

Study No. 16 & 17

DRAFT

**Study No. 16: Biological
Assessment of Federally
Listed Species**

**Study No. 17: Biological
Evaluation of Forest Service
Sensitive Species**

**Mystic Lake Hydroelectric Project
FERC No. 2301**

Mystic Lake, Montana

PPL Montana

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Executive Summary

Text...

Section 1 - Introduction

The biological assessment and evaluation provides written documentation of the review process and the analysis of effects on threatened, endangered, proposed, candidate, sensitive and management indicator species for the proposed re-licensing of Mystic Lake Hydroelectric Project FERC No. 2301.

1.1 Proposed Action

Prior to 1926, Mystic Lake was a natural body of water occupying 342.5 surface acres (138.7 ha). In 1926, Montana Power Company (MPC) built a dam, adding approximately 104.15 surface acres (42.2 ha) (Schollenberger 1984). Today, at the full pool elevation of 7,673.5 ft amsl (2,339 m), Mystic Lake occupies 446.65 acres (181 ha) with a maximum depth of 205 ft (Marcuson and Poore 1991). At low pool, elevation 7,612 ft amsl (2,320 m), the lake occupies approximately one-third fewer acres (Marcuson and Poore 1991). The useable storage at Mystic Lake is 20,800 acre-ft (MPC 1968). This is the volume of water between full pool elevation and low pool elevation, a 61.5 ft elevation difference. The total estimated cumulative volume of the lake varies due to some discrepancies in the various data sets used to generate the estimate, but the current estimate is approximately 47,000 acre-ft at full pool. Residence times also vary due to fluctuations in pool elevation, inflows and outflows.

The total rated capacity of the plant is 11.5 MW. However, the current useable capacity of the Mystic Lake hydroelectric development is 10.5 MW. The Project consists of: an arch-type dam, earthfill dike, concrete intake structure, pipeline and penstock, powerhouse with two similarly sized units, and the Re-regulation Dam downstream. Two of these components, the arch dam and earthfill dike, raise the elevation of the natural Mystic Lake by about 50 ft. A third dam is located one and one-half miles downstream from the powerhouse on West Rosebud Lake to re-regulate the varying releases from the powerhouse during peaking operations.

PPL Montana proposes to submit an application to re-license the existing Mystic Lake Hydroelectric Project. Although potential exists for enhancing generation by enlarging Mystic Lake, PPL Montana is not proposing to add generation capacity or implement any significant modifications to the operational regime or project structures under the new license. Thus, the footprint on the landscape will essentially remain as currently exists.

1.2 Project and Evaluation Area

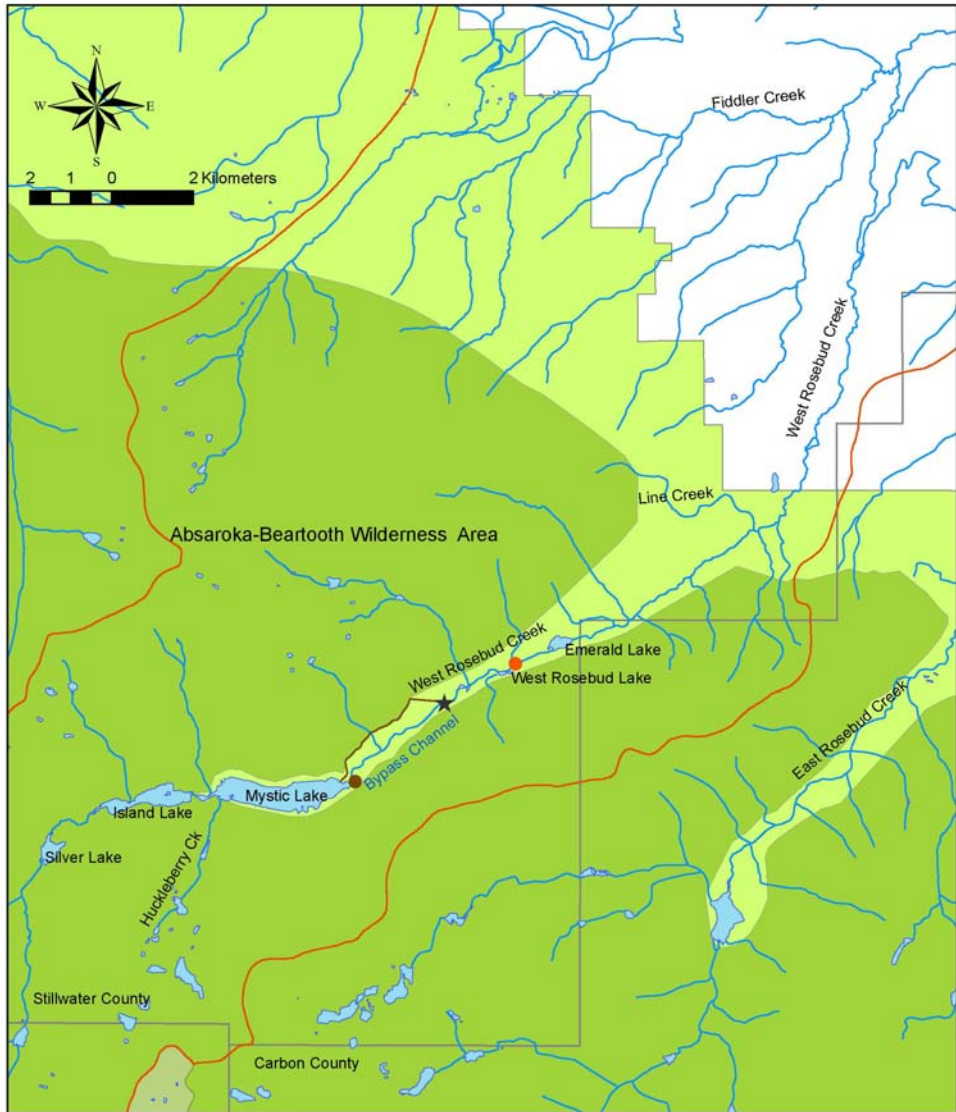
The Mystic Lake Hydroelectric Project No. 2301 (hereafter referred to as the Project) is situated in south-central Montana, primarily located in Stillwater County with a very small

portion within Carbon County. Stillwater County is primarily rural or undeveloped with about 8,000 residents and low population density, 4.6 per square mile. The Project area is approximately 17 miles north of the Wyoming-Montana State line and about 40 miles southwest of Columbus, Montana. The nearest metropolitan area is Billings, Montana, approximately 70 miles to the northeast, with a population of about 90,000 people.

The Project area encompasses those waters and surrounding land that could potentially be affected by the Project. This area includes Mystic Lake (Figure 1.2-1), approximately 22 miles (35.4 km) of West Rosebud Creek from the outlet of Mystic Lake downstream to the confluence with Fiddler Creek, as well as two lakes within the 22-mile reach, West Rosebud Lake and Emerald Lake. However, neither Emerald Lake nor West Rosebud Creek downstream of West Rosebud Lake are located within the FERC Project boundary.

Mystic Lake is located in the Beartooth Mountain Range and surrounded on three sides by the Absaroka-Beartooth Wilderness. Mystic Lake is located at the head of a high mountain canyon at an elevation of 7,673.5 feet (ft) above mean sea level (amsl) in the upper reaches of West Rosebud Creek (Figure 1.2-1). Within West Rosebud Creek drainage (213.4 square miles), Mystic Lake is the fourth in a chain of six hydraulically connected lakes as well as the largest lake (listed in order going downstream: Star, Silver, Island, Mystic, West Rosebud, and Emerald lakes). There are a total of 84 lakes within the West Rosebud Creek drainage, 14 of which are outside the designated Wilderness Area, including the lakes identified to be within the Project area (Marcuson and Poore 1991). Six tributaries drain into Mystic Lake: West Rosebud, Fish, Huckleberry, and three unnamed creeks arbitrarily assigned identification numbers 7, 8, and 10 (Schollenberger 1984). The Beartooth Ranger District manages approximately 124.7 square miles of the West Rosebud Creek drainage while the remaining 88.7 square miles is deeded land.

The FERC Project boundary is more limited than the Project area. The present FERC Project boundary is strictly defined to include Mystic Lake and dam, the flow line, the penstock, the powerhouse and associated camp buildings for operations and maintenance, West Rosebud Lake and Re-regulation Dam, and two transmission lines (A-line and B-line) starting at the powerhouse extending 5.3-miles (8.5 km) downstream to NorthWestern Energy's Line Creek Substation. Emerald Lake is not within the FERC Project boundary. The boundary at Mystic Lake is defined by the high water mark or elevation 7,673.5 ft amsl (2339 m). The boundary at West Rosebud Lake is defined at 6,399.9 ft amsl (1951m).



Mystic Lake Project Area
 West Rosebud Creek Drainage

- West Rosebud Creek Drainage
- Stillwater and Carbon counties
- Beartooth Ranger District
- Absaroka-Beartooth Wilderness Area
- Lakes
- Streams
- Mystic Lake Dam
- Penstock
- ★ Powerhouse
- Re-regulation Dam

Source: Montana Natural Resource Information System

Figure 1.2-1. Map of Mystic Lake Project Area.

Section 2 - Species Assessment

2.1 Federally Threatened, Endangered, Proposed, and Candidate Species

Currently there are five federally listed species for the Custer National Forest, four of which occur in Stillwater and Carbon counties (Table 2.1-1). There are no proposed species in Montana and none of the four candidate species has a historic or current range that includes the Project area. Black-tailed prairie dog was considered a candidate species as of February 4, 2000. The species was removed as a candidate from the ESA list in August of 2004.

Table 2.1-1. Federally listed species for Stillwater and Carbon counties (USDI 2003), species status, presence in the Project area, and determination of effects.

Wildlife Species	Status	Present in Project Area	Determination
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Threatened	Yes	May effect-not likely to adversely effect
Grizzly Bear (<i>Ursus arctos horribilis</i>)	Threatened	Yes	May effect-not likely to adversely effect
Gray Wolf (<i>Canis lupus</i>)	Experimental/Nonessential Population	Yes	May effect-not likely to adversely effect
Canada Lynx (<i>Lynx canadensis</i>)	Threatened	Yes	No effect
Black-footed Ferret (<i>Mustela nigripes</i>)	Endangered	No	No effect
Options in determination of effects for federally listed species (threatened or endangered) is limited to: 1) No effect; 2) May effect-Not likely to adversely affect; 3) May effect-Likely to adversely affect*; 4) Beneficial effect*. * Considered a trigger for significant actions.			

2.1.1 Bald Eagle (Threatened)

Key habitats for bald eagles include nesting territory and wintering habitat. Nesting territories are typically near large rivers, lakes, reservoirs, or ponds with fish. Nest sites are typically in conifer stands with large trees. Bald eagles will also nest in cottonwoods and other deciduous tree species where conifers are absent, such as along the Yellowstone River. Wintering habitat is found where food resources such as fish and waterfowl are abundant. In Montana, bald eagles tend to winter along major rivers and tailrace areas of some reservoirs. Mystic Lake is at high elevation and experiences hard winters that result in snow and ice

covered lakes and streams. Therefore, the Mystic Lake area does not provide suitable overwintering habitat for bald eagles.

Bald eagles are occasionally observed, however, foraging along West Rosebud Creek during late fall, winter, and early spring. Eagles have been reported roosting near the West Rosebud Lake outlet, foraging on spawning fish during fall. Currently, no nest sites have been identified in the vicinity of the Project area or on the Beartooth Ranger District (B. Pitman, Wildlife Biologist, Beartooth Ranger District, personal comm., 2003).

Thus far, there have been no reports of any raptor electrocution in the Project area. However, PPL Montana is continuing the process of updating the transmission lines (A-line and B-line) to meet raptor-safe standards and reduce potential of raptor electrocution. In 2004 and 2005, the A-line was replaced with new poles, cross members, and insulators. Similar upgrades will be made in the near future for the B-line.

Based on fish population data (MFWP 2005), local fisheries in the Project area are in good health and will continue to provide a potential food source for bald eagles. In addition, power lines will be updated to meet current raptor-safe standards; therefore the re-licensing of the Project may effect, but is not likely to adversely effect bald eagles.

2.1.2 Grizzly Bear (Threatened)

Beartooth Ranger District and Project area are inside the Grizzly Bear Management Area, however the Project area is outside the Primary Conservation Area of the Greater Yellowstone Area. Grizzly bears have been observed on occasion within the Project area. Currently, there is no known denning site(s) within the vicinity of the Project area, most likely due to the limited availability of food resources (B. Pitman, Wildlife Biologist, Beartooth Ranger District, personal comm., 2003).

The re-licensing of the Project will not directly lead to an increase in road or trail densities or the development of the area. However, future recreational use and activities in the Project area most likely will increase interactions, confrontations, and potential conflicts between humans and bears. Therefore, the re-licensing of the Project may effect, but is not likely to adversely affect grizzly bears.

2.1.3 Gray Wolf (Non-essential Experimental Population)

Suitable habitat for wolves has been defined as any place with an adequate supply of ungulate prey and freedom from excessive human persecution. Wolf packs generally require large home ranges. The actual extent of the home range depends primarily on pack size and the abundance and distribution of prey species.

Wolves were introduced into Yellowstone National Park in 1995. Since the initial release many packs have formed and established territories in the Greater Yellowstone Ecosystem, including several outside Yellowstone National Park. These wolves have been designated as a nonessential experimental population (ESA section 10j). Under this designation the wolves are treated as a proposed species, and therefore are not subject to the prohibitions and consultation requirements of section 7(a)(2) of the Endangered Species Act (ESA). Suitable habitat exists throughout the Beartooth Ranger District of the Custer National Forest, and dispersing wolves from Yellowstone National Park do utilize this portion of the Forest. The Project area is not within a mile of a known rendezvous site or den site. However, the number of wolves present and their reproductive status are currently unknown. The primary threat to wolves is human-caused mortality. Human-caused mortality includes legal and illegal killings, car collisions, and control actions to resolve conflicts.

The re-licensing of the Project will not directly lead to an increase in road or trail densities or the development of the area. Therefore, re-licensing will not affect the potential for an increase in human-caused mortality. Thus, the Project may effect but is not likely to adversely affect wolves.

2.1.4 Canada Lynx (*Threatened*)

Lynx rely on a mosaic of habitats including both early and late successional stages for foraging and denning. Lynx primarily depend on dense evergreen forests to provide cover for escape, protection, and den sites. However, their primary prey, the snowshoe hare, requires young forests with thick undergrowth. Therefore, lynx require a diversified habitat (<http://www.defenders.org/forests/species/lynx.html>). Lynx are well adapted for wintering in high elevation habitats. Woody debris from down logs, rootwads, and windfall are utilized for dens sites and provide security and cover for kittens. Home range size varies depending on gender, abundance of prey, season, and population density. The main threats to lynx habitat include timber harvest, road development, fire suppression, and recreation (specifically snowmobiling) (<http://www.defenders.org/forests/species/lynx.html>). Lynx are probably most vulnerable to humans during the winter and denning season.

The Lynx Habitat Model (Custer National Forest 2001) shows potential habitat for foraging and denning of lynx within the vicinity of the Project area. Potential habitat within the West Rosebud Creek and Mystic Lake watersheds exists mainly in the Absaroka-Beartooth Wilderness Area and upstream of the dam. Very little lynx habitat occurs within the Project boundary. At this point, no lynx have been observed or documented within the vicinity of the Project. However, lynx have been reported on rare occasions on or near the Beartooth Mountains portion of the Beartooth Ranger District.

Due to the remoteness of potential habitat and distance from the Project, the re-licensing of the Project will have no effect on the lynx. Additionally, the majority of the area surrounding the Project is designated Wilderness Area, which does not allow for snowmobiling, road development, or timber harvest and limits motorized recreational activities, therefore limiting the amount of human disturbance.

2.1.5 Black-footed Ferret (Endangered)

Suitable habitat (prairie lands) for the black-footed ferret is not present in the Project area. The black-footed ferret has not been documented in the Project area. Therefore, the re-licensing of the Project will have no effect on the black-footed ferret.

2.2 Forest Service Sensitive Species

There are 39 species listed on the updated Forest Service Northern Region Sensitive Species List (Table 2.2-1) (3/31/05, Available 7/20/05: <http://www.fs.fed.us/r1/projects/wwfrp/sens-species/Sens%20Spp%20List%20Wildlife.pdf>).

Options in determination of effects for Forest Service sensitive species are: 1) No impact; 2) May impact individuals, but not likely to cause a trend to Federal listing or loss of viability; 3) Likely to result in a trend to Federal listing or loss of viability; and 4) Beneficial impact. There would be “no impact” to sensitive species determined to be absent from the project area. Presence in the Project area is determined based on the presence of suitable habitat.

Table 2.2-1. List of all sensitive species known or suspected to be present on the Custer National Forest according to the Forest Service Northern Region Sensitive Species List (3/31/2005); suitable habitat present in Beartooth Ranger District; presence in Project area; and determination of effect. No insect has been listed as a sensitive species in the Custer National Forest. (Sensitive Species List Available 7/20/05: <http://www.fs.fed.us/r1/projects/wwfrp/sens-species/Sens%20Spp%20List%20Wildlife.pdf>)

Species	Suitable Habitat in Ranger District	Present in Ranger District	Present in Project Area	Determination
Birds				
American Peregrine Falcon (<i>Falco peregrinus anatum</i>)	Yes	Yes	No	No Impact
Baird’s Sparrow (<i>Ammodramus bairdii</i>)	Yes	No	No	No Impact
Black-backed woodpecker (<i>Picoides arcticus</i>)	Yes	No	No	No Impact
Blue-Gray Gnatcatcher (<i>Polioptila caerulea</i>)	No	No	No	No Impact
Burrowing Owl (<i>Athene cunicularia</i>)	Yes	Yes	No	No Impact

Species	Suitable Habitat in Ranger District	Present in Ranger District	Present in Project Area	Determination
Harlequin Duck (<i>Histrionicus histrionicus</i>)	Yes	Yes	No	No Impact
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	Yes	Yes	No	No Impact
Long-Billed Curlew (<i>Numenius americanus</i>)	Yes	Yes	No	No Impact
Northern Goshawk (<i>Accipiter gentilis</i>)	Yes	Yes	Yes	No Impact
Mammals				
Black-tailed Prairie Dog (<i>Cynomys ludovicianus</i>)	No	No	No	No Impact
Long-Eared Myotis (<i>Myotis evotis</i>)	Yes	Yes	No	No Impact
Long-Legged Myotis (<i>Myotis volans</i>)	Yes	Yes	No	No Impact
North American Wolverine (<i>Gulo gulo luscus</i>)	Yes	Yes	Yes	No Impact
Pallid Bat (<i>Antrozous pallidus</i>)	No	No	No	No Impact
Spotted Bat (<i>Euderma maculatum</i>)	Yes	Yes	No	No Impact
Townsend's Big-Eared Bat (<i>Corynorhinus townsendii</i>)	Yes	Yes	No	No Impact
White-tailed Prairie Dog (<i>Cynomys leucurus</i>)	Yes	Yes	No	No Impact
Amphibians				
Great Plains Toad (<i>Bufo cognatus</i>)	No	No	No	No Impact
Northern Leopard Frog (<i>Rana pipiens</i>)	Yes	Yes	No	No Impact
Plains Spadefoot (<i>Spea bombifrons</i>)	No	No	No	No Impact
Western Toad (<i>Bufo boreas</i>)	No	No	No	No Impact
Reptiles				
Greater Short-horned Lizard (<i>Phrynosoma hernandesi</i>)	Yes	Potential	No	No Impact
Milk Snake (<i>Lampropeltis triangulum</i>)	No	No	No	No Impact
Western Hognose Snake (<i>Heterodon nasicus</i>)	No	No	No	No Impact
Fish				
Northern Redbelly Dace (<i>Phoxinus eos</i>)	No	No	No	No Impact

Species	Suitable Habitat in Ranger District	Present in Ranger District	Present in Project Area	Determination
Sturgeon Chub (<i>Macrhybopsis gelida</i>)	No	No	No	No Impact
Yellowstone Cutthroat Trout (<i>Oncorhynchus clarki bouvieri</i>)	Yes	Yes	No	No Impact
Insects – There are no sensitive insect species listed in Montana under the USFS Region 1 Sensitive Species List (03/31/2005).				
Plants (Beartooth District Sensitive Plants verified by K. Reid, Custer National Forest, personal comm., 2005)				
Musk-root (<i>Adoxa moschatellina</i>)	Yes	Yes	Potential	No Impact
Small yellow lady’s slipper (<i>Cypripedium parviflorum</i>)	Yes	Potential	Potential	No Impact
Stream orchid (<i>Epipactis gigantea</i>)	Yes	Potential	Potential	No Impact
Hiker’s gentian (<i>Gentianopsis simplex</i>)	Yes	Yes	Potential	No Impact
Mealy primrose (<i>Primula incana</i>)	Yes	Potential	Potential	No Impact
Beartooth goldenweed (<i>Haplopappus carthamoides var. subsquarrosus</i>)	Yes	Yes	No	No Impact
Hall’s rush (<i>Juncus hallii</i>)	Yes	Potential	No	No Impact
Barratt’s willow (<i>Salix barrattiana</i>)	Yes	Yes	No	No Impact
Shoshonea (<i>Shoshonea pulvinata</i>)	Yes	Yes	No	No Impact

2.2.1 Birds

American Peregrine Falcon

Peregrine falcon distribution is limited by the availability of suitable nesting sites and a ready supply of prey. The Peregrine falcon prefer large cliffs for nesting, but will also use steep slopes, river cutbanks, or low rocks and mounds. In Montana, nesting sites are generally near major river drainages. Peregrine falcons do not maneuver well in trees, thus common hunting grounds include open areas such as meadows, river bottoms, marshes, lakes, and croplands. Their primary prey base consists of medium-size passerines. Peregrine falcons may travel several miles from the nest for food.

Peregrine falcons arrive in northern breeding areas late April-early May; departure begins late August-early September. Peregrine falcons breed at 2-3 years and tend to create lifelong pair bonds. In Montana the nesting season is reported to be in June and July (Johnsgard 1986)

cited in http://fwp.state.mt.us/fieldguide/detail_ABNKD06070.aspx). Currently, there were an estimated 57⁺ nesting pairs in Montana (D. Flath, personal comm., 8/26/05).

Although suitable habitat exists in West Rosebud Creek drainage, at present, there is no known nesting site in the drainage. The closest documented nesting site is in the East Rosebud Creek drainage. This active nesting site is monitored annually (B. Pitman, Wildlife Biologist, Beartooth Ranger District, personal comm., 2003).

Potential nesting habitat will not be affected by the re-licensing of the Project, therefore, the project will not impact the Peregrine falcon or its potential habitat in the West Rosebud Creek drainage.

Baird's Sparrow

Montana is included as part of the summer range for the Baird's sparrow. Within Montana, the species is found from west of Great Falls eastwardly to North Dakota and south along that border (<http://biology.dbs.umt.edu/landbird/mbcp/mtpif/mtbrds.htm>). The majority of sightings occur north of the Missouri River in native mixed-grass prairie, which is the preferred habitat type. Nonnative grasses, invasive species, livestock overgrazing, and fire suppression have reduced the quality and areas of suitable habitat available to the Baird's sparrow. Prairie grasslands are not present in the West Rosebud Creek drainage, thus suitable habitat for the Baird's sparrow is not present. Therefore, it is unlikely the Baird's sparrow utilizes the drainage for summer habitat.

Due to lack of suitable habitat in the Project area, the re-licensing of the Project will not impact the Baird's sparrow.

Black-backed woodpecker

The black-backed woodpecker is rare in most of its range. Their distribution includes forested habitats of Montana from the Rocky Mountain Front westward (<http://biology.dbs.umt.edu/landbird/mbcp/mtpif/mtbbwo.htm>). The black-backed woodpecker is associated with early-post fire habitats consisting of boreal and montane coniferous forests.

No black-backed woodpeckers have been documented on the Beartooth Ranger District, but some burned areas (e.g. East Rosebud Creek drainage) in the district may provide suitable habitat.

Due to lack of suitable habitat in the Project area, re-licensing of the Project will not impact the black-backed woodpecker or its habitat.

Blue-gray Gnatcatcher

Long-term land bird monitoring surveys conducted in southeastern Montana in 2002 and 2003 detected blue-gray gnatcatchers in the southern portion of the Pryor Mountains, where direct evidence of breeding has been documented. Lenard et al. (2003) show this area as containing the only known breeding population of this species in Montana. Blue-gray gnatcatchers inhabit a wide range of habitats that typically include broad-leaved trees and shrubs. The species rarely occupies conifer-dominated habitats (Ellison 1992). The individuals detected in the Pryor Mountains occurred mainly in juniper woodlands, but one individual was also detected in a drainage dominated by mature cottonwoods.

The Project area contains no juniper woodlands and little broad-leaved vegetation. The lack of suitable habitat indicates that blue-gray gnatcatchers are not expected to occupy the area. Thus, Project re-licensing will have no impact on the blue-gray gnatcatcher.

Burrowing Owl

Burrowing owl population declines have been linked to the declines in the number and extent of prairie dog colonies (Knowles 1999, <http://biology.dbs.umt.edu/landbird/mbcp/mtpif/mtbuow.htm>). In Montana, suitable habitat is limited to the eastern two-thirds of the state where species such as black-tailed prairie dogs are present. Surveys in the late 1990s documented 190 nesting pairs while surveying 22% of known black-tailed prairie dog town acres in Montana (<http://biology.dbs.umt.edu/landbird/mbcp/mtpif/mtbuow.htm>).

Suitable habitat and prey base for burrowing owls is not available in the Project area; therefore, the re-licensing of the Project will not impact the burrowing owl.

Harlequin Duck

Harlequin ducks are found in western Montana drainages and are scattered throughout the Rocky Mountain Front and the north edge of Yellowstone National Park. The Harlequin duck nests in headwater mountain streams and winters along the Pacific coast. Harlequin ducks tend to inhabit streams of second order or greater with stream gradients between 1-7%, some riffle or slow water areas, and gravel to boulder size substrate. Forest habitat often includes willow shrub or pole or immature-sized lodgepole pine, Engelmann spruce, and Douglas-fir (<http://biology.dbs.umt.edu/landbird/mbcp/mtpif/mthadu.htm>).

Harlequin ducks have been reported in various drainages on the Beartooth Ranger District, and suitable habitat is available in West Rosebud Creek drainage for the Harlequin duck. At present, the Harlequin duck has not been observed in the drainage. Re-licensing of the Project will not impact potential habitat for the Harlequin duck, therefore, there will be no impact to the Harlequin duck.

Loggerhead Shrike

The loggerhead shrike is present in Montana, east of the Continental Divide. Preferred habitat includes drier, open areas with woody nesting strata nearby. This habitat type may include grassland prairie with scattered trees, riparian areas or woody draws, cultivated lands with shelterbelts, or even badlands with few shrubs, in addition to the sagebrush shrubland and shrubsteppe habitats (<http://biology.dbs.umt.edu/landbird/mbc/mtpif/mtlosh.htm>).

Suitable habitat near the Project is probably limited for loggerhead shrike. Re-licensing of the Project will not affect any potential habitat. Therefore, there will be no impact to the loggerhead shrike.

Long-billed Curlew

The long-billed curlew is a neotropical migrant that is found breeding and migrating throughout Montana. In Montana, the long-billed curlew is more common east of the Rockies, particularly along the Rocky Mountain Front. During migration period, peak numbers occur in August and September (<http://biology.dbs.umt.edu/landbird/mbc/mtpif/mtlbcu.htm>). Montana's bird distribution database indicates the long-billed curlew is present in Stillwater and Carbon counties, but their presence is well downstream of the Project area (<http://fwp.state.mt.us/fieldguide/mediaDisplay.aspx?id=2170&elcode=ABNNF07070>). Preferred habitat for this species includes prairie and grasslands, particularly the presence of native short grasses.

Suitable habitat for the species is not present within the Project area. Therefore, the re-licensing of the Project will not impact the long-billed curlew.

Northern Goshawk

In Montana, the Northern goshawk uses a variety of mature and old growth forest habitats. Nest stands are typically characterized by a closed canopy and open understory. Aspen occurs in some patches that goshawks use but is a secondary species in the stand. The one known nest on the Beartooth Ranger District is in a mature lodgepole pine stand in the Beartooth Mountains. Goshawks have been observed in the West Rosebud Creek drainage, but no systematic survey has been conducted to document their reproductive status.

The re-licensing of the Project will not impact potential Northern goshawk foraging or nesting habitat or individuals, thus the Project will not impact the species.

2.2.2 Mammals

Black-tailed Prairie Dog

The black-tailed prairie dog is widely distributed east of the Continental Divide in Montana (Knowles 1999). Suitable habitat for the black-tailed prairie dog includes short-grass prairie lands. This habitat type is not present within the Project area or in other areas surrounding the Project area. Therefore, re-licensing of the Project will have no impact on the black-tailed prairie dog.

White-tailed Prairie Dog

The white-tailed prairie dog has a more limited distribution compared to the black-tailed prairie dog. The white-tailed prairie dog occurs in the dry valleys between the Beartooth and Pryor Mountains (Knowles 1999). In the Beartooth Ranger District there is one white-tailed prairie dog colony (~90 acres) (Knowles 1999). However this colony is not in the Project area or in the near vicinity.

Suitable habitat, such as grass/shrubland areas, is not present in the West Rosebud Creek drainage; therefore, the re-licensing of the Project will not impact the white-tailed prairie dog.

North American Wolverine

Outside of Alaska, Montana and Idaho are the only states thought to have significant numbers of wolverines (Foresman 2001). In Montana, wolverines are most common in the western one-third of the state and occupy habitat types dominated by grand fir, alpine fir, Douglas fir, lodgepole pine, ponderosa pine, and western larch (Foresman 2001). Wolverine sightings are reported on rare occasion on the Beartooth Ranger District, including one approximately 14 miles (22.5 km) southeast of the Project area in 2004 (B. Pitman, Wildlife Biologist, Beartooth Ranger District, personal comm., 9/2005).

The West Rosebud Creek drainage provides potential foraging habitat for wolverines, and the talus slopes provide denning habitat. Individual wolverines may potentially travel through the Project area. However, activities and facilities associated with the Hydroelectric project do not affect foraging conditions or denning habitat. Therefore, the re-licensing of the Project will not impact the wolverine or any potential habitat in the Project area.

Long-eared Myotis

The range for long-eared myotis encompasses the temperate west of North America including most of Montana where suitable habitat exists. Foraging habitat includes forested habitats such as Douglas fir and spruce-fir. Roosts are typically found in rocky areas, abandoned buildings, mines, caves, and under rocks on scree slopes (Adams 2003). Hibernation takes place in caves and mines. Long-eared myotis have been found in southeastern Montana including in caves of the Pryor Mountains in Carbon County (Foresman 2001). Although, none have been observed in Stillwater County or near the Project area, there is potential for their occurrence based on availability of habitat.

Project activities and facilities do not affect bat foraging conditions, roosting habitat, or hibernacula. The re-licensing of the Project will not impact the long-eared myotis or any potential habitat in the Project area.

Long-legged Myotis

The long-legged myotis typically inhabits montane coniferous forests but has also been observed in riparian cottonwood woodlands along the Yellowstone River (Foresman 2001). Summer roosts are found on the underside of tree bark, caves, or buildings (Adams 2003). This bat has also been observed at elevations greater than 6,000 ft in Montana (Foresman 2001). In Montana the long-legged myotis has been observed overwintering in mines in Richland County, Montana. No colony or resident population has been documented near the Project area, but the long-legged myotis has also been observed in Carbon County. The long-legged myotis has also been designated as likely occurring in Stillwater County (Foresman 2001).

As with the Long-eared myotis, project activities and facilities do not affect foraging conditions, roosting habitat, or hibernacula. The re-licensing of the Project will not impact the long-legged myotis or potential habitat in the Project area.

Pallid Bat

The pallid bat is not common in Montana and was first documented in the Pryor Mountains, Carbon County in 1980 (Foresman 2001). Since the first findings of the pallid bat in 1980, additional research has produced 24 additional individuals, all of which were from the Pryor Mountains. Presence of both sexes in this area suggests breeding may occur in this region, however no bats were found in any of the caves monitored (Foresman 2001).

Preferred habitats of the pallid bat include arid and semi-arid regions. The species is also known to sometimes inhabit oak and pine forests (Foresman 2001). Daytime roosts are predominately in rock cavities and buildings, whereas night roosting occurs in open shelters such as porches, bridges, and cave or mine openings (Genter and Jurist 1995).

Suitable roosting habitat and foraging habitat is available in the Beartooth Ranger District, specifically in the Pryor Mountains, Carbon County. However, suitable habitat does not exist in the vicinity of the Project area. Therefore, the re-licensing of the Project will not impact the Pallid bat.

Spotted Bat

Spotted bats may occur in open ponderosa pine and piñon-juniper as well as in deserts and other arid terrain. The range of the spotted bat is widespread, but the species is not common. Sightings of the spotted bat have been limited to the Pryor Mountains in Carbon County. Day roosting typically occurs in fractured sedimentary cliffs, and openings in drier ponderosa pine forests provide foraging habitat. Spotted bats are territorial and space themselves along regular foraging routes in suitable habitat. Specific foraging habitat requirements are not well understood, but previous studies have shown that spotted bats feed almost exclusively on moths.

There are only 3 records of observations of the spotted bat in Montana (Foresman 2001). A single adult was found flying into a house in Billings in 1949 (Nicholson 1950) and two individuals were captured in 1990 in the Pryor Mountains, Carbon County (Worthington 1991). In 1990, there were also additional spotted bats heard in the Bighorn Canyon National Recreation Area (Worthington 1991). In addition to the above observations, Spotted bats were heard or recorded at nine sites during bat surveys conducted from 2001 to 2003 in south-central Montana (Hendricks et al. 2004). No spotted bats have been detected or recorded in Stillwater County.

As a result of the preferred habitat type of spotted bats, this species most likely does not occur near the Project area. Therefore, the re-licensing of the Project will not impact the spotted bat.

Townsend's Big-Eared Bat

The Townsend's big-eared bat has been observed throughout Montana, but is considered rare (Adams 2003). Currently, resident populations are known to exist in the Lewis and Clark Caverns in Jefferson County, abandoned coal mines in the Bull Mountains of Musselshell County (Foresman 2001), Azure Cave located in the Little Rocky Mountains of Phillips County (Hendricks 1998), and a private abandoned mine shaft in Missoula County (Foresman 2001). The largest colony of this species in Montana exists in Azure Cave located in north central Montana. The largest colony known to exist in the United States is in Jewel Cave near Rapid City, South Dakota (Foresman 2001). In addition, bat surveys conducted in the Pryor Mountains have detected Townsend's big-eared bats along the Beartooth

District/Bureau of Land Management boundary. The bats were detected in caves and under cottonwoods in a canyon bottom (Worthington 1991, Hendricks et al. 2004).

The Townsend's big-eared bat utilizes a variety xeric and mesic of habitats in its range, including conifer forests, piñon-juniper woodlands, and desert shrublands. Extreme deserts and the highest elevations are the only habitat types that the species appears to be absent from. The Townsend's big-eared bat is one of three bat species that overwinter in Montana. In general the greatest threat to Townsend's big-eared bats is their vulnerability to disturbance and loss of habitat (e.g. traditional roosts) such as caves and abandoned mines.

Roosting habitat consisting of caves or abandon mines is limited in the near vicinity of the Project area. Buildings near the Powerhouse may provide roosting habitat. No bats were detected during a survey in May 2004 conducted by PPL Montana and the Forest Service. However, lack of detections does not necessarily mean bats were absent from the area.

Potential exists for Townsend's big-eared bats to inhabit the Project vicinity. However, project activities and facilities do not affect foraging conditions, roosting habitat, or hibernacula. Thus, the re-licensing of the Project will not impact the Townsend's big-eared bat.

2.2.3. Amphibians

Great Plains Toad

The great plains toad is primarily found in the eastern two-thirds of Montana east of the Continental Divide. The highest elevation at which the toad has been documented is 3,600 ft in the Wolf Mountains of Big Horn County. The great plains toad is often found on the plateaus between and flanking the Yellowstone and Missouri Rivers. The species has been documented in about 60 locations in eastern Montana, which does not include Stillwater or Carbon counties (Werner et al. 2004). The lowest elevation of West Rosebud Creek within the Forest boundary is approximately 5,360 ft, well above the known elevation of the species. Additionally, the Project area elevations appears to be beyond the range of the great plains toad. Due to the lack of suitable habitat in the Project area, the re-licensing of the Project will not impact the Great Plains Toad.

Northern Leopard Frog

Historically, the northern leopard frog occurred on both sides of the Continental Divide in Montana. Currently, the northern leopard frog is found primarily in the prairie regions of the eastern two-thirds of Montana east of the Continental Divide. This frog has been documented in all but seven Montana counties (six of which are west of the Continental Divide), at elevations up to 6,700 feet in Judith Basin County. The northern leopard frog has been

documented in Stillwater and Carbon counties at lower elevations, not near the Project area (Werner et al. 2004). During a survey in May 2004 conducted by PPL Montana and the Forest Service, no northern leopard frog was observed. Habitats used by northern leopard frog in Montana include wet meadows, cattail marshes, and grassy shorelines (Werner et al. 2004).

The re-licensing of the Project will not impact the northern leopard frog or potential habitat for the species.

Plains Spadefoot

Documentation of the plains spadefoot in Montana has been sparse in central and eastern Montana, including mountain valleys of the upper Missouri River watershed. The highest elevation at which the plains spadefoot has been observed is just over 5,000 ft in Beaverhead County (Werner et al. 2004). The species has been observed in parts of Carbon County, but not in the vicinity of the Project. Presence of this species is not expected in the West Rosebud Creek drainage or the Project area due to elevation and lack of prairie habitat. Thus, the re-licensing of the Project will not impact the plains spadefoot.

Western Toad

The Western toad occurs on both sides of the Continental Divide in Montana, which includes the Beartooth Plateau. The highest elevation at which this species is documented is 9,220 feet in the Madison Range of Gallatin County. The western toad has been documented in Carbon County near the boundary of Stillwater County, but no observations have been documented in Stillwater County. Typical habitat for the western toad includes coniferous forests and subalpine meadows, lakes, ponds, and marshes (Werner et al. 2004). Suitable habitat in the Project area may exist, however no western toad was found during a survey conducted by PPL Montana and the USFS in May 2004. The re-licensing of the Project will not impact the western toad or any potential habitat for the species.

2.2.4 Reptiles

Greater short-horned lizard

The greater short-horned lizard occur in the eastern two-thirds of Montana east of the Continental Divide primarily in the prairies, but occasionally into the mountain foothills along the upper Missouri headwaters. The highest elevation documented is 6,500 ft in the Pryor Mountains in Carbon County. The greater short-horned lizard has been documented in Stillwater County, but downstream of the Project area (Werner et al. 2004).

Preferred habitat such as sagebrush and short-grass prairies are not present in the vicinity of the Project, therefore this species most likely does not inhabit the Project area. Due to the

lack of suitable habitat, the re-licensing of the Project will have not impact on the greater short-horned lizard.

Milk Snake

There are nine subspecies of the milk snake that inhabit the United States. In Montana, the subspecies, pale milk snake (*Lampropeltis triagulum multistriata*), occurs in central and southeastern portions of Montana. The extent of its distribution in Montana is not currently known due to its nocturnal habits. The highest elevation at which the snake has been documented in Montana is 3,960 ft near Bluewater Fish Hatchery east of Bridger in Carbon County. Other unverified reports indicate that the milk snake may be located at slightly higher elevations. Typical habitat for the milk snake includes sandstone outcroppings, riparian zones, cedar-juniper hillsides, and margins of agricultural lands (Werner et al. 2004).

Suitable habitat is not likely common or available in the Project area and the milk snake is unlikely to be present in the West Rosebud Creek drainage. Therefore re-licensing of the Project will not impact the milk snake.

Western Hognose Snake

The western hognose snake is found east of the Continental Divide along the major river systems and their tributaries in Montana. Preferred habitat types include exposed riverbanks, sandstone outcroppings, and old riverbeds. The highest elevation in Montana at which a western hognose snake has been documented is 4,060 ft near Rapelji in Stillwater County. The distribution of the western hognose snake is in the lower elevation and larger drainages downstream of West Rosebud Creek (Werner et al. 2004). Suitable habitat is not available in the Project area since the Project area is at a much higher elevation (> 6,000 ft) compared to where western hognose snakes are known to occur. In addition, the small number of ponds, marshes, lakes, and other water bodies containing suitable amphibian habitat suggests there is most likely a limited source of prey to support the western hognose snake. Therefore, the re-licensing of the Project will not impact the western hognose snake.

2.2.5 Fish

Northern Redbelly Dace

The northern redbelly dace is not present in the West Rosebud Creek drainage (<http://www.fisheries.org/AFSmontana/SSCpages/Redbelly%20dace%20hybrid.htm>). Therefore, the re-licensing of the Project will not impact the northern redbelly dace.

Sturgeon Chub

The sturgeon chub is not present in the West Rosebud Creek drainage (http://www.fisheries.org/AFSmontana/SSCpages/sturgeon_chubstatus.htm). Therefore, the re-licensing of the Project will not impact the sturgeon chub.

Yellowstone Cutthroat Trout

In Montana, Yellowstone cutthroat trout were historically found in the upper Yellowstone River and tributaries downstream to the Tongue River, as well as in a few lakes. Currently, pure populations of Yellowstone cutthroat trout are limited to some headwater streams (not including West Rosebud Creek) and Yellowstone National Park. The decline in distribution and abundance of Yellowstone cutthroat trout has been attributed to several factors including habitat alterations, water withdrawals, and introduction of nonnative species.

Currently, in Mystic Lake and upstream of Mystic Lake the fishery includes rainbow x Yellowstone cutthroat trout hybrids. Genetic samples were collected from Mystic and Silver lakes in the West Rosebud drainage in 2000 and 2001 to assess the contribution of rainbow and Yellowstone cutthroat trout genetics in the population. Fish in Mystic Lake were identified as rainbow x cutthroat hybrids with only 13% Yellowstone genes. Fish from Silver Lake were also hybrids with a similar proportion of cutthroat genes (14%) (MFWP 2005).

Below Mystic Lake Dam, the fishery in West Rosebud Creek drainage includes wild populations of brown and brook trout, mountain whitefish, and longnose suckers. Yellowstone cutthroat trout are not commonly found in the West Rosebud Creek drainage.

To date there are no conservation populations of Yellowstone cutthroat trout identified in the West Rosebud Creek drainage. There is however one conservation population located in Bad Canyon Creek, a tributary to the Stillwater River located several miles upstream of the West Rosebud Creek confluence with the Stillwater River (Available 9/2005: http://mountain-prairie.fws.gov/species/fish/yct/Microsoft%20Word%20-%20Final_version%20of%20Conservation%20Program.pdf).

Since there is no Yellowstone cutthroat trout population present in the West Rosebud Creek drainage, the re-licensing of the Project will not impact the Yellowstone cutthroat trout.

2.2.6 Plants

Sensitive plants potentially known or suspected to occur in Beartooth Ranger District along with habitat type, closest known population, potential of occurrence, and determination of effects are listed in table 2.2-2. Beartooth goldenweed, Hall’s rush, Barratt’s willow, and Shoshonea do not occur in the Project area. There is however potential for musk-root, small yellow lady’s slipper, false helliborine, hiker’s gentian, and mealy primrose to occur in the Project area. Although these five plant species were not found during surveys conducted in June 2005 (refer to results from Study No. 11), this does not mean the species are not present. However, habitat types listed for these species (Table 2.2-2) does not indicate their presence is not necessarily dependent upon the water elevations of Mystic Lake or the hydrologic regime of West Rosebud Creek. Thus, the presence of these species is likely not dependent on the hydrologic regime of the drainage, but more dependent on local springs, seeps, and wetlands hydrologically disconnected from the lake and creek. Thus far, no sensitive plant species have been identified in inventoried wetlands hydrologically connected to West Rosebud Creek drainage (Jones et al. 2001). Therefore, the re-licensing of the Project will not impact any of the listed sensitive plant species.

Table 2.2-2. List of sensitive plants in the Beartooth Ranger District (R1 1999 sensitive plant list; K. Reid, Botanist, Custer National Forest, personal comm., 2005).

Species	Elevation (ft)	Habitat	Closest known population	Life-form	Potential of Occurrence in Project Area	Determination of Effects
Musk-root (<i>Adoxa moschatellina</i>)	4,400-6,000	Vernally moist places in the mountains at the bottom of undisturbed, open rock slides that have cold air drainage.	East Rosebud Creek and Spread Creek – approx. 30 air miles.	Perennial Forb	Potential	No Impact
Small yellow lady’s slipper (<i>Cypripedium parviflorum</i>)	2,520 – 6,200	Fens, damp mossy woods, seepage areas, and moist forest-meadow ecotones in valley to lower montane.	Stillwater Co. (State)– approx. 30 air miles	Perennial Forb	Potential	No Impact
False helliborine (<i>Epipactis gigantea</i>)	2,900 – 6,200	Streambanks, fens with springs/seeps, often near thermal waters	Bluewater Fish Hatchery – approx. 70 air miles	Perennial Forb	Potential	No Impact

Species	Elevation (ft)	Habitat	Closest known population	Life-form	Potential of Occurrence in Project Area	Determination of Effects
Hiker's gentian (<i>Gentianopsis simplex</i>)	4,460 – 8,400	Fens, meadows, and seeps, usually in areas of crystalline parent material, in the montane and subalpine zones.	East Rosebud – approx. 30 air miles	Annual Forb	Potential	No Impact
Mealy primrose (<i>Primula incana</i>)		Wet meadows, springs and shores, often where alkaline; calcareous bog meadows; wet meadows & quaking bogs; NOT found in alpine or subalpine areas.	Historically known to occur in East Rosebud, but not recently documented	Perennial Forb	Potential	No Impact
Beartooth goldenweed (<i>Haplopappus carthamoides</i> var. <i>subsquarrosus</i>)	5,520 – 7,200	Grasslands and sagebrush steppe and sandy calcareous soils in the foothills and montane zones.	East Front of the Beartooth Mountains and foothills of Pryor Mountains in Sage Creek	Perennial Forb	No	No impact
Halls' rush (<i>Juncus hallii</i>)	4,000 – 8,860	Moist to dry meadows and slopes from valley to montane.	Madison Range in Madison County	Perennial grass-like	No	No Impact
Barratt's willow (<i>Salix barrattiana</i>)	6,800 – 10,500	Forms extensive thickets in alpine habitats. Grows on boggy meadows, moist open hillsides in mountains, lakeshores, streambanks, rockslides and recent alluvial deposits. Soils range from very calcareous to very acidic.	Line Creek Plateau near the Wyoming state line	Shrub	No	No Impact

Species	Elevation (ft)	Habitat	Closest known population	Life-form	Potential of Occurrence in Project Area	Determination of Effects
Shoshonea <i>(Shoshonea pulvinata)</i>	6,440 – 7,800	Open, exposed limestone outcrops, ridgetops and canyon rims, in thin rocky soils.	Pryor Mountains in Carbon County	Perennial Forb	No	No impact

2.3 Forest Service Management Indicator Species

Forest Service Management Indicator Species are listed in table 2.3-1. There are a total of six species that are all present in the Project area, however the re-licensing of the Project will have no effect to the species or its respective habitat.

Table 2.3-1. List of the Forest Service Management Indicator Species on the Custer National Forest.

Species	Type of Indicator	Present in Project Area	Determination
Northern Goshawk	Habitat Indicator	Yes	No Effect
White-tailed Deer (<i>Odocoileus virginianus</i>)	Habitat Indicator & Key Species	Yes	No Effect
Ruffed Grouse (<i>Bonasa umbellus</i>)	Habitat Indicator	Yes	No Effect
Elk (<i>Cervus elaphus</i>)	Key Species	Yes	No Effect
Mule Deer (<i>Odocoileus hemionus</i>)	Key Species	Yes	No Effect
Bighorn Sheep (<i>Ovis Canadensis</i>)	Key Species	Yes	No Effect

2.3.1 White-tailed Deer (Habitat Indicator and Key Species)

White-tailed deer typically occur in the Project area downstream from the Forest boundary, but their use of habitat upstream is increasing. Winter range, according to MFWP GIS data, is located around the Fiddler Creek drainage downstream of the Project area (MFWP 1997). Project activities and facilities do not affect forage availability or other habitat conditions. The re-licensing of the Project will have no effect on white-tailed deer or its habitat in the West Rosebud Creek drainage.

2.3.2 Mule Deer (Key Species)

Mule deer occur within the Project area. The Project area is classified as year-round range for mule deer with sections downstream of the Project described as the range where “90% of the individuals are located during five winters out of ten from the first heavy snowfall to spring green-up, or during a site-specific period of winter” (MFWP 2004). Project activities and facilities do not affect forage availability or fawning and winter habitat conditions. The re-licensing of the Project will have not effect on mule deer or its habitat in the West Rosebud Creek drainage.

2.3.3 Elk (Key Species)

Other than limited fall use above Mystic Lake, elk rarely occupy the West Rosebud Creek drainage upstream from the Forest boundary. According to GIS data from MFWP (1999), the Project area provides summer range habitat for elk, but winter range is downstream of the Line Creek substation. Project activities and facilities do not affect forage availability or calving and winter habitat conditions. The re-licensing of the Project will have no effect on elk or its habitat.

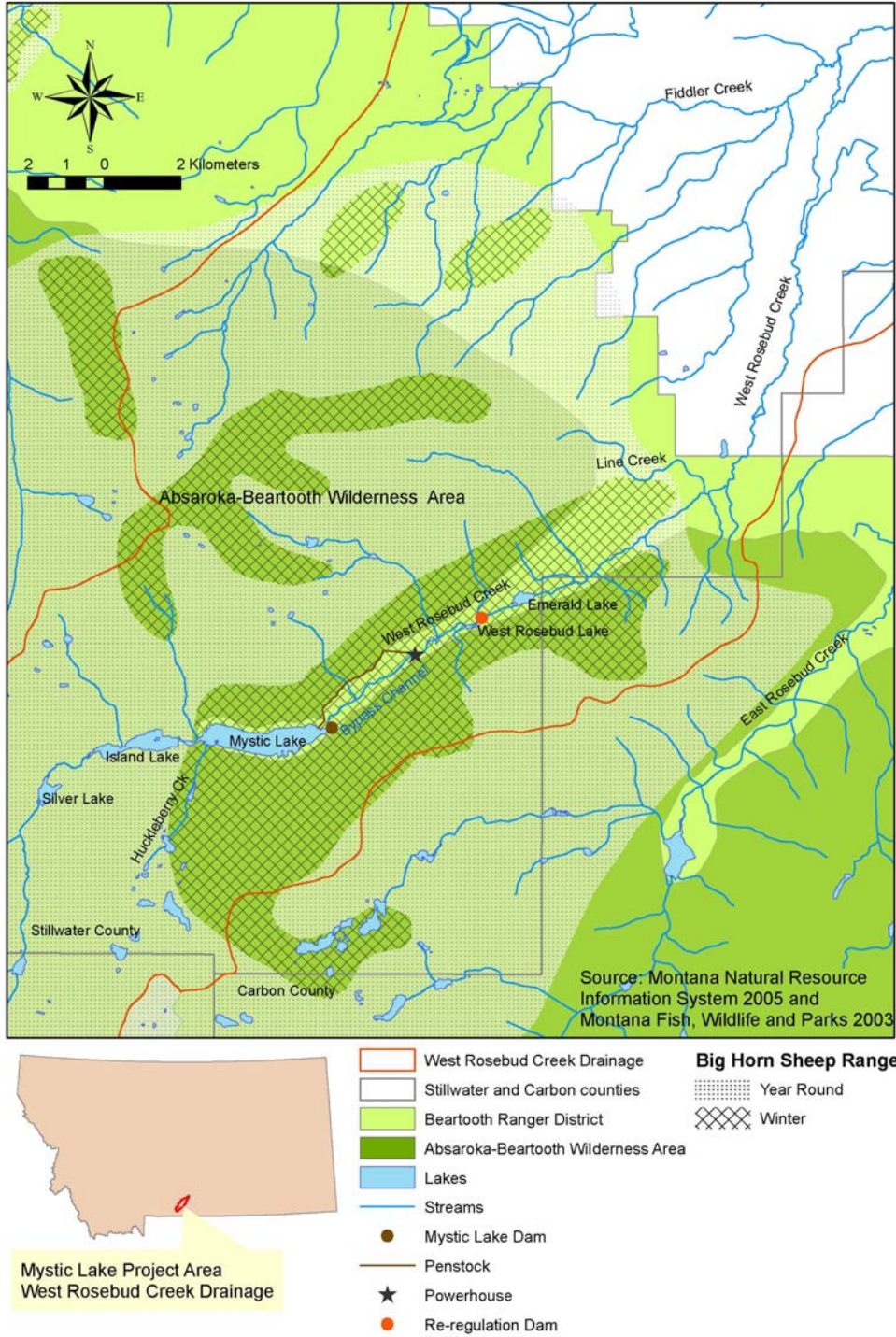


Figure 2.3-1. Year round and winter range of bighorn sheep in the Project area.

2.3.4 Bighorn Sheep (Key Species)

According to MFWP GIS data (2003), the local bighorn sheep population is estimated at 75 individuals. The winter range (November 15 – March 1) includes the Project area (Figure 2.3-1), however field observations indicate bighorn sheep typically winter on the Beartooth Plateau adjacent to the Project area and may occupy the Project area during spring and early summer (B. Pitman, Wildlife Biologist, Custer National Forest, personal comm., 2004). Project activities and facilities do not affect forage availability or lambing and winter habitat conditions. Re-licensing of the Project will have no effect on the bighorn sheep or its habitat.

2.3.5 Ruffed Grouse (Habitat Indicator)

In Montana, ruffed grouse are most common west of the Continental Divide, and restricted to the isolated mountain ranges and major drainages of central and south-central Montana (Montana Bird Distribution Committee 1996). Ruffed grouse in eastern Montana typically inhabit drier montane woodlands near aspen stands (<http://biology.dbs.umt.edu/landbird/mbcp/mtpif/mtrugr.htm>).

Ruffed grouse have been observed in Stillwater and Carbon counties (Montana Bird Distribution committee 1996). In addition, an individual ruffed grouse was heard in the Project area during a survey conducted by PPL Montana and the Forest Service in May 2004 (http://www.mysticlakeproject.com/pdfs/May%2018_19%202004%20summary.pdf). The species may occur in aspen communities and adjacent conifer stands throughout the West Rosebud Creek drainage.

Project activities and facilities do not affect forage availability or habitat conditions for ruffed grouse. Re-licensing of the Project will have no effect on ruffed grouse or to the species habitat.

2.3.6 Northern Goshawk (Habitat Indicator)

See narrative under sensitive species, section 2.2.1.

Section 3 Conclusions

Text..

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