TOWN OF VAIL

1309 Elkhorn Drive
Vail, Colorado 81657
vailgov.com

Public Works/Transportation Department
970.479.2158
970.479.2166 fax

November 28, 2017

This cover sheet is included on three documents commissioned in the summer of 2015 for the purpose of submitting a proposal to the Planning and Environmental Commission (PEC) to "renovate and extend" the Vail Trail. The documents are provided separately to reduce file size. They include:

1) Vail Trail Extension – Eastern Segment: Environmental Impact Report
2) Vail Trail Extension – Western Segment: Environmental Impact Report
3) Draft Rockfall, Avalanche and Debris Flow Hazard and Risk Assessment for Town of Vail Trail Improvements and Extension

At the time the reports were commissioned, the town was proposing two trail projects. The first project proposed to widen and realign segments of the existing Vail Trail (connecting Golden Peak to the Golf Course Clubhouse) and to extend it eastward to the Katsos Open Space. This is the "Western Segment". The second project proposed to add new trail across the Katsos Open Space towards the Vail Memorial Park, the "Eastern Segment". Both projects required PEC and Forest Service approval and these reports were the first step in that approval process.

A third study was commissioned to review the potential of rockfall/avalanche hazards due to new/realigned trail segments in that area.

In April of 2016, the Town Council directed staff to halt all ongoing work on the Vail Trail projects due to public concerns and to instead work towards an update of the 1994 Comprehensive Open Lands Plan which included a trails component.

Please note the following when reviewing these documents:

- The Western Segment was proposed to be widened and partially realigned. That is no longer a recommendation. Instead, the Open Lands Plan Update recommends leaving the existing Vail Trail as a narrow, meandering trail, largely in its existing condition. The extension on the eastern end would require additional evaluation.
- The studies evaluate a specific trail alignment that was flagged in 2015. The studies anticipate the trail would be constructed within 25' of that flagged alignment. Trail ideas identified in the Open Lands Plan Update do not propose specific trail alignments and are instead simply conceptual connections. The alignments proposed for the 2015 Vail Trail projects may no longer be relevant given the recommendations of the OLP Update.
- These documents were never submitted as part of a formal PEC or USFS review.

VAIL TRAIL EXTENSION – WESTERN SEGMENT

ENVIRONMENTAL IMPACT REPORT

Eagle County, Colorado
April 5, 2016

Prepared for **Town of Vail**

Prepared By:

WESTERN BIONOMICS LLC

NATURAL RESOURCE MANAGEMENT SERVICES
31040 Willow Lane, Steamboat Springs, CO 80487
kscolfer@westernbionomics.com • 970.846.8223

TABLE OF CONTENTS

1. INTRODUCTION

The Town of Vail (TOV) requires submittal of an Environmental Impact Report (EIR) for any project where such a report is required by federal or state law, or for any project which the TOV Administrator determines may significantly change the environment, either during construction or on a continuing basis. This document is the EIR for the Western Segment of the proposed extension of the Vail Trail.

The extension of the Vail Trail to East Vail was identified in the 1994 TOV Comprehensive Open Lands Plan (COLP) as a high priority project that would help connect Vail Village to East Vail and would provide a high-quality experience for users. While the COLP identified a need for extension of the trail, over the years it has become evident that the existing trail also needs maintenance and realignment in order to function properly. Thus, the Vail Trail project as proposed includes realignment and widening of portions of the existing Vail Trail, along with an extension of the trail into East Vail, connecting Vail Village to the Katsos Ranch Open Space.

The purpose of the Vail Trail project is to connect neighborhoods within the TOV, and to provide a recreational experience suitable for all levels of hiker and mountain bikers. The trail's proposed grade, width, and surface will cater to beginner-level mountain bikers and hiking families, and also will provide alternate access to Vail Village from neighborhoods to the east, and vice versa. It is anticipated that the project would provide an attractive trail option for both locals and visitors.

The Vail Trail Extension is being proposed in two segments, the Eastern Segment and the Western Segment, as shown in the figure on the following page. The EIR for the Eastern Segment has been prepared under separate cover. Project descriptions for both segments are included below.

1.1 EASTERN SEGMENT

The eastern segment of trail would be located completely on TOV-owned land. From east to west, the trail would extend from Katsos Open Space to a point just west of the 15th tee of the Vail Golf Club. The section consists of entirely newly constructed trail in a new trail corridor.

The eastern segment of the proposed Vail Trail would leave the Gore Valley Recreation Path approximately 0.4 miles west of the East Vail interchange and trailhead parking lot. From there, it would climb slightly and traverse the north-facing hillside, staying on TOV-owned land for its entire length and ending just west of the 15th tee box of the Vail Golf Club. Generally, the trail would be located anywhere from 150 to 450 linear feet uphill of the paved recreation path. No other access/egress routes are proposed along the eastern trail segment. Total length of the eastern segment would be approximately 1.5 miles (8,056 linear feet). The maximum sustained gradient of the eastern segment has been limited to about 6 to 8 percent, with an average gradient of approximately 4 percent. These gradients are well-suited to beginner-level mountain bikers and hiking families, and will ensure that water drains off of the trail rather than along it, thus decreasing the potential for erosion issues.

1.2 WESTERN SEGMENT

The western segment of trail would be located on a mix of Town, Forest Service[1], Vail Resorts, and privately-owned land, and would extend from the 15th tee box to Vail Village at Gondola One. This section of trail would consist of some existing portions of the Vail Trail, and some newly constructed trail. In order to be suitable for all levels of user, trail gradients along the existing trail would be lessened, and unnecessary ups and downs would be eliminated. This would also improve drainage and decrease erosion potential along the trail. The existing trail would also be widened in some sections to allow for users to pass one another without completely stepping off of the trail.

As described above, the western segment of the proposed Vail Trail would begin from just west of the 15th tee box, and would continue west, ending at Vail Village. In order to allow for shorter loops, neighborhood access, and a descent to safer ground in the case of inclement weather, there would be two additional access/egress points along the western segment – one from the paved recreation path at the end of Sunburst Drive, and another from Vail Valley Drive near the golf club maintenance facility. Along the western segment, the trail would be located anywhere from 50 to 400 linear feet from homes and condos. Total length of the western segment, including access/egress routes would be approximately 2.9 miles (15,009 linear feet). As with the Eastern Segment, the maximum sustained gradient of the western segment has been limited to about 6 to 8 percent, with an average gradient of approximately 4 percent. These gradients are well-suited to beginner-level mountain bikers and hiking families, and will ensure that water drains off of the trail rather than along it, thus decreasing the potential for erosion issues.

1.3 TIME SCHEDULE

The project would likely be completed in phases, with Eastern Segment completed first and the Western Segment completed second.

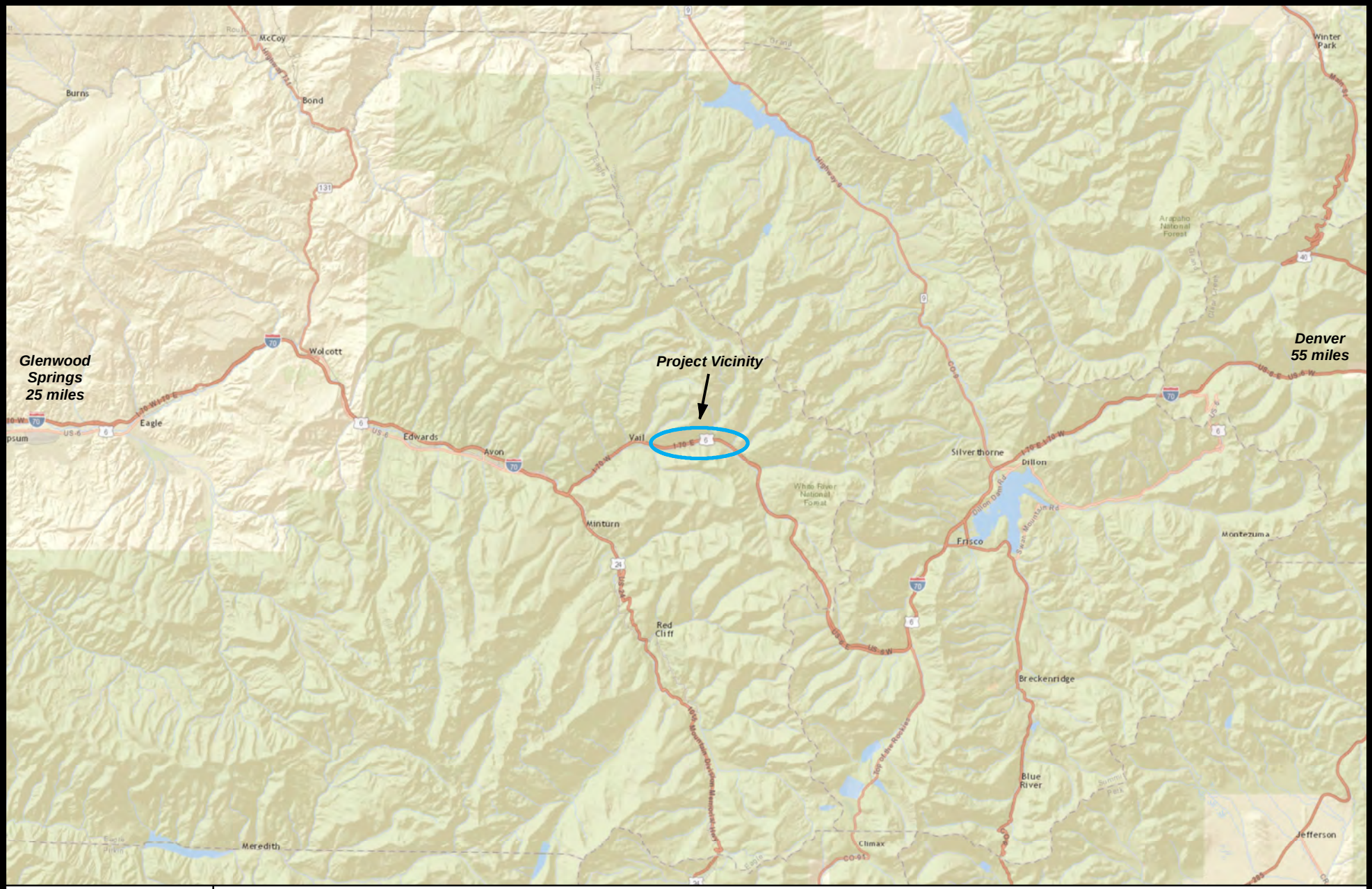
1.3.1 Eastern Segment

Because the Eastern Segment of the trail is located entirely on TOV-owned land, it is planned to be constructed in the late spring/early summer of 2016. Construction of this section would likely take no more than two months, so the trail would be open by mid-summer of 2016.

1.3.2 Western Segment

Because it crosses Forest Service land, the western section of the trail is subject to an environmental review under the National Environmental Policy Act (NEPA). Given the length of the federal process, this section of trail would likely be constructed either in the fall of 2016, or the late spring/early summer of 2017. The western section of trail is greater in length than the Western Segment, but does incorporate portions of the existing Vail Trail; therefore, it is estimated that construction of the western section would take approximately three months.

[1] In order to realign and construct the trail on Forest Service land, a separate environmental review process will be completed under the requirements of the National Environmental Policy Act (NEPA).

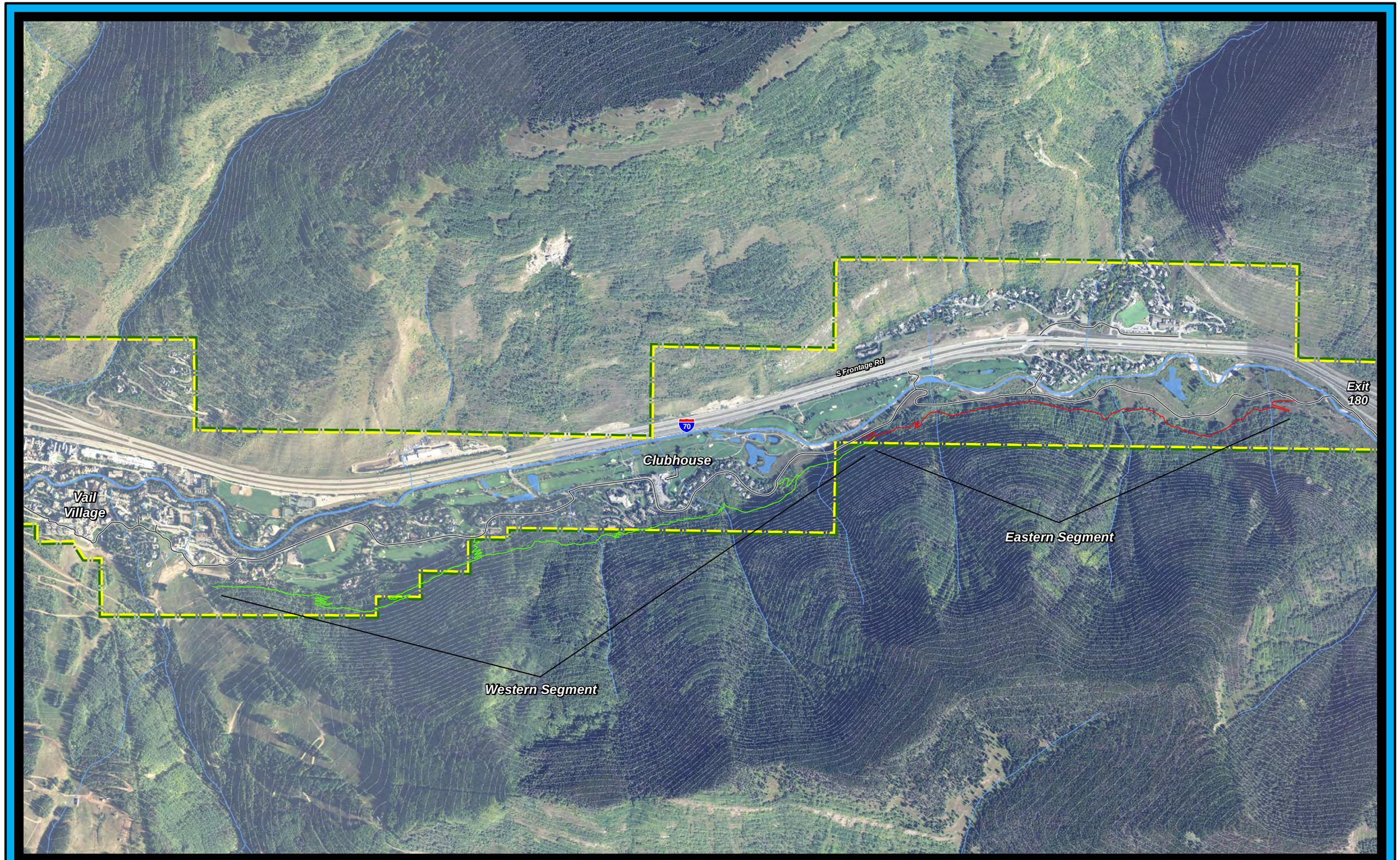


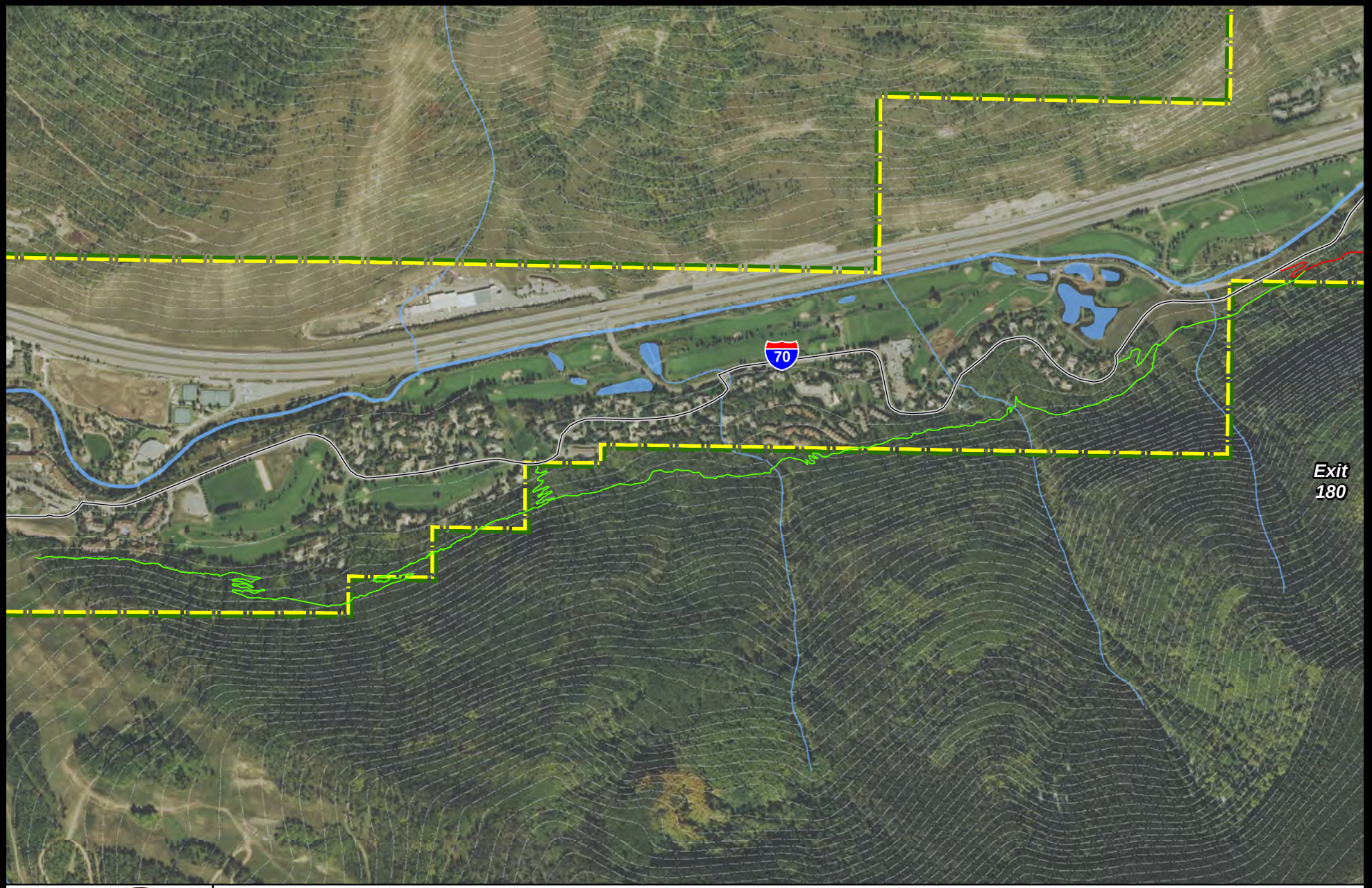
TOWN OF VAIL

Vail Trail Extension

Vicinity Map

SE GROUP


S Frontage Rd
Exit
180
70
Clubhouse
Vail
Village
Eastern Segment
Western Segment



TOWN OF VAIL

Vail Trail Extension

Western Segment

LEGEND

Proposed Eastern Segment

Proposed Western Segment

Existing Gore Valley Trail (Paved)

Town/NFS Boundary

0 425 850 1,700 2,550 Feet

Contour Interval: 40 feet

1 inch = 1,000 feet

SE GROUP

2. METHODS

The information and analysis in this EIR was developed from field reconnaissance, published and unpublished reports and documents, and contacts with agency resource personnel. Prior to preparation of this EIR, pertinent background information was reviewed, individuals familiar with the project were interviewed, and maps, aerial photos, and soil map unit descriptions of the project area were obtained.

The United States Fish and Wildlife Service's Information for Planning and Conservation (IPaC) website (https://ecos.fws.gov/ipac) was consulted to obtain a list of threatened and endangered wildlife and plant species. Colorado Parks and Wildlife (CPW) was consulted to obtain a list of State threatened and endangered wildlife (http://cpw.state.co.us/learn/Pages/SOC-ThreatenedEndangeredList.aspx). The White River National Forest Geographic Information System (GIS) was consulted to obtain soil maps and map unit descriptions (USDA Forest Service 1999).

On September 30, 2015, the landscape along the proposed Western Segment was assessed for wildlife habitat values, including federal and state listed wildlife species' habitat. A presence/absence survey was conducted at the same time for federal and state listed plants, or habitat for such plants, and for the presence or absence of federally jurisdictional wetlands. The surveys were conducted by Kelly Colfer, Western Bionomics' managing partner and biologist. The results of the survey are presented in the following sections.

3. REGULATORY OR REVIEW AGENCIES

In addition to preparation of this EIR, the County will be required to prepare National Environmental Policy Act (NEPA) documentation for that portion of the trail that would be located on NFS land. The USDA Forest Service, White River National Forest, will review the NEPA document and make a decision whether or not to permit that portion of the trail.

There will be no requirement for additional regulatory review other than the TOV Conditional Use Permit and NEPA document. Bill Andree, District Wildlife Manager, Colorado Parks and Wildlife (CPW), was consulted during preparation of this report. The TOV utilizes the assistance of CPW as a referral agency.

4. SOILS

Soils in the project area are mapped by the USDA Forest Service. Two soil map units will be traversed by the Western Segment of the proposed trail. Characteristics of these soils that are relevant to the proposed trail are reproduced below. The full map unit descriptions are included in Appendix A.

4.1 MAP UNIT 385D—SCOUT FAMILY - ROCK OUTCROP - HECHTMAN FAMILY COMPLEX, 40 TO 150 PERCENT SLOPES.

Scout

- Natural drainage class: somewhat excessively.
- Available water capacity: low.
- Permeability: moderately rapid.
- Runoff: moderate.

Hechtman

- Natural drainage class: somewhat excessively.
- Available water capacity: low.
- Permeability: moderately rapid.
- Runoff: rapid.

MANAGEMENT CONSIDERATIONS

Mass movement potential
Landslides: moderate.
Debris flows: high.
Snow avalanche: high.

Cut and fill slope stability
Scout: moderate - slope.
Rock outcrop: slight to severe - bedrock.
Hechtman: slight.

Foot trails and paths
Scout: moderate - slope and erosion hazard.
Rock outcrop: severe - cliffs and unstable talus.
Hechtman: severe - slope and erosion hazard.

Revegetation limitations
Scout: moderate - slope, low available water capacity and erosion hazard.
Rock outcrop: severe - bedrock.
Hechtman: severe - slope, shallow depth to bedrock, low available water capacity and erosion hazard.

Revegetation considerations: Mulch will conserve soil moisture and protect seedling establishment. Surface netting in conjunction with mulching will reduce the erosion hazard.

Timber management considerations: Limited by slope, rock outcrop and erosion hazard.
Wildlife management considerations: This map unit provides shelter for upland game animals.
Acid precipitation buffering capacity: moderate.

4.2 MAP UNIT 386C—SEITZ - TELLURA FAMILIES COMPLEX, 40 TO 60 PERCENT SLOPES

- Natural drainage class: well.
- Available water capacity: high.
- Permeability: slow.
- Runoff: rapid.

MANAGEMENT CONSIDERATIONS

Mass movement potential
Landslides: low.
Debris flows: low.
Snow avalanche: low.

Cut and fill slope stability
Seitz: moderate - fine grained material.
Tellura: moderate - fine grained material.

Foot trails and paths:
Seitz: moderate - slope and mud during seasonal wet periods.
Tellura: moderate - slope and mud during seasonal wet periods.

Revegetation limitations
Seitz: moderate - slope and erosion hazard.
Tellura: moderate - slope and erosion hazard.

Revegetation considerations
Mulch will conserve soil moisture and protect seedling establishment. Surface netting in conjunction with mulching will reduce the erosion hazard.

5. VEGETATION

5.1 GENERAL VEGETATION CHARACTERISTICS

The vast majority of the trail would pass through aspen forest, intersecting numerous slide paths originating on the steep slopes above. Aspen forest characterizes the landscape through which the trail will pass. The dominant aspens range in diameter from 6-13" at breast height (dbh) and approximate 70' in height. The overstory trees tower over an understory composed of aspen saplings up to 4" dbh and 40' in height. Occasional widely scattered mature Engelmann spruce and subalpine fir are present in the

overstory that are 14-18" dbh and 70-80' in height. Subalpine fir saplings are common, but widely scattered throughout the understory in portions of the West Segment trail alignment.

The shrub layer is dominated by snowberry, with serviceberry, wolf currant, mountain ash, Scouler willow, twinberry honeysuckle, pachistima, Oregon grape, and mountain maple also common. The herbaceous layer is composed of a variety of forbs and grasses. Most common are blue wildrye, timothy, nodding brome, Canada reedgrass, Kentucky bluegrass, goldenrod, geranium, fireweed, aspen daisy, meadow rue, and aspen pea.

The trail would cross one stream channel that exhibits a riparian fringe of willows, currant, twinberry, and aspen. No wetlands are present adjacent to the stream at the crossing location.

A list of all plants observed along the alignment is included in Appendix B.

5.2 Federal and State Threatened and Endangered Plant Species

The United States Fish and Wildlife Service's IPAC (Information for Planning and Conservation) website was consulted to obtain a list of federally threatened, endangered, proposed, and candidate species that may potentially occur in the project area (USFWS 2015; Appendix C). The only plant species on the IPaC list for the project is Ute Ladies Tresses.

Ute ladies'-tresses (***Spiranthes diluvialis***) are known primarily from moist meadows associated with perennial stream terraces, floodplains, and oxbows at elevations between 720' MSL (in Washington State) up to 7000' MSL in northern Utah. Additional vegetation and hydrology types occupied by Ute ladies' tresses includes seasonally flooded river terraces, sub-irrigated or spring-fed abandoned stream channels and valleys, lakeshores, irrigation canals, berms, levees, irrigated meadows, excavated gravel pits, roadside barrow pits, reservoirs, and other human-modified wetlands. Over one-third of all known Ute ladies'-tresses populations are found on alluvial banks, point bars, floodplains, or ox-bows associated with perennial streams.

The entirety of the project area is above the known elevation range of Ute Ladies Tresses. Regardless, suitable habitat along the alignment was surveyed for the presence of this species. While there are no federally jurisdictional wetlands that exist along the proposed trail alignment, there are "wet" areas that could provide potential habitat for this species. Each of these wet areas was surveyed for the presence of Ute Ladies Tresses. No Ute Ladies Tresses occurrences were detected.

6. WETLANDS

During my site visit, I examined the trail alignment for the presence of wetlands potentially subject to federal jurisdiction under Section 404 of the Clean Water Act (CWA). Section 404 of the Act establishes a program to regulate the discharge of dredge and fill material into waters of the United States, including wetlands. Section 404 requires project proponents to avoid and minimize impacts to Waters of the United States, including wetlands. Compliance with Section 404 of the CWA is monitored by the United States

Army Corps of Engineers (COE). My site visit and wetlands examination was conducted to facilitate the project's compliance with Section 404 of the CWA.

During my site visit I examined vegetation, soil, and hydrological characteristics according to protocol set forth in the 1987 COE Wetland Delineation Manual (USACOE 1987) and the 2010 Regional Supplement to the COE Wetland Delineation Manual for Western Mountains, Valleys, and Coast Region (USACOE 2010). A list of hydrophytic vegetation is included in the National Wetland Plant List: 2013 Wetland Ratings (Lichvar 2013).

Regulations implementing the federal Clean Water Act define wetlands as: …*areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.* For an area to be a federally jurisdictional wetland, the 1987 COE Wetland Delineation Manual and Supplement require for it to be dominated by hydrophytic vegetation, exhibit hydric soils, and possess wetland hydrology. If any one of these three indicators is absent, the site is not subject to federal jurisdiction under the CWA.

The trail would cross one stream channel that exhibits a riparian fringe of willows, currant, twinberry, and aspen. No wetlands are present adjacent to the stream at the crossing location. Based on the defining characteristics of wetlands presented in the 1987 Wetland Delineation Manual and the 2010 Supplement, this site failed to meet the COE definition of wetland, and is not subject to federal jurisdiction under Section 404 of the CWA. There are no other wetland sites along the proposed trail alignment.

7. WILDLIFE

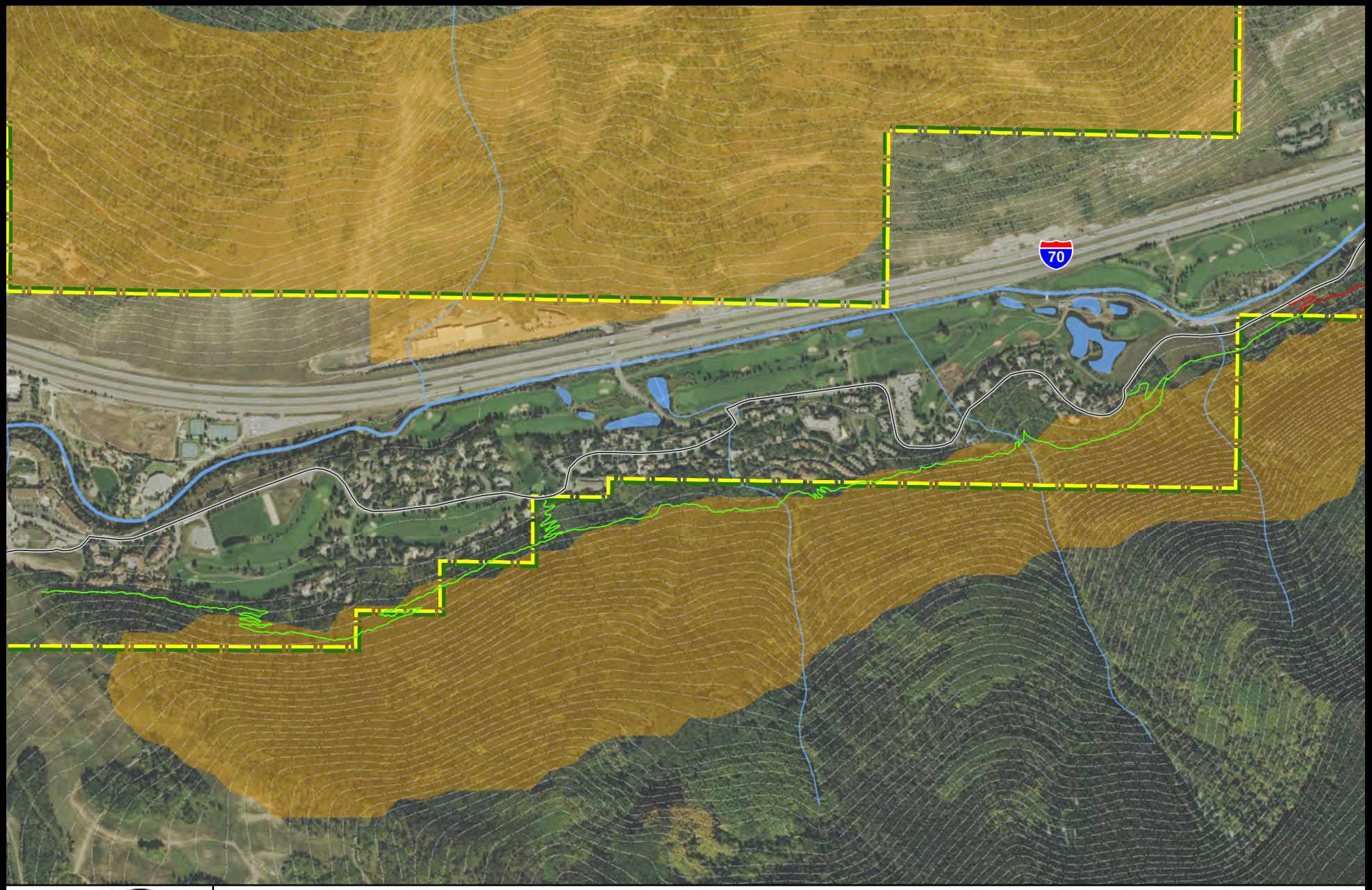
7.1 General Wildlife Habitat

The proposed alignment provides habitat for a broad variety of wildlife, from large mammals such as elk, deer, and black bear, to small mammals like ermine, golden-mantled ground squirrel, and Colorado chipmunk, to birds including northern goshawk, flammulated owl, and hairy woodpecker. Aspen forests are widespread in Colorado, and do not typically provide habitat deemed 'critical' for any wildlife species in Colorado. However, due to displacement from more traditional winter range (Bill Andree, personal communication), CPW recognizes that elk utilize the lower slopes in the project area during winter and has mapped it as elk winter range. The following section provides a description of elk habitat in the project area. Subsequent sections provide lists of State and federal threatened or endangered species.

7.2 Elk

Colorado Parks and Wildlife (CPW) maintains mapping of elk winter range, as well as other wildlife habitat. A review of CPW's wildlife habitat maps reveals that elk winter range is located directly adjacent and uphill of the proposed Western Segment (see winter range map, next page).

CPW has specific elk management goals and objectives that have been developed in cooperation with landowners, the public, and federal land management agencies. CPW estimates population numbers and sets management objectives for elk in units referred to as Data Analysis Units (DAUs). A Data Analysis



TOWN OF VAIL

Vail Trail Extension

Elk Winter Range

LEGEND

- Proposed Eastern Segment
- Proposed Western Segment
- Existing Gore Valley Trail (Paved)
- Town/NFS Boundary
- Elk Winter Range

0 425 850 1,700 2,550 Feet

Contour Interval: 40 feet

1 inch = 1,000 feet

SE GROUP

7.2.1 Data Analysis Unit E-16

The proposed East Segment of the Vail Trail would be located within DAU E-16, which comprises portions of Eagle, Pitkin, Gunnison, and Garfield Counties. Eighty percent of the DAU is public land, and 20% is private. Elk winter range in DAU E-16 is 63% public and 37% private land. E-16 includes the Holy Cross and Hunter-Fryingpan Wilderness areas. The Town of Vail and surrounding area are located in Game Management Unit (GMU) 45, a sub-unit of DAU E-16.

From 1988 through 2013, elk in E-16 had been managed for a population objective of 5100 animals. Through the 1990s and early 2000s, the herd numbers increased to over 10,000 elk. To reduce the population toward the 1988 population objective, liberal antlerless licenses were provided to achieve increased cow elk harvest. This management strategy allowed the population to be reduced to what in the 2013 herd management plan was estimated at 7,100 elk (CPW 2013).

As an over-the-counter (OTC) DAU with unlimited bull licenses in 2nd and 3rd rifle seasons, E-16 is not specifically managed for a sex ratio objective, but rather to provide ample hunting opportunities. The 2009-2011 three-year average was 28 bulls:100 cows, and the long-term average since 2000 is 25 bulls:100 cows.

The current population objective for DAU E-16, set forth in the 2013 Herd Management Plan, is 5,500-8,500 elk. The expected sex ratio range for E-16 is 18-30 bulls:100 cows. The most recent population estimate for E-16 is 8500 elk (CPW 2015).

7.2.1 Game Management Unit 45

Within GMU 45, conditions are different than elsewhere in DAU E-16 (Bill Andree, personal communication). There are no ranches for elk to retreat to during severe winters, and movements are confined due to the present of I-70 to the north and high elevation mountain passes to the other directions. The elk population within GMU 45 has decreased significantly during the past 3 years than at any time since 1975 (Bill Andree, personal communication).

7.3 FEDERALLY THREATENED AND ENDANGERED WILDLIFE

The United States Fish and Wildlife Service's IPAC website was consulted to obtain a list of federal T&E species, as well as species proposed or candidate for such listing, which may potentially occur in the project area (USFWS 2015; Appendix C). Wildlife species on the IPaC list for the project are presented in Table 1, below.

Table 1. 2013 LIST OF THREATENED, ENDANGERED, AND PROPOSED WILDLIFE SPECIES FOR THE WRNF.

SPECIES	STATUS [1]	TYPICAL HABITAT [2]	SUITABLE HABITAT PRESENT OR AFFECTED?	RATIONAL IF NOT CARRIED FORWARD FOR ANALYSIS
MAMMALS				
Canada lynx (Lynx canadensis)	T	C, D, E, G	No	No conifer habitat in project area.
BIRDS				
~~Mexican Spotted Owl (Strix occidentalis lucida)~~	T	B, D	No	No potential habitat in project area.

Table 1. 2013 LIST OF THREATENED, ENDANGERED, AND PROPOSED WILDLIFE SPECIES FOR THE WRNF.

SPECIES	STATUS [1]	TYPICAL HABITAT [2]	SUITABLE HABITAT PRESENT OR AFFECTED?	RATIONAL IF NOT CARRIED FORWARD FOR ANALYSIS
~~Yellow-Billed Cuckoo (*Coccyzus americanus*)~~	T	C	No	No potential habitat in project area.
FISH				
~~Colorado pikeminnow (Ptychocheilus lucius)~~	E	J	No	The USFWS has determined water depletions and regulated flows are the current activities with the greatest impact on all of the endangered Colorado River fishes. There will be no depletions or regulated flows as a result of the proposed project. Thus, there will be no effect on any of these 4 fish.
~~Razorback Sucker (Xyrauchen texanus)~~	E	J	No	
~~Humpback Chub (Gila cypha)~~	E	J	No	
~~Bonytail Chub (Gila elegans)~~	E	J	No	

[1] Status: S=Sensitive; T=Threatened ; E=Endangered; P=Proposed

[2] Habitat Key: A=Aspen; B=Cliff/Rock/Scree; C=Cottonwood/Riparian; D=Conifer Forest; E=Headwaters/ Willow Riparian; F=Lakes/Rivers; G=Marsh/Wetlands/Beaver Complexes/Fens; H=Rangelands/Sage; I=Creek w/ Limestone drips; J=Colorado River; Green River, Lower Yampa & White Rivers; K=Above timberline; L=Mountain parks; M=Piñon Juniper; N=Soils derived from Pierre, Niobrara, and Troublesome formations; O=High elevations with deep, persistent, and reliable spring snow cover.

For each species on the IPaC List, the Western Segment was analyzed for the landscape's ability to provide habitat. These species evaluations are summarized in Table 1. Additional information is provided in the following sections.

7.3.1 Canada lynx

In Colorado and the western United States, most lynx occurrences are associated with conifer forest. Engelmann spruce, subalpine fir and lodgepole pine forest cover types occurring on cold, moist sites provide habitat for lynx. Pure aspen stands are not considered to provide habitat for lynx, except when directly adjacent to conifer habitat or as provide transitional habitat between more suitable sites. As the Vail Trail Extension East Segment is composed of mostly pure aspen, there is no habitat for Canada lynx, the project would have no effect on the Canada lynx, and the species has been eliminated from further analysis.

7.3.2 Mexican Spotted Owl

Mexican spotted owl has not been documented anywhere on or adjacent to the White River National Forest. The only identified area on the WRNF that provides some of the characteristics of Mexican spotted owl nesting habitat is along Glenwood Canyon for approximately 2.5 miles.

There is no potentially suitable nest habitat in the Vail Trail Extension project area. As a consequence, the proposed project would have no effect on the Mexican spotted owl and the species has been eliminated from further analysis.

7.3.3 Yellow-billed Cuckoo

An examination of the distributional records for the yellow-billed cuckoo in the Rocky Mountain region indicates that there have been few records of yellow-billed cuckoos and the species is even scarcer at

elevations above approximately 6,000' MSL, and almost never breeds above 7,000'. Furthermore, this species requires expansive blocks of riparian vegetation containing trees of various ages, including in particular larger, more mature trees used for nesting and foraging. Such habitat does not occur in the project area. There will, consequently, be no effect on this species as a result of the proposed project, and the species has been eliminated from further analysis.

7.3.4 Colorado River Endangered Fish

The USFWS has determined water depletions and regulated flows are the current activities with the greatest impact on all of the endangered Colorado River fishes. There will be no depletions or regulated flows as a result of the proposed project. Thus, there will be no effect on any of these 4 fish.

7.4 State Threatened and Endangered Wildlife

The Colorado Wildlife Commission is directed by Statute to consider and establish at least once every five years, a list of wildlife species native to Colorado which are considered to be endangered or threatened. This Directive establishes definitions, criteria and a procedure for making recommendations to the Commission for listing and delisting species as endangered, threatened, or species of special concern.

Colorado Parks and Wildlife was consulted to obtain a current list of State special status species. This list is reproduced in Table 2 along with an indication of whether habitat or species are potentially present in the project area. Where habitat for a species is absent, no further analysis is necessary. In cases where habitat is present, the species will be further analyzed. Those species with potential habitat in the project area are highlighted in green in Table 2.

Table 2. Colorado State Listed Species.

Species	Common Name	Status*	Habitat Present?	Species Present?	Species Impact?
Birds					
Athene cunicularia	Burrowing Owl	ST	No	No	No
Buteo regalis	Ferruginous Hawk	SC	No	No	No
Centrocercus minimus	Gunnison Sage-Grouse	SC	No	No	No
Centrocercus urophasianus	Greater Sage Grouse	SC	No	No	No
Charadrius alexandrinus	Western Snowy Plover	SC	No	No	No
Charadrius melodus circumcinctus	Piping Plover	FT, ST	No	No	No
Charadrius montanus	Mountain Plover	SC	No	No	No
Coccyzus americanus	Western Yellow-Billed Cuckoo	SC	No	No	No
Empidonax traillii extimus	Southwestern Willow Flycatcher	FE, SE	No	No	No
Falco peregrinus anatum	American Peregrine Falcon	SC	Yes[1]	Yes	No
Grus americana	Whooping Crane	FE, SE	No	No	No
Grus canadensis tabida	Greater Sandhill Crane	SC	No	No	No

Table 2. COLORADO STATE LISTED SPECIES.					
SPECIES	**COMMON NAME**	**STATUS***	**HABITAT PRESENT?**	**SPECIES PRESENT?**	**SPECIES IMPACT?**
Haliaeetus leucocephalus	Bald Eagle	SC	Yes	No	No
Numenius americanus	Long-Billed Curlew	SC	No	No	No
Sterna antillarum	Least Tern	FE, SE	No	No	No
Strix occidentalis lucida	Mexican Spotted Owl	FT, ST	No	No	No
Tympanuchus pallidicinctus	Lesser Prairie-Chicken	ST	No	No	No
Tympanuchus phasianellus columbianus	Columbian Sharp-Tailed Grouse	SC	No	No	No
Tympanuchus phasianellus jamesii	Plains Sharp-Tailed Grouse	SE	No	No	No
FISH					
Catostomus playtrhynchus	Mountain Sucker	SC	No	No	No
Catostomus plebeius	Rio Grande Sucker	SE	No	No	No
Couesius plumbeus	Lake Chub	SE	No	No	No
Etheostoma cragini	Arkansas Darter	ST	No	No	No
Etheostoma exile	Iowa Darter	SC	No	No	No
Etheostoma spectabile	Plains Orangethroat Darter	SC	No	No	No
Gila cypha	Humpback Chub	FE, ST	No	No	No
Gila elegans	Bonytail	FE, SE	No	No	No
Gila pandora	Rio Grande Chub	SC	No	No	No
Gila robusta	Colorado Roundtail Chub	SC	No	No	No
Hybognathus hankinsoni	Brassy Minnow	ST	No	No	No
Hybognathus placitus	Plains Minnow	SE	No	No	No
Luxilus cornutus	Common Shiner	ST	No	No	No
Noturus flavus	Stonecat	SC	No	No	No
Oncorhynchus clarki pleuriticus	Colorado River Cutthroat Trout	SC	No	No	No
Oncorhynchus clarki stomias	Greenback Cutthroat Trout	FT, ST	No	No	No
Oncorhynchus clarki virginalis	Rio Grande Cutthroat Trout	SC	No	No	No
Phenacobius mirabilis	Suckermouth Minnow	SE	No	No	No
Phoxinus eos	Northern Redbelly Dace	SE	No	No	No
Phoxinus erythrogaster	Southern Redbelly Dace	SE	No	No	No
Platygobio gracilus	Flathead Chub	SC	No	No	No

Table 2. COLORADO STATE LISTED SPECIES.					
SPECIES	**COMMON NAME**	**STATUS***	**HABITAT PRESENT?**	**SPECIES PRESENT?**	**SPECIES IMPACT?**
Ptychocheilus lucius	Colorado Pikeminnow	FE, ST	No	No	No
Xyrauchen texanus	Razorback Sucker	FE, SE	No	No	No
MAMMALS					
Canis lupus	Gray Wolf	FE, SE	No	No	No
Corynorhinus townsendii pallescens	Townsend's Big-Eared Bat	SC	No	No	No
Cynomys ludovicianus	Black-Tailed Prairie Dog	SC	No	No	No
Gulo gulo	Wolverine	SE	No	No	No
Lontra canadensis	River Otter	ST	No	No	No
Lynx canadensis	Lynx	FT, SE	No	No	No
Mustela nigripes	□lack-Footed Ferret	FE, SE	No	No	No
Thomomy bottae rubidus	Botta's Pocket Gopher	SC	No	No	No
Thomomys talpoides macrotis	Northern Pocket Gopher	SC	No	No	No
Ursus arctos	Grizzly Bear	FT, SE	No	No	No
Vulpes macrotis	Kit Fox	SE	No	No	No
Vulpes velox	Swift fox	SC	No	No	No
Zapus hudsonius preblei	Preble's Meadow Jumping Mouse	FT, ST	No	No	No
Reptiles					
Cnemidophorus neotesselatus	Triploid Checkered Whiptail	SC	No	No	No
Crotalus viridis concolor	Midget Faded Rattlesnake	SC	No	No	No
Gambelia wislizenii	Longnose Leopard Lizard	SC	No	No	No
Kinosternon flavescens	Yellow Mud Turtle	SC	No	No	No
Lampropeltis getula	Common King Snake	SC	No	No	No
Leptotyphlops dulcis	Texas Blind Snake	SC	No	No	No
Phrynosoma cornutum	Texas Horned Lizard	SC	No	No	No
Phrynosoma modestum	Roundtail Horned Lizard	SC	No	No	No
Sistrurus catenatus	Massasauga	SC	No	No	No
Thamnophis sirtalis	Common Garter Snake	SC	No	No	No
AMPHIBIANS					
Acris crepitans	*Northern Cricket Frog*	*SC*	*No*	*No*	*No*

Table 2. COLORADO STATE LISTED SPECIES.					
SPECIES	COMMON NAME	STATUS*	HABITAT PRESENT?	SPECIES PRESENT?	SPECIES IMPACT?
Bufo boreas boreas	*Boreal Toad*	*SE*	*Yes*	*Yes*	*Yes*
Gastrophryne olivacea	*Great Plains Narrowmouth Toad*	*SC*	*No*	*No*	*No*
Rana blairi	*Plains Leopard Frog*	*SC*	*No*	*No*	*No*
Rana pipiens	*Northern Leopard Frog*	*SC*	*No*	*No*	*No*
Rana sylvatica	*Wood Frog*	*SC*	*No*	*No*	*No*
Scaphiopus couchii	*Couch's Spadefoot*	*SC*	*No*	*No*	*No*
MOLLUSCS					
Acroloxus coloradensis	Rocky Mountain Capshell	SC	No	No	No
Anodontoides ferussacianus	Cylindrical Papershell	SC	No	No	No

1 CPW maps peregrine falcon nesting habitat east of the Western Segment of the trail alignment. While CPW's polygon does overlap the project area, actual nest habitat is located in cliff bands approximately 600 vertical feet above the proposed alignment. Peregrines may hunt along the proposed alignment.

Two Colorado state listed species are known to exist within the area of influence of the Vail Trail Extension project area, the peregrine falcon and boreal toad. For all other species on the State List, there is no habitat in the project area; these species will not be impacted by the proposed project.

7.4.1 Boreal Toad

Suitable breeding habitat for boreal toads includes marshes, wet meadows, and the margins of streams, beaver ponds, lakes, and glacial kettle ponds in subalpine areas of Colorado. Toads in these areas are commonly found in shallow water or among sedges and shrubby willows where the soil is damp or wet. Young toads are restricted in distribution and movement by available moist habitat, while adults can move several miles and reside in marshes, wet meadows, or forested areas. Between September and May, boreal toads typically hibernate along the banks of a water body in naturally occurring burrows. However, following the breeding season, individual boreal toads have been recorded to have traveled up to 2.5 miles from breeding sites to sites within spruce-fir or lodgepole pine forests.

Boreal toads are known to inhabit Katsos Pond on Gore Creek, just north of the proposed Vail Trail Extension. It is conceivable that individual toads may occur in Gore Creek or its tributaries that cross the Western Segment of the Vail Trail, or migrate through the project area following breeding. Therefore, potential impacts of the project on boreal toad are analyzed in Section 8, Environmental Impacts.

7.4.2 Peregrine Falcon

Based on recent bird atlas work, there are an estimated 236 breeding pairs of peregrines in Colorado. Viable peregrine nesting sites possess two components: (1) adequate nesting habitat, and (2) extensive hunting habitat with an adequate prey base to support the adults and their offspring. Nesting sites are located on precipitous cliffs ranging in height from 40 to 2,100 feet, averaging 200 to 400 feet tall. All habitats within the 10-mile radius of the nest need not be considered essential habitat, since only those areas that attract or support peregrine prey need be protected or enhanced. Any habitat that supports or concentrates birds (peregrines prey primarily on birds) should be considered essential to locally nesting peregrines.

An active peregrine eyrie is located on cliffs approximately 600 feet vertically and almost ½ mile to the east of the easternmost extension of the West Segment. While not documented, it is likely that birds from this eyrie forage over portions of the proposed trail alignment.

Human disturbance at peregrine falcon eyries has the potential to lead to nest abandonment and/or nest failure. However, the physical characteristics of the nest site, the distance and location (above or below the eyrie) of the disturbance, and individual birds' level of habituation to human activities determine the response of individual peregrines to disturbance.

Peregrines are more tolerant to disturbances occurring below the eyrie than to disturbances at or above the same level as their eyrie. Furthermore, individual peregrines can become accustomed to human disturbance. Regular human disturbance in proximity to an eyrie has been observed to be less disruptive to nesting peregrines than intermittent or unexpected activities (Olsen and Olsen 1978). If peregrines are accustomed to a certain disturbance as a normal or routine occurrence, and the disturbance offers no known direct threat, then the peregrines will ignore it (Pagel 2001). If, however, the disturbance is new, intermittent, or unexpected within their nesting territory, then the peregrines will be less tolerant of that disturbance.

For example, when peregrines are accustomed to vehicle traffic or hikers, and they receive no potential threat to their eyrie from the activities, then observed peregrine falcon behavior patterns around the eyrie are "normal". When peregrines have not experienced a human disturbance, or the activity is intermittent (e.g. log skidding, aircraft, or distant rockfall) then they can become noticeably concerned (ranging from curiosity fly-overs to intense territorial defense; Pagel 2001).

A ½ mile buffer around occupied eyries and suitable adjacent nest habitat is mapped by CPW as a peregrine falcon nest area. The East Vail eyrie has such a buffer mapped by CPW. However, the East Vail eyrie has existed with human disturbance for years. The nest site is located adjacent to a busy transportation corridor, with I-70, the Frontage Road, a golf course, several subdivisions and commercial developments, numerous local roads and sidewalks, and an existing surfaced trail all currently in existence. Peregrines have occupied their current eyrie for years with these ongoing disturbances, and are apparently accustomed and habituated to the current level of human activity in the valley bottom.

CPW recommends a seasonal restriction to human encroachment within ½ mile of the nest cliff(s) from March 15 to July 31 (CPW 2008). CPW acknowledges that some individuals within a species may habituate and tolerate human activity at a proximity that would cause the majority of the group to abandon their nests. The buffer areas and seasonal restrictions that CPW recommends reflect an informed opinion that if implemented, should assure that the majority of individuals within a species will continue to occupy the area. Their guidelines state that additional factors, such as intervening terrain, vegetation screens, and the cumulative impacts of activities should be considered when determining appropriate buffer distances.

Potential impacts of the project on peregrine falcon are analyzed in Section 8, Environmental Impacts.

8. ENVIRONMENTAL IMPACTS

Environmental impacts were described in the preceding sections. This section of the report presents an analysis of the impacts of construction and use of the Western Segment of the Vail Trail Extension. It includes recommended mitigation measures where necessary, and summarizes the determinations for each resource. The analysis shall describe both beneficial effects and detrimental effects. The analysis shall consider primary effects and secondary effects that will result from the project, including the following:

- Mitigation measures proposed to minimize the impact, including water quality, erosion control and revegetation measures.
- Adverse effects which cannot be avoided if the proposal is implemented.
- Possible alternatives to the proposed action.
- Relationships between short term and long term uses of the environment.
- Irreversible environmental changes resulting from implementation of the proposal.

8.1 SOILS

The primary soil-related challenges for the project are related to slope and mud during seasonal wet periods. Trail construction specifications should include adequate drainage structures to dry the trail following seasonal wet periods and precipitation events.

8.1.1 Recommended Mitigation Measures

- During trail construction, maintenance and operations, stockpile top soil to the extent possible to maintain organic matter that will enhance revegetation of cut and fill slopes.
- Jute-netting or appropriate erosion-control matting on should be utilized steep cut & fill slopes (i.e., land with a slope angle of 35% or greater) to protect soils and enhance conditions for vegetation re-establishment.
- Biodegradable netting (erosion control blankets and matting) should be used, as opposed to persistent plastic/polypropylene materials.
- Promptly revegetate disturbed areas. Seed mixtures and mulches should be free of noxious weeds.
- To prevent soil erosion during revegetation, utilize non-persistent, non-native perennials or sterile perennials to provide cover while native perennials become established.
- Reclaim disturbed areas promptly upon termination of construction to prevent resource damage and invasion of noxious weeds.
- Ensure proper drainage, rip compacted areas, and apply revegetation seed mix and organic soil amendments to facilitate revegetation.
- Do not locate the trail on slopes that show signs of instability, such as slope failure, mass movement, or slumps.

8.1.2 Environmental Impact Summary

With implementation of the mitigation measures provided above, the proposed project would have no adverse effects that cannot be avoided. There are no recommended alternatives that would further reduce impacts to the soil resource. There will be no irreversible changes to the soil resource as a result of implementing the proposal.

8.2 VEGETATION

There are no federally listed plant species present in the project area. Consequently there are no impacts to threatened or endangered plants. The entirety of the project area is above the known elevation range of Ute Ladies Tresses. Regardless, suitable habitat along the alignment was surveyed for the presence of this species. While there are no federally jurisdictional wetlands that exist along the proposed trail alignment, there are "wet" areas that could provide potential habitat for this species. Each of these wet areas was surveyed for the presence of Ute Ladies Tresses. **The presence of Ute Ladies Tresses was not detected. The project would therefore have NO EFFECT on this species.** No portion of the project area or vicinity has been designated critical habitat by the Secretary of the Interior.

The mitigation measures recommended below relate to reducing the impact of the project on vegetation adjacent to the finished trail.

8.2.1 Recommended Mitigation Measures

- To prevent the spread of noxious weeds, existing infestations in the project area should be pre-treated with approved herbicides prior to project implementation.
- Trail construction tools and equipment should be cleaned of soil, seeds, vegetative matter, or other debris that could contain or hold noxious weed seeds.
- Disturbed ground should be revegetated with desirable plant species. Seed mixes that incorporate native plant species similar to those within the project area are desirable. Any mulch used in revegetation efforts must be certified to be free of weed species. Use of wood and other non-straw fibers (i.e. coir, jute or coconut) mulch and erosion control materials would help meet this objective.
- TOV should monitor the project area for 3 years after completion for presence of invasive plants and successful establishment of desirable vegetation. Invasive plants should be retreated, as needed.
- Adequately mark leave trees and trail clearing limits to avoid mistakes in clearing limits during construction.
- Areas cleared of vegetation alongside trails should be fully reclaimed after construction, where possible.
- Engelmann spruce trees that are felled should be either removed from the area or treated within one year after felling to prevent the buildup of spruce bark beetle. Treatments can include burning, burying or peeling the bark off felled Engelmann spruce.
- Consider the health and windthrow potential of residual trees as the major selection factors, when possible, during the selection of trees for removal.

8.2.2 Environmental Impact Summary

With application of the recommended mitigation measures above, the proposed project will not result in adverse effects to vegetation resources. There are no recommended alternatives to the proposed action that would further reduce vegetation impacts. There will be no irreversible change to vegetation resources resulting from implementation of the proposal.

8.3 WETLANDS

Based on the defining characteristics of wetlands presented in the 1987 Army Corps of Engineers Wetland Delineation Manual and the 2010 Supplement, there are no sits within the proposed Western Segment that meet the COE definition of wetland. Therefore, the project is not subject to federal jurisdiction under Section 404 of the CWA. Although wetlands are not present on the project area,

mitigation to prevent sediment contribution to streams is appropriate. Such measures are included in the following section.

8.3.1 Recommended Mitigation Measures

- For ground-disturbing activities near perennial and intermittent streams, and ephemeral draws, minimize sediment contribution by ensuring that the trail drains to undisturbed soils rather than directly to streams and ephemeral draws. Manipulate drainage from disturbed areas as necessary using natural topography, rolling dips, waterbars, ditch-relief culverts, etc., to disconnect disturbed areas from streams.
- Keep all debris generated by project activities out of ditches, swales, and drainage channels.

8.3.2 Environmental Impact Summary

With application of the recommended mitigation measures above, the proposed project will not result in adverse effects to wetland or watershed resources. There are no recommended alternatives to the proposed action. There will be no irreversible change to the wetland resource resulting from implementation of the proposal.

8.4 WILDLIFE

8.4.1 General Impact of Recreation on Wildlife

Outdoor recreation has the potential to disturb wildlife, resulting in increased energetic costs as animals flee a disturbance, which may impact animal's behavior and fitness. An abundance of literature exists on the sensitivity of wildlife (generally elk and deer) to roads. Less research is available regarding the impact of non-motorized recreation on wildlife. Discussion of the impacts of non-motorized recreation on wildlife generally incorporates the concept of a ***zone of disturbance*** where animals alter their behavior along the trail corridor. Additionally, the literature suggests that frequency, predictability, timing, and location of recreational disturbances may guide the degree to which wildlife species are able to habituate to recreational disturbances (Knight and Cole 1995).

Several studies have concluded that elk, deer, and other ungulates respond with more apparent alarm to ***unpredictable*** encounters with humans, such as off-trail hikers, than they do to ***predictable*** encounters on developed, more heavily used trails (Taylor and Knight 2003, Courtemanch 2014, Knight and Cole 1995). These studies lend credence to the concept that wild animals are able to habituate to regularly occurring disturbance, such as that which occurs on hiking/biking trails. Conversely, another study conducted by Naylor (2009), found no evidence of habituation to trail users. Apparently, the verdict is still out on whether wildlife does, in fact, become more comfortable in the presence of recreational disturbances over time.

The timing of recreational disturbances may also affect the degree to which the fitness of animals is adversely impacted. Most recreational activities do not occur during peak elk feeding activity at dawn and dusk. With their main feeding period being unaffected by disturbances, reduced foraging time due to recreational disturbance may not have substantial short-term biological consequences. The potential disadvantage to elk is the energy expense of traveling during each disturbance, coupled with a loss in forage intake. A shift away from disturbance routes to areas of potentially lesser quality forage could have a cumulative effect on long-term body condition (Naylor et al 2009).

Several workers have attempted to define the "zone of disturbance as it relates to various species of wildlife. Most recently, Taylor and Knight (2003) concluded the existence of a zone of disturbance along hiking trails in a Utah study area of 200 meters for mule deer, pronghorn, and bison. Wisdom et al (2005)

concluded that the zone of disturbance for elk may be as broad as 500 meters for hikers, and 1500 meters for mountain bikers. Both authors note that vegetation density and topography strongly influence the disturbance zone, the denser or more topographically complex, the smaller the zone of disturbance. While the efforts of these researchers provide useful information for recreation management, it is clear that more research is necessary to conclusively define the zone of disturbance that exists in wildlife response to recreational activities in various types of vegetation and topography.

The currently existing Vail Trail along the Western Segment provides access primarily to hikers. The proposal would alter the grade, surface, and drainage along this route. Thus, species that currently utilize habitat in this area already experience some level of human recreational disturbance. The improved trail would likely increase the frequency of human recreational disturbances, potentially increasing the level of disturbance to wildlife. The more frequent activity may lead to decreased utilization overall within the zone of disturbance.

The mere physical presence of trails fragments habitat, albeit to a very minor extent. Such fragmentation most likely affects small mammals to a greater extent than it does large animals. Trail construction can provide an avenue for weed invasions. Habitat loss and reductions of key structural components (snags, coarse woody debris) may occur within trail corridors. Such localized habitat losses are most likely not measurable at the scale of individual trail projects, however cumulatively the impact may be conjectured, when considered at the scale of a County, State, or Region.

8.4.1.1 Hiking

In addition to those impacts discussed above, hikers may affect wildlife through trampling of habitat and indirectly through discarded food and other items (Snetsinger and White 2009). Risk of human-caused wildfires, which affect wildlife and habitat, are greater with higher levels of recreation. Hikers can inadvertently lead to the spread of noxious weeds, reducing habitat quality for some species.

The presence of dogs on trails has been shown to have various effects on wildlife. For some birds, dogs alone cause birds to flush at a closer distance than they do from humans or humans with dogs (Miller et al 2001). For mule deer, dogs alone or dogs with humans expand the zone of disturbance beyond that of humans alone.

8.4.1.2 Mountain Biking

The results of research into mountain bike effects versus hiker effects on wildlife are not clear. According to Wisdom et al (2005), the probability of ungulates exhibiting a flight response is greater for mountain bikers than for hikers (1500 meters). Conversely, Taylor and Knight (2003a) found no difference between responses of ungulates to bikers versus hikers. The effects of on-trail versus off-trail use also differ. For example, Papouchis et al (2001) found bighorn sheep to be less sensitive to on-trail mountain bikers than to off-trail hikers.

Mountain biking for the most part is limited to trail corridors, adding predictability. However, speed and sound-levels of bikers vary from those of hikers, potentially affecting types of wildlife responses. Mountain bikers generally travel greater distances and thus, even if disturbance is equal to that of hiking, may provide greater disruption to wildlife on a single outing (Taylor and Knight 2003a).

Mountain bikers may contribute to the spread of noxious weeds, reducing habitat quality for some species (Snetsinger and White 2009).

8.4.2 Effects of Western Segment of the Vail Trail Extension on Wildlife

8.4.2.1 Elk

Winter range availability is the primary limiting factor for big game in Colorado due to the abundance of summer range and forage. However with the increasing human population and year round recreational demands, the importance of summer and transitional range has become more evident (Andree, personal communication). The opportunity for big game to forage during the summer periods to obtain maximum fat gains and the options of feeding on fall and spring transitional range all improve overall health and survival for big game. The hillside south of Gore Creek provides these types of habitat that are currently free from recreational disturbance (at least for that portion of the hillside beyond the currently existing zone of disturbance.

Construction and subsequent use of the Western Segment of the Vail Trail would result in increased frequency of human recreational use, by both increased hiker numbers, and the addition of mountain bike users. It is likely that in the short-term, the more frequent disturbances of elk by hikers and bikers on the new trail would lead to a 200-500 meter or greater zone of disturbance for elk, resulting in a flight response in animals when humans are present on the trail. The flight response has the potential to decrease the overall fitness of animals that use the area. Whether or not the decreased fitness would affect overall population numbers is impossible to predict. Cook et al. (2004) suggested that if elk body fat was reduced below 9% as the animal enters winter, there is an increased probability of that individual not surviving winter.

In the long-term, the zone of disturbance may decrease if elk habituate to hiker and biker use of the trail; however habituation has only been conjectured in the research, and has not been demonstrated. In the long term, the impact of the East Segment would likely include decreased elk utilization of the area within 200-500 meters of the trail over the long-term. This has the potential to decrease survival for that portion of the Fryingpan elk herd that utilizes the Vail area. For the entire Fryingpan herd, however, the impact would not likely be detectable at the scale of DAU E-16.

The elk population in DAU E-16 does not appear to be threatened, overall. Post-hunt population estimates increased from approximately 7500 animals in 2014, to 8500 in 2015 (CPW 2014, CPW 2015). The population was recently (1990s and early 2000s) estimated as high as 10,000 animals, and was reduced through management of hunter quotas to its current level. Therefore, with the mitigation proposed below, the trail project would be unlikely to adversely affect the ability of CPW to achieve elk or mule deer herd objectives in DAU E-16. However, given the diminishing herd population in GMU 45, any reduction in habitat due to the zone of disturbance from use of the Vail Trail Extension may add cumulatively to the impacts that have led to the decreasing population in the immediate vicinity of the Town of Vail.

The entirety of the Western Segment alignment is mapped by CPW as elk winter range. Winter use of the trail, during the period between December 1 and May 15, would be likely to create a zone of disturbance for elk during the period when they are most vulnerable. During the winter, elk subsist largely on fat reserves accumulated during the spring, summer, and fall. Disturbance that leads to increased stress or flight responses during the winter is particularly threatening to elk, and may lead to decreased survival and fecundity. Mitigation is proposed below to close the trail to human use during the period between December 1 and May 15 each year.

8.4.2.2 Federally Threatened or Endangered Species

The proposed project will not impact federally threatened or endangered species, or those that are proposed or candidate for such listing.

8.4.2.3 State Listed Threatened or Endangered Species

(a) Peregrine Falcon

The very eastern-most portion of the proposed Western Segment of the Vail Trail Extension would be located in an area mapped by CPW as peregrine falcon nesting area. The proposed trail would share the nest area with the currently existing I-70, the Frontage Road, a golf course, several subdivisions and commercial developments, numerous local roads and sidewalks, and an existing surfaced trail. The proposed trail would be located from 100-400' in distance from the currently existing surfaced trail, and parallel to its alignment. Furthermore, the existing trail that would be re-built and re-aligned currently exists roughly along the same alignment as the proposed alignment. This trail is currently used by hikers and dog walkers (Kelly Colfer, Personal Observation).

Peregrines have occupied their current eyrie for years with all of the aforementioned activities taking place, and are apparently habituated to the current level of human activity. Regular human disturbance in proximity to an eyrie is less disruptive to nesting peregrines than intermittent or unexpected activities. If peregrines are accustomed to a certain disturbance as a normal or routine occurrence, and the disturbance offers no known direct threat, then the peregrines do not exhibit a threat response. The new Western Segment of the Vail Trail would be located adjacent to existing human activity centers to which the falcons have apparently habituated. The trail would be 600 vertical feet below the eyrie; peregrines are more tolerant to disturbances occurring below their eyrie than to disturbances at or above the level of their eyrie. The trail would be located almost ½ mile horizontally from the nearest area mapped as potential nesting habitat.

Although CPW recommendations suggest a ½ mile buffer from peregrine eyries, the agency acknowledges that intervening terrain and vegetative screening should be considered when determining appropriate buffer distances. Aspen forest would provide a vegetative screen to conceal trail users from views along the majority of the length of the trail. The intervening steep terrain should also be considered when evaluating necessary buffer distance.

Furthermore, the new trail would not be located in an alignment that would adversely impact potential prey for peregrines at a greater rate than if it were located in a different alignment. While bird populations are relatively high in aspen forests, such forests are widespread in the analysis area.

To summarize, the following factors exist that will reduce the impact of the new trail on the East Vail Eyrie:

- The peregrines at the East Vail Eyrie are apparently habituated to elevated levels of human activity
- Most of the West Segment of the proposed trail is located beyond the limits of the East Vail eyrie nest buffer. Only a few hundred yards of the trail would extend into the ½ mile buffer.
- Aspen canopy provides a vegetative screen along a majority of the trail alignment
- Intervening terrain provides an additional topographic buffer between the proposed trail and the eyrie
- Peregrine's prey availability is no higher along the proposed alignment than elsewhere surrounding the eyrie.

It is therefore unlikely that construction and use of the new trail would impact the East Vail Eyrie or its occupants.

(b) Boreal Toad

Boreal toads are known to inhabit Katsos Pond on Gore Creek, just north of the proposed Vail Trail Extension Western Alignment. It is conceivable that individual toads may utilize the unnamed tributary to Gore Creek during spring and fall migration. While unlikely to occur, it is conceivable that individual toads could be crushed and killed by heavy equipment during trail construction near the tributary during the spring and fall migration periods (May 1 – June 20, September 20 until winter). Such impacts to the toad are not likely, nor would they be expected to contribute to a loss of overall population viability or to federal listing. Mitigation measures in the following section would minimize the potential hazards to boreal toads.

8.4.3 Recommended Mitigation Measures

- Construction workers should not be allowed to bring dogs on site during construction.
- To prevent adverse bear interactions, food/drink should not be stored onsite.
- Reduce sediment sources on proposed trails and stream crossings to prevent impact to aquatic species.
- To protect elk winter range, close the trail to use between December 1 and May 15.
- To protect migratory movements of boreal toads, limit heavy equipment usage near stream habitat from May 1 through June 20th and from late September through winter.
- To prevent transfer of potentially lethal fungi to which boreal toads are susceptible, heavy equipment should be cleaned prior to project entry by following the protocol to prevent the spread of the chytrid fungus before being utilized at creek crossings.

8.4.4 Environmental Impact Summary

With application of the recommended mitigation measures above, the proposed project will not result in adverse effects to wildlife resources. There are no recommended alternatives to the proposed action. There will be no irreversible change to the wildlife resource resulting from implementation of the proposal.

9. LITERATURE CITED

Andree, Bill. 12-8-2015. Personal communication with Kelly Colfer.

Andree, Bill. 01-13-2016. Personal communication with Kelly Colfer.

Colorado Parks and Wildlife. 2008. Recommended buffer zones and seasonal restrictions for Colorado raptors. CPW, Denver, CO.

Colorado Parks and Wildlife. 2013. Frying Pan River Elk Herd E-16 Data Analysis Unit Plan. CPW, Glenwood Springs, CO.

Colorado Parks and Wildlife. 2014. Post Hunt Population Estimates, Elk. CPW, Denver, CO.

Colorado Parks and Wildlife. 2015. Colorado Big Game Hunt Guide Northwest Region. CPW, Grand Junction, CO.

Cook, J. G., B. K. Johnson, R. C. Cook, R. A. Riggs, T. Delcurto, L. D. Bryant, and L. L. Irwin. 2004. Effects of summer–autumn nutrition and parturition date on reproduction and survival of elk. Wildlife Monographs 155.

Courtemanch, A. 2014. Seasonal habitat selection and impacts of backcountry recreation on a formerly migratory bighorn sheep population in northwest Wyoming, USA. MS Thesis, University of Wyoming, Laramie.

Snetsinger, S.D. and K. White. 2009. Recreation and Trail Impacts on Wildlife Species of Interest in Mount Spokane State Park. Pacific Biodiversity Institute, Winthrop, Washington. 60 p. Knight, R.L. and Gutzwiller, K.J. (eds.) 1995. Wildlife and Recreationists: Co-existence Through Management and Research. Island Press, Washington D.C.

Knight, R.L., and D.N. Cole. 1995. Factors that influence wildlife response to recreationists, In Wildlife and Recreationists: Coexistence through Management and Research, R.L. Knight and K. Gutzwiller, eds. Island Press, WA DC.

Lichvar, R.W. 2013. National Wetland Plant List: 2013 Wetland Ratings. Phytoneuron 2013-49: 1–241.

Miller, Scott G., Richard L. Knight, and Clinton K. Mliller. 2001. Wildlife responses to pedestrians and dogs. Wildlife Society Bulletin 2001, 29(1):1 124-132.

Naylor, LM, MJ Wisdom, and RG Anthony. 2009. Behavioral Responses of North American Elk to Recreational Activity. Journal of Wildlife Management 73(3). 11p.

Olsen, P. and J. Olsen. 1978. Alleviating the impact of human disturbance on the breeding peregrine falcon. Corella V2 No 1. 7p.

Pagel, J.E. 2001. Draft Peregrine Falcon (Falco peregrinus anatum) Nest Site and Habitat Management Plan. Prepared for Oregon Department of Transportation, unpublished draft report.

Papouchis, Christopher M., Francis J. Singer, and William B. Sloan. 2001. J. Wildl. Mage. 65(3): 573-582.

Taylor, A.R. & R.L. Knight. 2003. Wildlife responses to recreation and associated visitor perceptions. Ecological Applications, 13(4), pp. 951-963.

US Army Corps of Engineers. Environmental Laboratory. 1987. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS

US Army Corps of Engineers. Environmental Laboratory. 2010. Regional Supplement to the COE Wetland Delineation Manual for Western Mountains, Valleys, and Coast Region v2.0. ERDC/EL TR-10-3. US Fish and Wildlife Service. 2015. Information for Planning and Conservation. https://ecos.fws.gov/ipac/ . Accessed 11-20-2015.

US Fish and Wildlife Service. Information for Planning and Conservation (website). (https://ecos.fws.gov/ipac. Accessed 11-19-15.

USDA Forest Service. 1999. WRNF Soil Survey. GIS Data and Data Dictionary. WRNF Supervisors Office, Glenwood Springs, CO.

Wisdom, M. J., A. A. Ager, H. K. Preisler, N. J. Cimon, and B. K. Johnson. 2005. Effects of Off-Road Recreation on Mule Deer and Elk. Pages 67-80 in Wisdom, M. J., technical editor, The Starkey Project: a synthesis of long-term studies of elk and mule deer. Reprinted from the 2004 Transactions of the North American Wildlife and Natural Resources Conference, Alliance Communications Group, Lawrence, Kansas, USA.

APPENDIX A – SOIL MAP UNIT DESCRIPTIONS

9.1 MAP UNIT: 386C—SEITZ - TELLURA FAMILIES COMPLEX, 40 TO 60 PERCENT SLOPES.

Ecological Land Unit: 386C—subalpine fir, Engelmann spruce and aspen on montane, steep mountain slopes.

MAP UNIT SETTINGS
Location: Vail area.
Landform: steep mountain slopes.
Parent material: colluvium.
Geologic symbol: Pmb.
Elevation range: 9,000 to 10,500 feet.
Aspect: all.
Climatic zone: montane.
Mean annual precipitation: 20 to 30 inches.
Mean annual air temperature: 40°F. to 44°F.
Average annual snowfall: 200 to 300 inches.

COMPOSITION
60 percent Seitz and similar soils.
40 percent Tellura and similar soils.

TYPICAL PROFILES:
Seitz
Surface covering layer:
1 to 0 inches - spruce, fir and pine litter and duff.

Surface layer(s):
0 to 3 inches - pale brown, stony silt loam.
3 to 17 inches - brown, cobbly silt loam.

Subsurface layer(s):
17 to 22 inches - pale brown, very cobbly silty clay.
22 to 45 inches - yellowish brown, very cobbly clay.

Subsoil layer(s):
45 to 63 inches - light yellowish brown, extremely stony clay.
63 to 72 inches - pale brown, extremely cobbly clay.
to inches - , extremely channery coarse sand.

Tellura

Surface layer(s):
0 to 2 inches - brown, cobbly loam.
2 to 8 inches - brown, cobbly silt loam.

Subsurface layer(s):
8 to 14 inches - brown, very cobbly clay loam.

Subsoil layer(s):
14 to 18 inches - brown, very cobbly clay loam.
18 to 35 inches - light yellowish brown, very cobbly clay.
35 to 44 inches - light yellowish brown, very cobbly clay loam.

Substratum layer(s):
44 to 60 inches - very pale brown, very gravelly sandy clay loam.

SOIL PROPERTIES AND QUALITIES

Seitz

Effective rooting depth: greater than 40 inches.
Natural drainage class: well.
Depth to seasonal high water table: greater than 6 feet.
Available water capacity: high.
Permeability: slow.
Runoff: rapid.

Tellura

Effective rooting depth: greater than 40 inches.
Natural drainage class: well.
Available water capacity: high.
Permeability: slow.
Runoff: rapid.

VEGETATION

Potential natural communities:
Seitz: subalpine fir-Engelmann spruce/Rocky Mountain whortleberry (Abla-Pien1/Vamy).
Tellura: aspen/mountain snowberry (Potr1/Syor1).
Seral stages: includes plants of the respective potential natural communities.
Present vegetation: includes plants of the respective potential natural communities.

USE AND MANAGEMENT CONSIDERATIONS

Major uses: timber harvest, livestock grazing, dispersed non-motorized recreation, wildlife habitat and watershed.

Mass movement potential

Landslides: low.
Debris flows: low.
Snow avalanche: low.

Road and trail limitations:

Cut and fill slope stability
Seitz: moderate - fine grained material.

Tellura: moderate - fine grained material.

Improved unsurfaced roads:
Seitz: severe - slope and low load bearing strength.
Tellura: severe - slope and low load bearing strength.

Offroad vehicle roads and trails:
Seitz: severe - mud during seasonal wet periods, slope and erosion hazard.
Tellura: severe - mud during seasonal wet periods, slope and erosion hazard.

Foot trails and paths:
Seitz: moderate - slope and mud during seasonal wet periods.
Tellura: moderate - slope and mud during seasonal wet periods.

Revegetation limitations
Seitz: moderate - slope and erosion hazard.
Tellura: moderate - slope and erosion hazard.
Revegetation considerations: Mulch will conserve soil moisture and protect seedling establishment. Surface netting in conjunction with mulching will reduce the erosion hazard.
Timber management considerations: Harvest is limited by slope and erosion hazard.
Wildlife management considerations: This map unit provides shelter for upland game animals.
Acid precipitation buffering capacity: moderate.

9.2 MAP UNIT: 385D—SCOUT FAMILY - ROCK OUTCROP - HECHTMAN FAMILY COMPLEX, 40 TO 150 PERCENT SLOPES.

Ecological Land Unit: 385D—subalpine fir and Engelmann spruce on subalpine, steep to very steep mountain slopes.

MAP UNIT SETTINGS
Location: mountainous areas where sedimentary rocks predominate.
Landform: steep to very steep mountain slopes.
Parent material: colluvium and residuum.
Geologic symbol: Pm, PPm, TrPs.
Elevation range: 10,000 to 11,800 feet.
Aspect: all.
Climatic zone: subalpine.
Mean annual precipitation: 25 to 40 inches.
Mean annual air temperature: 36°F. to 40°F.
Average annual snowfall: 300 to 400 inches.

COMPOSITION
50 percent Scout and similar soils.
25 percent Rock outcrop.
20 percent Hechtman and similar soils.
Contrasting inclusions
5 percent Cryoborolls on avalanche chutes.

TYPICAL PROFILES:

Scout
Surface covering layer:
1.5 to 0 inches - spruce, fir and pine litter and duff.

Surface layer(s):
0 to 7 inches - light brown, very cobbly loam.

Subsurface layer(s):
7 to 19 inches - light reddish brown, extremely cobbly fine sandy loam.
19 to 30 inches - light reddish brown, extremely gravelly sandy loam.

Subsoil layer(s):
30 to 39 inches - red, extremely gravelly sandy loam.
39 to 57 inches - red, extremely cobbly sandy loam.
57 to 72 inches - red, extremely cobbly sandy clay loam.

Rock outcrop

Hechtman
Surface covering layer:
1.5 to 0 inches - spruce, fir and pine litter and duff.

Surface layer(s):
0 to 1 inches - grayish brown, cobbly loam.

Subsurface layer(s):
1 to 6 inches - light yellowish brown, cobbly sandy loam.

Subsoil layer(s):
6 to 15 inches - light yellowish brown, very cobbly sandy loam.

Unweathered bedrock:
15 inches - Hard igneous and metamorphic rock.

SOIL PROPERTIES AND QUALITIES
Scout
Effective rooting depth: greater than 20 inches.
Natural drainage class: somewhat excessively.
Depth to seasonal high water table: greater than 6 feet.
Available water capacity: low.
Permeability: moderately rapid.
Runoff: moderate.
Rock outcrop

Hechtman
Effective rooting depth: less than 20 inches.
Natural drainage class: somewhat excessively.
Depth to seasonal high water table: greater than 6 feet.
Available water capacity: low.
Permeability: moderately rapid.
Runoff: rapid.

VEGETATION
Potential natural communities:
Scout: subalpine fir-Engelmann spruce/Rocky Mountain whortleberry (Abla-Pien1/Vamy) typical site and subalpine fir-Engelmann spruce/common juniper (Abla-Pien1/Juco) south slopes.
Hechtman: subalpine fir-Engelmann spruce/Rocky Mountain whortleberry (Abla-Pien1/Vamy) typical site and subalpine fir-Engelmann spruce/common juniper (Abla-Pien1/Juco).

Seral stages: includes plants of the respective potential natural communities.

Present vegetation: includes plants of the respective potential natural communities.

USE AND MANAGEMENT CONSIDERATIONS
Major uses: wildlife habitat, dispersed non-motorized recreation, and watershed.
Mass movement potential
Landslides: moderate.
Debris flows: high.
Snow avalanche: high.

Road and trail limitations:
Cut and fill slope stability
Scout: moderate - slope.
Rock outcrop: slight to severe - bedrock.
Hechtman: slight.

Improved unsurfaced roads
Scout: severe - slope.
Rock outcrop: severe - cliffs and unstable talus.
Hechtman: severe - slope and shallow depth to bedrock.

Offroad vehicle roads and trails
Scout: severe - slope and erosion hazard.
Rock outcrop: severe - cliffs and unstable talus.
Hechtman: severe - slope and erosion hazard.

Foot trails and paths
Scout: moderate - slope and erosion hazard.
Rock outcrop: severe - cliffs and unstable talus.
Hechtman: severe - slope and erosion hazard.

Revegetation limitations
Scout: moderate - slope, low available water capacity and erosion hazard.
Rock outcrop: severe - bedrock.
Hechtman: severe - slope, shallow depth to bedrock, low available water capacity and erosion hazard.
Revegetation considerations: Mulch will conserve soil moisture and protect seedling establishment. Surface netting in conjunction with mulching will reduce the erosion hazard.

Timber management considerations: Limited by slope, rock outcrop and erosion hazard.
Wildlife management considerations: This map unit provides shelter for upland game animals.
Acid precipitation buffering capacity: moderate.

9.3 MAP UNIT: 281B—QUANDER FAMILY, 5 TO 40 PERCENT SLOPES.

Ecological Land Unit: 281B—sagebrush and grass on montane, ground and lateral moraines.

MAP UNIT SETTINGS
Location: glaciated parts of the survey area.
Landform: ground and lateral moraines.
Parent material: glacial till.
Geologic symbol: Qd.
Elevation range: 9,000 to 10,500 feet.
Aspect: all.
Climatic zone: montane.
Mean annual precipitation: 20 to 30 inches.
Mean annual air temperature: 40°F. to 44°F.
Average annual snowfall: 200 to 300 inches.

COMPOSITION
85 percent Quander and similar soils.
Contrasting inclusions
15 percent Argic Pachic Cryoborolls on swales.

TYPICAL PROFILES:
Quander
Surface layer(s):
0 to 14 inches - dark grayish brown, loam.

Subsurface layer(s):
14 to 22 inches - light yellowish brown, gravelly sandy loam.

Subsoil layer(s):
22 to 34 inches - light yellowish brown, very cobbly sandy clay loam.
34 to 48 inches - light yellowish brown, extremely stony sandy clay loam.
48 to 60 inches - pale brown, very cobbly sandy clay loam.

SOIL PROPERTIES AND QUALITIES
Quander
Effective rooting depth: greater than 60 inches.
Natural drainage class: well.
Depth to seasonal high water table: greater than 6 feet.
Available water capacity: moderate.
Permeability: moderate.
Runoff: moderate - slow.

VEGETATION
Potential natural communities
Quander: mountain big sagebrush/Thurber fescue (Artrv/Feth) typical site and aspen/Thurber fescue (Potr1/Feth) moist site.
Seral stages: includes plants of the respective potential natural communities.
Present vegetation: includes plants of the respective potential natural communities.

USE AND MANAGEMENT CONSIDERATIONS

Major uses: livestock grazing, dispersed motorized and non-motorized recreation, wildlife habitat and watershed.

Mass movement potential

Landslides: low.
Debris flows: low.
Snow avalanche: low.

Road and trail limitations

Cut and fill slope stability
Quander: slight.

Improved unsurfaced roads
Quander: slight.

Offroad vehicle roads and trails
Quander: slight.

Foot trails and paths
Quander: slight.

Revegetation limitations
Quander: slight.
Revegetation considerations: Mulch will conserve soil moisture and protect seedling establishment.

Wildlife management considerations: This map unit provides food for livestock and upland gme animals.
Fire management considerations: Suseptible to shrub and grass fires.
Acid precipitation buffering capacity: high.

APPENDIX B – PLANT LIST

Common Name	Latin Name
Subalpine fir	Abies lasiocarpa
mountain maple	Acer glabrum
yarrow	Achillea millefolium
baneberry	Actaea rubra
serviceberry	Amelanchier alnifolia
sagebrush	Artemisia tridentat
aster	Aster spp
nodding brome	Bromus anomalus
fringed brome	Bromus ciliatus
smooth brome	Bromus inermis
smooth brome	Brumus inermis
musk thistle	Carduus nutans
sulfur paintbrush	Castilleja sulphurea
fireweed	Chamerion angustifolium
rubber rabbitbrush	Chrysothamnus nauseosus
American thistle	Cirsium centaureae
squirreltail	Elymus elymoides
blue wild rye	Elymus glaucus
sulfur buckwheat	Eriogonum umbellatum
Thurber fescue	Festuca thurberi
strawberry	Fragaria virginiana
monument plant	Frasera speciosa
northern bedstraw	Galium boreale
Richardson geranium	Geranium richardsonii
cow parsnip	Heracleum maximum
common juniper	Juniperus communis
prickly lettuce	Lactuca serriola
aspen pea	Lathyrus laetivirens
ligusticum	Ligusticum porteri
yellow toadflax	Linaria vulgaris
Twinberry honeysuckle	Lonicera involucrata
western sweetroot	Osmorhiza occidentalis
western wheatgrass	Pascopyrum smithii
Oregon boxleaf	Paxistima myrsinites
timothy	Phleum pratense

Common Name	Latin Name
lodgepole pine	Pinus contorta
Kentucky bluegrass	Poa pratensis
wolf currant	Ribes wolfii
woods rose	Rosa woodsii
Scouler willow	Salix scouleriana
willow	Salix spp.
red elderberry	Sambucus racemosa
groundsel	Senecio spp
field sow-thistle	Sonchus arvensis
mountain ash	Sorbus scopulina
needleandthread grass	stipa comata
twisted stalk	Streptopus amplexifolius
redosier dogwood	Swida sericea
snowberry	Symphoricarpus alba
dandelion	Taraxacum officinale
meadow rue	Thalictrum fendleri
violet	Viola spp

APPENDIX C – IPAC LIST

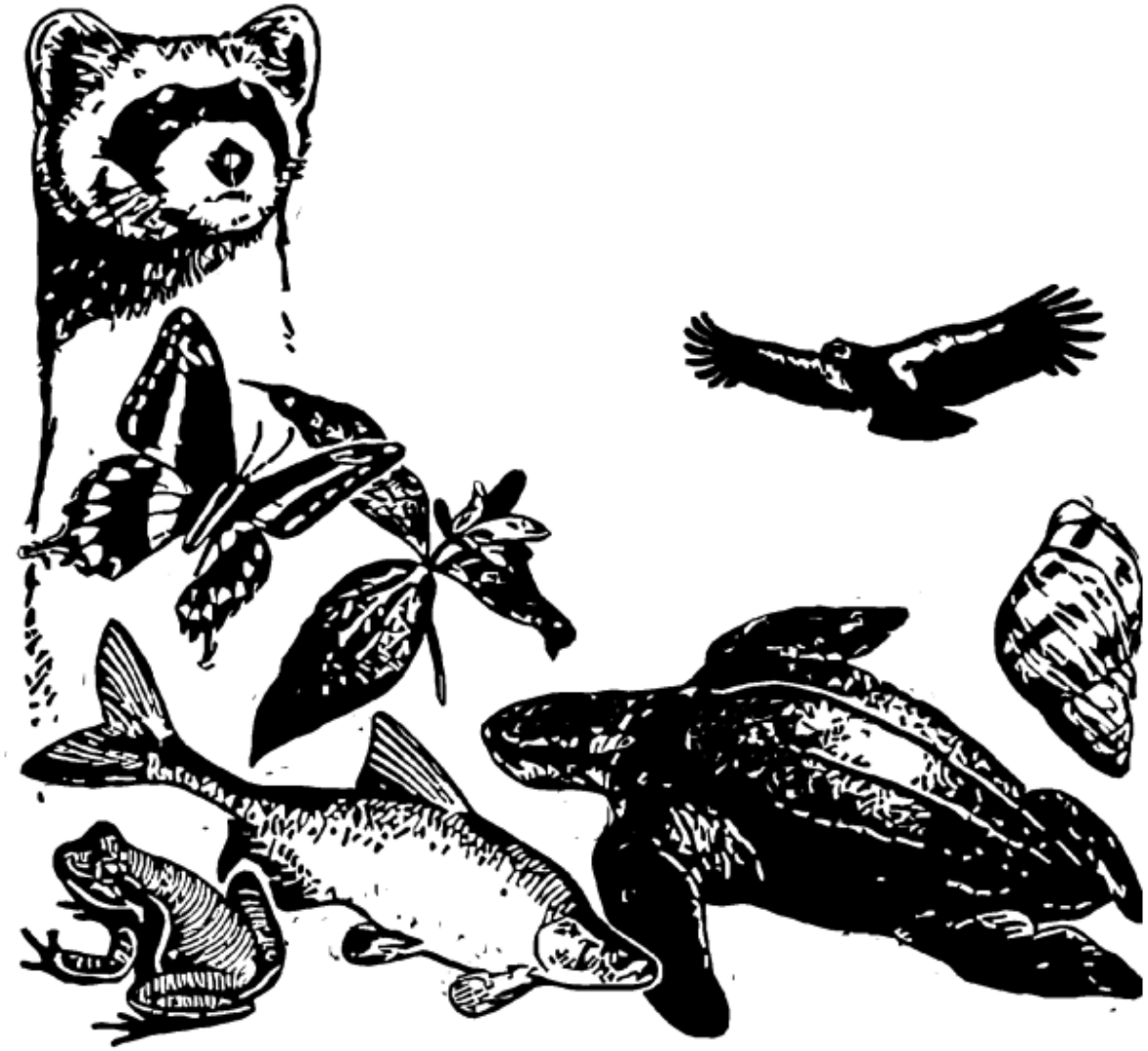
U.S. Fish & Wildlife Service

Vail Trail Extension

IPaC Trust Resource Report

Generated November 19, 2015 12:27 PM MST

This report is for informational purposes only and should not be used for planning or analyzing project-level impacts. For projects that require FWS review, please return to this project on the IPaC website and request an official species list from the Regulatory Documents page.



US Fish & Wildlife Service

IPaC Trust Resource Report

Project Description

NAME

Vail Trail Extension

PROJECT CODE

3JPH4-7JZQ5-AQRDU-EFHLH-4KZOIA

LOCATION

Eagle County, Colorado

DESCRIPTION

No description provided

U.S. Fish & Wildlife Contact Information

Species in this report are managed by:

Western Colorado Ecological Services Field Office
445 West Gunnison Avenue, Suite 240
Grand Junction, CO 81501-5720
(970) 243-2778

Endangered Species

Proposed, candidate, threatened, and endangered species that are managed by the Endangered Species Program and should be considered as part of an effect analysis for this project.

This unofficial species list is for informational purposes only and does not fulfill the requirements under Section 7 of the Endangered Species Act, which states that Federal agencies are required to "request of the Secretary of Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action." This requirement applies to projects which are conducted, permitted or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can be obtained by returning to this project on the IPaC website and requesting an official species list on the Regulatory Documents page.

Birds

Mexican Spotted Owl Strix occidentalis lucida — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B074

Yellow-billed Cuckoo Coccyzus americanus — Threatened

CRITICAL HABITAT
There is **proposed** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06R

Fishes

Bonytail Chub Gila elegans — Endangered

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E020

Colorado Pikeminnow (=squawfish) Ptychocheilus lucius — Endangered

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E006

Greenback Cutthroat Trout Oncorhynchus clarki stomias — Threatened

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E00F

Humpback Chub Gila cypha — Endangered

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E000

Razorback Sucker Xyrauchen texanus — Endangered

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E054

Flowering Plants

Ute Ladies'-tresses Spiranthes diluvialis — Threatened

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q2WA

Mammals

Canada Lynx Lynx canadensis — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A073

Critical Habitats

Potential effects to critical habitat(s) within the project area must be analyzed along with the endangered species themselves.

There is no critical habitat within this project area

Migratory Birds

Birds are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Any activity which results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service (1). There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

You are responsible for complying with the appropriate regulations for the protection of birds as part of this project. This involves analyzing potential impacts and implementing appropriate conservation measures for all project activities.

American Bittern Botaurus lentiginosus — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0F3

Bald Eagle Haliaeetus leucocephalus — Bird of conservation concern
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B008

Brewer's Sparrow Spizella breweri — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HA

Brown-capped Rosy-finch Leucosticte australis — Bird of conservation concern
Season: Wintering

Burrowing Owl Athene cunicularia — Bird of conservation concern
Season: Breeding

Cassin's Finch Carpodacus cassinii — Bird of conservation concern
Year-round

Ferruginous Hawk Buteo regalis — Bird of conservation concern
Season: Wintering
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06X

Fox Sparrow Passerella iliaca — Bird of conservation concern
Season: Breeding

Golden Eagle Aquila chrysaetos — Bird of conservation concern
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0DV

Juniper Titmouse Baeolophus ridgwayi — Bird of conservation concern
Year-round

Loggerhead Shrike Lanius ludovicianus — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FY

Mountain Plover Charadrius montanus — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B078

Olive-sided Flycatcher Contopus cooperi — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0AN

Peregrine Falcon Falco peregrinus — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FU

Pinyon Jay Gymnorhinus cyanocephalus — Bird of conservation concern
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0I0

Prairie Falcon Falco mexicanus — Bird of conservation concern
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0ER

Sage Thrasher Oreoscoptes montanus — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0ID

Short-eared Owl Asio flammeus — Bird of conservation concern
Season: Wintering
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HD

Swainson's Hawk Buteo swainsoni — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B070

Veery Catharus fuscescens — Bird of conservation concern
Season: Breeding

Williamson's Sapsucker Sphyrapicus thyroideus — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FX

Willow Flycatcher Empidonax traillii — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0F6

Refuges

Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. If your project overlaps or otherwise impacts a Refuge, please contact that Refuge to discuss the authorization process.

There are no refuges within this project area

Wetlands

Impacts to NWI wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes.

Project proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Wetland data is unavailable at this time.