ERO

Consultants in Natural Resources and the Environment

Wildlife Habitat Assessment
Southern Portion of the Canyons Far South Property
Douglas County, Colorado

Prepared for—

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ERO Project #21-174

December 1, 2021

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Project Description

Lowe (Client) retained ERO Resources Corporation (ERO) to provide a wildlife habitat assessment for the southern portion of the Canyons Far South property in Douglas County, Colorado (project area; Figure 1). A survey of the wildlife habitat and ecological conditions in the project area was conducted by Marie Russo, a biologist with ERO, on July 9, 2021 (2021 site visit). The purpose of the survey was to identify areas where wildlife resources could occur, including habitat for federally listed threatened and endangered species and other species of special concern, raptor nests, important big game habitat and movement corridors, and other significant wildlife resources that might be affected by development in the project area. The project area is an approximately 409-acre parcel in an undeveloped portion of Douglas County, Colorado, and is planned for low-density residential development with dedicated open space areas (Figure 2). The Client is currently in the process of annexing the property into the Town of Castle Rock (Town).

This report describes wildlife habitat identified during the surveys and outlines current regulatory guidelines related to natural resources potentially occurring in the project area. It is the Client's intent to protect and preserve wildlife corridors, habitat, and natural resources and to comply with all federal, state, and local environmental regulations.

Project Location and Site Description

The project area is in Sections 30 and 31, Township 7 South, Range 66 West and Section 25, Township 7 South, Range 67 West of the 6th Principal Meridian in Douglas County, Colorado (Figure 1). The UTM coordinates of the approximate center of the project area are NAD 83 515105mE, 4361696mN, Zone 13. The latitude/longitude of the project area is 39.404643°N/-104.824557°W. The elevation of the project area ranges between about 6,240 and 6,500 feet above sea level. The project area is bounded by a low-density residential community that is currently being developed (Macanta) on the north, Castle Oaks Drive on the east, residential developments on the south (Terrain), and Founders Parkway on the west (Figures 1 and 2).

Project Background

Originally, the Canyons Far South property was a single 2,043-acre parcel. The northern portion of the Canyons Far South property is currently being developed and will include low-density residential

properties, a community recreation center, local parks, and an elementary and middle school. Approximately 449 acres of the original Canyons Far South property was dedicated to Douglas County as a regional park.

A previously completed wildlife investigation report by EDAW Inc. was submitted and accepted by Colorado Parks and Wildlife (CPW) in 2006 for the overall Canyons Far South property (EDAW Inc. 2006). ERO provided a Natural Resources Assessment for the overall Canyons Far South Property in 2013 (ERO 2013), as well as a Wildlife Habitat Assessment in 2015 (ERO 2015). Since 2015, the Canyons Far South property has been subdivided into several parcels. This report focuses on the undeveloped, southern portion of the Canyons Far South property (Figure 1).

Regulatory Framework

Development in the project area may be affected by several federal and state environmental regulations. One of the goals of this document is to provide information to assist the Client in addressing regulatory compliance issues. The environmental regulations most pertinent to the proposed development are described below.

Federal, State, and Local Regulations

Endangered Species Act

Federally threatened and endangered species are protected under the Endangered Species Act of 1973, as amended (ESA) (16 United States Code 1531 et seq.). Significant adverse effects on a federally listed species or its habitat require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 or 10 of the ESA. No regulations require consultations for effects on candidate species; however, if a species were to become listed during project planning or construction, consultation with the Service would be required. Findings regarding federally threatened and endangered species are addressed in the *Federally Threatened, Endangered, and Candidate Species* section of this report.

Migratory Bird Treaty Act

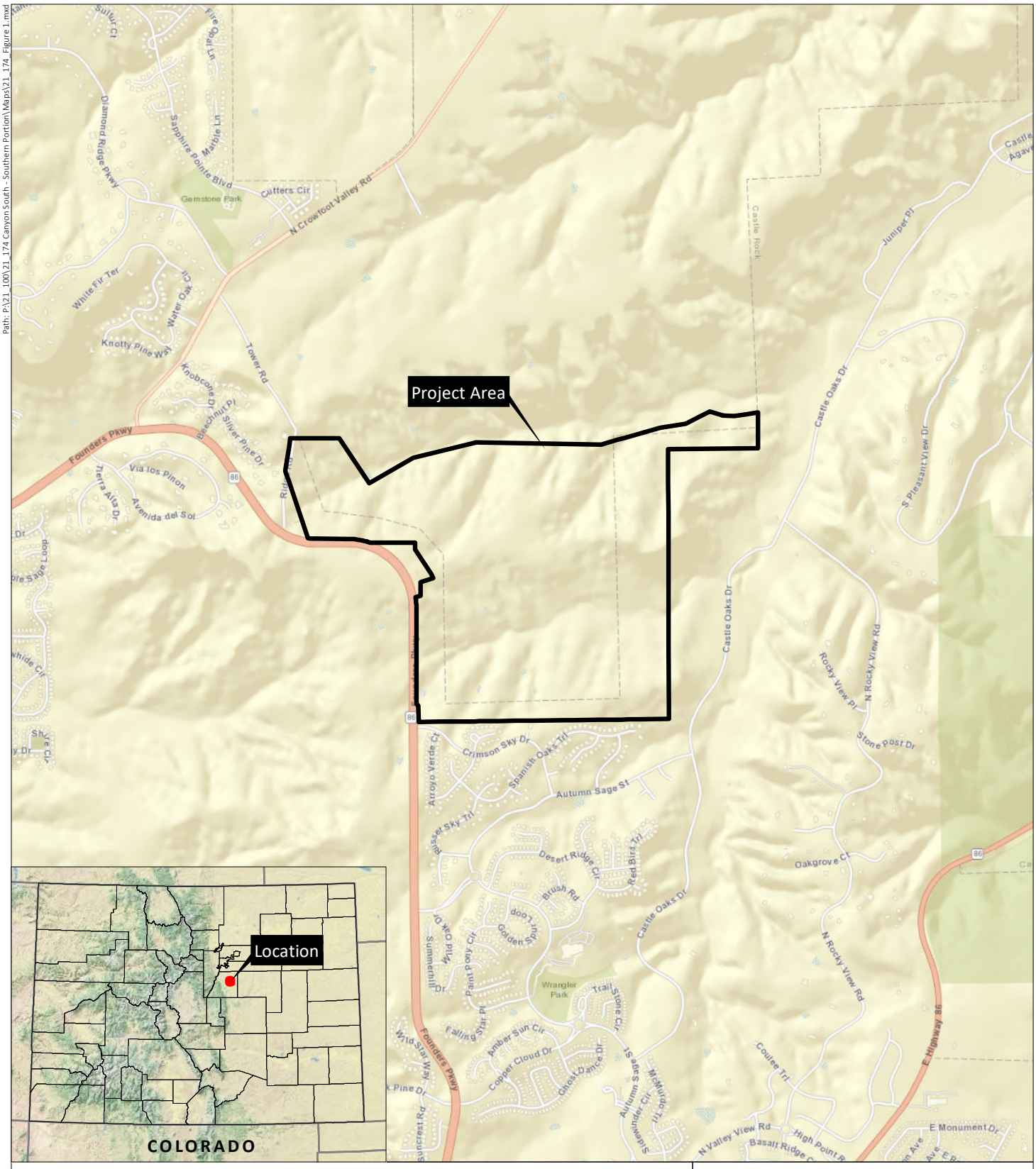
Migratory birds, including raptors, and any active nests are protected under the Migratory Bird Treaty Act (MBTA). Removal of active nests that results in the loss of eggs or young is prohibited under the MBTA. In Colorado, most birds (except grouse species and nonnative Eurasian collared dove, European starling, house sparrow, and rock pigeon) are protected under the MBTA (§§ 703-712). Even species such as magpie and great horned owl that tend to be present throughout the year are protected under the MBTA. All nests are protected, including cavity (e.g., flicker), ground (e.g., killdeer), and subterranean (e.g., burrowing owl) nests. The MBTA does not contain any prohibition that applies to the destruction of a bird nest alone (without birds or eggs), provided that no possession occurs during the destruction. Findings regarding migratory birds are addressed in the *Raptors and Migratory Birds* section of this report.

Colorado State Statute 33

As directed by Colorado State Statute 33 (State Statute 33; CRS Ann. §§33-2 to 102-106), the Colorado Wildlife Commission issues regulations and develops management programs implemented by CPW (formerly Colorado Division of Wildlife) for wildlife species not federally listed as threatened or endangered. This includes maintaining a list of state threatened and endangered species. CPW also maintains a list of species of concern, but these are not protected under State Statute 33. Although State Statute 33 prohibits the take, possession, and sale of state-listed species, it does not include protection of their habitat. Findings regarding state threatened and endangered species and other wildlife species are addressed in the *State Threatened and Endangered Species and Species of Special Concern* and *Other Species of Concern* sections of this report.

Town of Castle Rock Habitat Protection Policies

As part of the Town's 2030 Comprehensive Master Plan (CRCMP), the Town has established additional guidance, goals, and policies to protect and enhance significant natural areas that provide essential habitat. Recommendations on compliance with the Town's policies are provided in the *Post-construction Habitat Recommendations* section of this report.



Southern Portion of the Canyons Far South Property

Sections 30 and 31, T7S, R66W; Section 25, T7S, R67W 6th PM

UTM NAD 83: Zone 13N; 515105mE, 4361696mN

Longitude 104.824557°W, Latitude 39.404643°N

USGS Castle Rock North, CO Quadrangle

Douglas County, Colorado

Figure 1
Vicinity Map

Prepared for: Lowe Enterprises

File: 21_174_Figure 1.mxd (WH)

September 2, 2021

ERO Resources Corp.

Methods

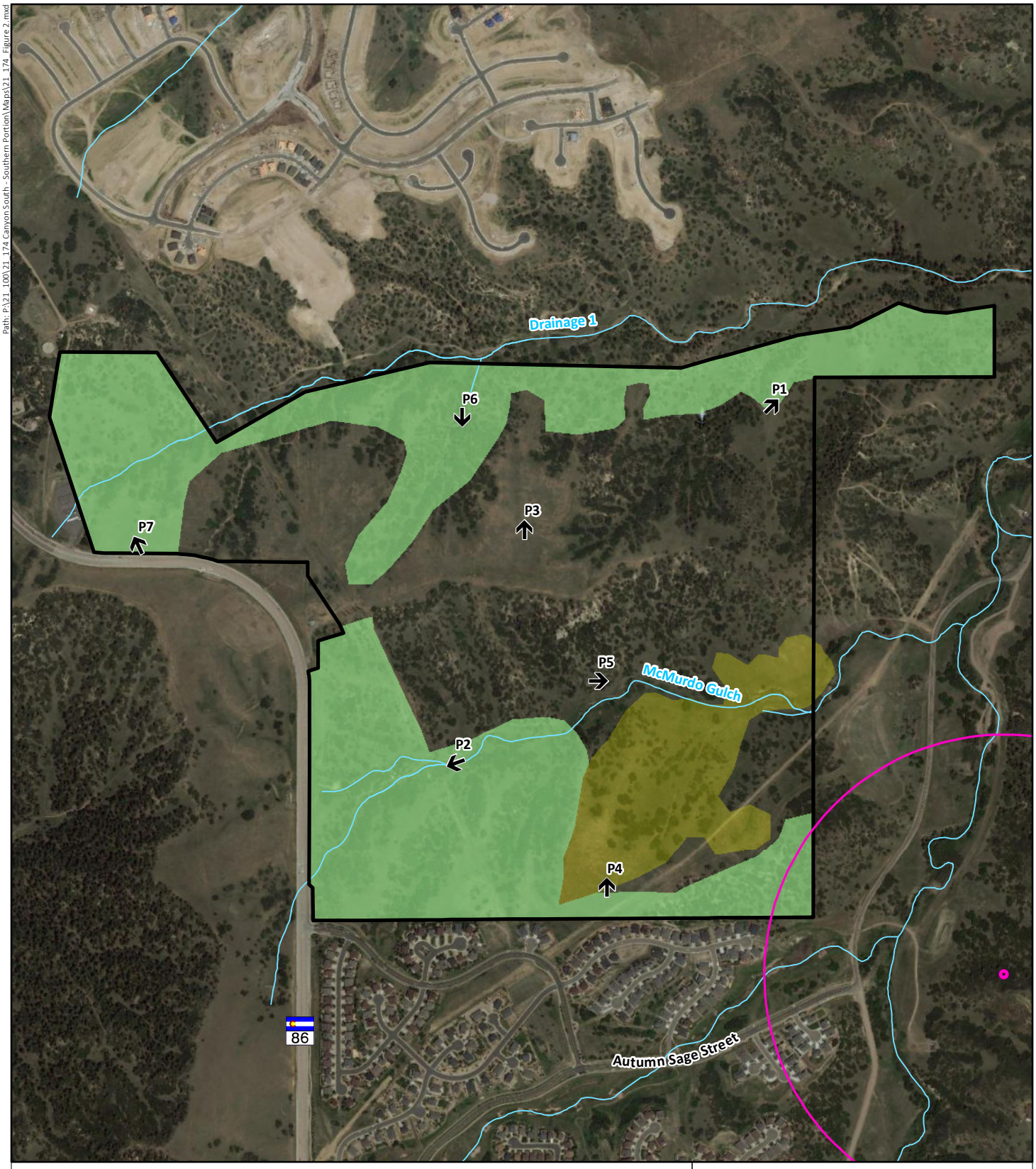
ERO conducted a wildlife habitat assessment of the project area to identify natural and wildlife resources that may be impacted by development of the project area and to identify any significant changes in natural resources since the 2015 wildlife habitat assessment (ERO 2015). In addition to the information gathered during the 2021 site visit, wildlife and natural resource information was obtained from existing sources such as aerial photography, the Colorado Natural Diversity Information Source (NDIS), Douglas County Riparian Conservation Zone (RCZ) mapping, and the Colorado Natural Heritage Program, and other sources. Based on the information gathered from existing sources and the initial site visit, ERO verified existing vegetation communities and identified important wildlife attributes of the project area both within the project area boundaries and in a regional context (Figures 2 and 3). In addition, ERO used existing data from CPW map databases, the 2030 CRCMP (Town of Castle Rock 2017), and the 2040 Douglas County Comprehensive Master Plan (DCCMP; Douglas County 2019) to compile this description of wildlife habitat.

Project Area Description

The U.S. Department of Agriculture (USDA) has mapped the project area within the Southern Rocky Mountain Foothills Major Land Resource Area, which is mainly characterized by rugged mountains with some broad valleys and remnants of high plateaus (USDA, Natural Resources Conservation Service [NRCS] 2006). The climate of the area is typical of midcontinental semiarid temperate zones, but the strong rain shadow effect of the Southern Rocky Mountains makes the area somewhat drier. The average annual precipitation is between 9 inches in certain valleys and 63 inches on some mountain peaks (USDA, NRCS 2006).

The project area is located in the Cherry Creek watershed and is part of the Platte River system, which is tributary to the Missouri River, the longest river in the United States (about 2,341 miles long). The geology of the area consists largely of exposed sedimentary rock and alluvial fill. The majority of the region historically consisted of shortgrass and midgrass prairie.

The topography of the project area generally slopes from plateaus and rolling ridges into tapered drainage basins (Photo 1, Appendix C). The project area contains four primary vegetation communities including upland grasslands, oak shrubland, ponderosa pine forest, and drainage corridors, which are described in detail in the *Vegetation Communities and Wildlife Habitat* section of this report. A list of plants observed during the 2021 site visit and their foremost associated vegetation community type can be found in Appendix A, and Appendix B lists wildlife species potentially found in the project area.



Southern Portion of the Canyons Far South Property

- Red-tailed Hawk Nest
- Photo Point
- Drainage Corridor
- 1/3-Mile Buffer
- Black-tailed Prairie Dog Colony
- Proposed Open Space
- Canyons South Property

Image Source: MaxarMetro©, June 7, 2020

0 500 1,000 Feet

N

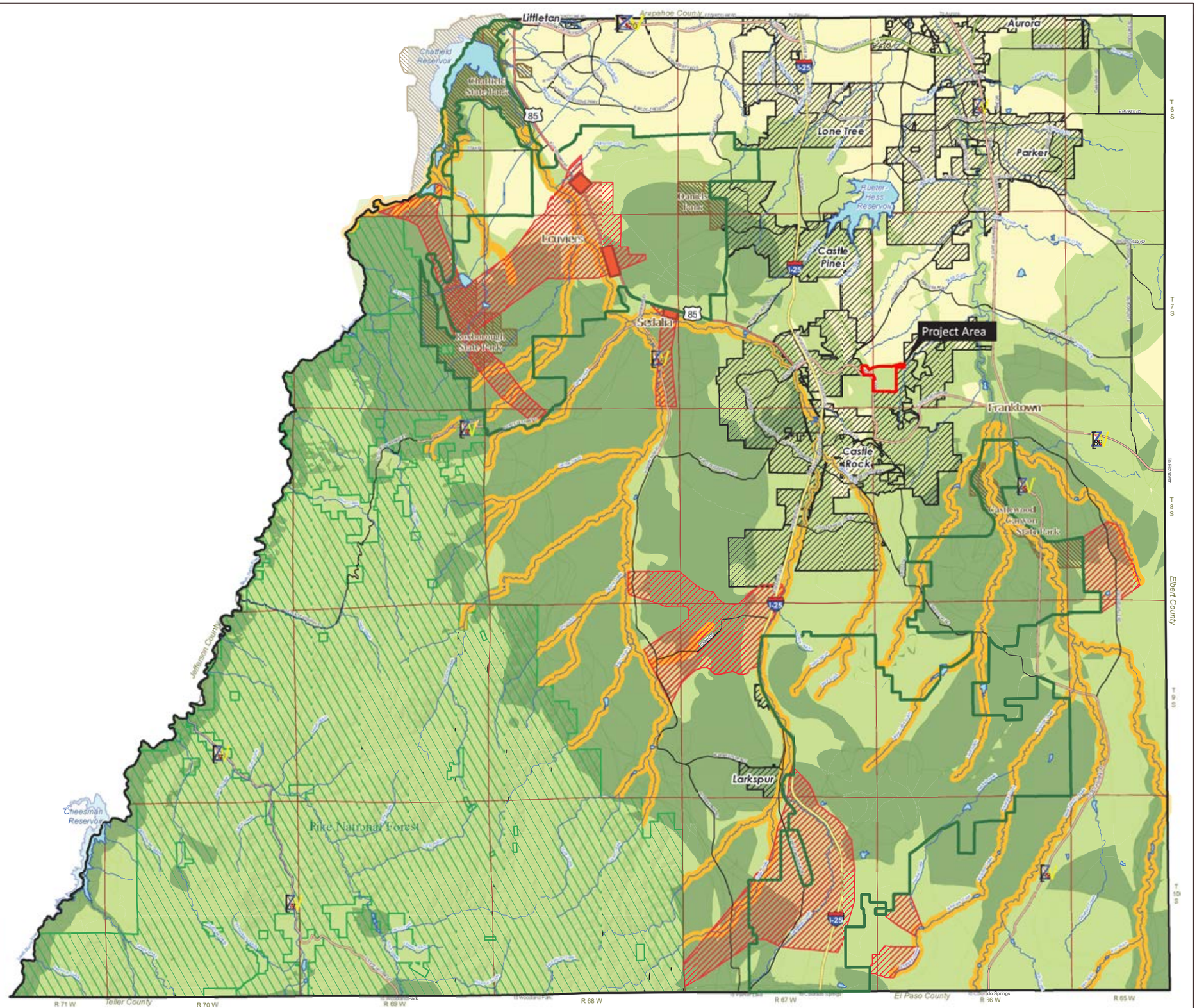
Figure 2
Existing Conditions

Prepared for: Lowe Enterprises
File: 21_174_Figure 2.mxd (WH)
December 1, 2021

ERO Resources Corp.

Figure 3
Wildlife Resources
Comprehensive Master Plan 2040

- Wildlife Habitat Conservation Area
- Overland Connection
- Wildlife Movement Corridor
- Low Habitat Value
- Moderate Habitat Value
- High habitat Value
- Wildlife Crossing Area
- Parks
- Pike National Forest
- Municipalities
- Townships
- Douglas County Boundary
- Streams
- Interstate
- US Highway
- State Highway
- Toll Highway
- Major Road



Vicinity Map
State of Colorado

0 0.25 0.5
Miles

Note:
For information pertaining to our Douglas County GIS data use disclaimer, see Land Use map 1.1, for more information.

DOUGLAS COUNTY COLORADO

Path: S:\PROJECTS\CMP2040\CMP2040.aprx Date : 7/18/2019 5:15 PM

Habitat Value

The DCCMP maps habitat value for the purpose of identifying wildlife habitat resources; the overall project area is mapped as moderate wildlife habitat value (Figure 3). During the 2021 site visit, ERO confirmed that a majority of the project area has moderate wildlife habitat value.

Moderate wildlife habitat value areas are usually dominated by native and introduced plant species, have low densities of noxious weeds, and have not been degraded by overgrazing within the project area. Patches of lower-quality habitat areas are located within moderate-quality habitat areas where prairie dog towns have degraded the vegetation by allowing native weedy species such as fringed sage (*Artemisia frigida*) and yucca (*Yucca* sp.) to become more dominant. Outside of the prairie dog towns, the moderate-quality habitat areas are dominated by native and introduced grasses such as western wheatgrass (*Pascopyrum smithii*), purple three-awn (*Aristida purpurea*), needle-and-thread grass (*Hesperostipa comata*), green needlegrass (*Nassella viridula*), blue grama (*Bouteloua gracilis*), cheatgrass (*Bromus tectorum*), smooth brome (*Bromus inermis*), and intermediate wheatgrass (*Thinopyrum intermedium*). These grass species have high wildlife forage potential. Commonly occurring plant species include forbs such as scarlet globemallow (*Sphaeralcea coccinea*), white prickly poppy (*Argemone albiflora*), sunflower (*Helianthus* sp.), slimflower scurfpea (*Psoralidium tenuifolium*), prairie spiderwort (*Tradescantia occidentalis*), lupine (*Lupinus* sp.), and hairy false aster (*Heterotheca villosa*) and shrubby species such as fringed sage, winterfat (*Krascheninnikovia lanata*), yucca, prickly pear (*Opuntia* sp.), Gambel oak (*Quercus gambelii*), skunkbush sumac (*Rhus trilobata*), and chokecherry (*Prunus virginiana*).

High wildlife habitat value areas were observed along the drainage corridors. High wildlife habitat value areas are typically defined as areas dominated by native plant species, have not been degraded by overgrazing, contribute to the function and value of the ecosystem, and have a strong structural component as well as a diverse species composition. Riparian and wetland areas are considered high-quality habitat areas because they have high value to wildlife, filter out pollutants, and contribute to the function and value of the ecosystem.

Vegetation Communities and Wildlife Habitat

Wildlife habitat in the project area correlates to the existing vegetation communities and topographical features. During the 2021 site visit, ERO documented primary vegetation communities that provide contiguous habitat, water resources, and core wildlife values such as cover and forage for various wildlife species. The primary vegetation communities found in the project area are upland grasslands, oak shrubland, ponderosa pine forest, and drainage corridors. Each primary vegetation community is described in more detail below.

Upland Grasslands

The upland grasslands in the project area are dominated by shortgrass and midgrass prairie vegetation communities. This vegetation community was observed along moderately flat upland areas and at the tops of the plateaus (Photo 3). Typical grassland species include blue grama, needle-and-thread grass, buffalo grass (*Bouteloua dactyloides*), sideoats grama (*Bouteloua curtipendula*), three-awn, green needlegrass, western wheatgrass, and introduced species such as crested wheatgrass (*Agropyron cristatum*), smooth brome, cheatgrass, and intermediate wheatgrass. The grassland areas also support a variety of flowers including paintbrush flower (*Castilleja* sp.), scarlet globemallow, sunflower, prairie spiderwort, slimflower scurfpea, lupine, hairy false aster, white prickly poppy, and yucca. Patches of lower-quality habitat were noted in this vegetation community in areas that were dominated by nonnative or noxious weed species (Photo 4). Within the project area, a few large patches of leafy spurge (*Euphorbia esula*; List B), Scotch thistle (*Onopordum acanthium*; List B), common mullein (*Verbascum* thapsus; List C), and cheatgrass (List C) were noted. These patches were found in areas of higher disturbance in the project area.

An active black-tailed prairie dog (*Cynomys ludovicianus*) colony inhabits the upland grasslands along the southern portion of the project area (Figure 2). This area was only sparsely vegetated during the 2021 site visit.

Typically, small predators, such as the coyote (*Canis latrans*) and red fox (*Vulpes vulpes*), use this vegetation community to hunt small rodents, ground-nesting birds, and reptiles that inhabit these areas.

Oak Shrublands

Oak shrublands in the project area are medium- to high-density and are generally dominated by Gambel oak with a variety subshrub species and an understory of shortgrass prairie species (Photo 5 and Photo 7). Additional shrub species include mountain mahogany (*Cercocarpus montanus*), skunkbrush sumac, chokecherry, snowberry (*Symphoricarpos occidentalis*), and Woods' rose (*Rosa woodsii*). The oak shrubland areas were found on relatively steep slopes in the project area and extend into the drainage corridors.

This vegetation community is important for its diversity. Wildlife species, such as elk (*Cervus canadensis*), mule deer (*Odocoileus hemionus*), and avian species, typically use these areas for cover and foraging. During the 2021 site visit, three elk were observed in the project area in this vegetation community.

Ponderosa Pine Forest

The ponderosa pine (*Pinus ponderosa*) forest in the project area is primarily low-density and consists of an understory of shrubby species such as snowberry, Woods' rose, chokecherry, mountain mahogany, and American plum (*Prunus americana*) and sparse coverings of mixed-grass prairie including species such as western wheatgrass, smooth brome, green needlegrass, Canada bluegrass (*Poa compressa*), prairie coneflower (*Ratibida columnifera*), wild bergamot (*Monarda fistulosa*), lupine, hairy false aster,

and aster (*Symphyotrichum* sp.) (Photo 6). This vegetation community occurs intermittently and in relatively small patches along the drainage corridors.

The ponderosa pine forest vegetation community supports nesting and foraging areas for squirrels (*Sciuridae* sp.) and birds. This vegetation community can also provide cover for big game species.

Drainage Corridors

Two main drainages occur in the project area, including an unnamed drainage (Drainage 1) and McMurdo Gulch (Figure 2). These drainages contribute to the varied topography of the project area. Drainage 1 appears to have an ephemeral flow regime, and McMurdo Gulch appears to have an intermittent flow regime. No perennial tributaries occur in the project area. The majority of Drainage 1 and McMurdo Gulch consist of upland vegetated swales, and wetlands were observed only in McMurdo Gulch near the headwaters and adjacent to constructed berms, culverts, and old drop structures in the project area (Photo 2). The wetlands along McMurdo Gulch were in relatively narrow, intermittent patches. The dominant vegetation found in the wetlands were hydrophytic species such as common spikerush (*Eleocharis palustris*), foxtail barley (*Hordeum jubatum*), sandbar willow (*Salix exigua*), and narrowleaf cattail (*Typha angustifolia*). A few isolated ponds are shown in the project area in the Service's National Wetland Inventory and the U.S. Geological Survey National Hydrography Dataset. These features are man-made agricultural ponds created for livestock grazing and, therefore, have been significantly disturbed and lack vegetation. Similar to Drainage 1 and McMurdo Gulch, water is only seasonally present in these features. The isolated ponds do not add to the wildlife habitat value in the project area because of the high level of disturbance and the lack of vegetation. No other large areas of open water were observed in the project area.

Although the drainage corridors do not support a permanent water source and lack well-developed wetland and riparian communities, they provide protective cover, foraging, and nesting habitat for wildlife and birds. The drainages extend across the project area and support movement corridors and core habitat connections for wildlife, as well as add to the scenic quality of the project area. Several wildlife species dwell in this vegetation community, while others use it as a passageway; therefore, there is typically high biodiversity. ERO recommends that the proposed project avoid development within the Drainage 1 and McMurdo Gulch corridors and wetland areas. Maintaining these areas as habitat corridors would contribute to the colonization, migration, and interbreeding of wildlife species.

Federally Threatened, Endangered, and Candidate Species

ERO assessed the project area for potential habitat for threatened, endangered, and candidate species protected under the ESA. Adverse effects on a federally listed species or their habitat require consultation with the Service under Section 7 or 10 of the ESA. The Service lists several threatened and endangered species with potential habitat in the project area or that would be potentially affected by the project (Table 1).

Table 1. Federally threatened, endangered, and candidate species potentially found in the project area or potentially affected by the project.

Common Name	Scientific Name	Listing Status[1]	Habitat	Suitable Habitat Present or Potential to Be Affected by Project?
Birds				
Piping plover[2]	*Charadrius melodus*	T	Sandy lakeshore beaches and river sandbars	No habitat, no potential to affect
Whooping crane[2]	*Grus americana*	E	Mudflats around reservoirs and in agricultural areas	No habitat, no potential to affect
Mammals				
Preble's meadow jumping mouse[3]	*Zapus hudsonius preblei*	T	Shrub riparian/wet meadows	No habitat
Fish				
Greenback cutthroat trout	*Oncorhynchus clarki stomias*	T	Gravelly headwater streams or mountain lakes	No
Pallid sturgeon[2]	*Scaphirhynchus albus*	E	Large, turbid, free-flowing rivers with a strong current and gravelly or sandy substrate	No habitat, no potential to affect
Plants				
Ute ladies'-tresses orchid	*Spiranthes diluvialis*	T	Moist to wet alluvial meadows, floodplains of perennial streams, and around springs and lakes below 6,500 feet in elevation	No
Western prairie-fringed orchid[2]	*Platanthera praeclara*	T	Mesic and wet prairies, sedge meadows	No habitat, no potential to affect

[1] T = Threatened Species, E = Endangered Species.
[2] Water depletions in the South Platte River may affect the species and/or critical habitat in downstream reaches in other counties or states.
[3] There is critical habitat for the species within Douglas County.
Source: Service 2021.

The proposed project would not affect the greenback cutthroat trout because the project area is outside of the known range of the species and lacks suitable habitat. The piping plover, whooping crane, pallid sturgeon, and western prairie fringed orchid are species that are affected by continued or ongoing water depletions to the Platte River system. If the project includes activities that deplete water in the South Platte River, such as diverting water from a stream or developing new water supplies, these species could be affected by the project, and consultation with the Service may be required.

Potential habitat for Preble's meadow jumping mouse (Preble's) and Ute ladies'-tresses orchid (ULTO) is generally more prevalent in areas across the Front Range. Because these species are more likely to be addressed by counties and regulatory agencies such as the U.S. Army Corps of Engineers, a more detailed discussion is provided below.

Preble's Meadow Jumping Mouse

Species Background

Preble's was listed as a threatened species on May 13, 1998. Several petitions to delist Preble's have been filed with the Service since 2011. On March 30, 2017, a petition to delist Preble's was filed; the Service found that the petition did not present substantial scientific or commercial information indicating that delisting Preble's may be warranted (83 Federal Register [FR] 16819). The Service refers to this finding as a "not substantial" petition finding (83 FR 16819). On August 10, 2018, the Service announced the initiation of a 5-year status review for Preble's (83 FR 39771). Until the completion of this 5-year finding, Preble's remains protected under the ESA. Preble's is found along the foothills of southeastern Wyoming and southward along the eastern edge of the Colorado Front Range to Colorado Springs (Clark and Stromberg 1987; Fitzgerald et al. 1994). The semiarid climate in southeastern Wyoming and eastern Colorado limits the extent of riparian corridors and therefore restricts Preble's range, which is associated with these corridors.

Along Colorado's Front Range, Preble's is found below 7,800 feet in elevation, generally in lowlands with medium to high moisture along permanent or intermittent streams. Preble's prefers riparian areas featuring well-developed, multistoried, and horizontal cover with a lush understory of grasses and forbs (Bakeman 1997; Bakeman and Deans 1997). Preble's typically inhabits areas characterized by plains riparian vegetation with relatively undisturbed grassland and a water source nearby (Armstrong et al. 2011). High-use areas for Preble's tend to be close to creeks and are associated with a high percentage of shrubs, grasses, and woody debris (Trainor et al. 2007). Studies have suggested that Preble's may have a wider ecological tolerance than previously thought and that the requirement for diverse vegetation and well-developed cover can be met under a variety of circumstances (Meaney et al. 1997). Radio-tracking studies conducted by CPW have documented Preble's using upland habitat adjacent to wetlands and riparian areas (Shenk and Sivert 1999). Additional research by CPW has suggested that habitat quality for Preble's can be predicted by the amount of shrub cover available at a site (White and Shenk 2000). Mountain riparian sites may be surrounded by dense forest vegetation (such as ponderosa pine in Colorado), and sites on the plains have less woody vegetation.

Potential Habitat and Effects

During the 2021 site visit, ERO assessed the project area for potential Preble's habitat. ERO determined that the project area does not contain suitable habitat based on the following:

- The RCZ does not occur within the project area. The RCZ consists of riparian areas and adjacent upland habitats on nonfederal lands with a high likelihood of supporting Preble's that were mapped and designated as potential habitat. The Service has approved the RCZ mapping as the geographic limits of Preble's habitat on nonfederal lands in Douglas County.
- The project area lacks the lush herbaceous understory and adequate shrub cover by sandbar willows or other riparian shrubs typically associated with Preble's.

- Two trapping surveys were conducted in the project area along McMurdo Gulch, and several evaluations and trapping surveys were conducted within a 1½-mile radius of the project area, with no Preble's found (Stoecker Ecological Consultants 1998).
- The closest known Preble's population is over 3.5 river miles east of the project area along Cherry Creek.

Recommendations

Because of the reasons listed above, ERO determined that Preble's is unlikely to be present in the project area. In 2014, ERO submitted a habitat assessment to the Service requesting concurrence that no threatened or endangered species or suitable threatened or endangered species habitat exists in the overall Canyons Far South property; and on June 26, 2014, the Service concurred with ERO's "no concerns" determination. Conditions in the project area have not significantly changed since the 2014 habitat assessment was conducted. An updated habitat assessment will be submitted to the Service.

Ute Ladies'-Tresses Orchid

Species Background

ULTO is federally listed as threatened. ULTO occurs at elevations below 7,800 feet in moist to wet alluvial meadows, in floodplains of perennial streams, and around springs and lakes where the soil is seasonally saturated within 18 inches of the surface (Colorado Natural Heritage Program 2014; Service 1992a). This species has also been found along irrigation canals, irrigated meadows, gravel pits, and other human-modified wetlands (Service 2021). Once thought to be fairly common in low-elevation riparian areas in the interior western United States, ULTO is now rare (Service 1992a). The species' known range is from Nevada to British Columbia. The largest known populations occur in Utah, followed by Colorado (NatureServe 2021).

In Colorado, the Service requires surveys in suitable habitat within the 100-year floodplain segments of the South Platte River, Fountain Creek, and the Yampa River and their perennial tributaries, or in any area with suitable habitat in Boulder and Jefferson Counties. Since the protocols were submitted in 1992, ULTO has been found along the Roaring Fork River. Therefore, surveys should be conducted in suitable habitat in the floodplain of the Roaring Fork River and its tributaries. ULTO does not bloom until late July to early September (depending on the year), and timing of surveys must be synchronized with blooming (Service 1992b).

Potential Habitat and Effects

During the 2021 site visit, ERO assessed the project area for potential ULTO habitat. Because the project area is in Douglas County and a perennial tributary to the South Platte River does not occur in the project area, the site does not fall within the Service's guidelines for ULTO surveys. In addition, the wetlands in the project area do not contain species usually associated with ULTO.

Recommendations

Because no suitable habitat occurs in the project area, no action is necessary regarding ULTO.

State Threatened and Endangered Species and Species of Special Concern

During the 2021 site visit, ERO also assessed the project area for potential habitat for threatened and endangered species and species of special concern protected under State Statute 33. Although State Statute 33 prohibits the take, possession, and sale of state-listed species, it does not include protection of their habitat. The state lists several threatened and endangered species and species of special concern that could occur in the project area (Table 2).

Table 2. State-listed species and state species of concern potentially occurring in the project area.

Common Name	Scientific Name	Habitat	State Status[1]
Mammals			
Black-tailed prairie dog	*Cynomys ludovicianus*	Rangeland; shortgrass prairie; dry, flat, sparsely vegetated grasslands; prefer fine or medium-textured soils	SC
Swift fox	*Vulpes velox*	Native shortgrass prairie; grasslands of eastern Colorado	SC
Birds			
Bald eagle	*Haliaeetus leucocephalus*	Open water and rivers with trees	ST
Western burrowing owl	*Athene cunicularia*	Rangeland and shortgrass prairie with prairie dogs	ST
Reptiles and Amphibians			
Northern leopard frog	*Rana pipiens*	Wet meadows and shallows of marshes, ponds, lakes, reservoirs, streams, and irrigation ditches up to 11,000 feet in elevation	SC

[1] ST = Threatened Species, SC = Species of Special Concern.
Source: CPW 2021a.

Black-Tailed Prairie Dog

Species Background

The black-tailed prairie dog is a Colorado species of special concern (CPW 2021a). Black-tailed prairie dogs are important components of the short and mesic grasslands systems. Threats to this species include habitat loss and degradation, habitat fragmentation, disease (sylvatic plague), and lethal control activities. Typically, areas occupied by prairie dogs have greater cover and abundance of perennial grasses and annual forbs compared with unoccupied sites (Whicker and Detling 1988; Witmer et al. 2002).

Black-tailed prairie dogs are commonly considered a “keystone” species because their activities (burrowing and intense grazing) provide food and shelter for many other grassland species and have a large effect on community structure and ecosystem function (Power et al. 1996). Prairie dogs can

contribute to overall landscape heterogeneity, affect nutrient cycling, and provide nest sites and shelter for wildlife (Whicker and Detling 1988). Species such as black-footed ferret, burrowing owl, prairie rattlesnake, and mountain plover are closely linked to prairie dog burrow systems for food and cover. Prairie dogs also provide an important prey resource for numerous predators including American badger, coyote, red fox, bald eagle, golden eagle, ferruginous hawk, and other raptors. Prairie dogs also can denude the surface by clipping aboveground vegetation and contributing to exposed bare ground by digging up roots (Kuford 1958; Smith 1967).

High densities of prairie dogs can have adverse effects on vegetation communities, promote the spread of noxious weeds, increase soil erosion, and result in behavioral and ecological responses to overcrowding. In addition, high densities of prairie dogs have been found to facilitate the spread of plague epizootics (Cully and Williams 2001).

Potential Habitat and Possible Effects

An active black-tailed prairie dog colony was observed in the southeastern portion of the project area during the 2021 site visit (Figure 2). Although viable prairie dog colonies can be considered areas of high resource value, the ecological value of the prairie dog colony in the project area is reduced by its isolation from other more expansive prairie dog colonies in more contiguous grassland habitats, the overall degraded condition of the grasslands supporting the colony, and the proximity of residential development. However, the prairie dogs potentially provide breeding areas for burrowing owls and some forage value to wintering bald eagles and other raptors.

CPW recommends attempting to remove or exterminate prairie dogs prior to bulldozing an active prairie dog town for humane reasons. Currently, neither the Town nor Douglas County has a prairie dog management plan or policy for private properties.

If prairie dogs need to be removed for the proposed project area, two options typically exist: relocation and extermination. Currently, relocation to other parts of Colorado is not an option due to limited resources for new populations. Permits to move prairie dogs are required by CPW. Private companies can be hired to relocate prairie dogs, although relocation sites are difficult to secure. If extermination of prairie dogs is the selected approach, an experienced state-licensed exterminator is recommended.

Recommendations

If removal of the active black-tailed prairie dog colony in the project area becomes necessary, CPW recommends removing them in a humane manner before any earthwork or construction takes place. Prior to any work between March 15 and October 31 that would disturb the colony, the colony should be surveyed for western burrowing owls.

Swift Fox

Species Background

The swift fox is a Colorado species of special concern (CPW 2021a). The distribution of the swift fox includes the grasslands of eastern Colorado (Fitzgerald et al. 1994). Dens are usually located on sites

dominated by native shortgrass prairie species such as blue grama and buffalo grass. The swift fox is sometimes associated with prairie dog towns, although they generally excavate their own dens (Fitzgerald et al. 1994). Swift foxes are shy, secretive animals that avoid development and urban areas.

Potential Habitat and Possible Effects

Although native shortgrass prairie and prairie dog colonies typically favored by the swift fox occur in the project area, it is outside of the potential range of the species as mapped by CPW (NDIS 2021). Although possible, it is unlikely the swift fox occurs in the project area. No signs of denning or other possible swift fox activity in the project area were noted during the 2021 site visit. The project area also supports several competitors or predators of the swift fox including the coyote, red fox, and grey fox.

Recommendations

The proposed project would not likely adversely affect the swift fox because the project area is outside of its potential range; therefore, no further action is necessary regarding this species.

Bald Eagle

Species Background

The Bald Eagle Protection Act (Eagle Act) was originally passed in 1940. In 1962, the Eagle Act was amended to include the golden eagle. The Eagle Act prohibits anyone without a permit issued by the Secretary of the Interior from "taking" bald eagles, including their parts, nests, or eggs. The Eagle Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb." The Eagle Act affords eagles additional protections beyond those provided by the MBTA by making it unlawful to "disturb" eagles. In 2007, "disturb" under the Eagle Act was defined to mean to "agitate or bother a bald or golden eagle to a degree that causes or is likely to cause, based on the best scientific information, (1) injury to an eagle; (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

Removing nests, destroying nests, or causing nest abandonment may constitute a violation of the MBTA and the Eagle Act. The Eagle Act authorizes the Service to issue eagle incidental take permits only when the take is "compatible with the preservation of bald eagles or golden eagles." In December 2016, the Service published a final rule regarding Eagle Take Permits, outlining revisions to regulations for eagle incidental take and take of eagle nests (Service 2016; 50 Code of Federal Regulations [CFR] 13 and 22). The permitting process provides limited exceptions to the Eagle Act's prohibitions, and the Service has issued regulations concerning the permit procedures in 50 CFR 22.

The bald eagle is a large North American bird with a historical distribution throughout most of the U.S. Most bald eagle nesting in Colorado occurs near lakes or reservoirs or along rivers. Typical bald eagle nesting habitat consists of forests or wooded areas that contain tall, aged, dying, and dead trees (Martell 1992). Bald eagles seek aquatic habitat for foraging and typically prefer fish, although they also feed on birds, mammals, and carrion, particularly in winter (Buehler 2000; Sharps and Uresk 1990).

Prairie dogs provide a major food resource for bald eagles wintering along the Colorado Front Range (Environmental Science and Engineering 1988).

Potential Habitat and Possible Effects

No known bald eagle nest or roost sites occur in the project area or within a ½-mile radius of the project area (the CPW-recommended buffer), and no eagles were observed during the 2021 site visit. Cherry Creek is approximately 2 miles east of the project area and is designated as bald eagle winter range by CPW (NDIS 2021). Bald eagles may occasionally forage on prairie dogs in the project area.

Recommendations

Although no nests were observed or are known to occur within a ½-mile radius of the project area, ERO recommends nest surveys be conducted during the nesting season (December 1 through July 31) to identify active nesting that may present additional development timing restrictions. If active nests are identified within a ½-mile radius of the project area, ERO recommends contacting the local CPW district manager. As applicable, CPW recommends early consultation with the Service to comply with the Bald and Golden Eagle Protection Act, the MBTA, and the 2016 Service Eagle Permits Rules (Service 2016).

Western Burrowing Owl

Species Background

The western burrowing owl (burrowing owl) is a small migrant owl listed by the State of Colorado as a threatened species and is federally protected under the MBTA. Primary threats to the burrowing owl include habitat loss and fragmentation, anthropogenic sources of mortality such as vehicular collisions, and loss of wintering grounds, largely in Mexico (McDonald et al. 2004).

In general, burrowing owls are found in grasslands with vegetation less than 4 inches high and a relatively large proportion of bare ground (Gillihan and Hutchings 2000). In Colorado, burrowing owls are usually associated with black-tailed prairie dog colonies (Colorado Breeding Bird Atlas Partnership 2016; Andrews and Righter 1992). More than 70 percent of sightings reported in Colorado Breeding Bird Atlases were in prairie dog colonies (Colorado Breeding Bird Atlas Partnership 2016).

Burrowing owls usually arrive on their breeding grounds around mid-March to early April and remain until September (Haug and Oliphant 1990). Burrowing owls are typically present in Colorado from March 15 through October 31, with breeding from mid-April through early/mid-August (Andrews and Righter 1992; Colorado Breeding Bird Atlas Partnership 2016). CPW suggests conducting burrowing owl clearance surveys in prairie dog towns that are subject to poisoning or construction projects during the period from March 15 through October 31 (CPW 2021b).

Potential Habitat and Possible Effects

The prairie dog colony in the project area is potential habitat for burrowing owls. Inadvertent killing of burrowing owls could occur during prairie dog poisoning, construction, or earthmoving projects during

the breeding period. CPW has a recommended buffer of ⅛ mile (660 feet) surrounding active burrowing owl nests (CPW 2021b).

Recommendations

If any construction is planned within the recommended 660-foot buffer of a prairie dog burrow, CPW recommends conducting burrowing owl clearance surveys during the period from March 15 through October 31 (CPW 2021b). Construction occurring from November 1 through March 14 would not require clearance surveys; however, if burrowing owls are known to be present in an area in the winter, CPW recommendations may apply. If burrowing owls are found within the construction footprint, individual nest burrows and a 660-foot buffer around the burrow should be left undisturbed until the owls have moved or migrated from the site, which can be determined through monitoring (CPW 2021b).

Northern Leopard Frog

Species Background

The northern leopard frog is listed as a Colorado species of special concern (CPW 2021a). This species typically inhabits the banks and shallow portions of wetlands, ponds, lakes, streams, and other permanent water bodies. The northern leopard frog occurs at elevations from 3,500 to 11,000 feet in Colorado (Hammerson 1999).

Potential Habitat and Possible Effects

Drainage 1 and McMurdo Gulch and its wetlands may provide low-quality habitat for the northern leopard frog. No leopard frogs were observed during the 2021 site visit.

Recommendations

CPW does not currently enforce restrictive measures if a northern leopard frog is encountered during construction, and corrective measures are voluntary. If a northern leopard frog is found during construction, ERO recommends that activities cease within a 30-foot buffer of where the animal was seen and a qualified biologist be brought on to the site to correctly identify the animal and, if possible, relocate the animal to suitable habitat outside the construction limits. If no activities would occur within Drainage 1, McMurdo Gulch, or the wetland areas, the proposed project would not likely adversely affect leopard frogs because suitable habitat would not be impacted.

Other Species of Concern

In 2021, CPW released a High Priority Habitat (HPH) table that identifies species and habitats, as well as recommendations to avoid and minimize impacts on wildlife from land use development (CPW 2021c). ERO reviewed data from CPW map databases and determined that no HPH areas overlap with the project area (CPW 2021c). Although no HPH occurs in the project area, ERO assessed the project area for potential habitat for species and habitats listed in the HPH table during the 2021 site visit. Because elk and mule deer likely frequent the project area, these species are discussed in more detail below.

Elk

Species Background

Elk once occurred over much of central and western North America from Alaska south through Canadian Provinces and further south through much of the United States (Fitzgerald et al. 1998; Peek 1999). In Colorado, elk primarily occupy the western two-thirds of the state but can also be found on the eastern plains (Fitzgerald et al. 1998). The statewide estimate for elk in 2004 post-hunt was 274,570 (Watkins 2005) and CPW's long-term objective for the elk population in Colorado is about 228,000 (Kahn 2006).

Elk once occupied the eastern plains of Colorado, but today they are mostly associated with semi-open forests or forest edges adjacent to parks, meadows, and alpine areas (Fitzgerald et al. 1998). Elk are considered generalist feeders, grazers, and browsers, foraging on a variety of grasses, forbs, and shrubs throughout the year, with grasses, shrubs, and even conifers such as Douglas fir as winter forage (Fitzgerald et al. 1998; Peek 1999; Stewart et al. 2002). Most elk herds migrate between summer and winter ranges, with winter ranges typically occurring at lower elevations; however, some herds are relatively sedentary (Fitzgerald et al. 1998).

Potential Habitat and Possible Effects

The entire project area is located within the overall range for elk in Colorado, and elk may occasionally forage in the project area; however, no HPH for this species (including migration corridors, production areas, severe winter range, or winter concentration areas) occurs in the project area (CPW 2021c). Interstate 25 is generally considered a barrier to elk movement from elk concentration areas found west of the highway. Elk and deer highway crossings occur where traditional elk and deer movement corridors cross roads, presenting potential conflicts between elk and motorists (NDIS 2021). No elk highway crossings have been identified by Douglas County (Douglas County 2019) or CPW (NDIS 2021) in or near the project area. Three elk were observed in the project area during the 2021 site visit.

Recommendations

Because no HPH for elk occurs in the project area, no action is necessary. However, to discourage conflicts between future residents and wildlife, ERO recommends educating residents on wildlife interactions and providing residents with links to CPW's educational websites for "Living with Wildlife" and "Avoid Wildlife Conflicts". Additional recommendations are provided in the *Habitat Management Guidelines* section of this report.

Mule Deer

Species Background

Mule deer are found in all ecosystems in Colorado from grasslands to alpine tundra. Spring and summer ranges are typically mosaics of meadows, aspen woodlands, alpine tundra-subalpine forest edges, or montane forest edges (Fitzgerald et al. 1994). Seasonally, deer are relatively sedentary, although most will spend the summer at higher elevations and migrate to lower elevations in the winter. Mule deer diets vary seasonally but generally consist of browse from trees and shrubs, forbs, and grasses.

Potential Habitat and Possible Effects

The majority of the project area is within mule deer overall range and winter range (NDIS 2021). No mule deer HPH areas, including migration corridors, severe winter range, or winter concentration areas, are located in the project area (CPW 2021c). The closest mule deer concentration area is located approximately 2 miles east of the project area along Cherry Creek. Although no mule deer were observed during the 2021 site visit, it is likely that mule deer forage and migrate through the project area.

Recommendations

Because no HPH for mule deer occurs in the project area, no action is necessary. Similar to the recommendation in the elk section above, residents should be educated on wildlife interactions and provided with links to CPW's educational websites for "Living with Wildlife" and "Avoid Wildlife Conflicts". Additional recommendations are provided in the *Habitat Management Guidelines* section of this report. Other Raptors and Migratory Birds

Species Background

Migratory birds, as well as their eggs and nests, are protected under the MBTA. The MBTA does not contain any prohibition that applies to the destruction of a bird nest alone (without birds or eggs), provided that no possession occurs during the destruction. While destruction of a nest by itself is not prohibited under the MBTA, nest destruction that results in the unpermitted take of migratory birds or their eggs is illegal and fully prosecutable under the MBTA (Service 2003). The regulatory definition of a take is to pursue, hunt, shoot, wound, kill, trap, capture, or collect; or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect (50 CFR 10.12).

Under the MBTA, the Service may issue nest depredation permits, which allow a permittee to remove an active nest. The Service, however, issues few permits and only under specific circumstances, usually related to human health and safety. Obtaining a nest depredation permit is unlikely and involves a process that takes, at a minimum, 8 to 12 weeks. The best way to avoid a violation of the MBTA is to remove vegetation outside of the active breeding season, which typically falls between March and August, depending on the species. MBTA enforcement actions are typically the result of a concerned member of the community reporting a violation.

CPW maintains a leadership role with respect to raptor management in Colorado; however, the primary authority for the regulation of take and the ultimate jurisdiction for most of these species rests with the Service under the MBTA and the Eagle Act (16 United States Code 668-668c).

Potential Habitat and Possible Effects

ERO did not observe any active or inactive songbird nests in the project area; however, trees and shrubs, wetlands, and upland grasslands in and adjacent to the project area are potential nesting habitat for migratory birds. A known red-tailed hawk (*Buteo jamaicensis*) nest is located approximately 0.25 mile southeast of the project area (Figure 2). CPW recommends a ⅓-mile buffer from active red-tailed hawk nests from February 15 through July 15 for human encroachment activities or installation of a

permanent or long-standing physical object or structure (CPW 2020). Additionally, golden eagles (*Aquila chrysaetos*) are known to forage in the area; the closest known nest is approximately 3 miles away from the project area to the southeast.

A wide variety of bird species may use different vegetation communities in the project area for shelter, breeding, wintering, and foraging at various times during the year. Several migratory birds were observed in the project area, including black-billed magpies (*Pica hudsonia*), red-winged blackbirds (*Agelaius phoeniceus*), spotted towhee (*Pipilo maculatus*), Woodhouse's scrub jay (*Aphelocoma woodhouseii*), blue-gray gnatcatcher (*Polioptila caerulea*), gray catbird (*Dumetella carolinensis*), black-capped chickadee (*Poecile atricapilla*), and mourning dove (*Aenaida macroura*). The breeding season for most birds in Colorado is March through August, with the exception of a few species that begin breeding in February, such as great-horned owls.

Recommendations

Although no nests were observed during the 2021 site visit, ground and arboreal nests are difficult to detect and may be present in the grasslands, trees, and shrubs in the project area. To avoid destruction of potential migratory bird nests, vegetation removal should be conducted outside of the April 1 through August 31 breeding season.

Both the Denver Field Office of the Service (2009) and the Colorado Department of Transportation (2011) have identified the primary nesting season for migratory birds in eastern Colorado as occurring from April 1 through August 31. However, a few species such as bald eagles, great horned owls, and red-tailed hawks can nest as early as December (eagles) or late February (owls and red-tailed hawks). Because of variability in the breeding seasons, ERO recommends that a nest survey be conducted within one week prior to construction to determine if any active nests are present in the project area so that they can be avoided. Additional nest surveys during the nesting season may also be warranted to identify active nesting species that may present additional development timing restrictions (e.g., eagles or red-tailed hawks).

If active nests are identified in or near the project area, activities that would directly affect the nests should be restricted. Habitat-disturbing activities (e.g., tree removal, grading, scraping, and grubbing) should be conducted in the nonbreeding season to avoid disturbing active nests or to avoid a "take" of the migratory bird nests in the project area. Nests can be removed during the September 1 through March 31 nonbreeding season to preclude future nesting and avoid violations of the MBTA. There is no process for removing nests during the nonbreeding season; however, nests may not be collected under MBTA regulations. If the construction schedule does not allow vegetation removal outside of the breeding season, a nest survey should be conducted immediately prior to vegetation removal to determine if the nests are active and by which species. If active nests are found, any work that would destroy the nests or cause the birds to abandon young in the nest cannot be conducted until the birds have vacated the nests.

Other Wildlife

The project area also provides habitat for a variety of small mammals such as cottontail rabbits (*Sylvilagus* sp.), deer mice, voles, and pocket gophers. As described above, prairie dogs are present in the project area. Grassland habitat likely provides breeding habitat for numerous ground-nesting prairie bird species, and riparian ecosystems typically support many more species of native birds than surrounding grassland or shrubland communities (Knopf and Samson 1994).

Predators such as coyotes, raccoons (*Procyon lotor*), red foxes, striped skunks (*Mephitis mephitis*), and short-tailed weasels (*Mustela ermine*) are also likely to occur in the project area. The project area is mapped as overall range for both mountain lions (*Puma concolor*) and black bears (*Ursus americana*) (NDIS 2021). In addition, the project area is included in a black bear/human conflict area (NDIS 2021). Any residential or commercial development will need to implement programs using best management practices to avoid human/wildlife (predator) conflicts. As discussed in the elk and mule deer sections above, residents should be educated on wildlife interactions and provided with links to CPW's educational websites for "Living with Wildlife" and "Avoid Wildlife Conflicts". Additional recommendations are provided in the *Habitat Management Guidelines* section of this report.

Post-construction Habitat Recommendations

Wetland and Riparian Communities

ERO recommends that revegetation and erosion control be conducted along the drainages to stabilize areas where erosion is occurring. To mitigate for impacted trees and shrubs and to enhance the restored areas, a native seed mix and several native shrubs should be planted. Increasing the diversity and abundance of riparian species would create habitat for a number of species, including the western terrestrial garter snake (*Thamnophis elegans*), bull snake (*Pituophis catenifer*), western chorus frog (*Pseudacris triseriata*), red fox, coyote, raccoon, greentailed towhee (*Pipilo chlorurus*), lazuli bunting (*Passerina amoena*), yellow warbler (*Dendroica petechia*), and many other species. Enhancing riparian vegetation within the drainages would create habitat, improve wildlife movement corridors, and provide cover, foraging, and nesting habitat for a number of species. The Client is proposing open space areas along the drainage corridors in the northern and southwestern portions of the project area, which would help protect and preserve higher wildlife habitat value areas (Figure 2).

Ponderosa Pine, Gambel Oak, and Upland Grassland Communities

To maintain shortgrass and midgrass prairie communities and associated wildlife, native seed should be planted in areas temporarily disturbed by construction and throughout open space areas as appropriate. Recommended species to be planted include blue grama, prairie junegrass (*Koeleria macrantha*), western wheatgrass, buffalo grass, fringed sage, and prairie coneflower, among others.

The proposed open space areas would help mitigate impacts on the species associated with upland grassland, Gambel oak, and ponderosa pine communities. ERO recommends preserving larger-diameter

ponderosa pines, as well as contiguous patches of Gambel oak, to the greatest extent feasible to maintain habitat for the large number of species associated with these community types.

Species in Disturbed Areas

It is likely that a diverse wildlife community would still be found in the project area after development. Many of the species would be those that prefer edge habitats and those that are relatively common such as red fox, raccoon, squirrel, cottontail rabbit, mule deer, elk, American robin, black-capped chickadee, mourning dove, black-billed magpie, blackbird (*Pica pica*), broad-tailed hummingbird (*Selasphorus platycercus*), house finch (*Carpodacus mexicanus*), and house sparrow (*Passer domesticus*). Black bears and mountain lions may also be found in the development, particularly the drainages, as the project area is mapped in both black bear and mountain lion overall range. In addition, some raptors such as great-horned owls, red-tailed hawks, and Swainson's hawks are known to inhabit areas of human disturbance.

Habitat Management Guidelines

To maximize the continued use of the area by native wildlife, ERO recommends implementing the following strategic planning principles:

- Design and install well-designed trails to encourage human use in appropriate areas and discourage use in sensitive wildlife areas. Such trails should not be placed within the bottom of drainages and buffers should be established to avoid impacts on wildlife movement areas.
- Locate trails planned for the development generally along the edge of residential development to the extent practicable to minimize fragmentation of wildlife habitat in open space areas. Keeping trails at this human–natural area interface will maximize the potential for wildlife such as mule deer to use the open space areas for movement corridors. Placement of trails in these areas will also create a visual and physical contrast that may discourage unwanted wildlife from entering residential neighborhoods.
- Preserve, to the greatest extent feasible, the wetland and riparian, oak scrub, and ponderosa pine communities, which provide valuable forage and cover for many wildlife species, including elk and mule deer. Management of the proposed open space areas should focus on maintaining or enhancing these communities and providing movement corridors for elk and other big game species.
- Limit fencing to open rail fencing along driveways and public rights-of-way to minimize disruption of wildlife movement within the development. The Client should work with CPW to identify areas where conflicts may occur and fence those areas accordingly.
- Where feasible and applicable, implement wildlife-friendly road crossings.
- Conduct surveys prior to construction of the development to avoid the inadvertent take of raptor or migratory bird nests, which are protected under federal and state laws. No active nests were identified in the project area during the 2021 site visit. If an active nest is found, follow CPW recommendations and implement buffers restricting disturbance and construction activities around nests to the extent they remain active (CPW 2020). Conduct habitat-disturbing activities such as tree removal, grading, scraping, and grubbing in the nonbreeding season (September through March for most songbirds) to avoid disturbance (or take) of an active

migratory bird nest, including nests of ground-nesting species.

- Follow the CPW burrowing owl guidelines for any removal or disturbance of the colony of black-tailed prairie dogs in the project area. If any construction is planned within the recommended 660-foot buffer of a prairie dog burrow, CPW recommends conducting burrowing owl clearance surveys during the period from March 15 through October 31 (CPW 2021b). Construction occurring from November 1 through March 14 would not require clearance surveys; however, if burrowing owls are known to be present in an area in the winter, CPW recommendations may apply. If burrowing owls are found within the construction footprint, individual nest burrows and a 660-foot buffer around the burrow should be left undisturbed until the owls have moved or migrated from the site, which can be determined through monitoring (CPW 2021b).
- Where feasible, leave large trees in place to provide continued nesting habitat for avian species.
- Retain sections of shortgrass prairie in and adjacent to the development whenever feasible to maintain habitat for wildlife species associated with the shortgrass prairie community.
- Develop and implement a noxious weed plan and management recommendations to control weeds on-site and maintain foraging habitat for big game and other wildlife. Prevalent noxious weed species include leafy spurge, Scotch thistle, common mullein, and cheatgrass.
- Contain and control noxious weeds in areas not slated for development or that will not be developed until later phases as required by the Douglas County weed ordinance.
- Reclaim temporarily disturbed areas that will not be landscaped with a mix of native species that are found on-site or that are highly compatible with site conditions to this plan.
- Educate residents on wildlife interaction. All wildlife, particularly big game, predators, and human commensal species such as raccoons, can cause nuisance problems in residential developments. Contact information and resources from CPW, the Town, and Douglas County should be provided to residents that describe how to minimize conflicts and ways to enjoy the natural resources in the area. Residents should also be made aware that feeding wildlife, with the exception of birds, is against state law.
- To minimize impacts on soils, identify topsoil depth and salvage topsoil from areas within the development and then revegetate.
- Revegetate as soon as practicable after construction activities have been completed in accordance with the recommended seasons for revegetation and use practices conducive to success.
- Take care to minimize temporary disturbance to and permanent loss of woody vegetation within the construction area. Whenever possible, avoid blading and grubbing of woody vegetation in areas of temporary disturbance. Cut woody vegetation to ground level in areas of temporary disturbance without removing the root mass.
- Implement best management practices to minimize the risk of a spill of hazardous materials and waste within the construction area and in particular near the drainages.

In addition to those strategies above, the following measures are suggested to further minimize impacts on area wildlife:

- Place signs along trails near open space areas to remind trail users to respect wildlife and their habitat.
- To help to minimize collision risk, place wildlife crossing signs throughout the development

reminding residents to be aware that big game and other wildlife may be present on the roads.

- Restrict domestic animals to building envelopes through covenants. Pets should be on leashes when in open space areas.

Conclusions

The existing vegetation communities and topographical features in the project area provide contiguous habitat, water resources, and core wildlife values such as cover and forage for various wildlife species. In particular, the drainage corridors along Drainage 1 and McMurdo Gulch and contiguous grasslands and shrublands along these drainages contribute to the overall diversity of the project area and provide wildlife movement passageways that help maintain connections between wildlife populations (Figures 2 and 3). Preservation of the drainages as open space would help maintain and conserve the high and moderate wildlife values of the project area. Additionally, conservation of larger contiguous parcels, such as the proposed open space areas along the northern and southern portions of the project area, and areas connected to off-site conservation areas provides a greater value to wildlife than numerous smaller parcels.

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APPENDIX A
LIST OF PREVALENT PLANT SPECIES OBSERVED IN THE PROJECT AREA

Scientific Name	Common Name	Community Type Where Prevalent
Achillea millefolium	Yarrow	UG, OS, PPF, DC
Agropyron cristatum	Crested wheatgrass	UG
Alyssum alyssoides	Pale madwort	UG, OS, PPF
Argemone albiflora	White prickly poppy	UG, OS
Aristida purpurea	Purple three-awn	UG, OS
Artemisia frigida	Fringed sage	UG, OS, PPF, DC
Asclepias speciosa	Showy milkweed	DC
Astralagus sp.	Milkvetch	UG, OS, PPF
Bouteloua curtipendula	Side-oats grama	UG, OS
Bouteloua dactyloides	Buffalo grass	UG
Bouteloua gracilis	Blue grama	UG, OS, PPF
Bromus inermis	Smooth brome	UG, OS, PPF, DC
Bromus tectorum	Cheatgrass	UG, OS, PPF, DC
Castilleja sp.	Paintbrush flower	UG, OS
Cercocarpus montanus	Mountain mahogany	OS, PPF
Cirsium arvense	Canada thistle	UG, OS
Convolvulus arvensis	Field bindweed	UG
Eleocharis palustris	Common spikerush	DC
Elymus elymoides	Squirreltail	UG, OS, DC
Ericameria nauseosa	Rubber rabbitbrush	UG, OS
Euphorbia esula	Leafy spurge	UG, OS, PPF, DC
Geranium sp.	Cranesbill	PPF
Helianthus sp.	Sunflower	UG
Heterotheca villosa	Hairy false aster	UG, OS, PPF
Hesperostipa comata	Needle-and-thread grass	UG, OS, PPF, DC
Hordeum jubatum	Foxtail barley	DC
Koeleria macrantha	June grass	OS
Krascheninnikovia lanata	Winterfat	UG, OS, PPF
Juncus arcticus	Baltic rush	DC
Lactuca serriola	Prickly lettuce	UG
Lupinus sp.	Lupine	US, OS, PPF, DC
Melilotus officinalis	Sweetclover	DC, PPF
Monarda fistulosa	Wild bergamot	PPF, DC
Nassella viridula	Green needlegrass	UG, OS, PPF
Oenothera curtiflora	Velvetweed	UG
Onopordum acanthium	Scotch thistle	UG, DC
Opuntia sp.	Prickly pear	UG, OS, PPF, DC
Prunus virginiana	Chokecherry	OS, PPF, DC
Pascopyrum smithii	Western wheatgrass	UG, OS, PPF
Pinus ponderosa	Ponderosa pine	PPF, OS, DC
Plantago patagonica	Woolly plantain	OS, DC
Poa compressa	Canada bluegrass	UG, OS, PPF, DC
Prunus americana	American plum	PPF
Psoralidium tenuifolium	Slimflower scurfpea	UG, OS

Scientific Name	Common Name	Community Type Where Prevalent
Quercus gambelii	Gambel oak	OS, PPF, DC
Ratibida columnifera	Prairie coneflower	PPF
Rhus trilobata	Skunkbush sumac	OS, PPF, DC
Rosa woodsii	Woods' rose	PPF
Ribes aureum	Golden currant	US, OS
Salix amygdaloides	Peachleaf willow	DC
Salix exigua	Narrowleaf willow	DC
Sisymbrium altissimum	Tall tumblemustard	UG
Sphaeralcea coccinea	Scarlet globemallow	UG
Symphoricarpos occidentalis	Snowberry	OS, UG, PPF, DC
Symphyotrichum sp.	Aster	PPF, DC
Thinopyrum intermedium	Intermediate wheatgrass	UG, OS
Tradescantia occidentalis	Prairie spiderwort	UG
Tragopogon dubius	Yellow salsify	UG, OS
Typha angustifolia	Narrowleaf cattail	DC
Verbascum thapsus	Common mullein	UG, OS, PPF, DC
Yucca sp.	Yucca	UG, OS, DC

[1]UG= Upland grassland; OS = Oak shrubland; PPF = Ponderosa pine forest; DC = Drainage corridor.
Source: U.S. Department of Agriculture, Natural Resources Conservation Service (2021).

APPENDIX B
WILDLIFE POTENTIALLY FOUND IN THE PROJECT AREA

Scientific Name	Common Name	Community Type[1]
Mammals		
Canis latrans	Coyote	UG, OS, PPF, DC
Cervus canadensis	Elk	PPF
Cynomys ludovicianus	Black-tailed prairie dog	UG
Erethizon dorsatum	American porcupine	OS, PPF
Mephitis mephitis	Striped skunk	OS, PPF
Odocoileus hemionus	Mule deer	PPF
Peromyscus maniculatus	Deer mouse	OS, PPF
Procyon lotor	Raccoon	DC
Sciurus aberti	Abert's squirrel	PPF
Taxidea taxus	American badger	UG, OS
Thomomys talpoides	Northern pocket gopher	UG
Vulpes velox	Swift fox	UG
Vulpes vulpes	Red fox	UG, OS, PPF
Birds		
Accipiter cooperii	Cooper's hawk	OS, PPF, DC
Accipiter striatus	Sharp-shinned hawk	PPF, DC
Aphelocoma woodhouseii	Woodhouse's scrub jay	OS, PPF
Bubo virginianus	Great-horned owl	OS, PPF
Buteo jamaicensis	Red-tailed hawk	OS, PPF, DC
Buteo swainsoni	Swainson's hawk	UG, DC
Carduelis tristis	American goldfinch	UG
Chordeiles minor	Common nighthawk	UG
Colaptes auratus	Common flicker	OS, PPF
Cyanocitta stelleri	Steller's jay	PPF
Dumetella carolinensis	Gray catbird	OS
Eremophila alpestris	Horned lark	UG
Falco sparverius	American kestrel	UG
Haliaeetus leucocephalus	Bald eagle	DC
Junco hyemalis	Dark-eyed junco	PPF
Meleagris gallopavo	Wild turkey	PPF
Pipilo maculatus	Spotted towhee	OS
Poecile atricapilla	Black-capped chickadee	OS, PPF
Polioptila caerulea	Blue-gray gnatcatcher	OS, PPR
Pooecetes gramineus	Vesper sparrow	UG
Seiurus aurocapilla	Ovenbird	OS, PPF
Selasphorus platycercus	Broad-tailed hummingbird	OS, PPF
Sialia mexicana	Western bluebird	PS, PPF
Sitta pygmaea	Pygmy nuthatch	PPF
Spizella passerina	Chipping sparrow	OS, PPF
Turdus migratorius	American robin	UG, OS, PPF
Vermivora virginiae	Virginia warbler	OS, PPF
Zenaida macroura	Mourning dove	UG, PPF
Reptiles		
Crotalus viridis	Western rattlesnake	UG, OS

Scientific Name	Common Name	Community Type[1]
Pituophis catenifer	Gopher snake	UG, OS, PPF
Rana pipiens	Northern leopard frog	DC
Sceloporus undulatus	Fence lizard	OS, PPF

[1]UG= Upland grassland; OS = Oak shrubland; PPF = Ponderosa pine forest; DC = Drainage corridor.

Appendix C Photo Log

Photo Log
Southern Portion of the Canyons Far South
Property Douglas County, Colorado
July 9, 2021

Photo 1 - Project area is comprised of plateaus, gently rolling ridges, and tapered drainages. View is to the northeast.

Photo 2 - Limited patches of wetlands within McMurdo Gulch. View is to the southwest.

Photo 3 - Overview of the upland grassland vegetation community in the project area that is typically located along the tops of plateaus. View is to the north.

Photo 4 - Overview of the active prairie dog colony dominated by nonnative vegetation. View is to the north.

Photo 5 - Overview of oak shrublands in the project area, typically found along the slopes of the gently rolling ridges. View is to the east.

Photo 6 - Overview of the ponderosa pine forest vegetation community in the project area, typically found along ridge lines. View is to the south.

Photo 7 - Overview of oak shrublands in the northwestern portion of the project area. View is to the northwest.