

**Stillwater Mining Company
Benbow Exploration Portal & Support Facilities
Dean, Montana**

Appendix G

Fish and Wildlife Inventory

**PLAN OF OPERATIONS FOR MINERAL EXPLORATION
Benbow Exploration Portal and Support Facilities**

Fish and Wildlife Resources Reconnaissance,
Benbow Project Area

For:

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1.0 INTRODUCTION

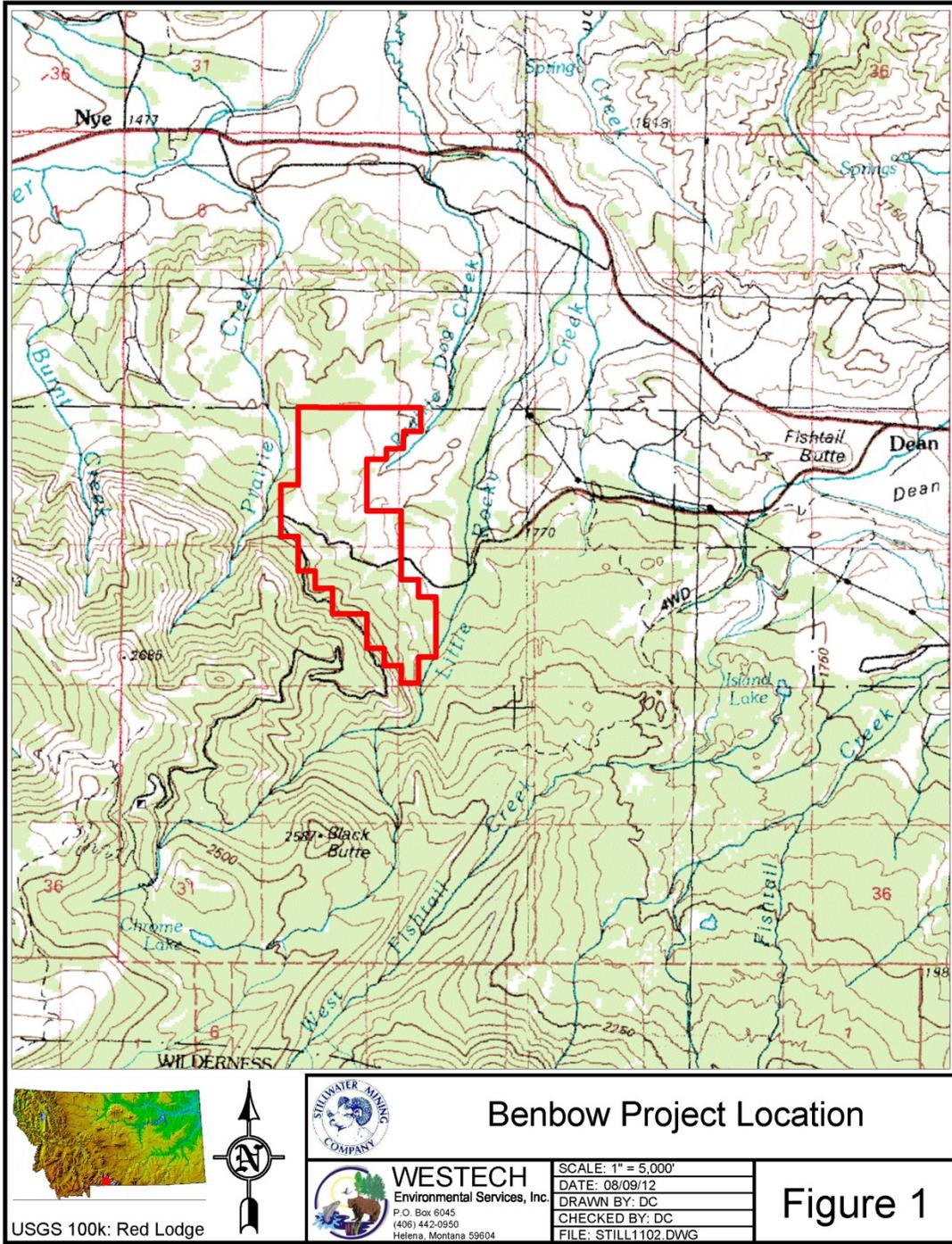
Stillwater Mining Co. (SMC) mines palladium, platinum and associated minerals from a geological formation called the J-M Reef in southern Montana. SMC proposes to construct a new exploration portal, called the Benbow Project, and associated facilities (bore holes, waste rock storage area, soil stockpile, water treatment facilities, etc.) to further delineate ore potential in the Fat Tire claim block on the east end of the J-M Reef. The Benbow portal and associated facilities would be located in Stillwater County about two miles southwest of the small town of Dean, in Sections 16, 17, 20 and 21, T 5S, R16E (Figure 1). Only a portion of the claim block would be affected by initially proposed activities; future developments in other parts of the claim block would depend on the results of proposed activities. The Benbow Project area is publicly owned land administered by the U.S. Forest Service's (USFS) Region 1/Custer National Forest/Beartooth Ranger District, is adjacent to the abandoned Benbow chromite millsite, and is accessed along USFS Road 2414.

2.0 METHODS

SMC submitted a Plan of Operations for the Benbow Project to the USFS on June 15, 2011; the USFS responded with a completeness review of the Plan of Operations dated June 23, 2011. As part of that review the USFS provided a list of fish and wildlife species recommended for consideration, occurrence and/or suitable habitat in the project vicinity. SMC then contracted WESTECH Environmental Services, Inc. (WESTECH) to collect information on fish and wildlife resources relevant to the proposed project, including these species. Information was derived from published and/or electronically available sources, and a brief field reconnaissance of the area.

The USFS lists included federally endangered, threatened or proposed species; Region 1 "sensitive" wildlife species; Region 1 "sensitive" fish and amphibian species; and Custer National Forest (CNF) "habitat indicator species" and "key wildlife species." However, USFS indicated that SMC did not need to consider species with no suitable habitat in the project area. This criterion reduced the number of federally endangered, threatened or proposed species to two; Region 1 "sensitive" wildlife species to seven; Region 1 "sensitive" fish and amphibian species to one; and Custer National Forest (CNF) "habitat indicator species" and "key wildlife species" to 10 (some of which were also included in the first three lists).

The Montana Natural Heritage Program (MTNHP) and Montana Department of Fish, Wildlife and Parks (MFWP) annually prepare a list of Species of Concern for the state of Montana. "Species of Concern" are considered to be native Montana animals that are considered to be at risk due to declining population trends, threats to their habitats, and/or restricted distribution (MTNHP and MFWP 2012). Designation as a Species of Concern is not a statutory or regulatory classification per se, but encompasses species that may be reviewed by state or federal agencies during the permitting process, and/or have statutory or regulatory connotation to other agencies, including the USFS. MTNHP and MFWP's (2012) list of Species of Concern for Stillwater County is combined with the USFS lists of endangered threatened or proposed species, and Region 1 sensitive species, in Table 1.



According to the Custer National Forest's Forest and Land Resources Management Plan (Forest Plan; USFS 1986), Management Indicator Species (MIS) include species that are biological indicators (represent a group of species that use the habitat similarly), as well as species of high interest (key species). The 10 "habitat indicator species" and "key wildlife species" USFS listed for SMC are given in Table 2.

Field work was conducted August 24-26, 2011 by Patrick Farmer and June 21-22, 2012 by Corey Baker. The August 2011 reconnaissance consisted of driving USFS roads in the project vicinity each day, followed by walking the general area of project development. Every conceptual development site identified by SMC was visited at least once. All wildlife species or their evidence observed during field work were recorded, with particular attention given to *the species* and habitats identified by USFS.

In March 2012 SMC and USFS personnel met to develop an approach to monitor northern goshawk (goshawk; *Accipiter gentilis*) activity in a post-fledging area (PFA) associated with an apparently active goshawk nest located by USFS personnel in 2011 near some of the Benbow Project proposed facilities. SMC contracted WESTECH to search the Project area for active or inactive (alternate) accipiter nests in June 2012. This search was intended to supplement goshawk call surveys conducted in May/June 2012 in the Project vicinity by USFS personnel. Woodbridge and Hargis (2006) stated that surveys involving physical entry into potential nesting habitat should not be conducted until late May or June, since goshawks may be sensitive to human intrusion during courtship and incubation. Therefore the 2012 search was conducted late enough (June 21 and 22) to minimize such disturbance.

Goshawks may have 1-8 alternate nests in their nest territory, and typically make between-year movements among nests (Squires and Reynolds 1997). Reynolds et al. (2005; cited in Woodbridge and Hargis 2006) reported that most goshawk alternate nests are grouped within a stand or cluster of adjacent stands, and about 75 percent of alternate nests used over a period of several years are within an 0.5 km (0.3 mile) radius, while about 95 percent of alternate nests are located within a 1 km (0.6 mile) radius. Thus the probability of one or more alternate nests being within the PFA was considered good.

The PFA was searched by walking through appropriate habitat (dense canopied forest), looking for nests and periodically broadcasting recorded goshawk and Cooper's hawk (*Accipiter cooperii*) calls. About six miles of nest searches were walked through the approximately 270 acres of the PFA. Locations of nests were recorded on aerial photos and by Global Positioning System (GPS) coordinates.

3.0 RESULTS AND DISCUSSION

3.1 Habitats

The Fat Tire claim block lies in an area of generally northeast aspects between about 5800 and 7000 feet in elevation (Figure 1), with initial Benbow Project proposed activities to occur between 6000 and 6500 feet in elevation. The northern portion of the claim block in Sections 16 and 17 is primarily grassland mixed with small stands of Douglas-fir (*Pseudotsuga menziesii*) and quaking aspen (*Populus*

Table 1. Fish and wildlife Species of Concern in Stillwater County, Montana (MTNHP and MFWP 2011). Shaded rows carried forward for analysis.

Species	Status/Rank ^a			Habitat ^e	Suitable Habitat in Project Area ^f	Habitat at Project Sites ^g	Observed 8/24-26/11
	USFS ^b	USFWS ^c	CFWCS Tier ^d				
FISH							
Yellowstone cutthroat trout (<i>Onchorhynchus clarkia bouvieri</i>)	Sensitive; MIS (see Table 2)		1	Mountain streams, rivers, lakes	Yes	Little Rocky Creek approx. 1400 ft. from nearest project facility	
Northern redbelly dace (<i>Phoxinus eos</i>)			3	Small prairie rivers	No	No	
Northern redbelly X finescale dace (<i>Phoxinus eos X Phoxinus neogaeus</i>) ^h			2	Small prairie rivers	No	No	
Arctic grayling (<i>Thymallus arcticus</i>) ^h	Sensitive	C	1	Mountain rivers, lakes. Distribution does not include upper Stillwater River drainage.		No	
AMPHIBIANS							
Plains spadefoot (<i>Spea bombifrons</i>)	Sensitive		2	Usually found in areas with soft sandy/gravelly soils. Breeds in wetlands, floodplain pools. Distribution does not include upper Stillwater River drainage.	No	No	
REPTILES							
Western hog-nosed snake (<i>Heterodon nasicus</i>)	Sensitive		1	Arid areas with friable soils. Distribution does not include upper Stillwater River drainage.	No	No	
Greater short-horned lizard (<i>Phrynosoma hernandesi</i>)	Sensitive		2	Arid areas with sparse shortgrass or sagebrush prairie. Distribution does not include upper Stillwater River drainage.	No	No	
Common sagebrush lizard (<i>Sceloporus graciosus</i>) ^h			2	Sage-steppe habitat, often with sandstone or limestone outcrops. Distribution does not include upper Stillwater River drainage.		No	
MAMMALS							
Hoary bat (<i>Lasiurus cinereus</i>) ^h			2	Riparian and forest habitat from low to high elevations		Yes; a MT Species of Concern due to possible susceptibility to wind turbine strikes	

Species	Status/Rank ^a			Habitat ^e	Suitable Habitat in Project Area ^f	Habitat at Project Sites ^g	Observed 8/24-26/11
	USFS ^b	USFWS ^c	CFWCS Tier ^d				
Fringed myotis (<i>Myotis thysanodes</i>)	Sensitive		2	Various habitats, including ponderosa pine, Douglas-fir, desert shrublands, sagebrush-grassland; roosts in caves, mines, crevices, buildings.	Yes	Yes	
Long-eared myotis (<i>Myotis evotis</i>) ⁱ	Sensitive		2	Variety of habitats; rocky habitats; strongly associated with coniferous forests	Yes	Yes	
Long-legged myotis (<i>Myotis volans</i>) ⁱ	Sensitive ⁱ		2	Primarily in coniferous-juniper habitat at moderate elevations (>6000 ft) but may also inhabit riparian cottonwood bottoms and desert areas; roosts in hollow trees, under bark, in buildings and rock crevices	Yes	Yes	
Black-tailed prairie dog (<i>Cynomys ludovicianus</i>)	Sensitive		1	Grasslands	No	No	
Uinta chipmunk (<i>Tamias umbrinus</i>) ^h			2	Moderate to high elevation ponderosa pine, lodgepole pine-Douglas-fir, spruce-fir and subalpine fir forest		Yes; old (1938) record in Stillwater County within 5 miles of the project area (MTNHP 2011a)	
Grizzly bear (<i>Ursus arctos horribilis</i>)	Threatened	LT	1	Habitat use is highly variable; in the Yellowstone Ecosystem may be considered a forest generalist	Yes – presence documented	Yes	
Wolverine (<i>Gulo gulo</i>)	Sensitive	C	2	Alpine tundra, boreal and mountain coniferous forests, “large, mountainous and essentially roadless areas”	Yes	No? See text	
Canada lynx (<i>Lynx canadensis</i>)	Threatened	LT	1	East of Continental Divide, primary habitat is high elevation (>5400 feet) subalpine fir; secondary habitat is Englemann spruce and Douglas-fir with dominant seral lodgepole pine.	Yes	Yes	
Gray wolf (<i>Canis lupus</i>) ⁱ	Sensitive	Delisted	1	No particular habitat preference except for the presence of native ungulate prey base	Yes – presence documented	Yes	
Bison (<i>Bos bison</i>) ^h			1	Grasslands		Yes; no records in Stillwater County ≤20 years	

Species	Status/Rank ^a			Habitat ^e	Suitable Habitat in Project Area ^f	Habitat at Project Sites ^g	Observed 8/24-26/11
	USFS ^b	USFWS ^c	CFWCS Tier ^d				
BIRDS							
Great blue heron (<i>Ardea herodias</i>) ^h			3	Nest in large cottonwoods or other trees along major rivers and lakes; forage in rivers, lakes, ponds and streams		No	
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Sensitive	Delisted	1	Nest in riparian forest; forage for fish along rivers and lakes; also carrion	Yes – presence documented	No	
Golden eagle (<i>Aquila chrysaetos</i>)	MIS; see Table 2		2	Usually found in open habitats; nests in trees, on cliffs	Yes – presence documented	Yes	
Northern goshawk (<i>Accipiter gentilis</i>) ^h	MIS; see Table 2		2	Mixed conifer forests	Yes – presence documented	Yes	
Ferruginous hawk (<i>Buteo regalis</i>)	Sensitive		2	Sagebrush grassland		No	
Peregrine falcon (<i>Falco peregrinus</i>)	Sensitive	Delisted	2	Cliffs/canyons; cliff habitat over 200 ft. high with suitable ledges for nests	Yes	No	
Greater sage-grouse (<i>Centrocercus urophasianus</i>)	Sensitive	C	1	Sagebrush	No	No	
Black-necked stilt (<i>Himantopus mexicanus</i>) ^h			3	Wetlands		No	
Long-billed curlew (<i>Numenius americanus</i>)	Sensitive		1	Grasslands, often near water	No	No	
Yellow-billed cuckoo (<i>Coccyzus americanus</i>) ^h			2	Prairie riparian forest		No	
Black-billed cuckoo (<i>Coccyzus erythrophthalmus</i>) ^h			2	Riparian forest		No	
Burrowing owl (<i>Athene cunicularia</i>)	Sensitive		1	Prairie dog colonies; grasslands w/mammal burrows	No	No	
Loggerhead shrike (<i>Lanius ludovicianus</i>)	Sensitive		2	Shrublands; willows	No	No	
Pinyon jay (<i>Gymnorhinus cyanocephalus</i>) ^h			2	Low elevation ponderosa pine and limber pine-juniper forest		No	
Clark's nutcracker (<i>Nucifraga columbiana</i>) ^h			3	Conifer forest; although utilizes many coniferous forest habitats, is a MT Species of Concern due to relationship with whitebark pine (not present at project sites)		Yes	X
Brown creeper (<i>Certhia Americana</i>) ^h			2	Mature coniferous and mixed coniferous-deciduous forests		Yes	X
Veery (<i>Catharus fuscescens</i>) ^h			2	Riparian forest		No	
Sprague's pipit (<i>Anthus spragueii</i>) ^h		C	2	Native, medium to intermediate height prairie		No	
Baird's sparrow (<i>Ammodramus bairdii</i>)	Sensitive		2	Native prairie, tame pasture with no or little grazing	No	No	
Grasshopper sparrow (<i>Ammodramus savannarum</i>) ^h			2	Open prairie with intermittent brush.		No	
Brewer's sparrow (<i>Spizella breweri</i>) ^h			2	Sagebrush		No	
Chestnut-collared longspur (<i>Calcarius ornatus</i>) ^h			3	Grazed or mowed grasslands, pastures.		No	

Species	Status/Rank ^a			Habitat ^e	Suitable Habitat in Project Area ^f	Habitat at Project Sites ^g	Observed 8/24-26/11
	USFS ^b	USFWS ^c	CFWCS Tier ^d				
McCown's longspur (<i>Rhynchophanes mccownii</i>) ^h			2	Shortgrass prairie, bare ground		Yes	
Bobolink (<i>Dolichonyx oryzivorus</i>) ^h			3	Moist grasslands		No	
Cassin's finch (<i>Carpodacus cassinii</i>) ^h			3	Drier coniferous forest		Yes	X
Black rosy-finch (<i>Leucosticte atrata</i>) ^h			2	Generally nest above timberline in crevices, talus, etc.		No	

^aStatus/rank from MTNHP and MFWP (2012) unless otherwise noted.

^bUSFS = U.S. Forest Service; ranks and data provided to Stillwater Mining Company (SMC).

^cUSFWS = U.S. Fish and Wildlife Service (2012); LT = listed threatened; C = candidate

^dCFWCS Tier = MFWP's Comprehensive Fish and Wildlife Conservation Strategy Tier; 1 = greatest conservation need; 2 = moderate conservation need; 3 = lower conservation need; 4 = species that are either non-native, incidental, or on the periphery of their range and are either expanding or very common in adjacent states.

^eDerived from MTNHP and MFWP (2012) and USFS information provided to SMC.

^fFrom USFS lists provided to SMC.

^gBased on 8/24-26/11 and 6/21-22/12 reconnaissance.

^hNot a USFS Region 1 Sensitive Species.

ⁱNot a Montana Species of Concern for Stillwater County (MTNHP and MFWP 2011).

Table 2. USFS Habitat Indicator Species and Key Wildlife Species relevant to the Benbow Project (source: USFS).

Species	Habitat ^a	Suitable Habitat in Project Area ^b	Habitat at Project Sites ^c	Observed 8/24-26/11
FISH				
Yellowstone cutthroat trout (<i>Onchorhynchus clarkia bouvieri</i>)	Mountain streams, rivers, lakes; Sensitive Species (see Table 1)	Yes – presence documented	Little Rocky Creek approx. 1400 ft. from nearest project facility	
BIRDS				
Golden eagle (<i>Aquila chrysaetos</i>)	Usually found in open habitats; nests in trees, on cliffs (see Table 1)	Yes – presence documented	Yes	
Northern goshawk (<i>Accipiter gentilis</i>)	Mixed conifer forests (see Table 1)	Yes – presence documented	Yes	? See text
Merlin (<i>Falco columbarius</i>)	Patchy shrub/grasslands with mature trees to support nesting	Yes	Yes? See text	
Ruffed grouse (<i>Bonasa umbellus</i>)	Dense, early stage aspen stands; moist deciduous or coniferous woodland	Yes – presence documented	Yes	X
Yellow warbler (<i>Dendroica petechia</i>)	Brushy riparian with willows	Yes – presence documented	Yes	X
Ovenbird (<i>Seiurus aurocapillus</i>)	Mature close-canopied deciduous or deciduous-coniferous forests with limited understory	Yes – presence documented	Yes	X
MAMMALS				
Elk (<i>Cervus Canadensis</i>)	Variety of habitats from alpine to forests to grasslands	Yes – presence documented	Yes	X
Mule deer (<i>Odocoileus hemionus</i>)	Variety of habitats from alpine to forests to grasslands	Yes – presence documented	Yes	X
White-tailed deer (<i>Odocoileus virginianus</i>) – both a Habitat Indicator Species and a Key Wildlife Species	Grassland to montane coniferous forest	Yes	Yes	X

^aDerived from MTNHP and MFWP (2012) and USFS information provided to SMC.

^bFrom USFS lists provided to SMC.

^cBased on 8/24-26/11 and 6/21-22/12 reconnaissance.

tremuloides). Scattered willows (*Salix* spp.) are present in the area along upper Prairie Dog Creek and a unnamed tributary to Little Rocky Creek.

The southern portion of the claim block in Sections 20 and 21, encompassing the initial proposed activities, is primarily forested (Figure 1). The predominant habitat is Douglas-Fir/ninebark (*Physocarpus malvaceous*), interspersed with small stands of quaking aspen and openings that are dominated by grass/forb, ninebark and/or snowberry communities (*Symphoricarpos* spp.) (WESTECH 2012).

Cattle were present in open habitats on moderate-to-gentle slopes during the reconnaissance, particularly in drainages and aspen stands. There was little evidence of cattle use of steep slopes and/or closed canopy Douglas-fir habitats.

Little Rocky Creek, a 10.5-mile long perennial stream, barely intersects the southeast corner of the claim block (Figure 1). It is downhill but also about 1400 feet from the nearest proposed initial facility site.

3.2 Species Recorded in the Benbow Project Area

Given the brief duration and limited methods employed during the reconnaissance, the number of species recorded in the Benbow Project area was expected to be small. Species recorded during the reconnaissance and/or reported by SMC or other WESTECH personnel are presented in Table 3.

3.3 Species of Concern/Endangered or Threatened Species/Sensitive Species

MTNHP and MFWP (2012) Species of Concern, including U.S. Fish and Wildlife Service (USFWS) endangered, threatened, proposed or candidate species and USFS sensitive species that could potentially occur at or near the Benbow Project area are given in Table 1. Species that were carried forward for further analysis, based on their known occurrence and/or presence of suitable habitat, are highlighted in the table. Those species are:

3.3.1 Yellowstone Cutthroat Trout

The Yellowstone cutthroat trout is present in Little Rocky Creek (MTNHP 2011). As discussed previously, Little Rocky Creek barely intersects the southeast corner of the claim block (Figure 1). It is downhill but also about 1400 feet from the nearest proposed initial facility site.

The Yellowstone cutthroat trout is native to the Yellowstone River drainage of southwest and south-central Montana. Although it was historically present as far downstream as the Tongue River, unhybridized populations are currently limited to small headwater streams and Yellowstone National Park (MTNHP 2012a). Threats include nonnative fish (hybridization with rainbow trout, displacement by brown and brook trout, predation by lake trout), other nonnative organisms, habitat degradation/alteration and overharvest (Young 2010).

According to the Montana Fisheries Information (MFISH) database (MFWP 2012a), Yellowstone cutthroat trout are found in the lower 7.8 miles of Little Rocky Creek; the upper limit of their distribution is about 0.5 mile upstream from the claim block. They are considered rare throughout the stream; although fish from this stream have apparently not been genetically tested, they are potentially hybridized with nonnative rainbow trout, which are also present (MFWP 2012a). MFWP has assigned a Fisheries Resource Value of 4 (moderate) to Little Rocky Creek, based on a complex evaluation of habitat and fisheries values (MFWP 2012b).

Table 3. Wildlife species recorded in the Benbow Portal project area, late summer 2011.

Species	
FISH	None
AMPHIBIANS	None
REPTILES	None
MAMMALS	
	Mountain cottontail <i>Sylvilagus nuttallii</i>
	Snowshoe hare <i>Lepus americanus</i>
	Northern pocket gopher <i>Thomomys talpoides</i>
	Unidentified ground squirrel <i>Urocyon</i> spp. ^a
	Red squirrel <i>Tamiasciurus hudsonicus</i>
	Unidentified vole <i>Microtus</i> spp. ^b
	Deer mouse <i>Peromyscus maniculatus</i>
	Porcupine <i>Erithizon dorsatum</i>
	Unidentified bear <i>Ursus</i> spp. ^c
	Coyote <i>Canis latrans</i>
	Mule deer <i>Odocoileus hemionus</i>
	White-tailed deer <i>Odocoileus virginianus</i>
	Elk <i>Cervus elaphus</i>
	Moose <i>Alces americanus</i>
BIRDS	
	Northern goshawk <i>Accipiter gentilis</i> ^d
	Cooper's hawk <i>Accipiter cooperii</i>
	Ruffed grouse <i>Bonasa umbellus</i>
	Clark's nutcracker <i>Nucifraga columbiana</i>
	Common raven <i>Corvus corax</i>
	Mountain chickadee <i>Poecile gambeli</i>
	Brown creeper <i>Certhia americana</i>
	Mountain bluebird <i>Sialia currucoides</i>
	American robin <i>Turdus migratorius</i>
	Golden-crowned kinglet <i>Regulus satrapa</i>
	Ovenbird <i>Seiurus aurocapilla</i>
	Yellow warbler <i>Setophaga petechia</i>
	Chipping sparrow <i>Spizella passerina</i>
	White-crowned sparrow <i>Zonotrichia leucophrys</i>
	Pine siskin <i>Spinus pinus</i>
	Cassin's finch <i>Carpodacus cassinii</i>

^aMounds present in grassland habitat; animals probably hibernating. Project area is near the distributional boundary between the Richardson's ground squirrel (*U. richardsonii*) and Uinta ground squirrel (*U. armatus*)

^bRunways visible in mesic grasses in drainage bottoms

^cClaw marks (scratches) observed on several trees

^dSee text

In 2008 MFWP took the lead in the development of the Crucial Areas Planning System (CAPS; available at: <http://fwp.mt.gov/fishAndWildlife/conservationInAction/crucialAreas.html>), a GIS-based planning tool which depicts fish and wildlife species and habitat information. Little Rocky Creek was assigned a rank of 4 (lowest) for both native fish species richness and game fish quality.

3.3.2 Fringed Myotis, Long-eared Myotis, Long-legged Myotis

The fringed myotis is both a USFS sensitive species and a Montana Species of Concern, while the long-eared myotis and long-legged myotis are USFS sensitive species but are not Montana Species of Concern (Table 1). The fringed and long-eared myotis have been captured in southern Stillwater County within the last five years (MTNHP 2012b,c). All three species may occur in coniferous forest habitats in the elevations of the Benbow Project; all three may roost in caves, crevices, rocky areas, trees, buildings, etc. (MTNHP 2012b,c,d). Suitable habitat for all three species is available in and near the Benbow Project sites (Table 1), but similar habitat is present in many areas along the north face of the Beartooth Mountains.

3.3.3 Uinta Chipmunk

The Uinta chipmunk is a Montana Species of Concern because its occurrence and distribution in the state are poorly understood; it is not a USFS Region 1 sensitive species (Table 1). It is considered to be a species of moderate to high elevation coniferous forest. In Montana it has been captured in high elevation subalpine forest and at timberline in the central Beartooth Mountains, but all Montana records are >15 years old (MTNHP 2012e). There is a very old record (1938) that appears to be within five miles of the Benbow Project, but the exact location is unknown (MTNHP 2011). The rarity and age of known records suggests that this species may no longer occur in the general area. Suitable habitat is available in and near the Benbow Project sites (Table 1), but similar habitat is present in many areas along the north face of the Beartooth Mountains.

3.3.4 Grizzly Bear

The grizzly bear in the Greater Yellowstone Ecosystem is listed as threatened under the Endangered Species Act (ESA; USFWS 2012). The population has been increasing for >20 years (Schwartz et al. 2005); current population estimates vary from about 600 (Billing Gazette 2011) to about 1000 bears (Casper Star-Tribune 2011), with the former based on protocols established by the Interagency Grizzly Bear Study Team (IGBST; 2005). Although the 9th Circuit Court of Appeals has confirmed that existing regulatory mechanisms are adequate to protect grizzly bears, which will lead to the eventual de-listing from the ESA, the Court ruled on November 22, 2011 that grizzly bears must remain under the ESA at this time (USFWS 2011a). Consequently the grizzly bear is a USFWS listed threatened species under the ESA; a USFS MIS/endangered species; and a Montana Species of Concern (Table 1).

The Benbow Portal project area is outside the Greater Yellowstone Grizzly Bear Recovery Zone, but lies within the currently known distribution of the grizzly bear (MTNHP 2011). There are several records from southern Stillwater County in the last five years (MTNHP 2012f). The grizzly bear is capable of

using a wide variety of habitats, including the habitats of the project area. Most use is likely to occur from spring through autumn; the project area is probably not denning habitat (in the Yellowstone Ecosystem, grizzly bears tend to locate dens on mid-to-upper steep (30°-60°) slopes with northern exposures between 6500 and 10,000 feet in elevation (Judd et al. 1986)).

No grizzly bears or their evidence (tracks) were observed during field work in the project area. Old claw marks (scratches) were observed on several trees but it was not possible to discern whether these had been made by grizzly bears or black bears (other WESTECH and SMC personnel reported finding bear scat in several habitats, but it was not possible to determine the species). Recreationists (pickup trucks and all-terrain vehicles) were observed frequently along USFS Road 2414 during the reconnaissance, and on August 26, 2011 recreationists established campsites at the abandoned Benbow chromite millsite and along Little Rocky Creek above USFS Road 2414. The comparatively high level of public use of the area, along with other activities (cattle grazing, timber harvest, home sites) on public and privately owned lands in the vicinity, suggest that the area is not conducive for consistent, regular use by grizzly bears.

3.3.5 Wolverine

The wolverine is a USFS sensitive species and a Montana Species of Concern (Table 1). In December 2010 the USFWS determined that wolverines in the contiguous United States constitute a distinct population segment that warrants protection under the ESA, but that listing is precluded by the need to address other listing actions of a higher priority (USFWS 2011b). It is known to occur in southern Stillwater County (USFWS 2012; MTNHP and MFWP 2012). There are no records from within five miles of the Benbow Project area, although the area is considered to lie within wolverine range (MTNHP 2011). No wolverines or their evidence (tracks) were observed during field work in the project area.

Wolverines have large individual home ranges and are capable of using many habitats; habitat use may depend on prey availability (including carrion), rather than specific habitat types (Butts 1992). Most habitat descriptions in the literature can be characterized as large, mountainous, and essentially roadless areas (MTNHP 2012g). Given their large individual home ranges, wide range of habitat use and considerable prey base diversity, wolverines could occur in the Benbow Project area. However, the area is comparatively small and is not “essentially roadless;” consequently it is likely that wolverine presence in the project area would be incidental and short-term.

3.3.6 Canada Lynx

The Canada lynx is listed as threatened under the ESA (USFWS 2012). It is known to occur in southern Stillwater County (USFWS 2012; MTNHP and MFWP 2012). The Benbow Project area is considered to lie within lynx range (MTNHP 2011); the Custer National Forest surrounding the project is designated critical habitat for the lynx (USFWS 2011c).

Lynx primary habitat east of the Continental Divide is subalpine fir forests at higher elevations (5400 to 7800 feet); secondary habitat is intermixed Englemann spruce and Douglas-fir habitat types where

lodgepole pine is a major seral species (Ruediger et al. 2000). Disturbances such as fire, insect infestations and timber harvest that create early successional stages provide foraging habitat for lynx by creating forage and cover for snowshoe hares, their primary prey item. Older forests provide habitat for longer periods of time than disturbance-created habitats (Ruediger et al. 2000). Den sites (hollow trees, under stumps or in thick brush) tend to be in mature or old-growth stands with a high density of logs (MTNHP 2011h). Snowshoe hares were observed during field work in the Benbow Project area; therefore the Benbow Project area is considered secondary foraging habitat but does not appear to constitute denning habitat. Lynx have comparatively large individual home ranges, and consequently it is likely that Canada lynx presence in the project area would be incidental and short-term.

3.3.7 Gray Wolf

The gray wolf is a USFS sensitive species and a Montana Species of Concern (Table 1). In May 2011 the USFWS announced that the gray wolf in Montana and several other states was removed from protections under the ESA (Federal Register, May 5, 2011 available at: http://www.fws.gov/mountain-prairie/species/mammals/wolf/05-05-2011-Federal-Register_NRM-Direct-Final-Rule.pdf). In August 2011 the District Court upheld this delisting (available at: http://www.fws.gov/mountain-prairie/species/mammals/wolf/WILDLIFE-221178-v1-NRM_CBDFilings56_ORDER_granting_Defs_MSJ.pdf). The gray wolf in the vicinity of the Benbow Portal project is currently managed by MFWP as a game species, and is legally hunted (MFWP 2012c). In 2010 there were no known wolf packs established in the general vicinity of the project (MFWP 2012d), but individual wolves and wolf packs have large home ranges, and there is a 2007 record from Little Rocky Creek near the project area (MTNHP 2012i). No wolves or their evidence (tracks, prey remains, scats, etc.) were observed during field work in the Benbow Project area .

3.3.8 Bald Eagle

The bald eagle is a USFS sensitive species and a Montana Species of Concern (Table 1). It was removed from the federal list of threatened or endangered species in 2007 (Federal Register, July 9, 2007 available at: <http://www.gpo.gov/fdsys/pkg/FR-2007-07-09/pdf/07-4302.pdf#page=1>). Bald eagles are now managed following established guidelines (MBEWG 2010).

The bald eagle is primarily a species of riparian and lacustrine habitats (forested areas along rivers and lakes), especially during the breeding season. Wintering habitat may include upland habitats, particularly if carrion is available. Nest sites are usually located in forested areas near large lakes and rivers. Nest site selection is dependent upon maximum local food availability and minimum disturbance from human activity (MTNHP 2012j). There are bald eagle nests along the Stillwater River (Hammond 2010). The Benbow Portal project area comprises upland habitat which could be used for foraging, but nesting would be unlikely (Table 1). No bald eagles were seen within five miles of the Benbow Project area during 2011 and 2012 field work.

3.3.9 Golden Eagle

The golden eagle is widespread in Montana, where it is considered a species that hunts over open prairies and woodlands, and nests on cliffs or in large trees (MTNHP 2012k). In the Livingston area 62 percent of nests were on cliffs, 29 percent were in Douglas-fir, and 2-3 percent each were in ponderosa pine, cottonwood, snags or on the ground (McGahan 1968, cited in MTNHP 2012k). About 70 percent of the cliff nests were oriented to the south or east, and most nests were found between 4000-6000 feet in elevation (McGahan 1968, cited in MTNHP 2012k). Using these parameters, the Benbow Project area would be considered foraging habitat but marginal nesting habitat. No golden eagles were seen during field work; cliffs on the northeast-facing slope above the project area were searched in August 2011 with a spotting scope, but no nests were observed.

3.3.10 Northern Goshawk

The northern goshawk is both a Montana Species of Concern and a USFS sensitive species (Table 1). In 1997 the USFWS was petitioned to list the goshawk under the ESA but determined that such listing was not warranted (MTNHP 2012l). The goshawk is a habitat generalist that may show a preference for nesting in certain habitat conditions. In Montana northern goshawks tend to nest in mature large-tract conifer forests with a high canopy cover, relatively steep slope, and little to sparse undergrowth (MTNHP 2012l). Hillis et al. (2000) reported that east of the Continental Divide and south of I-90, the variables that best explained nests were stands with mean diameters of at least 9 inches, crown closures of at least 25 percent, and elevations below 7500 feet. According to USFS (2006), desired conditions for nesting habitat in the Gallatin and Custer National Forests are:

Tree dominance group: Lodgepole pine, Douglas-fir, ponderosa pine, and aspen
Tree size: 12.5 +/- 3.0 inches
Canopy cover: 70.0 +/- 10.3%
Basal area: 142 +/- 38.3 square feet/acre
Structure class: 1, 2

Some of the Douglas-fir stands in the Benbow Project area meet these conditions. In 2009 a USFS employee saw a goshawk fly across USFS road 2414 near the crossing of Little Rocky Creek (Andy Godtel, USFS biologist, personal communication, October 1, 2012). During a July 29, 2011 visit to the Benbow Portal project area with USFS personnel, SMC personnel photographed an accipiter in an aspen stand and were told that the bird was a goshawk, and may have been nesting nearby because the bird was agitated (Randy Weimer, Stillwater Mining Company, personal communication, August 1, 2011). It can be very difficult to distinguish one accipiter species from another (Sibley 2000). The bird in the photograph appeared to be a Cooper's hawk or a juvenile goshawk, although the lighting and clarity of the photograph made identification problematic. Regardless, portions of the Benbow Project vicinity are suitable nesting habitat for the northern goshawk (Table 1).

The late June 2012 search of the Benbow Project area found two accipiter nests, one active and the other inactive. Both nests were previously located by USFS personnel in July 2011 and in May/June

2012. The inactive nest was located approximately 200 yards (180 m) from the active nest. The tree containing the active nest was a Douglas-fir (*Pseudotsuga menzeisii*) about 60-70 feet (18-21 m) tall, with a diameter at breast height (DBH) of 8 inches (23 cm). The nest was about 40 feet (12 m) above the ground and was constructed in a crotch of the trunk; the inactive nest was similarly located in a Douglas-fir with approximately the same dimensions.

The active nest was estimated to be approximately 2 feet (60 cm) in diameter and 1.5 feet (45 cm) high. These dimensions are somewhat less than the averages reported for goshawk nests (Squires and Reynolds 1997) and similar to the averages reported for Cooper's hawk nests (Curtis and Rosenfeld 2006), but there is sufficient overlap in nest dimensions between the two species that for the purposes of this report, nest dimensions could not be used as a species indicator.

However, the active nest was observed for 1.5 hours on June 21 and 0.5 hour on June 22, and the adult bird was photographed and its calls were recorded. These observations determined that the active nest was a Cooper's hawk's, which was later verified by USFS personnel (Andy Godtel, USFS biologist, personal communication, October 1, 2012). Given the nest territory defense behavior exhibited by both goshawks (Squires and Reynolds 1997; Woodbridge and Hargis 2006) and Cooper's hawks (Curtis and Rosenfeld 2006), it is unlikely that any other active nests were present in the PFA. No nests of any other raptor species were observed.

3.3.11 Peregrine Falcon

The USFWS removed the peregrine falcon from the ESA list in 1999 when there were an estimated 1650 breeding pairs in the U.S. and Canada (USFWS 1999); by 2003 the estimate had increased to 3005 breeding pairs in the U.S. alone; there were 10 known active nests in Montana, all located on natural substrate (i.e., cliffs) (Green et al. 2006). Ideal nest locations include undisturbed areas with a wide view, near water, and close to plentiful prey (primarily medium-sized passerine birds up to small waterfowl) (MTNHP 2011n). Appropriately sized cliffs are available near the Benbow Project claim block, although not at any of the initial proposed development sites (Table 1); however, these cliffs are about five miles from the Stillwater River. No peregrine falcons were seen during the August 24-26, 2011 reconnaissance; cliffs on the northeast-facing slope above the project area were searched with a spotting scope, but no evidence of nesting (ledges with overhangs and excrement) was observed.

3.4 USFS Habitat Indicator Species and Key Wildlife Species

Ten species that are Habitat Indicator Species and/or Key Wildlife Species were identified by the USFS to be considered in this report (Table 2). Of these, three (Yellowstone cutthroat trout, golden eagle and northern goshawk) are also USFS Sensitive Species and/or Montana Species of Concern (Table 1) and have already been discussed. Of the remaining seven species, four are birds and three are mammals:

3.4.1 Merlin

Merlins are found statewide and may use a wide variety of habitats (MTNHP 2011n). In southeastern Montana they are found in patchy shrub/grasslands with mature trees to support nesting; nests are

often constructed in black-billed magpie or American crow nests (Becker and Sieg 1987). Since the Custer National Forest extends into southeastern Montana, the merlin is considered an indicator species of this habitat (Table 2). For the most part, the initial development sites of the Benbow Project do not contain this habitat. Merlins may also nest in aspen stands, and this habitat is available in the project area; however, no black-billed magpie or American crow nests were observed at any of the project sites (Table 2). No merlins were seen during 2011 and 2012 field work.

3.4.2 Ruffed Grouse

Ruffed grouse are considered to be indicative of dense, early stage aspen stands and moist deciduous or coniferous woodland, often along stream bottoms (Table 1). They are also an upland game bird in Montana; for management purposes they are considered a mountain grouse (MFWP 2012e) even though they may occur along river or stream bottoms far from the mountains (MTNHP 2012o). Ruffed grouse were observed in aspen stands in or near the Benbow Project sites, and in spruce-fir forest along Little Rocky Creek, during 2011 and 2012 field work.

3.4.3 Yellow Warbler

The yellow warbler is a common species found throughout Montana in mesic shrub habitats. They are considered to be indicative of brushy riparian habitat with willows (MTNHP 2012p; Table 2). Despite the relatively high elevations of the Benbow Project area, yellow warblers were observed in aspen habitat along an unnamed tributary to Little Rocky Creek.

3.4.4 Ovenbird

Ovenbirds are small warblers considered to be indicative of mature close-canopied deciduous or deciduous-coniferous forests with limited understory (Table 1). A single ovenbird was observed in Douglas-fir/ninebark habitat during the August 2011 field work.

3.4.5 Elk

Elk may be seasonally and/or occasionally present in the Benbow Project vicinity, although they do not appear to be as common as moose. Fresh and recent moose evidence (tracks, pellet groups) were commonly observed in aspen stands and Douglas-fir/ninebark habitats during the August 24-26, 2011 reconnaissance, and SMC personnel observed a moose in the area on December 1, 2011. In contrast, no elk were observed and old elk pellet groups were uncommonly found in Douglas-fir/ninebark and grassland habitats during the August 2011 field work, and no elk were observed in June 2012.

The project area apparently does not constitute elk winter range. MFWP's CAPS mapping (<http://fwp.mt.gov/fishAndWildlife/conservationInAction/crucialAreas.html>) ranks Sections 16 and 17 as high value moose and mule deer winter range, and Sections 20 and 21 as moderate moose winter range, but does not assign values as elk winter range to the project area or its vicinity. The nearest elk winter range values are north of the town of Dean, about four miles northeast of the Benbow Project area.

3.4.6 Mule Deer

Mule deer were observed in Douglas-fir/ninebark and grassland habitats during the August 2011 reconnaissance of the Benbow Project area. Evidence (tracks, pellet groups) were observed in all habitat types, although it was not possible to differentiate mule deer from white-tailed deer.

As discussed above, MFWP's CAPS mapping ranks Sections 16 and 17 as high value mule deer winter range, while Sections 20 and 21 are not assigned rankings as mule deer winter range. The difference may be a function of elevation, aspect/slope and habitat: most of Sections 16 and 17 are below 6200 feet in elevation and/or are comprised of more open habitats (particularly grasslands) on moderate to steep slopes, while much of Sections 20 and 21 are above 6200 feet in elevation, with steeper, more northerly forested aspects. Most of the initial Benbow Project development sites are in Sections 20 and 21.

3.4.7 White-tailed Deer

White-tailed deer were observed in aspen, mixed aspen/conifer and willow/aspen stands throughout the Benbow Project area during the August 2011 field work; most sightings were associated with drainages. Evidence (tracks, pellet groups) were observed in all habitat types, although it was not possible to differentiate white-tailed deer from mule deer.

MFWP CAPS mapping does not rank Sections 16, 17, 20 or 21 as white-tailed deer winter range. The nearest ranked winter range is about two miles north of the project area. White-tailed deer winter range appears to be primarily associated with major stream and river drainages at comparatively lower elevations than the Benbow Project area. For example, Little Rocky Creek dissects white-tailed deer winter range about three miles downstream but about 1500 feet in elevation lower than the project area.

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