

3.13 THREATENED, ENDANGERED, AND STATE SENSITIVE SPECIES

This section addresses federally listed threatened and endangered species, state sensitive species (threatened, endangered, and species of special concern), and other federally protected species. One federally listed threatened wildlife species, and two federally listed plant species potentially occur in the regional study area.

3.13.1 Regulatory Framework

Colorado Department of Transportation (CDOT) projects must comply with federal, state, and local laws and regulations protecting wildlife species including:

- ▶ The Endangered Species Act of 1973 (16USC 1531 et seq.)
- ▶ The Bald and Golden Eagle Protection Act of 1940, as amended (16 USC 668-668d)
- ▶ Colorado State Statute 33 (CRS Ann. §§ 33-2 to 102-106)

IN addition, CDOT has a prairie dog policy that applies to all CDOT projects. Federal and state laws and CDOT policies are described below.

Federally listed threatened and endangered species are protected under the Endangered Species Act (ESA) of 1973, as amended (16 USC 1531 et seq.). Potential effects on a federally listed species or its habitat resulting from a project with a federal action require consultation with U.S. Fish and Wildlife Service (USFWS) under Section 7 of the ESA. Projects that may result in adverse modification of designated critical habitat for a federally listed species also require consultation with the USFWS. With this Final EIS, a Programmatic Biological Assessment (PBA) has been prepared (see **Appendix C**).

In January 2004, CDOT, Colorado Department of Natural Resources Division of Wildlife (CDOW), the Federal Highway Administration (FHWA), the USFWS, and public and private partners agreed on a "Shortgrass Prairie Initiative" as an alternative way to address species impacts in the eastern third of the state. The Shortgrass Prairie Initiative (initiative) provides programmatic clearance for CDOT activities on the existing road network in the eastern third of Colorado for the next 20 years. Covered transportation projects include: 1) bridge repairs for

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3.13 Threatened, Endangered, and State Sensitive Species

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1 all existing bridges; 2) approximately 4,310 miles of resurfacing/overlays and accompanying
2 shoulder improvements; 3) maintenance along existing transportation corridors; and 4) safety,
3 reconstruction, capacity, and other transportation improvements (USFWS, 2004; Venner,
4 2001). The initiative covers three federally listed threatened, endangered, and candidate
5 species, as well as 29 species of concern. Species covered by the initiative that potentially
6 occur within the project area include the bald eagle (*Haliaeetus leucocephalus*), Colorado
7 butterfly plant (*Gaura neomexicana subsp. coloradensis*), black-tailed prairie dog (*Gymnomys*
8 *ludovicianus*), western burrowing owl (*Athene cunicularia*), mountain plover (*Charadrius*
9 *montanus*), ferruginous hawk (*Buteo regalis*), northern leopard frog (*Rana pipien*), plains
10 topminnow (*Fundulus sciadicus*), and brassy minnow (*Hybognathus hankinsoni*). Species
11 explicitly not covered in the Programmatic Biological Opinion (BO) (USFWS, 2000) include
12 black-footed ferret (*Mustela nigripes*), Preble's meadow jumping mouse (*Zapus hudsonius*
13 *preblei*) (Preble's), and Ute ladies tresses' orchid (*Spironthes diluvialis*) (ULTO). The
14 programmatic BO was amended in February 2008 to address the change in status for the bald
15 eagle (USFWS, 2008).

16 The Bald and Golden Eagle Protection Act (Act) (16 USC 668-668d) includes several
17 prohibitions not found in the Migratory Bird Treaty Act of 1918 (MBTA), such as molestation
18 or disturbance. In 1962, the Act was amended to include the golden eagle.

19 As directed by CRS 33 (CRS Ann. §§ 33-2 to 102-106), the Colorado Wildlife Commission
20 issues regulations and develops management programs implemented by the CDOW for
21 wildlife species not federally listed as threatened or endangered. This includes maintaining
22 a list of state threatened and endangered species. CDOW also maintains a list of species of
23 concern, but these species are not protected under CRS 33.

24 Additional CDOT and local guidelines and recommendations applicable to wildlife include
25 the CDOT Prairie Dog Policy, which consists of a series of steps that include avoiding
26 disturbance to prairie dog colonies. More detail on all regulations pertaining to wildlife
27 resources is provided in the *Wildlife Technical Report* (ERO, 2008) and *Addendum*
28 (ERO, 2011a).

29 **3.13.2 Affected Environment**

30 Threatened and endangered species were reviewed during initial screening of alternatives
31 using existing information from readily available sources. Existing information was reviewed
32 and special concerns related to the project were identified through coordination and
33 consultation with USFWS, CDOW, and Colorado Natural Heritage Program (CNHP)
34 personnel, and local open space management agencies. Once the proposed project area
35 was identified, detailed habitat evaluations were performed in the project area based on
36 fieldwork. Additional reviews were conducted of existing information regarding Preble's
37 (*Zapus hudsonius preblei*), mountain plover (*Charadrius montanus*), bald eagle (*Haliaeetus*
38 *leucocephalus*), and black-tailed prairie dog (*Cynomys ludovicianus*) colonies. Effects to the
39 mountain plover were originally evaluated in the Draft EIS, however, the proposed listing as
40 a threatened species was withdrawn May 12, 2011. Thus, this species will not be further
41 evaluated as a proposed federally listed species in this Final EIS. Specific methods used for
42 data collection are described in detail in the *Wildlife Technical Report* (ERO, 2008).

43

1 **3.13.2.1 FEDERALLY LISTED THREATENED, ENDANGERED, AND CANDIDATE**
2 **SPECIES**

3 Federally listed threatened, endangered, and candidate wildlife species that potentially occur
4 in the project area are shown in **Table 3.13-1** (USFWS, 2010). **Table 3.13-2** lists species
5 potentially affected by water depletions to the Platte River system (USFWS, 2010).

6 **Table 3.13-1 Federally Listed Threatened, Endangered, and Candidate Wildlife**
7 **Species Potentially Occurring in the Project Area**

Common Name	Scientific Name	Status*	Habitat	Potential to Occur in North I-25 Project Area
Preble's meadow jumping mouse	<i>Zapus hudsonius preblei</i>	FT	Riparian areas along major drainages with adequate shrub and tree cover.	Known to occur in riparian habitat on Big Thompson River at I-25 and likely to occur in riparian habitat on Little Thompson River at I-25; suitable habitat is present on other major drainages, but is unlikely to be occupied based on trapping data.

*Status key:

FT ... Federally listed as threatened

No candidate species for listing under the ESA occur in the project area.

Source: USFWS, 2010.

8 **Table 3.13-2 Federally Listed Wildlife Species Potentially Affected by Depletions to**
9 **the Platte River System**

Common Name	Scientific Name	Status*	Habitat	Potential to Occur in North I-25 Project Area
Whooping crane	<i>Grus americana</i>	FE	Platte River and surrounding habitat in Nebraska	Not present, but may be affected by depletions to the Platte River system
Least tern	<i>Sternula antillarum</i>	FE	Platte River and surrounding habitat in Nebraska	Not present, but may be affected by depletions to the Platte River system
Piping plover	<i>Charadrius melodus</i>	FT	Platte River and surrounding habitat in Nebraska	Not present, but may be affected by depletions to the Platte River system
Pallid sturgeon	<i>Scaphirhynchus albus</i>	FE	Platte River in Nebraska	Not present, but may be affected by depletions to the Platte River system

*Status key:

FE ... Federally listed as endangered

FT.... Federally listed as threatened

No candidate species for listing under the ESA occur in the project area.

Source: USFWS, 2010.

1 Other federally listed species that occur in the northern Colorado Front Range were evaluated
2 in the Wildlife Technical Report (ERO, 2008) and were eliminated from further consideration
3 because of the lack of suitable habitat.

4 *Preble's Meadow Jumping Mouse*

5 Based on site visits and past trapping records, a number of riparian areas in the project area
6 offer potential habitat for Preble's. These areas include the Big Thompson River, Cache
7 la Poudre River, Dry Creek, Fossil Creek, Little Thompson River, St. Vrain Creek, South Platte
8 River, and Spring Creek. Trapping surveys have found Preble's in riparian habitat near the Big
9 Thompson River less than one mile downstream from I-25 (USFWS, 2005b). No trapping
10 surveys have been conducted within one mile of I-25 on the Little Thompson River; however,
11 trapping surveys have found Preble's more than one mile downstream from I-25
12 (USFWS, 2005b). Preble's is assumed to be present in riparian habitat along the
13 Big Thompson and Little Thompson rivers. Other drainages in the project area were surveyed
14 extensively for Preble's in the past, and available information indicates these sites are unlikely
15 to support populations of Preble's. Critical habitat was designated in Larimer County; however,
16 no designated critical habitat for this species occurs in the project area (see **Figure 3.13-1**).

17 **3.13.2.2 OTHER FEDERALLY PROTECTED SPECIES**

18 *Bald Eagle*

19 The bald eagle was recently removed from the federal list of threatened and endangered
20 species, but continues to be protected by the Bald and Golden Eagle Protection Act. Six active
21 bald eagle nests occur within 3 miles of the sections of I-25 proposed for widening or the
22 proposed rail alignment. These nests continue to be monitored by the Rocky Mountain Bird
23 Observatory (RMBO) Bald Eagle Watch Program (RMBO 2008, 2009, 2010). Nesting data
24 from each nest between 2008 and early 2010 are provided below:

- 25 ▶ Environmental Learning Center (ELC) Nest – A pair of adult bald eagles attempted to nest
26 near this site in 2009 and failed before constructing the existing nest at its present location.
27 The eagles returned in 2010 and successfully hatched two young.
- 28 ▶ Windsor Nest – This site has been used by nesting bald eagles since 2002. The nest
29 fledged two eaglets in 2008, and one eaglet in 2009 (RMBO 2008, 2009). The nest
30 successfully hatched one young in 2010.
- 31 ▶ Berthoud Nest – A pair of eagles nested at this site in 2007. Nesting success at this site
32 was unknown in 2008, and two eaglets were fledged in 2009 (RMBO 2008, 2009). The
33 nest successfully hatched three young in 2010.
- 34 ▶ Longmont/St. Vrain Nest – This nest produced one fledgling in 2008 and two fledglings in
35 2009 (RMBO 2008, 2009). The nest successfully hatched two young in 2010.
- 36 ▶ Delcamino/Boulder Creek Nest – This nest has been active since 2003. This nest fledged
37 three eaglets in 2008 and none in 2009 (RMBO 2008, 2009). While this nest was
38 unsuccessful in 2009, it successfully hatched one young in 2010.
- 39 ▶ Thornton Nest – This nest fledged two eaglets in 2008 and one eaglet in 2009
40 (RMBO, 2008, 2009). The nest successfully hatched two young in 2010.

1 In addition to the six nest sites, a pair of bald eagles has been observed exhibiting courtship
2 and prebreeding behavior in the northeast section of Fossil Creek Reservoir (RMBO, 2010)
3 (**Figure 3.13-1**).

4 CDOW mapping shows another active nest approximately 0.5 mile northwest of the
5 intersection of Highway 60 and Larimer County Road 17 (NDIS, 2010). This site is
6 approximately 1.5 miles west of the proposed rail line and is occupied by golden eagles rather
7 than bald eagles. This nest had successfully produced young golden eagles every year for at
8 least six years as of 2006 (Ryel pers. comm., 2006).

9 CDOW defines bald eagle roost sites as groups of trees or individual trees used by less than
10 15 eagles for diurnal and/or nocturnal perches. CDOW defines communal roost sites as
11 groups of trees or individual trees used by more than 15 eagles for diurnal and/or nocturnal
12 perches. CDOW has identified roost sites at several locations adjacent to or within 1 mile of
13 the project area (see **Figure 3.13-1**). These sites are:

- 14 ▶ **Fossil Creek Reservoir Communal Roost.** CDOW has mapped a communal roost site at
15 Fossil Creek Reservoir about 0.5 mile west of I-25 (NDIS, 2006). CDOW considers the
16 reservoir as a whole when mapping the limits of the roost. CDOW extends the roost
17 boundary about 0.25 mile from the edge of the reservoir, not including Swede Lake,
18 because most of the larger trees surrounding the reservoir are used by eagles in winter.
19 Specific roost locations and levels of use can vary depending on prey availability, weather,
20 and other factors.
- 21 ▶ **St. Vrain Creek and Boulder Creek Roost.** CDOW has mapped as a bald eagle roost site
22 the section of St. Vrain Creek from west of US 287 to east of I-25, and the section of
23 Boulder Creek from the confluence of Boulder Creek with St. Vrain Creek upstream to a
24 point about five miles from the confluence. This area was active as a winter roost in
25 February and March 2005 (ERO, 2008).
- 26 ▶ **Boulder Creek Communal Roost.** A communal roost site is about 3 miles southwest of
27 the intersection of I-25 and SH 119 on Boulder Creek (NDIS, 2006).

28 **3.13.2.3 STATE-LISTED THREATENED, ENDANGERED, AND SPECIES OF SPECIAL** 29 **CONCERN**

30 State threatened, endangered, and species of special concern with potentially suitable habitat
31 in the regional study area are listed in **Table 3.13-3** and **Table 3.13-4** and are described
32 below. CRS 33 states that it is unlawful for any person to take, possess, transport, export,
33 process, sell or offer for sale, or ship and for any common or contract carrier to knowingly
34 transport or receive for shipment any species or subspecies of wildlife appearing on the state
35 list of threatened and endangered wildlife (CRS Ann. §§ 33-2-105). While species of special
36 concern are not protected by CRS 33, CDOT is committed to their conservation. Some state-
37 listed species were dropped from further consideration because of the lack of suitable habitat
38 (ERO, 2008).

1 **Table 3.13-3 State Threatened, Endangered, and Species of Special Concern**
2 **Potentially Occurring in the Regional Study Area (Terrestrial)**

Common Name	Scientific Name	Status*	Habitat	Potential to Occur in North I-25 Project Area
Mammals				
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>	SC	Open space and vacant land	Known to occur throughout the project area
Swift fox	<i>Vulpes velox</i>	SC	Shortgrass prairie	Potentially occurs east of I-25 in Larimer and Weld counties
Townsend's big-eared bat	<i>Plecotus townsendii</i>	SC	Caves and mineshafts, urban areas, and riparian areas	Potentially occurs in urban areas and riparian areas
Birds				
Western burrowing owl	<i>Athene cunicularia</i>	ST	Nests in prairie dog colonies	Known to occur in the prairie dog colony at US 34 and SH 257; possibly occurs in other prairie dog colonies
Ferruginous hawk	<i>Buteo regalis</i>	SC	Nests in grasslands and often forages in prairie dog colonies	Likely to occur in prairie dog colonies in winter
Great blue heron	<i>Ardea herodias</i>	None ¹	Nests in colonies in groves of trees on major rivers and reservoirs, and forages in all aquatic habitats	Known to occur; three heron nesting areas occur in or near the project area
Mountain Plover	<i>Charadrius montanus</i>	SC	Open, flat tablelands and shortgrass prairie vegetation (<6 inches); breeds in areas with 30% bare ground, including grazed grasslands, fallow fields, and prairie dog towns.	Unlikely – very little suitable habitat for mountain plovers occurs in the project area; plovers are vulnerable to human and vehicle disturbance and there are no recent records of breeding mountain plovers in the project area along any alternative.
Reptiles/Amphibians				
Common gartersnake	<i>Thamnophis sirtalis</i>	SC	Streams, ditches, and ponds	Known to occur on major streams and rivers and other aquatic habitats in the project area
Northern leopard frog	<i>Rana pipiens</i>	SC	Streams, lakes, ponds, marshes, and wet meadows	Known to occur in Cache la Poudre, Big Thompson, St. Vrain, and South Platte drainages

*Key to CDOW species ranking system:

SC... Special Concern

ST... State Threatened

¹Great blue heron is not listed on the state list, but is protected by the MBTA.

1 **Table 3.13-4 State Threatened, Endangered, and Species of Special Concern**
2 **Potentially Occurring in the Regional Study Area (Aquatic)**

Common Name	Scientific Name	Status*	Habitat	Potential to Occur in North I-25 Project Area
Fish				
Common shiner	<i>Notropis cornutus</i>	SE	Cool, clear streams with moderate gradient, gravelly bottoms, and shady areas	Known to occur in St. Vrain Creek and South Platte River
Brassy minnow	<i>Hybognathus hankinsoni</i>	ST	Cool, clear streams with abundant aquatic vegetation and mud or gravel substrate	Known to occur in Cache la Poudre River, Fossil Creek, St. Vrain Creek, and South Platte River
Iowa darter	<i>Etheostoma exile</i>	SC	Lakes with rooted aquatic vegetation and streams with cool, clear water, undercut banks, and vegetation extending from the bank into the water	Known to occur in Cache la Poudre and Big Thompson rivers, and St. Vrain Creek
Stonecat	<i>Noturus flavus</i>	SC	Streams with strong current and rubble, rocks, or woody debris	Known to occur in St. Vrain Creek
Invertebrates				
Cylindrical papershell	<i>Anodontooides ferussacianus</i>	SC	Mud and sand in small creeks	Potentially occurs in small streams in the project area

*Key to CDOW species ranking system:
SE.. State Endangered
ST.. State Threatened
SC.. Special Concern

Sources: CDOW, 20010; NDIS, 2010.

3 3.13.2.4 OTHER SENSITIVE WILDLIFE SPECIES

4 A rare stonefly (*Mesocapnia frisoni*) is the only CNHP-listed species with potentially suitable
5 habitat in the regional study area (ERO, 2007). In Colorado, this species is known to occur
6 only in the Little Thompson River (CNHP, 2005). In the project area, the stonefly is known to
7 occur in the reach of the Little Thompson River that includes the crossing at US 287 and the
8 Burlington Northern/Santa Fe (BNSF) Railway (CNHP, 2005).

9 3.13.2.5 THREATENED AND ENDANGERED PLANT SPECIES

10 The USFWS (2006) has identified the Colorado butterfly plant (*Gaura neomexicana subsp.*
11 *coloradensis*) and ULTO (*Spiranthes diluvialis*) as potentially occurring in all counties within
12 the regional study area (see **Table 3.13-5**). As such, field surveys were conducted during the
13 summer/fall of 2005 and 2006 to assess if populations of these species or potential habitat for
14 these species existed in the project area.

15

1 **Table 3.13-5 Federally Listed Threatened and Endangered Plant Species Potentially**
2 **Occurring in the Regional Study Area**

Common Name	Scientific Name	Status*	Habitat	Acres of Existing Potential Habitat
Colorado butterfly plant	<i>Gaura neomexicana</i> subsp. <i>coloradensis</i>	FT	Zone between wetlands and upland prairies in subirrigated drainage bottoms of active, meandering streambeds	5.01 acres
Ute ladies'-tresses orchid	<i>Spiranthes diluvialis</i>	FT	Open riparian areas, floodplains, and alluvial meadows	19.19 acres

*Status key

FT.... Federally listed as threatened

Sources: USFWS, 2010.

3 ***Colorado Butterfly Plant***

4 The Colorado butterfly plant (CBP) is a perennial evening primrose that is approximately 20 to
5 32 inches in height with reddish, pubescent stems and a narrow, elongated inflorescence of
6 white flowers, which turn pink or reddish with age. The primary habitat for this species is
7 generally 5,000 to 6,400 feet in elevation in a zone between wetlands and upland prairie in the
8 subirrigated, alluvial soils of drainage bottoms with an active, meandering stream.

9 Potential habitat for CBP was identified within riparian areas along the St. Vrain, Little
10 Thompson, Big Thompson, and Cache la Poudre rivers where these drainages are crossed by
11 I-25 or the proposed commuter rail alignment; however, no populations or individuals of this
12 species were observed during field surveys.

13 ***Ute Ladies'-tresses Orchid***

14 The ULTO is a perennial, terrestrial orchid characterized by 8- to 20-inch stems, a thick
15 tuberous root system, narrow leaves, and a white flowering stalk. The stalk is comprised of a
16 spike arrangement at the top of the stem with few to many small white or ivory flower clusters.
17 The primary habitat for ULTO is typically found in elevations below 6,500 feet in open riparian
18 areas, alluvial meadows, floodplains of perennial streams, and edges of springs and lakes.

19 Potential habitat for ULTO was identified in riparian habitat along the St. Vrain, Little
20 Thompson, Big Thompson, and Cache la Poudre rivers where these drainages are crossed by
21 I-25 or the proposed commuter rail alignment. These sites are within the 100-year floodplain of
22 tributaries to the South Platte River and are described in greater detail in the BA.

23 Wetlands in Boulder County also are considered potential ULTO habitat, and potential habitat
24 was identified at an unnamed ditch at SH 66 and North 115th Street, Ish Ditch at the BNSF
25 alignment, and a site with wetlands on the BNSF alignment near the Divide Reservoir in
26 Boulder County. No ULTO populations or individuals were observed during field surveys.

27

3.13.3 Environmental Consequences

This section describes the consequences of the No-Action Alternative and Package A, Package B, and the Preferred Alternative to federally listed threatened and endangered species; state-listed threatened, endangered, and species of concern; and other sensitive species.

Given the large scale of the project, and the large size of the regional study area, effects were estimated on a broad scale using data from a variety of sources including USFWS, CDOW, and project-specific data collected by CDOT contractors. Direct effects to sensitive species or their habitat were quantified where possible by measuring acres of habitat within the project limits of disturbance using Geographic Information System (GIS) overlays.

- ▶ **Preble's Habitat.** Effects to Preble's habitat were estimated by assuming that Preble's is present in riparian habitat within 1 mile upstream and downstream of known capture sites. Riparian vegetation was defined based on vegetation data (**Section 3.10 Vegetation**).
- ▶ **Bald Eagle Habitat.** Effects to bald eagle habitat were estimated based on the number of nests within 0.5 mile of the project area and the acreage of summer or winter forage areas within the project area affected by a given project component.
- ▶ **Platte River Species Habitat.** Given the absence of suitable habitat in the regional study area, none of the alternatives would have direct effects on the whooping crane, least tern, piping plover, pallid sturgeon, or western prairie fringed orchid (*Platanthera praeclara*).

Depletions to the Platte River system due to CDOT activities are addressed by the State of Colorado's participation in the South Platte Water Related Activities Program (SPWRAP) through the "Memorandum of Agreement for Implementation and Operation of the Colorado Portion of the Platte River Recovery Implementation Plan (PRRIP)" (SPWRAP, 2009). All water depletions are considered an adverse effect to four downstream species (whooping crane, interior least tern, piping plover, and pallid sturgeon).

With regard to possible effects from water depletions to the Platte River system, potential project elements that could result in depletions include:

- ▶ Detention facilities
- ▶ Dust abatement activities
- ▶ Wetland mitigation
- ▶ Structure backfill
- ▶ Embankment and ABC Compaction
- ▶ Concrete needed for roadway, slope paving, embankments, inlets, guardrails, sidewalks, and curb and gutter

Because the amount of water to be used cannot be anticipated at the EIS level of project development, a PRRIP template biological assessment will be submitted to the USFWS during project-specific Section 7 consultation with the USFWS. Project-specific biological assessments will estimate the water usage for that particular phase or project. Following consultation and the USFWS's issuance of a biological opinion, project-level depletions will be monitored annually by FHWA/CDOT and reported to the USFWS.

1 In the meantime for this EIS, water usage resulting from the construction of Package A,
2 Package B and all three phases of the Preferred Alternative were estimated based on the
3 current level of design for the various components of the alternatives (see **Table 3.13-6**).
4 These components included, as appropriate, embankment, roadway, bridge structures,
5 retaining walls, sound walls, general construction water, express bus stations, commuter bus
6 stations, commuter rail stations access roads, at-grade crossings, and maintenance facilities.
7 The estimates are for the entire construction phase of each alternative. The following
8 assumptions were made for the construction process and construction items that would require
9 water use:

- 10 ▶ Five feet of embankment per square yard of pavement. Detailed earthwork calculations are
11 not available at the current level of highway design, so this assumption was made by
12 comparing the overall length of the roadway construction and the number of interchanges
13 that would be reconstructed and arriving at an average height of embankment.
- 14 ▶ Earthwork for the commuter rail was estimated for Package A at the Draft EIS design level
15 and these values are assumed to be within a similar range for the Preferred Alternative.
16 The earthwork quantities for the double track design for Package A are similar to the single
17 track, passing track and maintenance road design for the Preferred Alternative.
- 18 ▶ The median height for each range of retaining wall heights and an assumed thickness of
19 one foot was used to calculate the retaining wall areas for both roadway and commuter rail.
20 Roadway sound walls were also assumed to be one-foot thick.
- 21 ▶ Quantities for aggregate base course for roadway and gravel road for commuter rail were
22 calculated using 133 lb/cf.
- 23 ▶ The maintenance facilities for bus and rail include construction items for buildings and site
24 work. All site paving is assumed to be eight-inch concrete pavement. The buildings were
25 assumed to have 12-foot high concrete block walls and a four-inch thick concrete slab.
- 26 ▶ The number of at-grade rail crossings was determined for the commuter rail, but the
27 roadway design for each crossing has not been completed. Quantities were estimated
28 using similar crossing designs from RTD FasTrack projects. The items include concrete
29 pavement, aggregate base course and curb and gutter.
- 30 ▶ Bus and rail station quantities for concrete pavement, sidewalk and curb and gutter were
31 calculated during design.
- 32 ▶ Concrete truck washout values assume 30 gallons of water for washout of a 10 CY truck.
- 33 ▶ The General Construction Water value was provided by RTD and includes water use for
34 compaction, demolition and dust palliative. The estimate was based on the use of two 4000
35 gallon water trucks per day for the duration of the project. If the commuter rail is
36 constructed as one continuous project the assumption is that it would be a six- year
37 schedule. This same assumption applies to the roadway portion of the project. The bus
38 portion of the project assumes a four-year schedule.

39

1 **Table 3.13-6 Alternative Water Usage from Construction**

ITEM	Water Usage (acre feet)					
	Package A	Package B	Preferred Alternative			
			Phase 1	Phase 2	Phase 3	Total
Highway Improvements	1,141	1,141	321	608	212	1,141
Bus	20	27	14	14	0	28
Commuter Rail	125	0	0	35	90	125
Total	1,286	1,168	335	657	301	1,294

- 2 ▶ **Black-Tailed Prairie Dog Habitat.** Effects to black-tailed prairie dogs were quantified
3 based on mapping of prairie dog colonies supplied by CDOW and verified by ERO using
4 current aerial photography and field visits conducted in 2006 and updated in 2010. Effects
5 to other sensitive species often associated with prairie dogs, such as western burrowing
6 owls, were estimated from the effects on prairie dog colonies.
- 7 ▶ **Blue Heron Habitat.** Effects on great blue herons were estimated based on data from
8 CDOW, showing known nesting areas for this species (NDIS, 2010).
- 9 ▶ **Northern Leopard Frog/Gartersnake Habitat.** Effects to potential habitat for northern
10 leopard frogs and common gartersnakes were estimated by assuming that habitat for these
11 species coincides with wetlands and riparian vegetation. All types of wetland and riparian
12 habitat, including open water, were considered potential habitat for these two species.
- 13 ▶ **Sensitive Aquatic Species Habitat.** Effects to sensitive aquatic species, including
14 common shiner, brassy minnow, Iowa darter, stonecat, and cylindrical papershell, were
15 estimated based on acres of impacts to streams where these species are known to occur
16 or have the potential to occur.
- 17 ▶ **Colorado Butterfly Plant / Ute Ladies'-tresses Orchid Habitat.** Effects to the CBP and
18 ULTO were identified based on existing areas of potential habitat for these species as
19 identified by the USFWS and through the habitat assessments conducted in 2006.

20 **3.13.3.1 NO-ACTION ALTERNATIVE**

21 The No-Action Alternative includes major and minor structure rehabilitation, replacement or
22 rehabilitation of existing pavement, and minor safety modifications by 2030. These are
23 actions that would take place regardless of whether any of the proposed improvements in
24 Packages A, B, and the Preferred Alternative occur. The No-Action Alternative is described
25 in detail in **Chapter 2 Alternatives**.

26 The No-Action Alternative would not affect threatened and endangered species. Existing
27 conditions, described in **Section 3.13.2**, would continue. However, with increasing traffic
28 volumes and continuing commercial and residential development in the project area, some
29 effects to threatened, endangered, and special concern species would be expected. Effects
30 from existing traffic volumes would include mortality from vehicle collisions and disturbance
31 from vehicle lights and noise. With increasing traffic and congestion, roadway pollution and
32 sediment runoff may increase, which could eliminate sections of potential habitat and

33

1 increase the possibility for noxious weed invasions. Existing habitat fragmentation due to
2 I-25 would continue. Effects from continued development would include the direct loss of
3 habitat and increasing habitat fragmentation from development.

4 **3.13.3.2 PACKAGE A**

5 Package A includes construction of additional general purpose and auxiliary lanes on I-25,
6 construction and implementation of a commuter rail, and implementation of commuter bus
7 service. The alternatives are described in detail in **Chapter 2 Alternatives**. A discussion of
8 impacts for each Package A component is provided below.

9 *Highway Components*

10 Overall, the effects to threatened and endangered species from Package A highway
11 components would result primarily from road widening, replacement and construction of
12 new bridges, and installation of new lights. The types of effects from highway components
13 include habitat loss, habitat fragmentation, disturbance during construction, and increased
14 mortality from collisions with vehicles. Most disturbances would occur in permanently
15 degraded areas such as mowed ROW adjacent to the existing highway.

16 **Preble's Meadow Jumping Mouse.** Package A highway components A-H2 and A-H3
17 would disturb approximately 0.81 acre of riparian habitat that provides potential occupied
18 habitat for Preble's at the Big Thompson and Little Thompson rivers. The temporary
19 disturbance to riparian habitat during bridge replacement at these two rivers could affect
20 Preble's habitat on these drainages. Direct effects to Preble's could include the loss of
21 potential habitat, mortality from crushing by construction equipment, or disruption of
22 hibernation during winter. Any new street lights near bridges could increase the
23 susceptibility of Preble's to predation. Indirect effects could include increased habitat
24 fragmentation and decreased use of the area as a movement corridor due to the increased
25 width of I-25 bridge crossings of the Big Thompson and Little Thompson rivers. Based on
26 the information above, Package A highway components may affect Preble's or its occupied
27 habitat. Conservation measures developed in coordination with USFWS would ensure this
28 alternative would not adversely affect Preble's or its habitat.

29 Potential direct effects to Preble's habitat from Package A, Package B, and the Preferred
30 Alternative are summarized in **Table 3.13-7**.

31 **Bald Eagle.** Package A highway components would potentially affect bald eagle nests,
32 roosts, and foraging habitat:

- 33 ▶ Current data indicate that the new ELC nest occurs within 0.42 mile of the Package A
34 highway components as of the 2009 – 2010 breeding season; A breeding pair of bald
35 eagles attempted to nest at this location in 2009 and failed. In 2010, the pair
36 established a new nest 0.47 mile from the existing I-25 corridor and within 0.42 mile of
37 the proposed highway improvements in Package A. The nest is on property owned by
38 the Box Elder Water and Sanitation District, and was selected by the eagles despite
39 extensive human activities consisting of regular train traffic on the nearby railroad
40 tracks, aggregate mining and restoration, traffic on I-25 and local roads, and
41 recreational activities along the river. The CDOW recommends buffers and seasonal
42 restrictions within 0.5 mile of an active bald eagle nest from November 15 to July 31.
43 However, CDOW also recognizes that buffers can be altered based on site-specific

1 conditions, such as vegetation screening and individual tolerances to disturbance. The
2 bald eagles at the ELC nest initiated a nest and began breeding activities, and
3 successfully fledged two young, in the midst of extensive human activities described
4 above, indicating a high level of tolerance for existing levels of activity and human
5 disturbance. Package A highway components would also be partially buffered by
6 topography and vegetation. Other new breeding pairs of bald eagles could also
7 construct nests within 0.5 mile of the project area in the future, or a pair of eagles using
8 one of the existing nests could relocate to a new nest closer to the project area. If
9 construction activities occur within 0.5 mile of an active nest during the courting or
10 breeding season, the effects could include behavioral disturbance and potential nest
11 abandonment.

- 12 ▶ Package A highway components would affect 186.50 acres of bald eagle foraging
13 habitat. Bald eagles frequently forage in prairie dog colonies and riparian areas along
14 major streams and rivers in the project area, especially in winter. Long-term impacts
15 include the loss of foraging habitat from road widening or other project components.

16 Potential direct effects to bald eagle forage habitat from Package A, Package B, and the
17 Preferred Alternative are summarized in **Table 3.13-8**.

18 **Black-Tailed Prairie Dog.** Package A highway components would directly affect 45.22 acres
19 of black-tailed prairie dog colonies. Direct effects to black-tailed prairie dogs could include
20 being crushed by machinery or being displaced during construction. Implementation of
21 CDOT's prairie dog policy would result in avoidance or minimization of most impacts to
22 prairie dogs, especially direct mortality due to construction (CDOT, 2009). Prairie dogs would
23 also be indirectly affected by the loss of habitat within the highway ROW as a result of
24 construction and habitat fragmentation. The effects to occupied prairie dog habitat from
25 Packages A, B, and the Preferred Alternative are shown in **Table 3.13-9**.

26 **Western Burrowing Owl.** Package A highway components would affect 45.22 acres of
27 prairie dog colonies, which could indirectly affect burrowing owls because prairie dog
28 colonies provide potential nesting habitat for this species. Direct effects to burrowing owls
29 could include being forced to abandon their nests if construction occurs during the time the
30 owls are present in Colorado from March 1 to October 31, or during the nesting season from
31 April 1 to July 31 (CDOW, 2008). No burrowing owls are known to nest in the project area
32 associated with Package A highway components. For the purposes of comparing impacts
33 between packages, the impacts to prairie dog colonies are considered representative of
34 potential impacts to burrowing owl habitat. The effects to occupied prairie dog habitat from
35 Package A, Package B, and the Preferred Alternative are shown in **Table 3.13-9**.

36 **Great Blue Heron.** Package A highway components would not result in direct effects to great
37 blue heron nesting areas because no impacts would occur within the 500-meter (0.31-mile)
38 buffer from the edge of great blue heron nesting areas recommended by CDOW. Great blue
39 herons would be affected by the loss of foraging habitat in wetland and riparian areas. Impacts
40 to great blue heron foraging areas would be similar to impacts for other riparian species.
41 Indirect impacts could include potential changes in aquatic species composition or abundance
42 that affect the availability of heron prey. Impacts to aquatic resources (and thus impacts to
43 herons) would be small (see **Section 3.7** Water Resources).

44

1 **Northern Leopard Frog and Common Gartersnake.** Package A highway components would
2 affect 15.90 acres of habitat for northern leopard frogs and common gartersnakes. These two
3 species would be affected by the loss or fragmentation of riparian areas and wetlands as a
4 result of construction. Direct effects could include mortality from being crushed by equipment
5 during construction. Indirect effects could include habitat fragmentation and reduced
6 movement between habitat patches on opposite sides of new or widened bridges or culverts.
7 Indirect effects to these two species would result from temporary declines in water quality from
8 the project, but would be expected to be short-term (see **Section 3.7**). The decline in water
9 quality could suffocate and/or poison the adults, young, and eggs of northern leopard frog and
10 common gartersnake. Direct effects to potential northern leopard frog and common
11 gartersnake habitat from Package A, Package B, and the Preferred Alternative are shown in
12 **Table 3.13-10**.

13 **State Threatened, Endangered, and Special Concern Aquatic Species.** Package A
14 highway components would directly affect 0.30 acre of habitat for state threatened,
15 endangered, and special concern aquatic species such as common shiner, brassy minnow,
16 Iowa darter, stonecat, and cylindrical papershell (**Table 3.13-12**). Potential adverse effects to
17 these species during construction would include the temporary loss of habitat during
18 construction of piers, bridges, and concrete box culverts, and other work within streams.
19 Increased erosion during construction could result in increased sediment loads, which would
20 adversely affect sensitive aquatic species. Working directly in streams would increase
21 sediment loads, which could change water temperature and contribute to direct mortality
22 through crushing individuals or smothering and killing eggs. Working directly in streams could
23 also interfere with seasonal movements of sensitive fish species. These impacts would be
24 short-term and would be mitigated through the use of construction best management practices
25 (BMPs). Increases in traffic could result in increased contaminants in roadway runoff, including
26 deicer, and would increase the risk of accidental spills of hazardous materials, which could
27 affect threatened, endangered, and special concern aquatic species. Package A highway
28 components include construction of new water quality ponds, which would result in an indirect
29 benefit to state threatened, endangered, and special concern aquatic species by improving
30 water quality in streams and water bodies downstream compared to the No-Action Alternative.
31 Constructing new concrete box culverts or lengthening existing culverts would adversely affect
32 sensitive aquatic species by increasing shading or replacing natural streambed with concrete.
33 Stream habitat could be potentially improved through the replacement of existing culverts with
34 more numerous culverts or free-spanning bridges. The removal or redesign of drops that act
35 as barriers would also benefit sensitive fish species. Removal of the existing drop structure on
36 St. Vrain Creek just downstream from I-25 is planned as part of the project and would remove
37 a barrier to small fish movement.

38 **Other State Threatened, Endangered, and Species of Special Concern.** Potential impacts
39 to other sensitive species (swift fox, Townsend's big-eared bat, and ferruginous hawk) from
40 Packages A, B and the Preferred Alternative highway components are described in
41 **Table 3.13-11**.

42 **Colorado Butterfly Plant.** No populations or individuals were observed within the project area
43 during the field surveys; therefore, no direct impacts to this species would be anticipated.
44 However, because 2.25 acres of potential habitat would be disturbed by construction activities,
45 presence/absence surveys will be conducted prior to construction. If this species is found
46 during surveys, conservation measures would be developed in consultation with the USFWS
47 to ensure that this alternative would not adversely affect the Colorado Butterfly plant.

1 The addition of a highway lane on either side of the existing roadway would increase
2 impervious surfaces, thereby increasing runoff and exposing the surrounding vegetation to
3 higher levels of pollutants.

4 **Ute Ladies'-tresses Orchid.** No populations or individuals were observed within the project
5 area during the field surveys; therefore, no direct impacts to this species would be anticipated.
6 However, because 4.15 acres of potential habitat would be disturbed by construction activities,
7 presence/absence surveys will be conducted prior to construction. If this species is found
8 during surveys, conservation measures would be developed in consultation with the USFWS
9 to ensure that this alternative would not adversely affect the Ute Ladies'-tresses Orchid.

10 *Transit Components*

11 Effects to federal- or state-listed threatened and endangered species from the transit
12 components of Package A would result primarily from construction of new tracks, replacement
13 and construction of new bridges, and construction of other transit facilities such as new transit
14 stations and water quality ponds. Most disturbances would occur in permanently degraded
15 areas, such as ROW adjacent to the existing tracks, especially for the double-tracked
16 commuter rail line using the existing BNSF railroad track plus one new track from Fort Collins
17 to downtown Longmont (A-T1). The commuter rail segment from Longmont to the FasTracks
18 North Metro end-of-line station in Thornton (A-T2) would consist of a new double-tracked
19 commuter rail line and would be next to existing highways in areas that are less disturbed than
20 other portions of the project area. Impacts to threatened, endangered, and special concern
21 species from the Package A transit components are described below.

22 **Preble's Meadow Jumping Mouse.** Package A transit components would not affect occupied
23 Preble's habitat. Although potentially suitable habitat is present along several drainages
24 affected by Package A transit components, there have been no recent captures of Preble's
25 within most of the suitable habitat; therefore, Package A transit components would have no
26 effects to Preble's or its habitat. Potential direct effects to Preble's habitat for Package A,
27 Package B, and the Preferred Alternative are summarized in **Table 3.13-7**. Actual impacts may
28 be different at the time of construction because new data on Preble's distribution may be
29 available in the future. The effects shown in **Table 3.13-7** are representative of the effects that
30 are expected to occur based on currently available data.

31 **Bald Eagle.** Package A transit components potentially affect bald eagle nests, roosts, and
32 foraging habitat in the following ways:

- 33 ▶ Current data indicate that no active bald eagle nests occur within 0.5 mile of the Package A
34 transit components as of the 2009 – 2010 breeding season; however, several bald eagle
35 nests are known to occur near the project area. New breeding pairs of bald eagles could
36 construct nests within 0.5 mile of the project area in the future, or a pair of eagles using
37 one of the existing nests could relocate to a new nest closer to the project area. If
38 construction activities occur within 0.5 mile of an active nest during the courting or breeding
39 season, the effects could include behavioral disturbance and potential nest abandonment.
- 40 ▶ Package A transit component A-T2 could affect the bald eagle roost on St. Vrain Creek.
41 The proposed rail alignment from Longmont to Thornton would run parallel to SH 119 on
42 the north side of the highway, crossing St. Vrain Creek via a new bridge north of SH 119.
43 Approximately 0.08 acre of riparian habitat that provides suitable perching or roosting sites
44 for bald eagles would be directly affected at this location, and 5.05 acres within the

1 0.25-mile buffer around eagle roosting habitat would also be affected. Although it is unlikely
2 that bald eagles actually roost immediately adjacent to SH 119 – a busy highway, the loss
3 of riparian habitat in this area would reduce the amount of available roosting habitat further
4 downstream. Construction of the commuter rail line in this area could also lead to indirect
5 impacts to roosting bald eagles through increases in noise, vibration, and visual
6 disturbance such as lights from passing trains. Bald eagle roosting areas change from year
7 to year, and new roosting areas could become established or existing roosts could be
8 abandoned by the time of construction; therefore, the effects described above are
9 considered representative of effects that could occur.

- 10 ▶ Package A transit components would affect 17.19 acres of bald eagle foraging habitat.
11 Bald eagles frequently forage in prairie dog colonies and riparian areas along major
12 streams and rivers in the project area, especially in winter. Long-term impacts would
13 include the loss of foraging habitat from road widening or other project components.

14 Potential direct effects to bald eagle forage habitat from Package A are summarized in
15 **Table 3.13-8**. Package B highway components may affect Preble's or its occupied habitat.
16 Conservation measures developed in consultation with the USFWS would ensure this
17 alternative would not adversely affect Prebles' or its habitat.

18 **Black-Tailed Prairie Dog.** Package A transit components would directly affect 15.1 acres of
19 black-tailed prairie dog colonies. Direct effects to black-tailed prairie dogs could include being
20 crushed by machinery or being displaced during construction. Implementation of CDOT's
21 prairie dog policy would result in avoidance or minimization of most impacts to prairie dogs,
22 especially direct mortality due to construction (CDOT, 2005d). Prairie dogs would also be
23 indirectly affected by the loss of habitat within the railroad ROW as a result of construction and
24 by habitat fragmentation. The effects to occupied prairie dog habitat from Package A,
25 Package B, and the Preferred Alternative are shown in **Table 3.13-9**.

26 **Western Burrowing Owl.** The Package A transit component A-T1 would affect 15.1 acres of
27 prairie dog colonies, which could indirectly affect burrowing owls. The types of direct and
28 indirect effects would be the same as for Package A highway components. No burrowing owls
29 are known to nest in the project area associated with Package A transit components. For the
30 purposes of comparing impacts between alternative packages, impacts to prairie dog colonies
31 are considered representative of potential impacts to burrowing owl habitat. The effects to
32 occupied prairie dog habitat from Packages A, B, and the Preferred Alternative are shown in
33 **Table 3.13-9**.

34 **Great Blue Heron.** Package A component A-T1 would result in disturbance to 3.34 acres
35 within the 500-meter (0.31-mile) buffer around a great blue heron nesting area at
36 Ish Reservoir. The 0.31-mile buffer is based on CDOW recommendations. No direct impacts to
37 great blue heron nesting areas would occur. Great blue herons would be affected by the loss
38 of foraging habitat in wetland and riparian areas. Great blue herons could be affected by noise,
39 light, or human encroachment within the 0.31-mile buffer during nesting season, which is
40 approximately March 15 through July 31. The effects could include nest abandonment or
41 reduced nesting success. The impacts to great blue heron foraging areas would be similar to
42 impacts for other riparian and aquatic species.

1 **Northern Leopard Frog and Common Gartersnake.** Package A transit components would
2 affect 4.24 acres of potential habitat for northern leopard frogs and common gartersnakes. The
3 types of effects would be the same as Package A highway components. Direct effects to
4 potential northern leopard frog and common gartersnake habitat from Package A, Package B,
5 and the Preferred Alternative are summarized in **Table 3.13-10**.

6 **State Threatened, Endangered, and Special Concern Aquatic Species.** Package A transit
7 components would directly affect 0.08 acre of habitat for state threatened, endangered, and
8 special concern aquatic species such as common shiner, brassy minnow, Iowa darter,
9 stonecat, and cylindrical papershell (**Table 3.13-11, Section 3.13.3.4**). Potential adverse
10 effects to these species during construction would include the temporary loss of habitat during
11 construction of piers, bridges, culverts, and other work within streams. Accidental spills of
12 hazardous materials in streams could occur during construction, which would adversely affect
13 sensitive aquatic species. Working directly in streams would increase sediment loads, which
14 could indirectly change water temperature and cover eggs. Working directly in streams could
15 also interfere with seasonal movements of sensitive fish species. These impacts would be
16 short-term and would be mitigated through the use of construction BMPs.

17 The Package A transit components include construction of water quality ponds, which would
18 result in an indirect benefit to state threatened, endangered, and special concern aquatic
19 species by improving water quality in streams and water bodies downstream. Construction of
20 new culverts, lengthening existing culverts, or widening existing bridges would adversely affect
21 sensitive aquatic species by replacing the natural streambed with concrete and by increasing
22 shade. Stream habitat could be potentially improved through the replacement of existing
23 culverts with more numerous culverts or free-spanning bridges. The removal or redesign of
24 drops that act as barriers would also benefit sensitive fish species. **Table 3.13-12** summarizes
25 the direct effects to habitat for state-listed threatened, endangered, and special concern
26 aquatic species from Packages A, B, and the Preferred Alternative.

27 In addition to direct impacts to habitat, the project would lead to increases in impervious
28 surface areas, which would lead to increased flows during storm events. Increases in flows
29 could in turn lead to increased channelization and incision of streams, sedimentation, and loss
30 of riparian vegetation (refer to **Section 3.7 Water Resources**). These impacts could result in
31 degraded habitat conditions for state-listed threatened, endangered, and special concern
32 aquatic species. The impacts would be greater for Package B than Package A because
33 Package B would result in a greater increase in impervious surfaces.

34 In addition to effects to habitat from increased flows, increases in impervious surfaces in the
35 project area could also result in increased loads of contaminants in streams. The Driscoll water
36 quality model predicted that loads of several contaminants reaching aquatic habitat after storm
37 events would increase under all three build alternatives compared to the No-Action Alternative,
38 with the Preferred Alternative generally higher than Package A but less than Package B (refer
39 to **Section 3.7 Water Resources**).

40 **Other State Threatened, Endangered, and Species of Special Concern.** Potential impacts
41 to other sensitive species (swift fox, Townsend's big-eared bat, and ferruginous hawk) from
42 Package A transit components are described in **Table 3.13-11**.

43 **Colorado Butterfly Plant.** No CBP populations or individuals were observed in the project area
44 during the field surveys; therefore, no direct impacts to this species would be anticipated. No
45 areas of potential habitat were identified for this species within the transit component corridors;

1 however, since considerable time will lapse between when these surveys were conducted and
2 when construction will begin, presence/absence surveys for this species will be necessary prior
3 to construction. If this species is found during surveys, conservation measures would be
4 developed in consultation with the USFWS to endure that this alternative would not adversely
5 affect Colorado Butterfly Plant.

6 **Ute Ladies'-tresses Orchid.** No ULTO populations or individuals were observed during habitat
7 assessments; therefore, no direct impacts would be anticipated to this species. No areas of
8 potential habitat were identified for this species within the transit component corridors; since
9 considerable time will lapse between when these surveys were conducted and when
10 construction will begin, presence/absence surveys for this species will be necessary prior to
11 construction. If this species is found during surveys, conservation measures would be developed
12 in consultation with the USFWS to endure that this alternative would not adversely affect
13 Ute Ladies'-tresses orchid.

14 **3.13.3.3 PACKAGE B**

15 Package B includes construction of tolled express lanes on I-25, and the implementation of
16 bus rapid transit service. The alternatives are described in detail in **Chapter 2 Alternatives**.
17 Impacts from each Package B component are described below.

18 *Highway Components*

19 Overall, the effects on threatened and endangered species from Package B highway
20 components would result primarily from road widening, and replacement and construction of
21 new bridges. The types of effects from highway components would be the same as Package A
22 highway components. The effects to threatened, endangered, and species of concern from
23 Package B highway components are described below.

24 **Preble's Meadow Jumping Mouse.** Package B highway components would disturb
25 approximately 0.80 acre of riparian habitat that provides potentially occupied habitat for
26 Preble's at the Big Thompson and Little Thompson rivers. The types of direct and indirect
27 effects would be the same as Package A highway components. Package B highway
28 components may affect Preble's or its occupied habitat. Conservation measures developed in
29 consultation with the USFWS would ensure this alternative would not adversely affect Prebles'
30 or its habitat. Potential direct effects to Preble's habitat for Packages A, B, and the Preferred
31 Alternative are summarized in **Table 3.13-7**. The actual impacts may be different at the time of
32 construction because new data on Preble's distribution may be available in the future. The
33 effects shown in **Table 3.13-7** are representative of the effects that are expected to occur
34 based on currently available data.

35 **Bald Eagle.** Package B highway components that would potentially affect bald eagle nests,
36 roosts, and foraging habitat are:

- 37 ▶ Current data indicate that no active nests occur within 0.5 mile of the Package B highway
38 components as of the 2009 – 2010 breeding season. The types of impacts would be the
39 same as Package A highway components if a pair of bald eagles were to nest within
40 0.5 mile of the project area.
- 41 ▶ Package B would affect 2.01 acres of roost habitat along the Big Thompson River at I-25.
42 The types of impacts from lighting would be the same as Package A highway components.

- 1 ▶ Package B highway components would affect 230.68 acres of bald eagle foraging habitat.
2 The types of impacts would be the same as Package A highway components.

3 Potential direct effects to bald eagle forage habitat are summarized in **Table 3.13-8**.

4 **Black-Tailed Prairie Dog.** Package B highway components would directly affect 91.14 acres
5 of black-tailed prairie dog colonies. The types of effects would be the same as Package A
6 highway components. The effects to occupied prairie dog habitat from Package A, Package B,
7 and the Preferred Alternative are shown in **Table 3.13-9**.

8 **Western Burrowing Owl.** Package B highway components would affect 91.14 acres of prairie
9 dog colonies, which could indirectly affect burrowing owls because prairie dog colonies provide
10 potential nesting habitat for burrowing owls. The types of effects would be the same as
11 Package A highway components. No burrowing owls are known to nest in the project area
12 associated with Package B highway components. For the purposes of comparing impacts
13 between packages, the impacts to prairie dog colonies are considered representative of
14 potential impacts to burrowing owl habitat. The effects to occupied prairie dog habitat from
15 Packages A, B, and the Preferred Alternative are shown in **Table 3.13-9**.

16 **Great Blue Heron.** Package B highway components would not result in direct effects to great
17 blue heron nesting areas because no impacts would occur within the CDOW-recommended
18 500-meter (0.31-mile) buffer from the edge of great blue heron nesting areas. Indirect effects
19 to great blue herons would be similar to impacts from Package A highway components. The
20 impacts would include the loss of foraging habitat in wetland and riparian areas and potential
21 changes in aquatic species composition or abundance that affect the availability of heron prey.
22 Impacts to aquatic resources (and thus impacts to herons) would be small (see **Section 3.7**
23 *Water Resources*).

24 **Northern Leopard Frog and Common Gartersnake.** Package B highway components would
25 affect 20.76 acres of habitat for northern leopard frogs and common gartersnakes. The types
26 of effects to these two species would be the same as Package A highway components. Direct
27 effects to potential northern leopard frog and common gartersnake habitat from Packages A,
28 B, and the Preferred Alternative are shown in **Table 3.13-10**.

29 **State Threatened, Endangered, and Special Concern Aquatic Species.** Package B
30 highway components would directly affect 0.35 acre of habitat for state threatened,
31 endangered, and special concern aquatic species such as common shiner, brassy minnow,
32 Iowa darter, stonecat, and cylindrical papershell. The types of effects would be the same as
33 Package A highway components. As with Package A transit components, the construction of
34 water quality ponds as part of the project would likely result in a net benefit to water quality and
35 to sensitive aquatic species by improving water quality in streams downstream from the project
36 area. **Table 3.13-12** summarizes direct effects to habitat for state-listed threatened,
37 endangered, and special concern aquatic species from Packages A, B, and the Preferred
38 Alternative.

39 **Other State Threatened, Endangered, and Species of Special Concern.** Potential impacts
40 to other sensitive species (swift fox, Townsend's big-eared bat, and ferruginous hawk) from
41 Package B highway components are summarized in **Table 3.13-11**.

42

1 **Colorado Butterfly Plant.** No CBP populations or individuals were observed in the project
2 area during the field surveys; therefore, no direct impacts to these species would be
3 anticipated. However, because 2.42 acres of potential habitat would be disturbed by
4 construction activities, presence/absence surveys will be conducted prior to construction. If this
5 species is found during surveys, conservation measures would be developed in consultation
6 with the USFWS to ensure that this alternative would not adversely affect the Colorado
7 Butterfly plant.

8 The improvements on either side of the existing roadway would increase impervious surfaces,
9 thereby increasing runoff and exposing the surrounding vegetation to higher levels of
10 pollutants.

11 **Ute Ladies'-tresses Orchid.** No ULTO populations or individuals were observed in the project
12 area during the field surveys; therefore, no direct impacts to this species would be anticipated.
13 However, because 4.85 acres of potential habitat would be disturbed by construction activities,
14 presence/absence surveys will be conducted prior to construction. If this species is found
15 during surveys, conservation measures would be developed in consultation with the USFWS
16 to ensure that this alternative would not adversely affect the Ute Ladies'-tresses orchid.

17 *Transit Components*

18 Overall, effects on threatened, endangered, and special concern species from Package B
19 transit components would result from construction of new transit stations, parking lots, and
20 queue jumps. The types of impacts would include habitat loss and disturbance during
21 construction. Most habitat loss would occur in permanently degraded areas. The effects to
22 threatened, endangered, and special concern species are described below.

23 **Preble's Meadow Jumping Mouse.** No effects to Preble's would occur from Package B
24 transit components because no occupied habitat would be affected. Potential direct effects to
25 Preble's habitat for Packages A, B, and the Preferred Alternative are summarized in
26 **Table 3.13-7.**

27 **Bald Eagle.** No effects to bald eagle nests, roosts, or foraging habitat would occur from
28 Package B transit components. Potential direct effects to bald eagle forage habitat from
29 Packages A, B, and the Preferred Alternative are summarized in **Table 3.13-8.**

30 **Black-Tailed Prairie Dog.** Package B transit components would directly affect 6.25 acres of
31 black-tailed prairie dog colonies. The types of effects would be the same as Package A
32 highway components. The effects to occupied prairie dog habitat from Packages A, B, and the
33 Preferred Alternative are shown in **Table 3.13-9.**

34 **Western Burrowing Owl.** Package B transit components would affect 6.25 acres of prairie
35 dog colonies, which could indirectly affect burrowing owls because prairie dog colonies provide
36 potential nesting habitat for burrowing owls. The types of effects would be the same as
37 Package A highway components. No burrowing owls are known to nest in the project area
38 associated with Package B highway components. The effects to occupied prairie dog habitat
39 from Packages A, B, and the Preferred Alternative are shown in **Table 3.13-9.**

40 **Great Blue Heron.** Package B transit components would not result in direct effects to great
41 blue heron nesting areas because no impacts would occur within the CDOW-recommended
42 500-meter (0.31-mile) buffer from the edge of great blue heron nesting areas.

1 **Northern Leopard Frog and Common Gartersnake.** Package B transit components would
2 affect 0.52 acre of habitat for northern leopard frogs and common gartersnakes. The types of
3 effects to these two species would be the same as Package A highway components. Direct
4 effects to potential northern leopard frog and common gartersnake habitat from
5 Packages A, B, and the Preferred Alternative are shown in **Table 3.13-10**.

6 **State Threatened, Endangered, and Special Concern Aquatic Species.** Package B transit
7 components would not affect habitat for state threatened, endangered, and special concern
8 aquatic species such as common shiner, brassy minnow, Iowa darter, stonecat, and cylindrical
9 papershell. **Table 3.13-12** summarizes direct effects to habitat for state-listed threatened,
10 endangered, and special concern aquatic species from Packages A, B, and the Preferred
11 Alternative.

12 **Other State Threatened, Endangered, and Species of Special Concern.** Potential impacts
13 to other sensitive species (swift fox, Townsend's big-eared bat, and ferruginous hawk) from
14 Package B transit components are summarized in **Table 3.13-11**.

15 **Colorado Butterfly Plant.** The types of effects on CBP would be the same as Package A
16 transit components.

17 **Ute Ladies'-tresses Orchid.** The types of effects on ULTO would be the same as Package A
18 transit components.

19 **3.13.3.4 PREFERRED ALTERNATIVE**

20 The Preferred Alternative includes construction of additional general purpose lanes and tolled
21 express lanes on I-25, construction and implementation of commuter bus and express bus
22 service, and implementation of commuter rail. The components of the Preferred Alternative are
23 described in detail in **Chapter 2 Alternatives**. **Tables 3.13-7** through **3.13-12** provide a
24 comparison of Package A, B, and the Preferred Alternative. Detailed descriptions of the
25 impacts of the Preferred Alternative are provided in the PBA (ERO, 2011b)

26 *Preferred Alternative I-25 Improvements Component*

27 Direct effects on wildlife from the Preferred Alternative highway improvements component
28 would result primarily from road widening and replacement and construction of new bridges.
29 The types of effects from the highway components would include habitat loss, habitat
30 fragmentation, and disturbance during construction. Indirect effects include impacts to water
31 quality from increased sedimentation, increased traffic resulting in increased wildlife mortality,
32 and increased disturbance from vehicle lights. Most permanent habitat loss would occur in
33 permanently degraded areas such as mowed ROW adjacent to the existing highway. The
34 effects to threatened, endangered, and special concern species from the Preferred Alternative
35 highway improvements component are described below.

36 The effects on threatened, endangered, and special concern species from the Preferred
37 Alternative highway components would result primarily from road widening and replacement
38 and construction of new bridges. The types of effects from highway components would be the
39 same as Package A and Package B highway components. The effects to threatened,
40 endangered, and species of concern from the Preferred Alternative highway components are
41 described below.

1 **Preble's Meadow Jumping Mouse.** The Preferred Alternative highway components would
2 disturb approximately 0.72 acre of potentially occupied Preble's habitat at the Big Thompson
3 and Little Thompson rivers. The types of direct and indirect effects would be the same as
4 Package A highway components. The Preferred Alternative would result in less impacts
5 (0.72 acre) to occupied Preble's habitat than either Package A (0.81 acre) or Package B
6 (0.80 acre) The Preferred Alternative highway improvement components may affect Preble's
7 or its occupied habitat. Conservation measures developed in consultation with the USFWS
8 would ensure this alternative would not adversely affect Preble's or its habitat. The potential
9 direct effects to Preble's habitat for Packages A, B, and the Preferred Alternative are
10 summarized in **Table 3.13-7**. The actual impacts may be different at the time of construction
11 because new data on Preble's distribution may be available in the future. The effects shown in
12 **Table 3.13-7** are representative of the effects that are expected to occur based on currently
13 available data.

14 **Bald Eagle.** The Preferred Alternative highway components that would potentially affect bald
15 eagle nests, roosts, and foraging habitat are:

- 16 ▶ Current data indicate that one active nest occurs within 0.5 mile of the Preferred Alternative
17 highway components as of the 2009 – 2010 breeding season. The types of impacts would
18 be the same as Package A highway components if the ELC bald eagles continue to nest
19 within 0.5 mile of the project area or if a new nest is established within 0.5 mile of the
20 Preferred Alternative highway components.
- 21 ▶ The roost at Fossil Creek Reservoir would not be adversely affected by the Preferred
22 Alternative highway components because the proposed work in this area consists of
23 upgrading interchange and frontage roads, and because the roost is separated from the
24 highway by existing and proposed development. The types of impacts from lighting would
25 be the same as Package A highway components.
- 26 ▶ The Preferred Alternative highway components would affect 211.05 acres of bald eagle
27 foraging habitat. The types of impacts would be the same as Package A highway
28 components.

29 Potential direct effects to bald eagle forage habitat are summarized in **Table 3.13-8**.

30 **Black-Tailed Prairie Dog.** The Preferred Alternative highway components would directly
31 affect 70.98 acres of black-tailed prairie dog colonies. The types of effects would be the same
32 as Package A highway components, but the magnitude of effects is more than Package A
33 (45.22 acres) and less than Package B (91.14 acres). The effects to occupied prairie dog
34 habitat from Packages A, B, and the Preferred Alternative are shown in **Table 3.13-9**.

35 **Western Burrowing Owl.** The Preferred Alternative highway components would affect
36 70.98 acres of prairie dog colonies, which could indirectly affect burrowing owls because
37 prairie dog colonies provide potential nesting habitat for burrowing owls. The types of effects
38 would be the same as Package A and Package B highway components, but the magnitude of
39 effects is more than Package A (45.22 acres) and less than Package B (97.39 acres). No
40 burrowing owls are known to nest in the project area associated with the Preferred Alternative
41 highway components. For the purposes of comparing impacts between packages, the impacts
42 to prairie dog colonies are considered representative of potential impacts to burrowing owl
43 habitat. The effects to occupied prairie dog habitat from Packages A, B, and the Preferred
44 Alternative are shown in **Table 3.13-9**.

1 **Great Blue Heron.** The Preferred Alternative highway components would not result in direct
2 effects to great blue heron nesting areas because no impacts would occur within the CDOW-
3 recommended 500-meter (0.31-mile) buffer from the edge of great blue heron nesting areas.
4 Indirect effects to great blue herons would be similar to impacts from Package A highway
5 components. The impacts would include the loss of foraging habitat in wetland and riparian
6 areas and potential changes in aquatic species composition or abundance that affect the
7 availability of heron prey. Impacts to aquatic resources (and thus impacts to herons) would be
8 small (see **Section 3.7 Water Resources**).

9 **Northern Leopard Frog and Common Gartersnake.** The Preferred Alternative highway
10 components would affect 13.40 acres of habitat for northern leopard frogs and common
11 gartersnakes. The types of effects to these two species would be the same as Package A
12 highway components. Direct effects to potential northern leopard frog and common
13 gartersnake habitat from Packages A, B, and the Preferred Alternative are shown in
14 **Table 3.13-10**).

15 **Other State Threatened, Endangered, and Species of Special Concern.** Potential impacts
16 to other sensitive species (swift fox, Townsend's big-eared bat, and ferruginous hawk) from the
17 Preferred Alternative highway components are summarized in **Table 3.13-11**.

18 **State Threatened, Endangered, and Special Concern Aquatic Species.** The Preferred
19 Alternative highway components would directly affect 0.29 acre of habitat for state threatened,
20 endangered, and special concern aquatic species such as common shiner, brassy minnow,
21 Iowa darter, stonecat, and cylindrical papershell. The types of effects would be the same as
22 Package A highway components. As with Package A transit components, the construction of
23 water quality ponds as part of the project would likely result in a net benefit to water quality and
24 to sensitive aquatic species by improving water quality in streams downstream from the project
25 area. **Table 3.13-12** summarizes the direct effects to habitat for state-listed threatened,
26 endangered, and special concern aquatic species from Packages A, B, and the Preferred
27 Alternative.

28 **Colorado Butterfly Plant.** No CBP populations or individuals were observed in the project
29 area during the field surveys; therefore, no direct impacts to these species are anticipated.
30 However, because 2.42 acres of potential habitat would be disturbed by construction activities,
31 presence/absence surveys are recommended will be conducted prior to construction. If this
32 species is found during surveys, conservation measures would be developed in consultation
33 with the USFWS to ensure that this alternative would not adversely affect the CBP.

34 The improvements on either side of the existing road would increase impervious surfaces,
35 thereby increasing runoff and exposing the surrounding vegetation to higher levels of
36 pollutants.

37 **Ute Ladies'-tresses Orchid.** No ULTO populations or individuals were observed in the project
38 area during the field surveys; therefore, no direct impacts to this species are anticipated.
39 However, because 4.85 acres of potential habitat would be disturbed by construction activities,
40 presence/absence surveys will be conducted prior to construction. If this species is found
41 during surveys, conservation measures would be developed in consultation with the USFWS
42 to ensure that this alternative would not adversely affect the ULTO.

43

1 *Transit Components*

2 The effects on threatened, endangered, and special concern species from the Preferred
3 Alternative transit components would result from construction of new transit stations, parking
4 lots, and queue jumps. The types of impacts would include habitat loss and disturbance during
5 construction. Most habitat loss would occur in permanently degraded areas. The effects to
6 threatened, endangered, and special concern species are described below.

7 **Preble's Meadow Jumping Mouse.** No effects to Preble's would occur from the Preferred
8 Alternative transit components because no occupied habitat would be affected. Potential direct
9 effects to Preble's habitat from Packages A, B, and the Preferred Alternative are summarized
10 in **Table 3.13-7**.

11 **Bald Eagle.** No effects to bald eagle nests would occur from the Preferred Alternative transit
12 components, although the alternative approaches the 0.5 mile nesting buffer of the
13 Longmont/St Vrain nest. The Preferred Alternative transit components would affect
14 20.15 acres of bald eagle foraging habitat. The rail transit crossing at St. Vrain Creek would
15 affect 5.05 acres within the 0.25-mile buffer around eagle roosting habitat. The types of
16 impacts would be the same as Package A highway components. Potential direct effects to bald
17 eagle forage habitat from Packages A, B, and the Preferred Alternative are summarized in
18 **Table 3.13-8**.

19 **Black-Tailed Prairie Dog.** The Preferred Alternative transit components would directly affect
20 15.43 acres of black-tailed prairie dog colonies. The types of effects would be the same as
21 Package A highway components. The effects to occupied prairie dog habitat from Package A,
22 Package B, and the Preferred Alternative are shown in **Table 3.13-9**.

23 **Western Burrowing Owl.** The Preferred Alternative transit components would affect
24 15.43 acres of prairie dog colonies, which could indirectly affect burrowing owls because
25 prairie dog colonies provide potential nesting habitat for burrowing owls. The types of effects
26 would be the same as Package A highway components. No burrowing owls are known to nest
27 in the project area associated with Preferred Alternative highway components. The effects to
28 occupied prairie dog habitat from Packages A, B, and the Preferred Alternative are shown in
29 **Table 3.13-9**.

30 **Great Blue Heron.** The Preferred Alternative transit components would not result in direct
31 effects to great blue heron nesting areas because no impacts would occur within the CDOW-
32 recommended 500-meter (0.31-mile) buffer from the edge of great blue heron nesting areas.

33 **Northern Leopard Frog and Common Gartersnake.** The Preferred Alternative transit
34 components would affect 4.09 acres of habitat for northern leopard frogs and common
35 gartersnakes. The types of effects to these two species would be the same as Package A
36 highway components. Direct effects to potential northern leopard frog and common
37 gartersnake habitat from Package A, Package B, and the Preferred Alternative are shown in
38 **Table 3.13-10**.

39 **Other State Threatened, Endangered, and Species of Special Concern.** Potential impacts
40 to other sensitive species (swift fox, Townsend's big-eared bat, and ferruginous hawk) from the
41 Preferred Alternative transit components are summarized in **Table 3.13-11**.

42

1 **State Threatened, Endangered, and Special Concern Aquatic Species.** The Preferred
2 Alternative transit components would affect 0.09 acre of habitat for state threatened,
3 endangered, and special concern aquatic species such as common shiner, brassy minnow,
4 Iowa darter, stonecat, and cylindrical papershell. **Table 3.13-12** summarizes the direct effects
5 to habitat for state-listed threatened, endangered, and special concern aquatic species from
6 Package A, Package B, and the Preferred Alternative.

7 **Colorado Butterfly Plant.** The types of effects on CBP would be the same as Package A
8 transit components.

9 **Ute Ladies'-tresses Orchid.** The types of effects on ULTO would be the same as Package A
10 transit components.

11 **3.13.3.5 SUMMARY OF IMPACTS TO FEDERALLY PROTECTED SPECIES**

12 **Table 3.13-7** summarizes potential direct effects to Preble's habitat for Packages A, B, and the
13 Preferred Alternative. Actual impacts may be different at the time of construction because new
14 data on Preble's distribution may be available in the future. The effects shown in **Table 3.13-7**
15 are representative of the effects that are expected to occur based on currently available data.

16 Coordination with the USFWS has been ongoing and in July 2011, a Programmatic Biological
17 Assessment was submitted to the USFWS with a request for a Biological Opinion (BO). The
18 BO is required prior to the Record of Decision. Because of continuous coordination with the
19 USFWS on this project, the risk of a BO that would modify the project is low.

20

1 Table 3.13-7 Summary of Effects to Occupied Preble's Habitat by Component

Component		Acres of Habitat	Component		Acres of Habitat	Component	Acres of Habitat
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	0.72
AH-2	General Purpose Improvements: SH 14 to SH 60	0.53	BH-2	Tolled Express Lanes: SH 14 to SH 60	0.52		
AH-3	General Purpose Improvements: SH 60 to E-470	0.28	BH-3	Tolled Express Lanes: SH 60 to E-470	0.28		
AH-4	Structure Upgrades: E-470 to US 36	0	BH-4	Tolled Express Lanes: E-470 to US 36	0		
Total Package A Highway		0.81	Total Package B Highway		0.80	Total Preferred Alternative Highway:	0.72
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
Total Package A Transit:		0	Total Package B Transit:		0	Total Preferred Alternative Transit	0
Total Package A:		0.81	Total Package B:		0.80	Total Preferred Alternative	0.72

3.13.3.6 SUMMARY OF IMPACTS TO NON-FEDERALLY PROTECTED SPECIES

Table 3.13-8 through **Table 3.13-12** summarize effects to non-federally protected threatened, endangered, and special concern species by component.

Bald eagles frequently forage in prairie dog colonies and riparian areas along major streams and rivers in the regional study area, especially in winter. Long-term impacts from road widening or other project components could include the loss of foraging habitat or displacement of eagles from foraging habitat. Direct loss of bald eagle foraging habitat is based on both winter and summer forage habitat mapped by CDOW (NDIS, 2010).

Table 3.13-8 summarizes effects to bald eagle foraging habitat by component.

Table 3.13-8 Summary of Effects to Bald Eagle Forage Habitat by Component

Component		Forage Habitat	Component		Forage Habitat	Component		Forage Habitat ¹
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	211.05	
AH-2	General Purpose Improvements: SH 14 to SH 60	166.42	BH-2	Tolled Express Lanes: SH 14 to SH 60	187.05			
AH-3	General Purpose Improvements: SH 60 to E-470	20.08	BH-3	Tolled Express Lanes: SH 60 to E-470	20.31			
AH-4	Structure Upgrades: E-470 to US 36	0	BH-4	Tolled Express Lanes: E-470 to US 36	23.32			
Total Package A Highway:		186.5	Total Package B Highway:		230.68	Total Preferred Alternative Highway:		211.05
Package A Transit Components			Package B Transit Components			Preferred Alternative Transit Components		
A-T1	Commuter Rail: Fort Collins to Longmont	6.18	B-T1	BRT: Fort Collin/Greeley to Denver	0	I-25 Express Bus	0	
A-T2	Commuter Rail: Longmont to North Metro	4.92	B-T2	BRT: Fort Collins to DIA	0	US 85 Commuter Bus	4.24	
AT-3/ AT-4	Commuter Bus: Greeley to Denver and DIA	6.09				Commuter Rail Transit	15.91	
Total Package A Transit:		17.19	Total Package B Transit:		0	Total Preferred Alternative Transit		20.15
Total Package A:		203.69	Total Package B:		230.68	Total Preferred Alternative		231.20

¹Forage habitat is defined by NDIS, 2010

1 **Table 3.13-9** summarizes direct effects to black-tailed prairie dog habitat by component. Many
 2 prairie dog colonies in the project area are within private property that is likely to be developed
 3 in the near future. Other prairie dog colonies are adjacent to undeveloped land and have the
 4 potential to expand in the future. Prairie dog colonies are also occasionally affected by sylvatic
 5 plague, which may wipe out a colony or greatly reduce the number of prairie dogs. For all of
 6 these reasons, the area of occupied prairie dog habitat affected by the project is likely to be
 7 different from current conditions at the time of construction. The quantities in **Table 3.13-9** are
 8 considered representative of impacts that could occur.

9 **Table 3.13-9 Summary of Effects to Black-Tailed Prairie Dog Occupied Habitat by**
 10 **Component**

Component		Acres Occupied Habitat	Component		Acres Occupied Habitat	Component	Acres Occupied Habitat
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	70.98
AH-2	General Purpose Improvements: SH 14 to SH 60	24.50	BH-2	Tolled Express Lanes: SH 14 to SH 60	34.12		
AH-3	General Purpose Improvements: SH 60 to E-470	20.72	BH-3	Tolled Express Lanes: SH 60 to E-470	20.43		
AH-4	Structure Upgrades: E-470 to US 36	0	BH-4	Tolled Express Lanes: E-470 to US 36	36.58		
Total Package A Highway:		45.22	Total Package B Highway:		91.14	Total Preferred Alternative Highway:	70.98
Package A Transit Components			Package B Transit Components			Preferred Alternative Transit Components	
A-T1	Commuter Rail: Fort Collins to Longmont	0.11	B-T1	BRT: Fort Collins/Greeley to Denver	6.25	I-25 Express Bus	6.69
A-T2	Commuter Rail: Longmont to North Metro	7.67	B-T2	BRT: Fort Collins to DIA	0	US 85 Commuter Bus	1.31
AT-3/ AT-4	Commuter Bus: Greeley to Denver and DIA	7.32				Commuter Rail Transit	7.43
Total Package A Transit:		15.10	Total Package B Transit:		6.25	Total Preferred Alternative Transit	15.43
Total Package A:		60.32	Total Package B:		97.39	Total Preferred Alternative	86.41

1 **Table 3.13-10** summarizes effects to potential northern leopard frog and common gartersnake
2 habitat by component.

3 **Table 3.13-10 Summary of Effects to Potential Northern Leopard Frog and Common**
4 **Gartersnake Habitat by Component**

Component		Habitat ¹ (acres)	Component		Habitat ¹ (acres)	Component	Habitat ¹ (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	13.40
AH-2	General Purpose Improvements: SH 14 to SH 60	10.62	BH-2	Tolled Express Lanes: SH 14 to SH 60	14.27		
AH-3	General Purpose Improvements: SH 60 to E-470	5.28	BH-3	Tolled Express Lanes: SH 60 to E-470	5.52		
AH-4	Structure Upgrades: E-470 to US 36	0	BH-4	Tolled Express Lanes: E-470 to US 36	0.97		
Total Package A Highway:		15.90	Total Package B Highway:		20.76	Total Preferred Alternative Highway:	13.40
Package A Transit Components			Package B Transit Components			Preferred Alternative Transit Components	
A-T1	Commuter Rail: Fort Collins to Longmont	0.75	B-T1	BRT: Fort Collins/Greeley to Denver	0.52	I-25 Express Bus	0.71
A-T2	Commuter Rail: Longmont to North Metro	3.49	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	3.38
Total Package A Transit:		4.24	Total Package B Transit:		0.52	Total Preferred Alternative Transit	4.09
Total Package A:		20.14	Total Package B:		21.28	Total Preferred Alternative	17.49

¹Wetlands and Riparian vegetation are considered potential habitat for these species

1 **Table 3.13-11** summarizes impacts to other state threatened, endangered, and species of
2 concern.

3 **Table 3.13-11 Summary of Effects to Other State Threatened, Endangered, and**
4 **Species of Special Concern Potentially Affected by Packages A, B, and**
5 **the Preferred Alternative**

Common Name	Type of Effect	Relative Magnitude of Effect
Swift fox	Potential loss of foraging habitat and displacement during and after construction.	Low – disturbed areas would be low quality habitat for this species, on fringes of occupied range.
Townsend's big-eared bat	Potential loss of foraging habitat and displacement during and after construction.	Low – no caves or mines that could provide roosting or hibernation sites would be affected.
Ferruginous hawk	Potential loss of foraging habitat.	Low – no nesting habitat would be disturbed

6 **Table 3.13-12** summarizes direct impacts to habitat for state threatened, endangered, and
7 special concern aquatic species by component.

8 **Table 3.13-12 Summary of Direct Effects to Habitat for State Threatened,**
9 **Endangered, and Special Concern Aquatic Species from Packages A, B,**
10 **and the Preferred Alternative**

Component	Aquatic Habitat (Species Potentially Affected)	Activity	Acres Directly Affected
Package A Highway Components			
A-H1: Safety Improvements: SH 1 to SH 14	N/A	N/A	0
A-H2: General Purpose Improvements: SH 14 to SH 60	Cache la Poudre River (brassy minnow and Iowa darter)	Replace existing bridges at I-25 northbound, I-25 southbound, and Harmony Road	0.15
	Big Thompson River (Iowa darter)	Replace existing bridges at I-25 northbound, I-25 southbound, and I-25 service road	0.15
A-H3: General Purpose Improvements: SH 60 to E-470	St. Vrain Creek (common shiner, brassy minnow, Iowa darter, and stonecat)	No activity at existing bridges over I-25	0
A-H4: Structure Upgrades: E-470 to US 36	N/A	N/A	0
Total Package A Highway:			0.30
Package A Transit Components			
A-T1: Commuter Rail: Fort Collins to Longmont	Big Thompson River (Iowa darter)	Construct new tracks and crossing adjacent to existing crossing	0
A-T2: Commuter Rail: Longmont to North Metro	St. Vrain Creek (common shiner, brassy minnow, Iowa darter, and stonecat)	Construct new rail alignment and bridge on north side of SH 119	0.08
A-T3/A-T4: Commuter Bus: Greeley to Denver and DIA	N/A	N/A	0
Total Package A Transit:			0.08

1 **Table 3.13-12 Summary of Direct Effects to Habitat for State Threatened,**
2 **Endangered, and Special Concern Aquatic Species from Packages A, B,**
3 **and the Preferred Alternative (cont'd)**

Component	Aquatic Habitat (Species Potentially Affected)	Activity	Acres Directly Affected
Package B Highway Components			
B-H1: Safety improvements: SH 1 to SH 14	N/A	N/A	0
B-H2: Tolled Express Lanes: SH 14 to SH 60	Cache la Poudre River (brassy minnow and Iowa darter)	Replace existing bridges at I-25 northbound, I-25 southbound, and Harmony Road	0.20
	Big Thompson River (Iowa darter)	Replace existing bridges at I-25 northbound, I-25 southbound, and I-25 service road	0.15
B-H3: Tolled Express Lanes: SH 60 to E-470	St. Vrain Creek (common shiner, brassy minnow, Iowa darter, and stonecat)	No activity at existing bridges over I-25	0
B-H4: Tolled Express Lanes: E-470 to US 36	N/A	N/A	0
Total Package B Highway:			0.35
Package B Transit Components			
B-T1: BRT: Fort Collins/Greeley to Denver	N/A	N/A	0
B-T2: BRT: Fort Collins/Greeley to DIA	N/A	N/A	0
Total Package B Transit:			0
Preferred Alternative Highway Components			
I-25 Improvements: SH 14 to SH 66	Cache la Poudre River (brassy minnow and Iowa darter)	Replace existing bridges at I-25 northbound, I-25 southbound, and Harmony Road	0.15
I-25 Improvements: SH 60 to SH 7	Big Thompson River (Iowa darter)	Replace existing bridges at I-25 northbound, I-25 southbound, and I-25 service road	0.14
	St. Vrain River (common shiner, brassy minnow, Iowa darter, and stonecat)	No action at existing bridges at I-25	0
Total Preferred Alternative Highway:			0.29
Preferred Alternative Transit Components			
Commuter Rail Transit	Big Thompson River (Iowa darter)	Construct new tracks and crossing adjacent to existing crossing	0.03
	St. Vrain River (common shiner, brassy minnow, Iowa darter, and stonecat)	Construct new rail alignment and bridge on the north side of SH 119	0.06
Total Preferred Alternative Transit:			0.09

4

1 **Table 3.13-13** summarizes the direct impacts to threatened, endangered, other federally-
2 protected and state sensitive species for Packages A, B, and the Preferred Alternative by
3 component.

4 **Table 3.13-13 Summary of Direct Effects to Threatened, Endangered, Other**
5 **Federally-Protected and State Sensitive Species by Component, in**
6 **Acres**

Component	Preble's Habitat	Bald Eagle Forage	Bald Eagle Roosts	Prairie Dogs	N. Leopard Frog and C. Gartersnake	Sensitive Fish Species
Package A Highway Components	0.81	186.50	1.98	45.22	15.90	0.30
Package A Transit Components	0	17.19	5.05	15.1	4.24	0.08
Total of Effects for Package A	0.81	203.69	7.03	60.32	20.14	0.38
Package B Highway Components	0.80	230.68	2.01	91.14	20.76	0.35
Package B Transit Components	0	0	0	6.25	0.52	0
Total of Effects for Package B	0.80	230.68	2.01	97.39	21.28	0.35
Preferred Alternative Highway Components	0.72	211.05	0	70.98	13.40	0.29
Preferred Alternative Transit Components	0	20.15	5.05	15.43	4.09	0.09
Total of Effects for Preferred Alternative	0.72	231.20	5.05	86.41	17.49	0.38

7 **3.13.4 Indirect Impacts For All Build General Purpose Lanes,**
8 **Commuter Rail, and Tolled Express Lanes**

9 The addition of a highway lane on either side of the roadway, the installation of commuter rail
10 lines, or the installation of interchanges or commuter stations would increase impervious
11 surfaces, thereby increasing runoff and exposing the surrounding vegetation to higher levels of
12 pollutants. Soil disturbance from construction equipment would create favorable conditions for
13 weedy species to further establish in areas of potential habitat for threatened or endangered
14 species. The invasion of noxious weeds into potential habitat is one of the greatest threats to
15 species of special concern.

16 Other indirect impacts include the decrease or elimination of upland tree and/or shrub buffers
17 between the proposed roadway and vegetation areas adjacent to perennial and intermittent
18 waterways. Buffers filter pollutants before they reach wetlands, streams, and lakes, as well as
19 provide habitat for wildlife.

20 Because the proposed roadway and rail alignments primarily follow existing lines, existing
21 vegetation communities including potential habitat for threatened and endangered species
22 currently receive indirect effects from roadway, railway, and maintenance activities. However,
23 the magnitude of indirect effects could increase with implementation of Package A or
24 Package B.

25

3.13.5 Mitigation Measures

This section describes recommendations for reducing or mitigating proposed project impacts to threatened and endangered species, and presents possible mitigation opportunities. Whenever possible, mitigation measures to avoid or reduce impacts to threatened and endangered species were incorporated into the alternative, including avoiding sensitive habitat, maintaining existing alignments where practicable, using BMPs to control erosion and drainage improvements, and promptly revegetating disturbed areas.

The proposed project area falls within the Shortgrass Prairie Initiative (initiative), an agreement between CDOT, CDOW, FHWA, and USFWS. The initiative included a BA and conservation measures for FHWA funding of CDOT's routine maintenance and upgrade of existing transportation corridors in eastern Colorado for a 20-year period beginning in 2003. The BA includes all of I-25 within the project area. A BO was issued by the USFWS, which covers the bald eagle and 29 species of concern (USFWS, 2003). The BO includes a list of measures to minimize effects to the bald eagle, including protecting off-site shortgrass prairie habitat and implementation of on-site BMPs. The BO also includes conservation measures for sensitive, nonlisted species including black-tailed prairie dog; burrowing owl; native fish; and mussels (including brassy minnow, common shiner, plains minnow, and cylindrical papershell); and northern leopard frog. The BO lists BMPs for each of these species and provides that if any of these species are listed, appropriate protective measures will be incorporated into the BO. The initiative does not cover the Preble's meadow jumping mouse.

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

Specific mitigation recommendations, in addition to those in the initiative, are described below.

3.13.5.1 NO-ACTION ALTERNATIVE

No additional mitigation measures would be proposed under the No-Action Alternative. Routine maintenance and upgrades to I-25 will fall under the initiative BO described above and mitigation measures described in the BO apply.

3.13.5.2 PACKAGE A, PACKAGE B, AND THE PREFERRED ALTERNATIVE

Preble's Meadow Jumping Mouse

Mitigation measures for occupied Preble's habitat may be required as part of Section 7 consultation with the USFWS for impacts to federally listed threatened and endangered species. Because the project will be built over a period of many years, CDOT will reinitiate Section 7 consultation with USFWS when future phases are initiated to determine whether additional surveys for PMJM are needed at that time. Mitigation measures will focus on avoidance and minimization of impacts during construction and include the following:

- 1 ▶ Construction within occupied Preble's habitat at the Little Thompson and Big Thompson
2 rivers and any areas found to be occupied by Preble's by future surveys will be limited to
3 Preble's inactive season (November through April).
- 4 ▶ Visible barriers will be used to limit the area of construction within occupied habitat.
- 5 ▶ If culverts in occupied or potential Preble's habitat are replaced or upgraded, the new
6 concrete box culverts would incorporate ledges to facilitate small mammal passage.
- 7 ▶ Lighting within and near Preble's habitat will be incorporate current technology and
8 standards (e.g. Dark Skies) at the time of design to reduce lighting impacts to Preble's.
- 9 ▶ Where impacts to occupied habitat are unavoidable, compensatory mitigation would be
10 provided through replacement with suitable Preble's habitat. Mitigation measures for
11 Preble's could be combined with wetland mitigation. Wetland mitigation measures also may
12 replace any impacts to suitable unoccupied Preble's habitat. Permanent impacts would be
13 mitigated at a 3:1 mitigation to impact ratio; temporary impacts would be mitigated at a
14 1:1 ratio.
- 15 CDOT would employ conservation measures to minimize impacts during construction. These
16 measures would include:
- 17 ▶ Stockpiling construction materials in bare areas, rather than on top of existing vegetation in
18 known occupied and high potential habitats.
- 19 ▶ Informing construction workers the reasons for and importance of limiting impacts to
20 vegetated habitat outside the work area in known occupied habitat.
- 21 ▶ Supervising work on a daily basis to ensure that conditions established by the USFWS are
22 met.
- 23 ▶ Implementing concurrent revegetation during construction to the maximum extent
24 practicable.
- 25 ▶ Providing a report to the USFWS that includes photographic documentation of site
26 conditions prior to and at the completion of construction.
- 27 ▶ Reporting any inadvertent mortalities found during construction as specified in current
28 trapping guidelines. CDOT will report all relevant information within 24 hours and
29 subsequently submit a completed Injury/Mortality Documentation Report to the USFWS,
30 Ecological Services Colorado Field Office or the USFWS's Division of Law Enforcement in
31 Lakewood, Colorado (telephone 303-274-3560).
- 32 ▶ In the unlikely event that a Preble's mouse (dead, injured, or otherwise) is located during
33 construction, the Colorado Field Office of the USFWS will be contacted immediately to
34 identify additional measures, as appropriate, to minimize impacts to Preble's.

35 In many cases, existing culverts would be replaced by more and/or larger concrete box
36 culverts or by bridges, which would likely facilitate movement of Preble's between habitat
37 areas. The specifics of the conservation measures will be developed in coordination with the
38 USFWS during final design and prior to construction. Documentation of the final conservation
39 measures would include plans and specifications for creation of and enhancements to Preble's
40 habitat that could result in an increase in Preble's habitat.

41

1 ***Bald Eagle***

- 2 ▶ A raptor nest survey (to include bald eagles) will be conducted prior to construction to identify
3 bald eagle nests in the project area. If an active bald eagle nest is found within 0.5 mile of the
4 project area, CDOW-recommended buffers and seasonal restrictions (no human
5 encroachment within 0.5 mile of the nest from November 15 to July 31) will be established
6 during construction to avoid nest abandonment.
- 7 ▶ No construction will occur within 0.25 mile of active nocturnal roosts between November 15
8 and March 15. If perch or roost trees are removed during construction, they will be replaced at
9 a 2:1 ratio with native cottonwood trees.
- 10 ▶ All overhead lighting at the intersection of I-25 and SH 392 near Fossil Creek Reservoir will
11 incorporate the latest technology at the time of construction to control light leakage and
12 direct lighting away from eagles roosting or nesting at the reservoir.
- 13 ▶ Mitigation for wetland impacts will also provide mitigation for impacts to riparian habitats used
14 for foraging by bald eagles.

15 ***Black-Tailed Prairie Dog***

16 Prairie dog distribution in the project area is likely to change between the time field surveys
17 were conducted and the time construction occurs; therefore, prairie dog colonies will need to
18 be resurveyed prior to construction.

19 In areas where avoidance of prairie dogs is not possible, CDOT will follow its Impacted Black-
20 tailed Prairie Dog Policy (CDOT, 2009). CDOT's prairie dog policy is described in greater detail
21 in the *Wildlife Technical Report* (ERO, 2008) and Addendum (ERO, 2011a) and includes
22 avoidance and minimization of impacts to prairie dog colonies greater than two acres during
23 design and construction of CDOT projects. If avoidance is not practicable, the policy calls for
24 relocation, donation to raptor rehabilitation facilities, or donation to the black-footed ferret
25 reintroduction program. If relocation or donation to raptor or ferret facilities is not practicable,
26 prairie dogs will be humanely euthanized prior to construction. At no time will CDOT authorize
27 earth-moving activities that result in the burying of living prairie dogs. Any prairie dog relocation
28 or removal activities will be carried out in accordance with CRS 35-7-203, as well as any other
29 applicable laws or regulations, and with close coordination with CDOW.

30 ***Western Burrowing Owl***

- 31 ▶ Burrowing owl surveys will be conducted prior to any work in prairie dog colonies between
32 March 15 and October 31 (when burrowing owls are present in Colorado) (CDOW, 2007). If
33 burrowing owls are present, prairie dog removal will be scheduled to occur outside this time
34 period.
- 35 ▶ If burrowing owls are found in the construction footprint during preconstruction surveys,
36 nests will be left undisturbed and additional avoidance measures will be developed in
37 coordination with CDOW. No human encroachment or disturbance will occur within 150
38 feet of a known nesting site until after November 1, or until it can be confirmed that owls
39 have left the prairie dog town (CDOW, 2007).

40

- 1 ▶ Direct impacts to burrowing owls will be avoided by covering or destroying prairie dog
2 burrows prior to construction (prior to March 15) in order to prevent burrowing owls nesting
3 in the construction area. Prairie dogs will be humanely removed following CDOT's prairie
4 dog policy prior to destruction of burrows.

5 *Great Blue Heron*

- 6 Direct impacts to nesting great blue herons will be avoided by prohibiting work within the
7 CDOW-recommended 500-meter (0.31-mile) buffer from nest sites (NDIS, 2010). Impacts
8 within this buffer will be limited during the great blue heron nesting season, which occurs from
9 mid-March through July.

10 *Common Gartersnake and Northern Leopard Frog*

- 11 ▶ Mitigation measures for wetlands and Preble's, including wetland replacement and riparian
12 enhancement, will also mitigate for impacts to northern leopard frogs and common
13 gartersnakes.
- 14 ▶ Replacement of culverts with larger concrete box culverts or free-spanning bridges where
15 appropriate will also mitigate for potential impacts to northern leopard frog and common
16 gartersnake.

17 *State Threatened, Endangered, and Special Concern Aquatic Species*

- 18 The project will comply with Colorado Senate Bill (SB) 40, which requires any agency of the
19 State of Colorado to obtain wildlife certification from CDOW when the agency plans
20 construction in any stream or its bank or tributaries (CDOT, 2003a). An application for SB 40
21 wildlife certification would be submitted to CDOW. CDOW will review the plans to ensure the
22 project adequately protects fish and wildlife resources, and will provide recommendations if the
23 proposed project would adversely affect a stream.

24 To offset temporary impacts to aquatic species from habitat disturbance, aquatic habitats will
25 be restored after construction activities have ceased. The following design measures will
26 mitigate potential impacts to aquatic species, including native fish.

- 27 ▶ Riffle and pool complexes will be maintained and/or created.
- 28 ▶ Natural stream bottoms will be maintained.
- 29 ▶ Culverts will be partially buried and the bottom will be covered with gravel/sand and have a
30 low gradient to the maximum extent practicable.
- 31 ▶ Culverts will be replaced with one of equal or greater size.
- 32 ▶ Culverts will not have grates, energy dissipaters, or any other features that would impede
33 fish movement.
- 34 ▶ To avoid erosion-induced siltation and sedimentation, erosion control measures will be
35 applied, such as the immediate reseeding of disturbed areas after construction and, if
36 necessary, the application of mulch and mulch tackifier to stabilize slopes.
- 37 ▶ Erosion control blankets will be "wildlife friendly," consisting of 100% biodegradable materials.
- 38 ▶ Access points to streams during construction will be limited to minimize degradation of the
39 banks.

- 1 ▶ No new fish passage barriers will be created.
- 2 ▶ Existing drop structures that create a barrier to fish movements will be removed or
3 redesigned where practicable. An example is the drop structure east of the frontage road at
4 I-25 and St. Vrain Creek, which is planned to be modified to facilitate fish passage as part
5 of this project.

6 CDOT's water quality BMPs will be applied, and include the installation of mechanisms to
7 collect, contain, and/or treat road run-off. Mitigation measures, such as habitat
8 replacement/enhancement and replacement of existing culverts with larger or more numerous
9 culverts and/or free-spanning bridges, would also improve fish habitat. These measures are
10 designed to offset impacts to wetlands, ULTO, and Preble's.

11 The mitigation measures for state sensitive fish species described above, including SB 40
12 certification and water quality BMPs, also benefit sensitive aquatic invertebrates, such as
13 the cylindrical papershell and *Mesocapnia frisoni* stonefly.

14 *Other State Threatened, Endangered, and Species of Special Concern*

15 No specific mitigation measures are proposed for swift fox, Townsend's big-eared bat, and
16 ferruginous hawk because impacts to these species are expected to be minor or
17 nonexistent.

18 *Colorado Butterfly Plant and Ute Ladies'-tresses Orchid*

19 Potential CBP and ULTO habitat within the project area along the Cache la Poudre, Big
20 Thompson, and Little Thompson rivers and along St. Vrain Creek, will be surveyed during
21 the flowering season just prior to construction. Surveys are to be conducted according to
22 USFWS protocol by a biologist who meets qualifications established by the USFWS for
23 performing presence/absence surveys for these species. The findings of the survey will be
24 documented in a biological finding report and submitted to USFWS for concurrence prior to
25 beginning any construction activities. In the unlikely event either CBP or ULTO is found in
26 the project area, specific conservation measures will be developed in coordination with the
27 USFWS. Conservation measures could include avoiding impacts by establishing a no-work
28 zone or, in the event of unavoidable impacts, enhancing adjacent or off-site habitat.
29 Additionally, an integrated weed management plan or project-specific CDOT 217
30 specification will be incorporated in the project design and implemented during construction
31 to control the infestation of noxious weeds.