitat Characteristics

Targhee Pass is situated between two ecoregions as defined by the Idaho State Wildlife Action Plan (IDFG, 2017): the Beaverhead Mountains to the north and the Yellowstone Highlands to the south. The Beaverhead Mountains are noted for larger tracts of roadless areas that provide habitat, refuge, and movement corridors for migrating ungulates and forest carnivores that require large, intact expanses of habitat to survive (e.g., grizzly bears, wolverine). Other species likely to occur here include black rosy-finches, hoary marmot, and mountain goat. Where the Beaverhead Mountains meet the U.S. 20 corridor, small headwater streams of Henry’s Lake drain from the Centennial and Henry’s Lake Mountains, supporting riparian-associated species such as American beaver, moose, riparian avian species, and native Yellowstone cutthroat trout. Riparian meadows also provide valuable habitat for elk foraging (Dodd et al. 2007). The Yellowstone Highlands overlap with the Island Park, Henry’s Fork, and Yellowstone volcanic calderas and are a major component of the Greater Yellowstone Ecosystem (IDFG, 2017). This alpine
habitat supports one of the largest elk herds in North America, one of the few grizzly bear populations in the continental United States, and species that are rare to the area such as wolverine, trumpeter swan, and common loon (IDFG, 2017).

Figure 15 provides a more detailed characterization of vegetation communities. This characterization was developed by the Caribou-Targhee National Forest from aerial imagery (USFS 2016c). The riparian community associated with Howard Creek is illustrated in shades of red. Flatter and south-facing slopes adjacent to the lower half of the riparian community consist of montane herbaceous vegetation and Mountain big sagebrush, illustrated in shades of yellow and orange. Conifer-dominated communities tend to be on the north-facing slopes and the higher elevation near the top of the pass, illustrated in shades of green. There are also patches of aspen, conifer/aspen, and mixed conifer communities, illustrated in shades of blue and teal. Developed landscapes consist of the Big Horn Hills Estates subdivision and the highway, illustrated in shades of grey.

3.3.1.2 Common Species

Habitats adjacent to the highway support a range of alpine and riparian species. Common large mammals include elk, deer, mountain lion, bobcat, beaver, porcupine, and black bear. A more complete list of common amphibians, mammals, and reptiles is presented in Table 9. Examples of birds that may be frequently observed include mountain bluebird, chestnut-backed chickadee, red-breasted nuthatch, ruby-crowned kinglet, pygmy nuthatch, gray jay, Stellar’s jay, and Clark’s nutcracker. Blue and ruffed grouse are the most commonly found upland game birds.

Ungulate migration routes in and out of Yellowstone National Park cross U.S. 20 as animals make their way to winter range on the Sand Creek Desert in Idaho (southwest of Yellowstone National Park) and the Madison Valley in Montana (northwest of Yellowstone National Park) during fall and return back across U.S. 20 in the spring to access summer range and calving/fawning areas in Island Park and Yellowstone National Park. Non-migratory moose also live year-round along U.S. 20 and frequently cross the highway.

Wolverine and grizzly bears cross U.S. 20 periodically as part of their daily movements and during once-in-a-lifetime dispersals away from natal ranges (Seidler, 2018). A 2014 wildlife collision study (Andreasen et al., 2014) identified high probability road crossing locations for elk and moose in the Island Park area. The high probability locations included U.S. 20 mile posts 402.0 to 405.0 as well as S.H. 87 mile posts 0–5 (from the intersection with U.S. 20 to the north end of Henrys Lake).
Figure 15. Vegetation Communities
Table 9. Common Amphibians, Mammals, and Reptiles for Targhee Pass Habitats

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amphibian</td>
<td></td>
</tr>
<tr>
<td>Boreal Chorus Frog</td>
<td><em>Pseudacris maculata</em></td>
</tr>
<tr>
<td>Columbia Spotted Frog</td>
<td><em>Rana luteiventris</em></td>
</tr>
<tr>
<td>Western Tiger Salamander</td>
<td><em>Ambystoma mavortium</em></td>
</tr>
<tr>
<td>Western Toad</td>
<td><em>Anaxyrus boreas</em></td>
</tr>
<tr>
<td>Mammal</td>
<td></td>
</tr>
<tr>
<td>American Badger</td>
<td><em>Taxidea taxus</em></td>
</tr>
<tr>
<td>American Black Bear</td>
<td><em>Ursus americanus</em></td>
</tr>
<tr>
<td>American Marten</td>
<td><em>Martes americana</em></td>
</tr>
<tr>
<td>Big Brown Bat</td>
<td><em>Eptesicus fuscus</em></td>
</tr>
<tr>
<td>Black-tailed Jack Rabbit</td>
<td><em>Lepus californicus</em></td>
</tr>
<tr>
<td>Coyote</td>
<td><em>Canis latrans</em></td>
</tr>
<tr>
<td>Dusky Shrew</td>
<td><em>Sorex monticolus</em></td>
</tr>
<tr>
<td>Elk</td>
<td><em>Cervus canadensis</em></td>
</tr>
<tr>
<td>Fisher</td>
<td><em>Pekania pennanti</em></td>
</tr>
<tr>
<td>Golden-mantled Ground Squirrel</td>
<td><em>Callospermophilus lateralis</em></td>
</tr>
<tr>
<td>Gray Wolf</td>
<td><em>Canis lupus</em></td>
</tr>
<tr>
<td>Grizzly Bear</td>
<td><em>Ursus arctos</em></td>
</tr>
<tr>
<td>Least Chipmunk</td>
<td><em>Tamias minimus</em></td>
</tr>
<tr>
<td>Little Brown Myotis</td>
<td><em>Myotis lucifugus</em></td>
</tr>
<tr>
<td>Long-legged Myotis</td>
<td><em>Myotis volans</em></td>
</tr>
<tr>
<td>Long-tailed Vole</td>
<td><em>Microtus longicaudus</em></td>
</tr>
<tr>
<td>Long-tailed Weasel</td>
<td><em>Mustela frenata</em></td>
</tr>
<tr>
<td>Canada Lynx</td>
<td><em>Lynx canadensis</em></td>
</tr>
<tr>
<td>Meadow Vole</td>
<td><em>Microtus pennsylvanicus</em></td>
</tr>
<tr>
<td>Moose</td>
<td><em>Alces americanus</em></td>
</tr>
<tr>
<td>Mountain Lion</td>
<td><em>Puma concolor</em></td>
</tr>
<tr>
<td>Mule Deer</td>
<td><em>Odocoileus hemionus</em></td>
</tr>
<tr>
<td>North American Beaver</td>
<td><em>Castor canadensis</em></td>
</tr>
<tr>
<td>Northern Flying Squirrel</td>
<td><em>Glaucomyys sabrinus</em></td>
</tr>
<tr>
<td>Northern Pocket Gopher</td>
<td><em>Thomomys talpoides</em></td>
</tr>
<tr>
<td>Porcupine</td>
<td><em>Hystricidae, Erethizontidae</em></td>
</tr>
<tr>
<td>Raccoon</td>
<td><em>Procyon lotor</em></td>
</tr>
<tr>
<td>Red Squirrel</td>
<td><em>Tamiasciurus hudsonicus</em></td>
</tr>
<tr>
<td>Silver-haired Bat</td>
<td><em>Lasionycteris noctivagans</em></td>
</tr>
<tr>
<td>Snowshoe Hare</td>
<td><em>Lepus americanus</em></td>
</tr>
<tr>
<td>Southern Red-backed Vole</td>
<td><em>Myodes gapperi</em></td>
</tr>
<tr>
<td>Striped Skunk</td>
<td><em>Mephitis mephitis</em></td>
</tr>
</tbody>
</table>
### Biological Resources

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uinta Ground Squirrel</td>
<td>Urocitellus armatus</td>
</tr>
<tr>
<td>Vagrant Shrew</td>
<td>Sorex vagrans</td>
</tr>
<tr>
<td>Water Shrew</td>
<td>Sorex palustris</td>
</tr>
<tr>
<td>Water Vole</td>
<td>Microtus richardsonii</td>
</tr>
<tr>
<td>Western Jumping Mouse</td>
<td>Zapus princeps</td>
</tr>
<tr>
<td>Wolverine</td>
<td>Gulo gulo</td>
</tr>
<tr>
<td>Wyoming Ground Squirrel</td>
<td>Urocitellus elegans</td>
</tr>
<tr>
<td>Yellow-bellied Marmot</td>
<td>Marmota flaviventris</td>
</tr>
<tr>
<td>Yellow-pine Chipmunk</td>
<td>Tamias amoenus</td>
</tr>
</tbody>
</table>

Reptile

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Gartersnake</td>
<td>Thamnophis sirtalis</td>
</tr>
<tr>
<td>Painted Turtle</td>
<td>Chrysemys picta</td>
</tr>
<tr>
<td>Racer</td>
<td>Coluber constrictor</td>
</tr>
<tr>
<td>Rubber Boa</td>
<td>Charina bottae</td>
</tr>
<tr>
<td>Terrestrial Gartersnake</td>
<td>Thamnophis elegans</td>
</tr>
</tbody>
</table>

Fish

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellowstone cutthroat trout</td>
<td>Oncorhynchus clarki</td>
</tr>
<tr>
<td>Brook trout</td>
<td>Salvelinus fontinalis</td>
</tr>
</tbody>
</table>

Sources: IDFG, 2018; (Mabey, pers. comm. 2017)

#### 3.3.1.3 Special-Status Species

Species that are limited in number or that have known conservation needs receive special protections and planning under federal and state laws. Species listed as threatened or endangered under the federal Endangered Species Act receive the highest levels of protection. Federal resource and land management agencies such as the USFS also identify sensitive species as a part of agency planning and management directives. At the state level in Idaho, species of concern are native species that are not listed as threatened or endangered at the federal level but have been identified by the IDFG as being low in numbers, limited in distribution, or having suffered habitat loss sufficient to be of concern. In general, states seek to keep species of concern from becoming imperiled and subsequently listed as threatened or endangered at the federal level.

Table 10 lists special status species with potential to occur anywhere in Fremont County. This includes listed species under the Endangered Species Act (USFWS, 2018), USFS-designated sensitive species (USFS, 2015), and State of Idaho species of concern (IDFG, 2018).

**Amphibians**

The two amphibian species, Columbia spotted frog and Western toad, may occur in the Targhee Pass area due to presence of suitable habitat.
Table 10. Special Status Species with Potential to Occur in Fremont County

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
<th>STATUS a</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amphibians</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Columbia spotted frog</td>
<td><em>Rana luteiventris</em></td>
<td>Sensitive</td>
</tr>
<tr>
<td>Western toad</td>
<td><em>Anaxyrus boreas</em></td>
<td>Sensitive</td>
</tr>
<tr>
<td><strong>Birds</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American three-toed woodpecker</td>
<td><em>Picoides dorsalis</em></td>
<td>Sensitive</td>
</tr>
<tr>
<td>Bald eagle</td>
<td><em>Haliaeetus leucocephalus</em></td>
<td>Sensitive</td>
</tr>
<tr>
<td>Boreal owl</td>
<td><em>Aegolius funereus</em></td>
<td>Sensitive and Species of Concern</td>
</tr>
<tr>
<td>Common loon</td>
<td><em>Gavia immer</em></td>
<td>Sensitive</td>
</tr>
<tr>
<td>Flammulated owl</td>
<td><em>Psiloscops flammeolus</em></td>
<td>Sensitive</td>
</tr>
<tr>
<td>Great gray owl</td>
<td><em>Strix nebulosa</em></td>
<td>Sensitive</td>
</tr>
<tr>
<td>Greater sage-grouse</td>
<td><em>Centrocercus urophasianus</em></td>
<td>Sensitive</td>
</tr>
<tr>
<td>Northern goshawk</td>
<td><em>Accipiter gentilis</em></td>
<td>Sensitive</td>
</tr>
<tr>
<td>Trumpeter swan</td>
<td><em>Cygnus buccinator</em></td>
<td>Sensitive</td>
</tr>
<tr>
<td>Whooping crane</td>
<td><em>Grus americana</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Willow flycatcher</td>
<td><em>Empidonax traillii</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Yellow-billed cuckoo</td>
<td><em>Coccyzus americanus</em></td>
<td>Sensitive and Threatened</td>
</tr>
<tr>
<td><strong>Mammals</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada lynx</td>
<td><em>Lynx canadensis</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Grizzly bear (brown bear)</td>
<td><em>Ursus arctos</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Townsend’s big-eared bat</td>
<td><em>Corynorhinus townsendii</em></td>
<td>Sensitive</td>
</tr>
<tr>
<td>Wolverine</td>
<td><em>Gulo gulo</em></td>
<td>Sensitive, Species of Concern, and Proposed Threatened</td>
</tr>
<tr>
<td><strong>Plants</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>False mountain willow</td>
<td><em>Salix pseudomonticola</em></td>
<td>Species of Concern</td>
</tr>
<tr>
<td>James’ false saxifrage</td>
<td><em>Telesonix jamesii</em></td>
<td>Species of Concern</td>
</tr>
<tr>
<td>Pink agoseris</td>
<td><em>Agoseris lackschewitzi</em></td>
<td>Sensitive</td>
</tr>
<tr>
<td>Purple meadow-rue</td>
<td><em>Thalictrum dasycarpum</em></td>
<td>Species of Concern</td>
</tr>
<tr>
<td>Sierra sanicle</td>
<td><em>Sanicula graveolens</em></td>
<td>Species of Concern</td>
</tr>
<tr>
<td>Ute ladies’-tresses</td>
<td><em>Spiranthes diluvialis</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Whitebark pine</td>
<td><em>Pinus albicaulis</em></td>
<td>Sensitive and Candidate</td>
</tr>
<tr>
<td>White spruce</td>
<td><em>Picea glauca</em></td>
<td>Species of Concern</td>
</tr>
</tbody>
</table>

a Sensitive = Caribou-Targhee National Forest sensitive species; Species of Concern = Idaho Conservation Data Center Species of Concern; Threatened = Listed as threatened under the federal Endangered Species Act (ESA); Endangered = Listed as endangered under the ESA; Candidate = Candidate for listing under the ESA.
Biological Resources

Birds

Of the federally listed threatened, endangered, or candidate bird species for Fremont County in Table 10, the USFWS has not identified Targhee Pass as having known occurrences or suitable habitat for whooping crane, willow flycatcher, or yellow-billed cuckoo (USFWS, 2018). Among the other bird species, common loon is unlikely to occur on Howard Creek, but has been reported at Henry’s Lake by birders (eBird, 2018). Greater sage-grouse may occasionally be observed at Targhee Pass; the closest reported observations of greater sage-grouse are in the West Yellowstone area and Island Park (eBird, 2018). However, the closest Idaho greater sage-grouse conservation area is located well to the west of Targhee Pass, west of Island Park Reservoir (IDFG, 2016). All of the owl species listed in Table 10 could occur at Targhee Pass due to suitable habitat being present. The IDFG species database (IDFG, 2018) includes multiple boreal owl sightings between 2011 and 2013 within several miles west of Targhee Pass and south of Island Park along U.S. 20. American three-toed woodpecker sightings have also been recorded near Targhee Pass (eBird, 2018; IDFG, 2018). Bald eagle and northern goshawk have also been observed nearby (eBird, 2018).

Mammals

Of the mammals listed in Table 10, grizzly bear is the most frequently observed and likely to occur but suitable habitat is present for all four of the special status mammalian species.

The project area is within the Primary Conservation Area for the Greater Yellowstone Ecosystem distinct population segment of grizzly bears (IGBC, 2016) and there is one record of a grizzly bear killed on Targhee Pass by vehicle collision in 2015.

IDFG records include multiple wolverine sightings between 1985 and 2009 within twenty miles (IDFG, 2018). Several sightings have been made along U.S. 20 in the vicinity of Island Park and near the intersection of U.S. 20 and S.H. 87. Targhee Pass bisects important wolverine travel routes between Yellowstone National Park and the Wind River Range in Wyoming and high mountains of northeastern Idaho and western Montana (Heinemeyer et al., 2017; IDFG, 2014; Inman, 2013). Past research has indicated that wolverines tend to avoid roads generally, but a recent study found that wolverines tended to move more near higher volume roads rather than avoid the roads (Scrafford et al., 2018). Wolverines are likely affected by motorized winter recreation within the Targhee Pass area, which may reduce their frequency of occurrence near U.S. 20. A study by Heinemeyer et al. (2017) identified the Henry Mountains as having high concentration of motorized winter recreation; the study found that motorized dispersed winter recreation was the second most important predictor of female wolverine habitat selection (behind topographic position), constituting a habitat loss for female wolverines.

The extreme northeast corner of Idaho contains 45 square miles of designated critical habitat for Canada lynx. However, while individual animals are occasionally present in Idaho, Idaho does not have a persistent Canada lynx population (IDFG, 2017). Canada lynx are believed to be highly dispersed in the southern portion of their range including the Targhee Pass area (USFWS, 2013) and therefore are rarely observed. The most recent observations of Canada lynx in the Targhee Pass area are track sightings in 1997 and 1998 (IDFG, 2018). The habitat of the Targhee Pass area is not considered ideal for Canada lynx, but likely serves as an important linkage area regionally between more suitable habitat areas (USFS, 2007).

While there are no recorded observations of Townsend’s big-eared bat in the Idaho species database for the Targhee Pass vicinity (IDFG, 2018), this species is dispersed throughout the western United States; it inhabits coniferous forests among other habitats (WBWG, 2018) and therefore has potential to feed, roost, or migrate through the area.
Plants

Plant databases (IDFG, 2018; INPS, 2016) contain no historical records of special status plant occurrences in the Targhee Pass vicinity. Based on suitability of habitat, pink agoseris and whitebark pine could occur. There are observations of pink agoseris in mountains west of Henry’s Lake and north and east of Targhee Pass in Montana. A related species, pale agoseris (*agoseris glauca*) was observed in riparian areas adjacent to U.S. 20 during the wetland delineation (Kagel, 2017), though these two species are generally not found in the same habitats (Henderson et al. 1990). No stands of whitebark pine have been identified within the highway right-of-way but nearby occurrences are a possibility.

Fish

There are no special-status fish species in the project area; however, native Yellowstone cutthroat trout spawn in the tributaries of Henry’s Lake, including Howard Creek. Improvements have been made to the S.H. 87 crossing of Howard Creek and on a private road crossing to improve fish passage. Yellowstone cutthroat trout and brook trout are found in Howard Creek (Mabey, pers. comm. 2017). Barriers to fish movement are found in the middle of the project area, where there is a culvert for a private ranch entrance road and two subsequent culverts associated with the USFS Targhee Creek trailhead road. The only culvert that goes under the Targhee Pass segment of U.S. 20 is located at the Howard Spring Picnic Site.

3.3.1.4 Stressors Associated with Highways

Stressors are factors that reduce the ability of individual animals to survive. Environmental stressors include food availability, climate, predation, parasitism, and disease. Besides direct risk of mortality due to collision with vehicles, roads create a number of direct and indirect stressors on animals. These can include: habitat loss, degradation, and fragmentation; population fragmentation; and increased interaction with humans (Jackson 2000). Some stressors are significant while many are not, depending on the context. Direct habitat loss results from conversion of habitat to pavement is generally not significant because roads are linear features and habitat loss is negligible relative to available habitat. Habitat degradation can be caused by a number of factors associated with roads: introduction and spread of invasive species, increase in pollutants, risk of toxic spills due to accidents, and traffic noise (which can, for example, interfere with bird vocalization for some species) (Slabbeekoor and Peet, 2003; Wood and Yezorinac, 2006). Habitat fragmentation may occur when a new road bisects previously continuous habitat patches (Jackson 2000). Population fragmentation/isolation is more likely to occur for smaller animals that cannot cross a road or where roads have physical features such as retaining walls that create a complete barrier to movement for certain species. Increased human presence/increased activity, facilitated by roads, can be a stressor causing animals to flee or to abandon a nest or den, such as during road construction. Facilitated presence of humans in grizzly bear habitat caused by roads, for example, increases chances of encountering bears and in turn increases stress on the bear’s survivability. For example, from being pepper-sprayed, shot, or trapped and relocated, all interactions interfering with the ability of the bear to successfully feed, find a mate, and rear young; consequently, grizzly bear survival correlates well with bears spending more time in habitats with the least amount of human disturbance—roadless areas and wilderness (Schwartz et al. 2010, IGBC 2016).
Roads pose a mortality risk to animals from vehicle collisions; additionally, traffic volume can impede normal movements of animals, including daily movements to utilize habitats on each side of the road, as well as seasonal migrations and dispersal (Forman et al., 2003; Huijser et al., 2008; Van der Ree et al., 2015). The degree to which a given road presents a direct mortality risk is related to traffic volume and speed, but the relationship is not a simple linear relationship. Based on a review of nationwide data, wildlife researchers have concluded that wildlife-vehicle collisions decrease for higher volume roadways because the roadway becomes more of a barrier at a high traffic volume—fewer animals attempt to cross busier roads, so fewer are struck compared to lower-volume roads. This concept has been illustrated by (Seiler, 2003; Huijser et al., 2008; and Clevenger and Huijser, 2011) using the illustration in Figure 16.

In national crash data, almost one half of wildlife-vehicle collisions occurred on roadways with average daily traffic volumes less than 5,000 annual average daily traffic volume (AADT) (Huijser et al., 2008). These lower-volume roadways would typically be to the left of point $a$ in Figure 16. As the traffic volume increases on these roads, the number of animals killed also rises and the road becomes more of a barrier but to a lower degree. This can be due to seasonal variability in the traffic volume as well as big differences in volume by time of day; at times, the road is not a barrier to movement, at other times it is more of a barrier. In contrast, very high-volume roadways such as U.S. Interstate highways occur to the right of point $b$. These roads can have low rates of animals killed because few animals attempt to cross. This can be due to physical barriers such as fencing, highway dividers, and raised center medians as well.

*Figure 16. Conceptual Illustration of the Relationship of Traffic Volume to Wildlife Crossing (adapted from Huijser et al. 2008)*
as to high traffic volume that has lower variability by time of day and season. In another generalization, Clevenger and Huijser (2011) state that, at low traffic volumes (under 2,500 AADT), the proportion of traffic-related mortalities is generally low, as is the number of animals that may be repelled by the road and traffic disturbance. As traffic volume increases to moderate levels (2,500 to 10,000 AADT), the number of animals repelled would be expected to increase while the number of animals killed would start to increase dramatically. At high volumes (10,000 AADT and greater), only a small proportion of attempted road crossings are expected to be successful and a large proportion of animals are likely repelled.

The relationship of wildlife-vehicle collisions to speed is also complex because speed is interrelated with traffic volume and type of roadway. The majority of rural, two-lane roads are located where more animals tend to be present and also tend to have speed limits of 55-65 mph. Consequently, assessment of nationwide data found that the majority of wildlife-vehicle collisions occur on rural, two-lane roads with 55 mph speed limits (Huijser et al., 2008).

U.S. 20 through Targhee Pass is expected to remain a rural highway through the design year, with a projected average daily traffic volume of 3,555 in 2022 and 4,865 in 2042 (ITD, 2015). As traffic volume increases, risk of wildlife-vehicle collisions will be expected to increase as well, but will likely not reach the point at which the rate of wildlife-vehicle collisions decrease because the road would be primarily a barrier due to the traffic volume or physical barrier. The Targhee Pass segment of the highway is also not planned to have structural features that make it more of a barrier for medium and large mammals (for example, a divided highway, or a raised median center barrier). Though there may be some localized movement barriers (steep hill cuts, guard rails) that discourage animals from crossing at particular locations, most animals successfully cross the road most of the time, with the primary stressor being that some animals are struck by vehicles.

Secondarily, the highway is a stressor by creating traffic noise and facilitating human presence/activity near the roadway. Some animals may avoid or flee the corridor in response to these stressors. Traffic noise possibly reduces the habitat value close to the roadway for some species, while for others there is likely little or no effect of traffic noise and traffic noise levels dissipate quickly with distance. Traffic noise is also attenuated by variable terrain, conifer forest, and vegetated ground zones present in the corridor, and traffic noise levels dissipate quickly with distance. So, animals that are affected by traffic noise may avoid being close to the road. In terms of road avoidance, grizzly bears tend to avoid roads unless there is an attractor such as a regular food source (ICST, 2003; Mattson et al., 1986). But bears and other mammals can become habituated to areas with frequent human activity. The Targhee Pass segment of U.S. 20 is located within the food storage order area of the Grizzly Bear Conservation Strategy, which requires that all unattended food, refuse, and attractants be effectively stored to minimize conflicts between grizzly bears and humans (IGBC, 2016).

### 3.3.2 Effects of the Alternatives on Biological Resources

Project alternatives can affect biological resources through temporary construction disturbance and habitat loss and degradation.

#### 3.3.2.1 Alternative 1: No-Build

Under the No-Build Alternative, there would be periodic construction disturbances to wildlife when the pavement needs repair and replacement. These temporary disturbances would include increased noise and increased human presence. These disturbances would be of shorter duration compared to construction required for the build alternatives but would also occur more frequently over the 40-year project planning
period because the road would require more frequent replacement and repair without improvements to road ballast condition and drainage.

Actions outside of the existing road footprint under the No-Build Alternative may include weed control under ITD’s Integrated Vegetative Management Program and some tree removal as trees encroach into the clear zone of the roadway, causing a hazard for drivers. These actions would not have significant effects on populations of special status plant species (pink agoseris, whitebark pine) because few if any of them are present within or adjacent to the right-of-way.

Several special-status bird species have been observed to occur within 1 mile of Targhee Pass. Feeding and perching habitat may occur in the vicinity of the highway, but most of the available habitat would not be affected.

Various bat species are likely present, potentially including occurrences of Townsends’ big eared bat. Bats can be disturbed from roost sites as a result of periodic road construction disturbance. However, there are no known hibernacula and no bridges where bats may roost in the immediate area. Therefore, the potential to adversely affect bat populations during road construction is minimal.

The No-Build Alternative would not adversely affect fish or other aquatic species because the roadway would not be expected to degrade aquatic habitat. Existing culverts on Howard Creek at and near Targhee Creek Trailhead road may represent a fish passage barrier; however, these culverts are not part of ITD’s infrastructure and would not be physically disturbed under the No-Build Alternative. The existing 24-inch culvert at the Howard Spring Picnic Site appears to be partially filled with sediment and gravel. Presence of sediment and gravel in the culvert is likely beneficial to aquatic organisms and for water quality. This small culvert also represents a fish barrier; however, there is only a small segment of Howard Creek between the culvert and the spring head and better spawning habitats are found in the riparian areas below this point. At some point, this culvert would need replacement due to age and capacity loss from sedimentation.

Traffic volume (annual number of vehicles traveling the road) is expected to increase as described in Chapter 1. Traffic noise would increase with this increased volume, but imperceptibly, an average 2.0 decibel increase as evaluated in the noise study for this EA. As under current conditions, traffic noise levels would dissipate quickly with distance from the highway and would be attenuated by presence of vegetated ground zones, topography, and conifer forest stands that help absorb sound. Increased traffic volume would incrementally increase contaminants that accumulate on the road surface and then runoff into wetlands and waterways. These include small amounts of gasoline, oil, and other engine fluids; heavy metals from brake wear; particles from vehicle exhaust; and sand from deicing operations. Concentrations of these would not be expected to cause impairment of waterways to a degree that would affect beneficial uses, as evaluated in the water resources section of this EA.

Increased volume of traffic would also increase potential for wildlife-vehicle collisions and would cause the highway to become more of a barrier to wildlife movement, but seasonal variability of traffic volume would be expected to continue with lower traffic volumes in months when more-frequent, large-mammal movement is taking place. Based on expected traffic volumes and few existing physical barriers to wildlife movement across the highway (e.g., barriers, steep road cuts), the highway would continue to present a risk of collisions with wildlife and a cause of mortality for individual animals, and to a lesser extent would be a barrier to wildlife movement because of increasing traffic volumes. The Targhee Pass segment of U.S. 20 would contribute incrementally to wildlife mortality but would be unlikely in itself to be a threat to populations of any species.
Measures that could be taken to reduce wildlife-vehicle collisions under No-Build would include adding or modifying permanent signage to warn drivers of wildlife presence in the corridor and/or seasonal use of mobile variable message signs with advisory speed reduction. However, standard warning signs and digital/variable message signs have not been correlated with a reliably predicable reduction in wildlife-vehicle collisions (Seidler, 2018; Huijser and McGowen, 2010).

3.3.2.2 Alternative 2

Road construction under Alternative 2 would occur over a longer period of time than pavement replacement under the No-Build Alternative. This would create a longer temporary period of increased disturbance to wildlife associated with noise and human presence near habitat areas used by wildlife. However, because the road ballast and drainage would be improved, periodic construction disturbances to repair and repave the highway would be expected to occur less frequently and, therefore, there would be fewer occurrences of highway construction disturbance over the 40-year life span of the project.

Tree clearing under Alternative 2 for reducing road shade and installing wildlife fence has the potential to disturb nesting birds and would remove habitat for some small mammals that live and forage in trees adjacent to the highway. Construction noise is also likely to disturb migratory birds nesting adjacent to the study area if construction activities occur during nesting season (approximately mid-March to mid-August). Disturbance during nesting season could lead to nest abandonment and/or nesting failure. The adverse effect on migratory birds can be reduced by conducting tree clearing outside of the nesting season or by having a qualified wildlife biologist conduct a nest survey prior to conducting tree clearing. Areas where trees are removed would be revegetated with native grasses, forbs, shrubs. This would alter the habitat locally, but would not create a significant change in available habitat for any small, tree-dwelling mammals.

Existing habitat within the right-of-way would be converted more uniformly to grass and forbs with removal of trees. Wildlife fencing would exclude most mammals from this habitat. However, terrestrial habitat outside of the right-of-way would remain mostly unchanged by project actions, except where wildlife fencing and ends of wildlife crossing structures extend beyond the existing right-of-way. Overall, habitat modifications under Alternative 2 would not represent a significant change in habitat type or availability in the general area.

Similar to the No-Build Alternative, there is only minimal potential to affect bats as a result of road construction activity since there are no known nearby hibernacula and no physical structures associated with the highway such as bridges for roosting bats.

Riparian and aquatic habitat areas would be avoided during construction by showing these areas on construction plan drawings and requiring the contractor to avoid intrusion into these areas except where unavoidable. Use of straw wattles and silt fencing at the margins of these areas would help to avoid unintended erosion and sedimentation from encroaching into these areas. With this avoidance, aquatic species would not be adversely affected by Alternative 2.

No improvements to fish passage would be made because existing obstructions (culverts at Targhee Creek Trailhead) are not a part of the highway project or ITD’s infrastructure. The existing 24-inch culvert at Howard Spring Picnic Site would be replaced with a 36-inch culvert, if determined to be practicable in final design. This would be larger than needed for water conveyance, which would allow for sedimentation capacity and, possibly, small mammal passage.

Traffic volume would be expected to increase as described in Chapter 1 but would not differ from the No-Build Alternative. Traffic noise would increase with this increased volume of traffic, but almost
imperceptibly, an average 3.7 decibel increase, as evaluated in the noise study for human land uses near
the highway. As under current conditions, traffic noise levels would dissipate quickly with distance from
the highway and would be attenuated by presence of vegetated ground zones, topography, and conifer
forest stands that help absorb sound.

Increased traffic would also incrementally increase contaminants that accumulate on the road surface, and
then runoff into wetlands and waterways, to the same degree as the No-Build Alternative. These include
small amounts of gasoline, oil, and other engine fluids; heavy metals from brake wear; and particles from
vehicle exhaust. Sand and salt from winter road maintenance would be increased with the addition of a
passing lane and wider shoulders (more pavement to treat and greater impervious surface/runoff volume).
However, concentrations of these would not be expected to reach a level that would impair waterways or
adversely affect beneficial uses.

Alternative 2 would include construction of three wildlife overpasses and wildlife fence on both sides of
the highway. Wildlife fencing would need to be inspected periodically for needed repairs and
replacement. Fencing could be inspected from the highway side except in a few locations where the
proposed fence line would go through forested areas or along steep hillsides; access would need to be
maintained along the fence line in these locations. Fence maintenance activity would create periodic
disturbance for wildlife, but not any greater than existing nearby recreation disturbances on existing roads
and trails.

Wildlife fence with crossing structures would restrict wildlife movement across the highway to
designated locations. This would restrict wildlife movement more than the No-Build Alternative but
would do so with the benefit of greatly reducing risk of mortality due to collision for animals that utilize
the crossing structures. Medium-sized mammals such as bobcat, fox, and coyote would also likely use
crossing structures for dispersal and daily foraging. Small mammals could likely go through the fence and
so would not be restricted in their movement.

Wildlife fencing itself would pose some mortality risk to wildlife. Wolves, bears, and other predators
have occasionally been observed running prey species into wildlife fences (Huijser et al., 2008; Leeson,
1996). Some birds may also collide with fencing (Huijser et al., 2008; Baines and Summers, 1997,
Dobson, 2001). Larger mammals may find ways inside the wildlife fencing; however, jump-outs would
create opportunities for animals to leave the fenced areas. Spacing and location of jump-outs has been
considered in the preliminary design to optimize chances of wildlife to escape the highway enclosure.

On balance, wildlife fencing with crossing structures would significantly benefit populations of large and
medium-sized mammals by reducing potential for mortality due to collisions with vehicles and improving
safe movements across the highway. This would be more the case for special-status species—grizzly bear,
wolverine, and Canada lynx—as maintaining or increasing their population numbers is a component of
recovery or keeping them from becoming listed (or relisted) under the ESA (IDFG, 2017; IGBC, 2016).
IDFG also considers improving habitat connectivity to be necessary for maintaining healthy population
numbers of ungulates—elk, deer, and moose (IDFG, 2017). Such installations provide an estimated 83–87
percent reduction in wildlife-vehicle collision occurrence (Huijser and McGowen, 2010; Clevenger and
Huijser, 2011; Rytwinski et al., 2016).

3.3.2.3 Alternative 3

Road design elements of Alternative 3 are the same as all build alternatives and would have the same
construction impacts as described for Alternative 2. Some effects of increased traffic volume—increased
noise and increased presence of contaminants on the road surface—would also be the same as described
for Alternative 2 (no significant adverse effects).
In terms of addressing wildlife-vehicle collisions and wildlife movement under Alternative 3, a wildlife detection system would be installed with the objective of alerting drivers to the presence of large mammals on and near the road surface and warning drivers to slow down and be prepared to stop. Components of the system would be installed along the roadway within the existing right-of-way. Periodic disturbance would be necessary for system maintenance, replacement of components, system monitoring, possibly moving and relocating or installing additional components.

A wildlife detection system would not restrict animal movement to designated locations and would not pose the mortality risks to animals that wildlife fencing would potentially pose (predator trapping, fence collision, and becoming trapped inside the fence—as described for Alternative 2), though these mortality risks are insignificant compared to mortality risk from vehicle collisions in the vicinity of roads. Animals would remain vulnerable to vehicle collision whenever drivers do not successfully act to avoid collisions.

More tree clearing may be done under Alternative 3 within the upper half of the Targhee Pass segment to increase detection of animals by the radar system and to increase their visibility to drivers. Reducing tree cover may discourage some animals from approaching the road. If animals are more reluctant to approach the road, this may increase the barrier effect of the highway to wildlife movement in combination with the effect of increased traffic volume. Conversely, replacing trees with grasses and forbs may increase the attractiveness of the roadside to deer and elk as a food source, thus causing animals that do approach the road to spend more time near the road than they otherwise might (Huijser et al., 2008). ITD could potentially select plant species that have reduced value for ungulate foraging to reduce the attractiveness of the right-of-way for ungulate use; plant species for replanting disturbed areas would be determined in consultation with USFS.

Animals would still be at risk of vehicle collisions, being dependent on drivers to respond appropriately to the animal-detection signals. To the degree that a wildlife-detection system proves successful in reducing wildlife-vehicle collisions, it would benefit populations of large mammals in maintaining and possibly increasing their population numbers. Small- and medium-sized mammals would be unlikely to be detected and, therefore, would likely be as vulnerable to road mortality as they would be under the No-Build Alternative. As traffic volume increases over time, this risk would increase.

### 3.3.2.4 Alternative 4

Road design elements of Alternative 4 are the same as all build alternatives and would have the same construction impacts as described for Alternative 2. Some effects of increased traffic volume—increased noise and increased presence of contaminants on the road surface—would also be the same as described for Alternative 2 (no significant adverse effects).

In terms of addressing wildlife-vehicle collisions and wildlife movement, Alternative 4 would involve a combination of a single wildlife crossing structure with fencing throughout the Targhee Pass segment of U.S. 20. A series of wildlife “crosswalks” would be installed the lower half of the project area. Each crosswalk would include animal detection to warn drivers of animal presence in or approaching the crosswalk locations.

Alternative 4 would have a similar level of effectiveness to Alternative 2 in reducing wildlife-vehicle collisions, depending on the effectiveness of the wildlife crosswalks. A crosswalk system in Arizona reduced elk collisions by 91 percent (Dodd and Gagnon, 2008). Wildlife fence would restrict wildlife movement across the highway to designated locations and would have the same mortality risks to animals that wildlife fencing would as described for Alternative 2 (predator trapping, fence collision, and becoming trapped inside the fence). In the lower half of the project area, it is possible that large mammals would be hesitant to cross through the at-grade crossings, compared to the design of a crossing structure...
that would have a vegetated surface and berms on each side that visually isolate the crossing area from highway traffic. Animals would still be at risk of vehicle collision within the crosswalks, being dependent on drivers to respond appropriately to the animal-detection signals.

On balance, however, the combination of fencing with a crossing structure and multiple wildlife crosswalks would be expected to significantly benefit large mammals by reducing the occurrence of wildlife-vehicle collisions over time as traffic volume increases. As with Alternative 2, tree clearing within the right-of-way would not affect occurrence of wildlife-vehicle collisions because wildlife fencing would exclude most occurrences of large and medium-sized mammals within the right-of-way.

3.3.2.5 Alternative 5

Road design elements of Alternative 5 are the same as all build alternatives and would have the same construction impacts as described for Alternative 2. Some effects of increased traffic volume—increased noise and increased presence of contaminants on the road surface—would also be the same as described for Alternative 2 (no significant adverse effects).

Under Alternative 5, no permanent installations would be made for reducing wildlife-vehicle collisions. As under No-Build, ITD would rely on signage and advisory speed reductions as measures for reducing wildlife-vehicle collisions. Standard warning signs and digital/variable message signs have not been shown to produce a reliable reduction in traffic speed or wildlife-vehicle collisions (Seidler, 2018; Huijser and McGowen, 2010).

Effects of tree clearing within the right-of-way would be similar to what would be expected under Alternative 3. Reducing tree cover may discourage some animals from approaching the road. If animals are more reluctant to approach the road, this may increase the barrier effect of the highway to wildlife movement in combination with the effect of increased traffic volume. Conversely, replacing trees with grasses and forbs may increase the attractiveness of the roadside to deer and elk as a food source, thus causing animals that do approach the road to spend more time near the road than they otherwise might (Huijser et al., 2008). ITD could potentially select plant species that have reduced value for ungulate foraging to reduce the attractiveness of the right-of-way for ungulate use; plant species for replanting disturbed areas would be determined in consultation with USFS.

3.3.3 Avoidance, Minimization, and Necessary Permits

ITD’s Programmatic Biological Assessment (ITD, 2010) addresses effects of project actions to federally listed species and necessary best management practices for minimizing the potential for impacts. Early coordination with the USFWS indicated that design elements included in the build alternatives would likely fit within applicability requirements of the Programmatic Biological Assessment. The Programmatic Biological Assessment Project Pre-notification Form (ITD Form 0289) would be completed and distributed to the appropriate review agencies indicated in the Programmatic BA. This would be done following issuance of a decision document for a build alternative and at least 45 days prior to initiation of project construction, as required (ITD 2010, USFWS 2010, 2015). Best management practices required by the Programmatic BA would be added to the contractor’s commitments.

Construction contractors would be required to comply with the food storage order requirements of the Grizzly Bear Conservation Strategy (IGBC, 2016) to not attract bears during construction.

Contractors would also be responsible for environmental clearances of staging areas and source material areas, including potential effects on special status species.
Contractors would be required to practice due diligence to safeguard migratory and special status birds by contacting the ITD Environmental Planner when migratory or special status birds, nests, or eggs are encountered. Before any trees are cut an ITD-designated biologist will survey the areas for migratory bird nests. If nests are found, the tree with a nest cannot be removed until after August 1 to account for most re-nesting attempts. Nests that may be used in sequential years cannot be removed (e.g., raptor nests).

No stands of whitebark pine have been identified within the highway right-of-way but nearby occurrences are a possibility. Whitebark pine trees (5-needle pines), if found, will not be removed. Mitigation to address removal of trees, shrubs, and other vegetation that provide habitat structure for migratory birds and small mammals would include replanting with native species the riparian areas and other areas disturbed within the project footprint. For alternatives that do not include wildlife fencing, a goal would be to select plant species that have reduced value for ungulate foraging to discourage ungulate use.

### 3.3.4 Cumulative Effects

The most significant past impact to wildlife and wildlife habitat at Targhee Pass is the establishment of U.S. 20 as a major U.S. highway into and out of Yellowstone National Park. Other impacts include the establishment of the area as major center for travel and tourism. The travel and tourism industry of the area caters to outdoor recreationists drawn to the biological resources found here. As the area grows, the highway becomes an increasing barrier to wildlife movement and a greater threat to wildlife mortality. At present, wildlife-vehicle collisions are the second-leading cause of reported vehicular collisions on the U.S. 20 Corridor (ITD, 2006). From 2010 to 2014, 441 crashes occurred between Chester (mile post 352.7) to the Montana state line (mile post 406.3) with an estimated cost of $50 million dollars. Almost 20 percent of these crashes were associated with animal collisions or avoidance (Kittelson and Associates, 2016).

Increasing traffic volumes on other roadways, combined with the increase in traffic volume using Targhee Pass, will increase highway effects on wildlife through the design year and beyond. Land development in Island Park and other locations such as the Madison Valley where wildlife migrate and disperse (Kociolek et al., 2016) will contribute to increased stressors. These effects will occur regardless of the alternatives evaluated in this EA including the No-Build Alternative. Wildlife fencing (Alternatives 2 and 4) would furnish the greatest assurance of reducing wildlife mortality from collisions for the Targhee Pass segment and the greatest assurance of at least maintaining if not increasing the ability of large mammals to move freely across the road, contributing incrementally to reduced mortality of wildlife and improved habitat connectivity. A wildlife-detection system (Alternative 3) may also successfully reduce wildlife-vehicle collisions, but with greater variability and uncertainty of success compared to alternatives with fencing and with less benefit to wildlife movement.

Other than the highway improvements, the only other expected source of increasing wildlife disturbance is further development of the Big Horn Hills Subdivision and potentially increased travel and recreation activity. With high-volume snowmobile use in the winter, trail and recreational use in summer, activity at the Howard Spring Picnic Site, and residential activity in the subdivision, there is existing human interaction with wildlife in the Targhee Pass vicinity, and this will likely increase. However, large, roadless habitat areas back from the corridor in each direction provide refuge from interaction with humans. With the human activity near the highway, there would be human presence near the crossing structures, and animals that spend time near the highway are likely somewhat habituated to human presence. Elk and other large mammals that migrate to and from Yellowstone National Park are also likely to be habituated to human presence. This suggests that animals would likely adapt quickly to using crossing structures, if available, and may not be excessively disturbed by the existing and expected future human activity level within the corridor.
Independent of ITD actions, in-vehicle collision avoidance technology is currently available in some vehicles and will likely become more available in the future. There are two general types. One is in-vehicle detection of movement, possibly combined with automated braking. The other is roadside movement detection that communicates signals to approaching vehicles that are capable of receiving the communication (Huijser et al., 2008). In either case, this technology would detect larger animals (deer, elk, moose) as it does a pedestrian or bicycle. Effectiveness would depend on location but could be similar to or supplemental to a wildlife detection system (Alternative 3). In terms of automated collision avoidance technology, animal movement along and across a roadway is inherently less predictable than a pedestrian or bicycle; the current position and speed of the animal is what the vehicle will react to (National Center for Rural Road Safety, 2016). As quoted in a Smithsonian magazine article (Bland, 2015), Fraser Shilling, project lead of the California Roadkill Observation System said, “Even if we develop the perfect automated recognition and avoidance system, you still have an imperfect ecology and wildlife behavior system, so there’s maybe still too much chaos. If your subject, the animal, is sprinting out into the road in such a way that you can’t stop fast enough, does it really matter how perfect the car is?” However, the first step toward avoiding a collision or reducing the damage caused is to reduce speed; a vehicle with automated response capability would be able to do this more effectively and consistently than human drivers. In short, automated detection and braking may reduce reaction time compared to human driver decisions alone, but these systems will not overcome the laws of physics when it comes to avoiding all collisions with animals.

Effectiveness of collision avoidance for reducing wildlife-vehicle collisions will also be dependent on the rate of adoption. There will likely be a high incentive from insurance companies to facilitate adoption of collision avoidance technology in new vehicles (Bland, 2015; National Center for Rural Road Safety, 2015; Huijser et al., 2008). However, the age of the fleet that will be using the Targhee Pass segment of U.S. 20 is not foreseeable. To the extent that such systems do contribute to reduced wildlife-vehicle collisions, this will occur independent of the alternative selected for the Targhee Pass segment of U.S. 20. An autonomous vehicle, responding to either in-vehicle detection, or roadside detection communicated to the vehicle, could help reduce wildlife-vehicle collisions by automatically reducing speed to comply with an advisory speed, such as what might be implemented with a wildlife at-grade crossing (Alternative 4) or a wildlife detection system without fencing (Alternative 3). Even so, alternatives with wildlife fencing would still have greatest chance of reducing wildlife-vehicle collisions more than alternatives that do not restrict animal movement onto and along the pavement; experts quoted in the Smithsonian article and consulted for this EA (Huijser, pers. comm. 2018) concurred with the greater effectiveness of fencing in reducing wildlife-vehicle collision occurrence. Additionally, only alternatives with crossing structures would provide wildlife with an opportunity to cross the highway without risk of mortality and stress due to the barrier effect of highway traffic.

### 3.3.5 Conclusions regarding Impacts to Biological Resources

With avoidance and minimization measures, build alternatives would not have significant effects on special status species or habitats at Targhee Pass. Alternatives implementing wildlife fencing and crossings for wildlife (Alternative 2 or 4) would have net benefits for wildlife, helping to address objectives of Idaho’s State Wildlife Action Plan (IDFG, 2017) and benefits for human safety. Alternatives with a wildlife detection system (Alternatives 3 or 4) or signage (Alternative 1 or 5) would rely on driver behavior for effectiveness, with Alternatives 3 and 4 providing greater, location-specific information for drivers and greater likelihood of effectiveness. Effectiveness of Alternative 3 and 4 may increase over time with increasing availability of collision avoidance technology in the vehicle fleet and with adaptive implementation to increase detection capability of the system. Experts agree that excluding large mammals from the roadway is the most effective strategy and, combined with crossing facilities, is the only means of facilitating animal movement across a highway with increasing traffic volume.
3.4 Land Use and Transportation Planning

Transportation projects are intended to benefit the traveling public and to support safety, mobility, and economic opportunity. Consistency with adjacent land use planning, statewide land use planning, and state and local transportation planning is a component of achieving these objectives.

3.4.1 Affected Environment

Figure 17 illustrates management boundaries, zoning, and transportation features of the Targhee Pass area. Forest lands are administered by the Ashton Ranger District of the Caribou-Targhee National Forest. There is also a small parcel of federal land administered by the BLM (specifically, the Medicine Lodge Resource area of Idaho Falls District). Private lands surrounding the southern portion of the project area are located within unincorporated Fremont County, with a portion, at the intersection of U.S. 20 and S.H. 87 being within the City of Island Park.

3.4.1.1 Federal Land Use Plans

USFS-administered lands in the Targhee Pass area are guided by the Forest Plan (USFS, 1997). Land use on the BLM parcel is guided by the 1985 Medicine Lodge Resource Management Plan (BLM, 1985). ITD holds an easement with each of these federal agencies for the highway.

Targhee Pass is located within the Centennial Mountains (M332Ea) management subsection of the Forest Plan. Within this subsection, the highway is bordered on the south by management prescription 2.6.1(a), Grizzly Bear Habitat, and on the north by management prescription 1.3, Recommended Wilderness (USFS, 1997, pp. III-78, pp. III-98). Both of these management prescriptions call for limited human presence with an emphasis on wildlife habitat and natural conditions. The presence of the highway predates the Forest Plan. The highway and the adjacent electric powerline is acknowledged in management prescriptions. The Caribou-Targhee National Forest travel map (USFS 2016a) includes the highway. Other designated roads include Targhee Creek Trailhead Road 057 and Jeep Trail 393, which follows a portion of the electric powerline corridor. Powerline corridors have specific management direction under the Forest Plan (USFS, 1997) as Concentrated Development Area 8.1, which applies to all existing concentrated developments, including U.S. 20 and the powerline that passes through the corridor. Within this area the USFS expects a greater level of human presence and therefore allows for more intensive land uses.

Targhee Pass is within the Primary Conservation Area for the Yellowstone grizzly bear population. The USFS Intermountain Region, which is inclusive of the Caribou-Targhee National Forest, is a party to the conservation strategy for this grizzly bear population (IGBC, 2016). The Yellowstone grizzly bear population was delisted as a threatened species under the Endangered Species Act in 2017. The 2016 conservation strategy is an interagency agreement for guiding the management and monitoring of the Yellowstone grizzly bear population and its habitat following the delisting. The conservation strategy encourages highway planners to implement wildlife crossing mitigation measures to enhance safe wildlife passage as a component of highway improvement projects.
Figure 17. Land Use
3.4.1.2 Idaho State Wildlife Action Plan

The IDFG has a State Wildlife Action Plan, which identifies goals and objectives for the state’s wildlife. Targhee Pass is located within the Yellowstone Highlands and Beaverhead Mountains planning sections, and it is considered part of the 22 million-acre Greater Yellowstone Ecosystem, which supports a wide variety of wildlife. Providing for safe movement of wildlife (both for daily activities and along seasonal migration routes) is an important component of the plan. The U.S. 20 roadway has been identified as an impediment to wildlife movement because of direct mortality from wildlife-vehicle collisions and as a physical barrier to species that are adverse to crossing roads. An identified objective in the plan is to maximize permeability of highways to facilitate wildlife crossings (IDFG, 2017, pp. 511).

3.4.1.3 County and City Planning, Snowmobile Trail, and Local Roads

Private land uses are guided by zoning regulations and general plans of Island Park City and Fremont County. For Island Park, the intersection of U.S. 20 and S.H. 87 is within the Valley View Commercial Zoning District Boundary (City of Island Park, 2016). Fremont County has two zones that intersect the Targhee Pass segment of U.S. 20. These are the Commercial Limited Office and Rural Conservation zones (Fremont County, 2011 & 2017).

The City of Island Park Comprehensive Plan (City of Island Park, 2014) and Zoning Code (City of Island Park, 2016) are the relevant land use documents for the City. The area of the intersection of U.S. 20 and S.H. 87 is within the City’s Valley View Commercial Zone. The transportation component of Island Park’s Comprehensive Plan encourages the coordination of county, state, and federal land managers to create a regional transportation system for ATV, snowmobiles, and pedestrians that is “safe, convenient, and well-maintained” (City of Island Park, 2014, pp 11).

Fremont County’s Comprehensive Plan was adopted in 2008, and the latest zoning map adopted in 2017. The Targhee Pass segment of U.S. 20 is within the Commercial Limited Office and Rural Conservation zones (Fremont County, 2011 & 2017). Private lands on both sides of the highway between the S.H. 87 intersection and Big Horn Hills Estates are owned by a single property owner. The meadow on the north side of U.S. 20, across from Big Horn Hills Estates, has a conservation easement in place. The easement is held by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) and was created in 1998 as part of the Wetland Reserve Program (NCED, 2018). These lands are also zoned by the county for Rural Conservation, the purpose of which is to provide for continued use as agricultural, rangeland, and/or wildlife management (Fremont County, 2011).

Fremont County’s comprehensive plan acknowledges the local economic importance of recreation, and it seeks to “protect and enhance recreational resources in the County.” This includes the use of recreational easements for ATV and snowmobile use, among others (Fremont County, 2008, pp 19). To this end, the Fremont County Parks and Recreation Department provides winter maintenance of snowmobile trails, including the Valley View Trail adjacent to the Targhee Pass segment of U.S. 20. This snowmobile trail is groomed during the winter by Fremont County. The trail crosses private properties under easements with private landowners and crosses U.S. 20 and S.H. 87 with permits issued by ITD. One permit allows the trail to cross the U.S. 20 right-of-way near mile post 402.0, south of the Targhee Pass project area. Another permit allows the trail to cross S.H. 87 near the intersection of S.H. 87 and U.S. 20. On public lands, the snowmobile trail follows portions of USFS roads 057 and 393 and then connects with other snowmobile trails after crossing the Idaho-Montana state line.

Adjacent local roads consist of residential roads and driveways that are used to access private property. Big Horn Hills Estates uses two driveways for access from U.S. 20. Two other private driveways provide access to private residences near S.H. 87.
Another County-managed land use is the Henrys Lake Airport, which is located northeast of the intersection of U.S. 20 and S.H. 87. The airport’s runway is situated such that the runway approach zone for aircraft taking off or landing from its eastern end passes over U.S. 20. Fremont County, the ITD Division of Aeronautics, and the FAA have responsibility to protect the safety of air travelers by limiting structure and tree heights within the Airport Overlay Zoning District (Fremont County, 2011). Height limitations in the airport overlay zone are based on Federal Aviation Administration regulations, of which the most restrictive height limitations are established for the runway visual approach zone. This zone is 250 feet wide at the end of the runway and expands outward uniformly to a width of 1,250 feet wide at a horizontal distance of 5,000 feet from the runway edge. The protected airspace over this zone extends upward from the end of the runway at a slope of 20:1. With these dimensions, a segment of the protected airspace visual approach zone crosses over U.S. 20 somewhere between mile posts 402.5 and 403.0.

In April 2018, the Fremont County Board of Commissioners passed a resolution addressing land use planning for U.S. 20 from Ponds Lodge to the Montana state line (Fremont County Board of Commissioners, 2018). In the measure, the Commissioners resolved that the speed limit on U.S. 20, in their view, should be set at 45 miles per hour from Pond’s Lodge to Elk Creek, Mack’s Inn to Island Park Village, and Valley View to the Montana State line with a limit of 65 miles per hour at the remaining areas between Pond’s Lodge and the Montana state line. The resolution also called for the installation of animal-detection system(s), digital message sign(s), seasonal wildlife warning sign(s), posting of advisory speed(s) and vegetation removal and pruning as measures to address wildlife-vehicle collisions.

Responding to the resolution and previous comments from the public and Fremont County, ITD planned a complete review of speed limits in the Island Park area, including collecting speeds of vehicles, reviewing roadway conditions, crash history, and sight distance at intersections. In addition, ITD committed to review speeds at night to see if a nighttime speed limit could be implemented and also to assess truck speeds to see if a separate speed limit should be implemented for trucks. However, speed limits are determined independently of the NEPA process and were therefore were not included as a project alternative. A range of measures for reducing wildlife-vehicle collisions were included with project alternatives, inclusive of the recommended measures identified by the County.

### 3.4.1.4 U.S. 20 Corridor Plan

The ITD U.S. 20 corridor plan identified goals to: improve highway safety; decrease congestion; enhance facilities for pedestrians, bicycles, ATVs, and snow machines—and minimize impacts to the environment (ITD, 2006). Specific recommendations included the construction of passing lanes, acceleration and deceleration lanes at intersections, wider shoulders (for emergency vehicle parking and bicycle use), and measures to increase awareness of wildlife near the highway and reduce wildlife-vehicle collisions. Other recommendations included using context-sensitive roadway design reflecting community character and minimizing visual impact. The corridor plan also encouraged developing partnerships with Fremont County and other land management agencies to provide snow machine trails, parking, and safe motorized crossing locations.

### 3.4.2 Effects of the Alternatives on Land Use and Transportation

Relevant issues regarding effects of alternatives on land use and transportation include the degree to which project activities are congruent with local and federal land use goals and objectives.

#### 3.4.2.1 Alternative 1: No-Build

Periodic repaving under the No-Build Alternative may add to seasonal vehicle congestion for local residents and motorists travelling along U.S. 20. However, the No-Build Alternative would not have long-
term effects on land use or the Caribou-Targhee National Forest or local transportation plans. The current configuration of U.S. 20 generally supports local land use goals for business and residential access and does not conflict with the Airport Overlay Zone. This alternative would not adversely affect local transportation planning or the forest travel management plan, because all existing accesses would be preserved.

Under the No-Build Alternative, high-intensity human uses would continue to occur in the Targhee Pass vicinity within the Caribou-Targhee National Forest. These activities include highway traffic, motorized and nonmotorized trail use, operation and maintenance of the electric power line, recreational use of the Howard Spring Picnic Site, and dispersed recreation activity such as hunting. As traffic volumes increase, the effects of the highway (e.g., noise, wildlife impacts) would increase but the spatial extent of the highway would not expand. There would be no effects to the forest travel management plan because access to Forest Roads 057 and 393 would not be changed by any ITD actions. There would also be no changes affecting Fremont County winter trails.

The No-Build Alternative would not support ITD’s bicycle and pedestrian goals because the existing shoulders are narrow and unsafe and would remain unchanged under the No-Build Alternative. Lack of turn lanes at Big Horn Hills Estates would not improve safety at these intersections.

The No-Build Alternative would not include specific design features to facilitate safe wildlife passage, as recommended in the Grizzly Bear Conservation Strategy (ICST, 2016) and Idaho’s State Wildlife Action Plan (IDFG, 2017).

3.4.2.2 Alternative 2

Alternative 2 would not conflict with local land use planning because the new roadway configuration would support land use goals for local commercial zones and residential zones by maintaining vehicle access from U.S. 20. Wildlife fencing would introduce a barrier and linear structural feature that does not currently exist. However, existing access to business and residential locations would be preserved, and pedestrian access through the fencing would be included at key locations, which would be determined in the final design.

Alternative 2 is consistent with Forest Plan (USFS, 1997). Highway improvements would occur within the existing U.S. 20 right-of-way, though there would be minor intrusions outside of the right-of-way for wildlife fencing and portions of wildlife crossing structures. Wildlife overpasses would facilitate USFS goals for the grizzly bear habitat management prescription to the south by creating safe passage over U.S. 20 and connecting habitat areas in the north.

The wildlife crossing structure at mile post 402.8 has private land parcels on each side of the highway that are owned by the same landowner. These parcels are zoned by Fremont County as part of a rural conservation area. Due to relatively flat topography at this location, the wildlife crossing structure would extend beyond the right-of-way into the private land parcels on each side of the highway. Thus, an easement for the crossing structure would be needed from the private landowner. These lands are frequently used by migrating elk herds and as such the crossing structure has high probability of being used by elk. Presence of the crossing structure and easement for it would be compatible with the purposes of the rural conservation planning zone in Fremont County for these lands.

The wildlife crossing structure proposed for mile post 402.8 would be located under the runway visual approach zone for the Henrys Lake Airport. The approximate ground surface elevation of the airport runway is 6,596 feet above mean sea level. The approximate distance from the runway to the proposed crossing structure location is 3,870 feet. Rising from the runway at a slope of 20-to-1, the runway visual
approach zone would begin at 193 feet (3,870 divided by 20) above the runway elevation of 6,596, or 6,789 feet above mean sea level at mile post 402.8. The approximate ground elevation of the highway at mile post 402.8 is 6,690 feet. This is 99 feet under the runway approach zone. A wildlife crossing structure would rise above the highway surface approximately 40 feet, including fencing on the top of the structure, and would, therefore, not intrude into the runway visual approach zone at this location.

However, if Alternative 2 were selected, ITD District 6 would complete FAA Form 7460-1 during the final design process and would submit the completed form to the ITD Aeronautics Division and Fremont County. The Aeronautics Division and Fremont County would then determine if the project plan would require notification to the FAA and response from the FAA prior to proceeding with construction.

Many goals identified in ITD’s U.S. 20 corridor plan would be addressed by Alternative 2, especially goals regarding safety. Poor sight distance at the Targhee Creek Trailhead turnoff was noted in public scoping comments and would be improved with an increased hill cut. The proposed highway design elements (e.g., turn lanes, shoulder widening, additional uphill travel lane, and tree clearing to reduce winter shade) would all function to reduce crash rates and traffic congestion. Shoulder widening would also increase pedestrian and bicyclist safety. Wildlife-vehicle collision potential would be greatly reduced by the wildlife fencing, which would run the full length of the project and would prevent most large animals from entering the roadway.

As part of alternatives development, ITD examined the location where Fremont County routes the snowmobile trail between an electric substation and the highway, just past the intersection with S.H. 87. In scoping comments, Fremont County asked ITD to consider shifting the highway to create more room for the snowmobile trail to be routed through this location. ITD determined that a lane shift to move the highway to better accommodate the groomed snowmobile trail within the highway right-of-way would require an impractical amount of hill cut, right-of-way acquisition, and realignment of the highway and the U.S. 20 intersection with S.H. 87. Therefore, this shift was not included as part of the project design. However, the design for the proposed highway widening (shoulder widening and lane addition) would occur on the opposite side of the highway from the snowmobile trail route. There would be no changes to the right-of-way on the power substation side of the highway; therefore, the road widening would not create any changes from existing conditions in relationship to the snowmobile trail route at this location. Wildlife fencing, included with Alternative 2, would have to be installed to not affect the snowmobile trail in the vicinity of the power station. This would be accomplished by beginning the wildlife fence after the power substation, or by working with Fremont County and landowner in this vicinity to route the snowmobile trail behind the electric substation.

The installation of wildlife fencing to restrict animal crossing to the locations of new crossing structures would facilitate safer wildlife movement over the highway with increasing future traffic volumes. This would support objectives of the State Wildlife Action Plan (IDFG, 2017) to reduce wildlife mortality from wildlife-vehicle collisions and facilitate safe wildlife movement as well as recommendations of the Grizzly Bear Conservation Strategy (IGBC, 2016).

### 3.4.2.3 Alternative 3

Road improvements under Alternative 3 would be the same as Alternative 2 including compatibility with local and state planning, forest planning, and ITD’s U.S. 20 transportation planning.

The design for the proposed highway widening (shoulder widening and lane addition) would occur on the side of the highway that is opposite of the snowmobile trail route. There would be no changes to the right-of-way on the power substation side of the highway; therefore, the road widening would not create any changes from existing conditions in relationship to the snowmobile trail route at this location (no adverse
effect). There would be no wildlife fencing with Alternative 3 that would require accommodation of the snowmobile trail in the power substation vicinity.

Alternative 3 would include installing posts for mounting animal-detection equipment. The location of posts would be determined in final design; however, it likely that one or more posts would be installed within the runway approach zone for Henrys Lake Airport. Posts would not be taller than the existing powerline that is adjacent to U.S. 20 and, at the distance from the airport runway, would be unlikely to intrude into protected airspace. However, if Alternative 3 were selected, ITD District 6 would need to complete Federal Aviation Administration (FAA) Form 7460-1 during the final design process and would submit the completed form to the ITD Aeronautics Division and Fremont County. The Aeronautics Division and Fremont County would then determine if the project plan would require notification to the FAA and response from the FAA prior to proceeding with construction.

The degree to which the animal-detection system would prevent wildlife-vehicle collisions would depend on how well motorists respond to warnings by decreasing speed at appropriate times and locations and become more vigilant regarding presence of large mammals within the corridor. This would partially support objectives of the State Wildlife Action Plan (IDFG 2015) and recommendations of the Grizzly Bear Conservation Strategy (IGBC, 2016) by reducing mortality but would not make the highway easier for animals to cross with increasing future traffic volumes. Because no wildlife crossing structures or fences would be constructed, the highway traffic would represent an impediment to wildlife movement, as it would under the No-Build Alternative.

3.4.2.4 Alternative 4

Road improvements under Alternative 4 would be the same as Alternative 2 including compatibility with local and state planning, forest planning, and ITD’s U.S. 20 transportation planning.

The design for the proposed highway widening (shoulder widening and lane addition) would occur on the side of the highway that is opposite of the snowmobile trail route. There would be no changes to the right-of-way on the power substation side of the highway; therefore, the road widening would not create any changes from existing conditions in relationship to the snowmobile trail route at this location. Wildlife fencing, included with Alternative 4, would have to be installed to not affect the snowmobile trail in the vicinity of the power station. This would be accomplished by beginning the wildlife fence after the power substation, or by working with Fremont County and landowner in this vicinity to route the snowmobile trail behind the substation.

In addition to items common to all build alternatives, Alternative 4 would include the installation of wildlife fencing along both sides of the existing right-of-way and one new wildlife overpass. This alternative also includes the installation of two wildlife “crosswalks” equipped with animal detection to warn drivers of the presence of animals in or near the crosswalk locations. Alternative 4 would support the State Wildlife Action Plan (IDFG, 2017) and the Grizzly Bear Conservation Strategy (IGBC, 2016) similarly to Alternative 2, depending on the extent to which wildlife crosswalks successfully facilitate highway crossing by animals and prevent wildlife-vehicle collisions.

3.4.2.5 Alternative 5

Road improvements under Alternative 5 would be the same as Alternative 2, including compatibility with local and state planning, forest planning, and ITD’s U.S. 20 transportation planning.

The design for the proposed highway widening (shoulder widening and lane addition) would occur on the side of the highway that is opposite of the snowmobile trail route. There would be no changes to the right-
of-way on the power substation side of the highway; therefore, the road widening would not create any changes from existing conditions in relationship to the snowmobile trail route at this location (no adverse effect). There would be no wildlife fencing with Alternative 5 that would require accommodation of the snowmobile trail in the power substation vicinity.

In addition to items common to all build alternatives, Alternative 5 would utilize variable message signs and advisory speeds to warn drivers of wildlife. The highway would present the same degree of barrier to wildlife movement as the No-Build Alternative and in this respect would not facilitate objectives of the State Wildlife Action Plan (IDFG, 2017) and recommendations of the Grizzly Bear Conservation Strategy (IGBC, 2016). The degree to which the widened and straightened roadway and variable message signs would prevent wildlife-vehicle collisions would depend on how well motorists respond to warnings by decreasing speed and become more vigilant.

3.4.3 Avoidance, Minimization, and Necessary Permits

Under any of the alternatives, the contractor would be required to develop a traffic management plan as part of the final design to minimize travel delays to the extent practicable.

Any of the build alternatives would include some tree cutting. This would require a timber purchase/assessment from the USFS.

Under Alternative 2, wildlife fencing would be designed to accommodate vehicle and pedestrian access, avoiding and minimizing potential adverse effects to mobility. Alternative 2 might require electrical power if electric mats were used at any of the vehicle access locations. This may require easement on private land to extend electric power, depending on locations of power needs. Alternative 2 would require easement on private lands for one of the wildlife crossing structures.

If Alternative 2 or 3 were selected, ITD District 6 would complete FAA Form 7460-1 during the final design process and would submit the completed form to the ITD Aeronautics Division and Fremont County. The Aeronautics Division and Fremont County would then determine if the project plan would require notification to the FAA and response from the FAA prior to proceeding with construction.

Alternative 3 would be implemented entirely within the existing U.S. 20 right-of-way and would not require avoidance, minimization measures, or permits to implement. Wildlife detection and warning systems would likely be implemented with solar power and would not require access to the electrical grid.

Alternative 4 would require access to electrical power for the wildlife crosswalks or could be solar powered. If electrical power supply is needed, it may require an easement on private lands.

Alternative 5 would not require any new easements or land use permits.

3.4.4 Cumulative Effects

Existing land uses are based on the Forest Plan and as defined by local government comprehensive plans and zoning regulations. The only other reasonably foreseeable substantial land use change is further development of the Big Horn Hills Estates subdivision.

Wildlife design elements considered under Alternatives 2, 3, 4, or 5 could be implemented in other segments of U.S. 20 and S.H. 87, independently of the Targhee Pass segment. These would need to individually consider necessary right-of-way, easement on private lands, and consistency with land use planning for those locations.
3.4.5 Conclusions regarding Land Use and Transportation Planning

Combined with past, present, and reasonably foreseeable future actions, and the avoidance and minimization measures, none of the build alternatives would be expected to result in inconsistencies with existing land use or transportation planning. Alternative 2, and to a lesser extent Alternative 4, would support objectives of the State Wildlife Action Plan (IDFG, 2017) by facilitating wildlife movement over the highway. Alternatives 3 and 5 would not facilitate objectives of the State Wildlife Action Plan.

3.5 Traffic Noise

Noise is defined as unwanted sound. Traffic noise is generally understood to be a type of unwanted sound that can interfere with desirable sounds, such as a conversation during a backyard picnic or birds singing in a neighborhood park. The FHWA and ITD have noise abatement policies that establish criteria thresholds for locations where frequent human use occurs and where reduced traffic noise would be beneficial. The policies also establish criteria for determining if noise abatement is feasible and reasonable for a given location. Federal procedures for abatement of highway traffic noise are found in regulation 23 CFR 772; ITD’s noise abatement policy is included in Section 1300 of the ITD Environmental Process Manual (ITD, 2011).

Build alternatives involve the addition of a through-traffic lane and are therefore considered a “Type 1” project, or a project requiring completion of a noise study to determine if noise abatement criteria are exceeded. A noise study was completed (Horrocks Engineers, 2018) and results are summarized here. The full noise study report is available on the website, IslandParkUS20.com.

3.5.1 Affected Environment

In this section, fundamental information for understanding traffic noise is presented first, followed by information about noise abatement under FHWA and ITD policies. After that, results of traffic noise modeling for existing conditions are presented.

3.5.1.1 Fundamentals of Noise Measurement

Traffic noise is measured in A-weighted sound levels using decibel units (dBA). The A-weighted scale most closely approximates the way the human ear hears sounds of different frequencies. Figure 18 illustrates some typical sounds and where they fall on the dBA scale. Most people begin to detect a sound level increase at 3 dBA, while changes in noise of 1 to 2 dBA are generally not perceptible.

A 5 dBA increase is considered a readily perceptible change for most people, and a 10 dB increase is generally perceived as a doubling of loudness.

Traffic noise varies over time as vehicles come and go. For this reason, an averaging method is used to express the level of sound over time. The sound levels for traffic noise analysis are expressed as “equivalent levels” or Leq, a type of average that is weighted for the variability of noise level during a given time interval. The worst free-flowing traffic hour of traffic volume is used in traffic noise modeling. This is denoted as the 1-hour Leq, or Leq(h).

It is also important to understand that decibels are measured on a logarithmic scale and that noise levels dissipate quickly with distance. On the logarithmic scale, a doubling of sound energy corresponds to a 3 dB increase regardless of the level of the original sound. For example, if one vehicle produces 70 dB when it passes an observer, two identical vehicles that both produce 70 dB would together produce 73 dB.
Traffic noise

### Table: Typical A-weighted Sound Level Examples

<table>
<thead>
<tr>
<th>Common Outdoor Activities</th>
<th>Noise Level (dBA)</th>
<th>Common Indoor Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jet flyover at 1,000 feet</td>
<td>110</td>
<td>Rock band</td>
</tr>
<tr>
<td>Gas lawnmower at 3 feet</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Diesel truck at 50 mph</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Noisy urban area, daytime</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Gas lawnmower at 100 feet</td>
<td>70</td>
<td>Food blender at 3 feet</td>
</tr>
<tr>
<td>Commercial area</td>
<td></td>
<td>Garbage disposal at 3 feet</td>
</tr>
<tr>
<td>Heavy traffic at 300 feet</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Urban daytime</td>
<td>50</td>
<td>Large business office</td>
</tr>
<tr>
<td>Quiet rural daytime</td>
<td>40</td>
<td>Vacuum cleaner at 10 feet</td>
</tr>
<tr>
<td>Quiet urban nighttime</td>
<td>30</td>
<td>Normal speech at 3 feet</td>
</tr>
<tr>
<td>Quiet suburban nighttime</td>
<td>20</td>
<td>Dishwasher in next room</td>
</tr>
<tr>
<td>Quiet rural nighttime</td>
<td>10</td>
<td>Theater, large conference room (background)</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Library</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bedroom at night, concert hall (background)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Broadcast/recording studio (background)</td>
</tr>
</tbody>
</table>

**Figure 18. Typical A-weighted Sound Level Examples**

as they simultaneously passed an observer (an addition of 3 dB, rather than simple arithmetic doubling, i.e., $70+70=140$). In terms of noise dissipation, sound intensity decreases in proportion with the square of the distance from the source; generally, this means that sound levels from a point source would decrease by 6 dBA for each doubling of distance.

ITD has developed a Traffic Noise Policy (ITD, 2011) for transportation projects, which conforms to the FHWA NAC requirements outlined in 23 CFR 772. ITD’s Traffic Noise Policy states that a traffic noise impact occurs when either:

1) the predicted noise level approaches or exceeds the FHWA NAC, even if the future noise level is lower than the existing noise level (approach means 1 dBA below the FHWA NAC), or

2) the design year traffic noise level exceeds the existing noise level by 15.0 dBA or more (a substantial increase).

Noise-sensitive land uses in the Targhee Pass area include residential properties and the Howard Spring Picnic Site. The outdoor NAC level for both of these land uses in ITD’s Traffic Noise Policy is a Leq(h) of 66.0 dBA. Under the ITD Traffic Noise Policy and associated federal requirements, NACs are based on worst hourly traffic volumes using Traffic Noise Model (TNM) software developed by FHWA.
3.5.1.2 Existing Traffic Noise

Every existing residence was included in noise modeling. According to the ITD noise abatement policy, at the time noise modeling is conducted any property with a building permit must also be included in the analysis. Based on coordination with Fremont County, one additional property with a building permit at Big Horn Hills Estates was included. The Howard Spring Picnic Site was also included as a location of frequent outdoor use under the ITD Traffic Noise Policy.

Front-row sensitive receptors are those that are adjacent to the highway without any intervening structures that partially block traffic noise. Under existing (2016) conditions, the worst hourly traffic noise levels modeled for front-row residential sensitive receptors varied from 55.8 dBA to 65.1 dBA, with variation resulting primarily to distance from the highway. Properties that are not front-row receptors had modeled traffic noise levels ranging from a high of 57.5 dBA for a property relatively close to the highway (276.4 feet from the highway centerline) to a low of 41.7 dBA for a property relatively distant from the highway (1,745.3 feet). The highest modeled existing traffic noise level was at Howard Spring Picnic Site, which was 70.3 dBA. Under existing conditions, only the noise level modeled at the Howard Spring Picnic Site exceeds the NAC level of 66.0 dBA.

3.5.2 Effects of the Alternatives on Traffic Noise

Traffic volumes are expected to increase along U.S. 20 through the design year 2040. Build alternatives would also create a new travel lane, moving a portion of the future traffic volume closer to noise-sensitive receptors. Future traffic noise modeling was completed for the No-Build Alternative and build alternatives to determine if predicted noise levels would exceed the NAC (66.0 dBA) or create substantial increases over existing traffic noise levels (any increase of 15.0 dBA or more). The full noise study report (Horrocks Engineers, 2018) is available on the project website, IslandParkUS20.com.

3.5.2.1 No-Build Alternative

Compared to existing traffic noise levels, 2040 traffic noise levels would increase by an average of 2.0 dBA (considered an unnoticeable increase), with the greatest increase being 2.1 dBA (an unnoticeable increase). In the modeling, this increase is due to the increase in traffic volumes on existing roadways (S.H. 87 and U.S. 20).

3.5.2.2 Build Alternatives

Each of the build alternatives include a passing lane addition. This addition would move noise generators (vehicles) closer to sensitive receptors, creating a noise level increase over the No Build Alternative. Compared to existing noise levels, 2040 traffic noise levels under any of the build alternatives would increase by an average of 3.7 dBA (considered a slightly noticeable increase), with the greatest increase being 5.6 dBA (considered a noticeable increase). Noise modeling determined that there would be six residential receptors with 2040 worst hourly noise levels exceeding the NAC, along with Howard Spring Picnic Site, which already has existing and future traffic noise levels that exceed the NAC. No receptors would experience a substantial increase (15.0 dBA over existing conditions).

In terms of noise impacts, Alternatives 2 and 4 were slightly different from the other build alternatives. Wildlife crossing structures were included in noise modeling to determine if these structures would change traffic noise levels. One residential receptor had an imperceptible decrease of 0.1 dBA in the predicted future traffic noise level associated with one of the wildlife crossing structures. In the modeling, this decrease is associated with the crossing structure partially blocking traffic noise from the perspective of the receptor.
3.5.3 Noise Abatement Considered

Construction noise effects can be minimized by restricting construction work near residential areas to daytime work hours and avoiding work on weekends to the extent practicable.

Measures for abating traffic noise under the ITD Traffic Noise Policy include travel management, alteration of horizontal and vertical alignments of the highway, acquisition of real property to serve as buffer zones, and installation of noise barriers.

3.5.3.1 Traffic Management Measures

Traffic management measures such as speed restrictions and truck routes may be evaluated for mitigation of traffic noise in cases in which such measures do not conflict with the intended use of the roadway, create unreasonable delay or hardship on the motoring public, or create a safety or enforcement problems. According to FHWA’s Highway Traffic Noise Analysis and Abatement Policy and Guidance, a reduction in speed of more than 20 mph is necessary for a noticeable decrease in noise levels. Therefore, traffic management measures were not considered as part of this evaluation because they are not consistent with the intended use of the roadway.

3.5.3.2 Alteration of Horizontal and Vertical Alignments

To effectively reduce noise levels, U.S. 20 would need to shift several feet away from the impacted receptors, resulting in the need to acquire large amounts of additional right-of-way. Depressing U.S. 20 several feet may reduce noise levels; however, there would be a large cost associated with lowering the roadway. Therefore, altering the horizontal and vertical alignments was not considered as part of this evaluation.

3.5.3.3 Acquisition of Real Property to Serve as a Buffer Zone

ITD does not consider the purchase of buffer zones on undeveloped land as a reasonable expenditure of state highway funds because local jurisdictions have the regulatory power to achieve compatible development adjacent to highways.

3.5.3.4 Noise Barriers

For a noise barrier to be effective, it must be high enough and long enough to block the view of the noise source from the receptor’s perspective. The FHWA’s Highway Traffic Noise Analysis and Abatement Policy and Guidance (FHWA, 2011) states that a good rule of thumb is that the noise barrier should extend four times as far in each direction as the distance from the receptor to the barrier. For instance, if the receptor is 50 feet from the proposed noise barrier, the barrier needs to extend at least 200 feet on either side of the receptor in order to shield the receptor from noise traveling past the ends of the barrier. Noise barriers evaluated for the current project ranged from 6 to 16 feet high.

ITD Traffic Noise Policy has established criteria for determining if a noise barrier is feasible and reasonable. Among the requirements for feasibility, a noise barrier must provide a minimum 5 dBA traffic noise reduction for the majority of impacted receptors. Among the requirements for reasonableness, the barrier must also meet a design goal and a cost effectiveness goal. ITD’s design goal is that the barrier must provide a 7 dBA reduction for the closest benefitted receptor to the highway centerline. Only one receptor needs to achieve this 7 dBA goal. ITD’s cost effectiveness criterion is determined by multiplying the total number of benefited receptors by $24,250 and subtracting the estimated cost of constructing an effective noise wall. A positive remainder means the barrier would be cost effective (ITD, 2011).
In the traffic noise model, four noise-wall segments were modeled to assess feasibility and reasonableness. Modeled noise walls were able to meet the noise reduction feasibility and reasonableness design goals, but none would be cost effective. Details are provided in the noise report (Horrocks Engineers, 2018), available on the project website, IslandParkUS20.com.

### 3.5.3.5 Construction Noise Impact and Abatement

The most prevalent construction noise source is equipment powered by internal combustion engines (usually diesel). Noise from equipment likely to be used on this project (tractors, trucks, graders, pile drivers, etc.) would range to about 95 dBA when measured from a distance of 50 feet. To reduce the impact of construction noise, construction activity near residences would occur only from 7:00 a.m. to 7:00 p.m. and only on weekdays to the extent practicable; this limitation could be adjusted if approved by the resident engineer. Mitigation of potential highway construction noise impacts shall incorporate low-cost, easy-to-implement measures into project plans and specifications (equipment muffler requirements, work-hour limits).

### 3.5.4 Cumulative Effects

Traffic volume on U.S. 20 has been growing at a 2.3 percent rate over the past 40 years, and traffic volume is expected to continue growing through the design year (ITD 2015). To disclose noise levels to local officials, in an effort to prevent future traffic noise impacts on currently undeveloped lands (in conformance with 23 CFR 771.17), a ten-point transect was included in the noise modeling to determine the approximate distance from the build alternatives highway centerline for which NACs would be exceeded for future developments. Two exterior NACs are useful to consider in this respect, the residential NAC threshold (which is 66 dBA), and the NAC for hotels, motels, offices, restaurants/bars, and other developed lands (which is 71 dBA). Results of the modeling indicate that the 71 dBA threshold would be exceeded within 75 to 100 feet of the highway centerline and the 66 dBA threshold would be exceeded within 125 to 150 feet.

ITD noise policy states that cost effectiveness from a noise study should be re-analyzed at a regular interval not to exceed 5 years. Thus, if additional development near the corridor should occur within a 5-year period, ITD may need to reassess the cost effectiveness outcome of this analysis following the NEPA decision.

Additional modifications of travel lanes for the Targhee Pass segment of U.S. 20 are not planned prior to the design year 2040. If additional modifications were to become planned before or following the design year, then additional noise analysis would be necessary.

### 3.5.5 Conclusions regarding Impacts of Traffic Noise

Six residential properties and the Howard Spring Picnic Site would have design year 2040 traffic noise levels exceeding the NAC. Noise abatement measures were considered but determined to not be reasonable to implement at this time. Future residential development proximate to the Targhee Pass segment of U.S. 20 within 125 to 150 feet of the highway centerline would have design year 2040 traffic noise levels exceeding the NAC; future noise-sensitive commercial development within 75 to 100 feet would also be expected to have traffic noise levels exceeding the NAC. This information may prove useful for local officials to inform potential developers regarding anticipated highway traffic noise.
3.6 Visual Resources

This section describes the affected visual resources and evaluates potential project visual impacts. The visual impacts that are considered in this assessment are impacts that are seen by people travelling the highway corridor and by people adjacent to the highway corridor.

3.6.1 Affected Environment

Targhee Pass is substantially natural in character except for the roadway, sparse residential buildings, and electrical powerlines. The highway travels through meadows and sagebrush plains surrounded by mountain foothills to higher mountains of a predominantly forested landscape of conifer forest and aspen stands. The southern portion has privately owned lands adjacent to the highway right-of-way; the visual setting has an agrarian/rangeland character with scattered residential units including one residential subdivision, Big Horn Hills Estates. The northern portion of the corridor traverses Targhee Pass and is contained in the Caribou-Targhee National Forest. This portion has denser stands of conifer trees that are closer to the highway.

3.6.1.1 Visual Character of the Highway

Visually, the highway consists of two, 12-foot-wide travel lanes with 5-foot shoulders for a total asphalt width of 34 feet. Between the edge of asphalt and the right-of-way is an approximately 33-foot-wide open space. Within this open space, depending on the section of highway, is a variance of ditches, roadway signage, aboveground utilities, vegetation, and vehicle turnouts. Figure 19 represents a typical view. The road striping, roadway fencing, guardrails, overhead utility lines, and roadway asphalt gives the landscape a long, curving, geometric linear form. The utility poles, trees, and mountain silhouettes seen in the background give a juxtaposing vertical element that is less dominant than the horizontal forms.

Figure 19. Area of Visual Effect Typical View – Location at Mile Post 403 Looking Southwest, Google Street View Image

The vegetation consists largely of shrub/grassland vegetation with occasional conifer and aspen trees. The vegetative colors are dominated by greens, tans, and golds in all seasons except the winter months, when
both sides of the roadway are typically covered with snow. Figure 20 is a view of the residential subdivision, Big Horn Hills Estates. The primary views from the existing highway, traveling both directions, is the existing valley/mountain landscape in the middleground/background and the roadway, roadside fencing, residential buildings, aboveground utilities, guardrails, roadway signage, roadway shoulder gravels, and roadside vegetation in the foreground. The primary views onto the existing highway include human-made features such as the asphalt roadway, roadside fencing, aboveground utilities, roadway signage and passing motorists. Viewers include local traffic, tourist traffic, nearby residents, and trail users (by foot, bicycle, ATV, and snowmobile).

3.6.1.2 Nez Perce National Historic Trail

The Nez Perce National Historic Trail memorializes the flight of the Nez Perce in summer 1877. A portion of the historic path follows U.S. 20 from Kilgore Yale Road near Island Park Reservoir through Targhee Pass and across the state border; however, there is no physical trace associated with the path. The National Trails Systems Act of 1968 was established in part to protect visual resources associated with the pathway surroundings. One visual element associated with the significance of the area to Native Americans is a series of Native American metal sculpture silhouettes and boulders located at the Howard Spring Picnic Site (Figure 21).

3.6.1.3 Local Government Planning related to Visual Resources

Fremont County produced a Visual Sensitivity Assessment (Salmore and Johnson, 2008) that identifies priority viewing areas for the county with guidelines for development. The report identifies Targhee Pass as a foreground, multiple-view corridor.
3.6.1.4 USFS Visual Resource Management

The USFS utilizes the Visual Management System to determine the visual quality objectives (VQO) for all lands under its management. The system involves classifying landscapes using factors such as landforms, vegetation, distance zones, and sensitivity levels. Visual quality objectives are used to describe the degree of alteration that may occur to the visual resources (USFS, 1995). The Forest Plan for VQO within the Concentrated Development Area, including Targhee Pass, is classified as “Retention to Partial Retention” except for a small area of “Retention to Modification” around the Howard Spring Picnic Site (USFS, 1997). Under the Retention to Partial Retention objective, management activities are to remain visually subordinate to the characteristic landscape. Activities may repeat or introduce form, line, color, or texture that are found infrequently or not at all in the characteristic landscape, but they should remain subordinate to the visual strength of the characteristic landscape. Under the Modification objective, management activities may visually dominate the original characteristic landscape, but must borrow from naturally established form, line, color, or texture at such scale that its visual characteristics are compatible with the natural surroundings.

3.6.2 Effects of the Alternatives on Visual Resources

The process used in this visual impact assessment follows the guidelines outlined in FHWA’s “Guidelines for the Visual Impact Assessment of Highway Projects” (FHWA, 2015). Visual impacts were determined by assessing the change in visual resources caused by the build alternatives and then by predicting viewer response to that change. To assess the visual resource change, the visual compatibility and/or visual contrast of the proposed alternative with the visual character of the existing landscape was examined. To predict viewer response, viewer exposure and viewer sensitivity was considered. The visual impacts of
the build alternatives were analyzed from four key view locations and then given a change of visual quality degree as beneficial, adverse, or neutral. Consistency of each alternative with Fremont County and USFS visual resources management was also considered.

3.6.2.1 Alternative 1: No build

No change to the long-term visual character or visual quality would occur due to implementation of the No-Build Alternative. Therefore, no adverse visual impact is anticipated. No mitigation would be required.

3.6.2.2 Alternative 2

Wildlife fencing would be installed along both sides of the existing right-of-way to accommodate minimization of wildlife-vehicle collisions. The new fencing would be visible due to its size, extent, and location. Three wildlife overpass crossing structures would be installed and would be visible because the overhead structures would interrupt the existing form and line, and possibly the color and texture of the existing landscape visual character. The fencing and the wildlife overpass structures would be visible to motorists, residents, and recreationalists along the length of the installation. Visiting and local viewers alike would be sensitive to visual impacts of Alternative 2. Local viewers would have longer visual duration and awareness because of the proximity of residents to these features. The number of visiting viewers is much higher than local viewers, but duration, attention, and focus is considered less. Although this alternative would have the greatest overall change to visual quality (based on the number of proposed facility transportation and wildlife safety improvements), the changes are compatible with Targhee Pass as a travel corridor. The degree of visual impact would be slightly adverse due to a slight reduction in visual quality. Mitigation measures, described later in this analysis, would minimize visual impacts.

Alternative 2 would not affect the Native American features at Howard Spring associated with the Nez Perce Trail. The alternative would be compatible with the multiple-view corridor classification by Fremont County and the USFS Visual Quality Objectives for the corridor.

3.6.2.3 Alternative 3

Along with roadway improvements, an animal-detection system would be installed using sensors and electrical signage. Short-term temporary impacts would occur during the construction period. The temporary visual impacts of construction activities would be temporary. Additional signage and poles with radar detection equipment would be installed; otherwise, no substantial long-term change would occur to the visual character, visual quality, or the ability of the affected population to view visual resources due to implementation of Alternative 3; therefore, no adverse visual impact would occur.

Alternative 3 would not affect the Native American features at Howard Spring associated with the Nez Perce Trail. The alternative would be compatible with the multiple-view corridor classification by Fremont County and the USFS VQO for the corridor.

3.6.2.4 Alternative 4

Wildlife fencing would be installed along both sides of the existing right-of-way to accommodate minimization of wildlife-vehicle collisions. The new fencing would be visible due to its size, extent, and location. One wildlife overpass crossing structure would be installed in the upper segment of the pass and would be visible because the overhead structure would interrupt the existing form and line, and possibly the color and texture of existing landscape visual character. The fencing and the wildlife overpass structure would be visible to motorists, residents, and recreationalists. Both visiting viewers and local
viewers would be sensitive to visual impacts of this alternative. Local viewers would have longer visual duration and awareness because of the proximity of residents to the highway and regular use of the highway. The number of visiting viewers is much higher than local viewers, but duration, attention and focus is considered less. Although this alternative would have some change to visual quality based on the number of proposed facility transportation and wildlife safety improvements, the changes would be compatible with Targhee Pass as a travel corridor. The degree of visual impact under this alternative would be slightly adverse to neutral due to a very slight reduction in visual criteria. Mitigation measures may be considered to minimize visual impacts.

Alternative 4 would not affect the Native American features at Howard Spring associated with the Nez Perce Trail. The alternative would be compatible with the multiple-view corridor classification by Fremont County and the USFS Visual Quality Objectives for the corridor.

3.6.2.5 Alternative 5

Along with roadway improvements, use of non-permanent variable message signs would be deployed seasonally or year-round. Short-term temporary impacts would occur during the roadway improvement construction period. These construction activities include road re-surfacing, and construction staging areas. The temporary visual impacts of construction activities would be temporary. No substantial change is anticipated to occur to the visual character, visual quality, or the ability of the affected population to view visual resources due to implementation of Alternative 5; therefore, no adverse visual impact is anticipated.

Alternative 5 would not affect the Native American features at Howard Spring associated with the Nez Perce Trail. The alternative would be compatible with the multiple-view corridor classification by Fremont County and the USFS Visual Quality Objectives for the corridor.

3.6.3 Avoidance, Minimization, and Necessary Permits

Efforts would be made to minimize short-term and long-term visual impacts. Aesthetic details pertaining to the features of alternatives, including wildlife crossing structures and wildlife fencing, could be designed to minimize visual impacts. Examples of minimization measures are described in the following sections.

3.6.3.1 Construction Activities

Construction activities would occur during daylight hours. If there is need for nighttime construction at any point, the contractor would be instructed to minimize fugitive light from portable light sources used for construction by using color-corrected halide lights that would be operated at the lowest allowable wattage and height. Contractors would be instructed to direct all lights downward toward work activities and away from nearby residents to the maximum extent possible. The contractor would be required to restore construction staging areas after project completion to minimize the impact on visual quality and landscape character by planting native plants on all disturbed terrain.

3.6.3.2 Wildlife Crossing Structures

Aesthetic design treatments would be applied to the proposed Wildlife Crossing Structures by using elements such as form, line, texture, and style that complement the natural landscape, are aesthetically pleasing, and as unobtrusive as possible. Concrete materials that implement aesthetic design features such as mimicking natural material (e.g., stone or rock surfacing) and integral color would be used to reduce visibility and to blend with the surrounding landscape. Figure 22 is an example wildlife crossing structure
with design elements to blend with the highway and background natural landscape. Figure 23 is an example of a wildlife crossing structure located where a highway has an existing hill cut. The location minimizes the footprint and cost of the structure, as well as minimizing visual intrusion into the background landscape.

![Figure 23. Wildlife Overpass Structure Example #1 (photo from Digital Nomad National Geographic)](image)

### 3.6.3.3 Wildlife Fencing

Aesthetic design treatments would be applied to the proposed wildlife fencing by using construction materials and finishes that blend into the surrounding natural environment. Wire mesh fencing would be used. Skylined fencing from the perspective of the highway and residences would be minimized to the extent possible. This can be achieved by taking advantage of natural terrain where possible, or by installing fencing behind natural visual barriers, such as tree lines. Simplicity and uniformity of the fence design in Figure 24 minimizes visual intrusion in a setting similar to Targhee Pass. Figure 25 is a wildlife fence in a rural residential setting similar to Big Horn Hills Estates.

![Figure 24. Wildlife Fencing Example](image)
Figure 23. Wildlife Overpass Structure Example #2 (photo from Contech Engineered Solutions).

Figure 24. Wildlife Fencing Example (Photo Copyright: Marcel Huijser, used with permission).
Visual impacts can be reduced by selecting materials and designs that are compatible with the aesthetic qualities of the setting. These can include post type (e.g., wood, metal), fencing material and color, and types and design of vehicle accesses (cattle guards, wildlife electric mats). A design variation could be used for the entire length of the wildlife fencing, or a particular design could be used in the vicinity of the Big Horn Hills Estates subdivision that is preferred by the homeowners. Wildlife fence design and style, roadway exclusion design, and pedestrian accesses could be determined in coordination with Big Horn Hills property owners and other stakeholders.

3.6.3.4 Roadside Landscaping

Roadside landscaping by would mimic the appearance of the surrounding plant community structure, spacing, and density. Revegetation would utilize plant species consistent with adjacent vegetation according to ITD’s “Native Plants for Idaho Roadside Restoration and Revegetation Programs” (Robson et al., 2006). Rock and natural materials from the site would be used along with the newly installed roadside landscaping. Native rock and boulders would be saved and re-used.

3.6.4 Cumulative Effects

The proposed build alternatives are not expected to substantially alter the overall visual quality or block important views to or from visual resources at Targhee Pass. The highway improvements would be consistent with the general character of the U.S. 20 corridor, and the existing disturbance features in the Targhee Pass segment. The only other anticipated modification of the visual landscape is additional development, which is expected to be concentrated at the Big Horn Hills Estates subdivision.
3.6.5 Conclusions regarding Impacts to Visual Resources

Though some of the improvements proposed with build alternatives have the potential to alter the visual character of Targhee Pass by introducing additional human-made facilities and infrastructure, due to the overall “roaded natural” character of the existing landscape, these impacts would not be individually or cumulatively significant.

3.7 Recreation Resources

Recreation activities can be enhanced with highway projects, such as by providing additional space or grade-separated facilities for pedestrians and bicycles. Highway projects can also have adverse effects for recreation; for example, when public property with recreation value is acquired for right-of-way.

3.7.1 Affected Environment

Recreation features are illustrated in Figure 26. The Caribou-Targhee National Forest provides dispersed recreation opportunities including hunting, hiking, horseback riding, snowmobiling, cross-country skiing, and mountain biking. The Howard Spring Picnic Site is a notable USFS-managed recreation stop that features a natural spring, Native American sculptures, picnic tables, and a restroom. The Targhee Creek Trailhead provides access to backcountry trails and is accessed from U.S. 20 at mile 404.55. Hunting is regulated by IDFG.

Snowmobiling is the most common winter activity. The Continental Divide snowmobile trail system connects communities in the region through a network of groomed trails. The Valley View Trail is one link of this system and runs 4 miles along the west side of U.S. 20, connecting Island Park with trails at the Montana state line. There is a permitted crossing of S.H. 87 at the intersection with U.S. 20, a crossing of U.S. 20 to the south of the project area (near mile post 402.0), and a crossing of U.S. 20 at the top of Targhee Pass on the Montana side.

For drivers, Targhee Pass features beautiful scenery year-round with wildlife viewing opportunities. U.S. 20 is an access route to Yellowstone National Park with connectivity to nearby recreation sites in Idaho: Henry’s Lake, Harriman State Park, Mesa Falls, and numerous privately operated lodges, campgrounds, cabin rentals, and fishing outfitters. The Nez Perce Historic Trail follows the route a large band of Nez Perce traveled in summer 1877 while pursued by the U.S. Army Cavalry.

The recreation goals of the Forest Plan include providing a quality winter recreation experience while minimizing conflicts between motorized and nonmotorized usage, providing a network of designated and groomed winter trails for snowmobiles and cross-country skiers, and other winter travel routes and trailhead facilities (USFS 1997, pp. 111-25). The USFS uses the Recreation Opportunity Spectrum (ROS) management system to develop standards and guidelines for recreation use and development. Frequency of contact with other recreational users of the forest is a component of forest recreation planning, whereby less-frequent contact is considered desirable in remote areas and more-frequent contact is expected and allowed for in less-remote locations. The ROS class for the Targhee Pass vicinity is “Roaded Natural” (RN). Roaded natural areas are characterized by resource modifications and utilization practices that are evident but harmonious with the natural environment. Conventional motorized use is provided for in construction standards and design of facilities.
Figure 26. Recreational Features
3.7.2 Effects of the Alternatives on Recreation Resources

Relevant impact assessment issues include potential changes to recreation access and potential changes to recreation opportunity.

3.7.2.1 Alternative 1: No build

Short-term effects on recreation would be travel delays for recreationists from periodic repaving under the No-Build Alternative. Over the long term, the No-Build Alternative would not have other effects on recreation opportunity.

3.7.2.2 Alternative 2

In the short term, construction under Alternative 2 would cause travel delays for recreationists. Access to the Howard Spring Picnic Site and the Targhee Creek Trailhead may be restricted for a period of time as during construction in the vicinity of these facilities. In the long term, wildlife fencing would introduce a barrier and linear structural feature that does not currently exist. Existing vehicle access locations would be preserved, and pedestrian access through the fence would be included at key locations, which would be determined in final design.

The proposed wildlife crossing structure on private land (mile post 402.8) would be located near the existing snowmobile trail route. ITD would work with Fremont County, snowmobile association, the private landowner, and IDFG to determine if realignment of the snowmobile trail would be desirable and/or if restriction of snowmobile use of the crossing structure would be either desirable to prevent or conversely potentially allowable during certain times of the year or hours of the day.

The two wildlife crossing structures on Caribou-Targhee National Forest lands would not be located near existing trails and, therefore, would not be likely to be attempted to be used by summer recreationists. However, depending on how fence maintenance access is constructed and/or if wildlife eventually creates a game trail along the fence, it may become necessary to exclude recreationists from developing a user-created trail adjacent to the fence by posting signage. In winter, the Caribou-Targhee National Forest is open to dispersed snowmobiling. Coordinating with the USFS, Fremont County, the snowmobiling association, and IDFG, it may become necessary to either prevent this use or, conversely, to allow it during certain times of the year or hours of the day.

Recreation uses of the Howard Spring Picnic Site would not be adversely affected under Alternative 2. Existing vehicle access to the site would be preserved. Wildlife fencing would be installed behind the picnic area so that access would not be restricted. Pedestrian access through the fence would be included near the site to preserve public access to Caribou-Targhee National Forest near the site.

3.7.2.3 Alternative 3

Recreation resource effects would be the same as Alternative 2, except no fencing or wildlife crossing structures would be constructed.

3.7.2.4 Alternative 4

Recreation resource effects would be the same as Alternative 2.
3.7.2.5 Alternative 5

Recreation resource effects would be the same as Alternative 2, except no fencing or wildlife crossing structures would be constructed.

3.7.3 Avoidance, Minimization, and Necessary Permits

In project final design, ITD will coordinate with the USFS, IDFG, and Fremont County to minimize travel delays and closure of the Howard Spring Picnic Site and, for alternatives involving wildlife fence, to maintain vehicle and pedestrian access to Caribou-Targhee National Forest. There are no permits that would be needed for a build alternative related to recreation resources.

3.7.4 Cumulative Effects on Recreation Resources

Existing recreation opportunities are based on the Forest Plan, Forest Travel Management Plan, IDFG hunting regulations, and Fremont County policies and programs. Future changes to recreation access and opportunity based on these provisions, policies, and programs are not anticipated or known by ITD. The USFS would retain responsibility for managing recreation uses of Caribou-Targhee National Forest, and IDFG would retain responsibility for managing hunting. Fremont County would continue to manage groomed snowmobile trails. If an alternative including wildlife fence were selected, ITD would have coordination responsibilities with these other agencies regarding any conflicts that may arise. For example, if user created trails begin to develop on Caribou-Targhee National Forest along the fence line. If wildlife crossing structures or wildlife crosswalks are implemented (Alternative 2 or 4), ITD would also have coordination responsibility with these other agencies or private landowners regarding permissible recreation uses of these crossings, if any.

3.7.5 Conclusions regarding Impacts to Recreation Resources

None of the build alternatives would change recreation access or opportunity and therefore none would have significant direct effects to recreation resources. Alternatives involving wildlife fence and/or wildlife crossing structures would create an ongoing responsibility for ITD to coordinate with other entities managing recreation resources in the area regarding appropriate uses related to these design features and any conflicts that may arise in the future.

3.8 Social and Economic Context

Transportation projects benefit communities by increasing safety, mobility, and economic opportunity. Projects can also have localized adverse social and economic effects by displacing residents, businesses, public facilities, increasing traffic noise, and altering the visual landscape.

3.8.1 Affected Environment

Private properties adjacent to U.S. 20 include ranching lands, a vacation cabin rental business, and residential properties including the Big Horn Hills Estates subdivision. There are approximately 37 existing homes in the Big Horn Hills Estates development and 60–64 lots for future development. The vacation cabin rental property is near the S.H. 87 intersection and currently has two cabins. There are four private residences along the south side of the highway between the cabin rental and the Big Horn Hills Estates subdivision. There are no community facilities, schools, or churches along this segment of the U.S. 20 corridor.
In terms of demographics, the Island Park Census Block Group includes all of Island Park and had an American Community Survey (2011–2015) population estimate of 1,267 persons (EPA, 2017). There is a very low minority percentage of population (4%, which is in the 12th percentile for Idaho), but a somewhat higher percentage of low income persons (23%, 18th percentile for Idaho). This may be associated with having a higher percentage of retirees; in the block group there is a high percentage of persons 64 years of age or older (24%, in the 90th percentile for Idaho). There is a low percentage of children under the age of 5 (6%, in the 44th percentile for Idaho). There is a very low percentage of persons with less than a high school education (4 percent, in the 19th percentile for Idaho).

Tourism is the top economic sector in Island Park, followed by construction and retail trade (Fremont County 2008, p. 44). Attractions to the area for visitors are angling, hunting, wildlife watching, hiking, OHV recreation, and snowmobiling (Loomis, 2005; Headwaters Economics, 2014). Many travelers come through the area on their way to Yellowstone and Grand Teton National Parks (Loomis, 2005; Headwaters Economics, 2014). Many travelers come through the area on their way to Yellowstone and Grand Teton National Parks (Loomis, 2005; Headwaters Economics, 2014). U.S. 20 through Island Park leads to West Yellowstone, Montana, the most frequented entrance to Yellowstone. Anglers in Fremont County spent over $50.8 million in 2003, the highest in the state (IDFG, 2003; Loomis, 2005). Fremont County also has the highest number of registered snowmobiles in the state. Boat and ATV registration numbers are also very high (Fremont County 2008, pp. 135-6). Island Park is a major snowmobiling destination and popular local activity. The Fremont County Parks and Recreation Department manages the snowmobiling program with approximately 500 miles of snowmobile trails (Fremont County, 2008, p. 134).

Fremont County sees extensive public land ownership as a “mixed blessing.” Public lands offer numerous recreation opportunities for local residents as well as supporting the tourism industry. The Caribou-Targhee National Forest is among the largest local employers and public lands contribute to operation of the county government through payment-in-lieu-of taxes, sharing of revenues from timber sales and other commercial activities that are conducted on public lands. However, federal agencies also “must balance local interests in the public lands with the concerns of regional and national constituencies.” This sometimes results in “serious disagreement about the appropriate use of those lands. Examples might include balancing timber harvests, recreational uses, fire reduction, and public access with such broader concerns as the protection of wildlife habitat” (Fremont County, 2008, p. 63).

Fremont County’s vision for growth and development is to have a diverse economy including “recreation and tourism, businesses retention, entrepreneurship, and value added agriculture.” Other components of the county’s vision are to maintain a sense of place, appreciation of open spaces and natural places, and to continue to have and support a concerned, engaged citizenry (Fremont County, 2008, pp. 5-6).

Big Horn Hills Estates is located adjacent to the Targhee Pass segment of U.S. 20. Residents of the subdivision are a mix of full- and part-year residents. There is a Property Owners Association that represents the interests of homeowners and has provided comments with respect to the EA process and project alternatives (see Chapter 4). Some residents expressed the value of a sense of open space associated with their neighborhood. Some lament the increase in traffic and truck traffic volume, and say they would prefer slower traffic. Some also expressed concerns that wildlife fencing, if included in the project alternative selected, would adversely affect property values by adding an aesthetically unpleasant element to the landscape, creating a sense of being “fenced-in” and impacting views from residential properties.

Including comments from residents of the overall Island Park area, local residents express a strong sense-of-place and community attachment. Many express a dislike of outside influences on what are perceived to be local planning issues. Others would like to see the community support regional wildlife planning objectives for improved wildlife habitat connectivity; for example, objectives associated with the State
Wildlife Action Plan (IDFG, 2015) and other regional wildlife management objectives such as the Grizzly Bear Conservation Strategy (ICST, 2003).

3.8.2 Effects of the Alternatives on the Social and Economic Context

Socioeconomic issues for transportation projects include displacement of residents or businesses, disruption of social interaction patterns, and inconsistency with community planning and goals. In scoping, commenters also expressed concerns about potential adverse social or economic effects of changes to wildlife movement resulting from project alternatives such as concerns that wildlife would become more concentrated near homes or that wildlife fencing would adversely affect property values.

3.8.2.1 Alternative 1: No build

Under the No-Build Alternative, traffic volumes would continue to increase through the design year. Traffic volume increases without adding turning lanes would increase risk of crashes. There would be no residential property takes, no business relocations, and no community facilities affected; in this respect, there would be no direct effects of the alternative on community cohesion or social interaction patterns. The alternative does not have the potential to affect community cohesion or ability of residents to interact socially. Residents would not experience the improved highway safety and mobility that action alternatives would provide.

3.8.2.2 Alternative 2

Road construction creates temporary disturbances for nearby residents (travel delays, noise, vibration, and lighting). Construction delays also have economic effects by increasing travel times for commercial transportation. These effects are minimized by requiring contractors to plan construction work during normal work hours to the extent practicable, minimizing light disturbance at night with particular attention to residential areas, and developing a traffic management plan as part of the final design to minimize travel delays to the extent practicable.

When completed, the transportation improvements would produce positive social and economic effects. These include improved traveling safety associated wider shoulders, a passing lane, turn lanes at key locations, improved drainage and reduced road shade in key locations, and improved clear zone adjacent to the highway. ITD’s standard safety assessment (included in Appendix A) estimates a 60 percent reduction in crashes resulting from these transportation design improvements.

There would be no residential property takes, no business relocations, and no community facilities affected; in this respect, there would be no direct effects on community or social infrastructure and no adverse effects on the ability of people to meet, socialize, and interact as they normally would. As such Alternative 2 does not have potential to affect social interaction patterns or community cohesion.

Wildlife fencing would be located along the existing highway right-of-way and would not require property acquisition or easement in the vicinity of homes. Additionally, wildlife fencing would be installed along the right-of-way where visual and noise disturbances are already present.

Potential effects of wildlife fencing on property value, voiced in scoping comments are speculative. Residential property is understood to be a composite good; its value is determined by multiple variables with key variables being size and condition of the house, land included, and location attributes, with location attributes being a primary driver (Grether and Mieszkowski, 1974; Bourassa et al., 2003; Thrall, 2002). Environmental attributes (e.g., scenery, amenities) are understood to contribute positively to residential property value (Wolch et al., 2014; Bark et al., 2011; Bervaes and Vreke, 2004). Large scale
changes to a locations’ desirable attributes can adversely affect property values such as new industrial parks, waste facilities, or confined animal feeding operations (Kuethe and Keeney, 2012). However, wildlife fencing is not of that scale and is not likely to have a tangible effect on property value in the current setting because it would be located next to other existing visual intrusions in the natural landscape, such as the highway and electric powerline, and other existing fences. These elements are more visually pronounced for homes nearest the highway where traffic noise is also greatest.

Rather than having tangible potential to affect property values, fencing may contrast with some resident’s perceptions of why they choose to live at this location, such as a sense of open space and not being “fenced in,” as expressed by some residents in written comments. Wildlife fencing and other design features (e.g., vehicle and pedestrian accesses, animal jump-outs) can be visually intrusive and aesthetically unappealing, particularly if no consideration is given to the design of these elements, if the elements are visually dominant (located in the foreground or at the skyline), or if fencing and other structures are not properly maintained. Materials used in the design elements also affect the degree to which design elements are visually intrusive. However, other types of fencing and other visual disturbances are already present near the highway (e.g., electric powerlines, electric substation, and the highway itself). These elements and wildlife fencing and crossing structures would be localized to the highway right-of-way, not visually superior to the surroundings from key view points, and therefore not detract significantly from the broader visual context of the setting or sense of openness. Potential visual impacts are described more thoroughly in the Visual Resources section of this EA, as well as potential measures to avoid and minimize effects.

Scoping commenters expressed concern that wildlife fencing might cause wild animals to congregate closer to residences or to linger near residential areas for longer periods of time, increasing conflicts with humans and domestic animals or otherwise becoming a nuisance or hazard. These concerns are speculative and not supported by observations at other locations with wildlife fencing. The greatest concern may be for elk, which are herd animals and tend to travel in groups. However, their tendency to congregate would not be expected to be different as a result of wildlife fencing being present. Large mammals also tend to be intentional when approaching a road, they generally do not congregate along a road or spend time there unless there is an attractant or there is a lack of suitable habitat that is not near roads. For example, bears can become habituated to areas where food is present such as campgrounds and picnic areas. Big horn sheep have congregated on roads to lick the road salt, and mule deer can be numerous in bench areas where roads and homes have overtaken their winter habitat.

Converse to these concerns, proactively addressing wildlife-vehicle collisions and enhancing wildlife mobility could be promoted as symbolic of the value for wildlife expressed by residents, and may be perceived as an attraction to the area for visitors and potential future residents.

One tangible adverse economic effect is that wildlife crossing structures would introduce a height restriction that does not currently exist. ITD assembled oversize load permit data for a 20-year period (1998 to September 2017) for height of loads with the results indicated in Table 11. The preliminary design for wildlife crossing structures has a height clearance of 17 feet 6.5 inches. This means that no more than 18 vehicles seeing permits over the past 20 years would not clear the structures. The height provided with the wildlife crossing structures is comparable to what Interstate overpasses provide; therefore, most vehicles including haul trucks that do not require a special permit would pass through the structures. However, there are currently no overpasses present on this segment of U.S. 20. The closest existing underpass on U.S. 20 within Idaho is in St. Anthony. Given the topography surrounding the upper most proposed wildlife crossing structure for Targhee Pass, it would not be feasible to construct a bypass around the structures at Targhee Pass. Therefore, loads higher than 17 feet would have to be routed another direction if the wildlife crossing structures were installed. At present, loads traveling north to Montana would also not be able to travel Interstate 15 (I-15) because there are underpasses on I-15 that...
do not have ramps that could be used for bypass. U.S. 20 is the only corridor traveling north to Montana in eastern Idaho with no existing height load restrictions. Loads taller than 17 feet could bypass the Targhee Pass segment of U.S. 20 by following S.H. 87 to U.S. 287 to U.S. 191 (48.7 miles). This route would be 35.5 miles longer than the direct route from the intersection of S.H. 87 to West Yellowstone on U.S. 20 (13.2 miles). This would only affect a small proportion of the oversize loads that have been permitted for the Targhee Pass segment of U.S. 20.

Table 11. Oversize Load Permits using the Targhee Pass Segment of U.S. 20, 1998 to September 2017

<table>
<thead>
<tr>
<th>VEHICLE HEIGHT (feet)</th>
<th>NUMBER OF VEHICLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.0–14.6</td>
<td>8,546</td>
</tr>
<tr>
<td>14.7–15.0</td>
<td>787</td>
</tr>
<tr>
<td>15.1–15.6</td>
<td>396</td>
</tr>
<tr>
<td>15.7–16.0</td>
<td>342</td>
</tr>
<tr>
<td>16.1–17.0</td>
<td>63</td>
</tr>
<tr>
<td>17.1–18.0</td>
<td>8</td>
</tr>
<tr>
<td>18.1 and over</td>
<td>10</td>
</tr>
</tbody>
</table>

3.8.2.3 Alternative 3

Alternative 3 would have the same transportation benefits as Alternative 2 and would not require residential property takes or business relocations and would have no effects on community facilities. As such, Alternative 3 does not have potential to affect social interaction patterns or community cohesion. Alternative 3 does not include any overpass structures and therefore would not introduce a new height restriction for oversize load routes.

Wildlife-detection system designs have been improved in recent years, but implementation at this location would be to some degree experimental and adaptive. Local residents would be driving through the segments of road with the wildlife detection system frequently. Thus, local residents are the most likely to observe when detection system is not functioning, or to think that system is returning false positives or failing to detect animals based on their experiences. This experience can be misleading, for example, when an animal crosses the road quickly and disappears into the forest unseen by drivers. However, ongoing communications with the local community regarding the system, adjustments made, and community feedback are likely to be important and useful to ITD as part of the system operational plans.

3.8.2.4 Alternative 4

Alternative 4 would have similar social and economic effects to Alternative 2. Similar to Alternative 3, local community feedback and ongoing communication would be important and useful as part of the operational plan for the wildlife crosswalks. Alternative 4 would include a wildlife overpass structure and therefore would create the same oversize load height restriction as Alternative 2.

3.8.2.5 Alternative 5

Alternative 5 would have the same transportation benefits as Alternatives 2, 3, and 4, and would not require residential property takes or business relocations and would have no effects on community facilities. As such, Alternative 5 does not have potential to affect social interaction patterns or community cohesion. Alternative 5 does not include any overpass structures and therefore would not introduce a new height restriction for oversize load routes.
3.8.3 Environmental Justice

Environmental justice is concerned with addressing the principles of Title IV of the Civil Rights Act of 1964, which provides that “no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.” Executive Order 12898 (February 11, 1994) built on Title IV, requiring federal agencies to identify and address disproportionately high and adverse human health and environmental effects, including the interrelated social and economic effects of their programs, policies and activities on minority and low-income populations in the United States.

The Island Park census block group is in the lower 10 percent of census blocks within Idaho for these indicators (EPA, 2017). None of the project alternatives would be expected to have disproportionately high or adverse effects on minority or low-income populations per Executive Order 12898. Additionally, the benefits for safety, mobility, and economic opportunity resulting from the project alternatives would benefit all equally; therefore, there also would not be an unequal distribution of benefits.

3.8.4 Avoidance, Minimization, and Necessary Permits

Efforts to avoid and minimize impacts of road construction have been described in earlier sections of this chapter and include the following:

- Requiring the construction contractor to develop a traffic-management plan as part of the final design to minimize travel delays to the extent practicable.
- Restricting construction work near residential areas to daytime work hours and avoiding work on weekends to the extent practicable.
- If work at night near residential areas is necessary, minimizing fugitive light from portable sources by using color-corrected halide lights that would be operated at the lowest allowable wattage and height.

For Alternative 2 or 4, keeping fencing and associated features (e.g., access gates, jump-outs) in good repair is important aesthetically as well as functionally. Measures to minimize visual effects are described in the visual resources analysis (Section 3.3).

There are no permitting requirements associated with the social and economic context.

3.8.5 Cumulative Effects

The only other major change to the social and economic context of the project area is additional residential development of Big Horn Hills Estates. Highway improvements made with build alternatives would be a safety benefit to future as well as existing residents. The Island Park area has an economy based on recreation and tourism. Implementing wildlife vehicle collision and wildlife movement enhancement could become a positive element for further marketing the area’s value of wildlife as an attraction to the area.

3.8.6 Conclusions regarding the Social and Economic Context

The alternatives do not have potential for significant social or economic impacts. Project build alternatives would not require takes of residential or commercial property and would not affect community facilities or social interaction patterns. Alternatives 2 and 4 would create new height
restrictions that do not currently exist on Targhee Pass; however, wildlife crossing structures would provide height clearance similar to Interstate overpasses and would restrict movement of a small percentage of all vehicles historically seeking an oversize load permit through this segment of highway.

### 3.9 Cultural Resources

Cultural resources include architectural and archaeological resources, which are defined as those physical manifestations or remains of past human activity that are at least 50 years old. The National Historic Preservation Act of 1966 as amended (16 USC 470, et seq.) and implementing regulations (36 CFR 800 as amended) establish national policy and procedures regarding cultural resources.

Cultural resource properties which are listed or eligible for inclusion in the National Register of Historic Places (National Register) must be avoided and unavoidable impacts must be mitigated. The determination of effects is determined by the responsible officials (i.e., FHWA and ITD) followed by concurrence from the Idaho State Historic Preservation Officer (Idaho SHPO). Appropriate mitigation for unavoidable effects is determined through consultation with Idaho SHPO, Native American tribes with cultural affiliation to the affected resources that choose to participate, and the Advisory Council on Historic Preservation if the Council chooses to participate.

Native American tribes that were invited to participate in the EA process were the Shoshone-Bannock Tribe and the Nez Perce Tribe. Details regarding tribal participation are included in Chapter 4 (Section 4.4).

#### 3.9.1 Affected Environment

The Area of Potential Effect (APE) for cultural resources included the existing right-of-way including easements on federal lands for the existing highway, plus additional disturbance areas for wildlife crossings and wildlife fence, included in some alternatives. The APE was inventoried by a consulting archaeologist for known and potential new cultural resource discoveries.

**3.9.1.1 Previously Identified Cultural Sites**

The archaeologist requested file searches of previous cultural resource investigations. Requests were made to the Idaho SHPO, The Caribou-Targhee National Forest, and the Nez Perce Tribal Historic Preservation Office. From the file search, the archaeologist identified five previously recorded sites potentially occurring within or partially within the APE. The site recordation numbers, name, and National Register eligibility from previous reports is summarized in Table 12.

<table>
<thead>
<tr>
<th>Site Number</th>
<th>Site Type</th>
<th>National Register Eligibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>10FM143</td>
<td>Lithic Scatter</td>
<td>Ineligible</td>
</tr>
<tr>
<td>10FM317(43-16032)</td>
<td>Peter Rahn Homestead</td>
<td>Ineligible</td>
</tr>
<tr>
<td>10FM482</td>
<td>Nez Perce Trail</td>
<td>Eligible</td>
</tr>
<tr>
<td>43-5057</td>
<td>Targhee Pass</td>
<td>Undetermined</td>
</tr>
<tr>
<td>43-16276</td>
<td>Yellowstone Highway/U.S. Highway 20</td>
<td>Eligible</td>
</tr>
</tbody>
</table>

The five previously documented cultural properties represent a broad range of anthropogenic uses of the Targhee Pass and Island Park areas. Human occupation of the area commenced with hunter gatherers traversing the travel corridor between the upper Snake River Plain and the Northwestern Plains during
prehistory. That use as a travel corridor continued into the historic era, including as the path of the Nez Perce flight in 1877 and later as the route of roads and then paved highways. With historic improvements to the transportation system, homesteaders and recreationists began establishing residences along the corridor by the turn of the twentieth century. Physical evidence of that transportation, agricultural, and recreational history persists to this day and those uses of the area continue into the modern era. Site 10FM143 was described in 1979 as a limited activity lithic scatter of unknown age or cultural affiliation. However, no evidence of the site was found in a 1992 inventory and the site was recommended as ineligible.

Site 10FM317(43-16032) was recommended in a 1992 inventory as ineligible for the National Register based on deteriorated condition and lack of unique or distinctive design characteristics.

Site 10FM482 is a travel corridor commonly referred to as the Nez Perce Trail. A route used by various cultural groups throughout prehistory and history, the Nez Perce National Historic Trail now commemorates the 1877 flight of the nontreaty Nez Perce peoples from Idaho Territory to Canada.

Targhee Pass has been assigned Idaho Historic Sites Inventory number 43-5057, but documentation on file at the Idaho SHPO provides no information concerning the property, nor any justification for why it is identified as an historic resource.

Site 43-16276 is the historic route of the Yellowstone Highway/U.S. Highway 20 which follows a north/south course across southeast Idaho to Montana and Yellowstone National Park. In proximity to the project APE, the route generally follows the east side of Howard Creek between Island Park and Targhee Pass.

### 3.9.1.2 Sites Identified through Field Investigation

Field investigations by the archaeologist in October 2016 found physical evidence of four cultural sites within the APE, listed in Table 13. This included two of the previously identified sites and two previously unrecorded sites.

<table>
<thead>
<tr>
<th>Site Number</th>
<th>Site Type</th>
<th>National Register Eligibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>10FM317(43-16032)</td>
<td>Peter Rahn Homestead</td>
<td>Ineligible</td>
</tr>
<tr>
<td>43-16276</td>
<td>Yellowstone Highway/U.S. Highway 20</td>
<td>Eligible</td>
</tr>
<tr>
<td>US20TP-01</td>
<td>Sunset Lodge</td>
<td>Ineligible</td>
</tr>
<tr>
<td>US20TP-02</td>
<td>Archaeological Scatter</td>
<td>Eligible</td>
</tr>
</tbody>
</table>

Of the previously identified sites, the archaeologist:

- found no evidence of Site 10FM143 and recommended that the site is not a cultural property;
- concurred with previous investigators regarding ineligibility of Site 10FM317 (43-16032) due to deteriorated condition and lack of unique or distinctive design characteristics;
- determined that documentation of the Nez Perce Trail route (Site 10FM482) is based on detailed ethnographic and historical accounts but no physical remnants have been identified within, or in proximity to, the APE;
- found that “Targhee Pass” has previously been assigned an individual historic site number (43-5057), but researchers have not documented any archaeological resources within, or in proximity...
to, the APE and the archaeologist’s 2016 inventory of the project APE yielded no physical data concerning the site; and

- concurred with eligibility of the Yellowstone Highway/U.S. Highway 20 (Site 43-16276) for National Register listing due to its association with early tourism, commerce, and travel in the region not physical elements of the old highway and the archaeologist found that physical remnants of the old highway have deteriorated and lost integrity of design.

The archaeologist’s 2016 field inventory yielded information regarding two previously undocumented cultural resource sites. The first was assigned site number US20TP-01. The site consists of remnants of a tourist lodge from the 1940s. The archaeologist found that the site has lost integrity and is ineligible for National Register listing. The second site was assigned site number US20TP-01 and consists of an archaeological scatter. The archaeologist found that the site retains integrity of location, setting, and feeling and therefore is eligible for National Register listing.

### 3.9.2 Effects of the Alternatives on Cultural Resources

Historic resources recommended eligible or included in the NRHP are given certain protections. Impacts to historic properties established by Section 106 and its implementing regulations, 36 CFR 800 are categorized as: no historic properties affected, no adverse effect, or adverse effect. The category of effect for each alternative is determined by FHWA and ITD followed by concurrence from Idaho SHPO.

There were no historic properties already listed on the National Register found within the APE. Of the three sites determined to be eligible for listing, two are not associated with physical trace elements (the Nez Perce Trail and the Yellowstone Highway/U.S. Highway 20); therefore, these sites would not be adversely affected by any project alternative. The other eligible site, an archaeological scatter, was determined to be adversely affected.

### 3.9.3 Avoidance, Minimization, and Necessary Permits

In final design, FHWA and ITD would consult with the Idaho SHPO to determine if the adverse effects can be practicably avoided. If not, then ITD would prepare a Determination of Adverse Effect. FHWA and ITD would then consult with Idaho SHPO, Native American Tribes, and other consulting parties to determine appropriate mitigation.

As a standard contracting provision, inadvertent discovery of human remains and other cultural materials during construction requires immediate reasonable protection of the items and suspension of construction activity. The contractor would be responsible to notify ITD upon discovery and ITD would consult with the Idaho SHPO to determine the appropriate course of action prior to resuming construction activity.

### 3.9.4 Cumulative Effects

The 2016 cultural resources field inventory determined that past construction of U.S. 20 in the Targhee Pass area disturbed previously unknown archaeological resources. Proposed construction would require additional disturbance that may not be avoidable, requiring mitigation for the adverse effect. No other potentially disturbing actions within the Area of Potential Effects are known or planned.

### 3.9.5 Conclusions regarding Cultural Resources

Upon selection of a build alternative and during final design, ITD and FHWA would consult with the Idaho SHPO to determine if the adverse effects can be practicably avoided. If avoidance cannot be achieved, then ITD would prepare a Determination of Adverse Effect. FHWA and ITD would then consult with Idaho SHPO, Native American Tribes, and other consulting parties to determine appropriate
mitigation. Standard contracting provisions apply to inadvertent discovery of remains and cultural materials.

### 3.10 Section 4(f) Resources

Section 4(f) of the Department of Transportation Act of 1966, as amended, requires transportation agencies to conduct all possible planning to avoid uses of public parks, recreation lands and wildlife and waterfowl refuges for transportation projects. Most National Register-eligible historic properties are also included under Section 4(f).

Use of a Section 4(f) resource can include direct use of property (condemning the property with recreational or historic value and building transportation facilities on the land) or constructive use, which includes proximity impacts that impair the activities, features, or attributes that qualify the resource for Section 4(f) protection. Constructive uses can include noise and access restrictions as examples. If a proposed project would use a Section 4(f) resource, then alternatives must be evaluated to avoid the use. An alternative that avoids the use must be implemented whenever feasible and prudent. In federal regulations for implementing Section 4(f), there are criteria for determining applicability (23 CFR 774.11) as well as exceptions to applicability (23 CFR 774.13).

Potential Section 4(f) resources in the Targhee Pass project area are the Howard Spring Picnic Site, Targhee Pass Trailhead, Valley View Trail, and National Register-eligible cultural properties identified in the cultural resources inventory.

#### 3.10.1 Howard Spring Picnic Site

The Howard Spring Picnic Site is managed by the Ashton Ranger District of the Caribou-Targhee National Forest and open for public use. Early coordination between FHWA, ITD, and the Ashton Ranger District occurred to identify possible impacts to the picnic site and to avoid impacts to public use of the facility. Potential impacts to the site could include direct use by permanently removing any of the attributes of the site to reconstruct or expand the highway or constructive use which could include extended construction occupancy or proximity effects due to a significant increase in noise that interferes with use of the site.

Direct use of the Howard Spring Picnic Site was avoided in the preliminary design of all features of the build alternatives. A left-turn lane into the site was considered during alternatives development, but could not be constructed without removal of the existing pullout and other features at the Howard Spring Picnic Site. Due to this and other unavoidable impacts, the left turn lane was not included in any of the build alternatives carried forward.

Depending on the contractor’s construction plan, there would likely be temporary access restriction to the Howard Spring Picnic Site for a period of time during construction of a Build Alternative. Construction in this vicinity would include removal and replacement of the pavement including the highway and the parking pullout area, replacement of the culvert under the highway, and under Alternative 2 or 4, construction of wildlife fence through the forest behind the Howard Spring Picnic Site. Under Alternative 2 or 4, pedestrian access to the forest behind the wildlife fence would be preserved following construction by installation of pedestrian access gates, though there are no designated trails or road accesses to the forest from the Howard Spring Picnic Site. Features that provide recreation experience at the Howard Spring Picnic Site (the spring/water fountain, picnic tables, trees) would not be removed or altered. Upon completion of construction, access to the Howard Spring Picnic Site would be enhanced with an improved right turn lane and new pavement surface in the pullout area. With these measures, the build alternatives
would represent a minimal temporary occupancy and would not constitute a Section 4(f) use of a public recreation facility [23 CFR 774.13(d)].

3.10.2 Targhee Pass Trailhead

Another USFS recreation resource near the project area is the Targhee Pass Trailhead. None of the build alternatives would affect the trailhead or access to the trailhead; therefore, there would be no Section 4(f) use of this resource.

3.10.3 Valley View Snowmobile Trail

Snowmobile trails are an important recreation resource in Island Park, operated and maintained by the Fremont County Parks and Recreation Department. The Valley View Trail adjacent to the Targhee Pass segment of U.S. 20 is a component of Fremont County’s snowmobile trail system.

Under Section 4(f) regulations, trails, paths, bikeways, and sidewalks that occupy a transportation facility right-of-way without limitation to any specific location within that right-of-way are excepted from 4(f) approval, so long as the continuity of the trail, path, bikeway, or sidewalk is maintained [23 CFR 774.13(e)(3)].

As described in the Land Use and Transportation Planning section of this chapter, the Valley View Trail crosses S.H. 87 near the intersection of S.H. 87 and U.S. 20. The snowmobile trail is then groomed between an electric power substation and U.S. 20 before continuing across private land adjacent to U.S. 20 and then onto public lands following portions of USFS roads. In the past, the Valley View trail has been routed differently, depending on easements with private landowners and permits from ITD.

In scoping comments, Fremont County asked ITD to consider shifting the highway to create more room for the snowmobile trail to be routed between the through this location. ITD determined that a lane shift to move the highway to better accommodate the groomed snowmobile trail within the highway right-of-way would require an impractical amount of hill cut, right-of-way acquisition, and realignment of the highway and the U.S. 20 intersection with S.H. 87. Therefore, this shift was not included as part of the project design. However, the design for the proposed highway widening (shoulder widening and lane addition) would occur on the opposite side of the highway from the snowmobile trail route. There would be no changes to the right-of-way on the power substation side of the highway; therefore, the road widening under any of the build alternatives would not create any changes from existing conditions in relationship to the snowmobile trail route at this location. Wildlife fencing, included with Alternative 2 or 4, would have to be installed to not affect the snowmobile trail in the vicinity of the power station. This would be accomplished by beginning the wildlife fence after the power substation, or by working with Fremont County and landowner in this vicinity to route the snowmobile trail behind the electric substation.

Because the existing snowmobile trail route would not be adversely affected by any of the build alternatives and the snowmobile trail is not limited to being located within a specific portion of the highway right-of-way, there would be no Section 4(f) use and Section 4(f) approval is not required.

3.10.4 National Register-Eligible Historic Properties

Three National Register-eligible resources were identified in the cultural resources inventory. Of these, only one had physical attributes that would be potentially affected by one or more build alternatives. This site (US20TP-02) is an archaeological artifact scatter site. In consultation with Idaho SHPO, FHWA has
concluded that the site is important chiefly because of what could be learned by data recovery and has minimal value for preservation in place. Under Section 4(f) implementing regulations [23 CFR 774.13(b)], impacts to the site from any of the build alternatives would not constitute a 4(f) use. Even though the artifact scatter site does not qualify as a Section 4(f) resource, it is still an eligible site for National Register listing and protected under Section 106.

3.10.5 Conclusions regarding Section 4(f) Applicability

Because the construction occupancy of the Howard Spring Picnic Site under any of the build alternatives would be of limited duration and there would be no permanent adverse modification to the public’s use of the recreation resource, FHWA has determined that none of the build alternatives would constitute a Section 4(f) use of the Howard Spring Picnic Site.

None of the build alternatives would affect the trailhead or access to the Targhee Pass Trailhead; therefore, there would be no Section 4(f) use of this resource.

Because the existing snowmobile trail route would not be adversely affected by any of the build alternatives and the snowmobile trail is not limited to being located within a specific portion of the highway right-of-way, there would be no Section 4(f) use and Section 4(f) approval is not required.

Because the only potentially impacted cultural resource is an artifact scatter site primarily valuable for data recovery potential, the site does not constitute a 4(f) resource under the regulation 23 CFR 774.13(b).

Since there would be no Section 4(f) uses from any build alternatives, a Section 4(f) alternatives analysis was not completed.
4 Consultation and Coordination

ITD employed a suite of public involvement methods to obtain public input regarding issues evaluated in the EA. Throughout all phases of the EA, ITD has accepted comments by e-mail, postal mail, in-person meetings, and telephone. Hand-written comments were also accepted at public meetings. All communications with the public, organizations, and resource agencies are archived in a database that will be retained in ITD’s project record.

4.1 Situational Assessment

At the request of ITD, the public involvement consultant for this EA, The Langdon Group (TLG), conducted a situational assessment for ITD’s Targhee Pass EA to inform the public outreach strategy for this study. Assessment conversations occurred over the phone and in person. Conversations were conducted informally, allowing the stakeholders to drive the direction and discuss the issues that were most important to them. Interviews were not conducted using a specific set of questions asked of all stakeholders; therefore, the resulting summary does not provide quantifiable data. Instead, this report is intended to provide a window into the opinions, issues, and concerns that exist among a diverse sub-set of stakeholders. Interviews took place between October and November 2016. Assessment participants were identified by ITD and The Langdon Group. They included:

**Federal Agencies**
- U.S. Forest Service
- Federal Highway Administration
- U.S. Fish and Wildlife Service
- Yellowstone National Park

**Local Governments**
- City of Island Park
- Fremont County

**Tribes**
- Shoshone-Bannock Tribe
- Nez Perce Tribe

**State Agencies**
- Idaho Transportation Department
- Idaho Department of Fish and Game
- Idaho Department of Parks and Recreation

**Other Organizations**
- Greater Yellowstone Coalition
- Mitzi Rossillon Consulting (cultural)

The situational assessment assisted ITD in preparing internal scoping and planning subsequent agency and public scoping efforts.

4.2 Agency and Stakeholder Coordination

4.2.1 Agency Scoping

An agency scoping meeting took place on December 15, 2016, in Island Park, Idaho. Information provided during that meeting included the study process, purpose, schedule, and geography of the study area. Preliminary statements of the project purpose and need were provided along with descriptions of known issues to be evaluated. Attendees at that meeting included representatives of the following agencies and organizations:

- Idaho Department of Fish and Game
- City of Island Park
- Idaho Department of Parks and Recreation
4.2.2 Stakeholder Working Group

The FHWA and ITD formed a Targhee Pass Stakeholder Working Group in summer 2017. The Stakeholder Working Group was not a decision-making body. Engagement as a participant in the Stakeholder Working Group was twofold:

1. Help ITD and FHWA by providing feedback that is representative of the diverse interests in the EA.
2. Share accurate information with respective constituencies about the EA.

The Stakeholder Working Group also helped communicate EA updates and milestones during phases of the EA when other broader public outreach was taking place. This was particularly helpful in the Island Park area with seasonal fluctuations in population and recreation activity.

Representatives of governmental agencies were included in the Stakeholder Working Group to help inform ITD, FHWA, and other stakeholder participants of various regulatory requirements related to the EA. For efficiency, agency updates were included as part of the Stakeholder Working Group. It was also helpful for these governmental representatives to hear public issues. Stakeholder/Agency Working Group Meetings took place on the following dates:

- Tuesday, July 18, 2017 (Island Park EMS Building)
- Monday, August 28, 2017 (Fremont County Annex Building – St. Anthony, ID)
- Tuesday, January 16, 2018 (Fremont County Annex Building – St. Anthony, ID)

Participants in the Stakeholder Working group included representation from the following agencies and organizations:

- Idaho Transportation Department
- Federal Highway Administration
- Fremont County, Idaho
- Shoshone-Bannock Tribe
- Nez Perce Tribe
- City of Island Park
- Idaho State Legislature
- Local Residents and Landowners
- Island Park Preservation Coalition
- U.S. Bureau of Land Management
- U.S. Environmental Protection Agency
- Idaho Department of Fish and Game
- Island Park News, Local Media
- Greater Yellowstone Coalition
- Yellowstone 2 Yukon
- West Yellowstone Chamber of Commerce
- U.S. Fish and Wildlife Service
- Montana Department of Transportation
- Montana Fish, Wildlife & Parks
- U.S. Forest Service

Other invitees to the meetings included representation from the following agencies and organizations:

- City of Ashton
- National Park Service/Yellowstone National Park
- Idaho Department of Parks & Recreation
- U.S. Army Corp of Engineers
4.3 Public Meetings and Public Outreach

In addition to the three public meetings listed below, ITD provided regular updates on EA progress and milestones via email updates, presentations to local community groups, an additional newspaper article/op-ed, and updates to the study website (which was created in early 2017 to provide updates for the public and serve as a clearing house for all study documents, reports, links, and resources).

Public Meetings
All of the meetings below were advertised via press release distribution to local media, notices on the study website, paid advertisement placement in the local newspaper (Island Park News), and email distribution to a list of over 500 stakeholders.

Date: December 15, 2016
Location: Island Park, ID
Purpose: Public Scoping Meeting
Attendance: 22
Comments received at meeting: 10
Meeting Details: Information provided included the study process, purpose, schedule, and geography of the study area. Preliminary statements of the project purpose and need were provided along with descriptions of known issues to be evaluated. ITD solicited the public’s feedback on issues and concerns associated with the Targhee Pass segment of U.S. 20. ITD continued to receive and accept comments following this meeting. A total of 109 comments were received between December 2016 and June 2017, inclusive of comments received at the meeting.

Scoping Outcomes: Scoping comments identified suggestions for the project purpose and need, alternatives, and impact analysis issues. Due to the level of local public interest in the project, ITD decided to plan additional public meetings for the alternatives development phase and to form a Stakeholder Working Group to facilitate more opportunity for input in the process.

Date: July 27, 2017
Location: Island Park, ID
Purpose: Alternatives Development Workshop
Attendance: 77
Comments received at meeting: 68
Meeting Details: This public workshop consisted of several “information stations” with information on the EA process, timeline, and the EA’s updated Purpose and Need. Updated screening criteria for alternatives was also available for review. During this workshop, the public reviewed the materials and screening criteria, and then commented on or drew potential alternatives onto blank maps of the study area. Public comments from this meeting were included in overall scoping and considered as ITD developed alternatives. ITD continued to receive and accept comments following this meeting, with a total of 184 comments received between July and August 29, 2017, inclusive of the comments received at the meeting, plus additional hand-written comments on paper maps at the public meeting.

Workshop Outcomes: A strong local interest was including speed limit reduction as a project alternative. ITD determined that speed limit reduction was not part of the corridor plan (ITD 2006) and beyond the scope of the EA. Another interest was rerouting truck traffic. ITD communicated that U.S. 20 is an important highway corridor for the regional economy, such that prohibiting truck traffic along this route would limit interstate commerce.
Date: August 30, 2017  
Location: Island Park, ID  
Purpose: Presentation of Alternatives  
Attendance: 50  
Comments received at meeting: 8  
Meeting Details: The purpose of this public meeting was to present the proposed EA alternatives. The three-hour public meeting included formal presentations at two separate times during the evening, with opportunity for questions and answers. Between presentations, members of the study team were available to provide information and answer questions about the EA. ITD continued to receive and accept comments following this meeting, with a total of 234 comments received between August 30 and September 30, 2017, inclusive of the written comments received at the meeting and verbal comments during the meeting presentation that were captured on a flipchart.

Meeting Outcomes: Many local attendees were unsatisfied that speed limit reduction was not included as a project alternative. There was also local support for an alternative that did not include design elements for wildlife-vehicle collision reduction or wildlife movement enhancement. Alternative 5 was added based on these comments. Due to the large number of comments received throughout the scoping and alternatives development process, a scoping report (ITD, 2018) was developed summarizing issues and suggestions from agencies and the public and how these were being included in development of the EA. The report was made available to the public on the project website. Availability was advertised in a project email update.

4.4 Local Government Coordination

Fremont County and the City of Island Park have been included in all phases of the NEPA process. County and city staff were included in the Situational Assessment interviews at the beginning of the process. County and City representatives attended the agency scoping meeting and were represented on the Stakeholder Working Group.

In response to concerns about the process for determining speed limits and the inclusion of the objective for enhancing wildlife movement in the EA, ITD representatives attended a Fremont County Commission meeting on April 23, 2018. Also in April, the Fremont County Board of Commissioners passed a resolution addressing U.S. 20 from Ponds Lodge to the Montana state line (Fremont County Board of Commissioners, 2018). The measure resolves that the speed limit on U.S. 20 should be 45 miles per hour from Pond’s Lodge to Elk Creek, Mack’s Inn to Island Park Village, and Valley View to the Montana State line with a limit of 65 miles per hour at the remaining areas between Pond’s Lodge and the Montana state line. The resolution also called for the installation of animal-detection system(s), digital message sign(s), seasonal wildlife warning sign(s), posting of advisory speed(s) and vegetation removal and pruning should accompany the changes of speed limits.

The range of alternatives evaluated in this EA was responsive to local public comments and the Fremont County Commission, including alternatives that include animal-detection systems, digital variable message signs, advisory speeds, and vegetation clearing. Speed limits are determined independently of the NEPA process and were therefore not included as a project alternative. However, responding to comments from the public and Fremont County, ITD planned a complete review of speed limits in the Island Park area, including collecting speeds of vehicles, reviewing roadway conditions, crash history, and sight distance at intersections. In addition, ITD committed to review speeds at night to see if a nighttime speed limit could be implemented and also to assess truck speeds to see if a separate speed limit should be implemented for trucks.
4.5 Additional Stakeholder and Public Coordination

For this EA, ITD had a designated public involvement contact dedicated to answering questions and providing information to the public. This included a study-dedicated email address and phone hotline. The public involvement contact received many calls and emails over the course of the EA. The public involvement contact also worked to set up, coordinate, and attend several in-person meetings with agencies, stakeholder groups, land owners, and members of the public. Every phone conversation, email correspondence, and in-person meeting has been documented and included in the study database. Table 14 lists email updates and topics throughout the EA process. Table 15 lists press release dates and topics.

Table 14. Email Update Dates and Topics

<table>
<thead>
<tr>
<th>DATE</th>
<th>TOPICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/16/2017</td>
<td>- General EA Update</td>
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<tr>
<td></td>
<td>- Comment Period Extension</td>
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<tr>
<td>3/29/2017</td>
<td>- General EA Update</td>
</tr>
<tr>
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<td>- Notice of Upcoming Public Meeting</td>
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<tr>
<td>4/25/2017</td>
<td>- Notice of Cancellation of Public Meeting</td>
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<tr>
<td>6/28/2017</td>
<td>- General EA Update</td>
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<td>- Alternatives Workshop Announcement</td>
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<td>- Next Steps</td>
</tr>
<tr>
<td>8/9/2017</td>
<td>- Alternatives Presentation Public Meeting Announcement</td>
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<td>- Next Steps</td>
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<tr>
<td>8/9/2017</td>
<td>- Alternatives Presentation Public Meeting Reminder</td>
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<td>- Next Steps</td>
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<tr>
<td>9/27/2017</td>
<td>- August Meeting Displays</td>
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<td></td>
<td>- Comment Period Reminder</td>
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<tr>
<td>10/27/17</td>
<td>- Targhee Pass EA – By the Numbers</td>
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<tr>
<td></td>
<td>- Next steps</td>
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<tr>
<td>12/14/17</td>
<td>- Note: No December Public Meeting</td>
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<tr>
<td></td>
<td>- Update on Fall Progress (data collection, meetings, alternative refinement)</td>
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<td>- Next Steps</td>
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<td>1/15/2018</td>
<td>- Refined Alternatives Available</td>
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<td>- Scoping Report</td>
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<td></td>
<td>- Next Steps</td>
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<tr>
<td>3/8/2018</td>
<td>- Updated Scoping Report</td>
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<td></td>
<td>- Refined Alternatives</td>
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<td></td>
<td>- Next Steps</td>
</tr>
<tr>
<td>4/3/2018</td>
<td>- Targhee Pass EA Process Overview/Timeline</td>
</tr>
<tr>
<td></td>
<td>- Next Steps</td>
</tr>
<tr>
<td>5/21/2018</td>
<td>- Schedule Update</td>
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<td>- Impact Analysis Overview</td>
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<td>- Speed Limits</td>
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<td></td>
<td>- How a Decision is Made</td>
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<td></td>
<td>- Next Steps</td>
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**Table 15. Press Release Dates and Topics**

<table>
<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/30/2016</td>
<td>Transportation department schedules Dec. 15 meeting in Island Park on Targhee Pass Environmental Study</td>
</tr>
<tr>
<td>4/24/2017</td>
<td><em>ITD to hold open house in Island Park Thursday (April 27) on environmental assessment</em></td>
</tr>
<tr>
<td>7/25/2017</td>
<td>Alternative Development Workshop set for July 27 in Island Park for Targhee Pass Environmental Assessment</td>
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<tr>
<td>8/1/2017</td>
<td>Nearly 100 attend Targhee Pass workshop July 27 in Island Park</td>
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<tr>
<td>8/22/2017</td>
<td>Public meeting on Targhee Pass alternatives set for August 30 in Island Park</td>
</tr>
<tr>
<td>9/11/2017</td>
<td>Fifty people review Targhee Pass alternatives Aug. 30 in Island Park</td>
</tr>
<tr>
<td>6/7/2018</td>
<td>U.S. 20 Targhee Pass Project (Op/Ed)</td>
</tr>
</tbody>
</table>
5 List of Preparers

This EA was prepared by the following:

- Federal Highway Administration, Idaho Division
  - Lisa Applebee, Operations Engineer/Local Programs
- Idaho Department of Transportation, District 6
  - Derek Noyes, Project Engineer, Project Manager
  - Karen Hiatt, Engineering Manager
  - Tim Cramer, Environmental Planner
  - Eric Verner, Project Manager (Retired)
- BIO-WEST, Inc.
  - Andrea Moser, Principal, Project Manager
  - Sean Keenan, Environmental Analyst
  - Mike Sipos, Senior Wildlife Biologist
  - Shannon Herstein, Watershed Scientist
  - Bob Thomas, Professional Wetland Scientist
  - Glen Busch, Environmental Analyst/Planner
  - Kevin Wells, Geographic Information Systems Analyst
  - Lyndi Perry, Geographic Information Systems Specialist/Technical Writer
  - Sandy Davenport, Professional Landscape Architect, Visual Resource Specialist
  - Chadd VanZanten, Senior Editor
  - Miranda Lorenc, Technical Editor
- The Langdon Group, Inc.
  - Andrea Gumm, Public Involvement, Project Manager
  - Dan Adams, Public Involvement
  - Dianne Olson, Public Involvement
- Mitzi Rossillon, LLC
  - Ken Dickerson, Archaeologist
- Horrocks Engineers, Inc.
  - Kelly Hoopes, Project Engineer
  - Michael Jones, Professional Landscape Architect
  - Nicole Tolley, Project Engineer/Environmental Specialist
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6 References


Bland, A. “Will driverless cars mean less roadkill?” Smithsonian, November 2, 2015.


Burke, B. Personal communication, Idaho Transportation Department, 30 January 2017.


City of Island Park. City of Island Park Comprehensive Plan. 2014.


Fremont County Board of Commissioners. Resolution No. 2018-13 Addressing Hwy 20 from Ponds Lodge through the Montana State Line, April 23, 2018.


Huijser, Marcel P., Research Ecologist, Western Transportation Institute, Montana State University. Personal communication with the Idaho Transportation Department and BIO-WEST, Inc. regarding effectiveness of various wildlife-vehicle collision reduction strategies and supporting literature sources. January 9, 2018.


[ITD-IDFG] Idaho Transportation Department and Idaho Department of Fish and Game. *Memorandum of Understanding.* 2015.

[ITD-IDFG] Idaho Transportation Department and Idaho Department of Fish and Game. *Cooperative Agreement for Project No. A014(054), A019(913), A019(606), and A019(711) Targhee Pass (Jct 87 to Montana State Line, phase 1 & 2), U.S. 20 Chester to Montana Safety Corridor Plan and Ashton Hill Bridge to Dumpground Road.* 2017.


Loomis, J. *The economic value of recreational fishing and boating to visitors and communities along the Upper Snake River,* Final Report, Colorado State University, Fort Collins, CO, 2005.


[USFWS] U.S. Fish and Wildlife Service. List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project: U.S. 20, Junction S.H. 87 to the Montana State Line (Targhee Pass). Letter from the Idaho Fish and Wildlife Office, Boise Idaho, dated April 16, 2018.


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Memorandum

RE: Estimation of Annualized Cost and Benefit-Cost Ratios of Safety Improvements for Targhee Pass Environmental Assessment Alternatives

Prepared by: Idaho Transportation Department District 6

Date: October 4, 2018

To inform the comparison of alternatives being considered in the Environmental Assessment, the Idaho Department of Transportation (ITD) District 6 estimated the annualized cost and benefit of roadway safety improvements and wildlife-vehicle collision reduction safety improvements. Project funding is through the Restoration Program and does not require benefit-cost analysis for funding.

“Benefits” in this analysis are limited to the estimated cost benefit of crash reduction and do not capture broader benefits of meeting objectives of the Corridor Plan (ITD, 2006) for addressing roadway structural deficiencies and traffic flow and supporting all aspects of ITD mission (safety, mobility, economic opportunity).

The attached spreadsheet provides a basic safety benefit-cost calculation for alternatives using crash data for the period 2012-2016. Crash data came from Idaho’s statewide crash database. Crashes estimated to cost more than $1,500 are reported by law enforcement to the ITD Office of Highway Safety. The database consists only of crashes investigated by law enforcement officers.

Roadway safety improvements contributing to reduced probability of crashes include addition of a passing lane, shoulder widening, change in the horizontal alignment, and resurfacing. ITD utilizes a standardized method of evaluating safety benefits of these highway design elements (attached worksheet); ITD’s safety evaluation of these roadway improvements provides an estimated crash-reduction factor of 60 percent.

The improvements contributing to the reduction in wildlife-vehicle collisions have a range of efficacy used to estimate the crash-reduction factor for each alternative. Conservative values for the efficacy for alternatives 2, 3, and 4 were used, ranging from 0.50 to 0.83. Standard warning signs or variable message signs (Alternatives 1 & 5) have a low expected efficacy; 0.10 was used in this analysis.

Federal regulation regarding the use of benefit-cost analysis in NEPA documents (40 CFR 1502.23) is quoted below. In terms of relevance of the benefit-cost estimation there is not a substantive difference in the benefit-cost ratio for any of the alternatives; therefore, the benefit-cost ratios (BCRs) do not inform a distinction between the alternatives. The BCR for roadway safety improvements (the same for all alternatives) is 0.15. The BCR’s for wildlife-vehicle collision reduction measures are all very low (0.13 to 0.19), well below the break-even point of
1.0. Reasons for low benefit-cost ratios are the low number of crashes overall and relatively low costs of property damage per crash.

Among other factors, this analysis does not account for potential increase in frequency of wildlife-vehicle collisions with increased future traffic volume, and also does not include future discounting of costs. ITD also did not include the unreported accidents from law enforcement and reported carcass information from the Idaho Fish and Wildlife Information System. However, the results are not sensitive to the wildlife-related annual crash rate or efficacy of measures. This is due to the overall low magnitude of crashes, low cost per crash, and comparatively high cost of mitigation measures.

For a simple look at sensitivity of the BCRs to crash rates and costs per crash, the Alternative 2 wildlife design elements would become cost effective at a wildlife-related annual crash rate of 29 crashes per year (vs. current value: 3.8), or at a cost per crash of $151,000 (vs. current value: $21,212), with all other factors constant. Similarly results for wildlife-related BCRs are not sensitive to the efficacy, so potentially achievable higher efficacy rates would not substantially increase the BCRs. Again, this is due to the relatively low crash rates and cost per crash. Another ITD-funded study of wildlife safety solutions (Cramer, 2016) also found benefit-cost ratios lower than 1.0 for wildlife crossings for the Targhee Pass segment (Alternative 2).

This analysis also provides annualized costs of the alternatives, which do differ by alternative for the wildlife safety improvements.

40 CFR 1502.23 (Use of cost-benefit analysis, National Environmental Policy Act): “If a cost-benefit analysis relevant to the choice among environmentally different alternatives is being considered for the proposed action, it shall be incorporated by reference or appended to the statement as an aid in evaluating the environmental consequences. To assess the adequacy of compliance with section 102(2)(B) of the Act the statement shall, when a cost-benefit analysis is prepared, discuss the relationship between that analysis and any analyses of unquantified environmental impacts, values, and amenities. For purposes of complying with the Act, the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are important qualitative considerations. In any event, an environmental impact statement should at least indicate those considerations, including factors not related to environmental quality, which are likely to be relevant and important to a decision.”

Section 102(2)(B) of the National Environmental Policy Act (42 USC 4332) indicates that all agencies of the Federal Government shall: “identify and develop methods and procedures . . . which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations.”
Cited References:


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<th>Alternative</th>
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<td><strong>COST roadway safety improvements</strong></td>
<td></td>
<td></td>
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<td>Roadway improvement ($1,000)</td>
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<td>$14,500</td>
<td>$14,500</td>
<td>$14,500</td>
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<td>20</td>
<td>20</td>
<td>20</td>
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<td>Annual cost based on 20-year life</td>
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</tr>
<tr>
<td>Number of crashes per year (2010-2016 average)</td>
<td>8.6</td>
<td>8.6</td>
<td>8.6</td>
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<td>182.420001</td>
<td>182.420001</td>
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<td>Ongoing Maintenance ($1,000/Year)*</td>
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<td>$50</td>
<td>$25</td>
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<td>Wildlife Improvement ($1,000)**</td>
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<td>$13,128</td>
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<td>Annual cost based on individual lifes</td>
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<td>$487.60</td>
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<td>Number of crashes per year, wildlife-related</td>
<td>3.8</td>
<td>3.8</td>
<td>3.8</td>
<td>3.8</td>
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<td>Total cost (crash x cost)</td>
<td>80.604186</td>
<td>80.6041864</td>
<td>80.6041864</td>
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<td>$67</td>
<td>$40</td>
<td>$64</td>
<td>$8</td>
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<td><strong>Benefit-Cost Ratio, Wildlife safety improvements</strong></td>
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<td>0.14</td>
<td>0.13</td>
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<td><strong>Cummulative Benefit-Cost Ratio</strong></td>
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<td>0.15</td>
<td>0.14</td>
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<td>0.15</td>
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* Maintenance costs estimated per year. The relatively high maintenance costs for alternative 4 is attributed the high cost of maintaining the fence as well as an Animal Detection System (ADS). In addition, the maintenance total includes the cost of replacing the ADS system once during the 20 year life span at $250,000, or $12,500 per year.

** Wildlife Improvement costs come from ITD estimates from 1/10/2018.

Each alternative assumed a different life span for the improvement. To compare the costs of improvements that would have different life spans, (bridge 30 years, ADS 10 years) benefit/cost ratios are being evaluated on a per year cost.

Costs assumed beyond 30 years for the life of improvement or the benefits realized in the future years have not been discounted to present value. The life of improvements have been adjusted to help account for some of this; for example, life of bridge structure was reduced from 50 years to 30 years.
# SAFETY EVALUATION

## I. PROJECT DATA

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<thead>
<tr>
<th>DISTRICT</th>
<th>ROUTE</th>
<th>SEG CODE</th>
<th>B.M.P.</th>
<th>E.M.P.</th>
<th>LENGTH</th>
<th>AADT</th>
<th>TYPE RDWY</th>
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<tr>
<td>EXIST. RDWY</td>
<td>6</td>
<td>US 20</td>
<td>2070</td>
<td>402.27</td>
<td>406.30</td>
<td>4.03</td>
<td>3.2</td>
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| LOCATION | US 20 from SH 87 to Montana State Line |

| IMPROVEMENT | Reconstruction |

<table>
<thead>
<tr>
<th>PROPOSED IMPROVEMENT</th>
<th></th>
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<table>
<thead>
<tr>
<th>LIFE</th>
<th>CONST</th>
<th>R/W</th>
<th>TOTAL</th>
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<tr>
<td>20</td>
<td>20000</td>
<td>0</td>
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## II. ACCIDENT SUMMARY - SIGNIFICANCE

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<tr>
<th>MO.</th>
<th>YR.</th>
<th>TOTAL</th>
<th>FATAL</th>
<th>INJURY</th>
<th>I + F</th>
<th>PDO</th>
<th>SV</th>
<th>MV</th>
<th>WET</th>
<th>DRY</th>
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<tr>
<td>12</td>
<td>2016</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td></td>
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<tr>
<td>12</td>
<td>2015</td>
<td>5</td>
<td>0</td>
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<td>16</td>
<td>16</td>
<td>2</td>
<td>10</td>
<td>8</td>
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</table>

| TOTAL | 43 | 0 | 9 | 9 | 34 | 40 | 3 | 23 | 20 | 0 | 0 |

Ave. Severity % for this road type: 46.8% 53.2%

Expected I+F and PDO accidents: 20.1% 22.9%

Difference (Deviation from Expected): -11.1

Statistically Significant?: YES(-)

Confidence Level: 80% (Spot Intersection (Include X Street))

Confidence Level: 80% (Spot Non-Intersection)

Confidence Level: 80% (Segment (All Accidents))

## III. TRAFFIC DATA

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<th>AADT (1000)</th>
<th>TOTAL NO. OF</th>
<th>TOTAL TRAVEL</th>
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<tr>
<td></td>
<td>Cross Street</td>
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<tr>
<td>PRES. FUT. AVE.</td>
<td>3.2 4.865 4.03</td>
<td>1.26 5 43 8.60 1.17 4.71 - 1.83</td>
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## IV. REDUCTION FACTOR

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<tr>
<th>ACC/MVM</th>
<th>R.F.</th>
<th>BASE RATE ACC/MVM(M)</th>
<th>EXPECTED ACC/MVM(M)</th>
<th>D.R. MV(M)</th>
<th>CALC. R.F.</th>
<th>1-(&gt;3 OR 4)</th>
<th>(5 ÷ 1)</th>
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<tr>
<td>ACC/MVM</td>
<td>R.F.</td>
<td>BASE RATE ACC/MVM(M)</td>
<td>EXPECTED ACC/MVM(M)</td>
<td>D.R. MV(M)</td>
<td>CALC. R.F.</td>
<td>1-(&gt;3 OR 4)</td>
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<td>1.83</td>
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<td>0.95</td>
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## V. SAFETY INDEX CALCULATION (METHOD I)

<table>
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<td>6</td>
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<td>PDO</td>
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<td>9</td>
<td>85.1</td>
<td>765.9</td>
<td>5</td>
<td>6</td>
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Safety Index = (Box 10 - Box 11) ÷ Total Cost = 911.12 ÷ 200000.00 = 0.05

Annual Safety Benefit = (Box 10 - Box 11) ÷ (Box 8) = 911.12 ÷ 20 = $45,556

Computed by: Derek Noyes
Date: 10/04/18
Project No.: A(014)054

Checked by: ________________
Date: ______
Key Number: 14054
SAFETY EVALUATION
-SUPPLEMENTAL-

VI. ACCIDENT COSTS (METHOD II)

<table>
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<th>4</th>
<th>5</th>
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<th>7</th>
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<tbody>
<tr>
<td>TYPE</td>
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<td>TOTAL</td>
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<td>COST</td>
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<tr>
<td>I + F</td>
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<td>PDO</td>
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<tr>
<td>TOTAL</td>
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VII. SAFETY INDEX CALCULATION (METHOD II)

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<tr>
<td>$/ACC</td>
<td>$/ACC</td>
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<td>VCF</td>
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<td>BEFORE</td>
<td>EXPECTED</td>
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SAFETY INDEX = (BOX 6 - BOX 7) ÷ TOTAL COST = + =
ANNUAL SAFETY BENEFIT = (BOX 6 - BOX 7) + (BOX 5) = + =

COMMENTS:
Reduction Factors:
Passing Lane RF=0.2
Add Shoulder RF=0.2
Change Horizontal Alignment RF=0.3
Resurfacing RF=0.2(W)

Total Accidents = 43
Total Wet/Icy Accidents = 23

Resurfacing = 0.2x23 = 4.6
43-4.6=38.4
Passing Lane = 0.2*38.4 = 7.68
38.4-7.68=30.72
Add Shoulder = 0.2*30.72 = 6.114
30.72-6.114=24.606
Change Horizontal Alignment = 0.3*24.606 = 7.3818

Total Reduction = 4.6+7.68+6.114+7.3818 = 25.7758

Total Reduction Factor = 25.7758/43 = 59.9%