

3.12 WILDLIFE

This section addresses wildlife, wildlife crossings, and aquatic resources. Important wildlife resources in the project area include riparian and aquatic habitats and wildlife movement corridors.

3.12.1 Regulatory Framework

CDOT projects must comply with federal, state, and local laws and regulations protecting wildlife species including:

- ▶ The Fish and Wildlife Coordination Act of 1934, as amended (16 United States Code [USC] §§ 661-667e)
- ▶ The Migratory Bird Treaty Act of 1918, as amended (16USC §§ 703-712)
- ▶ Executive Order 13186
- ▶ Colorado Senate Bill (SB) 40 (SB40) (33-5-101-107, CRS 1973, as amended)
- ▶ The Fossil Creek Reservoir Area Plan

The Fish and Wildlife Coordination Act requires the federal action agency to consult with the United States Fish and Wildlife Service (USFWS) and the Colorado Division of Wildlife (CDOW) on issues related to conservation of fish and wildlife resources for federal projects resulting in modifications to waters or channels of a body of water (16USC §§ 661-667e).

Migratory birds, including raptors and active nests, are protected under the Migratory Bird Treaty Act. The act prohibits activities that may harm or harass migratory birds during the nesting and breeding season. Removal of active nests that results in the loss of eggs or young is also prohibited. In Colorado, most birds except the European starling, house sparrow, and rock dove (pigeon) are protected under the Migratory Bird Treaty Act (16USC §§ 703-712).

Executive Order 13186 directs federal agencies to take certain actions to implement the Migratory Bird Treaty Act (86 FR 3853). The Bald and Golden Eagle Protection Act (16USC §§ 668-668d) includes several prohibitions not found in the Migratory Bird Treaty Act, such as molestation or disturbance. In 1962, the Bald and Golden Eagle Protection Act was amended to include the golden eagle.

SB40 (33-5-101-107, CRS. 1973, as amended) requires any agency of the State of Colorado to obtain wildlife certification from CDOW when the agency plans construction in any stream or its bank or tributaries. CDOT has guidelines for SB40 wildlife certification, which were developed in cooperation with CDOW (CDOT, 2003a).

What's in Section 3.12?

3.12 Wildlife

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1 The Fossil Creek Reservoir Area Plan establishes natural area buffers for bald eagles, great
2 blue herons, waterfowl, and other wildlife. More detail on all regulations pertaining to wildlife
3 resources is provided in the *Wildlife Technical Report* (ERO Resources Corporation
4 [ERO], 2008 and Addendum ERO, 2011a).

5 **3.12.2 Affected Environment**

6 Wildlife resources were reviewed during the initial screening of alternatives using existing
7 information from readily available sources. Existing information was reviewed and special
8 concerns related to the project were identified through coordination and consultation with
9 USFWS, CDOW, the Colorado Natural Heritage Program (CNHP), and local open space
10 management agencies. Once the proposed project area was identified, detailed habitat
11 evaluations were performed in the project area based on fieldwork and additional review of
12 existing information for raptors and wildlife crossings. Specific methods used for data collection
13 are described in detail in the *Wildlife Technical Report* (ERO, 2008).

14 Wildlife in the regional study area generally consists of species adapted to highly disturbed
15 urban habitats or cultivated lands. Aquatic and riparian habitats in the regional study area,
16 although typically disturbed by human activity, provide habitat for a greater diversity of species.
17 The quality and connectivity of wildlife habitat in the regional study area is supported by the
18 large expanses of protected open space or otherwise undeveloped land, which preserves
19 several habitat types, as well as movement corridors between different habitat areas. Wildlife
20 Refuges and Natural Areas are discussed in detail in **Chapter 5 Section 4(f) Evaluation**.

21 **3.12.2.1 MIGRATORY BIRDS**

22 Nearly all bird species present in the regional study area are protected under the Migratory
23 Bird Treaty Act. Bird species use different habitat types in the project area for shelter,
24 breeding, wintering, and foraging at various times during the year. Common birds occurring in
25 the regional study area include common grackle (*Quiscalus quiscula*), house finch
26 (*Carpodacus mexicanus*), mourning dove (*Zenaidura macroura*), Canada goose (*Branta*
27 *canadensis*), American robin (*Turdus migratorius*), barn swallow (*Hirundo rustica*), vesper
28 sparrow (*Pooecetes gramineus*), western meadowlark (*Sturnella neglecta*), horned lark
29 (*Eremophila alpestris*), killdeer (*Charadrius vociferous*), and black-billed magpie (*Pica pica*). A
30 comprehensive list of bird species known to occur in the regional study area is found in
31 **Appendix B** of the *Wildlife Technical Report* (ERO 2008).

32 **3.12.2.2 RAPTORS**

33 Raptors commonly occurring in and near the project area include the red-tailed hawk (*Buteo*
34 *jamaicensis*), great horned owl (*Bubo virginianus*), and American kestrel (*Falco sparverius*).
35 Other raptors likely to occur near the project area include Cooper's hawk (*Accipiter cooperii*),
36 Swainson's hawk (*Buteo swainsoni*), ferruginous hawk (*Buteo regalis*), northern harrier (*Circus*
37 *cyaneus*), and rough-legged hawk (*Buteo lagopus*) (NDIS, 2009). Raptor nests in and near the
38 project area were mapped in April 2005, April 2006, spring/summer 2009 and April/May 2010
39 (ERO, 2006; 2011a). While most raptor nests observed were unoccupied; the occupied nests
40 were mostly used by red-tailed hawks, Swainson's hawks, or great horned owls.

3.12.2.3 BIG GAME AND MOVEMENT CORRIDORS

I-25 is a substantial barrier to east-west movements of big game and other wildlife in the project area due to traffic, noise, and lack of cover. Existing and proposed rail corridors also are a potential barrier to wildlife movement. Existing wildlife crossings in the project area occur primarily where major drainages cross the project area under bridges or culverts. Wildlife crossings for big game, such as mule deer (*Odocoileus hemionus*) and white-tailed deer (*Odocoileus virginianus*), occur along the Cache la Poudre, Big Thompson, and Little Thompson rivers, and St. Vrain Creek (Vierra, personal communication, 2006; Huwer, personal communication, 2006). The area around Ish Reservoir is also a movement corridor for mule deer and white-tailed deer (Huwer, personal communication, 2006). American elk (*Cervus elaphus*) are known to occasionally move through the project area along the Big Thompson River corridor at the proposed commuter rail alignment (Huwer, personal communication, 2006). Black bear (*Ursus americanus*) and mountain lion (*Felis concolor*) may occasionally occur in the western portion of the project area, possibly along the proposed commuter rail alignment from Fort Collins south to Loveland (NDIS, 2009). The project area is on the periphery of the occupied range for both of these species (NDIS, 2009). Mountain lions may occasionally move through the project area along major drainages (Huwer, personal communication, 2006).

Wildlife crossing areas and movement corridors were identified based on input from CDOW staff, review of road kill data collected by CDOT and the Colorado State Patrol (CSP) (from 1993 to 2004), and field review (refer to **Table 3.12-1**). Additional data was opportunistically collected by CDOT maintenance crews from 2004 to 2007.

1 **Table 3.12-1 Summary of Wildlife Crossing Areas Identified in the Project Area.**

Wildlife Crossing Area	Wildlife Usage	Existing Structure
Cache la Poudre River at I-25	The section of I-25 from SH 14 south to SH 392 is used as a crossing area by deer and other wildlife, as shown by the relatively high number of wildlife collisions in this area, and as reported by CDOW staff (Vierra, pers. comm. 2006).	Multiple-span bridges northbound and southbound. The existing bridges provide good passage for wildlife.
Fossil Creek at the BNSF alignment	No data is available for collisions at the railway, but a few collisions have been recorded on US 287 near Fossil Creek, which is less than 0.5 mile downstream from the railway crossing.	Single-span bridge. The existing bridge over the creek appears to provide good crossing opportunities.
Big Thompson River at BNSF alignment	CDOW biologists indicated that the Big Thompson River in this area is a movement corridor for deer, elk, and other wildlife (Vierra, pers. comm. 2006; Huwer, pers. comm. 2006). Relatively few wildlife collisions have been documented at US 287 near this location.	Multiple-span bridge. The existing bridge provides good passage for wildlife.
Big Thompson River at I-25	CDOW biologists indicated that the Big Thompson River in this area is a movement corridor for deer and other wildlife (Huwer, pers. comm. 2006). The section of I-25 extending about 3 miles north and south of the Big Thompson River is used as a crossing site by wildlife, as indicated by the relatively high number of wildlife collisions recorded in this area.	Multiple-span bridges (northbound, southbound, and service road). The existing bridges are adequately sized for deer and other wildlife.
Little Thompson River at BNSF alignment	The Little Thompson River is a movement corridor for deer and other wildlife (Huwer, pers. comm. 2006). CSP data shows that several collisions have been documented along US 287 about 2 miles to the west.	Multiple-span bridge. The existing bridge is adequately sized for deer and other wildlife.
Little Thompson River at I-25	The Little Thompson River is a movement corridor for deer and other wildlife (Huwer, pers. comm. 2006). CSP data shows that several collisions have been documented along I-25 near the Little Thompson River.	Multiple-span bridges (northbound, southbound, and service road). The existing bridges are adequately sized for deer and other wildlife.
Ish Reservoir Area	CDOW biologists indicated that a deer crossing problem occurs along US 287 west of Ish Reservoir (Huwer, pers. comm. 2006). CSP collision data indicates that deer, elk, and coyote have been killed crossing this section of US 287. The BNSF rail alignment passes to the east of Ish Reservoir, about 1.5 miles to the east of US 287. Wildlife crossings of the railway likely occur at a similar rate as US 287.	No major structures, crossings occur at grade.
I-25 between Little Thompson River and St. Vrain Creek	CSP collision data shows that deer and other wildlife have been killed along the section of I-25 between the Little Thompson River and St. Vrain Creek. The land surrounding I-25 in this area is mostly open and agricultural, and wildlife are killed when attempting to cross at grade.	Concrete box culvert at North Creek, adequate for small- and medium-sized mammals; inadequate for deer and larger mammals.

1 **Table 3.12-1 Summary of Wildlife Crossing Areas Identified in the Project Area.**
2 (cont'd)

Wildlife Crossing Area	Wildlife Usage	Existing Structure
St. Vrain Creek at SH 119	CDOW biologists reported that St. Vrain Creek serves as a movement corridor for deer and other wildlife (Huyer, pers. comm. 2006), and a broad, open area occurs at this location on both sides of SH 119 connecting undeveloped land along St. Vrain and Boulder creeks to St. Vrain State Park to the north and providing a natural movement corridor for wildlife.	Multiple-span bridge. The existing wildlife passage under SH 119 at St. Vrain Creek is undersized for deer due to low vertical clearance, but is large enough for small- and medium-sized mammals.
St. Vrain Creek at I-25	CDOW biologists reported that St. Vrain Creek serves as a movement corridor for deer and other wildlife (Huyer, pers. comm. 2006). CSP collision data shows that deer and other wildlife have been killed crossing I-25 near St. Vrain Creek. This crossing is used by deer, as indicated by tracks observed in the field.	Multiple-span bridge (northbound, southbound, and service road). The existing wildlife passage under I-25 is adequately sized for deer and other wildlife.
I-25 west of Firestone and Frederick	CSP collision data indicate that deer and other wildlife are occasionally killed along a 3-mile section of I-25 west of Firestone and Frederick. The surrounding area is mostly open and agricultural, and wildlife are killed when attempting to cross at grade.	No major structures.
Commuter rail alignment west of Firestone and Frederick	The rail alignment follows Weld County Road (WCR) 7 about 1 mile west of I-25. No wildlife collision data is available for this area, but wildlife movements probably are similar to I-25 west of Firestone and Frederick, as described above.	No major structures.
Little Dry Creek at I-25	Field review indicated Little Dry Creek at I-25 could be a potential wildlife crossing area, but collision data indicates that only occasional collisions with wildlife occur in this area and CDOW did not identify Little Dry Creek as a movement corridor.	Concrete box culvert; adequately sized for small- and medium-sized mammals.
Little Dry Creek at Commuter Rail Alignment	Field review indicated Little Dry Creek at the commuter rail alignment could be a potential wildlife movement area, but no CSP data is available for this area and CDOW did not identify Little Dry Creek as a movement corridor.	None, but no existing rail line is present, so no movement barriers exist in this area.
Big Dry Creek at I-25	CSP collision data show a few collisions on I-25 near Big Dry Creek, but CDOW did not identify this area as a movement corridor.	Multiple-span bridge; the existing bridge is adequately sized for deer and other wildlife.

3

1 **3.12.2.4 SENSITIVE WILDLIFE HABITAT AREAS**

2 Several sensitive wildlife habitat areas were identified during field work. These areas were
3 identified as sensitive wildlife habitat because they are wildlife crossing areas or because they
4 provide known habitat for threatened, endangered, or sensitive species as defined by the
5 USFWS or CDOW (refer to **Section 3.13 Threatened, Endangered, and State Sensitive**
6 *Species*). These habitat areas are listed in **Table 3.12-2**; their locations are shown in
7 **Figure 3.12-1**.

8 **Table 3.12-2 Sensitive Wildlife Habitats in the Project Area**

Sensitive Wildlife Habitat Area	Comments
Cache la Poudre River	Known occurrences of brassy minnow and Iowa darter; bald eagle winter concentration and summer forage; white-tailed deer winter range and concentration area; wildlife movement corridor
Fossil Creek Reservoir	Bald eagle winter roost occurs at reservoir.
Big Thompson River	Known occurrence of Preble's meadow jumping mouse (<i>Zapus hudsonius preblei</i>) (Preble's) and likely occurrence of Iowa darter; bald eagle winter concentration and summer forage; white-tailed deer winter range and concentration area; wildlife movement corridor; Big Thompson State Wildlife Area occurs just west of I-25
Little Thompson River	Possible occurrence of Preble's, bald eagle winter concentration and summer forage, white-tailed deer winter range and concentration area, wildlife movement corridor, CNHP Potential Conservation Area at U.S. 287
Ish Reservoir and surrounding area	Great blue heron rookery; wildlife crossing area.
St. Vrain Creek	Bald eagle winter roost west of I-25; bald eagle winter concentration and summer forage; known occurrences of common shiner, brassy minnow, Iowa darter, and stonecat; white-tailed deer winter range and concentration area; wildlife movement corridor; St. Vrain State Park occurs just west of I-25
South Platte River	Known occurrences of common shiner and brassy minnow; wildlife movement corridor.

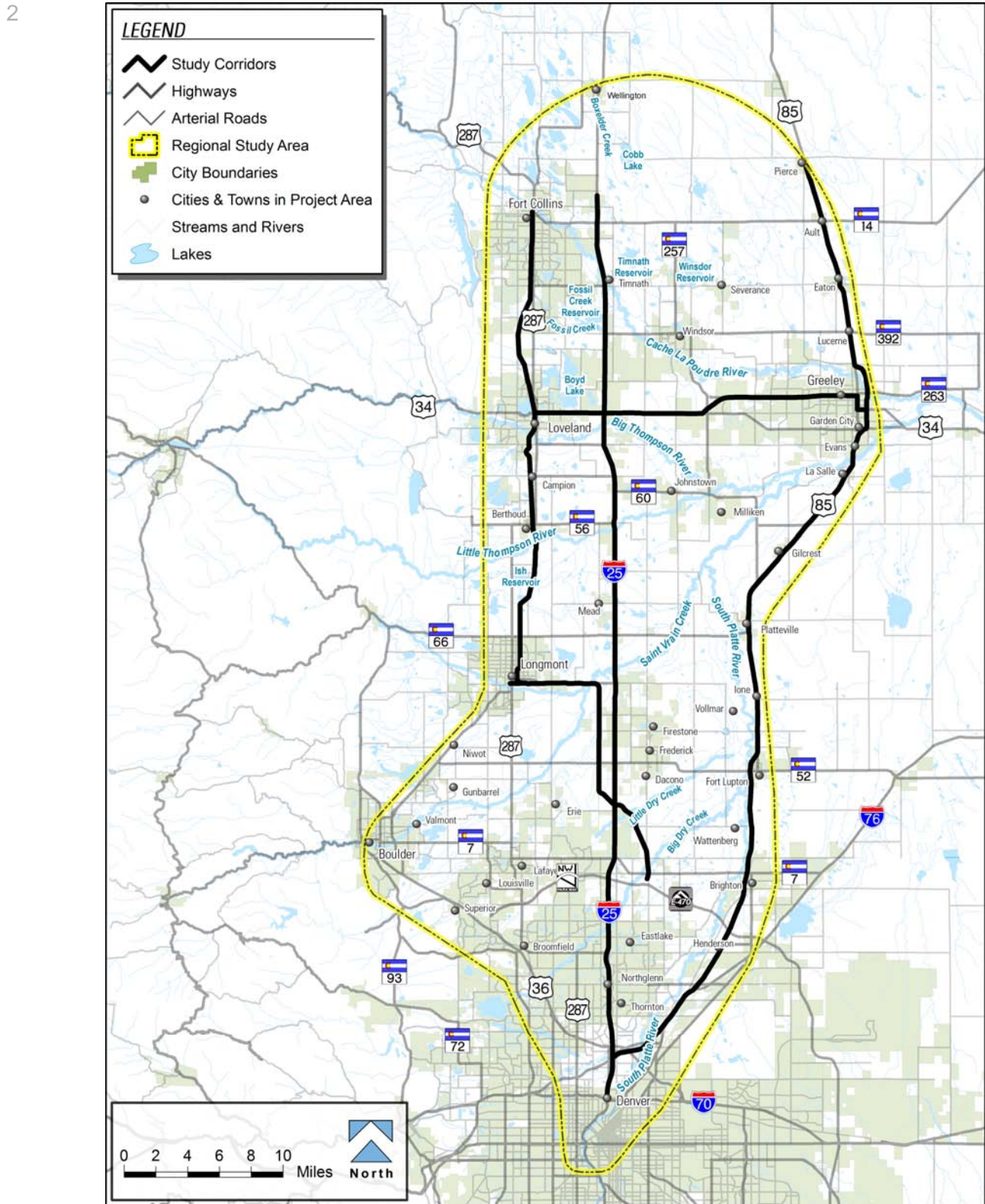
Source: NDIS, 2009; CNHP, 2005; CDOW, 2010; USFWS, 2010 (also refer to **Section 3.13 Threatened, Endangered, and State Sensitive Species**).

9 **3.12.2.5 OTHER WILDLIFE**

10 **Table 3.12-3** lists other wildlife species commonly found in the project area including big game
11 species, other mammals, raptors, other migratory birds, reptiles, and amphibians.

12

1 **Figure 3.12-1 Sensitive Wildlife Habitats in the Regional Study Area**



1 **Table 3.12-3 Common Wildlife Species in the Project Area**

Habitat	Mammals	Birds	Reptiles and Amphibians
Urban and developed areas	Red fox, raccoon, striped skunk, big brown bat, fox squirrel, deer mouse, and house mouse	House sparrow, European starling, common grackle, house finch, mourning dove, rock dove, Canada goose, American robin, and barn swallow	N/A
Riparian and wetlands	Mule deer, white-tailed deer, coyote, red fox, raccoon, striped skunk, eastern cottontail, big brown bat, meadow vole, prairie vole, deer mouse, and house mouse	Red-tailed hawk, Cooper's hawk, Swainson's hawk, northern harrier, great horned owl, American kestrel, great blue heron, red-winged blackbird, song sparrow, common yellowthroat, common snipe, northern oriole, American goldfinch, yellow warbler, and Canada goose	Plains gartersnake, western painted turtle, bullfrog, western chorus frog, Woodhouse's toad, and tiger salamander
Grassland	Mule deer, coyote, American badger, striped skunk, red fox, white-tailed jackrabbit, desert cottontail, black-tailed prairie dog, deer mouse, meadow vole, prairie vole, and house mouse	Rough-legged hawk, red-tailed hawk, Swainson's hawk, northern harrier, great horned owl, American kestrel, vesper sparrow, western meadowlark, grasshopper sparrow, horned lark, lark bunting, house sparrow, European starling, common grackle, mourning dove, Canada goose, killdeer, and black-billed magpie	Bullsnake, yellow-bellied racer, western rattlesnake, lesser earless lizard, and plains spadefoot
Streams, lakes, and ponds	Muskrat and beaver	American avocet, mallard, pintail, and American white pelican	Plains gartersnake, western painted turtle, western chorus frog, Woodhouse's toad, tiger salamander, and bullfrog
Bridges and underpasses	N/A	Cliff swallow, barn swallow, and rock dove	N/A

Source: Species listed as "common" or "abundant" in Adams, Boulder, Larimer, or Weld counties by CDOW (NDIS, 2009) and likely to occur in the project area based on suitable habitat.

2 **3.12.2.6 AQUATIC RESOURCES**

3 Ditches, streams, and water bodies in the project area potentially support a variety of aquatic
 4 insects, macroinvertebrates, and fish. Common fish species in creeks and streams in the
 5 project area include common carp (*Cyprinus carpio*), creek chub (*Semotilus atromaculatus*),
 6 fathead minnow (*Pimephales promelas*), Johnny darter (*Etheostoma nigrum*), longnose sucker
 7 (*Catostomus catostomus*), longnose dace (*Rhinichthys cataractae*), green sunfish (*Lepomis*
 8 *cyanellus*), and white sucker (*Catostomus commersoni*). Several state-listed threatened,
 9 endangered, or sensitive fish species are known to occur in the regional study area,

1 specifically common shiner (*Notropis cornutus*), brassy minnow (*Hybognathus hankinsoni*),
2 iowa darter (*Etheostoma exile*), and stonecat (*Noturus flavus*). These state listed species are
3 addressed in **Section 3.13 Threatened, Endangered, and Sensitive Species**. A complete list of
4 fish species documented in lakes, rivers, and streams in the regional sturdy area is provided in
5 Appendix C of the *Wildlife Technical Report* (ERO, 2008).

6 The CNHP designated a Proposed Conservation Area, which includes the Little Thompson
7 River at US 287. This reach of the Little Thompson River provides habitat for a number of
8 native fish and a greater diversity of mayflies, caddisflies, and stoneflies compared with other
9 Front Range streams (CNHP, 2005). Six fish species including creek chub, longnose dace,
10 fathead minnow, longnose sucker, white sucker and green sunfish were documented in the
11 Little Thompson on May 22, 2001 (CNHP, 2005). Results of this survey are similar to those
12 conducted by the CDOW in 1982 and 1997. All species captured are native and common in
13 streams along the Front Range corridor. Additionally, only a few fish out of several hundred
14 captured showed signs of parasites or infection, indicating a healthy community (CNHP, 2005).

15 **3.12.3 Environmental Consequences**

16 This section describes the effects of the No-Action Alternative and Package A, Package B, and
17 the Preferred Alternative on wildlife.

18 Given the large scale of the project, and the large size of the project area, effects were
19 estimated on a broad scale using data from a variety of sources including the USFWS, CDOW,
20 and project specific data collected by CDOT contractors. Direct effects to wildlife habitat were
21 quantified where possible by measuring acres of habitat within the project limits of disturbance
22 using GIS overlays. Effects to threatened, endangered, and state sensitive species are
23 described in **Section 3.13.3**.

- 24 ▶ Effects on migratory bird habitat were estimated based on the acreage of wetland, riparian,
25 and grassland habitat affected by each component.
- 26 ▶ Effects on raptors for each component were estimated based on the number of raptor
27 nests identified within 0.5 mile of the project area for each component.
- 28 ▶ Effects on big game and movement corridors for each component were estimated
29 subjectively based on the number and location of identified movement corridors crossed by
30 each component.
- 31 ▶ Effects on other sensitive wildlife habitat (including fish) were estimated based on acres of
32 riparian habitat affected within identified sensitive areas such as the riparian corridors
33 along the Cache la Poudre River, Big Thompson River, Little Thompson River, and
34 St. Vrain Creek.
- 35 ▶ Effects on aquatic habitat were estimated based on acres of open water directly disturbed.

36 Effects are evaluated by alternative component where possible. Direct effects and indirect
37 effects were evaluated. Effects were evaluated quantitatively where possible or qualitatively
38 where quantification was not possible or quantitative data were not available. Mitigation
39 measures to address adverse effects of the alternatives to wildlife are discussed in
40 **Section 3.12 Mitigation Measures**.

3.12.3.1 NO-ACTION ALTERNATIVE

The No-Action Alternative includes major and minor structure rehabilitation, replacement or rehabilitation of existing pavement, and minor safety modifications by 2035. These actions would take place regardless of whether any of the proposed improvements in Package A, Package B, or the Preferred Alternative occur. The No-Action Alternative is described in detail in **Chapter 2 Alternatives**.

Under the No-Action Alternative, existing conditions would continue. With increasing traffic volumes and continuing commercial and residential development in the project area, some effects to wildlife would be expected. Effects from existing or increasing traffic volumes on wildlife include mortality from vehicle collisions and disturbance from noise. Insufficient traffic capacity on I-25 could result in increased traffic on secondary roads, leading to increased mortality of wildlife from collisions and increased disturbance from noise. Effects from continued development in the I-25 corridor would include direct loss of habitat and increasing habitat fragmentation.

3.12.3.2 PACKAGE A

Package A includes construction of additional general purpose lanes on I-25, construction and implementation of commuter rail, and implementation of commuter bus service. Components of this build package are described in detail in **Chapter 2 Alternatives**. **Table 3.12-4** through **Table 3.12-7** below summarize environmental consequences to wildlife associated with Package A components. **Tables 3.12-14** through **3.12-16** provide a comparison of impacts between Package A, Package B, and the Preferred Alternative components.

Package A Highway Components

Overall, direct effects on wildlife from Package A highway components would result primarily from road widening, and replacement and construction of new bridges. The types of effects from the highway components would include habitat loss, habitat fragmentation, and disturbance during construction. Indirect effects include impacts to water quality from increased sedimentation, increased traffic resulting in increased wildlife mortality, and increased disturbance from vehicle lights. Much of the permanent habitat loss would occur in permanently degraded areas such as mowed rights-of-way adjacent to the existing highway. Effects to migratory birds, raptors, movement corridors, sensitive wildlife habitat areas, other wildlife, and aquatic resources from Package A highway components are described below.

Migratory Birds. Package A highway components would directly affect wetland, riparian, and grassland habitat for migratory birds. Direct effects to migratory birds would occur from highway widening and construction of associated facilities. Direct effects would include habitat loss, displacement during construction, increased habitat fragmentation, and destruction of nests during construction. A temporary loss of habitat would occur when grassy areas are cleared and grubbed during construction, or when structures used for nesting are replaced. Impacts to wetlands from the Package A highway components are quantified in **Section 3.8 Wetlands**. Ground nesting birds would likely be most affected because the grassland would be the habitat most affected by the project. Migratory birds using riparian areas would be temporarily displaced during bridge widening and replacement activities and their nests could be disturbed or destroyed. Cliff swallows, which often nest on bridges and overpasses, would

1 be directly affected by nest destruction or nesting disturbance during bridge replacement.
2 Indirect effects include increased disturbance due to noise and light from vehicles, and
3 increased mortality from collisions with vehicles.

4 **Raptors.** Package A highway components would potentially affect 36 existing raptor nests
5 located within 0.5 mile of the edge of the project area during surveys in 2005, 2006, and 2010.
6 Direct effects include loss of raptor hunting habitat within the existing highway right-of-way.
7 Loss of hunting habitat would most likely effect common, human-tolerant species such as red-
8 tailed hawks and American kestrels. Raptors requiring large trees for nesting or perching
9 would be affected where trees would be cut down or where trees are located in close proximity
10 to highway or railway improvements. Indirect effects include increased potential for raptor
11 collisions with vehicles as a result of increased traffic, behavioral disturbance induced by
12 encroachment of human activities within 0.25 to 0.33 mile of nests (CDOW, 2008), increased
13 noise, and increased disturbance from vehicle lights. Some behavioral disturbance could be
14 temporary as raptors adapt to the changed environment.

15 **Big Game and Movement Corridors.** Package A highway components would affect four
16 wildlife movement corridors located along drainages at the Cache la Poudre River, Big
17 Thompson River, Little Thompson River, and Little Dry Creek and two overland corridors
18 between the Little Thompson River and St. Vrain Creek, and west of Firestone and Frederick
19 (**Table 3.12-4**). The bridges at St. Vrain Creek would not be modified. Roads and
20 transportation corridors have many potential effects on wildlife, including habitat fragmentation,
21 reduced access to habitat, population fragmentation and isolation, disruption of dispersal
22 patterns, and mortality from collisions with vehicles (Jackson, 2000). Movement corridors for
23 big game and other wildlife are typically located along riparian corridors and stream crossings
24 in the project area since bridges and culverts at these locations provide an opportunity for
25 wildlife to cross under the highway or railway. Underpasses and culverts are used by many
26 species of wildlife during seasonal migrations, or to reach suitable habitat on the other side of
27 the highway or railway (Barnum, 2003). Without access to crossing sites such as culverts or
28 bridges, wildlife would either avoid crossing, resulting in isolation from suitable habitat, or risk
29 being killed by vehicles while attempting to cross the highway.

30

1 **Table 3.12-4 Effects to Wildlife Movement Corridors from Package A Highway**
2 **Components**

Component		Effects on Wildlife Movement Corridors
A-H1	Safety Improvements: SH 1 to SH 14	No additional lanes are proposed in this area, and long-term effects to wildlife movements from this would be minor (i.e., the same as under the No-Action Alternative).
A-H2	General Purpose Lane Improvements: SH 14 to SH 60	Construction of additional lanes in this component would increase existing fragmentation of habitat near I-25. Bridges at the Cache la Poudre and Big Thompson rivers would be replaced with larger structures that would benefit wildlife over the long term by creating wider movement corridors and increasing the overall perception of openness by wildlife. These bridges would continue to provide movement corridors beneath the highway.
A-H3	General Purpose Lane Improvements: SH 60 to E-470	Construction of additional lanes in this component would increase existing fragmentation of habitat near I-25. The bridges at Little Thompson River and Little Dry Creek would be replaced with larger structures that would benefit wildlife over the long term by creating wider movement corridors and increasing the overall perception of openness by wildlife. These bridges would continue to provide movement corridors beneath the highway. The size of the St. Vrain Creek bridge at I-25 would not be modified, and these bridges would continue to provide an underpass for wildlife. Increasing highway width also increases wildlife collision risk at the overland movement corridors located between the Little Thompson River and St. Vrain Creek, and west of Firestone and Frederick.
A-H4	Structure Upgrades: E-470 to US 36	No additional lanes are proposed under this component, and long-term effects to wildlife movements from this would be minor (i.e., the same as under the No-Action Alternative).

3 Big game movement corridors in riparian areas would be temporarily disrupted during bridge-
4 widening and replacement activities at the Cache la Poudre River, the Big Thompson River,
5 the Little Thompson River, and Little Dry Creek. Many species are more likely to use
6 underpasses that are wider or more open (Jackson and Griffin, 2000; Barnum, 2003).
7 Replacement of existing culverts with larger culverts would benefit wildlife over the long term
8 by creating wider movement corridors and increasing the openness ratio (culvert height
9 x width/length in meters). East-west movements of deer and other mammals are already
10 limited by the existing lanes of I-25, but the addition of new general purpose lanes could result
11 in increased mortality due to collisions with vehicles at the overland corridors located between
12 the Little Thompson River and St. Vrain Creek, and west of Firestone and Frederick.
13 Construction of new retaining walls would also create barriers to wildlife movements across the
14 highway, and would change wildlife crossing locations if existing at-grade crossing sites are
15 blocked by walls (Barnum, 2003). Existing bridges that provide suitable underpasses for
16 wildlife would likely become more important after construction of additional traffic lanes and
17 retaining walls.

18 **Sensitive Wildlife Habitat Areas.** Package A highway components would affect 1.93 acres of
19 sensitive wildlife habitat areas shown in **Table 3.12-5**. Other sensitive wildlife habitat areas in
20 the project area are primarily riparian and wetland areas associated with major drainageways.
21 These areas correspond closely with movement corridors for big game and other wildlife.
22 Effects to sensitive wildlife habitat from Package A highway components would include

1 removal of riparian tree and shrub vegetation that provides cover for a wide variety of species
2 in addition to the species already discussed. These effects would occur primarily during
3 construction and replacement of bridges and overpasses. Long-term and indirect effects would
4 include increased fragmentation of riparian habitat. Indirect effects of increased noise, light,
5 and human disturbance would reduce available habitat.

6 **Table 3.12-5 Effects to Sensitive Wildlife Habitat from Package A Highway**
7 **Components**

Component		Affected Sensitive Habitat Area
A-H1	Safety Improvements: SH 1 to SH 14	N/A – No additional lanes are proposed under this component, and long-term effects to sensitive wildlife habitat would be minor (i.e., the same as under the No-Action Alternative).
A-H2	General Purpose Lane Improvements: SH 14 to SH 60	Riparian and wetland habitat at the Cache la Poudre River (1.12 acres) and Big Thompson River (State Wildlife Area) (0.53 acres) would be affected by highway widening and bridge replacement under this component.
A-H3	General Purpose Lane Improvements: SH 60 to E-470	Riparian and wetland habitat at the Little Thompson River (0.28 acres) would be affected by highway widening and bridge replacement under this component. Sensitive riparian habitat also occurs along St. Vrain Creek near I-25, but no changes are proposed to the I-25 bridge over St. Vrain Creek.
A-H4	Structure Upgrades: E-470 to US 36	N/A – No additional lanes are proposed under this component, and long-term effects to sensitive wildlife habitat would be minor (i.e., the same as under the No-Action Alternative).

8 **Other Wildlife** Effects to wildlife from disturbance of degraded habitat in areas such as
9 highway rights-of-way would include potential direct effects such as loss of habitat—especially
10 grassland habitat; disruption of migration and other movements, especially along riparian
11 corridors; and increased mortality from collisions with automobiles. Potential indirect and long-
12 term effects would include increased habitat fragmentation.

13 **Aquatic Resources.** Package A highway components would directly affect 1.82 acres of
14 aquatic habitat. Adverse effects on fish and other aquatic organisms during construction would
15 include temporary loss of habitat during construction of piers, bridges, culverts, and other work
16 within streams. Increased erosion during construction could result in increased sediment
17 loads, which would adversely affect aquatic organisms. Working directly in streams would
18 increase sediment loads, which could change water temperature or smother and kill the eggs
19 of fish and amphibians as well as direct mortality through crushing. Working directly in streams
20 could also interfere with seasonal movements of sensitive fish species. These impacts would
21 be short-term and would be mitigated through use of construction best management practices
22 (BMPs). Increases in traffic could result in increased contaminants in roadway runoff, including
23 deicer, and would increase the risk of accidental spills of hazardous materials, which could
24 affect aquatic organisms (refer to **Section 3.7 Water Resources**). Package A highway
25 components include water quality ponds, which would reduce contaminants in runoff to
26 streams and waterways. Although the ponds would be dry most of the time, they would provide
27 a net benefit to water quality and for aquatic organisms by improving water quality
28 downstream. Construction of new culverts, lengthening of existing culverts, or widening
29 existing bridges would adversely affect fish and other aquatic species by increasing shading
30 and/or replacing natural streambed with concrete. Stream habitat would be potentially

1 improved through the replacement of existing concrete box culverts with more numerous
2 culverts or free-spanning bridges. Removal or redesign of drop structures that act as barriers
3 would also benefit fish and other aquatic organisms. Replacement of a drop structure just
4 downstream from I-25 on St. Vrain Creek would improve upstream movement for small fish.

5 *Package A Transit Components*

6 Overall, effects on wildlife from transit components of Package A would result primarily from
7 construction of new tracks, replacement and construction of new bridges, and construction of
8 other transit facilities such as new transit stations, the maintenance facility and water quality
9 ponds. Types of effects would include habitat loss, habitat fragmentation, disturbance during
10 construction, and increased mortality from collisions with trains. Most permanent habitat loss
11 would occur in permanently degraded areas such as rights-of-way adjacent to the existing
12 tracks, especially for the commuter rail section from Fort Collins to Longmont.

13 The commuter rail segment from Longmont to North Metro (A-T2) would consist of two new
14 sets of tracks and would be located next to existing highways in areas that are less disturbed
15 than other portions of the project area. Habitat fragmentation and disruption of movement
16 corridors resulting from this component (A-T2) would be a major effect to wildlife.

17 Indirect impacts resulting from project induced growth, transit oriented development, and
18 carpool lots are discussed within **Section 3.1.2 Land Use and Zoning Environmental**
19 *Consequences* of this Final EIS.

20 Effects to migratory birds, raptors, movement corridors, sensitive wildlife habitat areas, other
21 wildlife, and aquatic resources from Package A transit components are described below.

22 **Migratory Birds.** Package A transit components would directly affect wetland, riparian, and
23 grassland habitat for migratory birds. Direct effects to migratory birds could occur from
24 construction of commuter rail and construction of associated facilities such as transit stations.
25 Types of direct effects would be the same as for Package A highway components and would
26 include habitat loss, displacement during construction, increased habitat fragmentation, and
27 potential destruction of nests during construction. Most effects to migratory bird habitat would
28 occur in grasslands, but effects would also occur in wetlands and riparian areas. Impacts to
29 wetlands from the Package A transit components are quantified in **Section 3.8 Wetlands**.
30 Migratory birds using riparian areas would be temporarily displaced during bridge widening
31 and replacement activities, and their nests could be disturbed or destroyed. Ground nesting
32 birds would be most affected by the project. Cliff swallows would be directly affected by nest
33 destruction or nesting disturbance during bridge replacement. Indirect effects include
34 increased disturbance due to noise and light from vehicles, and increased mortality from
35 collisions with vehicles.

36 **Raptors.** Package A transit components potentially affect 13 existing raptor nests located
37 during surveys in 2005, 2006, and 2010 within 0.5 mile of the edge of the project area. Direct
38 effects from the loss of railway right-of-way would reduce the available hunting habitat for
39 many raptors, especially red-tailed hawks and American kestrels. Raptors requiring large trees
40 for nesting could be affected where trees would be cut down or where trees are located in
41 close proximity to highway or railway improvements. Indirect effects include increased
42 mortality resulting from collisions with vehicles as a result of increased traffic at rail stations,
43 behavioral disturbance induced by encroachment of human activities, within 0.25 to 0.33 mile
44 of nests (CDOW, 2008), increased noise, and increased disturbance from vehicle lights. Some

1 behavioral disturbance could be temporary as raptors adapt to the changed environment. Most
2 of the proposed transit stations are located in previously disturbed areas; however, because of
3 the expected induced growth around transit stations, raptors would be expected to avoid the
4 area.

5 **Big Game and Movement Corridors.** Package A transit components potentially affect seven
6 wildlife movement corridors located at Fossil Creek, Big Thompson River, Little Thompson
7 River, St. Vrain Creek, Little Dry Creek, and the overland corridors in the Ish Reservoir and
8 Firestone/Frederick areas (**Table 3.12-6**). Collisions with trains have been documented as a
9 source of mortality for wildlife, including mule deer, white-tailed deer, and elk (Wells et al.,
10 1999), thus the existing BNSF railway probably results in some mortality to wildlife. Currently,
11 the BNSF railway is not a major obstacle to wildlife movement due to the sporadic nature of
12 fencing along the alignment, the small size of the fences (three strand barbed wire), and
13 relatively low frequency of rail traffic. However, a future transit agency could install chain link
14 fences on both sides of the tracks along the entire commuter rail corridor for safety and liability
15 purposes. Construction of new retaining walls along the rail alignment would also create new
16 barriers to wildlife movement. Where retaining walls are present, the fences would be located
17 along the top of the retaining wall. Implementation of Package A transit alternatives would
18 create a substantial barrier to wildlife movement because of the new fences and retaining
19 walls, and would result in habitat fragmentation by isolating patches of wildlife habitat on
20 opposite sides of the rail alignment. Retaining walls and fences typically funnel wildlife
21 movements towards existing underpasses and crossing sites (Barnum, 2003). Bridges and
22 culverts would thus become much more important for wildlife movement after construction of
23 commuter rail. The commuter rail components of Package A would have a much greater effect
24 on wildlife movements and would result in greater habitat fragmentation than any other
25 components of Package A, Package B, and the Preferred Alternative.

26 Increased traffic as a result of operation of additional bus service along the feeder bus routes
27 could result in an increase in wildlife collisions with vehicles. Overall, increased bus traffic
28 would not affect big game movement corridors.

29 **Table 3.12-6 Summary of Effects to Wildlife Movement Corridors from Package A**
30 **Transit Components**

Component		Effects to Wildlife Movement Corridors
A-T1	Commuter Rail: Fort Collins to Longmont	Construction of new tracks, safety fences, and retaining walls would create substantial barriers to east-west wildlife movements under this component. Fencing would create a barrier at the overland crossing near Ish Reservoir. Culverts and bridges, including those at Fossil Creek and the Big Thompson and Little Thompson rivers would become much more important for wildlife crossings.
A-T2	Commuter Rail: Longmont to North Metro	Construction of new tracks, safety fences, and retaining walls would create substantial barriers to east-west wildlife movements under this component. Fencing would create a barrier at the overland crossing west of Firestone and Frederick. Culverts and bridges, including SH 119 at St Vrain Creek, the Little Dry Creek crossing of the rail alignment, and other bridges and culverts would become much more important for wildlife movements.
A-T3	Commuter Bus: Greeley to Denver and DIA	No additional lanes are proposed under this component, and long-term effects to wildlife movements from stations and lots associated with commuter bus would be minor.

1 **Sensitive Wildlife Habitat Areas.** Package A transit components potentially affect 0.08 acre
2 of sensitive wildlife habitat areas shown in **Table 3.12-7**. Effects to sensitive wildlife habitat
3 from the commuter rail components would include removal of riparian tree and shrub
4 vegetation that provides cover for a wide variety of species in addition to the species already
5 discussed. These effects would occur primarily during construction and replacement of
6 bridges. Long-term and indirect effects would include increased fragmentation of riparian
7 habitat. Indirect effects of increased noise, light, and human disturbance would be likely to
8 reduce effective habitat.

9 **Table 3.12-7 Summary of Effects to Sensitive Wildlife Habitat from Package A**
10 **Transit Components**

Component		Affected Sensitive Habitat Area
A-T1	Commuter Rail: Fort Collins to Longmont	No direct impacts to riparian and wetland habitat at the Big Thompson River are expected from the rail alignment and bridge replacement. Riparian habitat at Little Thompson River would not be directly affected by the rail alignment and bridge replacement; however, indirect effects to the Potential Conservation Area designated by CNHP could result. The wildlife crossing area near Ish Reservoir would also be affected by fences and retaining walls which would create a barrier to wildlife movement.
A-T2	Commuter Rail: Longmont to North Metro	Riparian and wetland habitat at St. Vrain Creek (0.08 acre) would be affected by construction of a new bridge crossing.
A-T3	Commuter Bus: Greeley to Denver and DIA	No additional lanes are proposed under this component, and long-term effects to sensitive wildlife habitat would be minor.

11 **Other Wildlife.** Disturbance of degraded habitat in railroad rights-of-way could have effects to
12 wildlife. Potential direct effects would include loss of habitat, especially grassland habitat;
13 disruption of migration, and other movements, especially along riparian corridors; and
14 increased mortality from collisions with automobiles or trains. Potential indirect and long-term
15 effects would include increased habitat fragmentation.

16 **Aquatic Resources.** No direct effects to aquatic habitat would result from Package A transit
17 components because no surface waters would be directly affected by this component.
18 Potential indirect adverse effects to fish and other aquatic organisms during construction of the
19 commuter rail components would include temporary loss of habitat during construction of
20 bridges, culverts, and other work within streams. Increased erosion during construction could
21 result in increased sediment loads in streams, which would adversely affect aquatic
22 organisms. Wider bridges would cause greater shading of streams, potentially altering stream
23 temperature. New stations and parking lots would increase impervious surface area, leading to
24 increased runoff to nearby streams. These effects would be short-term in duration and would
25 be mitigated through use of construction BMPs (refer to **Section 3.7 Water Resources**).
26 Package A transit components include construction of water quality ponds to reduce
27 contaminants in runoff, which would benefit fish and other aquatic organisms by improving
28 water quality downstream. Indirect effects could include interference with seasonal movements
29 of aquatic organisms. Construction of new culverts or lengthening of existing culverts would
30 adversely affect aquatic species by increasing shading or replacing natural streambed with
31 concrete. Replacement of culverts with larger diameter culverts or free spanning bridges would

1 potentially benefit fish and other aquatic species over the long term by facilitating movements
2 along streams and reducing shading. Removal or redesign of drops that act as barriers would
3 also benefit fish and other aquatic organisms.

4 **3.12.3.3 PACKAGE B**

5 Package B includes construction of tolled express lanes on I-25 and implementation of
6 bus rapid transit service. Components of Package B are described in detail in **Chapter 2**
7 *Alternatives*. **Table 3.12-8** and **Table 3.12-9** summarize environmental consequences of
8 Package B to wildlife. **Tables 3.12-14** through **Table 3.12-16** compare impacts associated with
9 Package A, Package B, and the Preferred Alternative.

10 *Package B Highway Components*

11 Overall, effects on wildlife and fish from Package B highway components would result primarily
12 from road widening, and replacement or construction of new bridges. Effects to wildlife would
13 include habitat loss, habitat fragmentation, disturbance during construction, and increased risk
14 of mortality from collisions with vehicles. Most permanent habitat loss would occur in
15 permanently degraded areas such as mowed rights-of-way adjacent to the existing highway.
16 Effects to migratory birds, raptors, movement corridors, sensitive wildlife habitat areas, other
17 wildlife, and aquatic resources from Package B highway components are described below.

18 **Migratory Birds.** Package B highway components would directly affect wetland, riparian, and
19 grassland habitat for migratory birds. Impacts to riparian areas and wetlands from the
20 Package B highway components are quantified in **Section 3.8 Wetlands**. Types of effects to
21 migratory birds from highway widening and construction of associated facilities under
22 Package B would be the same as effects under Package A.

23 **Raptors.** Package B highway components potentially affect 43 existing raptor nests located
24 during surveys in 2005, 2006, and 2010 within 0.5 mile of the edge of the project area. The
25 types of effects to raptors from Package B highway components would be the same as the
26 types of effects from Package A highway components.

27 **Big Game and Movement Corridors.** Package B highway components would potentially
28 affect five wildlife movement corridors along drainages located at the Cache la Poudre River,
29 Big Thompson River, Little Thompson River, Little Dry Creek, and Big Dry Creek
30 (**Table 3.12-8**). Additionally, highway widening could impact two already fragmented overland
31 corridors between the Little Thompson River and St. Vrain Creek, and west of Firestone and
32 Frederick. Package B highway components would have the same types of effects on wildlife
33 movements as Package A highway components.

34

1 **Table 3.12-8 Summary of Effects to Wildlife Movement Corridors from Package B**
2 **Highway Components**

Component		Effects to Wildlife Movement Corridors
B-H1	Safety Improvements: SH 1 to SH 14	No additional lanes are proposed in this area, and long-term effects to wildlife movements would be minor.
B-H2	Tolled Express Lanes: SH 14 to SH 60	Construction of additional lanes in this component would increase existing fragmentation of habitat near I-25 by creating greater separation between existing habitat on either side of the highway. Bridges at the Cache la Poudre and Big Thompson rivers would be replaced with larger structures that would benefit wildlife over the long term by creating wider movement corridors and increasing the overall perception of openness by wildlife. These bridges would continue to provide movement corridors beneath the highway.
B-H3	Tolled Express Lanes: SH 60 to E-470	Construction of additional lanes in this component would increase existing fragmentation of habitat near I-25. The bridges at the Little Thompson and Little Dry Creek would be replaced with larger structures that would benefit wildlife over the long term by creating wider movement corridors and increasing the overall perception of openness by wildlife. These bridges would continue to provide movement corridors beneath the highway. The size of the St. Vrain Creek bridge at I-25 would not be modified, and this bridge would continue to provide an underpass for wildlife. Increasing highway width also increases wildlife collision risk at the overland movement corridors located between the Little Thompson River and St. Vrain Creek and west of Firestone and Fredrick.
B-H4	Tolled Express Lanes: E-470 to US 36	Construction of additional lanes in this component would increase existing fragmentation of habitat by I-25. The bridge at Big Dry Creek would be replaced with a wider structure, and would continue to provide a movement corridor beneath the highway.

3 **Sensitive Wildlife Habitat Areas.** Package B highway components potentially affect 2.35 acres
4 of sensitive wildlife habitat areas shown in **Table 3.12-9**. Effects to sensitive wildlife habitat from
5 Package B highway components would include removal of riparian tree and shrub vegetation
6 that provides cover for a wide variety of species in addition to the species already discussed.
7 These effects would occur primarily during construction and replacement of bridges and
8 overpasses. Long-term and indirect effects would include increased fragmentation of riparian
9 habitat. Indirect effects of increased noise, light, and human disturbance would be likely to
10 reduce available habitat.

11

1 **Table 3.12-9 Summary of Effects to Sensitive Wildlife Habitat from Package B**
2 **Highway Components**

Component		Affected Sensitive Habitat Area
B-H1	Safety Improvements: SH 1 to SH 14	No additional lanes are proposed under this component, and long-term effects to sensitive wildlife habitat would be minor.
B-H2	Tolled Express Lanes: SH 14 to SH 60	Riparian and wetland habitat at the Cache la Poudre River (1.55 acres) and Big Thompson River (State Wildlife Area) (0.52 acre) would be affected by highway widening and bridge replacement under this component.
B-H3	Tolled Express Lanes: SH 60 to E-470	Riparian and wetland habitat at the Little Thompson River (0.28 acre) would be affected by highway widening and bridge replacement under this component. Sensitive riparian habitat also occurs along St. Vrain Creek near I-25, but no changes are proposed to the I-25 bridge over St. Vrain Creek.
B-H4	Tolled Express Lanes: E-470 to US 36	N/A – No effects to sensitive habitat are expected under this component because no sensitive habitat occurs in the project area for this component.

3 **Other Wildlife.** The types of effects to wildlife from disturbance of degraded habitat in areas
4 such as highway rights-of-way from Package B would be the same as the types of effects from
5 Package A. Potential direct effects of the highway components would include loss of habitat,
6 especially grassland habitat; disruption of migration, and other movements such as foraging,
7 especially along riparian corridors; and increased mortality from collisions with automobiles.
8 Potential indirect and long-term effects would include increased habitat fragmentation.

9 **Aquatic Resources.** Package B highway components would directly affect 2.25 acres of
10 aquatic habitat. Types of adverse effects to fish and other aquatic organisms during
11 construction of Package B highway components would be the same as effects from Package A
12 highway components and would include temporary loss of habitat during construction of piers,
13 bridges, culverts, and other work within streams. Types of indirect effects such as increased
14 sediment loads during construction and long-term effects such as interference with seasonal
15 movements would also be to the same as types of effects from Package A highway
16 components. As with Package A highway components, Package B highway components
17 would include water quality ponds which would provide an indirect benefit to aquatic organisms
18 by improving water quality downstream. Effects to aquatic resources from Package A,
19 Package B, and the Preferred Alternative are summarized in **Table 3.12-14**.

20 **Package B Transit Components**

21 Effects on wildlife from Package B transit components would result from construction of new
22 bus rapid transit stations and queue jumps on US 85. Types of effects would include habitat
23 loss, disturbance during construction, and possibly increased mortality from collisions with
24 buses. Most permanent habitat loss would occur in permanently degraded areas. Habitat
25 fragmentation would not be an effect from these components.

26 Effects to migratory birds, raptors, movement corridors, sensitive wildlife habitat areas, other
27 wildlife, and aquatic resources from Package B transit components are described below.

1 **Migratory Birds.** Package B transit components would directly affect wetland, riparian, and
2 grassland habitat for migratory birds. Effects to migratory birds from Package B transit
3 components would include habitat loss and disturbance during construction, if construction
4 occurs during nesting season.

5 **Raptors.** Effects to raptors from Package B transit components would be limited to potential
6 loss of foraging habitat and disturbance of foraging activity during construction. No raptor nests
7 were identified within 0.5 miles of these components during surveys in 2005, 2006, and 2010.

8 **Big Game and Movement Corridors.** Package B transit components would not have
9 substantial effects on wildlife movement corridors. No additional lanes that could fragment
10 habitat or affect wildlife crossings are planned as part of these components. Proposed bus
11 rapid transit stations are generally located near existing intersections and would not affect
12 wildlife movement corridors. Increased traffic as a result of operation of additional bus service
13 could result in a slight increase in wildlife collisions with vehicles.

14 **Sensitive Wildlife Habitat Areas.** Package B transit components would not have substantial
15 effects to sensitive wildlife habitat. None of the proposed bus rapid transit stations are located
16 in sensitive wildlife habitat such as riparian areas. Operation of additional bus service would
17 affect sensitive wildlife habitat areas due to a slight increase in noise and increased traffic.

18 **Other Wildlife.** Few substantial effects to other wildlife from the Package B transit
19 components would be expected because this component does not involve construction of new
20 lanes and because proposed bus rapid transit stations are generally located near existing
21 intersections.

22 **Aquatic Resources Including Fish.** Adverse effects to fish and other aquatic organisms
23 during construction of Package B transit components would be minimal. Package B transit
24 components would not directly affect aquatic habitat.

25 **3.12.3.4 PREFERRED ALTERNATIVE**

26 The Preferred Alternative includes construction of additional general purpose lanes and tolled
27 express lanes on I-25, construction and implementation of commuter bus and express bus,
28 and implementation of commuter rail. Components of the Preferred Alternative package are
29 described in detail in **Chapter 2 Alternatives. Table 3.12-10** through **Table 3.12-13** below
30 summarize environmental consequences to wildlife associated with the Preferred Alternative
31 components. **Tables 3.12-14** through **3.12-16** provide a comparison of Package A, Package B,
32 and the Preferred Alternative.

33 *Preferred Alternative I-25 Improvements Component*

34 Overall, direct effects on wildlife from the Preferred Alternative highway improvements
35 component would result primarily from road widening and replacement and construction of
36 new bridges. The types of effects from the highway components would include habitat loss,
37 habitat fragmentation, direct mortality through crushing or burial, and disturbance during
38 construction. Indirect effects include impacts to water quality from increased sedimentation,
39 increased traffic resulting in increased wildlife mortality, and increased disturbance from
40 vehicle lights. Most permanent habitat loss would occur in permanently degraded areas such

1 as mowed rights-of-way adjacent to the existing highway. Effects to migratory birds, raptors,
2 movement corridors, sensitive wildlife habitat areas, other wildlife, and aquatic resources from
3 the Preferred Alternative highway improvements component are described below.

4 **Migratory Birds.** The Preferred Alternative highway improvements component would directly
5 affect wetland, riparian, and grassland habitat for migratory birds. Impacts to riparian areas
6 and wetlands from the Preferred Alternative highway improvements component are quantified
7 in **Section 3.8 Wetlands**. Types of effects to migratory birds from highway improvements and
8 construction of associated facilities under the Preferred Alternative would be the same as the
9 types of effects from Packages A and B.

10 **Raptors.** Preferred Alternative highway improvements component would potentially affect
11 46 existing raptor nests identified within 0.5 mile of the edge of the project area during surveys
12 in 2005, 2006, and 2010. The types of effects to raptors from the Preferred Alternative highway
13 improvements component would be the same as the types of effects from Package A and
14 Package B.

15 **Big Game and Movement Corridors.** Preferred Alternative highway improvements
16 component would affect five wildlife movement corridors located at the Cache la Poudre River,
17 Big Thompson River, Little Thompson River, Little Dry Creek, and Big Dry Creek
18 (**Table 3.12-10**). Additionally, increasing the highway width to accommodate general purpose
19 lanes and tolled express lanes would increase wildlife collision risks at the overland wildlife
20 movement corridors between the Little Thompson River and St. Vrain Creek, and west of
21 Firestone and Frederick. Preferred Alternative highway improvements would have the same
22 types of effects on wildlife movements as Package A and Package B.

23

1 **Table 3.12-10 Effects to Wildlife Movement Corridors from Preferred Alternative**
2 **Highway Improvement Components**

Component	Effects on Wildlife Movement Corridors
I-25 Safety Improvements: SH 1 to SH 14	No additional lanes are proposed in this area, and long-term effects to wildlife movements from this would be minor (i.e., the same as under the No-Action Alternative).
I-25 General Purpose Lane Improvements: SH 14 to SH 66	Construction of additional lanes in this component would increase existing fragmentation of habitat by I-25 by creating greater separation between existing habitat on either side of the highway. Bridges at the Cache la Poudre, Big Thompson, and Little Thompson rivers would be replaced with larger structures that would benefit wildlife over the long term by creating wider movement corridors and increasing the overall perception of openness by wildlife. These bridges would continue to provide movement corridors beneath the highway. The size of the St. Vrain Creek bridges at I-25 would not be modified, and these bridges would continue to provide an underpass for wildlife. Increasing highway width increases wildlife collision risk at the overland wildlife movement corridor between the Little Thompson River and St. Vrain Creek.
I-25 Buffer-separated Tolloed Express Lanes: SH 66 to SH 7	Construction of additional lanes in this component would increase existing fragmentation of habitat by I-25. The bridge at Little Dry Creek would be replaced with a wider structure, and would continue to provide a movement corridor beneath the highway. The bridge over St. Vrain River would not be modified, and would continue to provide an underpass for wildlife. Increasing highway width increases wildlife collision risk at the overland wildlife movement corridor west of Firestone and Frederick.
I-25 Buffer-separated Tolloed Express Lanes: SH 7 to US 36	Construction of additional lanes would increase existing fragmentation of habitat by I-25. The bridge at Big Dry Creek would be replaced with larger structures that would benefit wildlife over the long term by creating wider movement corridors and increasing the overall perception of openness by wildlife. These bridges would continue to provide movement corridors beneath the highway.

3 **Sensitive Wildlife Habitat Areas.** Preferred Alternative highway improvements component
4 would affect 1.88 acres of sensitive wildlife habitat areas shown in **Table 3.12-11**. Other
5 sensitive wildlife habitat areas in the project area are primarily riparian and wetland areas
6 associated with major drainageways. These areas correspond closely with movement
7 corridors for big game and other wildlife. Effects to sensitive wildlife habitat from the Preferred
8 Alternative highway improvements component would include removal of riparian tree and
9 shrub vegetation that provides cover for a wide variety of species in addition to the species
10 already discussed. These effects would occur primarily during construction and replacement of
11 bridges and overpasses. Long-term and indirect effects would include increased fragmentation
12 of riparian habitat. Indirect effects of increased noise, light, and human disturbance would
13 reduce available habitat.

14

1 **Table 3.12-11 Effects to Sensitive Wildlife Habitat from Preferred Alternative**
2 **Highway Improvement Components**

Component	Affected Sensitive Habitat Area
I-25 Improvements: SH 1 to SH 14	No additional lanes are proposed in this component, and long-term effects to sensitive wildlife habitat would be minor.
I-25 Improvements: SH 14 to SH 66	Riparian and wetland habitat at the Cache la Poudre River (1.16 acres), Big Thompson River (0.47 acre), and Little Thompson River (0.25 acre) would be affected by highway widening and bridge replacement under this component.
I-25 Improvements: SH 66 to SH 7	Sensitive riparian habitat also occurs along St. Vrain River near I-25, but no changes are proposed to the I-25 bridge over the St. Vrain River.
I-25 Improvements: SH 7 to US 36	No effects to sensitive habitat are expected in this component.

3 **Other Wildlife** Effects to wildlife from disturbance of degraded habitat in areas such as
4 highway rights-of-way would include potential direct effects such as loss of habitat, especially
5 grassland habitat; disruption of migration and other movements, especially along riparian
6 corridors; and increased mortality from collisions with automobiles. Potential indirect and long-
7 term effects would include increased habitat fragmentation.

8 **Aquatic Resources.** Preferred Alternative highway improvements component would directly
9 affect 1.54 acres of aquatic habitat. Types of adverse effects to fish and other aquatic
10 organisms during construction of the Preferred Alternative highway improvements component
11 would be the same as effects from Packages A and B highway components and would include
12 temporary loss of habitat during construction of piers, bridges, culverts, and other work within
13 streams. Types of indirect effects such as increased sediment loads during construction and
14 long-term effects such as interference with seasonal movements would also be the same as
15 Packages A and B highway components. As with Packages A and B highway components, the
16 Preferred Alternative highway improvements component would include water quality ponds
17 which would provide an indirect benefit to aquatic organisms by improving water quality
18 downstream.

19 ***Preferred Alternative Transit Components***

20 Overall, effects on wildlife from transit components of the Preferred Alternative would be similar
21 to the effects from Package A transit components and result primarily from construction of new
22 passing tracks, maintenance roads, replacement and construction of new bridges, and
23 construction of other transit facilities such as new transit stations, the maintenance facility and
24 water quality ponds. Types of effects would include habitat loss, habitat fragmentation,
25 disturbance during construction, and increased mortality from collisions with trains. Most
26 permanent habitat loss would occur in permanently degraded areas such as rights-of-way
27 adjacent to the existing tracks, especially for the commuter rail section from Fort Collins to
28 Longmont.

29

1 The commuter rail segment from Longmont to North Metro would consist of new sets of tracks
2 (passing tracks) at four locations:

- 3 ▶ Beginning at 6th Street in Loveland, continuing north to 0.04 mile south of West 57th Street
4 in Loveland. (Length = 3.7 miles)
- 5 ▶ Beginning 0.3 mile south of East CR 6c in Berthoud, continuing north to 0.4 mile north of
6 WCR 14. (Length = 4.5 miles)
- 7 ▶ Beginning in Longmont 0.05 mile west of Martin Street, continuing north along existing
8 BNSF corridor to 19th Avenue. (Length = 2.3 miles)
- 9 ▶ Beginning 0.6 mile west of I-25, continuing north along existing UPRR to 0.3 mile south of
10 CR 20. (Length = 5.2 miles)

11 The Preferred Alternative design also includes a maintenance road parallel to the Burlington
12 Northern/Santa Fe (BNSF) line between Longmont and Fort Collins. Commuter rail track that
13 is not within the BNSF right-of-way would not include a maintenance road.

14 Wildlife habitat fragmentation and disruption of wildlife movement corridors would result from
15 this component. Indirect impacts resulting from project induced growth, transit oriented
16 development, and carpool lots are discussed within **Section 3.1.2 Land Use and Zoning**
17 *Environmental Consequences* of this Final EIS.

18 Effects to migratory birds, raptors, movement corridors, sensitive wildlife habitat areas, other
19 wildlife, and aquatic resources from Preferred Alternative transit components are described
20 below.

21 **Migratory Birds.** Preferred Alternative transit components would directly affect wetland,
22 riparian, and grassland habitat for migratory birds. Direct effects to migratory birds could occur
23 from construction of commuter rail and construction of associated facilities such as transit
24 stations. Types of effects to migratory birds from Preferred Alternative transit components and
25 construction of associated facilities under the Preferred Alternative would be the same as the
26 types of effects from Package A.

27 **Raptors.** Preferred Alternative transit components potentially affect 11 existing raptor nests
28 located during surveys in 2005, 2006, and 2010 within 0.5 mile of the edge of the project area.
29 Types of effects to raptors from Preferred Alternative transit components and construction of
30 associated facilities under the Preferred Alternative transit components would be the same as
31 the types of effects from Package A.

32 **Big Game and Movement Corridors.** Preferred Alternative transit components potentially
33 affect the seven wildlife movement corridors, five corridors along drainages at Fossil Creek,
34 Big Thompson River, Little Thompson River, St. Vrain Creek, Little Dry Creek, and two
35 overland corridors located in the Ish Reservoir and Firestone/Frederick areas (**Table 3.12-12**).
36 Types of effects to big game and movement corridors from Preferred Alternative transit
37 components and construction of associated facilities under the Preferred Alternative transit
38 components would be the same as the types of effects from Package A transit components.

39

1 **Table 3.12-12 Summary of Effects to Wildlife Movement Corridors from Preferred**
2 **Alternative Transit Components**

Component	Effects to Wildlife Movement Corridors
I-25 Express Bus	No additional lanes are proposed and no long-term effects to wildlife movements are expected.
US 85 Commuter Bus	No additional lanes are proposed and no long-term effects to wildlife movements are expected.
Commuter Rail Transit	Construction of new passing tracks, fences, and retaining walls would create barriers to east-west wildlife movements. Use of wildlife-friendly fences wherever possible would mitigate this impact. Fencing would create a barrier at the overland crossings near Ish Reservoir and west of Firestone/Frederick. Culverts and bridges, including those at Fossil Creek and the Big Thompson and Little Thompson rivers and along SH 119 at St. Vrain River and the Little Dry Creek crossing of the rail alignment would become more important for wildlife crossings.

3 **Sensitive Wildlife Habitat Areas.** Preferred Alternative transit components potentially affect
4 0.06 acre of sensitive wildlife habitat areas shown in **Table 3.12-13**. Effects to sensitive wildlife
5 habitat from the commuter rail component of the Preferred Alternative would be the same as
6 that described for Package A commuter rail.

7 **Table 3.12-13 Summary of Effect to Sensitive Wildlife Habitat from Preferred**
8 **Alternative Transit Components**

Component	Affected Sensitive Habitat Area
I-25 Express Bus	No additional lanes are proposed under this component, and no long-term effects to sensitive wildlife habitat are expected.
US 85 Commuter Bus	No additional lanes are proposed under this component, and no long-term effects to sensitive wildlife habitat are expected.
Commuter Rail Transit	No direct impacts to riparian and wetland habitat at the Big Thompson River are expected from the rail alignment and bridge replacement. Riparian habitat at the Little Thompson River would not be directly affected by the rail alignment and bridge replacement; however, indirect effects to the Potential Conservation Area designated by CNHP could result. The wildlife crossing area near Ish Reservoir also could be affected by fences and retaining walls, which would create a barrier to wildlife movement. Riparian and wetland habitat at the St. Vrain River (0.06 acre) would be affected by construction of a new bridge crossing.

9 **Other Wildlife.** Disturbance of degraded habitat in railroad rights-of-way could have effects to
10 wildlife. Potential direct effects would include loss of habitat, especially grassland habitat;
11 disruption of migration, and other movements such as foraging, especially along riparian
12 corridors; and increased mortality from collisions with automobiles or trains. Potential indirect
13 and long-term effects would include increased habitat fragmentation.

1 **Aquatic Resources.** No direct effects to aquatic habitat would result from Preferred
2 Alternative transit components because no surface waters would be directly affected by this
3 component. Potential indirect adverse effects to fish and other aquatic organisms during
4 construction of the commuter rail components of the Preferred Alternative would be the same
5 as those described for Package A commuter rail.

6 **3.12.3.5 SUMMARY OF EFFECTS TO WILDLIFE**

7 **Table 3.12-14** summarizes direct effects to aquatic habitat (including fish) by component.

8 **Table 3.12-15** summarizes effects to raptor nests within 0.5 mile of the project area by component.

9 Raptors may nest in favorable locations year after year, may use different nests in alternate years,
10 or may move to a new nest location in response to changes in the environment. The actual number
11 of nests is likely to be different at the time of construction, but these numbers are representative of
12 the effects that could occur.

13

1 Table 3.12-14 Summary of Effects to Aquatic Habitat (Including Fish) by Component

Component		Affected Habitat (acres)	Component		Affected Habitat (acres)	Component	Affected Habitat (acres)
Package A Highway Components			Package B Highway Components			Preferred Alternative Highway Improvements Components	
AH-1	Safety Improvements: SH 1 to SH 14	0	BH-1	Safety Improvements: SH 1 to SH 14	0	I-25 Improvements	1.54
AH-2	General Purpose Improvements: SH 14 to SH 60	1.42	BH-2	Tolled Express Lanes: SH 14 to SH 60	1.75		
AH-3	General Purpose Improvements: SH 60 to E-470	0.40	BH-3	Tolled Express Lanes: SH 60 to E-470	0.41		
AH-4	Structure Upgrades: E-470 to US 36	0	BH-4	Tolled Express Lanes: E-470 to US 36	0.09		
<i>Total Package A Highway:</i>		<i>1.82</i>	<i>Total Package B Highway:</i>		<i>2.25</i>	<i>Total Preferred Alternative Highway:</i>	<i>1.54</i>
Package A Transit Components			Package B Transit Components			Preferred Alternative Transit Components	
A-T1	Commuter Rail: Fort Collins to Longmont	0	B-T1	BRT: Fort Collins/Greeley to Denver;	0	I-25 Express Bus	0
A-T2	Commuter Rail: Longmont to North Metro	0	B-T2	BRT: Fort Collins to DIA	0	US 85 Commuter Bus	0
AT-3/ AT-4	Commuter Bus: Greeley to Denver and DIA	0				Commuter Rail Transit	0
<i>Total Package A Transit:</i>		<i>0</i>	<i>Total Package B Transit:</i>		<i>0</i>	<i>Total Preferred Alternative Transit:</i>	<i>0</i>
Total Package A:		1.82	Total Package B:		2.25	Total Preferred Alternative	1.54

2
3

1 Table 3.12-15 Summary of Effects to Raptor Nests within 0.5 Mile of Project Area by Component

Component		Number of Nests	Component		Number of Nests	Component	Number of Nests
Package A Highway Components			Package B Highway Components			Preferred Alternative Highway Improvements Components	
AH-1	Safety Improvements: SH 1 to SH 14	3	BH-1	Safety Improvements: SH 1 to SH 14	3	I-25 Improvements	46
AH-2	General Purpose Improvements: SH 14 to SH 60	15	BH-2	Tolled Express Lanes: SH 14 to SH 60	15		
AH-3	General Purpose Improvements: SH 60 to E-470	16	BH-3	Tolled Express Lanes: SH 60 to E-470	20		
AH-4	Structure Upgrades: E-470 to US 36	2	BH-4	Tolled Express Lanes: E-470 to US 36	5		
<i>Total Package A Highway:</i>		36	<i>Total Package B Highway:</i>		43	<i>Total Preferred Alternative Highway</i>	46
Package A Transit Components			Package B Transit Components			Preferred Alternative Transit Components	
A-T1	Commuter Rail: Fort Collins to Longmont	2	B-T1	BRT: Fort Collins/Greeley to Denver;	0	I-25 Express Bus	0
A-T2	Commuter Rail: Longmont to North Metro	10	B-T2	BRT: Fort Collins to DIA	0	US 85 Commuter Bus	1
AT-3/ AT-4	Commuter Bus: Greeley to Denver and DIA	1				Commuter Rail Transit	10
<i>Total Package A Transit:</i>		13	<i>Total Package B Transit:</i>		0	<i>Total Preferred Alternative Transit</i>	11
Total Package A:		49	Total Package B:		43	Total Preferred Alternative	57

1 **Table 3.12-16** summarizes the effects to wildlife habitat by component, including acres of
2 migratory bird habitat, number of raptor nests, numbers of movement corridors, acres of other
3 sensitive habitat, and acres of other aquatic habitat.

4 **Table 3.12-16 Overall Summary of Effects to Wildlife Habitat by Component**

Component	Number of Raptor Nests	Number of Movement Corridors	Sensitive Wildlife Habitat (acres)	Aquatic Habitat (acres)
Package A Highway Components	36	6	1.93	1.82
Package A Transit Components	13	7	0.08	0
Total Package A:	49	13	2.01	1.82
Package B Highway Components	43	7	2.35	2.25
Package B Transit Components	0	0	0	0
Total Package B:	43	7	2.35	2.25
Preferred Alternative Highway Improvements Components	46	7	1.88	1.54
Preferred Alternative Transit Components	11	7	0.06	0
Total Preferred Alternative:	57	14	1.94	1.54

5 **3.12.4 Mitigation Measures**

6 This section describes recommendations for reducing or mitigating proposed project impacts
7 to wildlife, and presents possible mitigation opportunities. Whenever possible, mitigation
8 measures to reduce or avoid impacts to wildlife and fish have been incorporated into the build
9 packages, including avoiding sensitive habitat, using BMPs to control erosion and drainage
10 improvements, and promptly revegetating disturbed areas.

11 **3.12.4.1 NO-ACTION ALTERNATIVE**

12 No additional mitigation measures will be proposed under the No-Action Alternative.

13 **3.12.4.2 PACKAGE A, PACKAGE B, AND PREFERRED ALTERNATIVE**

14 *Migratory Birds*

15 Requirements of the Migratory Bird Treaty Act (1918) (MBTA) will be followed. CDOT has
16 proposed special provisions creating a new Standards and Specification Section 240 –
17 Protection of Migratory Birds to address the requirements of the MBTA. These provisions will
18 ensure that consistent, appropriate and reasonable measures are taken to prevent injury to
19 and death of migratory birds and the CDOT activities are compatible with current federal and
20 state wildlife laws and regulations.

21 CDOT will implement the following mitigation measures for projects that will have an impact to
22 migratory birds:

- 1 ▶ Tree trimming and/or removal activities will be completed before birds begin to nest or after
2 the young have fledged. In Colorado, most nesting and rearing activities occur between
3 April 1 and August 31. However, since some birds nest as early as February, a nesting bird
4 survey will be conducted by a biologist before any tree trimming or removal activities begin.
- 5 ▶ Bridge or box culvert work that may disturb nesting birds will be completed before birds
6 begin to nest or after the young have fledged. No bridge or box culvert work will take place
7 between April 1 and August 31. If work activities are planned between these dates, nests
8 will be removed (before nesting begins) and appropriate measures taken to assure no new
9 nests are constructed.
- 10 ▶ Clearing and grubbing of vegetation that may disturb ground nesting birds will be
11 completed before birds begin to nest or after the young have fledged. If work activities are
12 planned between April 1 and August 31, vegetation will be removed and/or trimmed to a
13 height of six inches or less prior to April 1. Once vegetation has been removed and/or
14 trimmed, appropriate measures, i.e. repeated mowing/trimming, will be implemented to
15 assure vegetation does not grow more than six inches.

16 *Raptors*

17 CDOW has developed recommended buffer zones and seasonal restrictions for new surface
18 occupancy within certain distances of nest sites of several raptor species. Surface occupancy
19 is defined as human-occupied buildings and other structures such as oil and gas wells, roads,
20 railroad tracks, or trails. The USFWS typically considers that implementation of the CDOW
21 buffers and seasonal restrictions fulfill compliance requirements of the Migratory Bird Treaty
22 Act for raptors.

23 A raptor nest survey will be conducted prior to project construction to identify raptor nests and
24 nesting activity in the vicinity of the proposed project. If an active raptor nest is found on site,
25 the recommended buffers and seasonal restrictions recommended by the CDOW
26 (CDOW, 2008) for raptors will be established during construction to avoid nest abandonment.

27 If raptor nests will be impacted by the proposed project, specific mitigation measures for
28 impacts to nesting raptors will be developed in coordination with the CDOW and USFWS prior
29 to construction. If disturbance of raptor nests is unavoidable, mitigation measures will include
30 the construction of artificial nests in suitable habitat or enhancement of prey habitat. Artificial
31 nests will be constructed in the same general area as impacts.

32 *Big Game and Movement Corridors*

33 Impacts to big game will be minimized through construction of crossing structures that will be
34 designed to maintain wildlife movement corridors. In areas identified as important movement
35 corridors, the following measures will be recommended. These mitigation measures may not
36 be feasible at all wildlife crossing areas due to cost or engineering issues. The locations where
37 these mitigation measures will be implemented will be identified as the preferred alternative is
38 identified and final design is undertaken. To maximize use of movement corridors by wildlife,
39 bridge spans and culverts will have the following features:

- 40 ▶ A minimum clearance height of 10 feet and width of 20 feet for deer (Ruediger and
41 DiGiorgio, 2007). Crossing structures sized for deer will be adequate for most common
42 wildlife. The recommended minimum culvert diameter is 48 inches for medium-sized
43 carnivores and 36 inches for small carnivores (Ruediger and DiGiorgio 2007).

- 1 ▶ A minimum “openness ratio” of 0.75. The “openness ratio” is defined as the height of the
2 structure multiplied by the structure width and divided by the structure length, measured in
3 meters. A minimum openness ratio of 2.0 is recommended by some researchers (Reudiger
4 and DiGiorgio 2007).
- 5 ▶ Shrubs and vegetative cover placed at bridge underpass openings to attract wildlife and
6 provide a “funnel effect”.
- 7 ▶ For structures that periodically convey water, ledges or shelves to provide passage
8 alternatives during high water.
- 9 ▶ To avoid human disturbance to wildlife, trails will not be placed near wildlife crossing
10 structures.

11 The wildlife corridor near Ish Reservoir does not occur along a drainage. The proposed rail
12 profile in the vicinity of this wildlife crossing follows existing grades and there are no proposed
13 retaining walls at this location. The initial design recommendation to a regional transit agency
14 is to omit the perimeter fencing for the appropriate segment necessary to maintain the wildlife
15 corridor. If, during final design, it is determined that it will not be possible to omit the perimeter
16 fencing, the design team will investigate profile adjustments to determine the feasibility of
17 establishing a box culvert wildlife crossing underpass of suitable size, length, and substrate
18 composition to accommodate the range of wildlife encountered in this corridor, or use of
19 fencing that is not a barrier to wildlife.

20 Other recommended design elements include:

- 21 ▶ Avoiding the placement of lighting near the crossing structures
- 22 ▶ Avoid attracting wildlife to the right-of-way by keeping roadside vegetation height to a
23 minimum

24 Use of these design elements will be specified where appropriate during final design. Along
25 the commuter rail corridor, CDOT will seek permission from the regional transit authority to
26 minimize the use of chain link fencing in areas that are heavily used by wildlife. If a fence is
27 constructed, these will be of a type that is not a barrier to wildlife structures such as one-way
28 ramps will be placed at regular intervals along the corridor to allow animals that may get inside
29 the fence to exit the highway corridor. Measures will be taken to ensure that fences are
30 maintained.

31 *Sensitive Wildlife Habitat Areas*

32 Impacts to other sensitive wildlife habitat areas have been avoided and minimized to the
33 greatest extent possible. Proposed mitigation measures for wetlands and riparian areas will
34 mitigate for impacts to sensitive wildlife habitat, which tends to be located along streams and
35 rivers (refer to **Section 3.8 Wetlands**). Mitigation measures for big game and wildlife crossings
36 will also benefit these areas.

37 *Other Wildlife*

38 Many other wildlife species, such as small and medium sized mammals, reptiles, and
39 amphibians use the same migration corridors used by larger animals, and will benefit from
40 mitigation measures for wildlife movement corridors described above. Effects to other wildlife
41 from impacts to grasslands will be mitigated by mitigation measures described for vegetation.

1 Other wildlife habitat areas are generally located along major drainageways. Mitigation
2 measures for impacts to vegetation, wetlands, and Preble's habitat will also benefit these
3 areas.

4 *Aquatic Resources (Including Fish)*

5 The project will comply with Colorado SB 40, which requires any agency of the State of
6 Colorado to obtain wildlife certification from CDOW when the agency plans construction in any
7 stream or its bank or tributaries. An application for SB 40 wildlife certification would be
8 submitted to CDOW. CDOW will review the plans to ensure that the project adequately
9 protects fish and wildlife resources, and will provide recommendations if the proposed project
10 will adversely affect a stream or its riparian corridor.

11 To offset temporary impacts to aquatic species from habitat disturbance, aquatic habitats will
12 be restored after construction activities have ceased. The following design measures will be
13 implemented to mitigate potential impacts to aquatic species, including native fish:

- 14 ▶ Riffle and pool complexes will be maintained and/or created.
- 15 ▶ Natural stream bottoms will be maintained.
- 16 ▶ Culverts will be partially buried and the bottom will be covered with gravel/sand and have a
17 low gradient.
- 18 ▶ Culverts to be replaced will be replaced with one of equal or greater size.
- 19 ▶ Culverts will not have grates, impact dissipaters, or any other features that will impede fish
20 movement.
- 21 ▶ To avoid erosion, induced siltation, and sedimentation, sediment/erosion control BMPs
22 shall be placed during each phase of construction. Upon completion of slope, seeding in
23 combination with mulch/mulch tackifier or blanket shall occur within the limits set in
24 Section 208 of CDOT specifications.
- 25 ▶ Erosion control blankets will be "wildlife friendly," consisting of 100 percent biodegradable
26 materials.
- 27 ▶ Access points to streams during construction will be limited to minimize degradation of the
28 banks.
- 29 ▶ No new fish passage barriers will be created.
- 30 ▶ Existing drop structures that create a barrier to fish movements will be removed or
31 redesigned where possible. An example is the drop structure located east of the frontage
32 road at I-25 and St. Vrain Creek, which is planned to be modified to facilitate fish passage
33 as part of this project.

34 CDOT's water quality temporary and permanent BMPs will be applied, and will include the
35 installation of mechanisms to collect, contain, and/or treat roadway run-off. Mitigation
36 measures designed to offset impacts to wetlands, Ute ladies'-tresses orchid, and Preble's,
37 including habitat replacement/enhancement and the replacement of existing culverts with
38 larger or more numerous culverts and/or free-spanning bridges, will also improve fish habitat.