

3.9 BIOLOGICAL RESOURCES: FISH, WILDLIFE, VEGETATION, AND THREATENED AND ENDANGERED SPECIES

3.9.1 Introduction to Analysis

3.9.1.1 Summary of Results

The Preferred Alternative would impact a total of 89.7 acres of wildlife habitat. The majority of this impact (77.3 acres) would occur in large blocks of grasslands in the Louisville, Boulder, and Longmont sections. The remaining impacts would occur to riparian woodland, riparian shrubland, and marsh habitat (12.4 acres) along the proposed alignment (mostly in the Boulder section) and riparian woodland habitat (0.3 acres) at the Downtown Louisville station.

The Preferred Alternative would affect a total of 18.7 acres of black-tailed prairie dog towns, primarily in the Boulder, Westminster, and Longmont sections. Nearly all of the impacts would occur in black-tailed prairie dog towns that are larger than two acres in size.

The project could affect nesting raptors and other migratory birds. One red-tailed hawk nest active in 2004 and 2008 is located within the 300 feet of the proposed alignment, and 10 additional nests that were active in 2008 are located near the proposed alignment and could be affected by construction noise or human activity. A number of other migratory bird species could nest in the Northwest Rail (NWR) project study area, especially in riparian habitats.

Wildlife corridors cross the proposed alignment at various streams and ditches. The Preferred Alternative is not expected to adversely affect movement of wildlife along the corridors. Security fences required by the Regional Transportation District (RTD) have been designed to allow movement through these areas.

Two federally-listed threatened species may occur along the proposed alignment: Ute ladies'-tresses orchid and Colorado butterfly plant. Ute ladies'-tresses orchid is not known to occur but may be present at stream crossings. Colorado butterfly plant occurs near the proposed alignment but outside the construction area and presence/absence surveys conducted in August 2009 did not find this plant. Suitable habitat is present for Preble's meadow jumping mouse but this species is not known to occur and a presence/absence survey conducted in June 2009 found no presence of Preble's. Four state-listed species are likely to occur near the proposed alignment: bald eagle, burrowing owl, common shiner, and brassy minnow.

The roadway and transit projects included in the No Action Alternative could affect vegetation, habitat and prairie dog colonies. These impacts associated with the No Action Alternative would be addressed in the environmental documentation prepared for the individual projects as they are funded.

3.9.1.2 Purpose

Construction of infrastructure projects can result in the loss of ecosystems and displacement of wildlife, even in urban settings. Many of these resources are protected by statutes,

executive orders, and regulations.¹ The purpose of this section is to evaluate impacts on biological resources, including wildlife, fish, and their habitats.

3.9.2 Affected Environment

Biological resource data were collected from existing sources (maps, databases, publications, and agency information); field reconnaissance conducted in 2004, 2006, 2008, and 2009; and overlay of habitats with aerial photographs. For the purposes of this analysis, the project study area is defined as the 300-foot buffer surrounding the proposed alignment and 0.5 mile from proposed stations.

Nine habitats are present in the project study area (Table 3.9-1 and Figure 3.9-1). No native prairie is present; all of the habitats have been modified by human activity, and several habitats are primarily derived from human activities. The most natural areas occur along streams, rivers, and other wet areas, including riparian shrub, riparian woodland, and marsh habitat. Linear corridors of riparian vegetation that provide habitat and movement opportunities for wildlife are considered sensitive. In addition, prairie dog towns have high biological productivity and support other wildlife species such as raptors, and therefore are considered sensitive habitats.

TABLE 3.9-1. HABITATS IN THE PROJECT STUDY AREA

Habitat	Description	Location
Industrial and commercial	Developed areas with buildings, pavement, disturbed areas dominated by weedy vegetation, some lawns, and horticultural vegetation	Throughout the project study area, approximately 44 percent of the project study area
Disturbed	Disturbed and waste areas dominated by weedy vegetation	Throughout the project study area, approximately 7 percent of the project study area
Residential and parks	Areas dominated by a mixture of buildings, pavement, and irrigated landscape vegetation	Occurs mostly in Adams, Westminster Louisville, and Boulder sections, approximately 13 percent of the project study area
Agriculture	Irrigated and non-irrigated croplands, pastures, and fallow fields	Small areas in most sections, with largest amounts in Boulder and Longmont sections, approximately 2.5 percent of the project study area
Grassland	Areas dominated by grasses and other herbaceous vegetation, dominated by non-native grass species	Occurs in all sections, most abundant in Westminster, Broomfield, Louisville, Boulder, and Longmont sections. Approximately 29 percent of the project study area

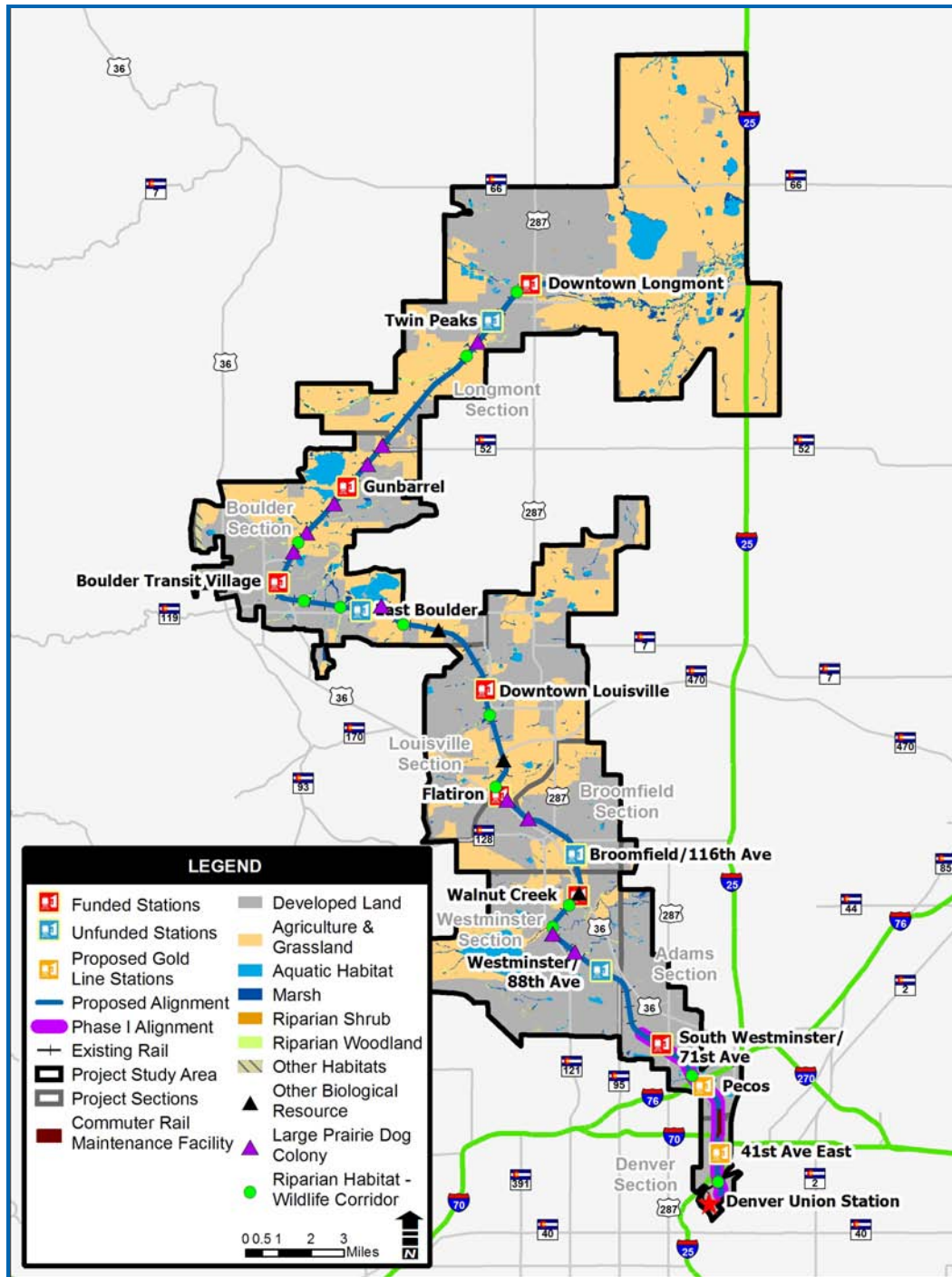
¹ Laws and regulations applicable to biological resources include NEPA (Title 42 United States Code [USC] Sections 4321-4347), the Endangered Species Act (16 USC 1531-1543), the Fish and Wildlife Coordination Act (16 USC 661-667d), the Migratory Bird Treaty Act (MBTA) (16 USC 703-712), Federal Executive Order (EO) 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, Federal EO 13112 – Invasive Species, Colorado Noxious Weed Management Act (Colorado Revised Statutes 35-5.5-101-119), and the State of Colorado EO D00699 – Development and Implementation of Noxious Weed Management Programs.

TABLE 3.9-1. HABITATS IN THE PROJECT STUDY AREA

Habitat	Description	Location
Riparian shrub	Areas dominated by shrubs and a mix of shrubs and other species along the edges of streams, ponds, and ditches	Small areas found in all sections: South Platte River, Clear Creek, Big Dry Creek, Walnut Creek, Rock Creek, Coal Creek, South Boulder Creek, Boulder Creek, Fourmile Canyon Creek, several ditches in the Boulder Section, Lefthand Creek, and St. Vrain Creek; less than 0.5 percent of the project study area
Riparian woodland	Mesic areas dominated by trees and shrubs along streams, ponds, and ditches	Found in all sections: South Platte River, Clear Creek, Big Dry Creek, Walnut Creek, Community Ditch in Broomfield Section, Rock Creek, Coal Creek, ditch in proposed Downtown Louisville Station, South Boulder Creek, Boulder Creek, Fourmile Canyon Creek, several ditches in the Boulder Section, Lefthand Creek, St. Vrain Creek, northwest of CO 119 east of 87 th Street in Longmont Section; approximately 2 percent of the project study area
Marsh	Wetlands dominated by emergent herbaceous vegetation such as cattails	Found in most sections: north of 92 nd Avenue crossing in Westminster Section, proposed Broomfield/116 th Avenue Station, and northwest of CO 119 east of 87 th Street in Longmont Section; approximately 1 percent of the project study area
Aquatic habitat	Streams and ponds	Occurs in all sections: Clear Creek, Little Dry Creek, Lower Church Lake, and Lefthand Creek; approximately 1 percent of the project study area
Wildlife corridors (sensitive habitat)	Natural and semi-natural areas allowing wildlife movement	South Platte River, Big Dry Creek, Walnut Creek, Coal Creek, and Rock Creek
Prairie dog towns (sensitive habitat)	Areas occupied by black-tailed prairie dogs	Most common in Boulder, Longmont, and Westminster sections, also in Broomfield Section

Source: Northwest Rail (NWR) Corridor Project Team, 2009.

FIGURE 3.9-1. HABITATS IN THE PROJECT STUDY AREA



Sources: Colorado Department of Transportation (CDOT), 2006; Denver Regional Council of Governments (DRCOG), 2007-08; ESRI SDC, 2004; NWR Corridor Project Team, 2008-09.

Notes:

- This map is intended for illustrative purposes only. Data has been generated from multiple sources and was only field verified within 300 feet of the proposed alignment.

- "Developed Land" includes Industrial, Commercial, Disturbed, Residential, and Parks.

- "Other Habitat" includes Upland Shrub and Ponderosa Pine. These are not included in Table 3.9-1 because they are not present within 300 feet of the proposed alignment.

Several species protected under federal or state laws are known to occur or could be found in the project study area (see Table 3.9-2).

TABLE 3.9-2. POSSIBLE ENDANGERED OR THREATENED SPECIES IN THE PROJECT STUDY AREA

Listing	Species	Status ¹	Location
Federally Listed	Preble's meadow jumping mouse	FT, ST	Not likely to occur: much of project study area is block cleared; not known to occur in remainder of corridor, presence/absence survey at one site in Boulder Section in June 2009 did not find this species
	Black-footed ferret	FE, SE	Not present, entire project study area is block-cleared
	Canada lynx	FT, SE	Not present, no suitable habitat in the project study area
	Mexican spotted owl	FT, ST	Not present, no suitable habitat in the project study area
	Greenback cutthroat trout	FT, ST	Not present, no suitable habitat in the project study area
	Pawnee montane skipper	FT	Not present, no suitable habitat in the project study area
	Ute ladies'-tresses	FT	No known occurrences may be present at some stream crossings including Boulder Creek and St. Vrain Creek; Presence/absence surveys conducted in August 2009 did not find this plant.
	Colorado butterfly plant	FT	One known occurrence near Walnut Creek; Presence/absence surveys conducted in August 2009 did not find this plant.
State Listed	Burrowing owl	ST	May occur especially in prairie dog towns in Louisville and Boulder sections
	Bald eagle	ST	Wintering birds may occur in Westminster, Broomfield, Louisville, Boulder, and Longmont sections; no known nests or communal winter roosts
	Brassy minnow	ST	Present in Clear Creek in Adams Section, Boulder Creek in Boulder Section, and St. Vrain Creek in Longmont Section
	Common shiner	ST	Present in Big Dry Creek in Westminster Section, Boulder and South Boulder Creeks in Boulder Section, and St. Vrain Creek in Longmont Section
	Northern redbelly dace	SE	Not present, historic occurrence in Boulder Creek

Sources: Colorado Division of Wildlife (CDOW) 2007a; NWR Corridor Project Team, 2009; US Fish and Wildlife Service (USFWS) 2008a.

Notes:

- ¹ FE = Federally Listed Endangered
 FT = Federally Listed Threatened
 SE = State Listed Endangered
 ST = State Listed Threatened

Resident mule deer (*Odocoileus hemionus*) inhabit undeveloped areas throughout Broomfield, Louisville, and Boulder. White-tailed deer (*Odocoileus virginianus*) are concentrated along Boulder Creek, South Boulder Creek, Coal Creek, and Rock Creek. The riparian and agricultural habitats along the South Platte River are considered to be high priority habitat for white-tailed deer, and moderate priority habitat for mule deer (NDIS 2009). Mountain lion (*Felis concolor*) and black bear (*Ursus americanus*) may occasionally travel through riparian corridors in the Boulder and Longmont sections. Medium sized mammals present in the study area include American badgers (*Taxidea taxus*) coyotes (*Canis latrans*), red foxes (*Vulpes vulpes*), an occasional gray fox (*Urocyon cinereoargenteus*), long-tailed weasel (*Mustela frenata*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*) and common porcupine (*Erethizon dorsatum*).

3.9.3 Impact Evaluation

3.9.3.1 Methodology

Impacts were assessed by comparing the project activities and footprints to the biological resources in the project study area. Direct impacts were quantified where possible by comparing the proposed alignment and proposed stations with the mapped distribution of habitats and locations of other sensitive features. Acres of habitat loss were assessed using geographic information system overlays. Other impacts (including indirect impacts) are described in terms of their type of action and relative importance. Impacts are evaluated by timing (construction versus operation), type of action (direct, indirect, temporary, or cumulative), and duration (short-term versus long-term, where long-term means more than 3 years). Impacts to wetlands are quantified in Section 3.10.3, Wetlands and Other Water Features.

Impacts are broken down into the following categories:

1. **NWR Corridor Alignment** – Impacts that would result from acquisitions for the project north of the South Westminster/71st Avenue Station to Longmont.
2. **Proposed Stations** – Impacts that would result from the land required for proposed station platforms and associated park-n-Rides. Both funded and unfunded stations are included in the impact analysis. Impacts associated with the South Westminster/71st Avenue Station are included in Phase 1, because this station would be constructed as part of Phase 1.
3. **Phase 1** – Impacts that would result from acquisitions for the project between Denver Union Station (DUS) and the South Westminster/71st Avenue Station. Phase 1 would be constructed first, as part of Regional Transportation District's (RTD) Eagle P3 project.

3.9.3.2 Results

No Action Alternative

The No Action Alternative assumes that existing and committed improvements, as defined in Chapter 2.0, Alternatives Considered, would be implemented by others as planned.

Direct, Indirect, Temporary Construction, and Cumulative Impacts

It is anticipated that vegetation, habitats, and wildlife may be impacted by some or all of the roadway and transit projects identified under the No Action Alternative. These projects could

result in direct, indirect, temporary construction, and cumulative impacts. The extent of these impacts will be evaluated in the environmental documents being prepared for these projects.

Preferred Alternative

Direct Impacts

The Preferred Alternative would impact a total of 89.7 acres of wildlife habitat. The majority of this impact (77.3 acres) would occur in large blocks of grasslands in the Louisville, Boulder, and Longmont sections. The remaining impacts would occur to riparian woodland, riparian shrubland, and marsh habitat (12.4 acres) along the proposed alignment (mostly in the Boulder section) and riparian woodland habitat (0.3 acres) at the Downtown Louisville station.

The Preferred Alternative would affect a total of 18.7 acres of black-tailed prairie dog towns, primarily in the Boulder, Westminster, and Longmont sections. Nearly all of the impacts would occur in black-tailed prairie dog towns that are larger than two acres in size. Phase 1 would not affect any black-tailed prairie dog towns.

NWR Corridor Alignment

Vegetation, Habitats, and Wildlife

The NWR Corridor Alignment between the South Westminster/71st Avenue Station and the Downtown Longmont Station would result in direct impacts to vegetation and habitat, primarily occurring from vegetation clearing and earth moving. Most impacts would be permanent, as some areas of habitat would be replaced by the track facilities. Acres of habitat loss caused by the NWR Corridor Alignment are shown in Table 3.9-3. These impacts represent the maximum area of disturbance. Portions of the impacted area would be affected only temporarily and would be revegetated after construction. Revegetation would typically consist of seeding with grasses to stabilize the soil, but shrubs and/or trees may be used in riparian areas.

TABLE 3.9-3. DIRECT IMPACTS TO VEGETATION AND HABITATS IN THE NORTHWEST RAIL CORRIDOR ALIGNMENT

Direct Impacts (acres) by Habitat Type									
	Industrial/ Commercial	Residential/ Parks	Disturbed	Grassland	Agricultural	Riparian Shrub	Riparian Woodland	Marsh	Aquatic
NWR Corridor Alignment									
Denver	Impacts associated with Denver Section are included under Phase 1.								
Adams ¹	41.9	1.4	6.7	8.4	0.0	0.2	0.6	0.1	0.4
Westminster	36.6	0.2	8.0	23.3	0.0	0.1	0.2	0.1	0.0
Broomfield	23.1	0.0	0.7	16.1	0.0	0.0	0.0	0.6	0.0
Louisville	35.7	9.1	3.0	25.8	0.2	0.3	0.5	0.4	0.1
Boulder	76.6	2.2	12.6	50.4	0.1	0.8	2.8	4.0	0.7
Longmont	55.6	0.3	5.8	25.5	0.2	0.0	0.2	0.2	0.2
Total	269.4	13.1	36.7	149.6	0.5	1.4	4.3	5.4	1.4

Source: NWR Corridor Project Team, 2009.

Notes: ¹ Impacts from DUS to the South Westminster/71st Avenue Station are included under Phase 1.

Throughout the project study area, the majority of impacts would occur in habitats that have already been heavily modified by human activity, including industrial/commercial and residential/park habitats. Construction of the facilities in these areas would have limited long-term effects to biological resources because the areas are already modified, are common in the project study area, and do not have unique or sensitive wildlife or plants. Several habitats are considered to have a moderate sensitivity to disturbance, including riparian woodland, riparian shrubland, marsh, and large areas of grassland. Impacts to high and moderate quality wildlife habitat are summarized in Table 3.9-4. The acres of habitat in Table 3.9-4 are a subset of the overall habitat identified in Table 3.9-3. High quality habitat includes black-tailed prairie dog towns and riparian and wetland areas. Moderate quality habitat includes large grasslands (none of the grasslands are native prairie). Other habitats are considered to be low value because they are already modified, are common in the project study area, and do not have unique or sensitive wildlife or plants. Although urban wildlife may be abundant in residential areas, it typically consists of a limited number of species that are tolerant of human activity and have low sensitivity to disturbance.

TABLE 3.9-4. DIRECT IMPACTS TO HIGH AND MODERATE QUALITY WILDLIFE HABITAT

Project Component	Black-tailed Prairie Dog Towns (acres)	Riparian Woodland, Shrubland and Marsh (acres)	Large Grasslands (acres)	Active (2008) Raptor Nests within ¼ mile (#)	Raptor Nests in Construction Footprint (#)	Wildlife Corridors Crossed (#) ²
NWR Corridor Alignment						
Denver	Impacts associated with Denver Section are included under Phase 1.					
Adams ¹	0.0	0.9	0.0	0	0	0
Westminster	3.6	0.4	0.0	0	0	2
Broomfield	1.6	0.6	0.0	1	0	1
Louisville	0.0	1.2	15.2	3	1	2
Boulder	8.8	7.6	38.0	5	0	5
Longmont	4.7	0.4	24.1	2	0	2
Total	18.7	11.1	77.3	11	1	12

Source: NWR Corridor Project Team, 2009.

Notes:

¹ Impacts from DUS to the South Westminster/71st Avenue Station are included under Phase 1.

² See text for impacts

More than half of the biological impacts in the project study area would occur in industrial and commercial habitat. Thirty percent of the remaining impacts are to grassland areas. The proposed alignment would affect strips of grassland adjacent to the existing rail line. Much of the impacted grasslands are open space in the Louisville, Boulder, and Longmont sections. Except in the Adams Section, most of the impacts to disturbed habitat would be in prairie dog towns. Impacts to riparian woodland, riparian shrubland, and marsh habitat would total 11.1 acres, and would occur mostly in the Boulder Section.

Habitat fragmentation is a result of development or man-made features that divide previously contiguous areas of habitat. This analysis considers four aspects of the project that could contribute to habitat fragmentation, including the location of the facilities, security fencing, increased rail traffic, and bridge design. It was assumed that the new bridge structures would be similar to the existing structures, with the same length and height of opening under the bridge. However, efforts would be made to develop bridge designs that span the largest amount of riparian habitat possible.

The NWR Corridor Alignment would be on or adjacent to existing track and would not cause a new division of previously contiguous habitat. More frequent traffic along the tracks would discourage wildlife movements across the tracks during operational hours, but this is likely to be a minor effect. Noise barriers are proposed at the three locations along the corridor listed below:

- Adams Section – W. 72nd Avenue to W. 78th Avenue
- Louisville Section – South Boulder Road to Baseline Road
- Longmont Section – N. 95th Street to Main Street

The noise barriers range from 500 to 1,500 feet in length and are ten feet tall. These barriers are located in primarily developed areas where noise sensitive receptors exist (residential areas, etc.). Therefore, wildlife movement through these areas is limited and would not block or impact significant wildlife corridors.

RTD policy includes fencing along the entire proposed alignment in order to act as a safety barrier and prevent trespassers. RTD completed significant coordination with local jurisdictions and agencies including the City of Boulder, Boulder County, the City and County of Broomfield, the City of Louisville (as the jurisdictions with the most open space along the alignment), and the CDOW to identify fencing types along the proposed alignment. More information on the fencing types and recommendations can be found in Chapter 2.0, Alternatives Considered. The High-Tensile Wire Type I rural/agricultural fencing was designed to meet CDOW specifications for wildlife-friendly fencing and includes a clearance of at least 16 inches from the ground and a 40-inch height limit. Existing passages under the tracks at stream and ditch crossings are likely to increase in importance for wildlife movement after construction. Wildlife friendly fencing can reduce collisions and habitat fragmentation. Proposed options relevant to wildlife movement are discussed later in this section.

Impacts to various types of wildlife are discussed below.

- **Large Mammals.** The project would have minor impacts to riparian woodland and riparian shrub. Deer populations are not likely to be affected by habitat loss. Impacts to large mammals would primarily occur from fencing.
- **Raptors.** Eleven raptor nests were located within 0.25 mile of the NWR Corridor Alignment in 2008, and a similar number are expected at the time of construction. One red-tailed hawk nest that was observed to be active in both 2004 and 2008 is within the construction footprint and would need to be removed. Nest removal would need to be done when the nest is inactive, to comply with the Migratory Bird Treaty Act (MBTA). The other raptor nests located within 0.25 mile of the proposed alignment could potentially be affected by noise and human activity during construction.
- **Other Migratory Birds.** Impacts to birds from construction and operation include direct loss of habitat, displacement during construction, and mortality from vehicle collisions. Nearly all bird species present in the project study area are protected by the MBTA, a federal act that prohibits destruction or disturbance to active nests that result in loss of eggs or young without a permit from the USFWS. Vegetation clearing, earth-moving, and other construction activities have the potential to destroy nests of birds species protected under the MBTA. Potential impacts would likely be greater in riparian woodland and

shrubland, but impacts to active nests could occur in all of the habitats if construction occurs during the nesting season.

- **Other Wildlife.** Impacts to small and medium-sized mammals and to reptiles and amphibians would include habitat loss, mortality from vehicle collisions or crushing, and avoidance/displacement during construction.
- **Aquatic habitats.** There would be no direct effects to lakes or ponds, but construction would occur within 50 to 100 feet of several of them. At Church Lake and Hillcrest Reservoir, hundreds of feet of shoreline would be in close proximity to the construction zone. Construction of bridges across creeks would generally involve no or minimal activities within the creek, and construction would typically occur from the adjoining track or uplands. Impacts to water quality and habitat in lakes, ponds and creek would be minimized through use of construction best management practices (BMP) to control erosion, sedimentation, and spills.

Impacts to wildlife are summarized by section below. Figures for each project section identify the areas where the most relevant impacts occur but do not represent all of the impacts in the discussion.

Denver Section

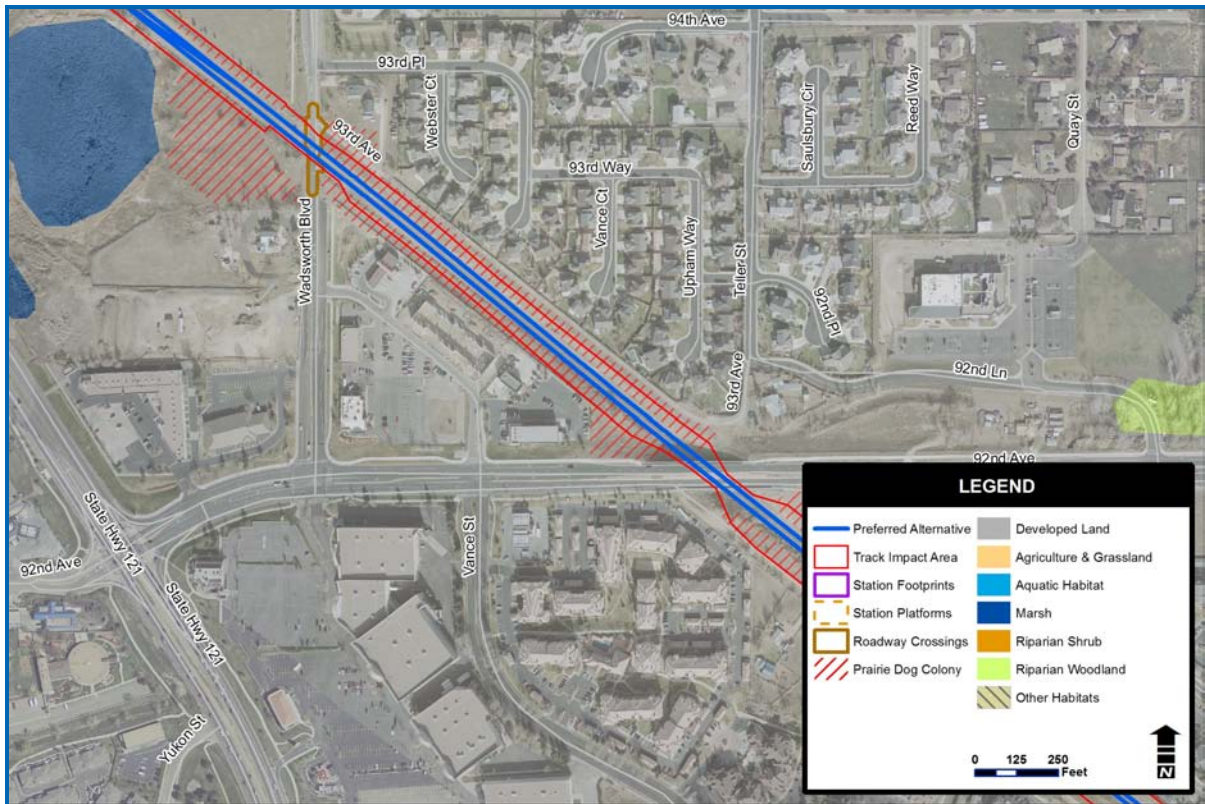
Discussion of the Denver Section is included under Phase 1.

Adams Section

The portion of the Adams Section from DUS to the South Westminster/71st Avenue Station (approximately Bradburn Boulevard) is discussed under Phase 1, later in this section. The remainder of the Adams Section, from Bradburn Boulevard north is discussed here. There are no black-tailed prairie dog colonies located in the Adams Section. The fencing proposed for this section includes the High-Tensile Wire Type II industrial/commercial and High-Tensile Wire Type IV residential fencing. Wildlife movements are less important in these areas and the recommended fencing would allow sufficient movement.

Westminster Section

A total of 3.6 acres of black-tailed prairie dog habitat would be affected along the proposed alignment and in open space near Wadsworth wetlands (Figure 3.9-2). The affected areas are part of a one large prairie dog town that is split by the tracks and roads. The large prairie dog town at Big Dry Creek would not be affected. Two wildlife corridors are located in the Westminster Section, Big Dry Creek, and Walnut Creek, which join downstream near US 36. The configuration of the existing rail line and other facilities present a barrier to wildlife movement under existing conditions. The existing rail line at Big Dry Creek is elevated on a high and steep-sided fill, and the only crossing through the fill is used as a bicycle path. Walnut Creek is piped under the intersection with Old Wadsworth Boulevard, and the only means of passage is over the steep railroad fill or along Old Wadsworth Boulevard under the railroad bridge.

FIGURE 3.9-2. IMPACTS TO BLACK TAILED PRAIRIE DOG HABITAT NEAR WADSWORTH


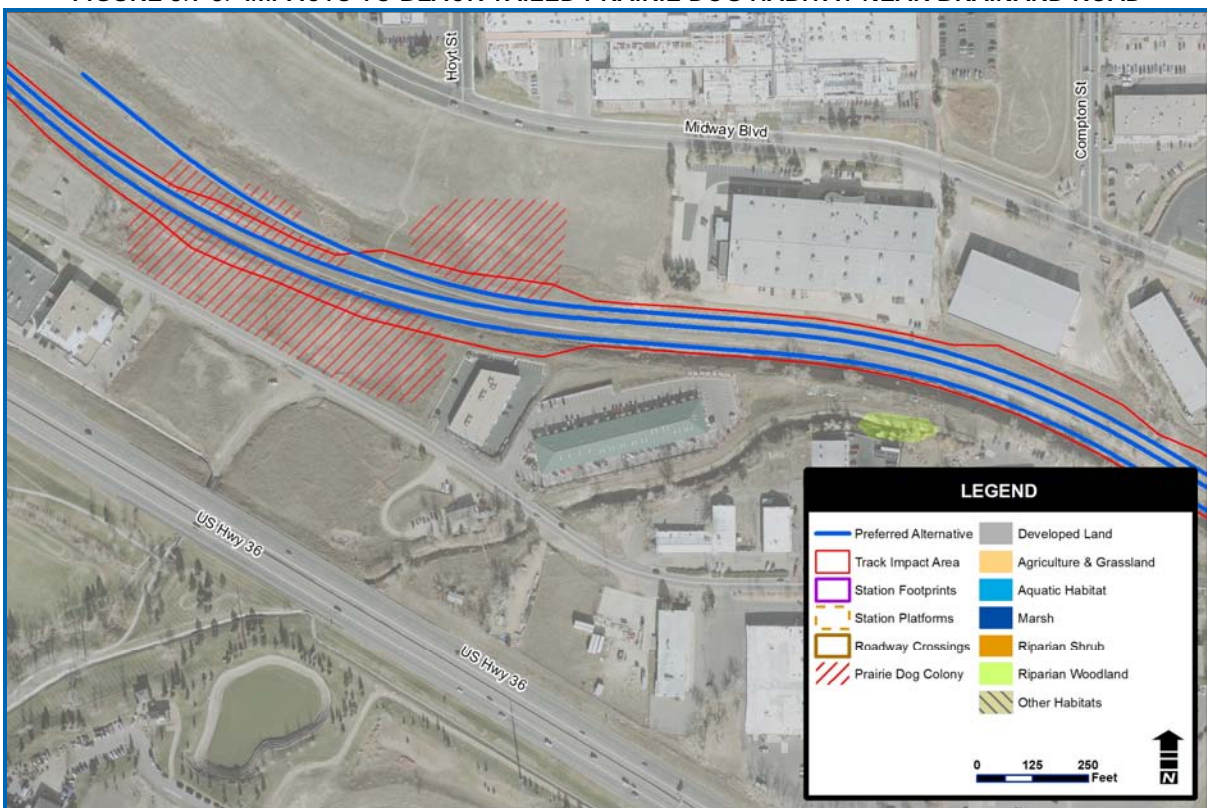
Sources: CDOT, 2006; DRCOG, 2007-08; ESRI SDC, 2004; NWR Corridor Project Team, 2008-09; Natural Diversity Information Source (NDIS), 2009.

High-Tensile Wire Type I rural/agricultural is proposed on the north side of the rail alignment from Walnut Creek to US 36 in the vicinity of Walnut Creek and adjacent to Lower Church Lake to facilitate wildlife movement. High-Tensile Wire Type II industrial/commercial is recommended on the south side of the alignment for this portion of the NWR corridor. The recommended option for the remainder of this section is primarily High-Tensile Wire Type IV residential fencing, with the exception of Type I being recommended in the vicinity of Big Dry Creek. Black-tailed prairie dogs occur in portions of this area but their movements are unlikely to be affected by the high-tensile fencing, because they can easily cross underneath the lowest wire.

Broomfield Section

The proposed alignment would not affect riparian habitat but would affect adjacent marsh wetlands. A total of 1.6 acres of black-tailed prairie dog towns would be affected, which occur along the tracks and roads and in vacant areas (Figure 3.9-3). The affected areas are part of two larger towns that are approximately 0.5 mile apart. Each prairie dog town is larger than 2 acres but is already divided by the existing rail line and roads. One wildlife corridor is located in this section, the east tributary of Rock Creek. The existing crossing is of minimal value because it consists of a small diameter long culvert at the bottom of a steep embankment. The NWR Corridor Alignment is not likely to enhance or degrade wildlife movements in this location.

FIGURE 3.9-3. IMPACTS TO BLACK TAILED PRAIRIE DOG HABITAT NEAR BRAINARD ROAD



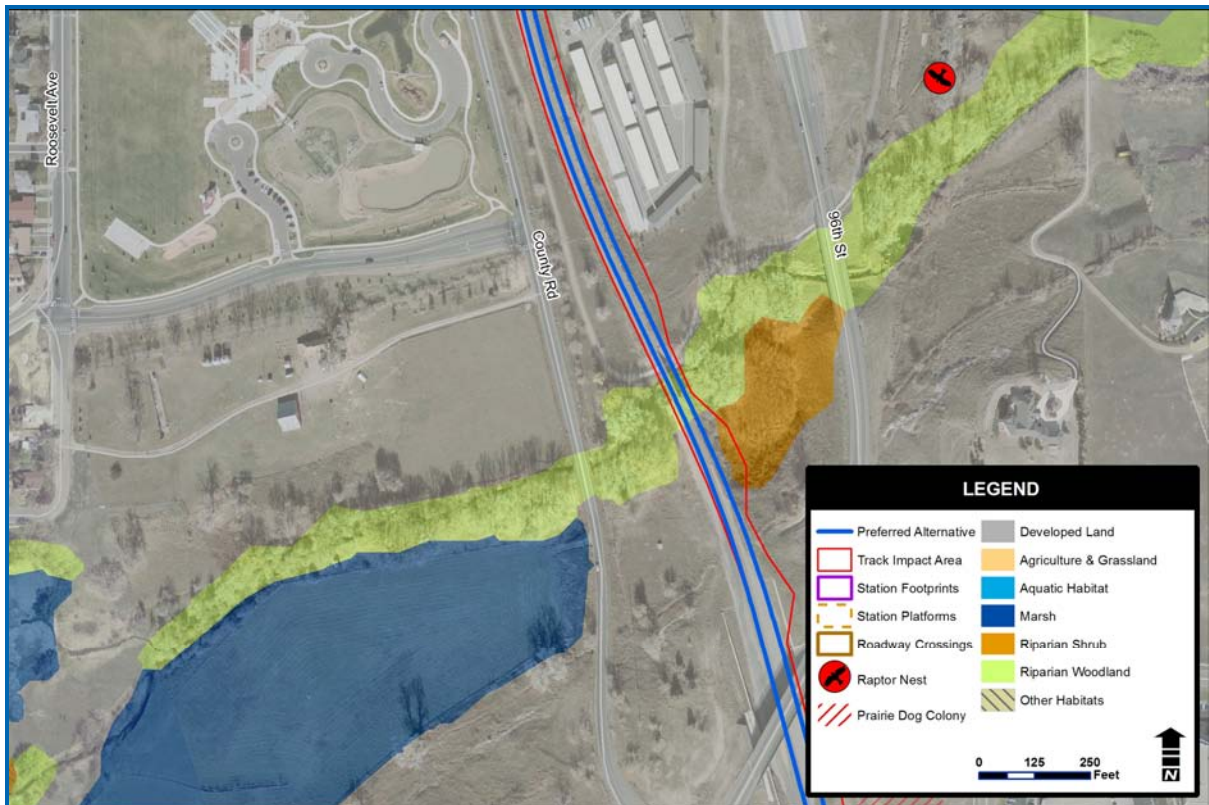
Sources: CDOT, 2006; DRCOG, 2007-08; ESRI SDC, 2004; NWR Corridor Project Team, 2008-09; NDIS, 2009.

High-Tensile Wire Type I rural/agricultural fencing is recommended near Airport Creek and from Brainard Drive to Northwest Parkway, which includes East Rock Creek and the Kathryn Holmberg open space to facilitate wildlife movement, unless additional development occurs prior to the implementation of the NWR Corridor Project. The recommended fencing type for the remainder of this section is primarily High-Tensile Wire Type II industrial/commercial.

Louisville Section

The proposed alignment would affect riparian woodland habitat at Rock Creek and Coal Creek (Figure 3.9-4), and wetlands in depressions along the existing railroad tracks. No prairie dog towns would be affected. One active nest, a red-tailed hawk nest at Goodhue Ditch, is within the impact area and would be directly and permanently impacted by the NWR Corridor Alignment. The nest is in a large cottonwood tree immediately adjacent to the existing rail line. Noise from the existing freight operations does not appear to affect this nest. Two other active raptor nests occur in this section.

FIGURE 3.9-4. IMPACTS TO RIPARIAN HABITAT AT COAL CREEK



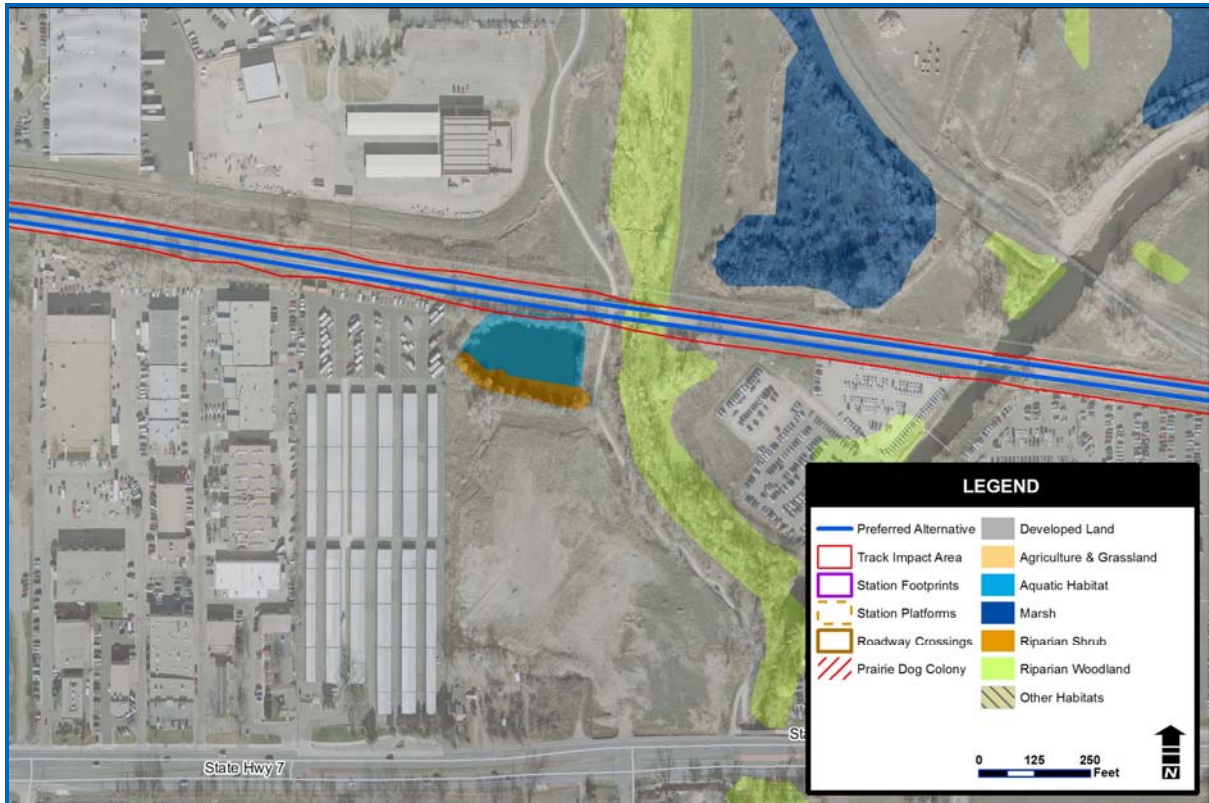
Sources: CDOT, 2006; DRCOG, 2007-08; ESRI SDC, 2004; NWR Corridor Project Team, 2008-09; NDIS, 2009.

Two wildlife corridors are located in this section: Rock Creek and Coal Creek. Rock Creek is crossed by an existing culvert, and lengthening of the culvert to accommodate a second rail line could reduce use by wildlife. Coal Creek is crossed by a high bridge that facilitates wildlife movement, and widening of the bridge would have no adverse impacts to wildlife movement. Either High Tensile Type I rural/agricultural fence or no fence is proposed for 300 feet on either side of Coal Creek to facilitate wildlife crossing. High-Tensile Wire Type I rural/agricultural fencing is proposed from Brainard Drive to Northwest Parkway and from Dillon Road to Lock Street. This fencing would maintain wildlife movement along Rock Creek and Coal Creek and adjacent open space.

Boulder Section

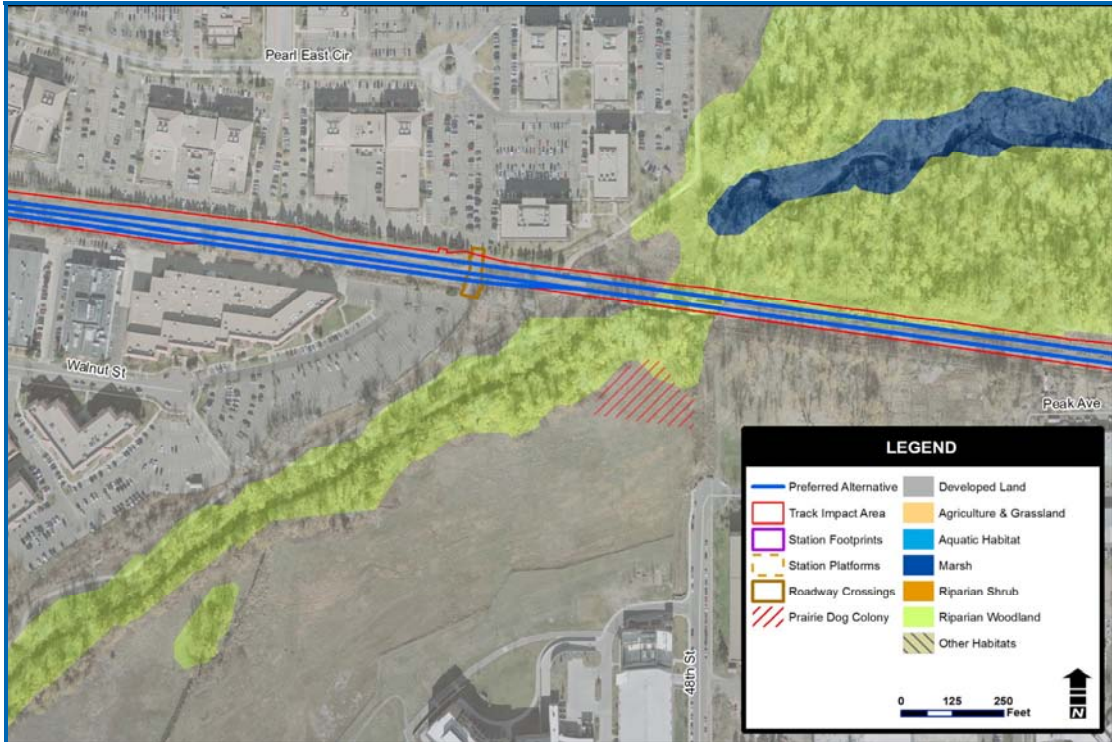
The proposed alignment would affect riparian and wetland habitat at several locations (Figures 3.9-5 through 3.9-11). It would also affect 8.8 acres of black-tailed prairie dog colonies that occur mostly in open space areas. The affected prairie dog towns are mostly over 2 acres in size and occur near Legion Park in Boulder County, east of the City of Boulder near Foothills Drive (less than 2 acres in size), Independence Road, Jay Road, Spine Road, north of 63rd Street, and near Mineral Road. Several raptor nests occur near the proposed alignment but would not be directly affected.

FIGURE 3.9-5. IMPACTS TO RIPARIAN HABITAT AT SOUTH BOULDER CREEK



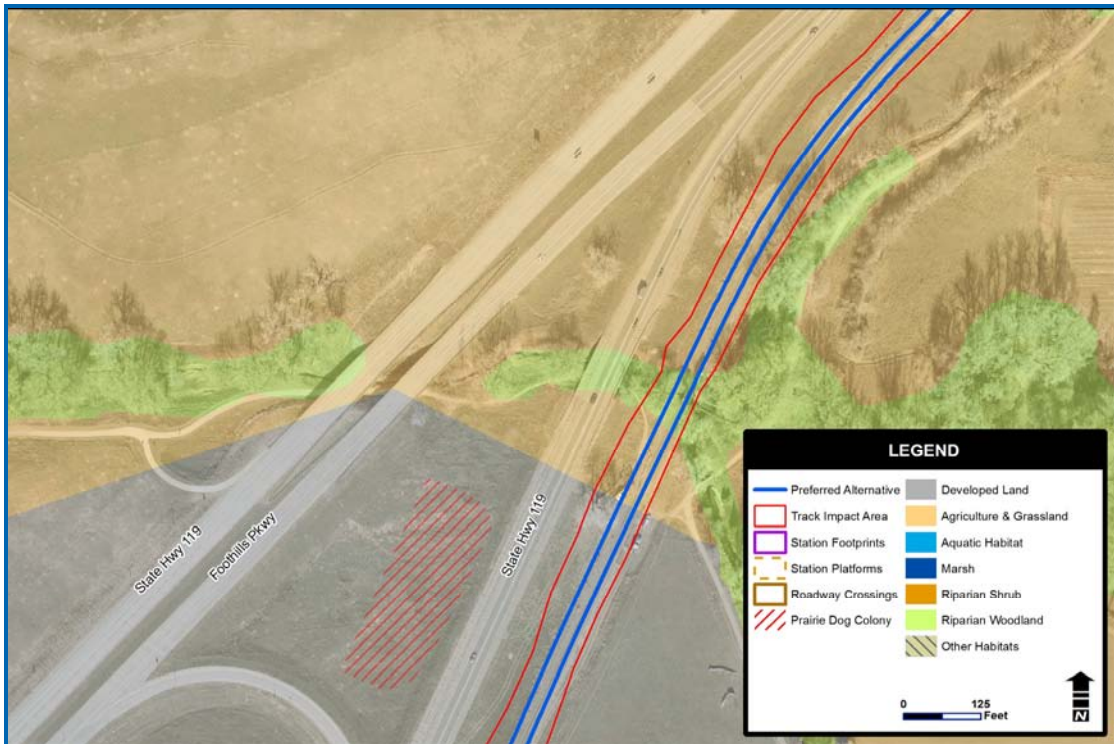
Sources: CDOT, 2006; DRCOG, 2007-08; ESRI SDC, 2004; NWR Corridor Project Team, 2008-09; NDIS, 2009.

FIGURE 3.9-6. IMPACTS TO RIPARIAN HABITAT AT BOULDER CREEK



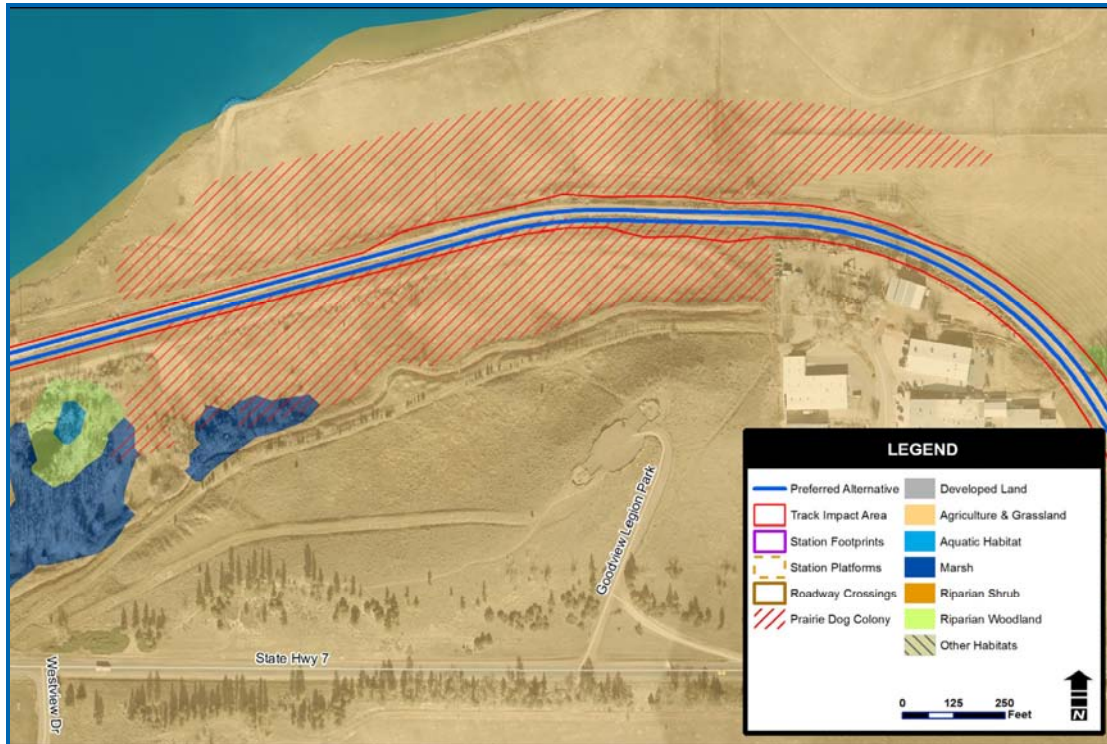
Sources: CDOT, 2006; DRCOG, 2007-08; ESRI SDC, 2004; NWR Corridor Project Team, 2008-09; NDIS, 2009.

FIGURE 3.9-7. IMPACTS TO RIPARIAN HABITAT AT FOURMILE CANYON CREEK



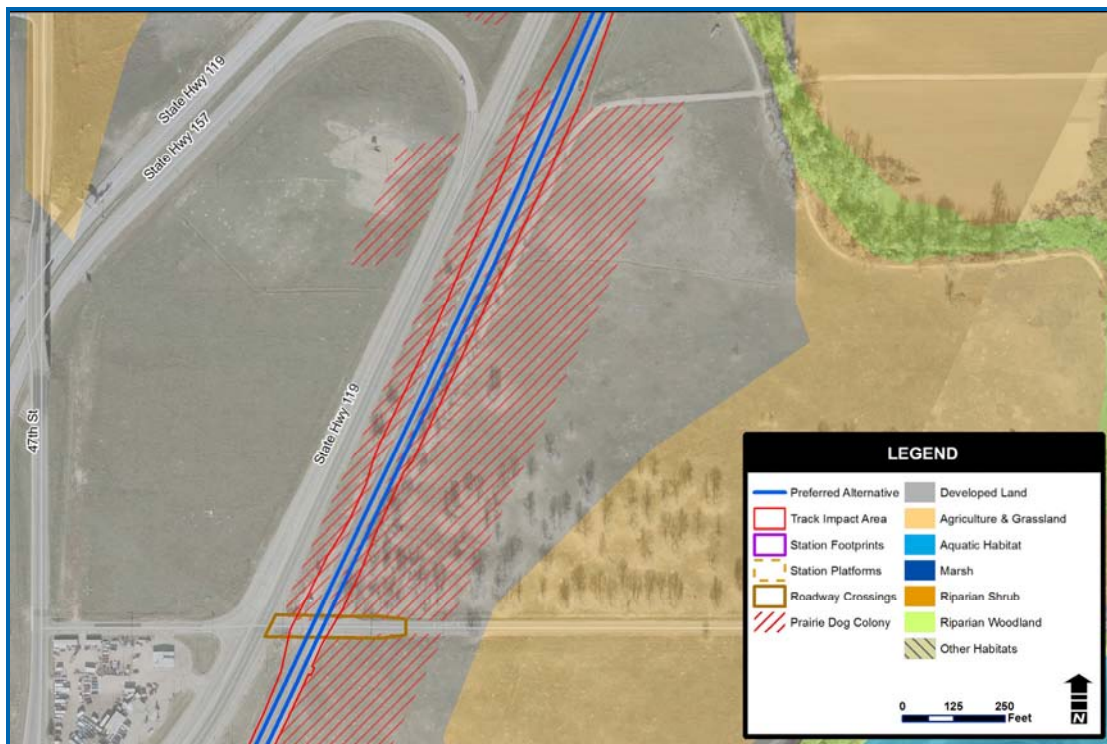
Sources: CDOT, 2006; DRCOG, 2007-08; ESRI SDC, 2004; NWR Corridor Project Team, 2008-09; NDIS, 2009.

FIGURE 3.9-8. IMPACTS TO BLACK TAILED PRAIRIE DOG HABITAT NEAR LEGION PARK



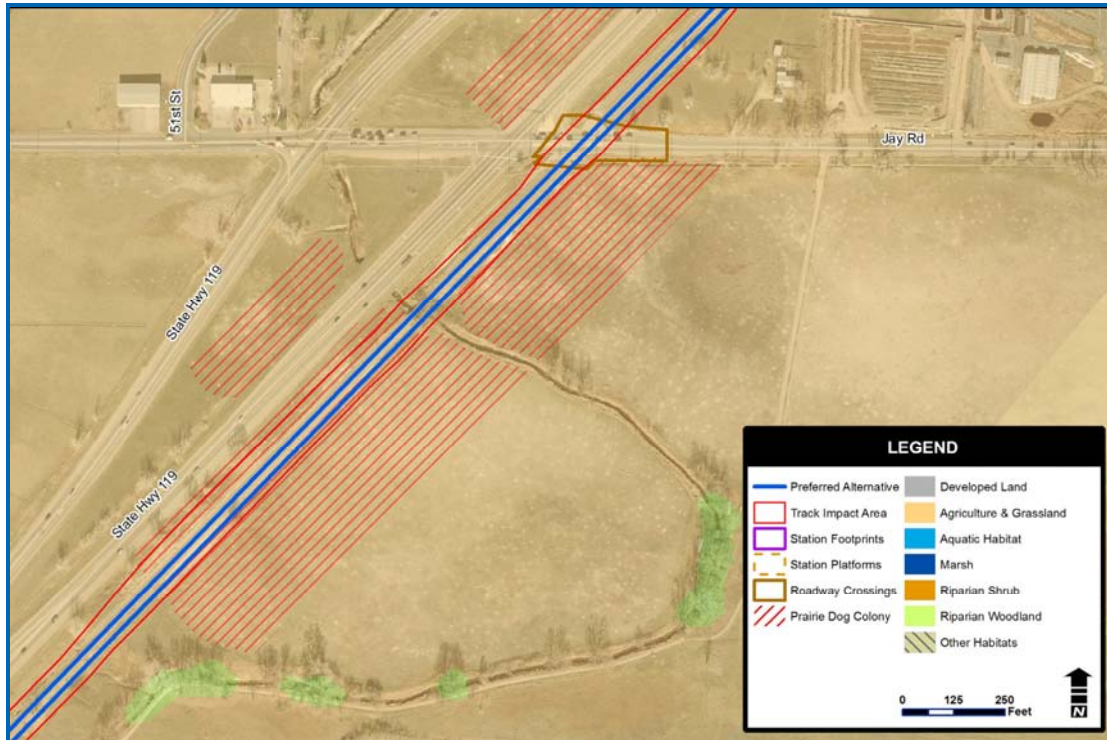
Sources: CDOT, 2006; DRCOG, 2007-08; ESRI SDC, 2004; NWR Corridor Project Team, 2008-09; NDIS, 2009.

FIGURE 3.9-9. IMPACTS TO BLACK TAILED PRAIRIE DOG HABITAT NEAR INDEPENDENCE ROAD



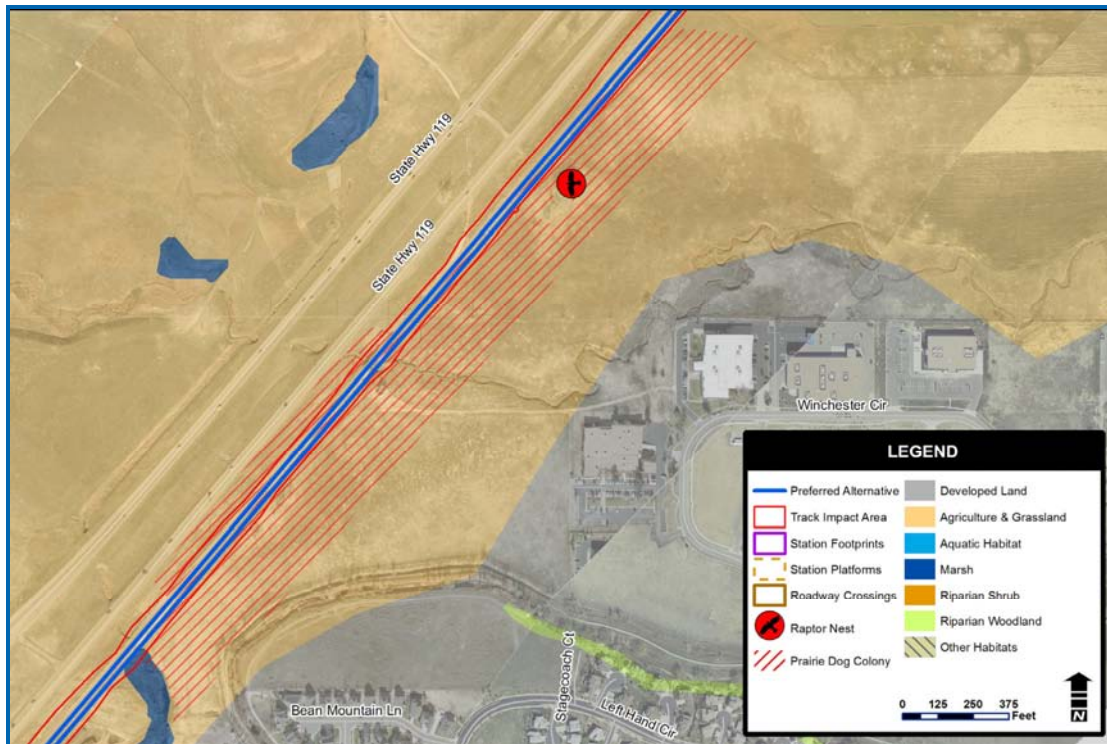
Sources: CDOT, 2006; DRCOG, 2007-08; ESRI SDC, 2004; NWR Corridor Project Team, 2008-09; NDIS, 2009.

FIGURE 3.9-10. IMPACTS TO BLACK TAILED PRAIRIE DOG HABITAT NEAR JAY ROAD



Sources: CDOT, 2006; DRCOG, 2007-08; ESRI SDC, 2004; NWR Corridor Project Team, 2008-09; NDIS, 2009.

FIGURE 3.9-11. IMPACTS TO BLACK TAILED PRAIRIE DOG HABITAT NORTHEAST OF 63RD AVENUE



Sources: CDOT, 2006; DRCOG, 2007-08; ESRI SDC, 2004; NWR Corridor Project Team, 2008-09; NDIS, 2009.

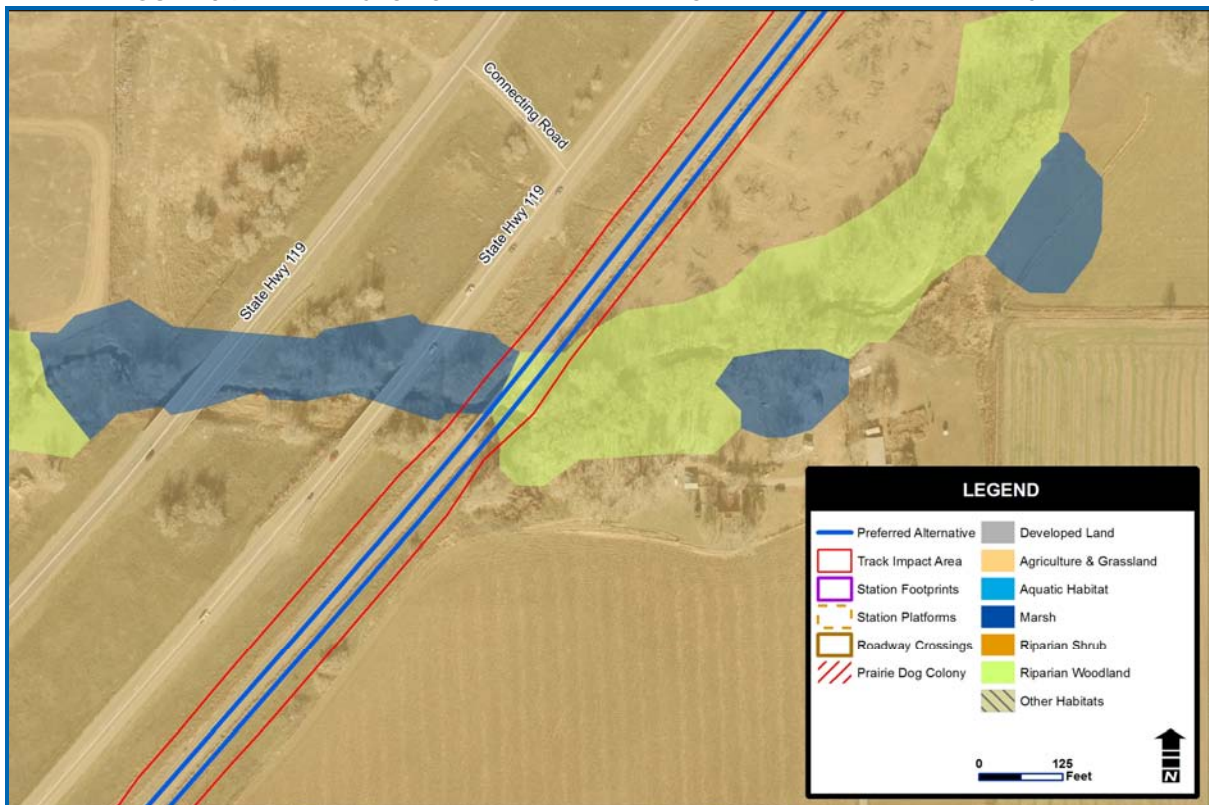
Five wildlife corridors are located in this section, of which two are located mostly east of the proposed alignment. Boulder and South Boulder Creek are crossed by existing bridges and new bridges are unlikely to have adverse effects on wildlife movement.

Smaller bridges such as Fourmile Canyon Creek may be replaced by box culverts, which could decrease wildlife passage, but movement could occur directly across the tracks. The adjacent roads have bridges designed for wildlife movement. High-Tensile Type I rural/agricultural fencing is proposed from Baseline to Arapahoe Road, at Boulder Creek, South Boulder Creek, Dry Creek No. 2 Ditch, Goose Creek, Wonderland Creek, and the entire proposed alignment north of Foothills Parkway, which would maintain wildlife movement.

Longmont Section

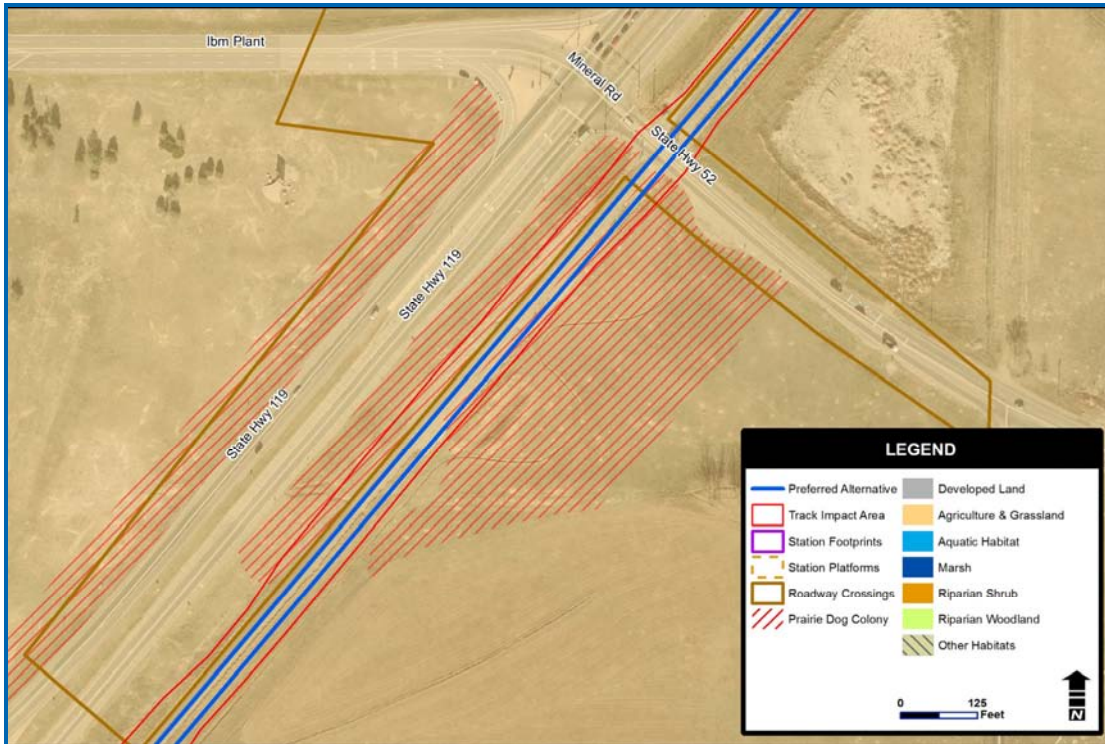
The NWR Corridor Alignment would affect riparian and wetland habitat at St. Vrain Creek, Lefthand Creek, and Williamson Ditch. A total of 4.7 acres of black-tailed prairie dog towns would be affected during construction, near Mineral Road and south of Hover Road. These prairie dog towns occur mostly in open space. Two active raptor nests were observed in this section near the alignment and could have nesting disrupted by construction activities. These habitats are shown in Figures 3.9-12 through 3.9-14.

FIGURE 3.9-12. IMPACTS TO RIPARIAN AND MARSH HABITAT AT LEFT HAND CREEK



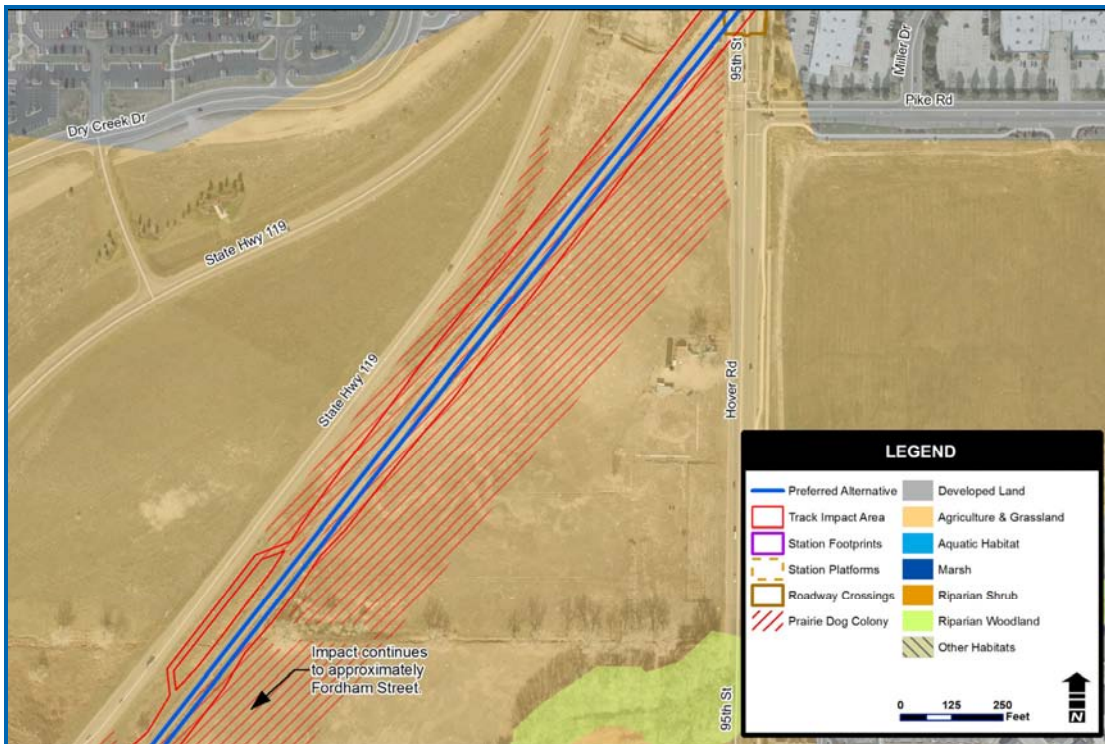
Sources: CDOT, 2006; DRCOG, 2007-08; ESRI SDC, 2004; NWR Corridor Project Team, 2008-09; NDIS, 2009.

FIGURE 3.9-13. IMPACTS TO BLACK TAILED PRAIRIE DOG HABITAT NEAR MINERAL ROAD



Sources Sources: CDOT, 2006; DRCOG, 2007-08; ESRI SDC, 2004; NWR Corridor Project Team, 2008-09; NDIS, 2009.

FIGURE 3.9-14. IMPACTS TO BLACK TAILED PRAIRIE DOG HABITAT SOUTHWEST OF HOVER ROAD



Sources: CDOT, 2006; DRCOG, 2007-08; ESRI SDC, 2004; NWR Corridor Project Team, 2008-09; NDIS, 2009.

Two wildlife corridors are located in this section: St. Vrain Creek and Lefthand Creek. St. Vrain Creek is crossed by a high bridge that does not limit wildlife movement in the riparian habitat along the creek. Left hand Creek is also crossed by a bridge that allows movement. High-Tensile Wire Type I rural/agricultural fencing is proposed for this section, except for the developed areas from Hover Street to downtown Longmont, which would maintain wildlife movement.

Special Status Species

Federally-listed species that may occur in the project study area include Preble's meadow jumping mouse, Ute ladies'-tresses orchid, and Colorado butterfly plant. Surveys conducted in June and August of 2009 indicated no presence of these species within the project study area. The USFWS concurred with results of the survey in December 2009 (see Appendix C, Public and Agency Coordination).

- **Preble's Meadow Jumping Mouse.** Much of the project study area is in the metro Denver block clearance area, and only one area of riparian habitat where Preble's meadow jumping mouse could potentially occur was identified. Suitable habitat occurs at the crossing of New Dry Creek Ditch and Dry Creek at 75th Street in the Boulder Section. Trapping was conducted at this location in June of 2009, and no Preble's meadow jumping mouse were found. Trapping conducted one mile upstream in the late 1990s was also negative. The Preferred Alternative would have no effect on the Preble's meadow jumping mouse in the project study area.
- **Colorado Butterfly Plant.** This species has been reported to occur both upstream and downstream of the crossing of Walnut Creek in the Westminster Section, with the primary population upstream of the crossing in the former Chambers Preserve. A presence/absence survey in August 2009 did not find any plants near the alignment, and there is no suitable habitat within the proposed alignment at Walnut Creek. Suitable habitat is present elsewhere along the alignment but not in the proposed stations footprints, but no populations are known to occur and no individuals were observed during the 2009 presence/absence survey. If present in the project footprint at the time of construction, construction activities could destroy plants and destroy soil seed banks by exposure or deep burial. The NWR Corridor Alignment may affect, but is unlikely to adversely affect, this Colorado butterfly plant.
- **Ute Ladies'-tresses.** While no populations of Ute ladies'-tresses have been recorded within the NWR Corridor Project study area, populations are known to occur upstream of the project area along Boulder Creek, and populations have been reported upstream of the crossings of St. Vrain Creek, Lefthand Creek, and Fourmile Creek (Fertig, Black and Wolken 2005). The only close location is on Boulder Creek, where a small population occurs approximately 0.25 mile upstream. Surveys were conducted in August 2009 to evaluate habitat quality along perennial streams in the NWR project study area, and to do presence/absence surveys in areas of suitable habitat. Suitable or marginal habitat was observed in some areas, but no individuals or high potential habitat was observed. If present in the project footprint, individual plants of Ute ladies'-tresses would be destroyed by crushing, uprooting, or burial during ground-clearing and earth-moving activities. The NWR Corridor Alignment may affect, but is unlikely to adversely affect, Ute Ladies'-tresses.

State-listed threatened and endangered species known or likely to occur in the project study area include bald eagle, burrowing owl, brassy minnow, and common shiner.

- **Bald Eagle.** Bald eagles may occur occasionally in most of the project study area. Construction may cause temporary displacement, but there would be no long-term loss of habitat. Construction would require removal of some large trees that could be used by bald eagles, but other trees are available. No nests or winter roosts would be affected.
- **Burrowing Owl.** No burrowing owl nests are known to exist near the project study area, but good quality habitat occurs in association with prairie dog colonies in the Broomfield, Louisville, and Boulder sections, and this species could occur. If present, impacts to nesting burrowing owls could include permanent loss of potential nesting habitat (prairie dog habitat loss), and disturbance to individuals during nesting and migration from construction activities. If owls or their young are present in burrows near the proposed alignment, they could be killed or injured if the burrows are destroyed during the nesting period (April 1 to July 31) or during the period when burrowing owls are present (March 1 to October 31). Noise and disturbance during construction could also adversely affect burrowing owls nesting within approximately 150 feet and could cause nest abandonment. Impacts would be avoided by pre-construction surveys and seasonal restrictions on construction near burrowing owl nests.
- **Common Shiner and Brassy Minnow.** Impacts to state-threatened fish could include displacement during construction of bridges at Big Dry Creek, South Boulder Creek, Boulder Creek, and St. Vrain Creek. Impacts are expected to be minor because little or no in-stream construction would be needed. Impacts to fish and fish habitat could also occur from sediment deposition from cleared construction areas adjacent to the channel, and from accidental releases of fuel, oil, or other materials that would adversely affect water quality. Impacts would be most detrimental during the fish spawning period in late spring and early summer. These impacts would be temporary and controlled by use of BMPs, a sediment control plan, and spill prevention plan.

State species of special concern known or likely to occur in the project area include black-tailed prairie dog and other sensitive species.

- **Black-tailed Prairie Dog.** Black-tailed prairie dog is listed as a species of special concern by the State of Colorado, and has a specific RTD management policy. Additional jurisdictions with regulations for the management of prairie dogs include the City of Boulder, Boulder County, and the City and County of Broomfield. Guidelines prepared by these jurisdictions would need to be followed, such as requirements for permitting, relocation, minimization of lethal control, and protection of burrowing owls. RTD Prairie Dog Management Policy states that projects will be designed and constructed to avoid and minimize impacts to prairie dog colonies greater than two acres in area. The majority of prairie dog colonies affected by the project are greater than two acres in size. Impacts to prairie dog colonies would be direct and permanent. Acres of prairie dog colonies affected by the Preferred Alternative are shown by section in Table 3.9-4. Impacts would include habitat loss, habitat fragmentation, disturbance during construction and operation, and mortality to individual animals during construction and operation. Loss of prairie dog habitat would affect numerous species dependent on prairie dog colonies for habitat and prey such as small mammals, songbirds, and raptors.
- **Other Sensitive Species.** A number of other special status species, mostly birds, are known or likely to occur in the project area, including species listed as birds of

conservation concern (USFWS 2008b), State of Colorado special concern (CDOW 2007a), and species “of greatest conservation concern” (CDOW 2005). These species are unlikely to be affected or may experience minor impacts.

Noxious Weeds

Project related construction could introduce new noxious weeds to the project study area or increase the abundance of existing noxious weeds. Removal of existing vegetation and disturbance of soils encourages germination of weed seeds and the spread of roots and seeds. Noxious weeds could degrade habitat quality in open spaces, sensitive areas, and riparian habitat and could cause increased management problems and costs in all areas.

Proposed Stations

Vegetation, Habitats, and Wildlife

The proposed stations would primarily affect industrial and commercial habitat except for 2.1 acres of grassland and 0.3 acre of riparian woodland along a ditch at the Downtown Louisville Station. Acres of habitat loss caused by the proposed stations are shown in Table 3.9-5. The majority of impacts would occur in habitats that have already been heavily modified by human activity, including industrial/commercial and residential/park habitats. Construction of the proposed stations in these areas would have limited long-term effects to biological resources because the areas are already modified, are common in the project study area, and do not have unique or sensitive wildlife or plants.

TABLE 3.9-5. DIRECT IMPACTS TO VEGETATION AND HABITATS BY THE PROPOSED STATIONS

Direct Impacts (acres) by Habitat Type									
	Industrial/ Commercial	Residential/ Parks	Disturbed	Grassland	Agricultural	Riparian Shrub	Riparian Woodland	Marsh	Aquatic
Proposed Stations									
South Westminster/ 71 st Avenue	Impacts associated with the South Westminster/71 st Avenue Station are included under Phase 1.								
Westminster/ 88 th Avenue	12.8	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Walnut Creek	1.9	0.0	2.8	0.4	0.0	0.0	0.0	0.0	0.0
Broomfield/116 th Avenue	7.7	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Flatiron	4.1	0.0	0.2	0.4	0.0	0.0	0.0	0.0	0.0
Downtown Louisville	7.5	3.0	1.4	0.7	0.1	0.0	0.3	0.0	0.0
East Boulder	8.5	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Boulder Transit Village	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gunbarrel	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Twin Peaks	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downtown Longmont	14.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	68.4	3.0	4.4	2.1	0.1	0.0	0.3	0.0	0.0

Source: NWR Corridor Project Team, 2009.

Special Status Species

The proposed stations would not result in direct impacts to special status species including Preble's meadow jumping mouse, Ute ladies'-tresses orchid, and Colorado butterfly plant.

Noxious Weeds

The impacts of the proposed stations on noxious weeds are the same as those previously described for the NWR Corridor Alignment.

Phase 1

Vegetation, Habitat, and Wildlife

Implementation of Phase 1 between DUS and the South Westminster/71st Avenue Station would primarily affect industrial habitat. It would also affect riparian woodland, riparian shrub, and aquatic habitats. These impacts are shown in Table 3.9-6 and detailed by section below.

TABLE 3.9-6. DIRECT IMPACTS TO VEGETATION AND HABITATS IN PHASE 1

Direct Impacts (acres) by Habitat Type									
	Industrial/ Commercial	Residential/ Parks	Disturbed	Grassland	Agricultural	Riparian Shrub	Riparian Woodland	Marsh	Aquatic
Phase 1 Alignment									
Denver	23.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Adams ¹	5.5	0.0	3.9	3.7	0.0	0.1	0.6	0.0	0.2
Subtotal	28.5	0.5	3.9	3.7	0.0	0.1	0.6	0.0	0.3
Proposed Stations									
South Westminster/ 71 st Avenue	24.8	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0
Total	53.3	0.5	3.9	5.0	0.0	0.1	0.6	0.0	0.3

Source: NWR Corridor Project Team, 2009.

Notes:

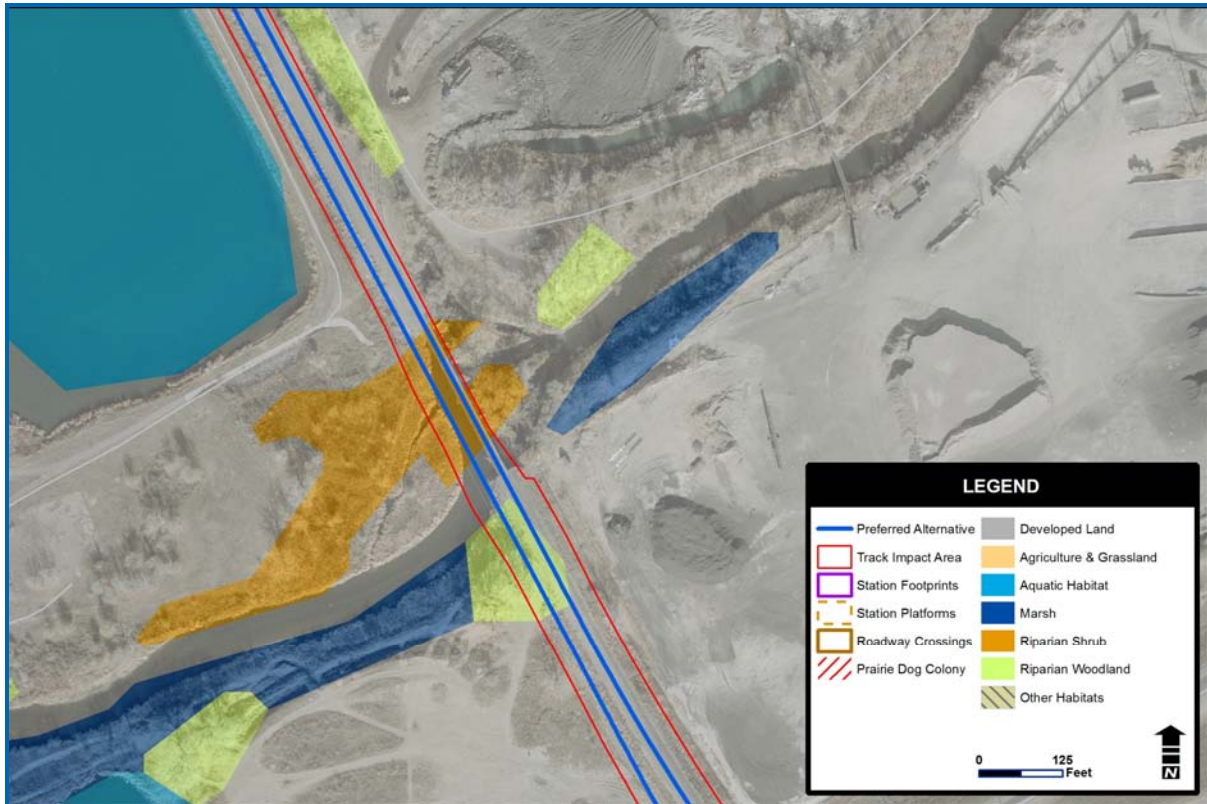
¹Alignment acquisitions from South Westminster/71st Avenue Station to Downtown Longmont Station are included under the NWR Corridor Alignment.

Denver Section

Phase 1 would have limited impacts on biological resources due to an absence of suitable habitat. Direct impacts on riparian vegetation associated with the crossing of the South Platte River are conservatively estimated between 0.25 and 0.50 acre. Pier construction would occur above the riparian corridor, spanning the river, thus potentially reducing the impact. No impacts to wetlands are anticipated. The new bridge would be elevated above the river and riparian area and would have no adverse effects on the wildlife corridor along the South Platte River. No prairie dog towns or raptor nests would be affected in the Denver Section.

Adams Section

The Phase 1 Alignment would affect riparian and aquatic habitat in the Adams Section at Clear Creek and along Little Dry Creek as shown in Figure 3.9-15. No prairie dog towns or known raptor nests would be affected. The South Westminster/71st Avenue Station would not impact biological resources. One wildlife movement corridor is located in this section. The existing bridge is a barrier to wildlife movement along the creek banks because of the configuration of the bridge, its abutments, the water surface of Clear Creek, the 8 foot drop structure immediately below the bridge, and existing industrial chain link fences. The new bridge would not enhance or degrade wildlife movements from the existing condition.

FIGURE 3.9-15. IMPACTS TO RIPARIAN HABITAT AT CLEAR CREEK


Sources: CDOT, 2006; DRCOG, 2007-08; ESRI SDC, 2004; NWR Corridor Project Team, 2008-09; NDIS, 2009.

High Tensile Wire Type I rural/agricultural fencing would be installed between Interstate 76 and 64th Avenue, an area which includes a pond and the Clear Creek riparian corridor. As with other sections, the rural high-tensile fencing would allow wildlife movements.

The BNSF Railway Company has discussed the potential need for additional storage track at the South Westminster/71st Avenue Station. If needed, this would affect approximately 0.2 acre of grassland habitat and would not affect any biologically sensitive areas.

Special Status Species

Phase 1 would not result in direct impacts to special status species including Preble's meadow jumping mouse, Ute ladies'-tresses orchid, and Colorado butterfly plant.

Noxious Weeds

The impacts of Phase 1 on noxious weeds are the same as those previously described for the NWR Corridor Alignment.

Indirect Impacts

The primary indirect impact of the Preferred Alternative would occur from an increase in urban density around the proposed stations. Indirect impacts could occur from loss of grassland and other habitats in undeveloped areas near proposed stations, where the stations are located next to undeveloped habitats. The majority of the impacts would be within 0.25 mile of the proposed station platforms. However, this more efficient land use scenario and the more effective provision of urban services could allow more undeveloped

land to be preserved within the region. The ultimate land use plans and the associated development would be controlled by local policy and not by RTD.

Temporary Construction Impacts

Construction of the Preferred Alternative would temporarily impact 99.5 acres of habitat. The majority of this impact (61.1 acres) would occur in grasslands. Impacts would include removal or physical disturbance of existing vegetation in areas adjacent to permanent facilities for installation of facilities and temporary access. These areas would be revegetated after construction. Temporary construction impacts to vegetation are detailed in Table 3.9-7.

TABLE 3.9-7. TEMPORARY IMPACTS TO VEGETATION AND HABITATS BY THE PREFERRED ALTERNATIVE

	Industrial/ Commercial	Residential/ Parks	Disturbed	Grassland	Agricultural	Riparian Shrub	Riparian Woodland	Marsh	Aquatic
Denver	Temporary construction impacts are accounted for in the direct impacts for the Denver Section								
Adams	2.6	1.1	3.1	3.1	0.0	0.0	0.5	0.1	0.0
Westminster	0.9	1.5	1.4	10.2	0.0	0.0	0.0	0.0	0.0
Broomfield	2.3	0.0	0.8	7.1	0.0	0.0	0.0	0.0	0.0
Louisville	0.9	1.2	1.5	14.9	0.3	0.1	0.3	0.1	0.0
Boulder	3.1	1.0	3.4	13.9	0.6	0.9	0.8	0.3	0.1
Longmont	4.9	0.4	3.4	12.0	0.6	0.0	0.0	0.0	0.0
Total	14.6	5.2	13.8	61.1	1.5	1.1	1.6	0.4	0.2

Source: NWR Corridor Project Team, 2009.

Impacts to wildlife during construction would include disturbance and displacement, temporary habitat fragmentation, and effects on wildlife movement due to increased noise and activity associated with construction. Temporary effects on aquatic habitats could also occur from erosion and sedimentation at stream crossings

Cumulative Impacts

The cumulative impact of the Preferred Alternative would be similar to the No Action Alternative. Vacant land that now serves as generally marginal wildlife habitat would continue to be developed as the population increases by the year 2035. However, the transit-oriented development anticipated to be stimulated by the Preferred Alternative would slightly modify this trend because some percentage of the new development would occur at higher densities. This would have a modest positive effect on wildlife as some vacant land would not be developed during the foreseeable future.

Avoidance and Minimization Measures

Stations have been sited to avoid or minimize impacts to sensitive or high quality habitats such as riparian areas and wetlands. Impacts to wildlife corridors and wildlife movement across the tracks have been minimized by developing a fencing plan that provides for use of wildlife-friendly fencing in areas where regular wildlife movements are anticipated.

3.9.4 Mitigation Measures

Mitigation techniques to reduce impacts to biological resources are described in Table 3.9-8.

TABLE 3.9-8. PROPOSED MITIGATION MEASURES - BIOLOGICAL RESOURCES: FISH, WILDLIFE, VEGETATION, AND THREATENED AND ENDANGERED SPECIES

Impact	Impact Type	Mitigation Measures
Loss of Vegetation and Habitat	Construction	<ul style="list-style-type: none"> • Restoration of disturbed riparian habitat will include planting of native trees and shrubs, as well as seeding and re-grading. Native grasses, forbs, and shrubs will also be seeded in riparian areas. • Grading plans will minimize removal of riparian vegetation where possible. • During construction, vehicle operation will be limited to the designated construction area, and the limits of the construction area will be fenced where adjacent to sensitive habitats including riparian areas, marshes, and upland trees and shrubs. • Silt fencing, erosion logs, temporary berms, and other BMPs will be used to prevent degradation of habitats adjacent to the construction area by transport of eroded sediment. • Areas of temporary disturbance within the right-of-way will be seeded with an appropriate mixture of native grasses and forbs. Shrubs will be planted where appropriate. • Trees within CDOT right-of-way will be replaced in accordance with CDOT's tree replacement policy.
Loss of Prairie Dog Colonies	Construction	<ul style="list-style-type: none"> • RTD has issued guidance on prairie dog mitigation for the FasTracks projects. Corridor projects will be designed and constructed to avoid and minimize impacts to prairie dog colonies. Relocation of prairie dogs will be coordinated with CDOW and conducted in compliance with the CDOW Permit to Capture and Relocate Prairie Dogs. If a relocation site cannot be located for towns greater than 2 acres, the prairie dogs will be captured and donated to raptor rehabilitation facilities or turned over to USFWS for the black-footed ferret reintroduction program. At no time will RTD authorize earth-moving activities that result in burying live prairie dogs. If needed, humane techniques will be used for killing prairie dogs. • Prairie dog mitigation will be coordinated with applicable local jurisdictions including the City of Boulder, Boulder County, the City and County of Broomfield, and CDOT.

TABLE 3.9-8. PROPOSED MITIGATION MEASURES - BIOLOGICAL RESOURCES: FISH, WILDLIFE, VEGETATION, AND THREATENED AND ENDANGERED SPECIES

Impact	Impact Type	Mitigation Measures
Disturbance to Migratory Birds, including Raptors	Construction	<ul style="list-style-type: none"> • In compliance with the MBTA, construction activities in grassland, riparian, marsh, and stream habitats, and those that occur on bridges that would otherwise result in the take of migratory birds, eggs, young, and/or active nests will be avoided. • Although the provisions of MBTA are applicable year-round, most migratory bird nesting activity in eastern Colorado occurs during the period of April 1 to August 31. Raptors can be expected to nest in woodland from February 1 to July 15. • The USFWS recommends that a qualified biologist conduct a field survey of the affected habitats and structures to determine the presence or absence of nesting migratory birds. • Surveys will be conducted during the nesting season prior to construction. Where possible, nesting may be prevented until construction is complete, by removal of vegetation. The results of field surveys for nesting birds, along with information regarding the qualifications of the biologist(s) performing the surveys, will be maintained on file for potential review by the USFWS, until such time as construction on the proposed project has been completed. • The USFWS Colorado Field Office will be contacted immediately for further guidance if a field survey identifies the existence of one or more active bird nests that cannot be avoided by the planned construction activities. • Raptor nest surveys will be conducted annually during an appropriate season (generally May 1 to June 1) to determine presence of active raptor nests. If an active nest is located, seasonal buffers will be established and coordinated with the CDOW to prevent disturbance of nesting raptors during construction. • Raptor and other nests in the construction footprint will be removed when they are inactive, outside of the nesting season.
Effects on Wildlife Corridors and Wildlife Movement	Operations	<ul style="list-style-type: none"> • Bridge structures will span the largest amount of riparian habitat as possible under a constructed bridge to limit the amount of disturbance to vegetation and to allow for travel along the water's edge. • Fencing installed along the proposed alignment should use wildlife-friendly design at crossings of wildlife corridors, other stream and ditch crossings, and in all areas adjacent to open space land. In addition, other areas considered high quality wildlife habitat should provide for wildlife friendly fencing. • RTD is committed to coordination with USFWS and CDOW throughout final design and will consider additional mitigation measures, if necessary.

TABLE 3.9-8. PROPOSED MITIGATION MEASURES - BIOLOGICAL RESOURCES: FISH, WILDLIFE, VEGETATION, AND THREATENED AND ENDANGERED SPECIES

Impact	Impact Type	Mitigation Measures
Spread of Noxious Weeds	Construction	<p>An Integrated Noxious Weed Management Plan will be developed during final design. This plan will be implemented during construction and will include identification of noxious weeds in the area, weed management goals and objectives, and preventive and control measures. Preventive measures include the following:</p> <ul style="list-style-type: none"> • Contractor's vehicles will be inspected before they are used for construction to ensure that they are free of soil and debris capable of transporting noxious weed seeds or roots. • Noxious weeds observed in and near the construction area at the start of construction would be treated with herbicides or physically removed to prevent seeds blowing into disturbed areas during construction. • Potential areas of topsoil salvage would be assessed for presence and abundance of noxious weeds prior to salvage. Topsoil from heavily infested areas would either be treated by spraying, taken off-site, or buried during construction. <p>Areas of temporary disturbance will be reclaimed as soon as construction is finished and seeded using a permanent seed mixture. If areas are completed and permanent seeding cannot occur due to the time of year, mulch and mulch tackifier would be used for temporary erosion control until seeding can occur.</p> <ul style="list-style-type: none"> • Only certified weed-free mulch and bales will be used in the project area. • Weed control would use the principles of integrated pest management, to treat target weed species efficiently and effectively by using a combination of two or more management techniques (biological, chemical, mechanical, and/or cultural). Weed control methods would be selected based on the management goal for the species, the nature of the existing environment, and methods recommended by Colorado State University, county weed boards, and other weed experts. The presence of important wildlife habitat or threatened and endangered species would be considered when choosing control methods.
Impacts to Aquatic Habitats	Construction	<ul style="list-style-type: none"> • BMPs will be used to control erosion and sedimentation during construction and to protect water quality in streams. BMPs may include berms, brush barriers, check dams, erosion control blankets, filter strips, sandbag barriers, sediment basins, sheet mulching, silt fences, straw-bale barriers, surface roughening, and/or diversion channels. A spill prevention and emergency response plan will be prepared and used during construction for storage, handling and use of chemicals, fuels and similar products. • See Section 3.10.2 Water Resources and Water Quality

TABLE 3.9-8. PROPOSED MITIGATION MEASURES - BIOLOGICAL RESOURCES: FISH, WILDLIFE, VEGETATION, AND THREATENED AND ENDANGERED SPECIES

Impact	Impact Type	Mitigation Measures
Impacts to Special Status Species	Construction	<p>Burrowing owl (state-listed threatened) CDOW recommendations (CDOW, 2007b) for surveys and protection of nesting burrowing owls will be followed:</p> <ul style="list-style-type: none"> • Surveys will be conducted prior to construction to determine presence of burrowing owls in prairie dog towns, and the locations of occupied nests. Surveys will be conducted for any construction activities in suitable habitat from March 15 to October 31 in prairie dog towns. • Construction will be avoided within 150 feet of burrows used by burrowing owls from March 15 to October 31. <p>Federally Listed Species. Consultation was conducted with the USFWS under Section 7 of the Endangered Species Act. A Biological Assessment was prepared, and the USFWS will issue a Biological Opinion with a determination of effect. Based on presence/absence surveys conducted in 2009, the Biological Assessment indicates that the project may affect but is not likely to adversely affect federally listed species. The USFWS concurred with this finding in December 2009. If requested by the USFWS, additional surveys will be conducted prior to construction. If individuals or populations of federally listed species are found or if other information indicates that a federally listed species has become present in the construction corridor, consultation will be reinitiated with the USFWS. Any conservation measures identified in the Biological Opinion will also be implemented.</p>

Source: NWR Corridor Project Team, 2009.