

Norbeck Wildlife Preserve
Landscape Assessment

Black Hills National Forest



Completed by:

Continuing Education in Ecosystem Management Group
Module XII

June 12 – June 23, 2006

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I. INTRODUCTION

A group of resource specialists from various natural resource agencies and disciplines were invited through the Continuing Education in Ecosystem Management (CEEM) Program to the Black Hills National Forest to conduct a landscape level assessment of the Norbeck Wildlife Preserve on the Hell Canyon Ranger District. This landscape assessment is a review of the forest and social conditions, based on credible data; synthesis of those data; and incorporation of findings (if any) into recommendations for possible future planning and management activities. Prior to conducting this assessment, the group completed six weeks of training. This training was designed as a mid-career program to expose participants to the latest science in ecosystem management principals and philosophies. The Norbeck Wildlife Preserve Landscape Assessment provided an opportunity for the team to apply their classroom training. This report serves to document the analysis conducted by the team during the period of June 12 to June 23, 2006.

II. DEFINITION OF PLACE

The Norbeck Wildlife Preserve lies within the Black Hills National Forest. The Black Hills National Forest is located in southwestern South Dakota and northeastern Wyoming near the geographic center of North America. The Norbeck was established in 1920 for the “protection of game animals and birds and to be recognized as a breeding place therefor”. The preserve covers 34,255 acres of which 27,494 acres are managed by the Hell Canyon Ranger District of the Black Hills National Forest. Mount Rushmore National Memorial is located in the northeastern portion of the preserve and covers 1,270 acres. Custer State Park borders the Norbeck to the south, and 3,361 acres of the park are within the Norbeck boundary. Private property is also contained within the Norbeck boundary and is located in the northern and eastern portions of the preserve accounting for 2,130 acres (Figs. 1 and 2).

Table 1: Land Acreage within the Norbeck Wildlife Preserve (Fig. 3)

Ownership	Acres
Black Elk Wilderness	13,542
Norbeck Wildlife Preserve administered by the US Forest Service (does not include Wilderness acres)	13,952
Upper Pine Creek Research Natural Area (located within the Black Elk Wilderness)	1,190
Mount Rushmore National Memorial	1,270
Custer State Park	3,361
Private	2,130
Total Acreage within the Norbeck Wildlife Preserve	34,255

There are two small portions of the Norbeck Wildlife Preserve that are detached from the larger primary portion. The Stockade Portion is located just east of the town of Custer along Highway 16A at the entrance of Custer State Park. The Section 2 Portion of the Norbeck is located farther south bordering the northwest corner of Wind Cave National Park and the southwest corner of Custer State Park.

The Norbeck Wildlife Preserve lies within both Pennington and Custer Counties. Major towns surrounding the area include: Custer, Hill City and Keystone, with a few smaller communities such as: Oreville, Kennedyville, Storm Hill, Spokane, Harney and Oblivion.

The Black Elk Wilderness and Upper Pine Creek Research Natural Area are located within the portion of the Norbeck Wildlife Preserve administered by the Forest Service. The Black Elk Wilderness covers 13,542 acres and the Upper Pine Creek Research Natural Area covers 1,190 acres. The Upper Pine Creek Research Natural Area is located entirely within the Black Elk Wilderness, which is located entirely within the Norbeck Wildlife Preserve.

A. Norbeck Wildlife Preserve

The Norbeck Organic Act of June 5, 1920 authorized the establishment of the Custer State Park Game Sanctuary “for the protection of game animals and birds and to be recognized as a breeding place therefor”. The Norbeck Wildlife Preserve was established by proclamation, October 9, 1920 by then President Woodrow Wilson. The size of the Norbeck has changed over time, but currently 27,494 acres are administered by the Forest Service. Forest Plan direction states that this area is to be managed to provide habitat for game animals and birds. Some human activities are allowed, but these activities must be consistent with wildlife needs.

B. Custer State Park

In 1913, the South Dakota Legislature created a state game reserve in the southern Black Hills. In 1919, the reserve became Custer State Park. The park covers 73,000 acres, of which 3,361 acres are within the boundary of the Norbeck Wildlife Preserve. The remainder of the state park lies to the south of Norbeck. A visit to Custer State Park offers views of wildlife and of Mount Rushmore, camping and hiking opportunities and educational experiences.

C. Mount Rushmore National Memorial

The Mount Rushmore National Memorial was formally dedicated on August 10, 1927 and is located in the northeastern portion of the Norbeck Wildlife Preserve. The Memorial encompasses 1,270 acres with the primary attraction being the faces of four presidents carved into the southeast face of a mountain. The faces of George Washington, Thomas Jefferson, Theodore Roosevelt, and Abraham Lincoln form the Memorial to American history. The idea was conceived to attract more people to the Black Hills of South Dakota with carvings of American heroes. Congress passed legislation authorizing the mountain carving in Harney National Forest Preserve (now Black Hills National Forest). In 1933, the Memorial came under jurisdiction of the National Park Service.

Figure 1: Norbeck Wildlife Preserve – Vicinity Map (1 of 2)

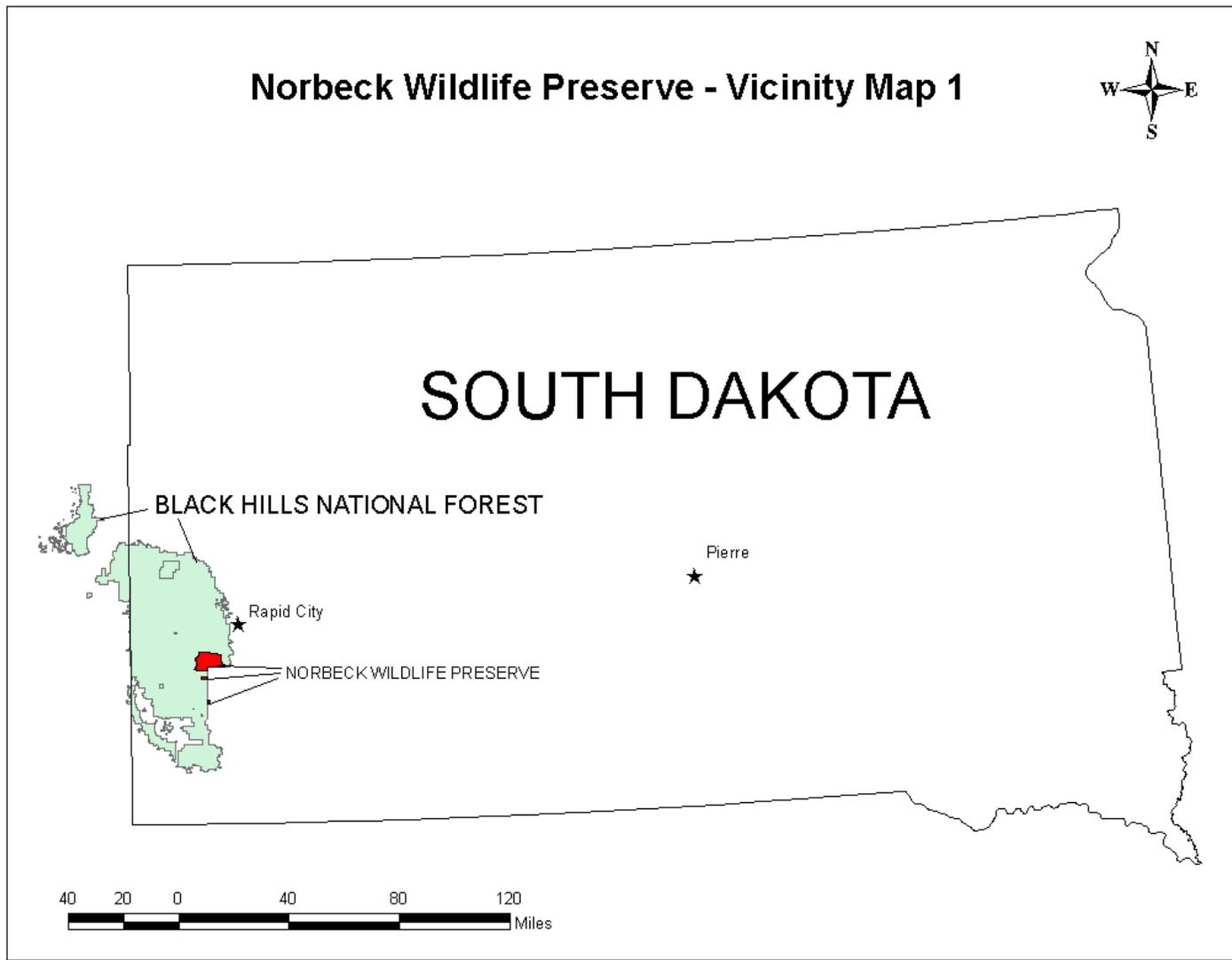


Figure 2: Norbeck Wildlife Preserve – Vicinity Map (2 of 2)

Norbeck Wildlife Preserve - Vicinity Map 2

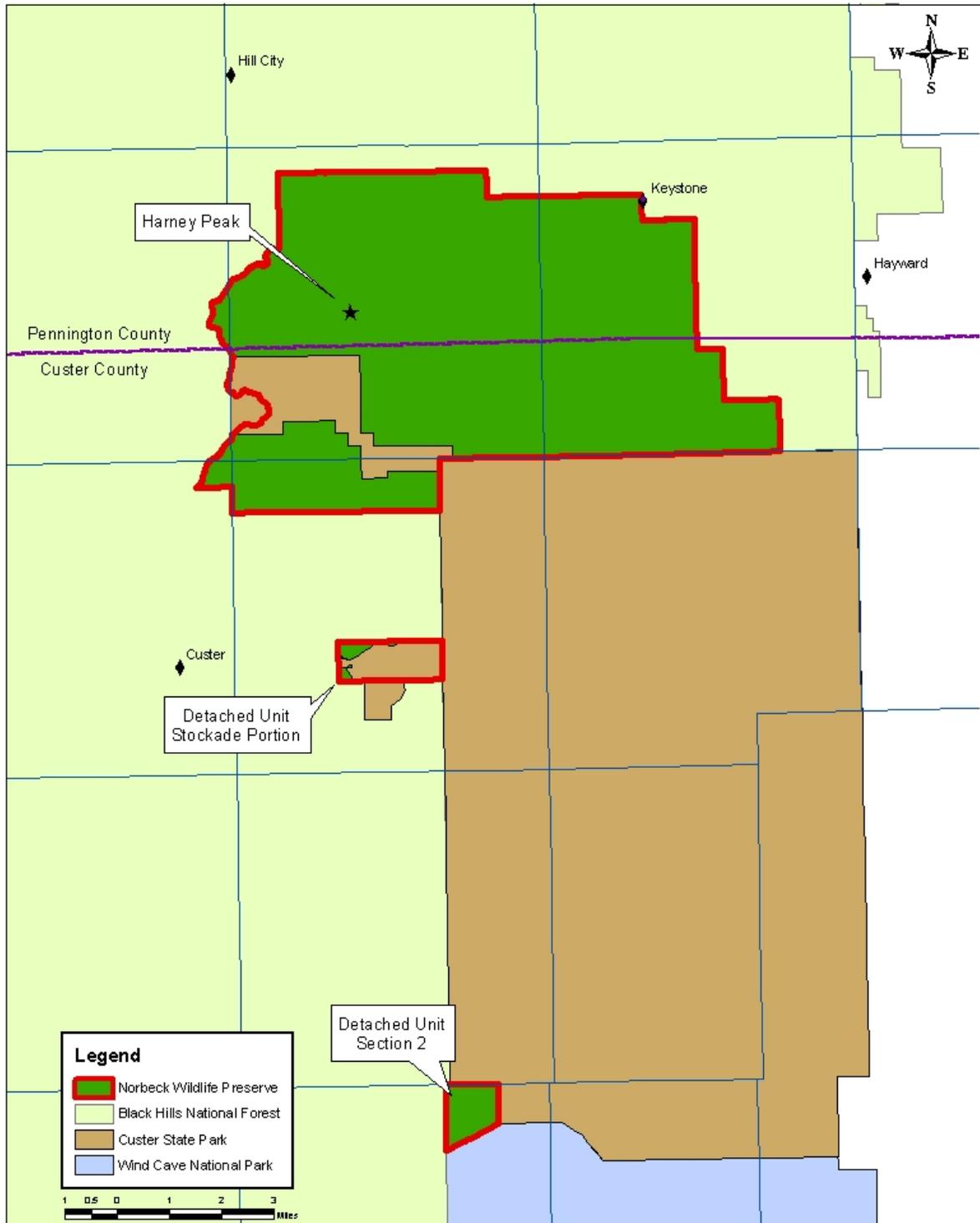


Figure 3: Ownership Within the Norbeck Wildlife Preserve

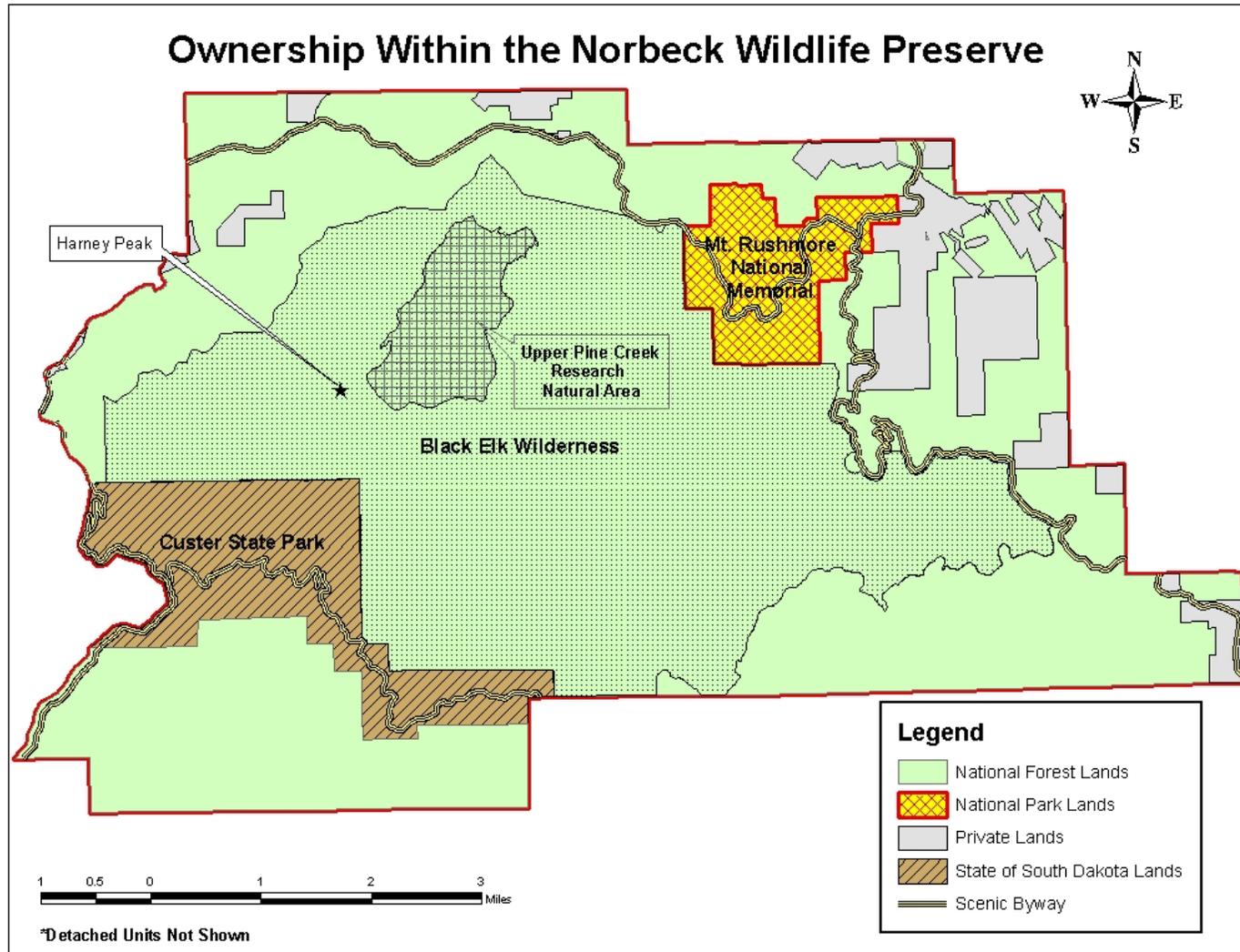
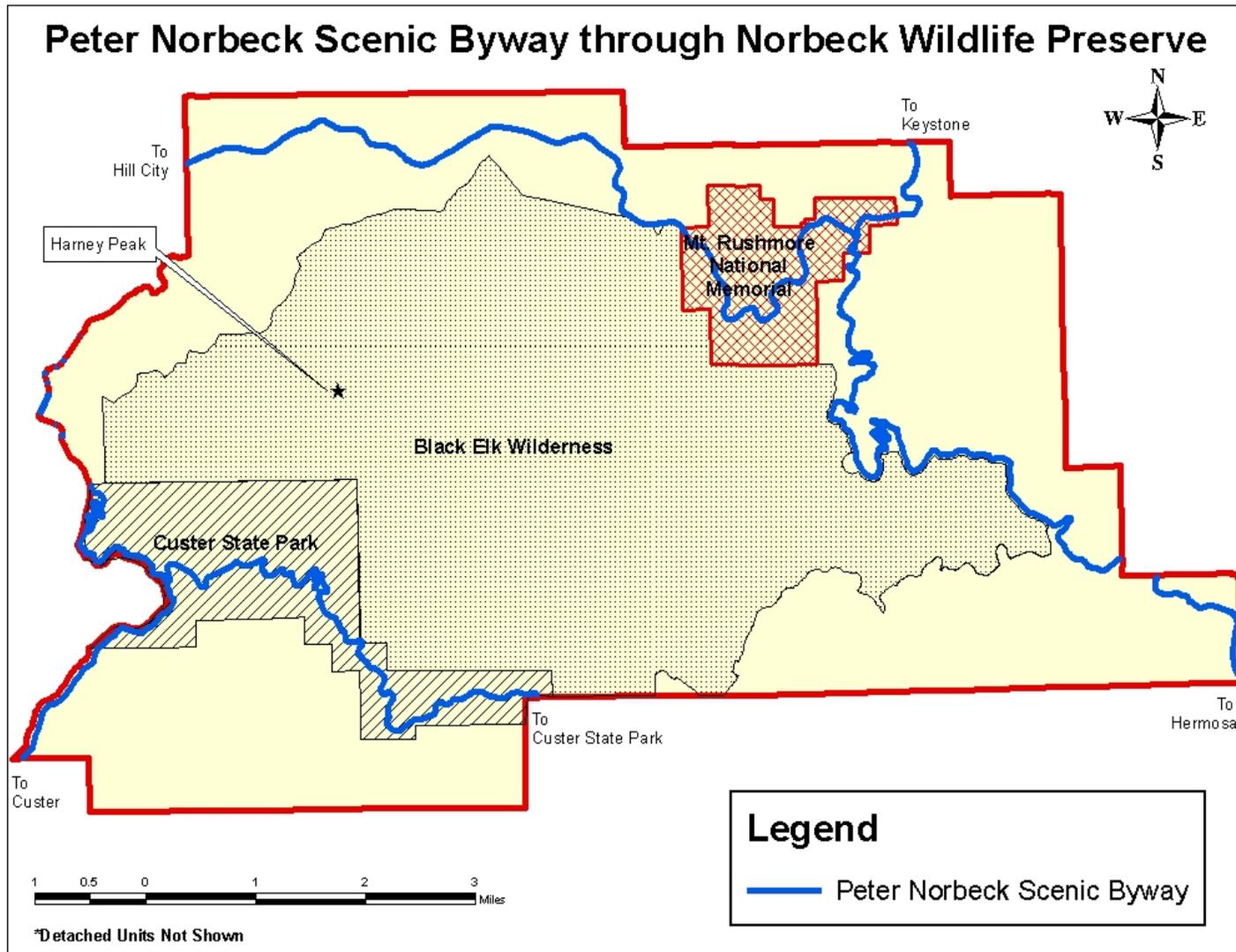


Figure 4: Peter Norbeck Scenic Byway



D. Upper Pine Creek Research Natural Area

The Upper Pine Creek Research Natural Area consists of 1,190 acres within the Black Elk Wilderness portion of the Norbeck Wildlife Preserve. The Upper Pine Creek Research Natural Area was designated by the Secretary of Agriculture on July 3, 1932, prior to the designation of the Black Elk Wilderness. The location was selected because it was “the only sizable area in the Black Hills that is relatively free of human modification which represents the forest and vegetative types of the Black Hills. It also serves to identify the ‘base line ecology’ of the area” (Project File, Upper Pine Creek Research Natural Area, 1973). The purpose of its designation was to preserve an area of virgin timber “so that past and future generations can see it as it was when the Indians used the Black Hills for their hunting grounds. Such an area can also be used for comparisons with research plots and cutover lands, and will be increasingly valuable as time goes on” (Black Elk Wilderness EA, 1990). This area is a member of a national network of ecological areas designated in perpetuity for non-manipulative research, education, and biodiversity conservation (Forest Plan Phase II FEIS, 2005).

E. Black Elk Wilderness

The Black Elk Wilderness was designated by Congress on December 22, 1980 and is located in the center of the Norbeck Wildlife Preserve. This area was named for Black Elk, an Oglala Sioux holy man. The Black Elk Wilderness comprises 13,542 acres within the Norbeck Wildlife Preserve. Harney Peak is located within the wilderness and at 7,242 feet above sea level is the highest point in the United States east of the Continental Divide. From a historic lookout tower on Harney Peak, one has a panoramic view of four states (South Dakota, Nebraska, Wyoming, and Montana) as well as the granite formations and cliffs that make up the Black Elk Wilderness. Forest Plan direction states that this area is to be managed to protect and perpetuate natural processes while providing opportunities for solitude and self-reliance.

F. Peter Norbeck National Scenic Byway

Established in 2001, the Peter Norbeck National Scenic Byway, this 70-mile corridor was created to emphasize the scenic quality of the heart of the Black Hills granitic core. Portions of the Byway were designed by Peter Norbeck himself after searching the Harney Range for routes that would provide “the grandest view” and allow visitors to drive slowly and experience the area from their motor vehicles. The Byway is one of the major draws to the area and with its steep, winding route and pig-tail bridges, it leaves a lasting impression (Fig 4).

G. Private Property

There are 2,130 acres of private property located within the boundaries of the Norbeck Wildlife Preserve. These parcels are located along the northern and eastern portions of the Norbeck. The mixture of forest and private property creates a challenge for forest managers. There is Forest Plan direction to attempt to acquire private property and possibly convey land

out of Federal ownership. The Forest is interested in obtaining isolated tracts of private land which contain perennial streams and/or contribute to wildlife protection. Those areas of particular interest are private lands located in Sections 7, 8, 17 and 18, T2S, R5E. Additionally, there is a desire to consolidate ownership of lands generally east of the Iron Mountain Highway, specifically in Sections 8, 9, 16, 17, 20 and 21, T2S, R6E. National Forest System lands within the Norbeck can also be conveyed out of Federal ownership if such a conveyance meets specific criteria outlined in the Forest Plan.

There are currently four special use permit easement requests within the Norbeck that are being evaluated by the Black Hills National Forest. Three of these requests are to access private property. One of the requests includes a property that could be accessed without crossing into the Norbeck. The final request is to transfer the special use permit to a new owner.

II. CURRENT AND HISTORICAL CONDITION

A. Physical Setting

Climate

Within the Black Hills, precipitation is greater, variations in air temperature more moderate, and wind velocities lower than on the surrounding Great Plains (Froiland 1990). Mean annual precipitation averages 20-24 inches, with 65-75 percent of the annual moisture falling as rain from April through September (Froiland 1990). Storms are typically frontal prior to mid-June, and convective the remainder of the summer. Intense thunderstorms are common. Monthly precipitation increases through mid-July, then drops off sharply, while mean daily air temperatures continue to rise into mid-August. Late July through early September is referred to as the dry season. Snow falls most commonly from October through April (Marriott et al 1999).

Average annual air temperature decreases with increased elevation, ranging from 47° F on the outer Hogback Rim to 36° F on the Limestone Plateau. As with precipitation, air temperature exhibits a north-south pattern (Froiland 1990). Annual ranges in air temperature are large with highs above 100° F common at low elevations in July and August, and lows below -15° F occurring periodically throughout the area from December through February (Martner 1986, Marriott et al 1999).

Strong winds, including tornadoes, occasionally extend into the Black Hills from the Great Plains, but winds generally are moderated by the uplift. The prevailing winds are from the west. Average wind velocity is highest, 13 miles per hour, in spring. Average relative humidity in midafternoon is about 50 percent. Humidity is higher at night, and the average at dawn is about 70 percent (Ensz, 1990).

Air Quality

Air quality in the Black Hills is considered to be excellent. Pollution concentrations are believed to be lower than both State and Federal standards. However, the meteorology and topography of the Black Hills cause infrequent inversions, which can trap smoke and dust.

There are two federally designated Class I areas in the vicinity of the Norbeck Wildlife Preserve. Class I areas have stringent limitations on pollutants and allow only minimal deviation from baseline pollution concentrations. The goal is “the prevention of any future, and remedy any existing, impairment of visibility in which impairment results from any manmade air pollution.” The Class I areas of concern include Wind Cave National Park (20 miles south of the main portion of the Norbeck) and Badlands National Park (60 miles east of Norbeck).

Norbeck, along with the rest of the Black Hills, is designated as a Class II area. Class II allows higher concentrations of pollutants to be added to the air than a Class I designation.

However, in no case may the National Ambient Air Quality Standards (set by the Clean Air Act, 1963) be exceeded.

Although maintenance of high air quality and visibility is important to both the public and land managers, it holds a special significance in the presence of such unique sights as Mount Rushmore, the Peter Norbeck Scenic Byway, Harney Peak, and other picturesque locations in and around the Norbeck Wildlife Preserve.

Geomorphology

The Black Hills are an isolated mountain range in the Great Plains of western South Dakota and northeastern Wyoming. Trending roughly northwest to southeast, the uplift is approximately 200 km long and 100 km wide, with an area of more than 2 million acres.

The Black Hills uplift is a product of the Laramide orogeny, a series of mountain-building events that effectively produced most of the ranges in the Rocky Mountains. Uplift began near the end of the Cretaceous period, 65 million years ago, ending nearly 30 million years later. The result was an anticline, which subsequent erosion shaped into a rounded mountain range, removing the sedimentary and metamorphic rocks overlying it and exposing the topography seen today.

The Black Hills is composed of five distinct geomorphic regions (Darton and Paige 1925, Froiland 1990). From the center of the Black Hills fanning out, these include the Central Core, the Limestone Plateau, the Minnekahta Foothills and Plains, the Red Valley, and the Hogback Rim. The Norbeck Wildlife Preserve falls within the Central Core area.

The Central Core area consists of the oldest exposed rock – ancient Precambrian granitic and metamorphic rocks more than 1.6 billion years in age. Elevations are the highest the Black Hills has to offer, with Harney Peak (7,242 feet) as the high point of the uplift. Mount Rushmore and the Black Hills Needles are other famous outcrops of the Central Core (Marriott et al. 1999).

Topography

Elevations range from 4,360 feet to 7,242 feet (Harney Peak) in the larger portion of the Norbeck. The average elevations for the detached units around Stockade Lake and the southernmost portion (Section 2) are 5,200 feet and 4,750 feet respectively. The topography of the Norbeck Wildlife Preserve Landscape Assessment Area falls into three landtype associations: Domelike Hills, Crystalline Hills and Ridgeland, and Gently Rolling Uplands (Forest Plan, 1997 Revision).

Domelike Hills makes up 59 percent of the Norbeck, and is the primary landtype in the Black Elk Wilderness. This landtype has narrow ridges, steep to very steep sideslopes, narrow valley bottoms and outcrops of granite. Crystalline Hills and Ridgeland comprise 39 percent of the assessment area, primarily around the outer edges of the Norbeck. This landtype association has narrow ridges, moderately steep to steep sideslopes, narrow valley

bottoms and rock outcrops. Gently Rolling Uplands represent 2 percent of the assessment area, primarily constituting the two detached areas of the Norbeck around Stockade Lake and Section 2. This landtype association has broad ridgetops, gently to moderately sloping sideslopes, broad valley bottoms and rock outcrops (Fig. 5).

Soils

The soils in the Norbeck area are characterized as shallow, sandy loams. A large portion of the area is unvegetated rock outcrops. The three major soil types are Buska, Mocmont and Cordeston.

Buska soils occur on 10-40 percent slopes on mountain sideslopes and ridges. The Buska series consists of deep, well drained soils formed under timber in loamy material weathered from micaceous schist. *Mocmont* soils occur on 10-40 percent slopes on forested mountains. The Mocmont series consists of deep, well drained soils formed in colluvium and material weathered from granite bedrock. They consist of a gravelly loam. *Cordeston* soils occur on 0-10 percent slope along the larger, grassy drainageways such as mountain meadows. The Cordeston series are deep, dark colored soils formed in loamy alluvium weathered from sedimentary and metamorphic rock (Fig. 6).

Soil Erosion

The objective of soil management is to prevent impairment of long-term soil productivity. Loss of soil productivity would be irreversible and irretrievable. Soil productivity can be maintained by keeping soil erosion within tolerance limits. Soil loss tolerance limit is the maximum rate of erosion that may occur and still maintain long-term productivity. The current erosion rate in Norbeck and the surrounding areas is an estimated 0.27 tons/acre/year. This is well below the average tolerance limit of 2 tons/acre/year for Buska, 3 tons/acre/year for Mocmont, and 5 tons/acre/year for Cordeston.

Commercial timber harvest and fire in addition to fire suppression on steeper slopes cause soil erosion to temporarily exceed tolerance limits in the area of surface disturbance. However, use of techniques known as Best Management Practices should result in a restoration of erosion levels within the time allotted by the Forest Plan.

The granite, slate and schist bedrock in the Norbeck is quite stable. Mass movement (slumps, landslides, etc) is not a major problem.

Minerals

The Norbeck is a highly mineralized, mountainous area. The most important minerals in the Norbeck are associated with granite outcrops called pegmatite dikes. A partial list of minerals found in either elemental or ore form in the geological formations within the Norbeck include the following: arsenic, beryllium, feldspar, gold, lead, lithium, mica, silver, tantalum, tin and tungsten.

Figure 5: Topography of the Norbeck Wildlife Preserve

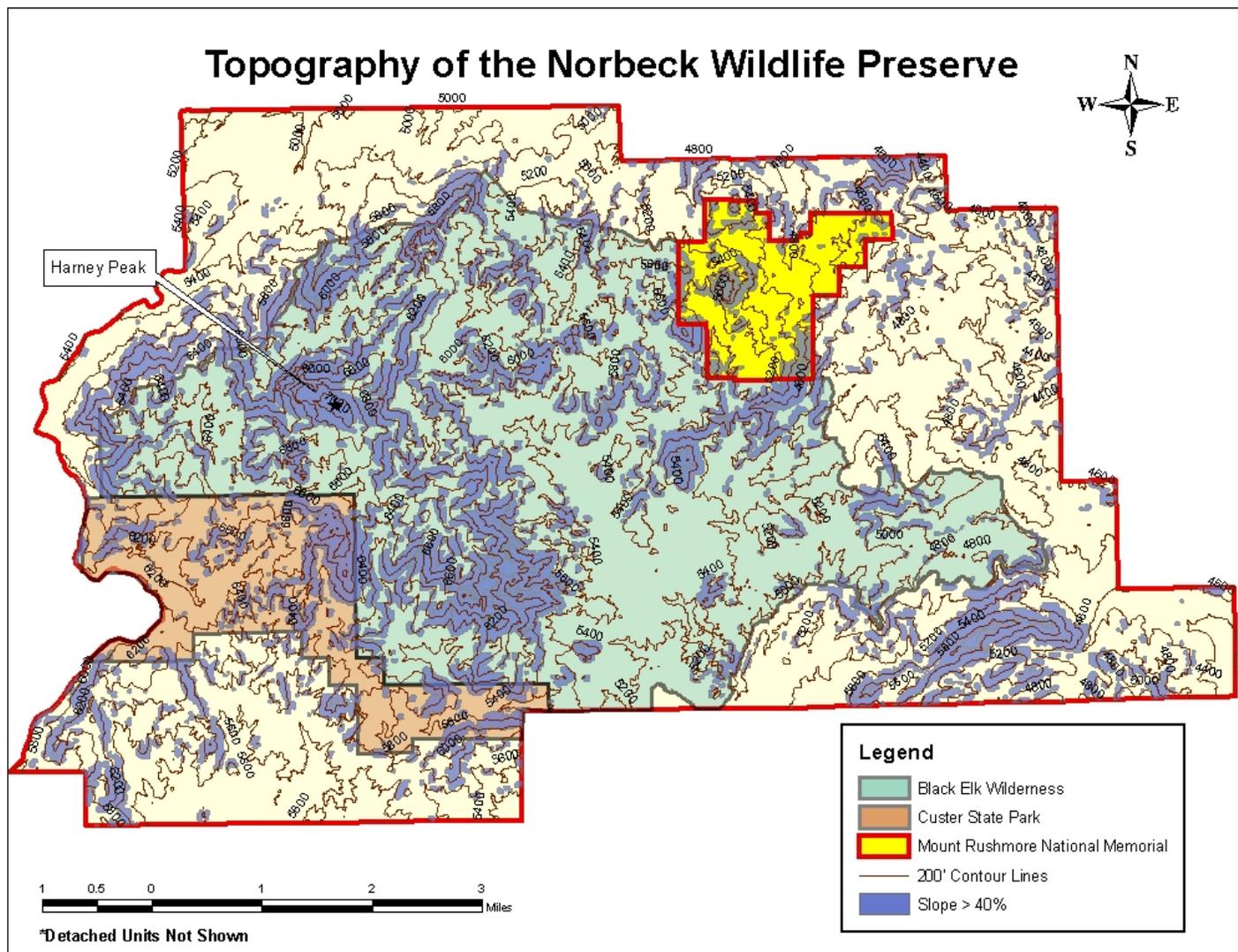
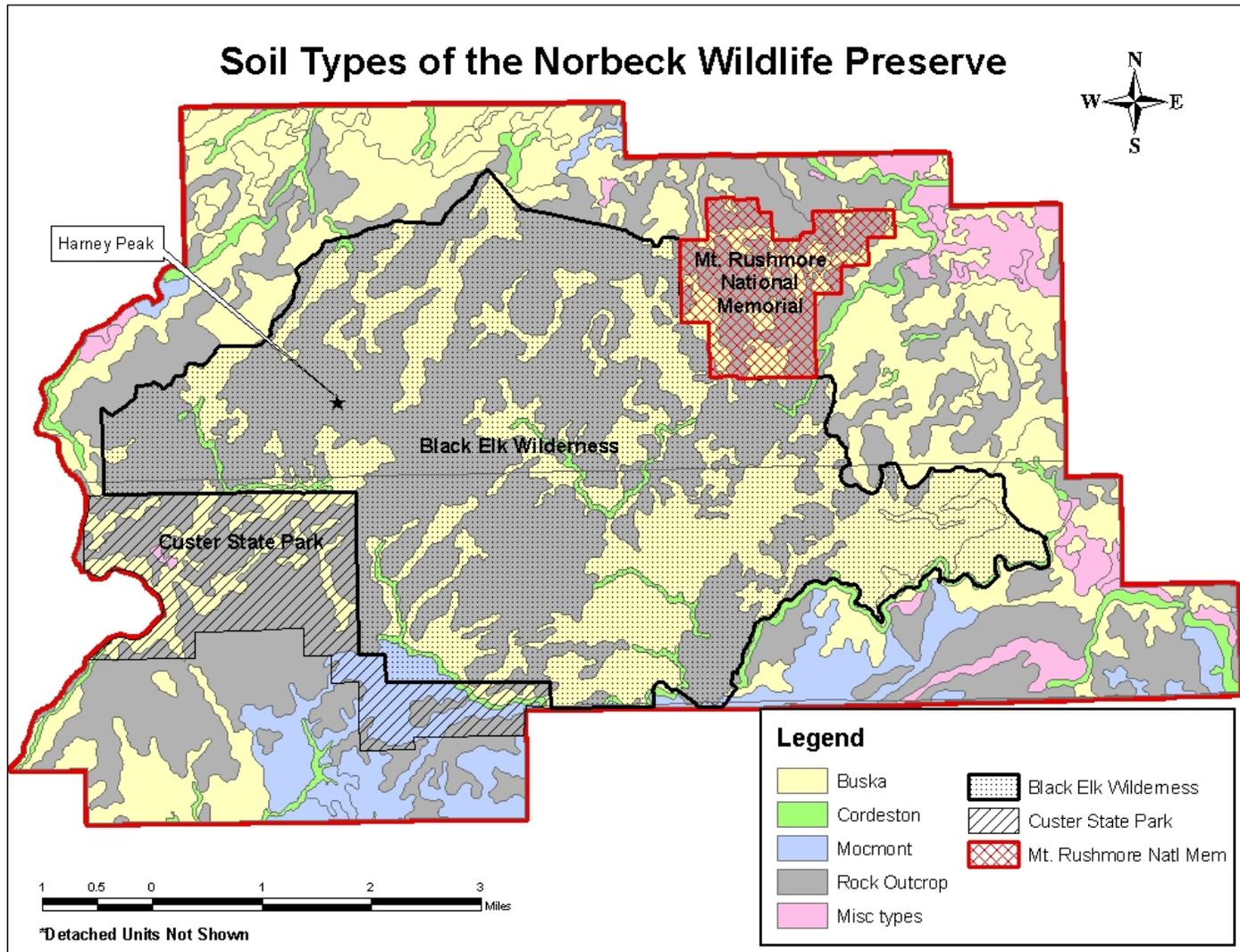


Figure 6: Soil Type of the Norbeck Wildlife Preserve



The mineral composition in the Norbeck area resulted in the placement of Mount Rushmore in its current location. The granite outcrops allowed for the skilled carving of the famous faces, drawing millions of visitors to the Norbeck area annually.

Mineral extraction through mining has occurred throughout the Norbeck area. As of 1991, 85 percent of the Norbeck is prohibited from mineral extraction. Currently, there are 168 abandoned mining claims, one active mine (slate extraction) and two legitimate claims outside the prohibited area.

Only a portion of the area not prohibited from mineral extraction is open to locatable mineral development. There is no known or likely potential for the discovery of leasable minerals such as oil and gas, or salable minerals such as sand and gravel (US Geological Survey, 1986).

Watersheds

The Norbeck Wildlife Preserve contains portions of three major watersheds (Fig. 7). They are: Spring Creek watershed (95), Battle Creek watershed (96), and French Creek watershed (97). The detached tract surrounding Stockade Lake is also within the French Creek watershed. All three watersheds extend to the Cheyenne River. The detached tract in Section 2 is within the Beaver Creek watershed (9) (Norbeck Wildlife Preserve FEIS, 1989).

The following are identified as protected streams (Forest Plan Phase II FEIS, 2005):

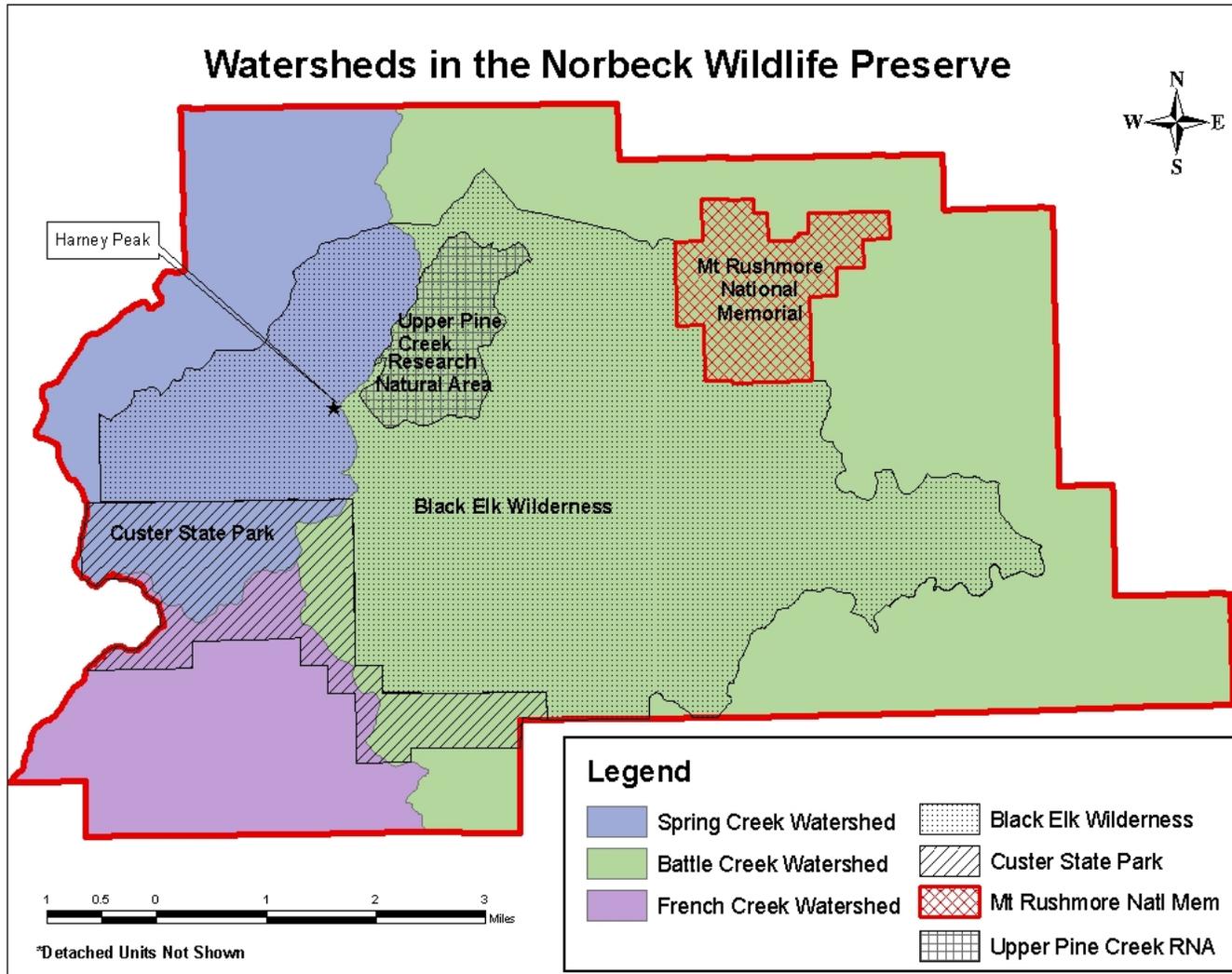
Pine Creek	Grizzly Bear Creek
Iron Creek	Spokane Creek
Sunday Creek	Toll Gate Creek
Battle Creek	Lost Cabin Creek
Palmer Creek	
The lower portions of Willow and Nelson Creeks	

Water Quality

The quality of the water in the Norbeck area is generally characterized as being good to excellent, falling within the State standards assigned to the streams. Of the streams within the Norbeck, only Iron Creek has water quality analyzed by the Forest Service on a regular basis. During 1987-1998, a study was conducted by the Forest Hydrologist to try and determine the effects, if any, of the Camp Remington summer home group and associated access road on the water quality of Iron Creek. Homes and roads had no significant impact on the water quality (Norbeck Wildlife Preserve FEIS, 1989).

The high water quality is due in a large part to a cooler climate and higher rainfall than the surrounding plains as a result of greater elevation and forest cover (Phase II FEIS). One concern for continued water quality is the lack of storm water discharge practices for paved highways within the Norbeck.

Figure 7: Watersheds in the Norbeck Wildlife Preserve



Stream Flow

Flows range from 0 to an estimated 15 cfs (cubic feet per second), depending on the size of the watershed, the amount of precipitation, and the time of year (these estimates do not include flood event flows). Most of the streams are intermittent, flowing only 50-90 percent of the year. Some reaches of some streams may flow perennially (90-100 percent of the year), or at least contain perennial pools that provide survival habitat for aquatic species. Of all the area streams, Iron Creek probably has the most reliable streamflows, but it too has reaches that dry up, particularly in dry years (Fig. 8), (Norbeck Wildlife Preserve DEIS, 1989).

The amount of water available to enter a stream depends partly on the type and amount of vegetation growing within the watershed, the number and quality of riparian areas, and the presence or absence of beaver dams among other factors.

Beaver activity can have a positive effect on the water quantity and ground water recharge. In the Grizzly Creek drainage there is a long established series of beaver dams. A big pool of water like this holds silt, can raise the water table, catch run-off, and provide habitat for wildlife and birds (Raverton, 1994). It is unknown how many streams in the Norbeck have beaver activity at the present time.

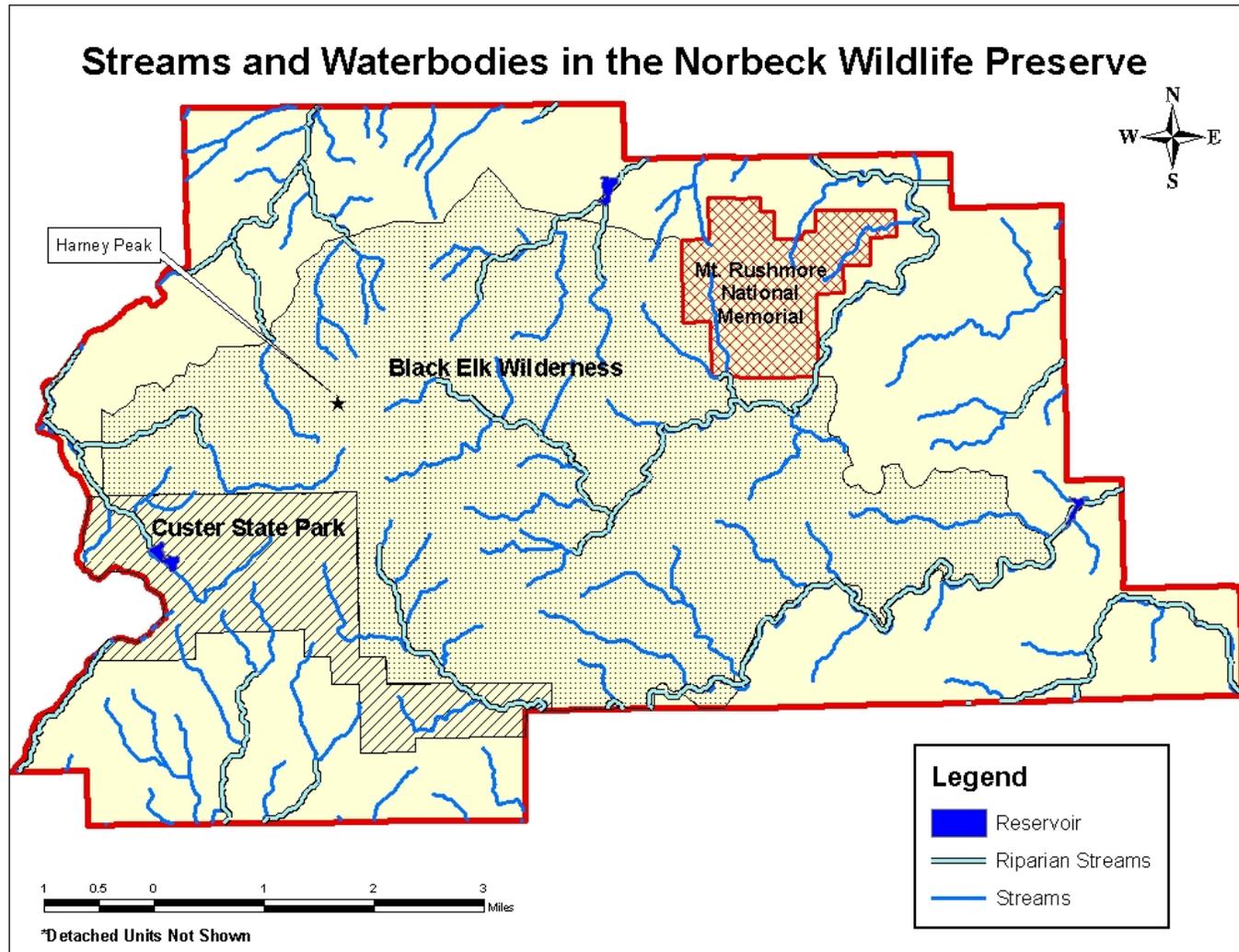
Surface water and groundwater are intimately connected in the Black Hills, so that water disappearing down a sinkhole in one watershed may reappear in a spring located in another watershed. Water yield from the Norbeck is an important issue for local communities that rely on ground water for some of their water needs.

Reference Conditions

During the time of the Custer and Dodge Expeditions of 1874 and 1875, streamflows were noted and some were quantified. Without corresponding information about precipitation and other factors, this information cannot be definitively interpreted, but it generally appears that streamflows were more often perennial, riparian growth was more lush and more extensive, and wet meadows were more abundant in low-gradient valley bottoms. At the time of these expeditions, much of the Black Hills was open, and "park-like," but there were also large expanses of small-diameter trees containing occasional, old large trees (Parrish, et al 1996).

A substantial amount of timber harvest took place between 1876 and 1898. This activity would have had an effect on water yield, possibly pushing streamflows far above those observed by Custer and Dodge. Other events during this time, including mining, introduction of livestock, and the trapping of beaver, may also have influenced water yield and streamflow, damaging the existing riparian and channel conditions. These factors would likely increase the flashiness of watershed response to storm events, increase peak flows, and possibly decrease or even eliminate the perennial flow of some channels. There has likely been ongoing hydrologic recovery occurring since these

Figure 8: Streams and Waterbodies in the Norbeck Wildlife Preserve



excesses of the late 1800s. As the Forest recovered from the substantial amount of timber harvest, and the number of cattle grazed was decreased, some riparian areas would have begun to recover, slowing the flashiness of storm response, and dampening peak flows (Forest Plan FEIS, 1996).

Floodplains and Wetlands

Floods are a natural occurrence. Forest geology, topography and climatic conditions play an important role in flood frequency and severity. Forest management activities have only a minor effect on floods in the Black Hills.

Zone A floodplains are those which would be inundated by a 100-year flood event. Zone A floodplains within the Norbeck are: Iron Creek, Grizzly Bear Creek, Battle Creek, and Palmer Creek. Lakota Lake and Sylvan Lake also have Zone A floodplains associated with them. All remaining watersheds and streams in the Norbeck area are within Zone C (minimal flooding hazard).

No wetlands have been identified in the Norbeck, except those associated with riparian areas. All the major streams have associated riparian/wetland zones (Norbeck Wildlife Preserve DEIS, 1989).

Fire Activity

Wildfire can have a profound influence on watersheds, streams and associated aquatic organisms. In the short-term, fires and post fire flooding and debris flows may have ecologically catastrophic effects. Driscoll et al. (2004) reported the hydrologic effects of the 1988 Galena Fire in the Black Hills. Moderately burned areas did not experience a substantial increase in the rate of surface erosion; however, severely burned areas underwent surface erosion nearly twice that of the unburned areas (Forest Plan Phase II FEIS, 2005). Only a small portion of the Norbeck was burned in the 1988 Galena Fire. It has been observed that water yield can increase post fire, but is substantially returned to pre fire conditions within 2-3 years due to re-establishment of forbs and grasses in the watershed (personal communication with Les Goyner).

Cultural Resources

Cultural resources represent evidence of past human activities. Cultural resources can be prehistoric (rock shelters, tool-making areas, pictographs) or historic (mine structures, homesteads). Currently, 40% of the area has been surveyed by Level III (100%) cultural resource inventories.

Table 2: Number of Cultural Resource Sites Within the Norbeck Wildlife Preserve

Category	Number of Sites Eligible *	Number of Sites Not Eligible	Unevaluated
Prehistoric	1	2	1
Historic	4	81	12
Multi-Component (contains both)	1	1	0

* Eligible to the National Register of Historic Places

Prehistoric

Remains of this type include artifact scatter, primarily the remains of tools, and evidence of shelters. Little prehistoric evidence exists in the Norbeck. This is attributed first to the terrain, as it was used more as a hunting ground and a destination for spiritual journeys, than a settlement area. In addition, areas that would have been more suitable for settlement are located near riverbeds, in the highly erosive Cordeston soil, and have likely been washed away.

Historic

An abundance of historic remains can be found throughout the Norbeck. These include evidence of mining, logging, and Civilian Conservation Camp (CCC) work. Many of the recreational residences present within the Norbeck Wildlife Preserve are related to these activities. Recreational residences on the Norbeck comprise most of the sites eligible for listing in the National Register of Historic Places.

Facilities

Recreational Residences

Several recreational residences are also located with the Norbeck. These structures were built on National Forest System lands during the 1920s to house personnel who were working in the local mines. The size of these areas has not increased over time and will not increase in the future. These areas are managed under a special use permit and are identified as: Lafferty, Iron Creek, Camp Remington, Grizzly Creek and Sunday Gulch

Recreation Facilities

Recreational activities are allowed within the Norbeck Wildlife Preserve as long as they are not detrimental to wildlife. Numerous facilities exist within the Norbeck that provide for a variety of recreational opportunities. The majority of the facilities are open and available for use on a year-round basis. The following facilities are closed during the off season months: Horsethief Lake Campground, Grizzly Campground, Iron Mountain Picnic Area, Norbeck Overlook, Iron Creek Horse Camp and Breezy Point Overlook and Picnic Area.

Campgrounds

Four campgrounds exist within the Norbeck Wildlife Preserve, with two of those having horse facilities. Willow Creek Horse Camp is located in the northwest portion of the Norbeck and is open all year. Iron Creek Horse Camp is located in the southern portion of Norbeck near the boundary with Custer State Park. Horsethief Lake and Grizzly Creek Campgrounds are both located in the northeastern portion of the Norbeck and are near Mount Rushmore National Memorial. These facilities are for family camping opportunities and both are closed during the winter months. These campgrounds are managed by a concessionaire who collects the fees and manages the campground. Campfires are prohibited except in a developed campground.

Dispersed camping in undesignated areas does occur within the Norbeck Wildlife Preserve; however, officials are attempting to alter that trend. Two areas are currently being utilized for dispersed camping and access is via user created roads. Since off-road motorized vehicle use is not allowed within those portions of the Norbeck, and users are starting campfires and generating a loss of vegetation, gates have been placed in these areas to restrict access. Dispersed camping is allowed within the Norbeck as long as access is via foot travel and it is located 300 feet or more from a highway or major development.

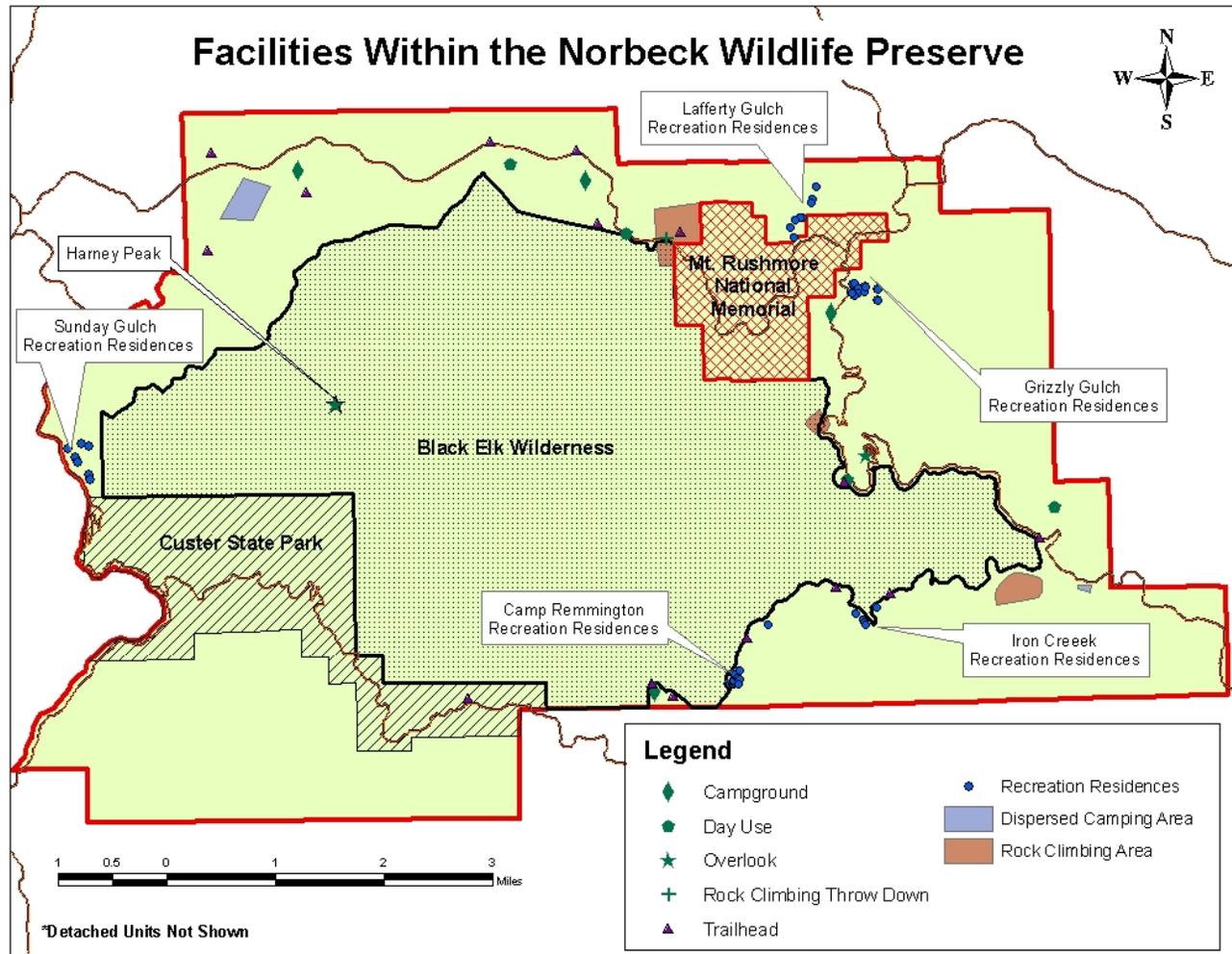
Picnic Areas/Overlooks

Day-use and picnic areas are also found throughout the Norbeck Wildlife Preserve. Horsethief Lake Day Use Area and Lakota Lake Picnic Area provide fishing and picnic opportunities as well as a lakeside atmosphere that is available year round. Grizzly Picnic Area and Iron Mountain Picnic Area are located in the eastern portion of Norbeck and are only available from mid-May through mid-September. Breezy Point Overlook and Picnic Area, along with Norbeck Overlook, provide impressive views of the Black Elk Wilderness and the Norbeck; both are usually closed during the winter. Last winter, Mount Rushmore National Memorial requested that the Forest Service keep the Breezy Point Overlook and Picnic Area open during the winter. The Forest Service agreed, provided that the Park Service took care of law enforcement and garbage disposal during the off season. It is unclear if this agreement will be made again in the future.

Rock Climbing Areas

Three rock climbing areas are found within the eastern portion of the Norbeck Wildlife Preserve. These activities are consistent with the Forest Plan. Wrinkle Rock Primitive Campground is located along State Highway 244 near the eastern entrance to Mount Rushmore. There is no charge to use this facility and there are no developed sites at this location. The intended use is for rock climbers to “throw down” their equipment and remain for the night before leaving on their climbing excursion the next morning (Fig. 9).

Figure 9: Facilities Within the Norbeck Wildlife Preserve



Transportation

Roads

A system of roads allows travel from one place to another and provides access for Forest management and recreation. Development of a road system in the Black Hills, including the Norbeck, began with the arrival of the Custer Expedition in 1874. Tracks through the Forest, used continually over the years, have become today's road and highways. Most roads existing today were constructed or upgraded in the 1950s and 1960s. They were used for timber harvest, and some were opened for motorized recreation until 1979, when most local roads (usually single-lane, primitive roads) were closed to motorized recreation. Since then, the local road system has been used primarily by hikers and horseback riders (Fig. 10), (Norbeck Wildlife Preserve DEIS, 1989).

The 1989 Norbeck EIS stated there was a total of 106.2 miles of road within the Norbeck. The 2005 Forest Wide Roads Analysis Report, states that in the Norbeck Wildlife Preserve there are 49 miles of road open for public use.

Table 3: Road Density (in miles road/sq mile land)

	Forest Plan Management Area	1989*	2005**
Norbeck (including detached units and Scenic Byway)	5.4A & 4.2B = 21.67 sq miles	4.9	2.3

*1989 Norbeck Wildlife Preserve DEIS pg III-28, existing conditions prior to the Record of Decision prohibiting most motorized recreation.

** 2005 Forest Wide Roads Analysis Report, Appendix B

It should be noted that the seeming decrease in number of miles of roads and road density is most likely due to gated closure of roads, restricting general public use. Many of those will remain as access routes for forest management needs. This gating effectively decreases much of the previous use on "local roads" (personal communication Laura Burns, 2006).

Forest officers continue to find evidence of some illegal off road motorized use in closed areas.

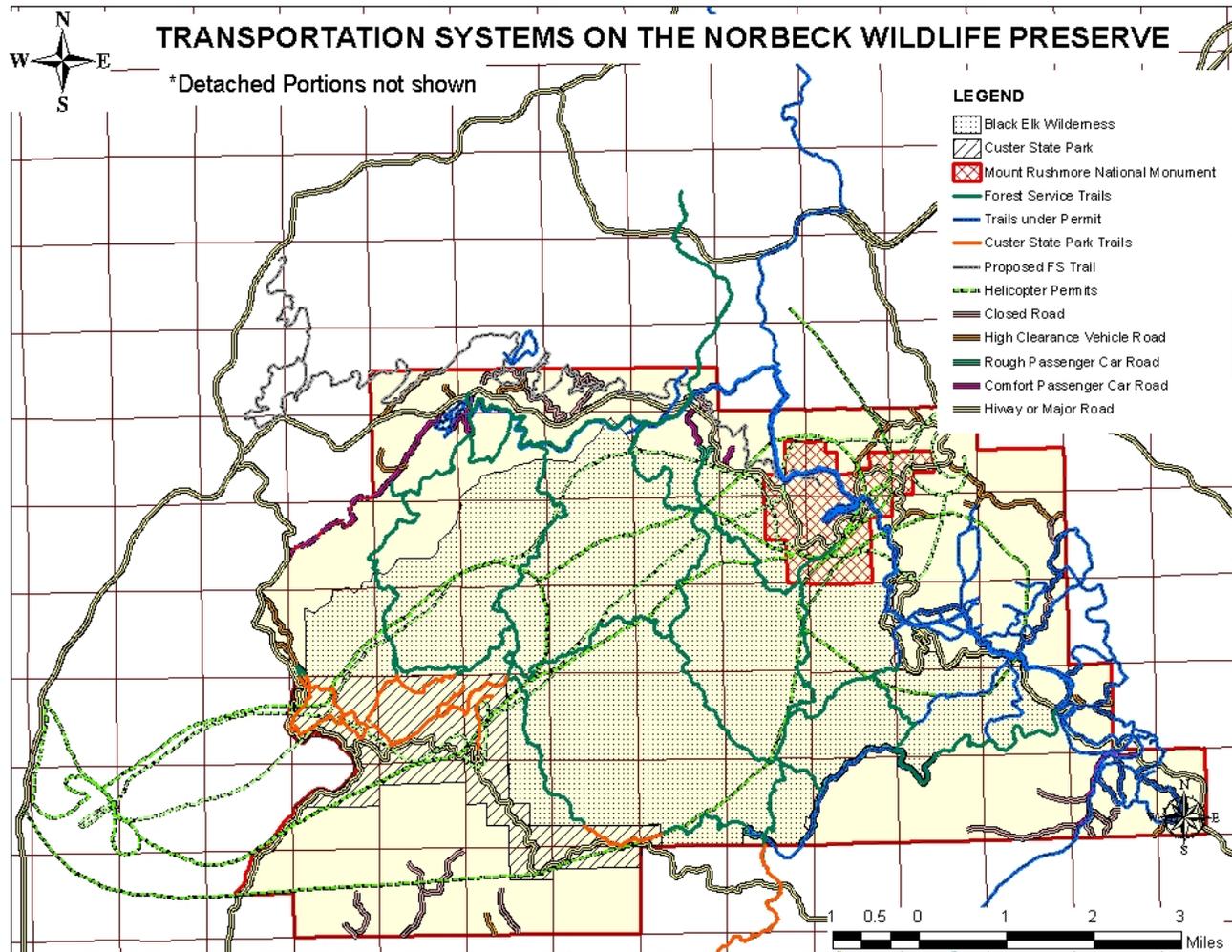
The 2005 Phase II Forest Plan Amendment lists the following guidelines for future management of roads in Norbeck:

5.4A-9107 Specific areas and travel routes are open year-round or seasonally for motorized recreation. Otherwise, they are closed to motorized recreation, including snowmobiling.

a. Off-road motorized recreation is permitted in the detached Stockade Lake tracts, in portions of Norbeck north of Highway 244, and in the vicinity of Keystone.

b. Motorized recreation is permitted year-round on federal and state highways, county roads, private land access roads, and Forest Development Road (FDR) 345 from Highway 87 through the Iron Creek summer homes group. Motorized recreation is permitted seasonally on access roads to developed recreation sites.

Figure 10: Transportation Systems on the Norbeck Wildlife Preserve



Peter Norbeck National Scenic Byway

History

“You’re not supposed to drive here at 60 miles per hour. To do the scenery half justice, people should drive 20 or under, to do it full justice, they should get out and walk.”

-Peter Norbeck, circa 1920

Norbeck searched through the Harney Range for routes that would provide “the grandest views” – routes that would bring the visitor in intimate contact with the forest, the rocks, and the streams (Peter Norbeck Scenic Byway Corridor Management Plan, 1995).

The Peter Norbeck National Scenic Byway is a 70-mile drive through the heart of the Black Hills Granite core. The Byway introduces travelers to magnificent scenery, including vistas of Harney Peak, and to rock tunnels and pigtail bridges (Fig. 11).

Table 4: Characteristics of the Peter Norbeck Scenic Byway

Name	Number	Mileage	Where	Special features
Iron Mountain Road	U.S. 16A	34	Town of Keystone easterly through Custer SP to the town of Custer	3 tunnels, pigtail bridges
Needles Highway	S.D. 87	20	North west to South East via Sylvan Lake majority in Custer SP	Hair-pin curves and narrow tunnels through granite spires
Sylvan Lake Road	S.D. 89	6	Sylvan Lake to the town of Custer	Granite outcroppings and forested landscape
Mount Rushmore Highway	S.D. 244	10	North west to north east US 16 to the town of Keystone	Mount Rushmore National Memorial

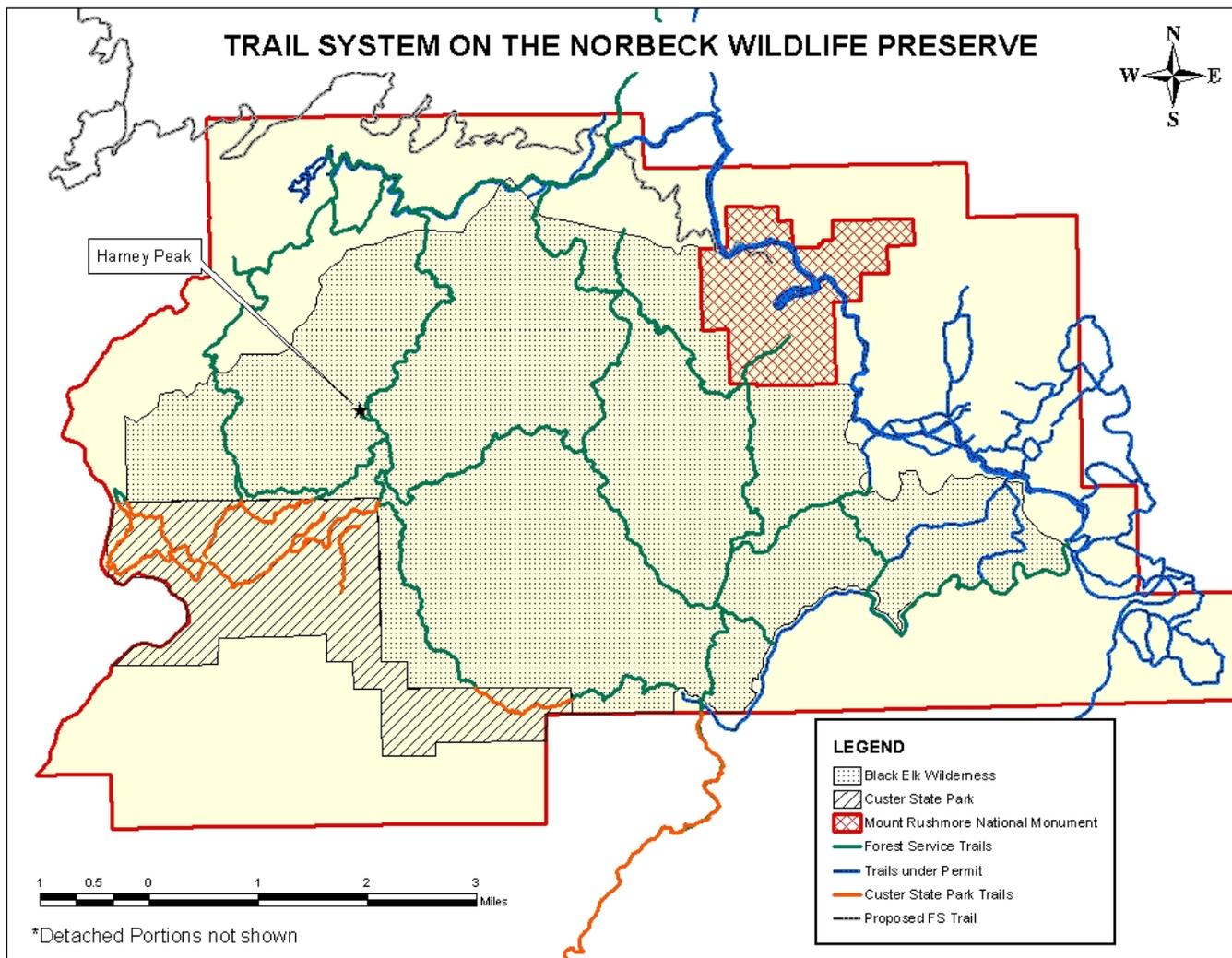
Management Direction

Much of the Peter Norbeck Scenic Byway winds through the Norbeck Wildlife Preserve, which was established by Congress in 1920 for the “protection of game animals and birds and to be recognized as a breeding place therefor”. It is this portion of the Byway to which Management Area 4.2B applies. The 2005 Forest Plan Phase II Amendment states:

Where there is a conflict between management of the Peter Norbeck Scenic Byway and the direction for the Norbeck Wildlife Preserve, the latter will take precedence, based on the Congressional mandate for Norbeck.

It has been noted in several planning documents that the ponderosa pine stands along the Byway have encroached on, and in many cases, obliterated the scenic vistas, views of rock outcroppings, and stands of hardwoods (2005 Phase II Amendment). In 2006, a grant was obtained by the Forest to selectively remove ponderosa pine in strategic locations along the Byway to open some of the scenic vistas now encumbered by these dense stands of pine.

Figure 11: Trail System on the Norbeck Wildlife Preserve



Trails

There are fifteen trailheads providing for use on eighteen trails in the Norbeck. Nine are managed by the Black Hills National Forest, five by Custer State Park, and one by the Mount Rushmore National Memorial (Fig. 11).

Table 5: List of Trails

No.	Trail Name	Length	Uses
2	Lost Cabin	6.2	
3	Norbeck	4.6	
4	Cathedral Spires	3.2	
5	Willow Creek Rushmore	2	
7	Grizzly Bear Creek	6	
8	Willow Creek Loop	1.5	
9	Sylvan Lake/Harney Peak	3.4	
9	Willow Creek/Harney Peak	5.4	
14	Horsethief Lake	2.7	
15	Iron Creek	2.3	
16	Iron Mountain	1.4	
88	Cook Lake	1.4	
89	Centennial (no bicycles on portion w/in Wilderness)	111	
89B	Centennial Bypass	1.7	
	Blackberry (w/in Mt Rushmore NM)	0.8	
	Sylvan Lakeshore (Custer SP)	1.0	
	Cathedral Spires (Custer SP)	0.9	
	Little Devils Tower (Custer SP)	0.6	

Trail number 89, the Centennial Trail, is highly used by bicyclists. When the Black Elk Wilderness was established and subsequently added to, the continuity of this trail for bicyclists was severely compromised. No alternate route around the Wilderness has been determined to date.

Recently, the Superintendent of Mount Rushmore National Monument, Gerard Baker, proposed a new bike trail to connect the Memorial with the Michelson trail. The trail would need to cross National Forest lands, within the Norbeck Wildlife Preserve. It is unresolved how the moratorium on additional trail miles would be met if this proposal were to be implemented.

The 2005 LMRP gives direction to not expand the recreational trail system within the Norbeck Wildlife Preserve (Management Area 5.4A). Direction for the Black Elk Wilderness states that trail density will not exceed an average density of 2 miles per square mile over the wilderness area (Management Area 1.1A).

Safety

It has been long acknowledged by transportation professionals that portions of the Norbeck Scenic Byway do not meet federal highway safety standards. Recently, three projects were proposed to remedy these conditions. First, trees within eight feet of the edge of pavement was to be removed, second, rock outcroppings in the “clear zone” were to be removed, and third, the size of the tunnels were to be increased. After the tree removal project was started, the Governor’s Office received many comment letters protesting this action. The result was recognition of the inability of the Byway to fully meet federal safety standards and an order for the Department of Transportation to stop removing trees and not implement the second and third components (personal communication Steve Keegan, 2006). No documentation of this decision has been procured at this time.

B. Biological Setting

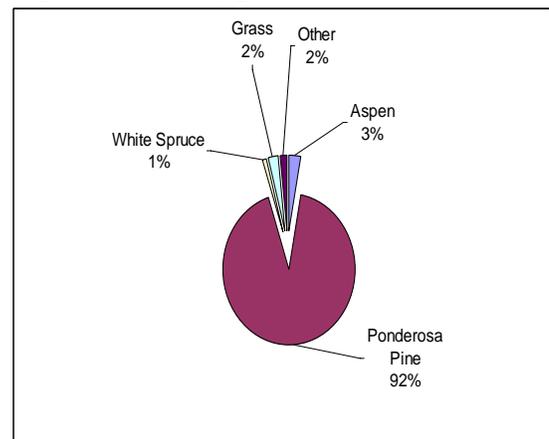
Vegetation

The area within the Norbeck Wildlife Preserve is dominated by ponderosa pine (*Pinus ponderosa*) with other minor species occurring mostly in the valley bottoms and along wetland stringers and riparian areas, and several larger non-forested areas existing on the eastern edge of the Norbeck.

Norbeck Area Cover Types

The ponderosa pine cover type dominates the landscape at the Norbeck (Fig. 13). Aspen (*Populus tremuloides*) is the second most dominant species, occurring mostly along streams. White spruce (*Picea glauca*) occurs mostly in the cool valley bottoms. Herbaceous communities are also represented in the Norbeck. Bur oak (*Quercus macrocarpa*) populations occur along streams, common snowberry (*Symphoricarpos albus*) plants, and non-vegetated areas including rocks and water bodies are also represented. The data source for cover types and structural stages was obtained from GIS analysis of the Black Hills R2Veg layer.

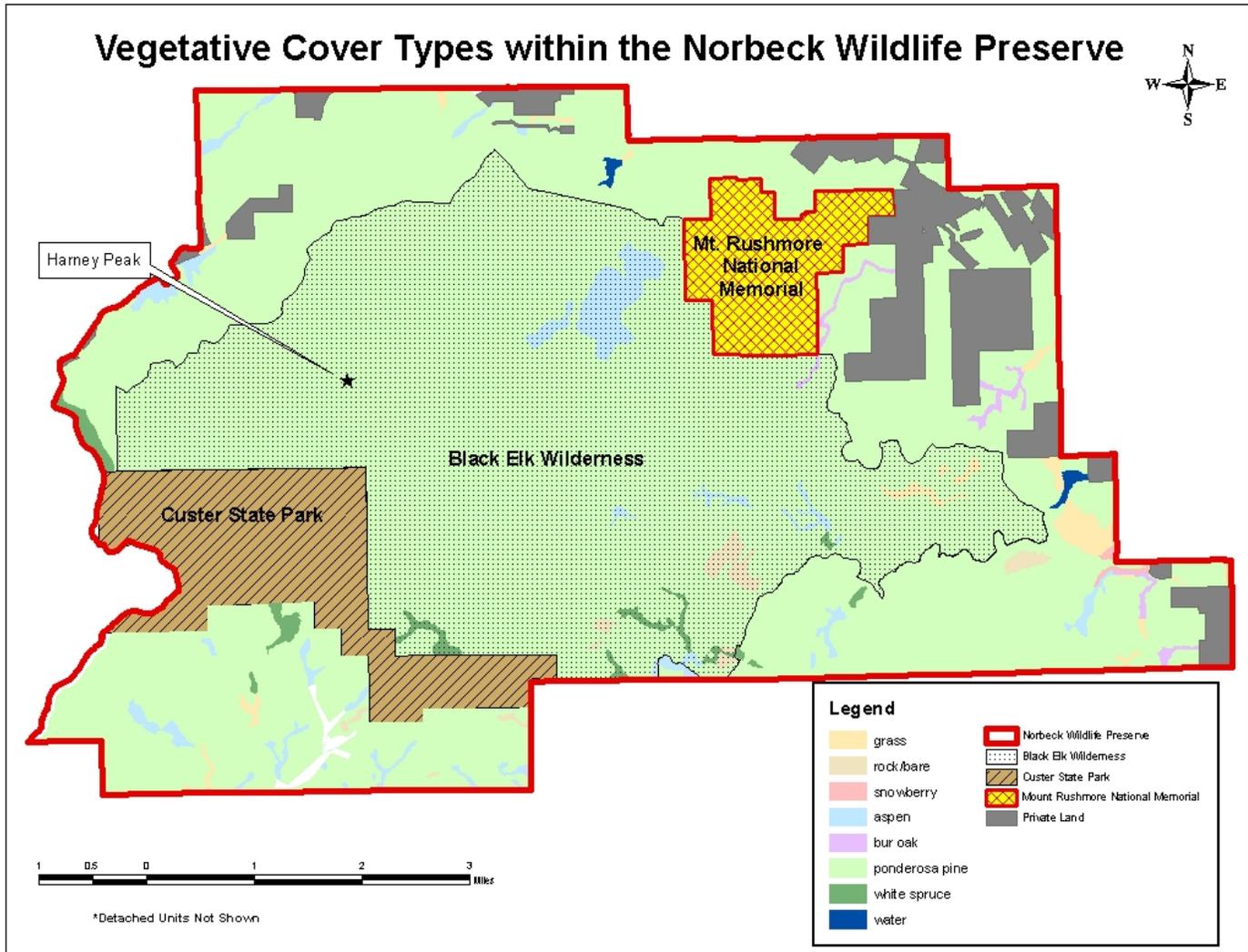
Fig. 12: Cover Types of Norbeck



Habitat Structural Stage for Forested Cover Types

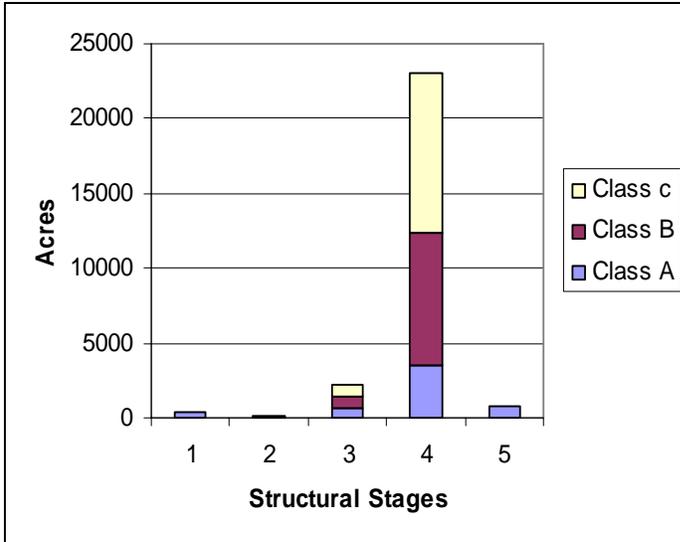
Habitat structural stages (HSS) categorize land into developmental classes (e.g. early to late-successional) and tree density (based on overstory cover). Structural stages include grass/forb (1), seedling/saplings (2), to sapling pole (3), mature (4), and late-successional (5). Density classes within structural stages 3 and 4 are: A – overstory canopy cover from 0-40%; B – overstory canopy cover from 40-70%; and C – overstory canopy cover greater than 70%.

Figure 13: Vegetative Cover Types within the Norbeck Wildlife Preserve



The Norbeck is dominated by ponderosa pine forest with large trees in the overstory, (88% of the area is in structural stage IV).

Fig. 14: Habitat Structural Stages



(Tables 6-8). Further, much of the forest is dense with 76% of the pine forest in density class B and C (Fig. 15). Structural stage distributions are similar in and outside the Wilderness, but forests in the Wilderness are more dense than outside, (60-80% of pine forest are density class C, within the Wilderness, compared to only 18% outside).

Table 6: Habitat Structural Stage by Forest Cover Type for the 27,494 acres of Forest Service Land within the Norbeck Boundary

Habitat Structural Stage	Aspen		Bur oak		Ponderosa Pine		White spruce	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
1	10	1	29	24	304	1	--	--
2	70	9	--	--	92	<1	--	--
3A	24	3	85	70	488	2	--	--
3B	29	4	--	--	847	3	--	--
3C	--	--	--	--	695	3	--	--
4A	287	39	--	--	2,977	12	206	81
4B	98	13	--	--	8,829	35	9	4
4C	220	30	8	7	10,406	41	--	--
5	7	1	--	--	735	3	40	16

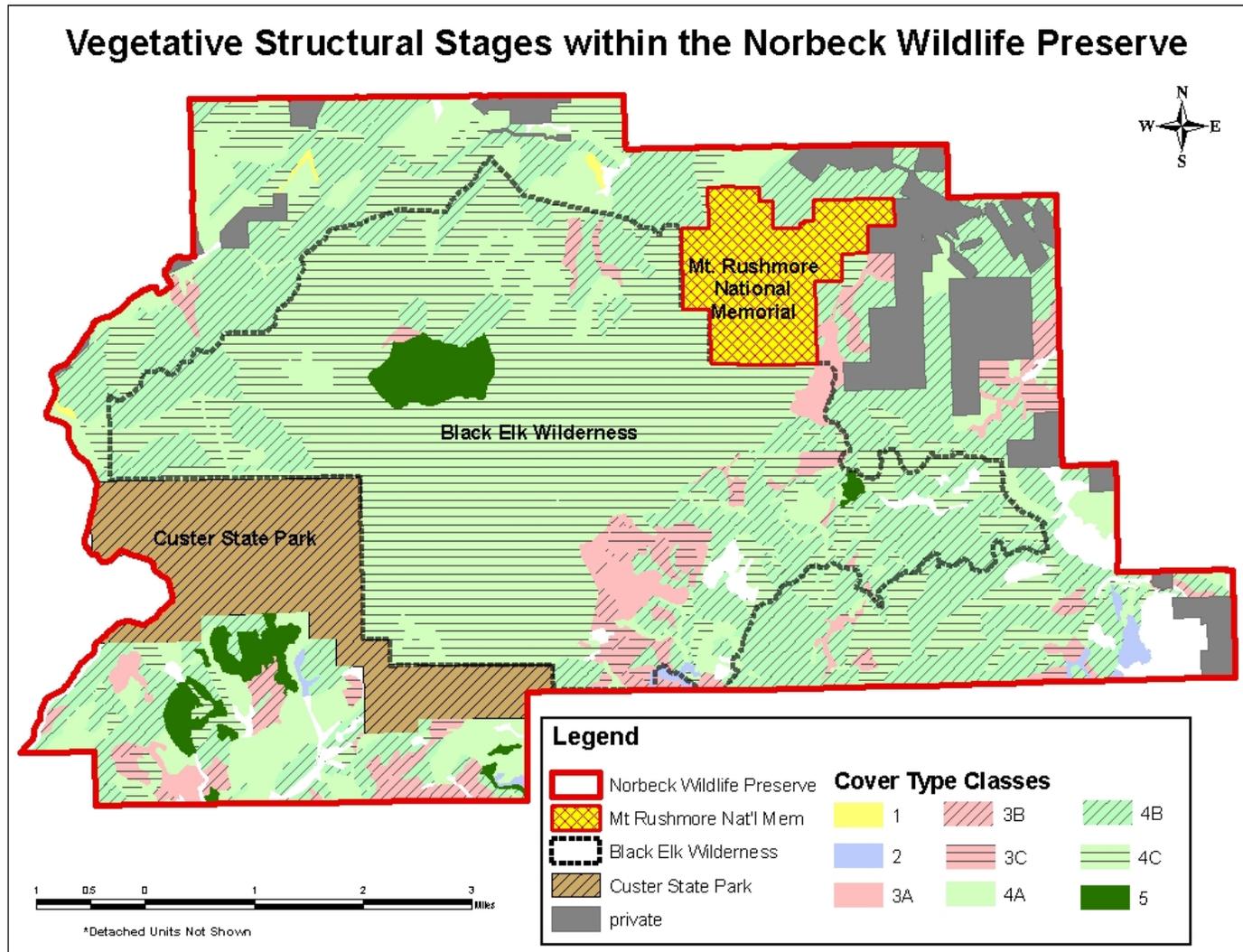
Table 7: Habitat Structural Stage by Forest Cover Type for the 13,542 acres of Forest Service Land within the Black Elk Wilderness

Habitat Structural Stage	Aspen		Bur oak		Ponderosa Pine		White spruce	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
1	--	--	--	--	--	--	--	--
2	15	4	--	--	--	--	--	--
3A	--	--	10	100	308	2	--	--
3B	10	3	--	--	231	2	--	--
3C	--	--	--	--	403	3	--	--
4A	117	31	--	--	500	4	122	100
4B	60	16	--	--	2,640	21	--	--
4C	175	46	--	--	8,382	65	--	--
5	--	--	--	--	397	3	--	--

Table 8: Habitat Structural Stage by Forest Cover Type for the 13,952 acres of Forest Service Land within the Norbeck boundary and outside the Black Elk Wilderness

Habitat Structural Stage	Aspen		Bur Oak		Ponderosa Pine		White Spruce	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
1	10	3	29	26	304	2	--	--
2	55	15	--	--	92	1	--	--
3A	24	7	75	67	180	1	--	--
3B	19	5	--	--	616	5	--	--
3C	0	--	--	--	292	2	--	--
4A	170	46	--	--	2,477	20	84	63
4B	38	10	--	--	6,189	49	9	7
4C	45	12	8	7	2,024	16	--	--
5	7	2	--	--	397	3	40	30

Figure 15: Vegetative Structural Stages within the Norbeck Wildlife Preserve



Ponderosa Pine

Historical Condition

Many of the research documents provide a general view that ponderosa pine forests were widespread but that disturbances, especially from fire, limited the number and extent of coniferous trees across the landscape (Parrish et al, 1996). The Graves Report of 1899 and the Dodge Report of 1965 suggest that the non-forested areas were more plentiful in both number and size. Today, forested areas are denser and are comprised of smaller diameter trees when compared with similar areas in early settlement photographs (Grafe and Horstead, 2002; Brown and Cook, 2006). A study on early settlement forest structure by Brown and Cook (2006) states that there is no significant difference in current and historical basal areas, however, the forest structure was dramatically different. The stands contained fewer, larger trees compared to today's smaller, denser structure.

Photographs taken around Harney Peak during pre-settlement times show that the ponderosa pine stands in the higher elevation ranges within the Norbeck consisted of more open stands of large diameter trees. The lower elevations of the Norbeck also contained areas of more open stands of large diameter trees; however, there was also a component of the dense, closed canopy, smaller diameter stands (Grafe and Horstead, 2002). The early settlement landscape of the ponderosa pine on the Norbeck was shaped by both large scale stand replacing fires and low intensity ground fires. Relatively short fire return intervals of low intensity surface fires would consume the smaller regeneration that was growing under the larger more open canopy. Occasional large, mixed severity stand replacing fires did occur in the area. These fires would create a mosaic of stand structures. Small diameter dense stands would occupy places in the landscape that were completely consumed by the fires. The landscape would retain its pre-fire structure where the large fires burned as surface fires (Graves 1899, Garmer and Thompson 1973, and Progulske 1974). Ponderosa pine mortality in the pre-settlement forest was conspicuous and noteworthy (Ludlow 1875, Graves 1899, Donaldson, 1914, Dodge 1965). The most common causes of mortality appeared to have been fire and mountain pine beetle (*Dendrocronus ponderosa*). Early explorers frequently noted evidence of forest fires such as burned trees and treeless meadows with residual stumps (Ludlow 1875, Dodge, 1965 and Parrish et al, 1996).

From the late 1800s to about 1920 the area in and around the Norbeck was heavily influenced by human activity. The Norbeck Master Plan (1927) describes the Norbeck area as being highly valued as both a wildlife refuge as well as a timber producing area. The Norbeck Master Plan considered the trees in the area to be healthier and of better quality than the surrounding forests. The surrounding forests had been heavily logged and affected by man. In the Norbeck Master Plan, the Norbeck Wildlife Preserve was scheduled for entry every 35 years to remove timber. It was thought that the 35 year return interval would have a minimal impact on wildlife. Approximately 107,000 million board feet of timber was to be produced from the area yielding approximately 3-7 million board feet annually in separate "working circles".

Current Condition

Ponderosa pine currently comprises 92% of the vegetative cover in the Norbeck. Ponderosa pine is found from low to high elevations and on all soil types. Pine is aggressive, out-competing hardwoods like quaking aspen and bur oak on suitable sites. After fire or logging, it re-establishes often in extremely dense stands. Pine has also expanded its range into historical upland parks (Alexander, 1987). The average age of the trees is 150 years with the majority of the stands in structural stages 4B and 4C (Norbeck Wildlife Preserve DEIS, 1989). In many areas, the ponderosa pine is crowding out the spruce and hardwoods. Some of the mature stands exhibit late-seral characteristics. These stands tend to be lumped in certain areas and are not distributed throughout the area (Needles Environmental Assessment, 1994). The current landscape, consists of mature or over-mature trees with slow growth rates. The area is highly susceptible to mountain pine beetle and is currently experiencing an outbreak (refer to Disturbance section). Rock outcrops and rock formations are difficult to define as they are currently overtopped by trees. The understory has an average age of 40 and 900–3500 stems per acre with poor growth. The forest is largely made up of uneven-aged small diameter trees growing under a canopy of older, large diameter trees (Norbeck Wildlife Preserve DEIS, 1989).

Disruption of fire regimes have played an important role in shaping today's ponderosa pine stands. Ponderosa pine is adapted to frequent fire-return intervals (Weaver 1974) and without that influence, significant structural and in some cases compositional changes accrue (Refer to Disturbance section for more information on fire return intervals, fire regimes, and fire hazard).

Aspen

Historical Condition

Early visitors and residents of the Black Hills provided limited information on hardwoods due to its limited commercial value (Turchen and McLaird 1975, Donaldson 1914, Graves, 1899). Deciduous trees were minor in comparison to pine, but important in some areas such as post-fire landscapes, riparian communities, mesic north-facing slopes, and low elevations. In many instances, nearly pure stands of aspen or bur oak were present. (Forest Plan FEIS, 1996). According to Graves (1899), aspen was very abundant throughout the Hills in ravines and canyons, on north slopes and shallow depressions, and where the soil is sufficiently fresh on ridges. Aspen is the first tree to return after fires in the situations described. Graves also notes that aspen was sufficiently abundant at high elevations and in burned over areas. The frequent fire regime of the Black Hills probably was the most typical agent for aspen regeneration; however, fire suppression during the past century has limited disturbance in aspen stands (Forest Plan FEIS, 1996). Consequently, many aspen clones in the Black Hills have become older and/or have been invaded by conifers. Graves (1899), estimated average sizes to be 6-10 inches in diameter and 30 feet in height. This general description of aspen on the Black Hills is probably fairly accurate for the Norbeck as well. Aspen stands in the Norbeck were likely significantly larger than current stands. Stands of aspen likely existed in the valley

bottoms along streams and on slopes where moisture and soil conditions were favorable (Forest Plan FEIS, 1996).

Current Condition

Approximately 3% of the vegetative cover on the Norbeck Wildlife preserve is comprised of aspen. Within the Norbeck, aspen is usually found in stringer bottoms, while the slopes are more exclusively ponderosa pine. There are scattered small stands of aspen throughout the Norbeck. Aspen generally is a fire-induced successional species that initially, following fire, can dominate a site (Mueggler, 1985). Once the aspen canopy is established, conifers that are more shade tolerant begin to grow in the understory. Through time as the conifers establish dominance in the overstory, aspen gets crowded out, eventually disappearing (Mueggler, 1985). Regular disturbances, such as fire, can restart this cycle. The absence of disturbance is causing existing stands of aspen to be lost to conifer encroachment. The older more decadent aspen trees in these stands are starting to experience mortality and are falling over, creating a higher fuel hazard (Forest Plan FEIS, 1996).

Minor Forest Species Components

There are only two other species of trees that occur on the Norbeck in substantial numbers. They are white spruce and bur oak. Together they comprise approximately 1% of the vegetative cover. Bur oak is typically found in the stringer bottoms, and mostly in the older age classes. Following the Galena Fire in 1988 there were documented oak seedlings in nearby Custer State Park (Forest Plan FEIS, 1996).

White spruce was historically found on slopes and ridges around Harney Peak. At the lower elevations it occurred in deep, cool moist canyons and followed the creeks. As a rule, spruce ended where oak began although they were found together in a few localities. Spruce demands a large amount of moisture in the atmosphere and requires a cool climate. While it grows in the rich canyon bottoms, it is also found on Harney Peak on the most meager, primitive soil (Graves, 1899). Today, spruce is found mostly along the cool valley bottoms within the Norbeck.

Non-Forested

Historic Condition

When EuroAmericans first arrived in the Black Hills they cited the low density of the Forest tree canopy in many areas. Because of the large expanses of forest that were relatively open in the late 1870s (Graves 1899, Progulske 1974, Parrish et al. 1996), it is assumed that understory production in the Black Hills must have been higher than we find today. The Graves Report (1899) and the Dodge Report (1965) suggest that the non-forested areas were more plentiful in both number and size than the current distribution. Graves (1899) also noted that in the central Black Hills, there were large prairies and under the trees was enough production to allow stock to range freely. These generalizations of the entire Black Hills probably hold true for the areas of the Norbeck that were the more open stands of large diameter trees, as well as the prairies, meadows

and parks that existed in the late 1870s. According to Schatz (1961), citing remarks from the 1874 Custer Expedition, the area south of Harney Peak was open and rolling and largely covered with excellent grass (Forest Plan FEIS, 1996). This may be a more typical description of the area within Norbeck that is located south of Custer State Park, including the Section 2 portion and the Stockade portion. Much like the ponderosa pine and aspen stands, these communities were shaped by frequent fire return intervals. When fires started to be suppressed, the tree densities and canopy covers increased resulting in a decrease in the amount of herbaceous and woody vegetation on the Norbeck (Brown and Sieg, 1999).

Current Condition

Non-forested cover types currently comprise 3% of the Norbeck Wildlife Preserve, although a portion of the forested acres contain an understory of herbaceous and woody vegetation. The species composition, density, and productive capacity of the herbaceous and shrub community varies as a function of the soils and overstory canopy density (Pase 1958, Uresk and Severson 1989, Bennett 1984). Fire exclusion from the area has allowed ponderosa pine to encroach on the non-forested communities of the Norbeck. Fire exclusion has also contributed to the reduction in size of the hardwood cover type and has created dense, closed canopy ponderosa pine stands. In the early settlement years, these areas would have supported herbaceous and shrub communities under the tree canopy (Forest Plan FEIS, 1996).

Vegetative Disturbance

The major disturbance agents operating within the Norbeck Wildlife Preserve are fire and mountain pine beetle. Other disturbance agents such as wind events, disease outbreaks and recreational traffic occur in the area, however, these agents are not major drivers in the landscape. The focus of this assessment will be on fire and mountain pine beetle effects within the Norbeck Wildlife Preserve. Disturbance is an integral part of the ecology of the ponderosa pine forest type within the Black Hills. When these disturbance events operate within a natural range of variability they produce a diversity of stand structures resulting in a larger variety of wildlife habitat, increased biodiversity, enhanced nutrient cycling and they facilitate other ecological processes (Shepperd and Battaglia, 2002). The Norbeck Wildlife Preserve has a somewhat unique disturbance history, in that it largely escaped the logging of the late 1800s that was prevalent in most of the Black Hills. The higher tree density and greater homogeneity of today's Norbeck Wildlife Preserve is largely a result of the removal of fire as a disturbance agent. This condition is likely to result in larger scale disturbance events (mountain pine beetle and fire) with more intensity than would have occurred under the historic patterns.

Fire and Fuels

Historic Condition

The historic fire return interval, characteristic of the ponderosa pine forest type within the Norbeck Wildlife Preserve, likely had a median length of 22 to 23 years (Brown and Others, 2000). These fires returned frequently with low intensity, killing small seedlings,

pruning lower branches from large trees, and consuming concentrations of woody fuels on the forest floor (Shepperd and Battaglia 2002). Under these processes, vegetation was much more open and diverse as compared to the forest on the Norbeck today. Under these low intensity, high frequency disturbance patterns, aspen, bur oak, grasslands and rock outcroppings would have been more abundant than they are today within the Norbeck. These vegetative types are valuable to many wildlife species. The mosaic of frequent, variable sized fires created an equilibrium of savanna-prairie boundary (Shepperd and Battaglia 2002).

Current Condition

The current fire hazard rating for most of the Norbeck Wildlife Preserve is high. The Black Elk Wilderness represents the largest amount of area (81%) with a high hazard. Outside of the Wilderness area, 74% is classified with a high fire hazard rating (Table 8).

Table 9: Fire Hazard Rating within the Norbeck Wildlife Preserve*

	High	Moderate	Low
Norbeck Wildlife Preserve (27,494)	74%	16%	10%
Inside the Black Elk Wilderness (13,542)	81%	10%	9%
Outside the Black Elk Wilderness (13,952)	67%	22%	11%

* values do not reflect the recent treatments that have occurred (Grizzly & Needles timber sales, & fuel reduction treatments)

In addition to stand conditions, recent pockets of tree mortality caused by the mountain pine beetle have affected the fuel conditions within the Norbeck. These beetle outbreaks will create a substantial increase in the amount of fine dead fuels in the canopy. The majority of these fuels will only remain in the canopy for 2-3 years after the outbreak (Knight 1987, Schmid and Amman 1992). After the needles and fine fuels fall to the forest floor there will be a period where fire hazard returns to pre-outbreak conditions. However, once the trees fall (3 to 10 years) build ups of large fuels will create the potential for high severity fires.

The high fire hazard that exists in the Norbeck Wildlife Preserve is a result of the disruption of the historic fire regime. For about a century, fires have been virtually eliminated within the Norbeck, and other disturbance agents such as insects and logging have had only a minor role in the landscape. The last large fire that occurred in the preserve was the Galena fire (1988) which burned a total of 17,976 acres, with only 526 acres occurring within the Norbeck boundary, before that, no large fires occurred for well over a century. This lack of fire has created a landscape dominated by large contiguous stands of dense ponderosa pine with a high loading of surface and ladder fuels.

The current suppression tactic for fires that start within the preserve is an initial attack with direct containment. This approach, combined with the abundance of rock outcrops and the tendency for starts to occur on ridges and mountain tops, has proven effective at keeping fires to a small size within the Norbeck. An average of 1.6 fire starts per year has occurred within the Norbeck Wildlife Preserve since 1973, most (77%) were lightning caused. Despite the success of fire suppression, there is potential for a large fire to occur. Local fire weather is unpredictable and there is a risk associated with leaving a

fire uncontained for one or more burn periods (personal communication with Gary Lipp, 2006). Most of the recent large fires that have occurred in the Black Hills have followed a pattern that seems to correlate with periods of prolonged drought. This pattern is characterized by fire front direction shifts, from one day to the next, over one or more burn periods, creating a large flame front. In some cases, active night burn periods also occur. When high winds combine with this increased flame front, the fire can run for long distances (personal communication with Dean Berger, 2006).

This potential for large fires, combined with smoke concerns and the high values at risk, make it very difficult to use wildfire as a management tool within the Norbeck Wildlife Preserve. Smoke is a major concern for the nearby Mount Rushmore National Memorial and the community of Keystone. Additionally, there are many values at risk from wildfire within and adjacent to the Norbeck Wildlife Preserve. The high visitor use, private parcels surrounding the preserve in addition to the Mount Rushmore National Memorial, Custer State Park, recreational residences within the Norbeck, and the community of Keystone are all at risk from fires originating from within the Norbeck Wildlife Preserve (personal communication with Gary Lipp, 2006).

Recently, some fuel reduction treatments have occurred within the Norbeck Wildlife Preserve near private parcels and developed sites along State Highway 244 and 16A. There is additional fuel reduction treatments planned within the Peter Norbeck Scenic Byway Enhancement Project. The Grizzly and Needles Timber Sales have also served to reduce fuel loadings on the east and southwest portions of the Norbeck Wildlife Preserve respectively.

Mountain Pine Beetle

The “Black Hills Beetle” was first identified in the Black Hills in the late 1800s. It was not until expeditions moved west and noted outbreaks of beetle activity were observed, which then prompted the name change to the mountain pine beetle.

Even-aged densely stocked forests are more conducive to widespread outbreaks than irregularly spaced uneven-aged forests (Sartwell and Stevens 1975, Schmid and Mata 1992a). Typically trees larger than 8” Dbh (Diameter at breast height) are attacked, but during an epidemic, mountain pine beetles may attack saplings less than 8” Dbh if they are intermixed with larger trees. Outbreaks of the beetle can cause significant changes in forested stands, including a reduction of average stand diameter and stand density (McCambridge et al 1982).

Pine stands in the Black Hills can be categorized as to their susceptibility to beetle attack. In general, stands are considered to be most susceptible when 75% of the stand is over 7” Dbh and the stand density is over 120 feet of basal area per acre (Stevens et al. 1980, Schmid and Mata 1992, Schmid et al. 1994).

Historical Condition

The mountain pine beetle always has been a part of the Black Hills forest ecosystem, with outbreaks occurring periodically. The first recorded outbreak took place from the late 1890s through the early 1900s. This outbreak is known to be the largest recorded outbreak to date, killing an estimated two billion board feet (Boldt and Van Deusen 1974). Outbreaks also have occurred in the 1930s, 1940s, 1960s and 1970s. Tree mortality exceeded 250,000 trees per year for several years during the 1960s and 1970s (Thompson 1975). Although weather and stand density seem to be the driving force for most outbreaks, stand density is the major cause of infestation in the Norbeck Wildlife Preserve and the Black Elk Wilderness (personal communication with Kurt Allen, 2006).

Current Condition

A total of 65 acres of affect trees within the Norbeck Wildlife Preserve and Black Elk Wilderness were detected in 1997. From 1997-1999, affected acres tripled in size (220 acres), killing on average, one-half tree per acre. Between the years 2000 and 2005, aerial surveys detected multiple areas of infestation. The peak number of acres affected occurred in 2003, when 6,735 acres were detected and an estimated one tree per acre was killed. Although acres declined to 1,870 in 2004 and 1,272 in 2005, estimated trees per acre killed increased to 1.52 trees per acre in 2004 and 2.85 trees per acre in 2005. Some of the areas were new infestations and some were from previous infestations that spread from within the Norbeck Wildlife Preserve and the Black Elk Wilderness. There is growing concern about the increased activity in the Upper Pine Creek Research Natural Area. Beetles are attacking the larger trees, which provide a better environment for larger populations compared to the smaller trees. It is predicted, based on historical records that this outbreak will last for another 4-6 years, when the lack of food source, predation and silvicultural treatments in the Norbeck Wildlife Preserve should slow or stop the progression into adjacent lands (personal communication with Kurt Allen, 2006).

Table 10: Mountain Pine Beetle Risk by Acre

Area	Low	Moderate	High
Norbeck Wildlife Preserve	1780	6700	4800
Black Elk Wilderness	1000	2850	9600
Custer State Park	378	400	2000
Mount Rushmore National Memorial	270	400	800

Low = QMD (Quadratic Mean Diameter) <7" or Live basal area is < 80

Moderate = QMD >7" and Live basal area = 80-120

High = QMD >7" and Live basal area > 120

Table 11. Number of Infected Acres by Year

Year	Acres	Total Trees Infected	Infected Trees Per Acre
1996	7	91	13.0
1997	65	1905	29.3
1998	60	530	8.8
1999	220	161	0.7
2000	180	78	0.4
2001	870	2088	2.4
2002	2750	1464	0.5
2003	6735	6561	1.0
2004	1870	2854	1.5
2005	1272	3627	2.9

Noxious Weeds

The Black Hills National Forest Weed Management Plan was signed in 2003. This plan describes the actions desired to address the noxious weed issue. There is no specific mention of the Norbeck Wildlife Preserve in this report, or direction on noxious weed management within the Norbeck in the Forest Plan. Within the wilderness, control of noxious weeds by any means possible is desired, provided that it does not cause serious adverse impacts to Wilderness values. Continued implementation of the Forest Certified Weed-Free Feed Order should help to mitigate the spread and establishment of noxious weeds over the long-term in the Black Elk Wilderness. Control of populations of invasive, non-native plant species is desired within the Upper Pine Creek Research Natural Area provided that control measures minimize threat to native species. Recent estimates indicate that over 80% of land within the Black Hills National Forest is infested with noxious weeds.

The following species are known to exist within the Norbeck boundary; however, their extent is unknown because no official inventory of noxious weeds exists:

- Canadian Thistle (*Cirsium arvense*)
- Common Mullen (*Verbascum thapsns*)
- Leafy Spurge (*Euphorbia esula*)
- Yellow Toadflax (*Linaria vulgaris*)

Noxious weeds within the Norbeck generally occur near wet areas and along streamcourses. Some treatment of noxious weeds is currently done in the Norbeck, especially in the Needles 2 Timber Sale area where the Forest is currently treating about 700 acres. During the summer of 2006, the Forest plans to complete a full scale

inventory which will help obtain funds needed to aggressively treat noxious weeds within the Norbeck and the Black Elk Wilderness. The chemical currently used to treat noxious weeds within the Norbeck is Milestone. This chemical is fairly new on the market and is considered to be “light on the land”. Milestone has a short half-life (about 6 months) and is safe to use under broad leafed trees and next to streamcourses. Application is done by horseback within the Black Elk Wilderness boundary and with ATV’s where appropriate throughout the rest of the Norbeck (personal communication with Jason Brengle, 2006).

Plant Species of Local Concern

According to the 2005 Forest Plan FEIS there is currently one species of local concern that exists within the Norbeck, and three Region 2 sensitive species.

Table 12: Plant Species of Local Concern and R2 Sensitive Plants occurring on the Norbeck

Species	Sensitive or Plant of Local Concern	Black Hills Habitat* * Habitat descriptions provided by: Beth Burkhart, Botanist, Black Hills National Forest
Lesser Roundleaved Orchid (<i>Platanthera orbiculata</i>)	Sensitive	Shady, north-facing slopes in paper birch/hardwood stands, and occasionally in conifer forests on damp, rich, humus soil. Currently known elevation range is 4,350-6,150 feet. Occurs other places on the Forest in addition to the Norbeck
Leathery Grapefern (<i>Botrychium multifidum</i>)	Sensitive	Mesic sites next to riparian areas dominated by spruce or mixed spruce-pine along small, perennial streams in more or less open areas, in or near old stream channels where water is no longer flowing on a permanent basis, but may still receive water scouring disturbance by occasional flooding events. Only known occurrences on the Black Hills National Forest are in the Norbeck
Selkirk’s Violet (<i>Viola selkirkii</i>)	Sensitive	High elevation, cold and shaded to open microhabitats associated with vegetated granitic rock outcrops or spruce forest with a highly variable understory. Only known occurrences on the Black Hills National Forest are in the Norbeck
Southwestern showy hedge (<i>Carex bella</i>)	Local Concern	Granitic outcrops and rocky areas in cool, moist, shaded white spruce or paper birch forest at between 6,600 and 7,100 feet

Current and Future Projects on the Norbeck Wildlife Preserve

Needles 2 Timber Sale

The primary goal in the Needles project area was to manage for a variety of wildlife habitats. The existing forest condition showed a need to increase habitat diversity within the project area and to move toward a desired future condition. The Needles 2 Timber Sale Project area comprised approximately 3,631 acres, with 296 acres occurring outside

the boundary of the Norbeck Wildlife Preserve. The total number of treated acres totaled 1,490 acres within the project area, with 1,194 occurring within the Norbeck (Needles Environmental Assessment, 1994).

The majority of the treatments in the Needles 2 Timber Sale area are shelterwood removal cuts (Table 14). The estimated amount of timber removed is 14,379 hundred cubic feet (Ccf) or 7,135 thousand board feet (Mbf).

Table 13: Structural stage percentages for pre-sale and post-sale conditions on Forest Service Lands within the Needles 2 Timber Sale Boundary

Structural Stage	Pre – Sale (%)	Post – Sale (%)
1	--	17
2	--	16
3	10	20
4	56	26
5	34	21

Grizzly Timber Sale

The Grizzly Environmental Assessment focused on the use of silvicultural treatments (including timber harvest) to provide a wider variety of wildlife habitats within the Grizzly Project area. The Grizzly Timber Sale project area comprised approximately 7,417 acres, of which 2,566 occurring within the boundaries of the Norbeck Wildlife Preserve. The total number of treatment acres was 1,367, of which 896 acres occurred in the Norbeck.

Pine removal from meadows, hardwood regeneration, patch clearcut, and special cut treatments would help to maintain or improve the vegetative diversity within the project area. Meadow and hardwood areas would be maintained as well as creation of additional grass/forb habitat to provide a variety of browse vegetation. Specific wildlife elements include: (1) maintain potential turkey roost trees and cover; (2) maintain the existing area closures in portions of the project area; (3) designate 22% of the area (23% in the Norbeck portions of the project area) as old-growth; (4) retain live trees as replacement snags; (5) maintain cover along openings and arterial roads; (6) release hardwood stands to maintain species diversity; and (7) increase forage (Grizzly Environmental Assessment, 1995).

The majority of the treatments included commercial thinning, shelterwood removals, and special cuts. The estimated amount of timber removed is 14,923 hundred cubic feet (Ccf) or 7,542 thousand board feet (Mbf).

Table 14: Structural stage percentages for pre-sale and desired post-sale conditions on Forest Service Lands within the Grizzly Timber Sale Boundary

Structural Stage	Pre – Sale (%)	Post – Sale (%)
1	8	7
2	--	--
3	28	51
4	53	34
5	11	8

Table 15: Comparison of treatment types and acreages between the Grizzly 2 and Needles 2 Timber Sales (Numbers reflect entire project area)

Treatment Type	Grizzly (acres treated)	Needles 2 (acres treated)
Shelterwood Removal	450	1051
Special Cut	337	23
Patch Clearcut	44	321
Commercial Thinning	477	0
Hardwood Release	37	95
Pine Removal from Meadow	22	0

Peter Norbeck Scenic Byway Enhancement Project

The Peter Norbeck Scenic Byway Enhancement Project was developed because aggressive fire suppression activities have resulted in an increase in the number of small, densely growing trees. Mortality is occurring due to bug infestation, blizzard damage and overstocked stands. Treatments are intended to improve the scenic integrity and the wildlife habitat along the Byway by thinning small diameter ponderosa pine (less than 9 inches dbh), increasing forage, enhancement of hardwood stands and improving the vigor of remaining vegetation. Additional benefits of these treatments include a reduction of hazardous fuels that have built up over time (Peter Norbeck Scenic Byway Enhancement Project).

Treatments that are proposed are meadow enhancement on approximately 131 acres, and non-commercial thinning of ponderosa pine on approximately 1,363 acres.

Norbeck Section 2

This project is approximately 461 acres in size and is located entirely within the boundary of the Norbeck Wildlife Preserve. Treatments will focus on restoring the meadow and grassland sites by removing commercial and non-commercial ponderosa pine. Other sites will promote a savannah type of habitat structure that was historically common in the southern Black Hills. Additional sites will be opened-up through commercial and non-commercial thinning to allow for greater forage production, enhancement of hardwoods and shrubs, and to promote large tree growth (Project Proposal for Norbeck Section 2).

The purpose of the project is to improve wildlife habitat, especially for game animals and birds by reducing the number of small diameter pine trees. This project will increase the quantity and quality of forage, enhance hardwoods and shrubs, restore meadows and upland grass sites, and improve the vigor of remaining vegetation. An additional benefit of these treatments will be a reduction of hazardous fuels that have built up over time.

Iron Mountain/Palmer Gulch Project

The Iron Mountain Project will address all remaining acres of the Norbeck Wildlife Preserve that are not part of the above listed projects, within the Black Elk Wilderness, and are administered by the Forest Service. After talking with the project planners, it is estimated that between 30-40% of the project area will be inoperable due to topography and administrative boundaries. This project is currently in the pre-planning stage, and treatments will be planned to benefit wildlife.

Wildlife Populations and Distributions

Historic Condition

Resident wildlife at the time of EuroAmerican exploration primarily reflected the plant communities that had reached the Black Hills and survived the fluctuating climate since the last glacial period. Pre-settlement plant communities and associated wildlife included northern boreal forests [northern flying squirrel (*Glaucomys sabrinus*) and three-toed woodpecker (*Picoides tridactylus*)], eastern deciduous forests [(*Seiurus aurocupillus*) and ruffed grouse (*Bonasa umbellus*)], western coniferous forests [mule deer (*Odocoileus hemionus*) and pygmy nuthatch (*Sitta pygmaea*)], and the Great Plains [sharp-tailed grouse (*Tympanuchus phasianellus*) and bison (*Bison bison*)]. Early accounts of the Black Hills noted native wildlife, although much of the focus was on large conspicuous species, especially those hunted and trapped (e.g., Dodge 1965, Donaldson 1914). More extensive lists for the Black Hills and adjacent prairies came from the observations and collections of naturalists Ferdinand V. Hayden (1862) and George B. Grinnell (included in Ludlow 1875). EuroAmericans influenced wildlife in the Black Hills in four ways:

(1) Some species were harvested for food or fur or killed because they were perceived to be a threat to settlers or their livestock. These included bison, Manitoban elk (*Cervus elaphus manitobensis*), Audubon bighorn sheep (*Ovis canadensis auduboni*), wolf (*Canis lupus*), grizzly bear (*Ursus arctos horribilis*), and blue grouse (*Dendragapus obscurus*) (Over and Churchill 1941, Thomson 1968, Turner 1974, South Dakota Ornithologists' Union 1991). All of these species were extirpated from the Black Hills as a direct result of overharvesting. Loss of habitat was also a reason why wildlife in the area was adversely affected. Beaver, black bear (*Ursus americanus*), white-tailed deer (*Odocoileus virginianus*) and mule deer (*Odocoileus hemionus*) were nearly eliminated by the early 1900s. In later years, regulated harvests restored the deer populations, and transplants successfully re-established elk (*Cervus elaphus canadensis*), bighorn sheep (*Ovid canadensis canadensis*), and beaver, although the first two are different subspecies than the original populations (Turner 1974). However, there have been unsuccessful attempts to reintroduce blue grouse (South Dakota Ornithologists' Union 1991).

(2) Other species, including nearly all of the current wildlife, were influenced by habitat modifications as fire suppression and logging changed the ponderosa pine communities. These landscapes, once dominated by relatively sparse stands of multi-aged trees with diverse productive understories, are now broad, contiguous expanses of higher density, medium-aged stands 70 to 120 years old with abundant pine regeneration and relatively poor understories. These shifts may have increased habitat for species that prefer dense mid-aged forests and decreased habitat for open forest wildlife. The abundance of deciduous forest dependent wildlife was believed to decline as preferred habitat was lost. In particular, wildlife species associated with aspen, such as ruffed grouse and red-naped sapsuckers (*Sphyrapicus nuchoks*) have declined as a result of succession to conifers.

The impact of fire, mountain pine beetle, and other mortality factors in the pre-EuroAmerican forest may have produced relatively high dead tree (snag) densities. Newton and Jenney (1880), Donaldson (1914), and Dodge (1965) commented on the large number of fire-killed trees but did not provide estimates. Graves (1899) published the first quantification of snag densities based on 69 plots (one-half and one acre in size) distributed across the Forest Reserve. Snag densities, based on this data, averaged 273 snags per 100 acres, and diameters ranged from 9 to 19 inches in the sampled area. Again, it is important to realize that the objective of the Graves (1899) report was to justify inclusion of the Black Hills in the Forest Reserve System based on forest productive potential. The plots selected may have represented good timber areas. It may be logical to assume those areas with high snag densities and open, park-like situations with low snag densities were omitted from his report. Graves (1899) stated that in some areas up to 50% of the timber was defective and 3-4% was dead throughout the original forest. Snags are probably fewer in number in the 1990s. Silvicultural management reduced the abundance of “defective” trees that could eventually become snags and reduced forest vulnerability to mountain pine beetle epidemics. Fire suppression efforts limited tree mortality from fires. Salvage harvesting operations following burns and epidemics typically removed a considerable proportion of dead trees. Fuelwood collection, primarily near communities and along forest roads, may have reduced snag densities.

In these situations, potential nest sites for snag dependent species such as woodpecker have undoubtedly declined. Remote portions of the Black Hills not intensively harvested and areas with limited access may have densities more like those reported by Graves (1899).

Habitat modification also occurred in riparian areas. The loss of beaver dam complexes and declines in perennial stream mileage converted riparian ecosystems to drier communities, as previously mentioned. These modifications reduced available habitat for species such as beaver, waterfowl, amphibians, and fish. Shifts in habitat also may have eliminated some aquatic invertebrates; however, since early naturalists did not survey these animals, no comparative information is available. Developments also influenced available habitats. Extensive mining during the past century has left numerous

abandoned mine shafts. These have supplemented the historical habitat for cave dwelling species such as bats, originally limited to natural caves found primarily in the limestone formations. Community and rural housing developments have supplanted many acres of prime winter range for elevational migrants such as deer and sharptailed grouse. In the aggregate, these low-elevation plant community conversions may limit winter habitat availability during critical periods of the year for some wildlife species. The extensive road network in the Black Hills area has had multiple effects upon habitat. The first is direct conversion of habitat to roads. Historically, road construction in riparian areas and meadows was common. Second is collisions with vehicles (up to 1,400 deer per year in the 1990s), which have become an important mortality factor for some species. Third are increases in vehicular traffic which reduces habitat quality for some wildlife. Elk are a good example because they tend to avoid areas near roads with traffic (Lyon and Ward 1982).

(3) The third impact of EuroAmericans on native wildlife has been the introduction of other species into the Black Hills. The Merriam's turkey (*Meleagris galiopavo merriami*), mountain goat (*Oreamnos mericanus*), and all existing game fish were successfully introduced to enhance recreation. Another group of introductions includes the house sparrow (*Passer domesticus*), European starling (*Scumus vulgaris*), common pigeon (*Columba livia*), Norway rat (*Rattus norvegicus*), feral dogs (*Canis familiar-is*), and feral cats (*Felis Cotus*) which accompanied or followed settlement during the past century. Each of these species successfully occupied a niche and may have altered the composition of native fauna. For example, starlings are aggressive secondary cavity nesters that can displace other cavity-dependent species. Feral dogs and cats inevitably become predators on a wide variety of native wildlife. There is, however, no clear understanding of the direct and cumulative impacts of exotics on the native fauna.

(4) The fourth category of impacts of EuroAmericans on wildlife in the Black Hills consists of species historically documented in the Black Hills but, for a variety of reasons other than hunting, is no longer part of the fauna. These include the peregrine falcon (*Falco peregrinus*) raven (*Corvus corax*), and purple martin (*Progne subis*). The peregrine falcon probably disappeared from the Black Hills during world-wide declines induced by exposure to chlorinated hydrocarbons (USDI, Fish and Wildlife Service 1984). Only one attempt was made to reintroduce this bird, and it was unsuccessful (Sharps and O'Brien 1984). Ravens, once common throughout South Dakota, were associated with large bison herds (South Dakota Ornithologists' Union 1991). The extirpation of these herds also led to the disappearance of ravens. Purple martins historically inhabited the Black Hills (Ludlow 1875) but today are essentially absent in the western third of South Dakota (South Dakota Ornithologists Union 1991). No reason for this change in distribution was found, although it may be related to isolation of the Black Hills caused by reductions in prairie floodplain forests and snag abundance throughout the western portion of the state.

Current Condition

The Norbeck Wildlife Preserve currently contains limited big game habitat. Wildlife habitat within the analysis area consists of ponderosa pine forests, aspen, bur oak, white spruce, meadows and rock outcrops. Most of the species present today in the Norbeck Wildlife Preserve are in much greater numbers than when Peter Norbeck traveled through the area in the early 1900s. The wildlife species found today on the Norbeck Wildlife Preserve are for the most part the same species as they were at that time. However, some of the species that were extirpated have since been re-introduced back into the area. Others were permanently removed from the ecosystem. Game populations were low in the early 1900s primarily due to mass over-hunting in the area.

The Norbeck Wildlife Preserve was set aside “for the protection of game animals and birds and to be recognized as a breeding place therefor” in the Norbeck Organic Act of June 5, 1920 by then-President Woodrow Wilson. A Memorandum of Understanding (MOU) between the Forest Service and the South Dakota Department of Game, Fish and Parks establishes procedures and responsibilities regarding the management and monitoring of the Norbeck Wildlife Preserve. Under this MOU it is the responsibility for the Forest Service to manage the habitat and South Dakota Department of Game, Fish and Parks to manage the wildlife on the Norbeck.

The following is a compilation of species that are generally thought to currently inhabit the Norbeck Wildlife Preserve or have been used to analyze effects of proposed actions. The list is not intended to be exhaustive, nor does it represent an attempt to enumerate “game animals and birds” for the purpose of the Norbeck Organic Act:

Table 16: List of Species Used to Analyze Effects of Proposed Actions

Species	Habitat Description	Status*
American Dipper (<i>Cinclus mexicanus</i>)	Swift-flowing montane streams (NatureServe 2005).	SOLC
American Peregrine Falcon (<i>Falco peregrinus anatum</i>)	Open habitat with cliffs present (Terres 1991); optimal cliffs are 200-to-300 feet high and dominate the surrounding landscape.	SS
American Three-toed Woodpecker (<i>Picoides tridactylus</i>)	Mature spruce forests, and possibly burned spruce habitat (Anderson 2003, Panjabi 2003).	SS
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Usually found near open water or carrion (Tallman et al. 2002); no nests or traditional roosts known in the Black Hills.	T
Black-and-White Warbler (<i>Mniotilta varia</i>)	Young, medium-aged and mature deciduous and mixed coniferous-deciduous forests (NatureServe 2005).	SOLC
Black-backed Woodpecker (<i>Picoides arcticus</i>)	Burned areas with a high density of pre-burn snags; dense and/or mature forests with a high snag density (Anderson 2003, Panjabi 2003).	MIS, SS
Broad-winged Hawk (<i>Buteo platypterus</i>)	Primarily found in aspen stands in northern Black Hills and Bearlodge Mountains, but also found occasionally in late successional pine stands.	SOLC

Species	Habitat Description	Status*
Brown Creeper (<i>Certhia americana</i>)	Late successional ponderosa pine and white spruce (USDA Forest Service 1996a).	MIS
Burrowing Owl (<i>Athene cunicularia</i>)	Dry grasslands and pastures, usually associated with prairie dogs or ground squirrels (Tallman et al. 2002).	SS
Cooper's Hawk (<i>Accipiter cooperii</i>)	Ponderosa pine, white spruce, riparian, shrubland and burned areas (Panjabi 2001, Panjabi 2002, Panjabi 2003, Panjabi 2004, Peterson 1995).	SOLC
Flammulated Owl (<i>Otus flammeolus</i>)	Open ponderosa pine forests (Hayward and Verner 1994).	SS
Golden-crowned Kinglet (<i>Regulus satrapa</i>)	Mature white spruce habitats or other forested habitats with significant spruce inclusions (Panjabi 2002).	MIS
Grasshopper Sparrow (<i>Ammodramus savannarum</i>)	Native mixed-grass prairies, especially in southern Black Hills (Panjabi 2004).	MIS, SS
Lewis's Woodpecker (<i>Melanerpes lewis</i>)	Open burned areas with large snags; oak and cottonwood forests, and open, park-like ponderosa pine forests (Anderson 2003, Panjabi 2003)	SS
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	Open country with scattered, low deciduous thickets (Tallman et al. 2002).	SS
Northern Goshawk (<i>Accipiter gentilis</i>)	Forages in a variety of forested areas and small openings; Nests primarily in dense mature conifer forests (Erickson 1987).	SS
Northern Harrier (<i>Circus cyaneus</i>)	Open country in medium/tall grass prairies and associated wetlands, marshes, and meadows (USDA Forest Service 2003).	SS
Northern Saw-whet Owl (<i>Aegolius acadicus</i>)	Forest habitat generalist; dense coniferous or mixed forest, cedar groves, alder thickets, swamps, and tamarack bogs; when not breeding, found in dense second growth, brushy areas, arid scrub, and open buildings (NatureServe 2005).	SOLC
Pygmy Nuthatch (<i>Sitta pygmaea</i>)	Mature ponderosa pine stands with large trees and snags (USDA Forest Service 2005).	SOLC
Ruffed Grouse (<i>Bonasa umbellus</i>)	Forests containing aspen or other hardwoods (USDA Forest Service 2005).	MIS
Sharp-shinned Hawk (<i>Accipter striatus</i>)	A variety of forested areas, but nesting habitat typically restricted to dense young conifer stands (USDA Forest Service 2005).	SOLC
Song Sparrow <i>Melospiza melodia</i>	Closely associated with riparian and wetland habitats.	MIS
Yellow-billed Cuckoo (<i>Coccyzus americanus</i>)	Low elevation riparian areas and woodlands characterized with cottonwood-willow or burr oak (Panjabi 2003, FWS www).	SS
American Marten (<i>Martes americana</i>)	Spruce forests with complex near-ground structure, extending into adjacent ponderosa pine stands (Buskirk 2002).	SS
Beaver (<i>Castor canadensis</i>)	Large rivers and lakes with constant water levels, marshes, small lakes, and streams with weak flows adequate for damming (Higgins et al. 2000).	MIS

Species	Habitat Description	Status*
Black-tailed Prairie Dog (<i>Cynomys ludovicianus</i>)	Short-grass and mixed-grass prairies with soils conducive to burrowing (Higgins et al. 2000).	SS
Fringe-tailed Myotis (<i>Myotis thysanodes pahasapensis</i>)	Forages on insects in a variety of habitats including grasslands and forested areas; roosts in a variety of structures including caves, mines, tunnels, snags and buildings (Schmidt 2003b).	SS
Long-eared Myotis (<i>Myotis evotis</i>)	Mostly coniferous montane habitats; Roosts in snags; No known hibernacula in Black Hills (USDA Forest Service 2005).	SOLC
Long-legged Myotis (<i>Myotis volans</i>)	Primarily in montane coniferous forests; uses caves and mines as hibernacula; roosts in abandoned buildings, rock crevices, under bark (NatureServe 2005).	SOLC
Meadow Jumping Mouse (<i>Zapus hudsonius</i>)	Strongly associated with riparian habitats along small streams in meadows (Luce et al. 1999).	SOLC
Mountain Goat (<i>Oreamnos americanus</i>)	Rugged terrain with cliffs, rock faces, ledges and talus slopes. Limited primarily to Black Elk Wilderness Area and Norbeck Wildlife Preserve (USDA Forest Service 2005).	SOLC
Northern Flying Squirrel (<i>Glaucomys sabrinus</i>)	Optimal conditions are cool, moist, mature forest with abundant standing and down snags (NatureServe 2005); typically dominated by conifers or mixed coniferous/deciduous forests (Wells, Gosling and Heanery 1984).	SOLC
Northern Myotis (<i>Myotis septentrionalis</i>)	Dense ponderosa pine and mixed coniferous/deciduous forest (Luce et al. 1999); roosts in caves, mines, tunnels, and under bark of snags (NatureServe 2005).	SOLC
Rocky Mountain Bighorn Sheep (<i>Ovis canadensis</i>)	Cliffs, rock outcrops, and nearby meadows. Limited primarily to areas around Sheridan Lake, Dark Canyon (Rapid Creek), Spring Creek, and Custer State Park (USDA Forest Service 2005).	SOLC
Small-footed Myotis (<i>Myotis ciliolabrum</i>)	Variable habitats, but usually associated with rocky areas like bluffs, dissected breaks, ridges, cliffs and major rock outcrops; Roosts include mines, caves, rock features, and under bark (USDA Forest Service 2005).	SOLC
Townsend's Big-eared Bat (<i>Plecotus townsendii</i>)	Forages on insects in a variety of habitats including forested and wet areas; roosts in a variety of structures including caves, mines, and buildings (NatureServe 2005).	SS
White-tailed Deer (<i>Odocoileus virginianus</i>)	Various habitats from forests to fields with adjacent cover; wooded draws and pine stands with closed canopies provide thermal cover, while agricultural areas and recently logged and open stands with abundant shrubs are important for foraging.	MIS
Rocky Mountain elk (<i>Cervus elaphus nelsoni</i>)	Forested riparian areas, forested stringers in meadows, and deciduous stands of birch or aspen	
Mule deer (<i>Odocoileus hemionus</i>)	Various habitats from forests to fields with adjacent cover; wooded draws and pine stands with closed canopies provide thermal cover, while agricultural areas and recently logged and open stands with abundant shrubs are important for foraging	

Species	Habitat Description	Status*
Mountain lion (<i>Felis concolor</i>)	Dense cover, steep slopes, boulder piles, undercut cliffs, and rock outcrops	
Black Hills Redbelly Snake (<i>Storeria occipitomaculata pahasapae</i>)	Moist habitats with well-developed ground litter (Smith 2003c).	SS
Northern Leopard Frog (<i>Rana pipiens</i>)	Riparian and wetland areas for tadpoles, sub-adults, and breeding adults; adults forage in upland habitats (Smith 2003b).	SS
Finescale Dace (<i>Phoxinus neogaeus</i>)	Streams, small lakes and cool, boggy environments often associated with springs or beaver dams; limited primarily to the Redwater Creek drainage, with the exception of Geis Reservoir on Middle Fork Hay Creek; no known occurrences on the South Dakota portion of the Forest (Isaak et al. 2003).	SS
Lake Chub (<i>Couesius plumbeus</i>)	Lakes and streams that usually have cool waters and clean gravel or cobble substrate; only population on the Forest is in Deerfield Reservoir (Isaak et al. 2003).	SS
Mountain Sucker (<i>Catostomus platyrhynchus</i>)	Occurs most often in cool, clear mountain streams, but have been observed in elsewhere in large rivers, lakes and reservoirs (Isaak et al. 2003).	SS, MIS
Atlantis Fritillary (<i>Speyeria atlantis pahasapa</i>)	Riparian areas adjacent to openings and moist meadows, and in boreal forests (NatureServe 2004).	SOLC
Callused Vertigo (<i>Vertigo arthuri</i>)	Moist, relatively undisturbed forest with diverse understories, deep litter, and abundant woody material (Frest and Johannes 2002). Calcareous or schist soils.	SOLC
Cooper's Mountain Snail (<i>Orechelix strigosa cooperi</i>)	Found on calcareous soils, lowland wooded areas and talus slopes, generally but not always with northern or eastern exposures. In contrast to other land snails, Cooper's snail can thrive with little cover and thin litter (Anderson 2005).	SS
Frigid Ambersnail (<i>Catinella gelida</i>)	Limestone soils, Usually in open ponderosa pine forest (sometimes spruce), often with a secondary deciduous tree and shrub component (Frest and Johannes 2002).	SOLC
Mystery Vertigo (<i>Vertigo paradoxa</i>)	On limestone or schist soils, usually in spruce forests (but sometimes pine) with relatively closed canopy, abundant litter, and well-developed understories (Frest and Johannes 2002).	SOLC
Striate Disc (<i>Discus shimckii</i>)	Found in litter of rich mesic forests with limestone soils, generally on shaded, north-facing slope bases; often bordering or ranging slightly onto stream flood plains (Frest and Johannes 2002).	SOLC
Tawny Crescent (<i>Phyciodes batessi</i>)	Open meadows and riparian woodlands (Stefanich 2001).	SOLC
Regal Fritillary (<i>Speyeria idalia</i>)	Requires open prairies (Royer and Marrone 19992); most likely to be found in native tall-grass prairies.	SS

Species	Habitat Description	Status*
Red-Naped Sapsucker (<i>Sphyrapicus nuchalis</i>)	Found in low to moderate densities throughout the Black Hills. Mostly associated with hardwood communities, especially aspen (Panjabi 2005).	
Hairy Woodpecker (<i>Picoides villosus</i>)	Found in low to moderate densities throughout the Black Hills. Mostly associated with burned areas but has been observed in other forested habitats (Panjabi 2003).	
Warbling Vireo (<i>Vireo gilvus</i>)	One of the most abundant bird species in the Black Hills. Most commonly associated with aspen and birch (Panjabi 2003).	
MacGillivray's Warbler (<i>Oporornis tolmiei</i>)	Located throughout most of the Black Hills, this species prefers montane riparian habitat and areas characterized with broad-leaved forest (Panjabi 2005).	
Vesper Sparrow (<i>Pooecetes gramineus</i>)	Primarily occupies mixed-grass prairie habitat in the central and southern Black Hills (Panjabi 2005).	
White-Crowned Sparrow (<i>Zonotrichia leucophrys</i>)	Prefers woodlands, thickets, groves and weedy fields (Tallman et al. 2002).	
Ruby-Crowned Kinglet (<i>Regulus calendula</i>)	This species is associated primarily with white spruce in the Black Hills but can also be found in montane riparian, aspen, late successional and north-facing pine sites (Panjabi 2003).	
ruffed grouse (<i>Bonasa umbellus</i>)	Mainly located in the northern Black Hills, this species is closely tied to aspen forests but has been observed in other habitat types (Panjabi 2003).	
northern flicker (<i>Colaptes auratus</i>)	This species can be found throughout the Black Hills in low to moderate numbers. It occupies all habitat types but is most common in burned areas (Panjabi 2003).	
mountain bluebird (<i>Sialia currucoides</i>)	Occurs locally in the Black Hills preferring more "open" areas such as grasslands, shrublands and burned areas (Panjabi 2005).	
red-breasted nuthatch (<i>Sitta canadensis</i>)	Found throughout the Black Hills and in almost all habitat types. Prefers areas dominated by pine (Panjabi 2003).	
Merriam's Wild Turkey (<i>Meleagris gallapavo merriami</i>)	A wide variety of vegetation types, including foothill and montane riparian associations, pine-juniper Shrubland, mixed grass prairie, and ponderosa pine, white spruce, and aspen forest stands	

*R2 SENSITIVE SPECIES (SS), SPECIES OF LOCAL CONCERN (SOLC), MANAGEMENT INDICATOR SPECIES (MIS) AND FEDERALLY LISTED SPECIES (T) CONSIDERED FOR PROJECT WORK.

C. Social Setting

Political and Administrative Structure

The Norbeck Wildlife Preserve was defined by legislation in 1920. Over the last 85 years, additional legislation and administrative decisions have continued to redefine land uses within the Norbeck. The cumulative effect of this legislative and administrative process is the creation of a complex political landscape (Fig. 16, see page 59).

Understanding the structure of the Norbeck landscape requires an understanding of the laws and administrative decision that have shaped it. The following list represents a legal timeline of Acts of Congress (in bold type) and Administrative Designations (in italics) pertaining to the Norbeck Wildlife Preserve, Custer State Park, Mount Rushmore National Memorial and the Black Elk Wilderness.

1851 Fort Laramie Treaty

The 1851 Fort Laramie Treaty set aside an area in northern Wyoming for Lakota hunting grounds. The treaty called for peace among the northern tribes, promised safety to the Sioux, and approved roads and military posts.

1868 Fort Laramie Treaty

The commander at Fort Laramie was ordered to have all Lakota sign a new treaty in 1868. The Fort Laramie Treaty of 1868 promised that the Lakota, Cheyenne, and Arapaho groups could travel the buffalo grounds of the upper Missouri as long as the buffalo herds survived. The treaty also required their children to attend Christian missionary schools and promised that Fort Phil Kearney would be burnt to the ground.

1912 Custer State Forest was established through state-federal land exchange.

State and Federal land exchanges begun in 1898 and were completed and signed by President Taft on February 15, 1912 eventually leading to Custer State Park. The land swap consolidated 96 sections of state land from throughout what is now the Black Hills National Forest. Originally designated by the South Dakota legislature as Custer State Forest, the area was re-designated a game preserve in 1914 and renamed Custer State Park in 1919.

1920 The Norbeck Organic Act authorized the president to establish a game preserve, of up to 30,000 acres of National Forest land, for the protection of “game animals and birds”.

On June 5, 1920 Congress passed the Norbeck Organic Act, authorizing the President to establish a game preserve and spelled out certain stipulations for its creation and purpose. The act states that Custer State Park Game Sanctuary was to be and not more than 30,000 acres, near or adjacent to Custer State Park, on the Harney National Forest. It was to be

“set aside for the protection of game animals and birds and be recognized as a breeding place thereof”. The act prohibits hunting except as authorized by the Secretary of Agriculture, with the provision that the Act does not affect local game laws on state or private land. The Act also authorized the state of South Dakota to build and maintain a game proof fence. This is considered to be a second withdrawal. The first withdrawal was when the forest was withdrawn as a reserve for the purposes of watershed protection and timber production. The second withdrawal of the Norbeck Wildlife Preserve area was and is for the protection of game animals and birds. Because the second withdrawal was a congressional act, specific to the area and came later in time, it is considered the dominant withdrawal.

1920 Presidential Proclamation established Custer State Park Game Sanctuary.

In accordance with the Norbeck Organic Act, President Woodrow Wilson established by proclamation Custer State Park Game Sanctuary on October 9, 1920 on Forest Service lands. Although the sanctuary’s name, size and boundaries have changed, the primary management direction spelled out in this original legislation has remained consistent.

1924 Amendment to Norbeck Organic Act authorized the expansion of the sanctuary to no more than 46,000 acres.

Congress, acting upon the recommendation of the Secretary of Agriculture, authorized the expansion of the Custer State Park Game Sanctuary. This opened the way for the designation of the two detached portions of the Norbeck Wildlife Preserve.

1925 Presidential Proclamation expanded the game sanctuary to 42,200 acres by adding sections near what is now Wind Cave National Park.

1927 The Master Plan for the Protection and Administration of the Norbeck Wildlife Preserve was approved.

The Master Plan laid out the specific management direction that has guided the Norbeck Wildlife Reserve since June, 1927. While acknowledging the Norbeck Organic Act and the over riding importance of wildlife, the Plan sets guidelines for managing other resources as long as it does not adversely affect wildlife. Specific resource management direction in the Master Plan is summarized as follows:

- Timber harvesting was an integral part of management, the purposes being to maintain thrifty stands and to provide economic stability for local communities. Scenic values, thinning, brush disposal, and insect and disease control were important parts of timber marking guidelines. Strict utilization and cleanup were required along scenic routes and special timber sale contract clauses were provided “to protect the forest and public health and to guard the purity of streams.”
- Public campgrounds and summer homes were permitted, always recognizing that the “protection of game shall have priority over human use”.

- Livestock grazing under established term permits was to continue with no increase in herd size. Temporary permits for additional grazing could be issued provided the area “produces a surplus of feed over and above the reasonable requirements of the game animals and stock grazing”.
- The Forest Service retained control and responsibility for location and development of roads and trails.
- Acquisitions and exchanges of land were to continue.
- Mining was prohibited, based on a formal opinion rendered by the Solicitor of the Department of Agriculture on July 9, 1918.

1929 Presidential Proclamation expanded the sanctuary again, adding several hundred acres in the Stockade Lake area.

1932 The Upper Pine Creek Research Natural Area was designated by the Secretary of Agriculture.

On July 3, 1932, the Secretary of Agriculture designated 1,190 acres within the Norbeck Wildlife Preserve as the Upper Pine Creek Research Natural Area. The purpose of its designation was to preserve an area of virgin timber “so that past and future generations can see it as it was when the Indians used the Black Hills for their hunting grounds. Such an area can also be used for comparisons with research plots and cutover lands, and will be increasingly valuable as time goes on”. The Upper Pine Creek Research Natural Area has been administered since in accordance with 36 CFR 251.23, which requires it to be retained in “a virgin or unmodified condition except where measures are required to maintain a plant community which the area is intended to represent”. Most of the area was withdrawn from mineral entry and exploration since 1962.

1933 Mount Rushmore National Memorial is moved to the Department of the Interior.

With the establishment of the Mount Rushmore National Memorial, 1270 acres in the northwest section of the Norbeck was transferred to an association and later to the Park Service and the Department of the Interior. Although the memorial is located within the Norbeck Wildlife Preserve, it is under the jurisdiction of the Park Service and not subject to the objectives of the Norbeck Organic Act.

1948 Congress re-established mining rights in the Custer State Park Game Sanctuary and realigns the western boundary.

With specific provisions for the protection of wildlife, mining was allowed inside the Norbeck Wildlife Preserve area under the general mining laws of the U.S. The western boundary of the Norbeck Wildlife Preserve area was moved to where it stands today.

1949 Congress renamed Custer State Park Game Sanctuary as the Norbeck Wildlife Preserve and restored acreage from Mount Rushmore National Memorial.

Along with a new name the Norbeck Wildlife Preserve re-acquired 505.25 acres of land that had been made part of the Mount Rushmore National Memorial. Congress also authorized the placing of a Peter Norbeck Commemorative Plaque upon Iron Mountain, as long as it didn't cost the government any money. This was 19 years after the death of Peter Norbeck.

(1964 Congress passes the Wilderness Act.)

(1969 Congress passes the National Environmental Policy Act.)

1973 Custer Ranger District issued the Norbeck Unit Management Plan to address recreation issues and the mountain pine beetle.

After 48 years of management under the 1927 Master Plan, a new plan was written to address the shifts in use and increasing mountain pine beetle.

1974 Due to litigation, the implementation of the plan was suspended pending the preparation of an Environmental Impact Statement.

(1976 National Forest Management Act.)

1979 The Forest Service issued the Norbeck Wildlife Preserve Management Plan and accompanying EIS.

1980 Congress establishes the Black Elk Wilderness within the Norbeck Wildlife Preserve.

In December 1980, the proposed Harney Peak Wilderness Area was officially established by Congress. Its name was changed to the Black Elk Wilderness. Congressional debate includes concern that provisions to ensure the Forest Service's ability to manage the area for the protection of game animals and birds as originally intended in the Norbeck Organic Act be included. Assurance is given that Wilderness designation would not limit management action necessary for that purpose and the provisions were not added to the legislation. Sec 103 states...."That the provisions of the Act establishing the Custer State Park Sanctuary and later named Norbeck Wildlife Preserve shall also apply to the Black Elk Wilderness to the extent they are not inconsistent with the provisions of the Wilderness Act".

1983 The Black Hills National Forest Land and Resource Management Plan was approved.

1985 Master Memorandum of Agreement between South Dakota Game, Fish and Parks Division of Wildlife and the Forest Service was signed.

Pursuant to 36 CFR 241 and the Sikes Act, the Memorandum states that “The Forest Service agrees to recognize the Department as being responsible for establishing the regulations and programs under which populations of fish and wildlife species will be managed in South Dakota”.

1985 The Forest Service approved timber harvest and road construction in the Norbeck. The proposals were appealed.

1989 The FEIS and ROD (Record of Decision) for the Norbeck Wildlife Reserve, including the Needles and Grizzly timber sales were issued. The decision was appealed

1990 On discretionary review, the Chief's Office of the Forest Service requested a supplemental EIS and new ROD.

1992 The FSEIS and ROD were issued and appealed. The decision was upheld.

1994 Civil Action 94-Z-2273 was filed in Colorado District Court.

A civil action lawsuit was filed in Colorado District Court in reference to the 1989 FEIS and the Grizzly and Needles Timber Sales.

1996 A Revised Black Hills National Forest Land and Resource Management Plan (LRMP) was approved then appealed.

1997 Revised LRMP Final EIS released and ROD signed.

1999 U.S. District Court denied the plaintiffs' motion in reference to the 1989 FEIS related to the Grizzly and Needles Timber Sales.. The plaintiffs appealed to the Tenth Circuit Court.

U.S. District Court for the District of Colorado denies plaintiffs motion for summary judgment and dismisses counts 1, 2 and 3 with prejudice. Shortly thereafter plaintiffs appeal case to the Tenth Circuit Court.

2001 LRMP Phase I Amendment complete.

2001 The U.S. Tenth Circuit Court of Appeals reversed the lower courts ruling, effectively blocking implementation of the Grizzly and Needles Timber Sales.

Timber harvests proposed for the Norbeck Wildlife Preserve based on the 1983 Black Hills National Forest Land and Resource Management Plan (LMRP) were litigated. The Tenth Circuit determined that the Forest inappropriately used the mandate of the National Forest Management Act (NFMA) (optimize overall wildlife, fish, and vegetative habitat diversity) to override the Norbeck Organic Act's narrower mandate “for the protection of game animals and birds... and a breeding place thereof”. The decision remanded the case

back to the Forest Service to justify the proposed timber harvests by showing specifically that game animals and birds are protected, not by showing that optimal diversity is served generally.

This ruling reverses the lower court ruling and remands the decision, determining that the Forest Service subjugated the mandate of the Norbeck Organic Act to that of the National Forest Management Act. The ruling includes dissent by one member of the three judge panel.

2001 The Peter Norbeck Scenic Byway was designated.

2002 Congress passes P.L. 107-206, sec. 706 (which set aside the court proceedings), mandated implementation of the Needles and Grizzly timber sales and added acreage to the Black Elk Wilderness.

After negotiations at the local level, in which some groups opted out, President George W. Bush signed into law a supplemental appropriations act. Section 706 of this act authorized and directed the Forest Service to carry out certain actions to address deteriorating forest health conditions in the Beaver Park and Norbeck portions of the Black Hills National Forest. In the Norbeck Wildlife Preserve, Congress directed that the Needles and Grizzly Timber Sales proceed with modifications. Congress further authorized the Secretary of Agriculture “to use the full spectrum of management tools including prescribed fire and silviculture treatments to benefit game animals and bird habitat in meeting the purposes of the Norbeck Organic Act”.

Congress prescribed that an MOU be drafted with the South Dakota Department of Game, Fish and Parks to further cooperation and consultation in the management of Norbeck. Finally, the act amended earlier legislation and added about 3,600 acres to the Black Elk Wilderness.

2004 Memorandum of Understanding between South Dakota Game, Fish and Parks (SDGFP) and Black Hills National Forest of Norbeck Wildlife Preserve per the 8/2/02 Daschle Legislation, Public Law 107. In part:

FS Shall...Recognize that SDGFP is responsible for establishing the regulations and programs under which fish and wildlife populations are managed in South Dakota, provided that nothing in this agreement modifies or changes existing state and federal laws....

SDGFP Shall....Recognize the Forest Service as the agency responsible for the final decision and determination of occupancy, use and management of the land, water, and habitat within the Norbeck Wildlife Preserve, provided that nothing in this agreement modifies or changes existing state and federal laws....Keep the Forest Service informed of changes in SDGFP policies, laws, legislation, programs, projects and/or funding opportunities which may have impacts on game animals, birds and their habitats within Norbeck Wildlife Preserve....Consult with and consider the guidance provided by the

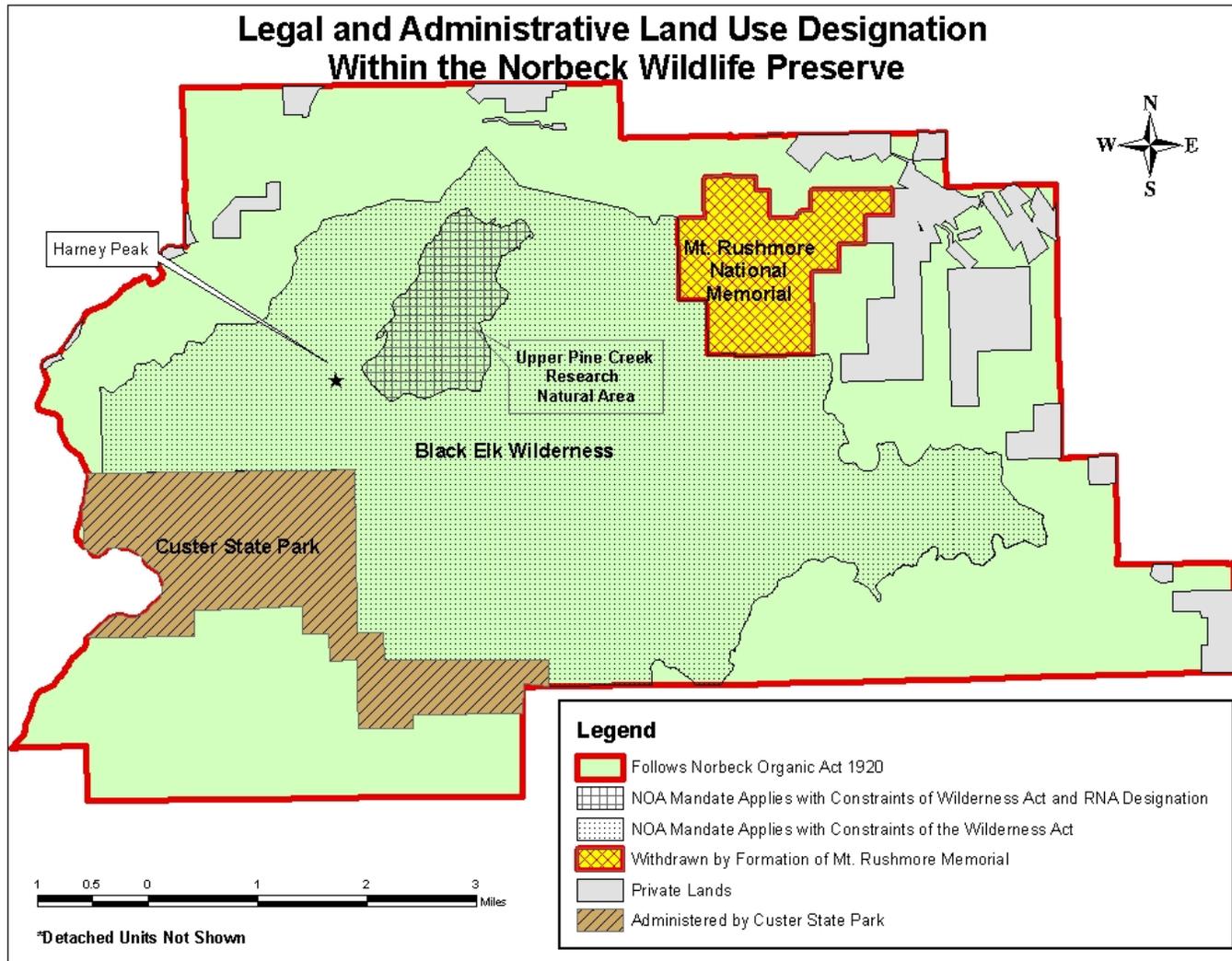
Forest Service in SDGFP's regulation of fish and wildlife populations and harvests within the Norbeck Wildlife Preserve in order that game animals, birds and their habitats will be maintained consistent with existing and future management plans.

Both Parties mutually agree that ...Projects in the Norbeck Wildlife Preserve must be designed to first and foremost improve conditions for game animals, birds and their habitats. Furthermore, all actions must be consistent with the Norbeck Organic Act, other applicable legislation, court rulings and legal interpretations which may result.

2005 LRMP Phase II Amendment.

The Phase II Forest Plan Amendment has its basis in a number of events that have occurred since 1997. In brief, these events include the decision by the Office of the Chief of the Forest Service (USDA Forest Service 1999a) on a number of appeals of the 1997 Revised Forest Plan; a lawsuit filed against the Forest Service (1999) and the resulting Settlement Agreement (U.S. District Court for the District of Colorado 2000); a number of large fires and a continuing insect epidemic on the Forest; and emerging national policy related to forest health. To help the reader better understand the context of the Phase II Amendment, these events are explained in more detail in the following paragraphs:

Figure 16: Legal and Administrative Land Use Designation within the Norbeck Wildlife Preserve



Demographics

The study area for the social analysis was limited to Custer and Pennington counties. These are the counties that are adjacent to the Norbeck Wildlife Preserve. It is recognized that the impacts of tourism are far-reaching, but given the limited time available, these two counties were used as indicators.

Population

The town of Custer is the closest population center to the Norbeck, with an estimated population of 1860 people. Other communities around the perimeter of the Norbeck are Keystone, Hill City, and Hermosa. Pennington County contains Rapid City, a regional trade center and second largest city in South Dakota. Approximately 70 percent of the population of Pennington County resides in Rapid City.

Table 17: Population data for Custer and Pennington Counties

	Custer County			Pennington County		
	1970	2000	2004	1970	2000	2004
Population	4,698	7,275	7,665	59,249	88,565	92,631
Median Age		43	45		35	36

Both Custer and Pennington counties have shown an approximate 5 percent growth in population between 2000 and 2004. Although the trend of “rural flight” is common in South Dakota as well as other Midwest states, the Black Hills area has exhibited a net gain in population.

The current median age for Custer County is 45 years. This value is projected to rise as the current population ages and an influx of retirees continues to flow to the region from Midwest metropolitan areas. Due to the lack of year-round job opportunities, many of the youth leave the area upon graduating from high school. Eighty-eight percent of adults in Custer County have a high school diploma or higher education. Although a high percentage of people in Custer County have some college education, the area does not have higher education or training facilities for those looking to advance their careers.

The current median age for Pennington County is 36 years. This trend is projected to remain steady as the majority of the population resides in Rapid City, which is expanding its retail and business opportunities. Pennington County has three higher education institutions, Black Hills State University in Spearfish, and National American University along with Western Dakota Technical Institute in Rapid City.

The people living in the Black Hills area are mainly AngloEuropean or American Indian (primarily Lakota) descent. This is not projected to change significantly.

Visitors to the Black Hills come primarily from the Midwestern states of Minnesota, South Dakota, Iowa, Indiana, Illinois, Nebraska, Oklahoma, North Dakota and

Wisconsin. Large population centers in Colorado and California also contribute to overall visitation (1996 FEIS).

Social and economic factors, such as available private lands, national economic trends, technology, and transportation, will play a role in the future growth of the study area's population. It is unlikely that any management activity proposed in the Norbeck area would have a significant impact on county populations. Some individuals may be directly affected by some decisions, but it is unlikely that these decisions would influence overall population trends.

Income and Employment

The general trends in employment and income of a region provide context for the potential impacts of changes in Forest management. Along with population changes and growth, employment within the analysis area has also been changing. The median incomes of Custer and Pennington Counties are approximately \$40,000, above the median value for the state of South Dakota, but below the national average by about 5 percent. Approximately 10 percent of people in Custer County and 13 percent in Pennington County live below the poverty line. The unemployment rate for both counties is around 3 to 4 percent. Neither of the counties contain low-income or minority populations as defined by Executive Order 12898.

Since 1960, there has been a major shift away from traditional mining, forestry, and ranching-based economies toward more of tourism and retirement economy. In 2004, accommodation and food services was the largest of 20 major sectors in Custer County. Approximately 33 percent of all employment in Custer County is government employment, which includes federal, state, and local government employees involved in executive, legislative, judicial, administrative, and regulatory activities. This trend is predicted to remain constant in the foreseeable future.

The largest growth within Pennington County has been in the finance, insurance, real estate, construction, and retail sectors. These sectors are associated with the increasing population and overall growth of the area, residential and commercial building construction and sales, and the development of infrastructure required to accommodate population increases. Also associated with population growth of the study area, employment in the retail trade and service sectors has grown over the 10-year period. Much of this growth is in health care services and tourism.

Total direct, indirect, and induced jobs and income due to recreation on the Forest was estimated at 127 million dollars in 1995.

Property Values

The demand for land in the area is increasing. Land prices are increasing on average about 12 percent annually. The in-migrating populations tend to be baby boomers from California and Colorado, escaping the high cost of living, or long time vacationers from

the Midwest who retire in this area. There is little affordable housing available to the local working class. In 2000, the average monthly cost for homeowners' in Custer was \$884 per month with a mortgage. Approximately 20 percent of the households rented, with the median rent being around \$300 a month. In 2000, median value for a house in Custer was approx \$82,000. Raw land is currently going for \$3,000 to \$20,000 an acre.

Human Uses of the Norbeck

Recreation

Each year the Forest provides more than 3.5 million Recreation Visitor Days (RVD) of outdoor recreation enjoyment to the public. The principal recreation activities are driving for pleasure and viewing scenery (63 percent), camping and picnicking (9 percent), hunting and fishing (7 percent), hiking and horseback riding (7 percent), and snowmobiling (4 percent). This use occurs in dispersed areas and at developed sites. The remaining 10 percent is comprised of nearly 50 other activities (Forest Plan DEIS, 1996).

It is important to note that the above figures comprise recreation data for the entire Black Hills National Forest, and it is likely that the percentages of use change dramatically in favor of driving and viewing scenery. An estimate (based on 3.5 million use driving and viewing scenery use days versus 1995 trail counts of 31,000 use days in the Wilderness) would be approximately 99% of the use in the Norbeck is driving and viewing scenery. All other uses, including hiking in the wilderness, picnicking, horseback and bike riding account for 1% or less than of the total use.

Driving and Viewing Scenery

More than 3 million visitors per year travel the Scenic Byway. During the 2006 Bike Week Rally, Mount Rushmore National Monument tallied 46,000 visitors in one day, with a peak season average of 30,000 people each day (personal communication MRNMM Superintendent, 2006). According to daily average traffic entering the town of Sturgis (State Department of Transportation Sturgis Report, 2005) the Sturgis Motorcycle Rally, held each spring, has increased from around 50,000 in 1993 to 78,000 in 2004. Based on these figures it is important to consider the effects (i.e. noise, volume, safety) this increasing amount of motorcycle traffic is having on both the Scenic Byway and the Norbeck Wildlife Preserve.

Larger recreational vehicles using the Norbeck Scenic Byway have been known to have difficulties navigating portions of the Byway (Personal communications S. Keegan, 2006). When a vehicle is too large they have been known to get stuck in a tunnel or require many point turns to negotiate the switchbacks and other narrow road conditions. Effects of these situations may also be incompatible with the objectives of the Byway (traffic congestion).

It could be argued that the extreme amount of motorized use, though confined to a single corridor, may have a detrimental effect on the quality and quantity of game animal and bird species habitat.

Illegal off-road motorized use continues to affect the landscape. Proximity to private land, accessible terrain, Black Hills National Forest policy (until recently) that allowed off road use in an area unless posted as closed, and a local population rich in OHV (Off Highway Vehicle) owners and recreationists (Forest Service OHV Survey 2005) contributes to the challenges faced in managing Norbeck for limited motorized use to provide for wildlife security (Phase II Land Resource Management Plan Management Area 5.4A).

In 2005, the Forest Travel Management Team worked to close illegal roads in the Norbeck Wildlife Preserve. Violations of motorized travel in the Norbeck and the Black Elk Wilderness decreased following this effort. In 2005, one violation was issued and two incident reports were documented for use of motorized or mechanized equipment within closure areas (both wilderness and Norbeck).

Camping and Picnicking

Restriction on campfires, 300 ft from roads for dispersed camping, results in light camping uses. Picnicking occurs and is likely to take place in the Wilderness as visitors participate in the various hiking and horseback riding opportunities.

Hunting and Fishing

Hunting and fishing occur within the Norbeck. Opportunities to hunt Rocky Mountain goats, and bighorn sheep are especially valued. Recent management activities are cited as bringing back huntable population of elk, deer and turkey.

Hiking and Horseback riding

According to 2005 trail counter data, the most highly used trails that access National Forest lands are the Sylvan Lake/Harney Peak Trail (#9 South) with approximately 13,000 visitors per year accessing the Black Elk Wilderness, and the Norbeck Trail (#3) with approximately 1,800 visitors accessing the Black Elk Wilderness. Trailheads for both these trails are located within Custer State Park. Trail counters are set up at the National Forest boundary (2005 Black Elk Wilderness Report).

Private Land Ownership

An overall factor shaping the social environment is the intermingling of private homes and businesses within the proclaimed boundary of the Forest. Very few national forests have the amount of suburbanization that is in the Black Hills. The towns of Custer and Hill City are near the Norbeck Wildlife Preserve, while the town of Keystone is immediately adjacent. Of the 34,256 acres of the Norbeck within the proclaimed

boundary six percent is privately owned. A strong pattern of suburbanization will continue to occur within the Black Hills, with profound effects on both the social and the biological elements of the environment (Forest Plan FEIS, 1996).

Professional opinion of Forest resource specialists determines that many user defined routes and trails are being developed that provide these private land owners access onto areas within the Norbeck. Several new road easements across though the Norbeck have been and are likely to continue to be requested. Four are pending decisions for 2006. County ordinances requiring both and ingress and egress roads to these private land in-holdings for fire safety, complicate the easement request issue (personal communication L. Burnes). Current direction for the Norbeck is to authorize land occupancies (special uses) only if they are compatible with wildlife needs (Forest Plan Phase II FEIS 2005).

Economic

Little data exists that relates specifically to the Norbeck, the following is information for the entire Black Hills National Forest.

Industries that use forest-related resources include wood products, mineral extraction, recreation and tourism, and livestock grazing. These are the four industries that are directly dependent on forest related resources and are the most likely to be affected (positively or negatively) by Forest management.

Based on the facts that there is only one livestock grazing allotment, one active mining claim and little commercial timber harvest within the Norbeck, it is likely that the greatest economic reliance on the Norbeck would be in the recreation and tourism sector with timber harvest much lower and livestock and mining very minor contributors to the economy.

Each industry is described below in terms of dependence on Forest outputs. For more resource information concerning each industry, please refer to each individual resource section in this document.

Mining

Historic Condition

Mining activity in the Norbeck prior to 1900 was limited to local, placer extractions of gold. The first gold found in the Black Hills area was around the Bismark Lake, located in the Stockade Lake detached unit of the Norbeck Wildlife Preserve, by Custer's team as they crossed the landscape. The presence of gold in the hills, and specifically the Norbeck Wildlife Preserve, attracted an influx of prospectors in the late 1800s and early 1900s.

With the establishment of the Norbeck in 1920, the area was withdrawn from mineral entry by the Secretary of the Interior under provisions of the General Mining law of 1872. When the withdrawal was made, minerals of significance were thought not to exist in

significant amounts in the withdrawn area, or were not considered particularly important to the nation or to the local economy. By the late 1930s, however, evolving manufacturing techniques combined with threats to foreign importation increased demand for several of the minerals located in the Norbeck (Fig. 17).

In response to the changing state of affairs, in 1938 the Secretary of Agriculture authorized mining within the Norbeck game sanctuary under “free special-use permits” issued by the US Forest Service with “appropriate conditions in the permits to protect the wildlife and other public interests”. Partially due to this special-use policy, South Dakota became the second largest mica producing state during World War II. The “1948 Act” was passed to legitimate the Secretary of Agriculture’s authority over mining practices in Norbeck, and allow for the prohibition of mining “only where, in his judgment, mining would not be in the public interest” (Thompson 2000).

Since the re-instatement of mining in 1938, mining records indicate miners have extracted gold, silver, feldspar, spodumene, beryl, pyrite, granite/pegmatite, lead, zinc, mica, tungsten and other industrial and semiprecious minerals. Most mining activity is and has been in the northeast corner of Norbeck, in the vicinity of Keystone, and much of it is located on private land. Of the 168 claims recorded on National Forest land in the Norbeck in April 1988, 130 were near Keystone.

Current Condition

In 1991, the Chief of the Forest Service approved the prohibition of mining on 85 percent of the Norbeck Wildlife Preserve, including the Black Elk Wilderness. The remaining 15 percent is located in the northeast portion of the Norbeck. Within the permitted area exists one active mine (Whitecap Mine) and two additional claims.

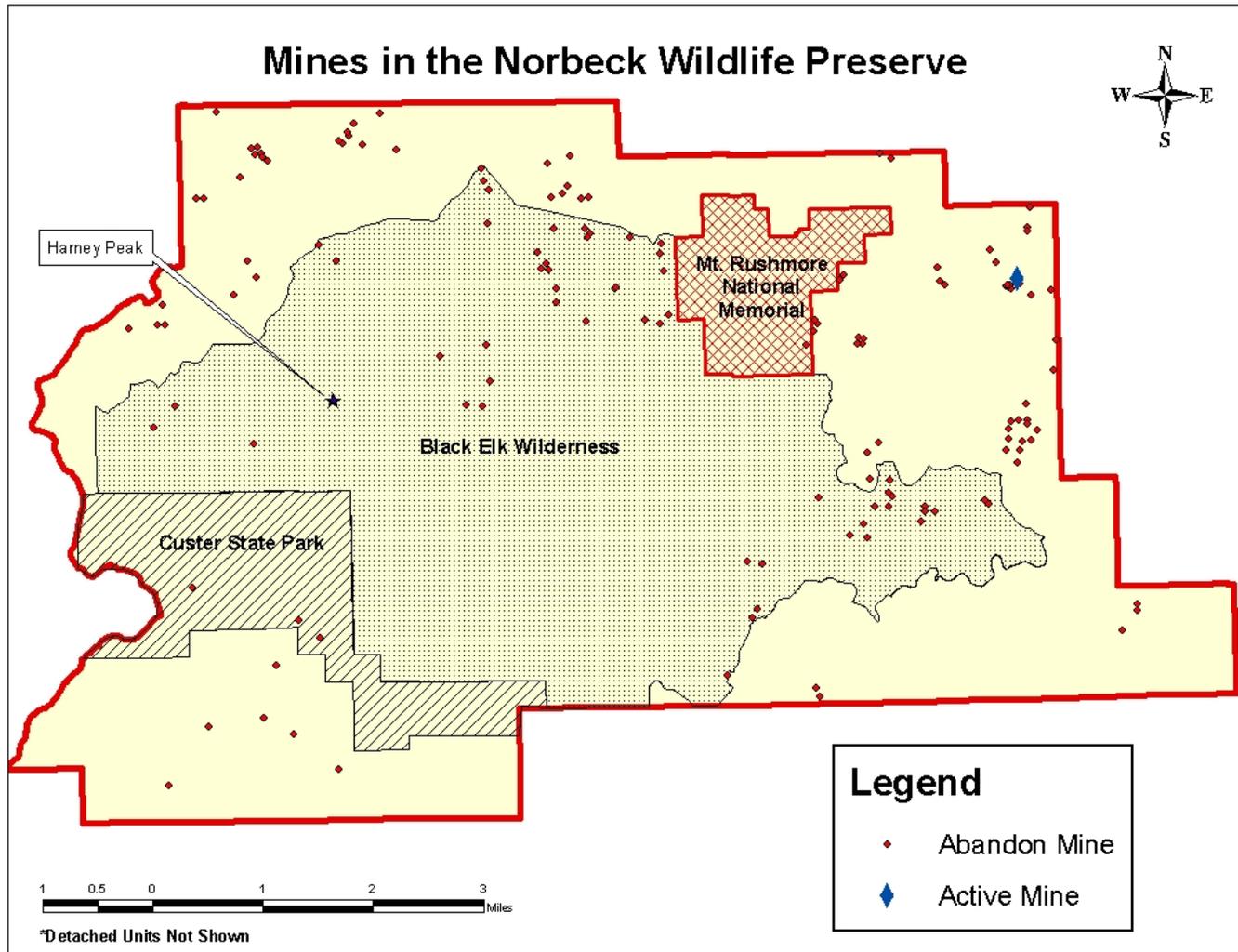
Human activity associated with mining disturbs and displaces wildlife. Removing vegetation for surface mines reduces available habitat, but for small operations, typical of Norbeck, this is a minor effect. There are approximately 40 acres of disturbed and un-reclaimed mined land in the Norbeck. This amount of forage production loss is also considered minor (Norbeck Wildlife Preserve DEIS, 1989).

As the majority of the area is withdrawn from mining activity, there is little potential for further development of mining opportunities.

Wood Products

Production of wood products is a very important economic sector on most of the Black Hills National Forest, but within the Norbeck commercial timber activity has been light to non-existent since the 1960s. Designation of the Black Elk Wilderness in 1980, the Peter Norbeck Scenic Byway in 2001 and the physical limitations of the landscape limit the landbase available for production of wood products within Norbeck. The Phase II Amendment to the Forest Plan (2005) limits the commercial timber offerings to no more than 5.4 million board feet of sawtimber and 1 million cubic feet of products other than logs on suitable lands within the Norbeck in the decade from fiscal years 1997 to 2006.

Figure 17: Mines in the Norbeck Wildlife Preserve



Ranching

There is one cattle allotment in Norbeck it is within the detached portion known as Section 2.

Tourism

The Black Hills economy depends heavily on recreation and tourism. The Norbeck area is important as both a primary destination and as a "backdrop" for other destinations like the region's National Memorial, Custer State Park, and historic towns. The rugged beauty of the mountains and the Forest provide the basis for a number of recreational activities. The maintenance and perpetuation of this natural beauty is vital to the area's recreation and tourist industries (Forest Plan FEIS, 1996).

Probably the most direct indicator of the tourism industry is hotel and lodging. While only part of the expenditure, it most directly reflects the industry since a majority of visitors will need overnight accommodations (Foulke, 2002). Sales taxes associated with lodging as well as food services can be used as a proxy of tourism trends in an area.

Table 18: South Dakota Counties Taxable Sales, Fiscal Years 2001 and 2002

County	FY01	FY02	% Change
Custer	\$62,443,202	\$64,241,305	+2.9
Pennington	\$1,689,557,796	\$1,811,305,083	+7.2

There are three outfitter and guides permitted to operate within Norbeck. Most Forest Service campground and picnic areas in the Norbeck are under contract to a concessionaire.

Many Black Hills communities including Custer, and Hill City, have traditionally relied upon forest management to provide them with high-quality water (Forest Plan FEIS, 1996).

The City of Custer has requested that the Forest Service manage the Upper French Creek Drainage for increased water yield. When wells produced less water during the latest drought cycle, Custer residents suffered from water shortages. As a result, more wells were drilled. In 1995, Custer's Mayor, Lee Sutton, continued to express concern about the impact the increasing vegetative density in the French Creek Drainage may have on water yield (Forest Plan FEIS, 1996).

Social Assessment

The social assessment consisted of semi structured interviews with key informants and content analysis of those interviews. The list of the informants began with contact list provided by the Black Hills National Forest. The contacts were grouped according to their use and linkage to the Norbeck Wildlife Preserve. Additional contacts were researched and added to the list after being referred by the initial contacts.

The content analysis portion of the social assessment involved summarizing the content of the interviews and compiling a list of issues, concerns and repeated themes. Each community was then analyzed for themes common to the group and areas of disagreement. Overarching themes that were common across all groups were also found.

The social assessment utilized open-ended interview questions with very little prompting from the interviewers. People talked about what was important to them. This is not a survey and the opinions and views expressed are only examples of the range of attitudes and opinions that we found. The range of issues and opinions is not exhaustive nor statistically representative.

Key Informant: Elected Officials

Three elected officials from local communities were interviewed. They did not express strong views on many of the issues that other community groups felt were important. The views that they did express were varied and not generally consistent throughout the government group. One of the few areas they did agree on was the need for active management of the Norbeck Wildlife Preserve, particularly active management for wildlife. All expressed concern over increasing tree density and wildfire risk. Despite their recognition of the need for management in these areas, no consistent views were expressed on specific actions.

Key Informant: Non-government organizations (NGOs)

In this group are the clubs and societies that are concerned with the Norbeck Wildlife Preserve, eight of which were interviewed for our assessment. The NGOs expressed strong views on the majority of issues raised. They also had the greatest variety of opinions among any of the communities of interest. The only areas of general agreement are approval of the Black Elk Wilderness designation and disapproval of commercial timber harvest as a management tool. Most of the NGOs feel that the Norbeck Wildlife Preserve is a special place.

Key Informant: Recreation

This group is made up of people who use the Norbeck Wildlife Preserve for recreation. There were nine interviews from this group. The key informants that we interviewed expressed a variety of opinions on use and management of the Norbeck Wildlife Preserve. Specific activities represented by the participants include horseback riders, hikers, rock climbers, mountain bikers and hunters. Unsuccessful attempts were made to interview representatives from the motorized recreation community and that group remains unrepresented in our analysis.

Some of the opinions expressed were predictable and consistent with attitudes known to be held by the specific user types. For example, mountain bikers were not supportive of the recent addition to the Black Elk Wilderness because it closed a popular route to bicycles. The climbers expressed strong support for climbing and the horse users for horse use. Through our content analysis of the interviews, several trends of general agreement and disagreement between those interviewed became apparent.

Almost all individuals were supportive of active management of the Norbeck. Management activities that were given general approval and support were commercial timber harvest as a management tool, restrictions on motorized use, and trail maintenance and improvement. Those individuals who perceived a loss of meadows and open areas supported meadow restoration. A strong concern over increasing tree density was expressed by most people in this group. The management actions that were not favored were the use of quotas that would limit the number of people who could use the area. Although a few thought that a quota system was needed to reduce crowding, most did not. All those who expressed an opinion on quotas to protect wildlife did not feel that such actions were necessary because they felt that the presence of people had little to no impact on wildlife. They did, however, express the perception of and concern over the loss of wildlife habitat.

A common thread was found between the view on public involvement and trust in Forest Service management. As with other groups those in the recreation group who felt that public involvement was sufficient also expressed confidence in Forest Service management. Those who found public involvement lacking or superficial, had little faith in the Forest Service's ability to manage the Norbeck Wildlife Preserve.

Key Informant: Economic

This community group consists of people with economic ties to the Norbeck Wildlife Preserve. Nine participants were interviewed from this group. The key informants in this group included the local Chamber of Commerce's, a local developer, a representative of the timber industry, a forest concessionaire and KOA owner, and a local aerial adventure provider.

In summary of opinion expressed, all generally supported active management of the Norbeck, recognizing the need to maintain wildlife habitat. Generally they did not speak

to management in terms of fire hazard but more in terms of the need to maintain/restore wildlife habitat.

Trails were an important topic with this group, advocating the need for more trails, better maintenance and signage. The subject of accessibility for the disabled was also raised. The area was noted as a special place but solitude was not the specified reason. None of the interviewees in this group raised the topic of quotas to limit the number people allowed to use the area.

All mentioned the increasing density of small trees. All supported active management and are in agreement with the use of commercial timber sales and prescribed fire. The group did not raise the issue of open space/meadow loss.

Several expressed that the Forest Service has too much public involvement, and that the Forest Service should be trusted as natural resource management professionals.

Key Informant: Land Management Agency

Members of this group of users work for land management agencies, including the National Park Service, Custer State Park and South Dakota Game, Fish and Parks. Eight participants were interviewed in this group. All those interviewed expressed awareness of the boundaries of the Norbeck, but had varying interpretations of what that meant in terms of management. All agreed on the need for active management to achieve given objectives. All recognize the Black Elk Wilderness to be part of the Norbeck but disagree on whether the designation was beneficial. There was strong agreement on the need to manage for wildlife; and several felt that quotas were needed to manage the people. If they viewed the tree density of the area as too high, they also seemed to favor the use of commercial timber harvest and prescribed fire as a means to reduce densities. Loss of open space/meadows was not addressed.

Key Informant: Local Resident and Adjacent Landowner

Nine residents of local communities and landowners adjacent to the Norbeck Wildlife Preserve were interviewed to gauge the perspective of those who live closest to the Norbeck. The majority of this group expressed support for the active management of the area. Most also feel that wildlife habitat is declining and that active management is needed to protect and restore habitat. Many, but not all do not support the designation of the Black Elk Wilderness. There is general agreement among the group that there are too many small trees in the Norbeck and that commercial timber harvest is an appropriate management tool to address tree density. The group expressed strong opinion both for and against improvements or modifications of the scenic byway. Their perception of wildfire risk was also split; some see the Norbeck as a high fire threat while others do not. Those in this group who perceived a loss of meadows and open areas support restoration. As with other groups, there was a common thread between trust in the Forest Service and satisfaction with public involvement.

Key Informant: Native Peoples

Comments from an anonymous interviewee and a member of a tribe spoke on behalf of the American Indian people saying:

- Plants are gathered during spring, summer and the fall at known spots, in darkness by small numbers of several named tribes.
- The majority of the American Indian people are unaware of the designation of the Norbeck Wilderness Preserve, and those that are aware dislike government restrictions requiring “permits to pray” to use what is viewed as their land.
- They like nothing about the Norbeck because it was land taken from them.
- Under the Ft. Laramie Treaty, this is still American Indian land.
- Recommends creating an equal number of Forest Service and Tribal people to be involved in decision and discussion groups
- Recommends increasing outreach to the Reservations for college students.
- Recommends having American Indians teach both academically and traditionally, Forest Service Managers and Staff the history and treaties of the American Indian people.
- The land is sacred and is not respected.

Key Informant: Summary

Analysis of all 46 key informant interviews revealed some themes that, with one exception, were common throughout all the community groups. The Non-government organizations expressed views that were quite different from the other groups as well as different from one another. Support for the active management of the Norbeck Wildlife Preserve was expressed by all other groups. The perception of high tree densities was common and approval of timber harvesting as a management tool was prevalent throughout all groups except the NGOs. Other than one of the NGOs, everyone who thought that there is a loss of meadows and open spaces in the Norbeck were supportive of restoration. Including the NGOs, everyone interviewed who felt that the Forest Service did a satisfactory job of involving the public also expressed trust in the Forest Service. Those who didn't feel satisfied with public involvement said that they did not trust the Forest Service. Each key informant group was divided as to how they feel about public involvement and trust in the Forest Service.

American Indian Issues and Tribal Consultation

It is important for the Forest Service to recognize the America Indian people's historical and cultural links to the Black Hills area. Tribal members practice sacred religious ceremonies on sacred sites located throughout the Black Hills. They also gather important medicinal plants and herbs in the area.

The Black Hills National Forest consults with the following tribes:

Cheyenne/Arapaho Tribes of Oklahoma
Cheyenne River Sioux Tribe
Crow Creek Sioux Tribe
Crow Tribe
Eastern Shoshone Tribe
Flandreau Santee Sioux Tribe
Lower Brule Sioux Tribe
Northern Arapaho Tribe
Northern Cheyenne Tribe
Oglala Sioux Tribe
Rosebud Sioux Tribe
Santee Sioux Tribe of Nebraska
Sisseton-Wahpeton Sioux tribe
Spirit Lake Sioux tribe
Standing Rock Sioux Tribe
Three Affiliated Tribes
Yankton Sioux Tribe

Since October 1999, the Forest has held two general consultation meetings each year with tribal representatives. The agendas have included upcoming-project discussion, Forest-planning efforts, and special cooperative project development. Notes from each meeting and attendee lists are on file with the Forest tribal liaison. Heritage Resource Inventory reports are submitted to two certified Tribal Historic Preservation Offices (THPOs) including the THPOs for the Cheyenne River and Standing Rock Sioux Tribes for review and comment. In 2004, bi-annual meetings between the Forest heritage resource staff and the THPOs were initiated to review the findings of completed heritage inventories and discuss future inventories. Informal comments received from tribal representatives on Phase II include the following:

- Concern with expenditure of Federal money to protect isolated homes in the Black Hills from wildfire (a treaty/land claim-based view) and associated concern for potential environmental effects from WUI projects;
- Concern for cultural-site protection;
- Concern for plant and animal protection;
- Concern for timber-resource over-cutting;
- Need for a good and continuous tipi-pole supply;

- Concern over the “Daschle legislation” on Beaver Park that will set a precedent for reduced NEPA analysis and either reduced or no consultation with affected tribes;
- Opposition to mineral activities and the mining laws in general;
- Strong opposition to any land exchanges;
- Concern for lack of formal consultation;
- Concern that too much development (housing and otherwise) exists surrounding the Forest;
- Concern for maintaining water quality/fish habitat.

Comments from personal interviews:

During an interview with the Historic Preservation Officer and Tribal Liaison for the Black Hills National Forest, the following views were expressed during meetings with tribal representatives, however he made it clear that he was not speaking for the tribes.

- The Black Hills are very spiritually important to the Native People.
- The Native People are in favor of wilderness and opposed to any development.
- The Native People believe the land was illegally taken from them and are looking forward to the day when it will be returned.
- The Native People are in favor of limited management and want to be actively involved in the decision making process. Not informed after the decisions have been made and asked for their approval.
- He mentioned that the Black Hills National Forest is involved in working with the tribes for training in fire management and working with tribal youth.

Native American Use (1990 Black Elk Wilderness Implementation EA)

For many people, from early Native Americans to today’s visitors, the Black Hills have been a special place to come for physical and spiritual renewal. Since small groups and individuals do not need a special use permit to worship on National Forest Land, it is difficult to estimate the full extent of ceremonial use within the Black Elk Wilderness. However, several large groups have requested and received permits for vision quests, give-aways and unity marches for areas near the Wilderness. For example, a special use permit was issued in 1988 to conduct a “Sioux Unity Day” with an encampment at Pine Creek and a march to Mount Rushmore National Memorial. There are also indications of Native American ceremonial use of the area near Harney Peak.

The American Indian Religious Freedom Act (AIRFA) and its relation to management of the Black Hills National Forest is described on pages II-7-8 of the Forest Plan and pages III-18-20 of the Forest Plan EIS. It is the intent of the Forest Plan that Native Americans be free to worship in the forest and conduct religious ceremonies and traditional rights in accordance with existing laws and regulations. However, in reviewing Management Prescription (8C) for the Black Elk Wilderness, it appears there could be some confusion regarding the prohibition of “competitive contest events, group demonstrations, ceremonies and other similar events”(Forest Plan Phase II FEIS, 2005). The Forest Plan either needs to be amended or clarified to ensure that Native American religious ceremonies are not prohibited in the Black Elk Wilderness.

Herbs, medicinal plants and edible plants may also be gathered for individual or ceremonial use without a permit. It is Forest policy to facilitate individual and group use of the National Forest for religious purposes as described in FSM 2723.12, BH Supp 55, March 1988.

D. WILDERNESS RESOURCES

Background

The only designated wilderness within the Norbeck is The Black Elk Wilderness. Named for Oglala Sioux holy man Black Elk, the Wilderness was established on December 22, 1980, in accordance with the Wilderness Act of 1964. It is located within the portion of the Norbeck Wildlife Preserve administered by the Forest Service. The area of the Black Elk Wilderness is approximately 13,542 acres. Contained within this area is the Upper Pine Creek Research Natural Area, encompassing approximately 1,190 acres (Appendix D).

There are a number of legislative and planning documents to provide direction for the management of the Black Elk Wilderness. Enabling legislation for the Black Elk Wilderness states that provisions for the Norbeck Wildlife Preserve also apply to the Wilderness to the extent they are not inconsistent with the 1964 Wilderness Act.:

- The Norbeck Organic Act, 1920
- The Wilderness Act of 1964
- Norbeck Unit Management Plan, 1973
- Public law 96-560
- BHNF Land and Resource Management Plans, 1983,1996
- Norbeck Unit Management Plan, 1989
- BHNF Black Elk Wilderness Implementation Schedule, 1990
- BHNF Phase II Amendment, 2005

The primary direction for the management of the Black Elk Wilderness is provided in the BHNF Land and Resource Management Plan, Phase II Amendment (management area 1.1A). An exhaustive list of standards and guidelines for each resource is provided in the amendment, some of which will be discussed here.

Bio-Physical Setting

Domelike hills are the primary topographic features in the Black Elk Wilderness. This landform has narrow ridges, steep to very steep side-slopes, narrow valley bottoms, and outcrops of granite. Side-slopes generally are steeper than 30 percent. Rock outcrops of granite comprise 25 to 40 percent of the area. The valley bottoms generally are less than 300 feet in width.

The Black Elk Wilderness comprises approximately 1% of the acreage in the Black Hills National Forest. Vegetation structure is markedly different than that of the rest of the Forest. The difference is primarily in the age and structure of the vegetation. Forest land within the Wilderness generally contains older, larger trees with dense new growth. This vegetation structure is likely to provide habitat for species associated dense, late-seral ponderosa pine forest.

Social Setting

Introduction and Historical Context

The concept of a special management area surrounding Harney Peak began over 30 years ago, prior to the formation of the Norbeck Unit Management Plan in 1973. Management activities in the area up to that point included light logging in the north and east portions of the area, along with fire control and minor recreational facility development by the Civilian Conservation Core (CCC). Public comments received during the planning process for the 1973 Norbeck Plan indicated much social interest for limiting extractive resource use, particularly mining, and also for limiting development in general for the area.

Alternative #2 in this Plan divided the Norbeck area into two management units, the Peripheral and Central Core areas (Fig. 18). The Central Core area has Harney Peak as its dominant land feature. Mount Rushmore adjoins on the east and the Sylvan Lake portion of Custer State Park on the south and west. The terrain is rugged of granitic origin, and there is little potential for access.

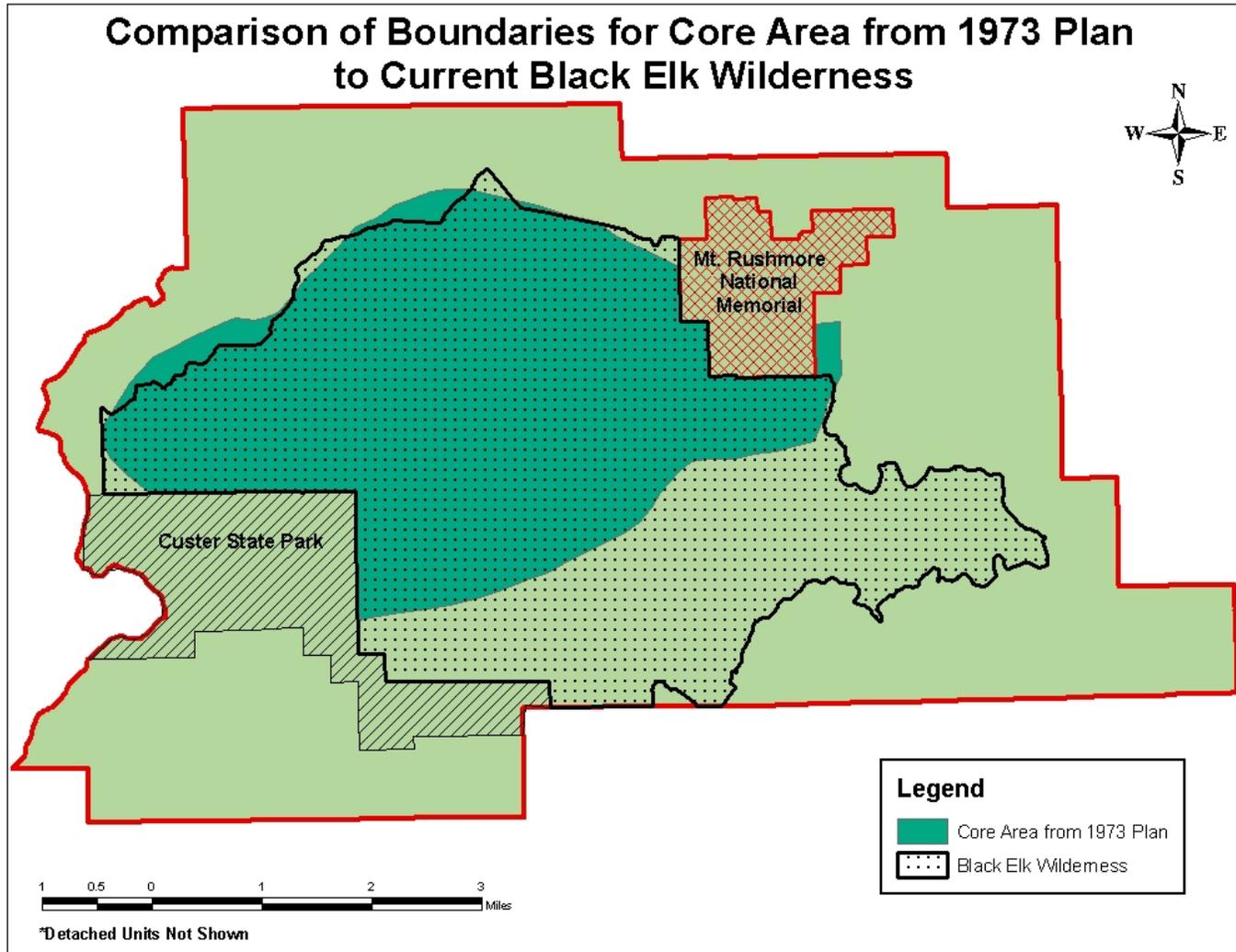
Peripheral areas would be the most accessible portion, consisting of everything contained within Norbeck that lies outside core area boundary. In the peripheral areas, the Norbeck plan called for intensive vegetation management to provide suitable habitat for game species and birds, per the original mandate of the Norbeck Organic Act.

In the late 1970s, per the U.S. Forest Service's Roadless Area Review and Evaluation (RARE II), approximately 10,700 acres around Harney Peak were recommended for Wilderness designation by both the President and the U.S. Secretary of Agriculture. According to the Forest Service's RARE II analysis, the area has a high potential for hardrock minerals and moderate potential for uranium. The area was not identified for prime commercial timbering due to the rugged terrain, dispersed harvestable resources, and lack of roads (Wilderness Implementation Guide, 1990).

According to South Dakota Senator George McGovern, "...because the area is so special not only to native South Dakotans but to Native Americans and millions of visitors to my State, it should be the 'last' area where these (mining) potentials are ever exploited...." Senator George McGovern introduced bill S. 1769 for the establishment of this area as the Black Elk Wilderness, in accordance with the Wilderness Act of 1964. A similar bill was introduced in the House of Representatives by Congressmen Jim Abnor and Tom Daschle (Wilderness Implementation Guide, 1990).

The Act of Congress to allow for sufficient management flexibility as would allow for the manipulation of wildlife habitat compatible with the purpose for which the Norbeck Wildlife Preserve was created, for "the protection and propagation of wild game animals and birds". The stated recommended management approach for meeting this goal was prescribed burning (Wilderness Implementation Guide, 1990).

Figure 18: Comparison of Boundaries for Core Area from 1973 Plan to Current Black Elk Wilderness



With some relatively small differences in the area's size and shape, the Core area identified in the 1973 Norbeck plan eventually became the designated Black Elk Wilderness, in the fall of 1979 (note that the Wilderness' current extent is larger than it was originally, since approximately 3500 acres were added to it in 2002, per Public Law 96-560).

Recreation

Recreation use within the Black Elk Wilderness involves dispersed type activities. Existing developments are the trails systems and the Harney Peak Lookout Tower Complex. Use is primarily for hiking horseback riding, viewing scenery, nature study, and big-game hunting. Because day-use activities predominate (98% of use is day-use), no overnight facilities are provided.

General facts of interest: 50% of Wilderness's visitors are first time visitors, 50% are repeat visitors. Of the repeat visitors:

- 40% have visited a Wilderness 1 to 3 times
- 20% have visited a Wilderness 4 to 7 times
- 10% have visited a Wilderness greater than 7 times

Visitors to the Black Elk Wilderness come from the following states:

- South Dakota – 27%
- Minnesota – 16%
- Wisconsin – 8%
- Iowa – 6%
- Illinois – 6%
- Other – 37%

Trails

The 1973 Norbeck Unit Management plan called for trails to be reconstructed/relocated so as to be configured as scenic loop trails, to emphasize the unique scenic character of the area. Abandoned portions of existing trails were to be drained and rehabilitated. Nothing is mentioned in the 1990 Wilderness Implementation Plan regarding this direction. Current plan direction is for a maximum trail density of 2 miles per square mile. Construction/reconstruction is allowed when needed as part of the transportation system.

There is a point of confusion regarding some trails that have been identified for closure to reduce negative impact on some wildlife species. The uncertainty is whether or not this prescribed management action has been implemented.

Sustainability

Based on past use in the Black Elk Wilderness, it appears that the maximum recreation carrying capacity will be reached by 2010. (Forest Plan Phase II FEIS, 2005). The guideline specified in the Phase II amendment for Wilderness carrying capacity is 32,100 recreational visitor days (RVD). Plan direction calls for the utilization of a permit system to manage use levels if needed. No thresholds are specified in the Phase II amendment to define trigger points for switching to the permit system. The 1990 Wilderness Implementation Plan defines trigger points to be when acceptable use levels, as specified in each Wilderness area prescription, are exceeded during 20% of the summer use season, or, when acceptable capacities, as specified in the individual prescriptions, in primitive or pristine management areas are exceeded on 10% or more of the days during the summer use season.

Detailed yearly information regarding use of Wilderness's is available in the Forest's annual Wilderness reports

Scenery Management

According to the Phase II Management plan, the scenery management objective guideline is very high. Background on additional scenery management direction is provided in the 1990 Black Elk Implementation Schedule.

Heritage Resources

Per the Phase II Management plan, heritage resources inventory activities are allowed. No interpretative facilities or enhancement of heritage resources for recreational purposes is allowed. The exception is the Harney Peak Lookout Tower, which is listed on the National Register of Historic Places.

Administrative Elements

Geographically, the Wilderness area falls within the Norbeck Wildlife Preserve. The Norbeck was established in 1920 under the Norbeck Organic Act, for the primary purpose of maintaining suitable habitat for game animals and bird. The enabling legislation for the Black Elk Wilderness states that provisions for the Norbeck also apply to the wilderness, to the extent that they are not inconsistent with the Wilderness Act (Public Law 88-577, 1964).

Per the Phase II plan standards, wilderness boundary location is to be maintained. Utility corridors will be prohibited. Collecting of rocks, minerals, and paleontological materials is prohibited. Per the Phase II plan guidelines, special uses are limited to those authorized by wilderness legislation that cannot be reasonably met on non-wilderness lands.

There are three classes of management opportunities within the wilderness area:

1. Pristine (Upper Pine Creek RNA)
2. Primitive Wilderness Opportunity (In-Between)
3. Transition Wilderness opportunity Class (Trail Corridors)

Transportation and Travel Elements

Direction is provided in the Phase II plan for trail maintenance and construction/reconstruction. Project design should emphasize primitive characteristics and visual impacts are to be minimized.

Native American Use

Several Native American tribes use the Black Elk Wilderness for religious ceremonies and traditional rites. Forest Service policy is to facilitate individual and group use of the National Forest for religious purposes as described in Forest Service Manual (FSM 2723.12, BH Supp 55, March 1988). Herbs, medicinal plants, and edible plants may be gathered for individual or ceremonial use without a permit. Native American Uses are not specifically addressed in the management area description for the Black Elk Wilderness (1.1A) in the Phase II amendment. In the 1990 wilderness plan, a point of confusion is mentioned regarding allowable activities within the wilderness prescription and some of the cultural Native American uses (Black Elk Wilderness Implementation Schedule, 1990). The document cited the need for forest plan amendment/clarification to ensure that Native American religious ceremonies are not prohibited in the wilderness.

IV. SYNTHESIS

Our landscape assessment of the biological, physical, and social properties of the Norbeck Wildlife Preserve lead us to some common themes. We synthesized these themes into:

- The Norbeck Wildlife Preserve as a Special Place,
- The Contradictions We Observed,
- A Characterization of the Ecological Conditions, and
- The Wilderness as a Resource.

Finally, we have been so bold as to recommend actions based on our observations.

A. Special Places

The Norbeck Wildlife Preserve is a special place because of its unique geology, ecology, human created features, and strong human connections.

The Black Hills of South Dakota is a unique geographical and ecological area itself; it is considered a biological crossroad between the Rocky Mountains, the eastern woodlands, the northern forest, and the Great Plains. Within this unique area lies the Norbeck Wildlife Preserve, often referred to as the heart of the hills. Even in the early 1900's the people of the Black Hills recognized the need to preserve areas for their aesthetic scenic and unique natural values.

Although small in size, the Norbeck Wildlife Preserve comprises some of the highest, most rugged country in the Black Hills. The rugged terrain is the remains of granite that intruded into rocks through faults and cracks. Through millions of years of erosion what remain are dramatic formations, such as the Needles and Cathedral Spires.

Within the Norbeck exists the highest point in the United States east of the Rockies. Surrounded by the Black Elk Wilderness, Harney Peak is a natural draw for hikers and horseback riders. From atop Harney Peak there is an open vista of Nebraska, North Dakota, Wyoming, and Montana.

The Black Elk Wilderness is contained within the Norbeck Wildlife Preserve. This is the only wilderness on the Black Hills National Forest. For many, the Black Elk Wilderness invokes strong emotions; it is a spiritual place, a place of solitude. It is one of the few places in the Black Hills where motorized use is restricted.

The Norbeck contains an important ecological component. Stands of late seral forest with large old legacy trees persist. This critical habitat for species associated with old forest is rare on the Black Hills National Forest.

Several distinctive features draw over 3.5 million visitors to this area of the Black Hills; Mount Rushmore National Memorial to the north, Custer State Park to the south, and nearby Wind Cave National Park and Jewel Cave National Monument. A majority of the visitors include in their experience a memorable drive along the Norbeck Scenic Byway

with its winding road, pig-tail bridges, and narrow tunnels which open up into breathtaking vistas. Here against the backdrop of the Norbeck Wildlife Preserve, visitors experience the legacy of Peter Norbeck's vision for preserving natural beauty while making special areas accessible to as many people as possible

The Norbeck area shapes people's connections to the land with its diverse recreational opportunities: hiking, biking, horseback riding, rock climbing, and wildlife watching or just driving the Scenic Byway. The Norbeck Wildlife Preserve is a special place for all those who experience it.

B. Contradictions

The accumulation of a century of legislative and administrative land use designations, in a small geographic area, has resulted in a politically fragmented landscape.

Seven land use areas have evolved, each with a different set of laws and regulations.

Mount Rushmore National Memorial, private lands, and part of Custer State Park exist within the outer perimeter of the Norbeck Wildlife Preserve. Each has their own laws and regulations, but are not legally affected by the Norbeck Organic Act. For the outer perimeter of the Norbeck Wildlife Preserve, excluding non-Forest Service lands, the Norbeck Organic Act is the dominant legislation. The Norbeck Scenic Byway is subject to the Scenic Byway designation, but the Norbeck Organic Act takes precedence when there is conflict. The Black Elk Wilderness, located within the Norbeck Wildlife Preserve, is subject to the Norbeck Organic Act when management for game animals and birds does not conflict with the Wilderness Act. The Upper Pine Creek Research Natural Area, being within the Black Elk Wilderness, has additional natural area regulations that apply when they do not conflict with the Wilderness Act or the Norbeck Organic Act.

The cumulative effect of these legislative and administrative decisions is to define a distinct geographic pattern. An inner core of approximately 40% of the total area emphasizes wilderness values and preservation. In the outer periphery, about 40% of the total area, active management for game animals and birds is the priority (Fig. 19).

Due to the ambiguity in the Norbeck Organic Act, there has never been an official definition of "game animals and birds".

The 1920 Norbeck Organic Act mandate is "for the protection of game animals and birds ... and a breeding place thereof". The 2001 Tenth Circuit Court Majority Opinion stated "It is a "fundamental tenet of statutory construction that a court should not construe a general statute to eviscerate a statute of specific effect". The Forest has not been compelled to specify exactly which species of game animals and birds these are. It seems imperative that the Forest fully digest the differences between direction in the National Forest Management Act (NFMA) as compared to the Norbeck Organic Act and take the step to, in effect, codify the Norbeck Organic Act mandate. If the Forest does not take

this step, likely consequences are continued mistrust from internal personnel, external partners and interest groups.

Implementation of management actions is problematic despite widespread agreement on the need for active management.

There seems to be agreement among the management agencies and the public that the Norbeck Wildlife Preserve is not being successfully managed for wildlife habitat as defined by the Norbeck Organic Act. There is general acknowledgement that the vegetation component of the Norbeck Wildlife Preserve is in a condition that is conducive to an intense wildfire. There also seems to be general consensus that some type of active management is necessary to prevent a severe wildfire disturbance. There appears to be some mistrust among the interested parties regarding the selection of a treatment method. This has led to the current situation of uncertainty on how to proceed with future management recommendations and treatment methods.

Is the Norbeck Organic Act mandate relevant or consistent with the Norbeck's unique character and value in relationship to the rest of the Black Hills National Forest and surrounding region?

The Norbeck Wildlife Preserve exists in a very different landscape today than it did in 1920 when the Norbeck Organic Act was signed. There are abundant game populations in the adjacent Custer State Park and surrounding National Forest lands. The Norbeck Wildlife Preserve no longer functions as a "sanctuary" for game (if it ever has) and now is marginal habitat for the game species and most birds it was meant to benefit. This condition will likely not change significantly, due to the management restrictions within the Black Elk Wilderness, and the fragmented landscape available for habitat improvement around the periphery of the core wilderness area. Rather than habitat for game animals, the most valuable habitat that exists within the Norbeck today is the large contiguous block of late seral forest with rare large old legacy trees from the pre-EuroAmerican settlement period. This valuable and unique old forest habitat has many wildlife benefits for certain species, however, most of these species are not the same group the Norbeck Organic Act set out to protect - game species and birds.

Recreation has grown and expanded in both number of visitors and the types of activities that occur in and around the Norbeck Wildlife Preserve. This area is uniquely valuable because of the recreation opportunities it provides in combination with its proximity to the Mount Rushmore Memorial, Custer State Park, the town of Keystone and other surrounding communities. Additionally, the Scenic Byway located within the preserve provides millions of visitors each year with an exceptional viewing experience. Current recreation includes: rock climbing, hiking, horse back riding, camping, fishing, scenic viewing and climbing Harney Peak. Although these uses currently appear to have little negative impact on the functioning of the wildlife preserve, they cannot be managed to their fullest benefit given the constraints that any activity must not degrade the habitat for "game animals and birds"

In summary, it is apparent that the value of the Norbeck Wildlife Preserve has changed in many ways since it's inception over 86 years ago. Changes in the surrounding landscape have shifted the value of the Norbeck from a remnant island of habitat for game species and birds to an island of late seral forest surrounded by abundant game populations and habitat.

We considered three possible future management strategies for the Norbeck Wildlife Preserve; 1. maintain status-quo, 2. more preservation or 3. re-emphasizing the Norbeck Organic Act given the current values and capabilities. Each of these options is described below:

1. Status-quo: This option would be to continue management in a piece meal fashion with an ambiguous list of species to manage for. This strategy has proven unsatisfactory and controversial. Application of treatments has been very limited and has only started to occur recently after 14 years of litigation and an act of Congress. This management strategy was not selected.
2. More preservation: This option has been advocated by certain groups as a means to protect wildlife habitat and the unique character of the area. Additional management limitations would inhibit the ability to actively manage for "game animal and birds". This option was not selected.
3. Re-emphasizing the Norbeck Organic Act: This management strategy would evaluate the Norbeck Wildlife Preserve in the context of it's current habitat value in the regional setting, and determine a list of game animals and birds to reflect these values.

We selected the option of re-emphasizing the Norbeck Organic Act because it has the potential to clarify the management direction and create an integrated landscape that is truly functioning as a wildlife preserve. With this option the Forest Service and other responsible agencies have the opportunity to define the mandate of the Organic Act by determining the list of "game animals and birds".

The U.S. Tenth Circuit Court of Appeals ruled in 2001 that the Norbeck Organic Act is the primary legislative mandate for the management of the Norbeck Wildlife Preserve. Then in 2002, the Dashed Legislation *P.L. 107-206, sec. 706* prescribed that a MOU be drafted with the South Dakota Department of Game, Fish and Parks to further cooperation and consultation in the management of the Norbeck Wildlife Preserve. In 2004, the MOU was signed but no definition of "game animals and birds" has been agreed upon.

Desired Future Conditions

The Norbeck will be a functioning wildlife preserve managed to fulfill a habitat need in the regional landscape for a defined list of “game animals and birds” in accordance with the mandate of the Norbeck Organic Act.

Recommendations

- The list of “game animals and birds” will consider what habitat the Norbeck has the potential to provide and what is needed in the regional landscape.
- Under the provisions of the MOU the responsible agencies (US Forest Service and South Dakota Department of Game, Fish and Parks) will determine which species should be protected in the Norbeck Wildlife Preserve.
- Design and evaluate habitat enhancement treatments in an integrated manner, focusing on the contribution of the treatments to habitat conditions across the entire Norbeck Wildlife Preserve.
- Uses of must be compatible with the objectives of the Norbeck Wildlife Preserve as defined by the Organic Act and the final list of “game animals and birds”.

C. Characterization of the Norbeck Setting

Vegetation

Vegetation in the Norbeck Wildlife Preserve is outside the reference condition but remains important in that it contains areas of large pre-settlement trees.

The Norbeck Wildlife Preserve is primarily comprised of ponderosa pine forests, with a hardwood component, aspen and bur oak, along with meadows and rock outcrops. Over time, the Norbeck has become dense with increasing numbers of smaller diameter pines. Aspen and oak no longer have an environment conducive for their survival. Ponderosa pine has encroached into meadows, negatively impacting some wildlife habitat and food sources. Inaccessible terrain and historical management approaches in the Norbeck have allowed areas of pre-settlement trees to persist.

Disturbance

Disturbance processes are a natural component to a healthy, functioning ecosystem.

Historically, wildfires were more frequent, less severe, and kept the forest more open. Fire suppression activities have trended the forest outside the historic range of variation. Aggressive fire suppression has been undertaken to protect private homes, nearby communities, structures, visitors, Mount Rushmore National Memorial, and Custer State Park, which are all at risk from fires originating in the Norbeck. The increased fuel loading from the current mountain pine beetle mortality raises the wildfire risk.

Insect populations have been a natural occurrence throughout the history of the landscape, often contributing to a reduction of tree density within pockets of ponderosa pine stands. The current outbreak is not outside of the historic range of variation, as larger outbreaks have occurred in the 1890s and 1970s, with smaller outbreaks throughout the 1900s. However, the current outbreak may result in high mortality rates of large trees given the change in stand structure and density.

Wildlife

A wide range of species are present in the Norbeck, including species associated with old forest, but populations of game animals and birds are lower than the potential.

The landscape of the Norbeck Wildlife Preserve still provides habitat for numerous species. Nearly all of the wildlife habitat has been influenced by habitat modifications resulting from fire suppression, logging, roads, and recreational use. These shifts may have increased habitat for species preferring dense ponderosa pine forests, while decreasing habitat for species dependent on less dense stands, aspen, or meadow. The abundance of species dependent on aspen and oak is believed to have declined, as preferred habitat has been reduced. Species associated with old forest are likely to be more common here than in other areas of the Black Hills National Forest. However, mortality of the larger trees from insect outbreaks or uncharacteristic stand replacing

wildfire is more likely given the increase in the number of smaller trees now present in these stands.

Human Uses

This is a heavily used landscape where large numbers of people engage in numerous uses within a small geographic area with little conflict.

The landscape of the Norbeck Wildlife Preserve provides a variety of recreational opportunities to a large number of people. Current estimates indicate that over 3 million visitors per year travel through the Norbeck via the Scenic Byway. It is not uncommon to have 400 visitors on top of Harney Peak at one time during the high-use season. Eight trails wind through the Norbeck offering hiking and horseback riding opportunities. Rock climbing is also a popular recreational activity within the Norbeck. Off highway vehicles (OHV) use is allowed north of State Highway 244 and near the town of Keystone. The largest KOA campground in the nation lies near the Norbeck Wildlife Preserve, and is in close proximity to numerous local attractions (Mount Rushmore National Memorial, Custer State Park, Scenic Byway, Wind Cave National Park, and Jewel Cave National Monument). Several of these attractions are unique to this area thus cannot be experienced anywhere else. Given that numerous activities do occur within this area, it is ironic that there is limited conflict between user groups and limited negative resource impacts. Current use levels seem to be sustainable within the landscape, but may need to be monitored to ensure that resource damage is minimized.

Wildlife preservation was the vision of Peter Norbeck for this area. This attracts many visitors to the area mostly by driving the Scenic Byway and hiking throughout the Norbeck. In addition, hunting is allowed in the Norbeck Wildlife Preserve, which brings in locals as well as others from the country.

Socially, people are still tied to the land through their uses. They find it to be a special place to visit due to its numerous unique characteristics. Additionally, numerous economic activities occur throughout the Norbeck, including recent timber sales, tourism, and family-oriented recreational opportunities.

Attitudes towards management

Active management has been re-imposed on the Norbeck through timber sales as a result of the Daschle legislation. While there is general agreement that active management is appropriate there is considerable disagreement regarding how it should be done.

There is little debate that management needs to be done, but more of a question of how implementation should occur. Public comments often characterized the Grizzly and Needles timber sales as “business as usual” in spite of being in the Norbeck Wildlife Preserve. Due to the unique setting of the Norbeck Wildlife Preserve and legislative direction, a modification of traditional prescriptions emphasizing wildlife could provide

opportunities to enhance relations with other interested parties. A majority of contacts made during the social assessment were supportive of active management within the Norbeck to benefit wildlife species. Due to the unique landscape and the Norbeck Organic Act this area needs special attention to achieve the desired outcome.

Desired Future Condition

The Norbeck Wildlife Preserve will be actively managed for the creation of habitat for game animals and birds.

- **Timber management is a viable tool in the periphery to provide habitat for game animals and birds. Current vegetation is outside the historic range of variation and is of limited value for many game animals and birds.**

Timber management is a viable option outside the Wilderness to manage for game and bird species within the Norbeck Wildlife Preserve. Removal of trees would allow for more desirable habitat conditions, providing an opportunity for grasses and forbs to become a larger component within the ecosystem. Hardwood species such as aspen and oak would return to a proportion of the landscape that they previously occupied. Wildlife species that benefit from these conditions would be allowed to thrive. Commercial activities as well as timber stand improvement projects can be used to reach this desired condition without a “business as usual” mentality.

- **Fire as a management tool throughout the Norbeck should be used in order to optimize habitat for game animals and birds. Current fire regimes are outside the historic range of variation.**

The return of fire to this ecosystem would be beneficial to habitat management. Historically fire shaped the ecosystem by keeping tree densities low and recycling nutrients. Fire suppression activities have led to a condition that is unnatural and threatening to the future of the preserve. Active re-introduction of fire back into this ecosystem will help to maintain acceptable levels of tree densities, a mix of tree species more conducive to wildlife habitat, a healthy understory component, the large pre-settlement tree component, and a forest that is less susceptible to catastrophic loss due to wildfire. This ecosystem structure will assist in providing habitat opportunities that are unique within the surrounding landscape. Prescribed fire is an important and appropriate tool to improve wildlife habitat. Wildland fire-use is not an option due to social concerns associated with risk, therefore an active prescribed fire program is necessary to achieve desired goals.

Prescribed fire within the Black Elk Wilderness is an important tool to be used to provide habitat for game animals and birds. Due to limitations on mechanical treatments within the Wilderness, fire is the most viable tool to improve wildlife habitat. Tree mortality is acceptable as a thinning tool to reduce smaller diameter trees. Application of prescribed fire will be compatible with the Wilderness Act.

- **Active engagement of the interested stakeholders is needed to reach consensus and/or gain acceptance on how best to maintain the forest structures necessary “to provide for game animals and birds, and the breeding thereof”.**

Publics have strong connections to the Norbeck landscape because of its physical beauty, large tree dominated forest structure and management history. Many publics support active management but differ in what is considered appropriate application. These publics could be effectively engaged in a collaborative process to define management to improve habitat. We recognize that some stakeholders do not support active management and there is low likelihood that they could be effectively engaged in collaboration.

D. Wilderness

The Black Elk Wilderness constitutes the geographic core of the Norbeck. In a small area, heavy use associated with Harney Peak coexists with opportunities for solitude. Vegetation is not pristine, and opportunities to allow fire to play a natural role are constrained by exceptional values at risk in adjoining lands.

Legal Considerations

The Black Elk Wilderness was established in 1980, under Public Law 96-560, in accordance with the 1964 Wilderness Act. The enabling legislation for the Black Elk Wilderness states that provisions for the Norbeck also apply to the Wilderness, to the extent that they are not inconsistent with the Wilderness Act (Public Law 96-560, section 103, paragraph 1). The 1964 Wilderness Act included specific direction that “...*areas designated as wilderness are to be protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man’s works substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation...*”.

While there has historically been broad public support for a protected area in the vicinity of Harney Peak to maintain a wild, primitive character, there is contention regarding the designation of the Black Elk Wilderness as a formal Wilderness. There is also contention regarding the expansion of the Wilderness in 2002, as to whether or not there was an ecological basis for the expansion.

Recreational and Cultural Considerations

The Black Elk Wilderness is a special place to many cultures, due to its primitive characteristics and Harney Peak.

There is existing conflict between some of the wilderness users and wildlife management direction. To date, management response to these conflicts has been to limit human use. This seems to be working, as most users have expressed satisfaction with management of the Wilderness. There is notable exception for some commercial recreation concessionaires.

Data from the annual Wilderness reports does not show a definite trend of increasing use. Given that there are features in the surrounding landscape of national significance which draw large numbers of users, and the slow but steady growth of surrounding communities, there is clear potential for use to increase. If it does, to the point of conflicting with wilderness objectives, then the existing practice of limiting use would create more limitations. These additional limitations could result in a public perception of not having access to public lands that have special meaning to them. The potential for negative impact on the wilderness resource, however, is lessened given that use is usually

for a short period of time and is seasonal. Furthermore, use is generally confined to identified corridors, such as trails.

Ecological Considerations

The Black Elk Wilderness has unique vegetative characteristics, relative to the surrounding area. These characteristics provide key wildlife habitat niches, including an old forest structure and non-fragmented (interior) areas. The potential contribution of these characteristics to this type of habitat is amplified in light of the fact that the Black Elk Wilderness comprises only 1% of the area for the Black Hills National Forest.

Per the Wilderness Act of 1964, management of Wilderness is supposed to preserve natural conditions. For the ponderosa pine forest that dominates that Black Elk Wilderness, the presence of fire is critical to proper ecological function. Although wildfire use and prescribed burning management activities are allowed within the Wilderness, existing landscape conditions have restricted their use. Tree densities are far enough outside their historical range that fire could burn severely enough to cause undesirable ecological consequences. In addition, social constraints, such as the need to protect important man-made structures (some having National historic significance), increase the liability risk of using fire as a management tool.

Because of its relatively small size compared to other designated Wilderness areas, and of the social constraints to limit the presence of fire within its boundaries, the question remains as to whether or not the existing ecological conditions in the Wilderness are primarily affected and shaped by natural forces.

Desired Future Condition

The Black Elk Wilderness will be managed for maximizing habitat for game animals and birds, to the extent that management activities do not conflict with the Wilderness Act of 1964.

- **Recreational uses in the wilderness do not adversely affect the protection of game animals and birds**

One of the primary uses of wilderness is for solitude. This is not likely to negatively impact the wildlife species of interest. Other activities could have an adverse impact, depending on the intensity, duration, and time of year that they occur. Restrictions on recreational use may be necessary to ensure that quality habitat for the species of interest is maintained.

- **Natural processes are the primary influence on the vegetative character of the Wilderness. Forest structure is within the historical range of variation, including species composition, age class, and density.**

The need to protect features of exceptional social value may necessitate more predictable management activities, such as prescribed burning, which can closely mimic the positive ecological effect of natural processes. When mountain pine beetle infestations are detected, allow infestation to proceed, unless the rate and extent of spread exceed the historic range of variability.

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APPENDIX A

Appendix A: Management Area Direction

Management Area	Theme:
Black Elk Wilderness – 1.1A	This Area is to be managed to protect and perpetuate natural processes while providing opportunities for solitude and self-reliance.
Research Natural Area – 2.2	Research Natural areas form a national network of ecological areas designated inperpetuity for non-manipulative research, education, and bio-diversity conservation. This prescription is applicable to both existing research natural areas and areas pending formal establishment.
Peter Norbeck Scenic Byway – 4.2B	This area is managed to emphasize visually appealing landscapes in roaded settings, while meeting overall wildlife objectives for the Norbeck Wildlife Preserve.
Norbeck Wildlife Preserve – 5.4A	This area is managed to provide habitat for game animals and birds. Some human activities are allowed, consistent with wildlife needs.

APPENDIX B

Appendix B: Legal and Administrative Timeline for the Norbeck Wildlife Preserve

Acts of Congress and proclamations in **Bold**, Administrative designations in *Italics*

1920 The Norbeck Organic Act authorized the president to establish a game preserve, of up to 30,000 acres of National Forest land, for the protection of “game animals and birds.”

1920 Presidential Proclamation established Custer State Park Game Sanctuary.

1924 Amendment to Norbeck Organic Act authorized the expansion of the sanctuary to no more than 46,000 acres.

1925 Presidential Proclamation expanded the game sanctuary to 42,200 acres by adding sections near what is now Wind Cave National Park.

1927 The Master Plan for the Protection and Administration of the Norbeck Wildlife Preserve was approved.

1929 Presidential Proclamation expanded the sanctuary again, adding several hundred acres in the Stockade Lake area.

1932 The Upper Pine Creek Research Natural Area was designated by the Secretary of Agriculture.

1933 Mount Rushmore National Memorial is moved to the Department of the Interior

1948 Congress re-established mining rights in the Custer State Park Game Sanctuary and realigns the western boundary.

1949 Congress renamed Custer State Park Game Sanctuary as Norbeck Wildlife Preserve and restored acreage from Mt Rushmore National Memorial.

1973 Custer Ranger District issued the Norbeck Unit Management Plan to address recreation issues and the mountain pine beetle..

1974 Due to litigation, the implementation of the plan was suspended pending the preparation of an Environmental Impact Statement.

1979 The Forest Service issued the Norbeck Wildlife Preserve Management Plan and accompanying EIS.

- 1980 Congress establishes the Black Elk Wilderness within the Norbeck Wildlife Preserve.**
- 1983 *The Black Hills National Forest Land and Resource Management Plan was approved.*
- 1985 *Master Memorandum of Agreement between South Dakota Game, Fish and Parks Division of Wildlife and the Forest Service was signed.*
- 1985 *The Forest Service approved timber harvest and road construction in the Norbeck. The proposals were appealed.*
- 1989 *The FEIS and ROD for the Norbeck Wildlife Preserve, including Needles and Grizzly timber sales were issued. The decision was appealed*
- 1990 *On discretionary review, the Chief's Office of the Forest Service requested a supplemental EIS and new ROD.*
- 1992 *The FSEIS and ROD were issued and appealed. The decision was upheld.*
- 1994 *Civil Action 94-Z-2273 was filed in Colorado District Court.*
- 1996 *A Revised Black Hills National Forest Land and Resource Management Plan was approved then appealed.*
- 1997 *Revised LRMP Final EIS released and ROD signed.*
- 1999 *U.S. District Court denied the plaintiffs' motion. The plaintiffs appealed to the Tenth Circuit Court.*
- 2001 *LRMP Phase I Amendment complete.*
- 2001 *The U.S. Tenth Circuit Court of Appeals reversed the lower courts ruling, effectively blocking implementation of the timber sales.*
- 2001 *The Peter Norbeck Scenic Byway was designated.*
- 2002 Congress passes P.L. 107-206, sec. 706 of which set aside the court proceedings, mandated implementation of the Needles and Grizzly timber sales and added to the Black Elk Wilderness.**
- 2004 *Memorandum of Understanding between South Dakota Game, Fish and Parks and Black Hills National Forest of Norbeck Wildlife Preserve per the 8/2/02 Daschle Legislation, Public Law 107. In part:*

APPENDIX C

Appendix C: Key Informant Comments

MPB and wildfire biggest concerns, not managed well but it is not the Forest Service's fault, their hands are tied

Flexibility and diversity are possible in creating wildlife habitat

Has been neglected and needs to be managed properly

Since it is designated as a preserve, we should live with it and treat it as such

Look at feasibility of plan on a case by case basis to allow things that have not been allowed in the past

Wish it was more pristine, fuels aspect is an excuse for logging, controversy is in how to manage

Good by far outweighs bad, NWP is needed to provide wildlife habitat

Accessibility for everyone

Keep motorized out, enjoy peace and quiet

Adding more acres to wilderness in order to do timber sales is bad business

We've taken to Smokey Bear mandate too far

Preserve area for access for people to come and enjoy

Too many people making too many demands on the area make it a bad location for a wildlife preserve

We invite people to the Black Hills to see our wonderful views, yet they are disappearing

Scenic Byway needs more vistas

Manage the people, the forest takes care of itself

The Forest Service logs the hell out of the area

Get the Forest Service out of the way so I can manage the trail system

Forest is overgrown and is all going to burn, it needs to be managed

Better trail management leads to a better experience

Would like to see ATVs allowed in NWP

Meadows need restoration, too many trees, wildfire threat

The public should not influence professional management.

Everything is good.

Glad the Forest Service owns 92% of the Black Hills when sees what private land owners have done

Need active management to restore habitat, the area is not conducive to wildlife

Sees more game since thinning, it helps reduce wildfire risk and MPB

APPENDIX D

**Appendix D: Black Elk Wilderness Resource Summary Data
For Years 2003 - 2005**

**Source: Black Hills National Forest Annual Wilderness Reports
(summary information for selected data elements)**

ACTIVITY	UNIT OF MEASURE	YEAR		
		2003	2004	2005
Wilderness education				
Formal education programs	count	272	748	397
Informal field contacts	count	3473	2,670	1658
Printed education forms	count		7,616	7000
Use of mechanical and motorized equipment				
	count	4	6	5
Search and rescue (SAR)				
	count	3	4	4
Violations/law enforcement actions				
Warning notices/incident reports	count	7	22	35
Violation notices	count	0	1	5
Visitor trail use				
Harney Peak #9 South	visitor count	17,019	16,485	13127
Trail #4	visitor count	6,980	5,812	X
Upper Trail #3	visitor count	X	X	9005
Harney Peak #9	visitor count	1,601	1,925	1818
Centennial Bypass #89B	visitor count	697	X	1788
Horsethief Lake #14	visitor count	1,466	1,789	1626
Grizzly Bear Creek #7	visitor count	359	1,324	1391
Blackberry #10	visitor count	1,317	1,227	X
Lost Cabin #2	visitor count	1,512	1,173	1322
Centennial #89	visitor count	946	546	802
Norbeck #3	visitor count	461	400	470

X -> data not available

