

WILDERNESS

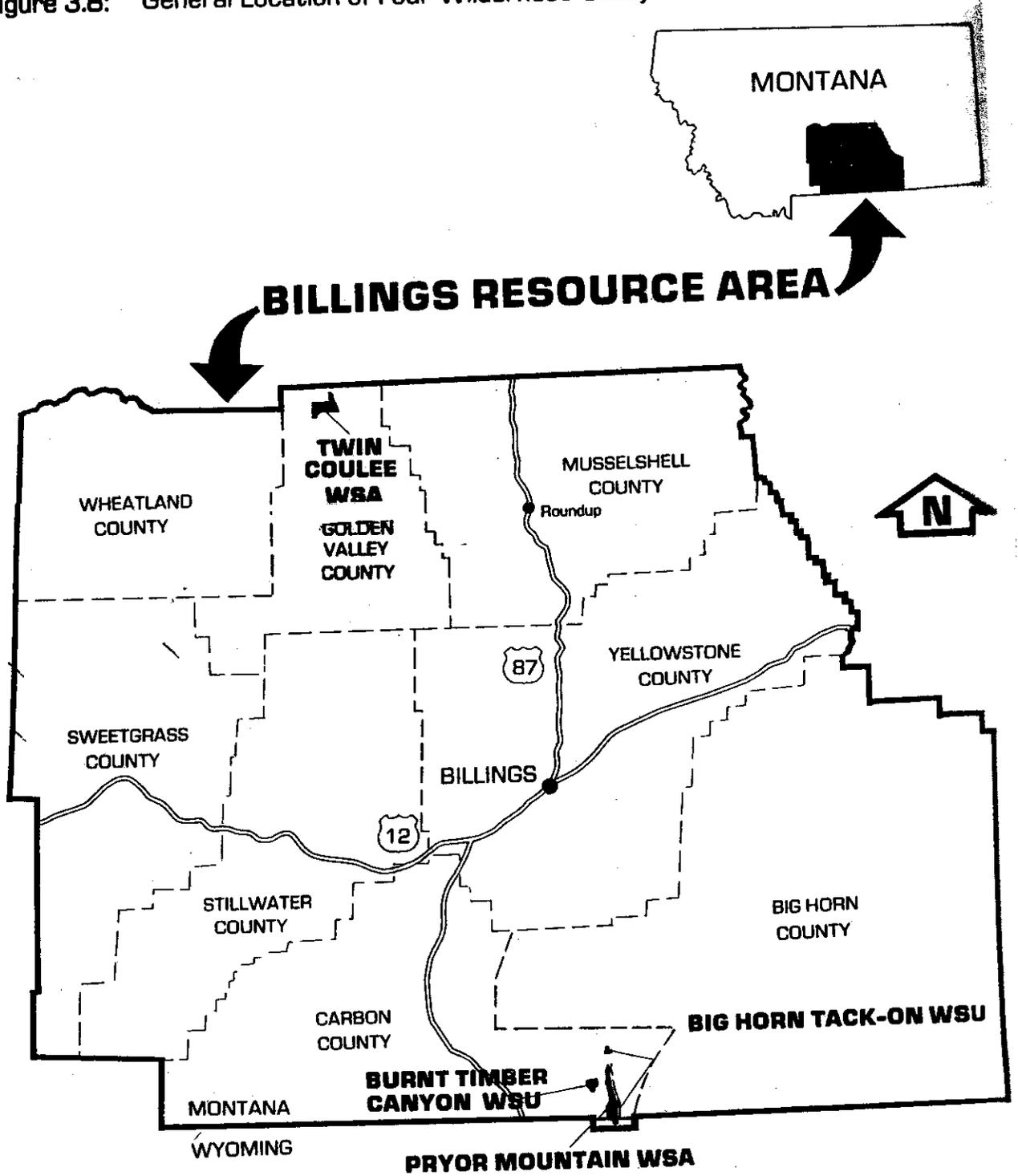
The following section discusses the four areas and units under wilderness study. The four areas are discussed in terms of:

1. **Wilderness Quality.** Each area's mandatory characteristics of size, naturalness and outstanding opportunities for solitude and/or primitive recreation are considered prior to making a recommendation for or against wilderness designation. In addition, any special features, ecological, geological, scientific, educational and scenic as well as historical values are considered.
2. **Resource Values Within the Wilderness Study Units.** The specific resource values in each study area are considered in determining the potential uses foregone if the areas were designated wilderness as well as how ongoing or potential resource use would affect wilderness if the areas were not designated. Resource values are discussed by study area or unit. Because the three areas located in the Pryor Mountains have similar resources, they have been grouped together for much of the discussion. Where specific resource values differ in these three units, the differences are indicated.
3. **Diversity in the National Wilderness Preservation System.** This section describes the extent to which designation of any area under study would contribute to expanding the diversity of the National Wilderness Preservation System (NWPS). The system places each area in an ecosystem and landform group and balances the distribution of wilderness areas. In addition, the opportunities for solitude or primitive recreation within a day's driving time (5 hours) of major population centers are assessed.

This analysis is based on the format outlined in the Bureau of Land Management's Wilderness Study Policy, which appeared in the February 3, 1982, *Federal Register*, Vol. 47, No. 23, pp. 5103-5107. Figure 3.8 provides the locations of the wilderness study areas and units.



Figure 3.8: General Location of Four Wilderness Study Areas/Units



Twin Coulee Wilderness Study Area MT-067-212

Size

The Twin Coulee Wilderness Study Area (WSA) consists of approximately 6,870 acres. The WSA is located in Golden Valley County along the southeast flank of the Big Snowy Mountains, approximately 35 miles south of Lewistown, Montana (see Figure 3.9). Lewis and Clark National Forest lands border this area on the north and west sides. The WSA is bordered on the east by a county road (Red Hill Road) and by private lands on the south. The northeast portion of the WSA is a narrow finger of land adjacent to the Red Hill Road, with a 3 mile segment with a core to perimeter distance of less than 250 yards. However, the bulk of the WSA is approximately 2 miles in width and 4.5 miles in length with a core to perimeter distance exceeding 1 mile.

The study area is contiguous on its western and northern boundary with the U.S. Forest Service RARE II Area 1-739, Big Snowies. The Forest Service released its draft recommendation of non-suitable for wilderness for the Big Snowies in July 1982.

Naturalness

The major portion of this WSA is apparently natural. There is evidence of past post and pole cutting and a vehicle-way apparently used as a haul road, in portions of Sections 21, 27 and 28, T. 11 N., R. 20 E. An old road cut is also visible in Section 15, T. 11 N., R. 20 E., but it hasn't been used or maintained for many years. Another vehicle-way crosses BLM land in Section 10 and terminates in adjacent U.S. Forest Service land. There are 2 miles of fence located along the eastern and southern boundaries of the unit. Table 3.13 is a listing of the man-made features in the WSA.

Solitude

Portions of this WSA offer outstanding opportunities for solitude. The area slopes from west to east with approximately 90% of the north facing slopes covered with dense stands of timber. The area consists of six deep, timbered, parallel drainages. The major impact on solitude comes from regular traffic on the Red Hill Road which forms the WSA's eastern boundary for approximately 5 miles. It is a county maintained road connecting Lewistown with a number of dispersed ranches, carries a relatively large volume of traffic (59 vehicles per day according to the Montana State Highway Department) and is visible from portions of Sections 14, 15 and 23 (see Figure 3.9). Also some ranching activity can be seen to the south, but this is in the distance and has little impact on the area's solitude.

Primitive and Unconfined Recreation

This WSA does not offer any outstanding opportunity for primitive and unconfined recreation. Opportunities exist for hunting, hiking, camping, rock climbing and nature study. However, due to the dense forest cover, steep slopes and sparse flora and fauna, these opportunities are limited. Winter access to this area is possible by cross-country skis or snowshoes, but the steepness and heavy timber in the interior make the area impractical for most winter sports.

Supplemental Values

Limestone outcroppings in some of the higher areas and well defined drainages enhance the scenic quality of the area. Scenic vistas of the adjacent prairie lands to the south and the southern slopes of the Big Snowy Mountains can be obtained from some of the higher portions of the WSA, but from most areas, visibility is extremely limited by dense stands of timber.

TABLE 3.13: MANMADE FEATURES IN THE TWIN COULEE WSA

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Old post and pole cutting skid trails	T. 11 N., R. 20 E., Secs. 21 and 28	Eastern one-fourth of the unit	300 acres	Little effect on naturalness.
Old road cut	T. 11 N., R. 20 E., Sec. 15	Northeast corner	1/4 mile	Little effect on naturalness.
Vehicle way	T. 11 N., R. 20 E., Sec. 10	Northern edge	1/4 mile	Little effect on naturalness.
Vehicle way	T. 11 N., R. 20 E., Sec. 27	South-central portion	1/4 mile	Little effect on naturalness.
Fences	T. 11 N., R. 20 E., Secs. 14, 27, 31 and 32	East and south boundaries	2 miles	Little effect on naturalness.

Source: BLM, 1982

Geology/Topography

The Big Snowy Mountains occur as a broad pine-covered range rising out of the surrounding plains. The maximum elevation is 8,730 feet at Greathouse Peak.

The lands within the Twin Coulee WSA lie in the southern corner of the Big Snowy Mountains, in T. 11 N., R. 10 E. (see Figure 3.8). Elevations in the WSA range from approximately 7,600 feet in the northwest corner, to 8,000 feet along Red Hill Road on its eastern edge.

The area is very rugged, with several deeply incised drainages and extensive outcrops of bare limestone and sandstone.

Sedimentary rock exposed in the Twin Coulee area is assigned to the Madison and Big Snowy Groups, of Mississippian Age. The rock types are generally limestones, shales and sandstones. These rocks have been folded during the Big Snowy Uplift, exposing the older Madison Group limestones at higher elevations, while the Big Snowy Group sediments outcrop along the flanks of the range.

Minerals

Mineral deposits in the vicinity of the Twin Coulee WSA consist of the Heath "oil" shale.

The Heath shales are extensive, covering an estimated 2,700 subsurface square miles of eastern and central Montana, and range in thickness from 160-240 feet. In this WSA, the Heath outcrops along the south and southeast flanks (Desborough, 1981). Marine shales such as the Heath, are commonly enriched in heavy metals, which are deposited in microscopic mineral grains. The Heath may contain anomalous values of vanadium, zinc, nickel, selenium and molybdenum, and up to 10 gallons per ton of synthetic crude oil.

Gypsum may be found outside the WSA both in outcrops and as subsurface deposits. It is thickest in the lower portion of the Otter formation, where its depth reaches 5½ feet plus the interbedded shale (Harris, 1972). Its thickness and extent are unknown.

Two companies have located lode mining claims in the area, probably for the metal-bearing shales in the Heath formation. One group of 100 claims lies in the southern part of the WSA. A second group of 86 claims blankets its southwest corner (see Figure 3.9). The claims were located in April 1981. The companies are maintaining the claims, though little exploration has ensued to date, and no plan of operations under 43 CFR 3802 has been filed with the BLM.

There are oil and gas lease applications pending in the Montana State BLM Office covering all of the Twin Coulee WSA. Final action on these applications has not been taken because of the backlog of similar applications.

Soils

The soils of this WSA are developed from sedimentary bedrock, primarily limestone. Soil depths run from very shallow to deep. Surface runoff is usually rapid. Parent materials in the WSA are of the limestones of the Madison Group.

Watershed

All drainages in this study area are ephemeral. No known watershed problems exist other than channel erosion from intensive local storm activity.

Vegetation

Much of this WSA is forested with Douglas fir, ponderosa pine and lodgepole pine. Depending on the density of the forest canopy, understory consists primarily of non-palatable forbs and shrubs. Sparse amounts of pine-grass and elk sedge are also present.

On the open ridgetops and under the less dense forest canopies, shrubby cinquefoil is the dominant shrub with numerous forbs and some grass species also present. Grasses include Idaho fescue, Kentucky bluegrass and timber oat grass.

Timber

In 1975 an extensive inventory of the forest values was completed in the Twin Coulee WSA. The major species are ponderosa pine and some Douglas fir and lodgepole pine. Scattered Engelmann spruce patches and individual trees are also found along the moist drainages. The stands are in good condition with a minimal loss attributed to spruce budworm. Of the 6,870 acre area, 4,612 acres are classified as commercial forest, 1,495 as noncommercial and 763 as non-forested. The total volume is estimated to be 9.4 million board feet (MMBF) ponderosa pine, 2.6 MMBF of Douglas fir and .3 MMBF of lodgepole pine. No harvesting has been done in this WSA except for some horse logging in the 1930's.

There is a demand for timber resources from the sawmills located in Roundup (approximately 44 miles), Lewistown (approximately 35 miles) and Judith Gap (approximately 38 miles).

Livestock Grazing

Six hundred acres along the eastern boundary of the study area are included in one grazing allotment. Grazing use is limited to 68 AUMs from July 1 to October 15. Red Hill Road, on the east boundary of the WSA, is used for a stock driveway with about 6,000 animals using the road annually.

Wildlife

The Twin Coulee WSA does not contain any perennial streams or other sources of permanent water supply. Because of the absence of water, wildlife populations and species distribution are limited.

The primary big game species are mule deer and black bear. Utilization of the area by mule deer is highest during winter months. The area is also utilized by elk during winter months.

Black bear probably utilize the study area throughout the year as part of their natural range in the Snowy Mountains.



The only upland game birds known to occur in the study area are mountain (blue) grouse and Merriam's turkeys in the forested areas and sage grouse on the lower elevation grass and sagebrush covered prairie.

Predators or carnivorous animals in this WSA include black bear, skunk, coyote, red fox, bobcat and mountain lion (BLM, 1982).

There are no known or potential threatened or endangered species in the Twin Coulee WSA.

Access

This study area is accessible from the Red Hill Road, except during the winter months or after heavy rain storms when travel is difficult.

Recreation: Uses and Opportunities

Hunting is the major recreational use in Twin Coulee. The number of hunter days spent is unavailable, but the State Comprehensive Outdoor Recreation Plan (Montana Department of Fish, Wildlife and Parks, 1978) indicates that the general area near Twin Coulee is used for hunting mule deer and occasionally whitetail deer and black bear. Other activities may include hiking, picnicking and cross-country skiing.

Projected Visitation Trends

Little information is available for projecting visitor trends for the use of this wilderness study area. On-the-ground evidence indicates that the Twin Coulee WSA has received light use in the past. This low recreational use is probably due to the lack of water, steep topography, dense forest cover and low game population.

It's anticipated that visitation would change very little if Twin Coulee were designated as wilderness.

Visual Resources

Twin Coulee is classified as having Class II (good) scenic quality, consisting of a variety of landforms, colors and vegetation. The classification implies uniqueness and no outside intrusion. The area is covered with a mixture of ponderosa pine and Douglas fir with lodgepole pine at higher elevations.

Cultural Resources

This area was surveyed for cultural resources by Professional Analysts, Inc., in June 1977. Seven cultural sites were located, or one site per 981 acres. The majority of prehistoric sites are limestone rockshelters. In addition to 7 definite cultural sites, 18 additional rockshelters bearing some suggestion of cultural occupation were located but not recorded as sites. It's felt by the surveyors that such density is based on a combination of low intensity of human occupation and the difficulty of finding sites in such terrain and heavy vegetation.

Classifications and Rights-of-Way

There are no classifications or rights-of-way within Twin Coulee WSA.

Adjacent Land Uses

The study area is bordered on the north and west by the Lewis and Clark National Forest. These lands are in a relatively natural condition and are used for some livestock grazing. The Red Hill Road parallels the study area along its eastern boundary.

Privately-owned grazing lands are located east of the Red Hill Road and directly south of the study area. These lands are in a relatively natural state with the exception of one private home and several primitive vehicle-ways. There are no activities associated with these lands which would have an adverse impact on the wilderness characteristics of the study area.

Pryor Mountain WSA MT-067-206

Size

This area consists of 16,927 acres. Approximately 12,575 acres are located in Carbon County, Montana and the remaining 4,352 acres are in Big Horn County, Wyoming. The area is located approximately 15 miles north of Lovell, Wyoming along the southern slopes of the Pryor Mountains. The Sykes Ridge Road forms the eastern boundary, the Burnt Timber Canyon road and Custer National Forest lands border the western side. The southern boundary is formed by regularly used county roads as well as legal ownership boundaries and topographic lines (see Figure 3.10). The WSA averages 12 miles in length and 2 miles in width.

Naturalness

The limited evidence of man's presence within the study area is not concentrated in any particular area and is usually well screened by topography and vegetation. The unit contains 1 range management enclosure, 1 water catchment, 1 reservoir, 3 wild horse traps, 4½ miles of fence and 6 miles of vehicular-ways. There are at least 23 prospecting pits for uranium within the study area. Most are located along or near boundary roads. Table 3.14 is a listing of the man-made features in this WSA.

Solitude

Opportunities for solitude throughout the majority of the Pryor Mountain Wilderness Study Area are outstanding. The intricate drainage patterns and topographic relief offer ample opportunities for isolation to individuals or groups.

Primitive and Unconfined Recreation

There are outstanding opportunities for hiking, back-packing, nature and wildlife photography, rock climbing, nature study and viewing geologic features within the mountain foothills and canyons of this area.

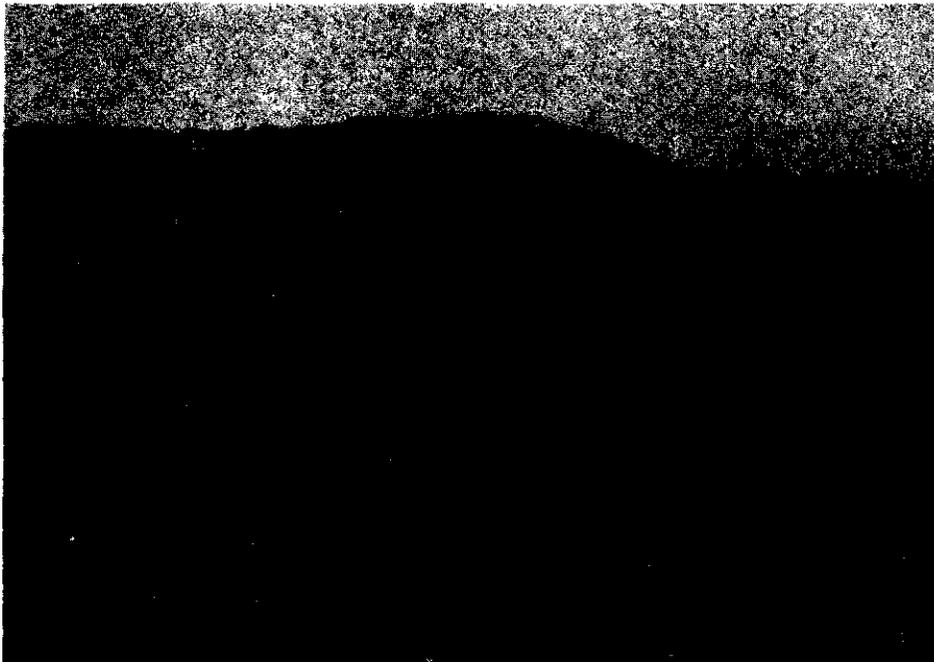
Hunting opportunities would not be outstanding in relation to the higher forested areas to the north. Horse-back riding opportunities would be excellent, but on a short term basis. The lack of water and grass would limit this activity unless hay was brought into the area. Water is available at a few locations.

This WSA is located in the central portion of the Pryor Mountain Wild Horse Range and wild horses can be observed throughout the area, especially around watering places. The presence of wild horses is one of the major reasons for the current recreational use in the area.

The unit is extensive, being 12 miles in length and 1 to 3 miles in width. The area rises from an elevation of 3,900 feet in the south to 8,500 feet in the north. The topography varies from an arid sonoran landform in the south, to mountain foothills in the central region, to densely forested mountains in the north. Each portion of the unit has excellent opportunities for solitude.

The expanse of the southern portion compensates for the lack of vegetative screening. There are some patches of juniper and eroded hillocks which provide some screening. The central portion is more broken with many patches of timber. The mountain topography in the north is characterized by steep cliffs, dense timber and excellent opportunities for solitude.

Big Coulee is the major north-south drainage near the center of this WSA. This deep channel with an array of rugged side drainages would tend to spread users, and increase opportunities for solitude.



Pryor Mountain WSA
Big Coulee foreground
Lower end of Sykes Ridge
in background

Figure 3.10: Pryor Mountain Wilderness Study Area

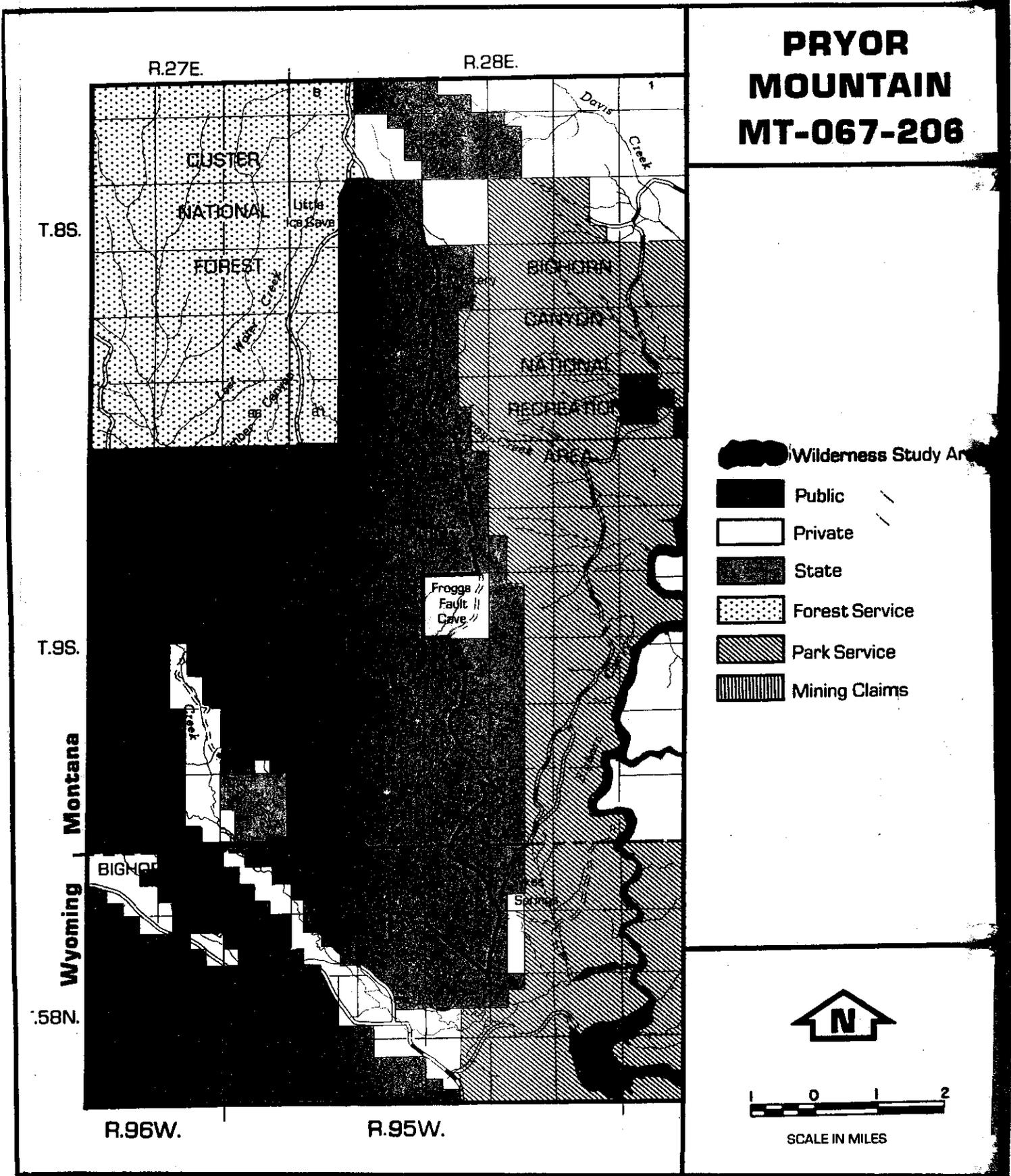


TABLE 3.14: MANMADE FEATURES IN THE PRYOR MOUNTAIN WSA

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Wild horse trap	T. 58 N., R. 95 W., Sec. 22	Cottonwood Springs	Approximately 100' in diameter	Well screened, in coulee bottom.
Wild horse trap	T. 9 S., R. 28 E., Sec. 29	Along canyon floor in Big Coulee	Approximately 100' in diameter	Well screened, in coulee bottom.
Wild horse trap	T. 8 S., R. 28 E., Sec. 28	Located on Sykes Ridge Boundary Road	Approximately 100' in diameter	Well screened by natural vegetation.
Water catchment	T. 9 S., R. 28 E., Sec. 4	Located along open ridgetop	100' x 150'	Visible from several points along Burnt Timber Canyon Road. However, because of vastness of country, not readily seen.
Reservoir	T. 8 S., R. 17 E., Sec. 17	1/2 mile southwest of Penn's Cabin	400' x 200'	Visible from Sykes Ridge Road.
Fence	T. 58 N., R. 95 W., Sec. 27	Cottonwood Springs southeast to Sykes Ridge Road	1 mile	Well screened by topographic features.
Seven uranium prospecting pits	T. 8 S., R. 28 E., Sec. 6	East side, Burnt Timber Canyon Road	Pits are approximately 20' by 25', 3' in depth	Visible from boundary road.
Four uranium prospecting pits	T. 8 S., R. 28 E., Secs. 7, 8, 18	East side, Burnt Timber Canyon Road	Pits are approximately 20' by 25', 3' in depth	Visible from boundary road.
Eleven uranium prospecting pits	T. 9 S., R. 27, 28 E., Secs. 19, 24, 25, 30	Two pits located along Burnt Timber Canyon Boundary Road, nine pits located along vehicle ways within 1 mile of western boundary road	Pits are approximately 20' by 25', 3' in depth	Two pits visible from Burnt Timber Canyon Boundary Road. The remainder are well scattered and quite inconspicuous.
One uranium prospecting pit	T. 9 S., R. 28 E., Sec. 33	Located 1/8 mile northeast of vehicle way leading to Big Coulee Horse Trap	Pit is approximately 20' by 25', 3' in depth	Inconspicuous until one is in close proximity.
Range management enclosure	T. 9 S., R. 28 E., Sec. 33	Located approximately 100 yards northwest of Sykes Ridge Road on ridgetop	Approximately 100' on a side	This enclosure is conspicuous from higher elevations within several hundred yards. It is not readily noticeable from greater distances.
Fence	T. 9 S., R. 28 E., Sec. 30, 31 T. 9 S., R. 27 E., Sec. 25 T. 58 N., R. 95 W., Sec. 20	Boundary fence in SE corner of unit	2 miles	Portions are visible from Tillett Ridge Road.
Fence	T. 58 N., R. 95 W., Sec. 20, 21	Drift fence for water trapping at Britton Springs	1 1/2 miles	Well screened by topographic features.
Vehicle way	T. 9 S., R. 28 E., Sec. 18, 19, 20	NE of Turkey Flat Road and is within the unit	1 1/2 miles	Little effect on naturalness.

Vehicle way	T. 9 S., R. 28 E., Sec. 18, 19 T. 9 S., R. 27 E., Sec. 24, 25	Westcentral portion	3 miles	Little effect on naturalness.
Vehicle way	T. 9 S., R. 28 E., Sec. 19	Westcentral portion	1/2 mile	Little effect on naturalness.
Vehicle way	T. 9 S., R. 28 E., Sec. 19	Westcentral portion	1/4 mile	Little effect on naturalness.
Vehicle way	T. 9 S., R. 28 E., Sec. 7	Westcentral portion	3/4 mile	Little effect on naturalness.

Source: BLM, 1982

Supplemental Values

The designation of the Pryor Mountain Wild Horse Range, the first in the United States, is a definite supplemental value to the area. The presence of wild horse herds in association with native wildlife species enhances the wild and scenic qualities of the area.

Wind and water erosion has created an interesting drainage pattern through the center of the area. Big Coulee is the most significant canyon bisecting the central portion of the unit on a north-south axis. Many colorful rock formations, ranging from grays to deep reds are visible from the higher ridges.

Several archeological sites have been found in this study area. Dominant site types are lithic scatters, some of which also contain hearths, and discarded or lost stone tools.

Both vertebrate and invertebrate fossils have been found in the area. The Crooked Creek Natural Landmark is a National Register site for vertebrate fossils.

Geology/Topography

Pryor Mountain WSA, Burnt Timber Canyon Wilderness Study Unit (WSU), Big Horn Tack-On WSU

The Pryor Mountain study units are discussed in terms of one area in some of the following descriptions where resource values are identical. The units are located in southcentral Montana primarily on the southern slopes of the Pryor Mountains. They extend from the foothills to the upper slope of East Pryor Mountain and include Burnt Timber and Sykes Ridges. Elevations on the northeast corner of the mountain exceed 8,700 feet. Elevations decrease to the southwest (4,500 feet in Crooked Creek) and the south (3,800 feet in Big Coulee).

Sedimentary rock layers exposed in the area represent a generally complete sequence of deposition from the Middle Cambrian through the Lower Cretaceous Periods (an interval of nearly 400 million years). The total thickness of rock exceeds 4,500 feet (Blackstone, 1975). The upper slopes of East Pryor Mountain are dominated by the limestones of the Madison formation. Younger rocks outcrop to the south and southwest.

Older rocks outcrop on its east-facing scarp (toward Dryhead Basin). The only exposure of the Precambrian (crystalline) rocks is at the base of this scarp. East Pryor Mountain is one of several of the major structural units which comprise the Pryor Range. Others include West Pryor Mountain and Big Pryor Mountain (Blackstone, 1940). These units developed from vertical uplift with their origins deep within the earth, producing anticlines (upfoldings of the rock) which often rupture into faults on their northeast corners.

This uplift and subsequent erosion produced the landforms present today. The mountains are a series of northwest-southeast ridges with steep northeasterly-facing scarps, and gentle slopes to the southwest.

Demi-John Flat, in the Burnt Timber Canyon study unit is an outwash terrace from an earlier period of erosion of rock from the upper slopes of Big Pryor and East Pryor Mountains.

Minerals

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

Prospective mineral resources which may occur within these three units include uranium/vanadium, limestone, oil, gas, sand and gravel and bentonite.

The uranium/vanadium mineralization in the Pryor Mountains is mostly confined to collapsed limestone caverns near the contact between the Madison and Amsden formations, on Big Pryor Mountain and on Burnt Timber Ridge. Over 500 uranium occurrences are known. Though most of these contain only traces of mineralized material, some deposits have produced over 1,000 tons of ore. The uranium/vanadium minerals form coatings on chert and limestone rock fragments within the collapse breccias. The grade of the ore may exceed 0.50% U³⁰⁸ (uranium oxide) and 1.50% V²⁰⁵ (vanadium oxide).

Minor mineralization has also been found as replacement of bone fragments, and in small "roll front" deposits in the Swift, Morrison and Cloverly formations where they outcrop in the Wyoming part of the Pryors, particularly in the Pryor Mountain WSA.

Though much of the land disturbed by mining activities has been removed from wilderness study, many mining claims have been located on lands within the study units. One group has been located within the Pryor Mountain WSA. It includes all or part of 35 different lode mining claims located in 1956 and 1957. These claims blanket the only major mining area on Burnt Timber Ridge, in Section 7, T. 9 S., R. 28 E. Little recent exploration or development work has been performed on the claims, though they are being maintained. The claimant has not filed a plan of operations as specified by 43 CFR 3802. Most other claims have been abandoned.

Bentonite beds of unknown quality or thickness have been found in the Morrison, Cloverly and Thermopolis formations of northern Wyoming. These formations outcrop along the southern boundary of the Pryor Mountain WSA.

Limestone occurs throughout much of the northern portions of the units. Similar limestone mined near Warren, Montana is used as railroad ballast and in the process of refining sugar.

There are no known deposits of oil or gas within the three units. However, strata which lies at or near the surface of the Pryors are often producing horizons for petroleum elsewhere in the state. Their prospective value here is unknown, as no oil tests have been drilled within the horse range, and few in the rest of the Pryors.

Big Coulee (in the Pryor Mountain WSA) is a wide ephemeral stream which flows only during spring snowmelt and after high-intensity summer thunderstorms. Gravel is carried downstream from the Pryor Mountains at this time, accumulating in the stream channel when the current wanes. The material is primarily composed of limestone boulders and cobbles, with minor sandstone and chert fragments. It is useful in upgrading and maintaining local county roads.

No portion of the Pryor Mountain study areas has been leased for oil and gas.

Soils

The soils of these areas are developed from limestone, sandstone, gypsiferous siltstone and shale. Soil depths range from deep to very shallow with some bare bedrock outcrops on ridges, knolls and along slopes of high terraces and drainages. Soil textures range from very gravelly loam to sandy loam. The soils are well drained to excessively drained with slow to rapid surface runoff. The slope of land ranges from gently rolling to steep with deeply entrenched streams and drainages.

Watershed

Drainages in the Pryor Mountain study area are ephemeral. A number of side drainages flow into Big Coulee which experiences flows from snowmelt and intense summer storms.

Vegetation

The mid-elevations of the Pryor Mountains are characterized by patches of Douglas fir, particularly on the north slopes (northern portion of the Pryor Mountain WSA), with occasional open parks. Understory is generally sparse in the dense Douglas fir stands. Shrub species include snowberry, ninebark, spirea and juniper. Limber pine is also present along with bluebunch wheatgrass, needleandthread grass, bluegrasses, forbs and sedges. In the open unforested area, vegetation is composed primarily of shrubs and grasses. Big sagebrush and shrubby cinquefoil are the dominant shrubs. Grasses include mountain brome, Kentucky bluegrass and bluebunch wheatgrass. Common forbs are balsamroot, geranium and eriogonum.

The next lower belt consists mostly of mountain shrubs. Utah juniper occupies the upper elevations; gradually blending into mountain mahogany and eventually big sagebrush. Black sage, rabbit brush and skunkbush sumac may also be present along with bluebunch wheatgrass, needleandthread grass, three awn and Sandberg bluegrass.

The Red desert/saltshrub occurs on the lower portions of the WSA. Vegetation is generally sparse and scattered. Saltbushes of the *Atriplex* genus comprise the majority of the vegetation.

Timber

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

A timber inventory was done within the study areas in 1964. The major species are Douglas fir with minor amounts of limber pine, Engelmann spruce and Alpine fir. Overmature saw log stands of Douglas fir cover most of the north and east slopes, and canyons in the higher elevation of the WSAs. Stands of small, stagnated spruce and Alpine fir are found intermingled with the Douglas fir. Limber pine is prevalent as stringers, isolated trees and as patches intermingled with other species. Almost all of the forested areas consist of overmature Douglas fir and are in fair to poor condition with high risk levels for beetle infestation. Approximately 600 acres within the units are classified as commercial, and contain an estimated 5 million board feet (Billings District Consolidated Forest Type Acraeges, Billings Resource Area, Billings, Montana). At this time, none has been harvested and the area is classified as a protection stand. There are 7,750 acres of noncommercial forest consisting of the above species. In addition, there are approximately 19,000 acres of noncommercial juniper which have received limited use for firewood, post, lamps and other decorative items. The use of forest products has been very limited and demand has been light.

Livestock Grazing

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

There is no licensed grazing permitted within the Pryor Mountain study areas since they are located within the Pryor Mountain Wild Horse Range. Approximately 130 wild horses graze throughout the three units.

The Pryor Mountain Wild Horse Range was designated September 9, 1968, by order of Secretary of the Interior, Stewart L. Udall. The horse range is located in the southeastern portion of Carbon County, Montana and overlaps into Big Horn County, Wyoming. The Pryor Mountain WSA and Big Horn Tack-On WSU are located entirely within the Pryor Mountain Wild Horse Range. A small portion of the Burnt Timber Canyon WSU is outside the designated range. This portion consists of approximately 300 acres between Crooked Creek Canyon and the road crossing Demi-John Flat.

Wildlife

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

The three Pryor Mountain study areas offer many diverse habitat types and associated species of wildlife. The wildlife in these areas are somewhat unique in that they coexist with a herd of wild and free roaming horses.

The primary big game species found in the study areas are mule deer, Rocky Mountain bighorn sheep and black bear. Mule deer are the most abundant of these species. Little information is available on actual numbers or migration patterns. However, observations indicate that there is seasonal movement from the subalpine forest and meadow zones located in the northern portions of the study areas in the fall and winter months to the sagebrush, juniper and mountain mahogany zones along the southern foothills, where they winter.

Rocky Mountain bighorn sheep were introduced in the Pryor Mountains in two transplant efforts conducted by the Montana Department of Fish, Wildlife and Parks. The transplanted sheep established migration patterns at the time of the plants and subsequently, a majority of them migrated from the area. However, a resident herd estimated to be 10 to 20 in number still reside within the area, primarily in the Pryor Mountain WSA and Big Horn Tack-On WSU.

Black bear are quite abundant within the Burnt Timber Canyon WSU and the northern portion of the Pryor Mountain WSA. These areas provide the necessary hibernating, forage and cover requirements.

The only upland game birds known to occur within the units are mountain (blue) and sage grouse. Mountain grouse primarily occur in the northern, forested areas of the Burnt Timber Canyon WSU and Pryor Mountain WSA. Sage grouse are only found in the southern portions of all three areas where sagebrush/grassland is the dominant vegetation. Neither of these species are considered to have large populations within the study areas.

Coyotes are the most common predator in the Pryor Mountain study areas although skunk, weasel, bobcats and mountain lions are known to occur.

The only fisheries occurring in the units are in Crooked Creek within the Burnt Timber Canyon WSU. The primary species are brook rainbow and cutthroat trout. The cutthroat may be isolated in the upper portions and could represent a pure strain and, as such, have a very high intrinsic value (Bishop, 1973).

The only potential threatened or endangered species suspected to occur in the Pryor Mountain units is the peregrine falcon. However, surveys in 1979 and 1980 conducted by the BLM revealed no current use. The last confirmed sighting was made in 1972, with two unconfirmed sightings occurring in 1975 (South, 1980).

One plant being reviewed as threatened or endangered and identified on the Montana BLM list of sensitive species may exist in the Pryor Mountain study areas. This is *Eriogonum lagopus*, a buckwheat. It has not been positively located to date.

Access

Access to the Pryor Mountain WSA is best obtained from the south via a county road paralleling Crooked Creek. Access from the north can be obtained along the western boundary from the U.S. Forest Service's Dryhead Overlook to the Burnt Timber Canyon (Tillett Ridge) Road. Access along the eastern boundary is obtainable from the Dryhead Overlook to the Sykes Ridge Road. All of these access routes are public roads. However, 4-wheel drive vehicles are recommended for travel on the Burnt Timber Canyon and Sykes Ridge roads.

Recreation: Uses and Opportunities

Hunting is one of the major recreational uses in the three units. Actual number of visitor days spent in the Pryor Mountain study areas is not known but estimates are that use is light. It has been determined from traffic counters placed on roads adjacent to the areas, that approximately 5,000 people visited the general area of the study units from June to November 1980.

Other recreational activities occurring within the study units are rock hounding, caving, off-road vehicle driving, sightseeing and viewing the wild horses. Rock hounding use is light and occurs primarily in the southern portion of the Pryor Mountain study units. Cave use is also limited.

Projected Visitation Trends

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

The number of visitors using the study areas in the Pryor Mountains is related to visitor use on adjacent Park Service and Forest Service lands. The National Park Service reported that the annual visitation to the southern division of the Bighorn Canyon National Recreation Area was about 143,000 visitors in 1980 and 1981. The BLM has no data available to state what percentage of Park Service visitors use the study areas. However, the use would be a relatively small percentage because of the primitive nature of the roads accessing the area.

Visual Resources

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

The Pryor Mountain study units are rated as having exceptional to moderate scenic values. The overall area varies from semi-arid to subalpine. The only visual intrusion in the area is the past minor mining activity associated with uranium exploration conducted in the 1950's. This consists of jeep trails along the boundaries and some small mining pits found mostly in the southern half of the units. Scenic attractions include fault scarps, deep canyons and outcroppings of the colorful Chugwater formation. Off-site intrusions consist of bentonite mining activity to the south, low traffic gravel roads and a National Park Service paved highway paralleling portions of the Bighorn Canyon, visible primarily from the Big Horn Tack-On. The community of Lovell, Wyoming approximately 13 miles from the nearest WSA boundary, powerlines and some nearby ranching activities are visible from the higher elevations of each of the study areas. Most of these intrusions are several miles or more from the study area boundaries.

Cultural Resources

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

Beginning in the summer of 1968, Dr. Larry Loendorf of the University of Montana began a 5 year survey, testing, and conducting excavation work in the Pryor Mountain and Bighorn Canyon National Recreation Area. As a result of field work in all three of the Pryor Mountain study units, 37 prehistoric sites have been recorded. Lithic scatters, stone rings, chert quarries, rock art, rockshelters, vision quests and a ford/migration area comprise the site types located. Lithic scatters dominate the site types.

In 1978, investigators from the Universities of Maine and Alberta began a study of human cultural patterns at upper, middle and low elevation caves and rockshelters in the Pryor Mountains. Work thus far in three caves has yielded cultural and faunal material dating approximately 6,000-9,000 years before the present.



Classifications and Rights-of-Way

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

The Pryor Mountain study areas were included in the exterior boundaries of the Pryor Mountain Wild Horse Range when the range was created in 1968. The designation is compatible with wilderness management.

Three areas were classified for retention under the Classification and Multiple Use Act of 1964. The classifications further segregated the lands from appropriation under the agricultural land laws, from sales under Section 2455 of the Revised Statutes and from operation of the general mining laws (not from mineral leasing laws). The three study areas lie entirely within these segregated areas. The classifications are compatible with wilderness management (see Figure 1.2).

Two rights-of-way for powerlines of ¼ mile and ⅓ mile are present in the Pryor Mountain WSA. There are no such encumbrances in the Burnt Timber Canyon or Big Horn Tack-On units.

Adjacent Land Uses

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

The Pryor Mountain units are bordered on the east by the 120,000 acre Bighorn Canyon National Recreation Area, which includes 12,700 acres of Yellowtail Reservoir. The 73,956 acre Pryor Mountain area of the Custer National Forest borders the three study units on the northwest. The National Recreation Area and Pryor Mountain Forest Service lands are high use recreation areas.

Irrigated meadows and several groups of ranch buildings are located approximately 1 mile south of the Burnt Timber Canyon Unit. However, these ranching activities are not visible from the unit. They would be visible from some of the higher points near the western boundary of the Pryor Mountain WSA, but distance mitigates any impact upon solitude within the area.

A 640 acre parcel of privately-owned land borders the southwest boundary of the northern portion of the Big Horn Tack-On Unit. These lands are in a relatively natural condition, similar to the study areas, with the exception of two fair weather roads which cross the area.

The Dryhead Basin is located north of the Big Horn Tack-On Unit and is clearly visible from some of the ridges in the study areas. These privately-owned lands are in a relatively natural state and are utilized for grazing purposes.

An old mining road constructed on the southeast flank of Red Pryor Mountain is visible from Demi-John Flat in the Burnt Timber Canyon Unit. This road was constructed in the 1950's as part of uranium exploration activities. It is located approximately 1 mile southwest of the unit.

Bentonite mining activities are currently being conducted within 3 miles of the southern boundaries of the Pryor Mountain and Big Horn Tack-On Units. Dust created by trucks on haul roads is sometimes visible.

Burnt Timber Canyon WSU MT-067-205

Size

The Burnt Timber Canyon WSU is located in Carbon County, Montana and consists of 3,955 acres. This acreage is less than the minimal 5,000 acres required by the Wilderness Act for wilderness study, but the unit is contiguous to the U.S. Forest Service's 9,520 acre Lost Water Canyon RARE II Area which has been administratively recommended for wilderness designation.

The study area is bounded by Custer National Forest lands on the north, a road crossing Demi-John Flat on the west and boundaries based upon topographic and legal ownership lines on the south and east. Approximately ½ mile of the Tillett Ridge Road serves as the boundary along the northeastern portion of the unit (see Figure 3.11).

The unit encompasses a portion of the extremely rugged and isolated Crooked Creek drainage on the southern slopes of the Pryor Mountains. The area is approximately 3 miles in length and 2 miles in width.

Naturalness

This study area is in a nearly natural condition. A major portion of the unit is comprised of the steep, rugged Crooked Creek Canyon and because of its nearly inaccessible nature, has remained in a nearly pristine state. There is a 1 acre range management enclosure on Demi-John Flat in the northwest corner of the area. Approximately 2½ miles of fence separates BLM lands from Custer National Forest lands on the north and 1¾ miles of fence also exist along the southern boundary. A dozer blade cut approximately 200 feet in length is visible on the eastern edge of Crooked Creek Canyon from some points along the western edge of the canyon. This cut was made during uranium prospecting activities in the 1950's. Five uranium prospecting pits exist along the boundary road on Demi-John Flat. There is also a wild horse trap near the mouth of Burnt Timber Canyon. Table 3.15 is a listing of the man-made features in this unit.

Solitude

The Crooked Creek and Burnt Timber Canyon drainages in the study unit offer outstanding opportunities for solitude. These drainages have cut into the limestone strata of the Pryor Mountains to a depth of several hundred feet and more. Only the canyon wall and intermittent side drainages are visible from the floor of the canyon. Ponderosa and limber pine and Douglas fir grow profusely along some of the canyon walls and side drainages. The combination of deeply incised topography and dense vegetation would tend to isolate recreationists.

The channeling effect created by the deep canyons is lessened by both their length (approximately 4 miles) and the heavy vegetative screening. A number of smaller drainages which radiate from the primary drainages would disperse users.

There is very little opportunity for solitude on the more open canyon rims and adjacent ridges, particularly in the southern tip of the study unit, because of the lack of vegetative or topographic screening. Approximately 10% of the area lacks outstanding opportunities for solitude.

Primitive and Unconfined Recreation

There are outstanding opportunities for hiking, backpacking, rock climbing, photography, spelunking and nature study within the Burnt Timber Canyon unit.

The deeply incised limestone canyons contain many caves, rock overhangs and alcoves that provide opportunities for exploration. Foot travel along the canyon bottom is difficult because of the dense underbrush and steep rocky talus slopes. However, the uniqueness of the area offsets the difficulty of travel.

Crooked Creek, which bisects the center of the unit, offers fishing for brook, rainbow and cutthroat trout. The trout are small and because of the dense brushy conditions along the banks and fishing is difficult.

Black bear and mule deer are the most common big game species, but again, because of the dense undergrowth, hunting opportunities are not exceptional.

The geologic and scenic values of the canyons are the most unique characteristics of the study unit, and are outstanding. All but 430 acres of this area are within the Pryor Mountain Wild Horse Range. The opportunity to view and/or photograph the wild horses is a popular recreation opportunity.

Supplemental Values

The eastern 1/3 of Demi-John Flat is within the wilderness study area. The Demi-John Flat Archeological District has been nominated to the National Register of Historic Places. Included within the district is the Demi-John Flat site which contains an abundance of stone rings (over 230) and rock cairn alignments. The site is significant for its large size and distinctive features.

The Tillett Petroglyph Site, also within the Demi-John Flat Archeological District, has been evaluated as having outstanding interpretive potential (Loendorf, 1971). The petroglyphs were made using paint in combination with incised designs upon a rock face.

As previously stated, fishing opportunities are not outstanding in Crooked Creek. However, the cutthroat trout in the upper portions of the creek are believed to represent a pure strain, and as such, have a very high intrinsic value (Clint Bishop, 1973, Montana Department of Fish, Wildlife and Parks Fisheries Biologist, personal communication).

The rubber boa, *Charina bottae*, occurs in the Crooked Creek and Burnt Timber Canyons. This snake is quite common in western Montana but the Crooked Creek drainage is one of the most easterly extensions of its range.

Figure 3.11: Burnt Timber Canyon Wilderness Study Unit

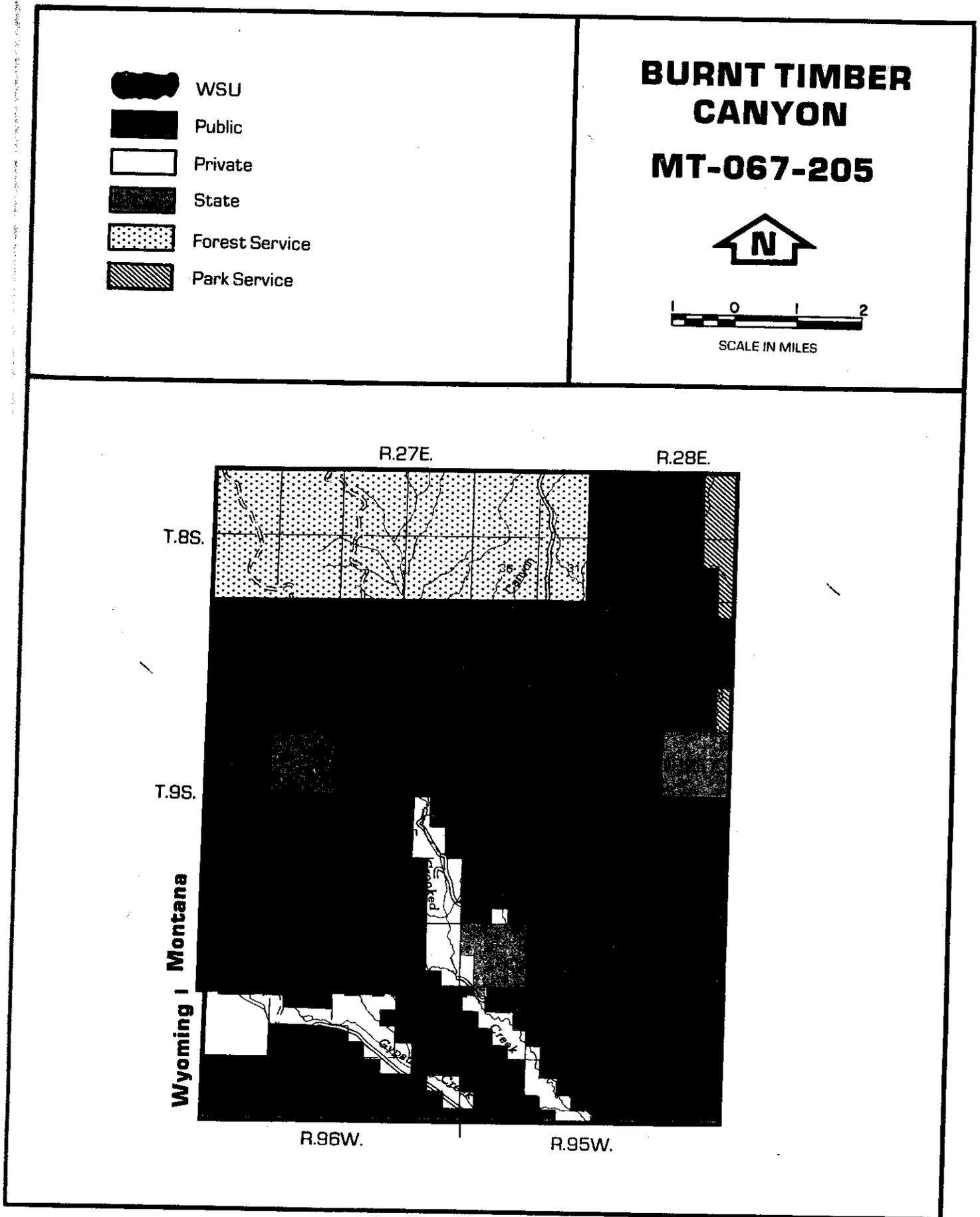


TABLE 3.15: MANMADE FEATURES IN THE BURNT TIMBER CANYON WSU

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Five uranium exploration pits	T. 9 S., R. 27 E., Sec. 10	In near proximity to, and directly east of road crossing Demijohn Flat	Pits are approximately 20' by 25', 3' in depth	Very visible from road forming west boundary. Not visible from other locations within the unit.
Dozer blade cut	T. 9 S., R. 27 E., Sec. 11	East side of Crooked Creek Canyon, near top	Approximately 200' in length	Visible from canyon edge on Demijohn Flat.
Range management enclosure	T. 9 S., R. 27 E., Sec. 3	Along road crossing Demijohn Flat	Approximately 1 acre in size	Visible from road on Demijohn Flat. Not visible from other portions of unit.
Fence	T. 9 S., R. 27 E., Secs. 1, 2, 3, 6	North boundary fence separating BLM from U.S. Forest Service lands	2 1/2 miles	
Fence	T. 9 S., R. 27 E., portions of Secs. 23, 24, 25	Forms boundary, southwestern portion of unit east of Tillett Ranch	1 3/4 miles	
Wild horse trap	T. 9 S., R. 27 E., Sec. 14	Near mouth of Burnt Timber Canyon	Approximately 75' in diameter	Inconspicuous except from canyon floor or directly above from canyon rim.

Source: BLM, 1982

Stands of mountain mahogany, *Cercocarpus ledifolius*, are common on Demi-John Flat and portions of the PMWHR and is one of the more northerly extensions of its range.

The scenic values of this study area are outstanding. The deeply incised canyons formed by the Crooked Creek drainage are especially picturesque. The unique geologic formations and abundant caves would be of interest to most recreationists.

The Geology, Topography, Minerals, Soils, Timber, Livestock Grazing, Wildlife, Threatened and Endangered Species, Recreation, Uses and Opportunities, Projected Visitation Trends, Visual Resources, Cultural Resources, Classifications and Rights-of-Way and Adjacent Land Uses information for this WSU is the same as that given in the Pryor Mountain WSA discussion.

Watershed

Crooked Creek is a perennial stream averaging 45 cubic feet per second (CFS). Water quality is excellent although some bank deterioration occurs from wild horse trampling and grazing in the lower reaches of the channel prior to leaving public land. Burnt Timber Canyon is an ephemeral tributary to Crooked Creek. This drainage experiences rapid flows of short duration from snowmelt and locally intense summer storms, which may cause channel scouring. The use of the channel bottom by wild horses may contribute to localized erosion problems.

Vegetation

Vegetation in the Burnt Timber Canyon unit is dominated by Utah juniper and sagebrush. The understory on the thin, skeletal soils is usually low-growing species that have adapted to droughty sites. Major shrubs are Utah juniper, black sagebrush, mountain mahogany and snakeweed. Common forbs include buckwheats, phlox and prickly pear cactus. Several grass species (bluebunch wheatgrass, needleandthread grass, three awn, Sandberg bluegrass and western wheatgrass) are present but are generally sparse due to the low productive capabilities of the soils and low precipitation.

There is a distinct difference in vegetation along Crooked Creek due to the permanent water supply. Broadleaf shrubs dominate with an understory of sedges, forbs and grasses associated with the mesic conditions.

Access

Access to the Burnt Timber Canyon unit is obtained by the Crooked Creek Road from either the north or south. Access from the south is from Lovell, Wyoming via county roads to the Crooked Creek Road or from county and BLM roads east of Warren, Montana. Access from the north is from the U.S. Forest Service Sage Creek Road. All of these roads are fair weather, public roads.

Big Horn Tack-On WSU MT-067-207

Size

The Big Horn Tack-On WSU is composed of two parcels of public land located in Carbon County, Montana and Big Horn County, Wyoming. The two areas consist of 4,550 acres, 80 of which are located in Wyoming. The northern segment contains 2,000 acres and the southern portion consists of 2,550 acres. Both segments are contiguous to 8,108 acres of National Park Service land within the Bighorn Canyon National Recreation Area, which has been recommended for wilderness designation. The study unit is approximately 17 miles north of Lovell, Wyoming.

The southern portion lies between the Sykes Ridge Road on the west and the Bighorn Canyon National Recreation Area, administered by the National Park Service, on the east. The Sykes Ridge Road is a BLM access road through the Pryor Mountain Wild Horse Range. This segment is a narrow strip of land averaging 9 miles in length and less than 1/2 mile in width. The area consists primarily of steep sideslopes rising up to a narrow ridge-top. Just below the ridge is the Sykes Ridge Road which runs the entire 9 mile length and forms the western boundary of this part of the tack-on. The northern segment is bounded on the west by Custer National Forest lands (see Figure 3.12). The northern segment is a diagonal shaped parcel averaging 3 miles in length and 1 mile wide. This segment is isolated from the other part of the unit by a combination of state and private lands.

Both parcels are contiguous to a portion of the Bighorn Canyon National Recreation Area, a Park Service wilderness study unit consisting of 7,645 acres. The tack-ons, while not meeting the size criteria to be WSAs, do contain wilderness values identified during the initial wilderness inventory. The southern segment appears to be a logical physiographic extension of the Park Service unit sharing 9 miles of common boundary. The northern parcel has a tenuous connection of 1/2 mile of common boundary and does not appear to significantly supplement the diversity of the Park Service area. Figure 3.11 shows the relationship of all agency wilderness study areas in the Pryor Mountains.

Naturalness

This unit appears to be primarily natural. However, there are some signs of man's presence in both parcels. The southern portion contains a BLM horse trap used for capturing excess wild horses. It is constructed of locally obtained native materials and is well screened by pine trees and topographic features. There is also approximately 1 1/2 miles of low quality 2-track vehicle-ways and several uranium prospect pits. One mile of fence serves as the boundary between BLM and Forest Service lands in the northern portion of the unit. There is also an old wooden tower approximately 20 feet in height which was possibly used as a triangulation point by the U.S. Geological Survey. All of these features are located on or near boundaries and are well dispersed or screened by topography and vegetation. Table 3.16 is a listing of the man-made features in this unit.

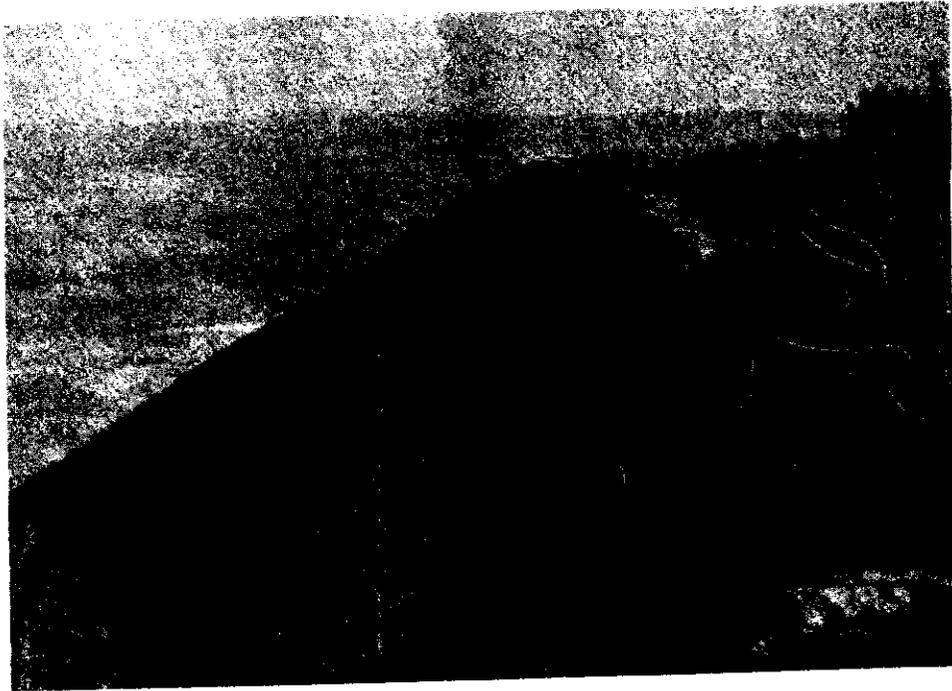
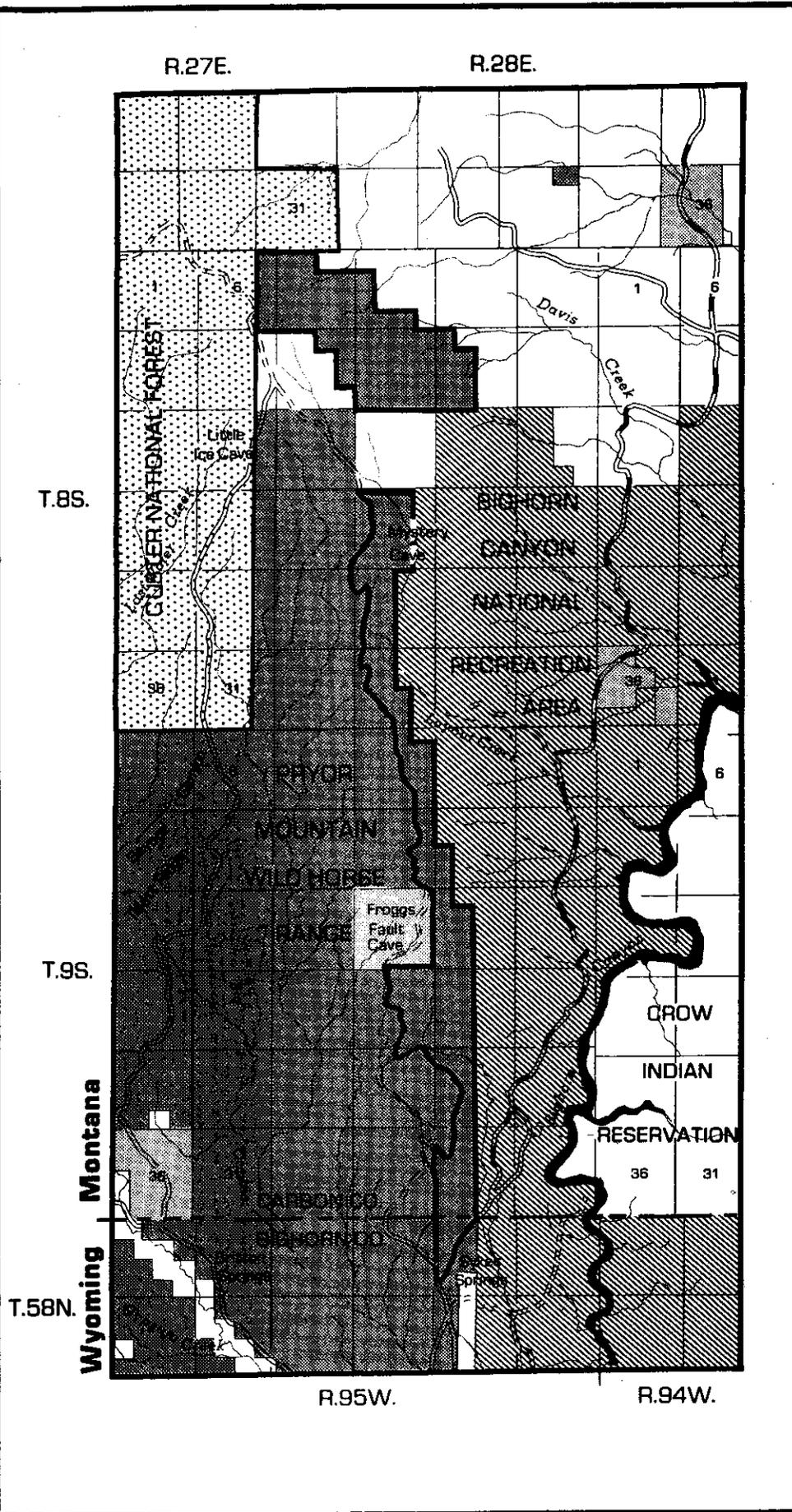


Figure 3.12: Big Horn Tack-On—Wilderness Study Unit

BIG HORN TACK-ON MT-067-207



-  Wilderness Study Unit
-  Public
-  Private
-  State
-  Forest Service
-  Park Service



TABLE 3.16 MANMADE FEATURES IN THE BIGHORN TACK-ON WSU

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Radio repeater	T. 8 S., R. 28 E., Sec. 21	Near northern boundary	1/2 acre	Visible only for a short distance.
Reservoir	T. 8 S., R. 28 E., Sec. 5	Along south boundary	5 acres	Visible only for a short distance.
Old tower	T. 8 S., R. 28 E., Sec. 9	Central portion of section	1/2 acre	Visible only for a short distance.
Wild horse trap	T. 8 S., R. 28 E., Sec. 28	Located on Sykes Ridge Boundary Road	Approximately 100' in diameter	Visible from boundary road.
Vehicle way	T. 9 S., R. 28 E., Sec. 21		3/4 mile	Visible from Sykes Ridge Road.
Vehicle way	T. 8 S., R. 28 E., Sec. 21	North end of southern portion	3/4 mile	Little impact on naturalness.
Uranium pits	T. 9 S., R. 28 E., Secs. 21, 27 and 34	Located along Sykes Ridge Road	Pits are approximately 20' x 25' x 3'	Visible from Dryhead Overlook and Penn's Cabin.

Source: BLM, 1982

Solitude

The southern portion of this unit is approximately 10 miles in length and less than 1/2 mile wide in most areas. Toward the southern end, it becomes approximately 1 mile in width. This portion of the unit consists of the crest of Sykes Ridge and the westerly trending slopes just below Sykes Ridge. This high limestone ridge rises in elevation from approximately 4,000 feet in the extreme southern portion to 8,000 feet in the northern part. The crest of the ridge is primarily comprised of steep, rocky outcroppings.

Wilderness users would be able to detect automobile traffic on the Bad Pass Highway within the Bighorn Canyon National Recreation Area. At most points, this highway is approximately 1 1/2 miles to the east.

The Forest Service Dryhead Overlook is visible from some of the higher vantage points in the northern portion of the unit. The scenic overlook is located approximately 1 mile to the northwest of the nearest boundary.

The outstanding opportunities for solitude are limited in the southern portion of the unit because of the elevated open nature of Sykes Ridge and the nearby location of the boundary road. Small heavily timbered areas in the

northern segment of the unit provide pockets with outstanding opportunities for solitude. However, most areas of the unit are highly visible from the Dryhead Overlook which reduces the overall quality of solitude.

Primitive and Unconfined Recreation

There are two caves in the southern portion of this WSU which provide spelunking opportunities. However, these opportunities could not be considered outstanding because of limited access and in one situation, a dangerous point of entry. The possibility of rock climbing exists on some of the sheer limestone cliff faces and pinnacles for experienced climbers.

Hiking and associated photography and sightseeing activities are outstanding. The topographic relief, unique geologic formations and the wide expanse of rugged country within view from the ridgetops presents a challenge to potential users.

Hunting could not be considered outstanding in relation to opportunities in adjacent areas. Big game, primarily mule deer, are more frequently found on the National Forest lands to the west. There is also some black bear hunting in the Pryor Mountains, but this, too, most commonly occurs on National Forest lands. Some hunting would occur within the area in association with the more concentrated activity on adjacent lands.

Supplemental Values

The scenic quality of the surrounding area is the most notable supplemental value. The deeply incised Bighorn Canyon and adjacent Dryhead Basin are clearly visible to the east and northeast from Sykes Ridge. To the south and southwest, the hillsides and steeply incised canyons within the PMWHR are within view. There are colorful marine rock formations exposed within the Bighorn Canyon and the Pryor Mountain Wild Horse Range. Their colors range from blues, greens and grays to the reds of the Chugwater formation. Conifers in the higher elevation National Forest lands to the west and northwest lend a predominately deep green contrast to the more arid lowlands within the horse range.

Archeological sites have been recorded within the study unit. Lithic scatters dominate the site types found in the unit but one vision quest site has been discovered.

The Geology, Topography, Minerals, Soils, Timber, Livestock Grazing, Wildlife, Threatened and Endangered Species, Recreation: Uses and Opportunities, Projected Visitation Trends, Visual Resources, Cultural Resources, Classifications and Rights-of-Way and Adjacent Land Uses information for this WSU is the same as that given in the Pryor Mountain WSA discussion.

Watershed

Drainages in this area are the upper ends of small ephemeral channels that are tributaries to the Big Horn River. Flows result from snowmelt and storm events and may be classified as having a high erosion potential due to the steep topography and shallow soils.

Vegetation

Vegetation is very diverse in both density and composition in the Big Horn Tack-On. The difference in elevation from the top of the Pryor Mountains to the Wyoming border is more than 4,000 feet. This results in a variety of physical, environmental and climatic conditions.

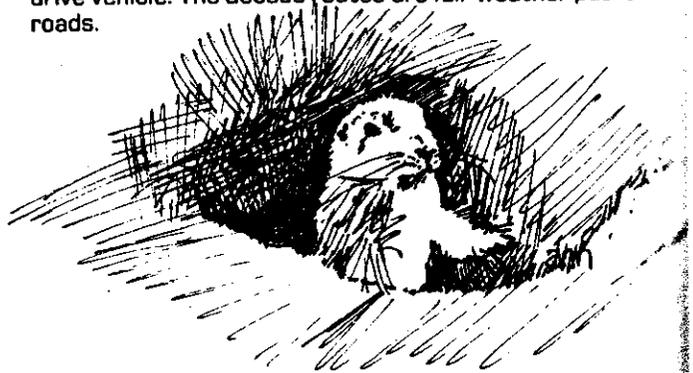
Vegetation occurs in belts as a result of the above factors. Beginning with the highest elevations and working down, the vegetative belts include subalpine meadows, conifer-grassland/shrub, mountain shrub and red desert/saltshrub.

The upper elevations support a wide variety of plant species mostly due to the increased precipitation. Characteristic vegetation includes scattered areas of alpine fir interspersed with subalpine meadows and plateaus. Much of the understory consists of small perennial forbs and sedges that have adapted to the moist, cool sites and shallow soils. Common grasses include sheep fescue, alpine timothy and alpine bluegrass. The middle elevations consist of steep timbered slopes with Douglas fir. The terraces support a variety of sedges, grasses and forbs.

The lower elevations consist of steep, easterly facing slopes that are sparsely vegetated by juniper, mountain mahogany, bluebunch wheatgrass and needleandthread grass.

Access

Vehicular access to the Big Horn Tack-On is accomplished by following the Sykes Ridge Road from the Dryhead Overlook. This road accesses both portions of the Big Horn Tack-On from the north. Access from the south is obtained via a county road in the Sykes Spring vicinity. Vehicular access from the north is by 4-wheel drive vehicle. The access routes are fair weather public roads.



Multiple Resource Benefits From Wilderness Designation: All Areas

Wilderness designation for the four areas or any portions of the areas could aid in the long-term maintenance of important wildlife habitat. Designation would protect native vegetation by limiting timber harvest, restricting mechanical treatments, restricting the introduction of non-native species and restrictions on off-road vehicle use. Vehicle use restrictions would also provide some protection for those cultural resources easily accessed by vehicular use and would alleviate stress on some wildlife species. Wilderness designation would ensure the preservation of scenic values by requirements that all new projects blend with the natural landscape. Watersheds would benefit by the careful placement of water developments and limitations on surface disturbing activities. The restriction of human activities in the Pryor Mountain Wild Horse Range would benefit wild horses by minimizing stress.

Diversity in the National Wilderness Preservation System: Ecotype/Landform

The U.S. Forest Service, as part of the Roadless Area Review and Evaluation II (RARE II) examined all wilderness and wilderness study areas for ecotype representation. Regional ecotype targets were assigned as a means of balancing ecotype diversity in the National Wilderness Preservation System. The highest target assigned by the Forest Service would have at least six wilderness areas of a specific ecotype.

The Twin Coulee WSA is located in Ecoregion 3110, subgroup 057, grama, needlegrass, wheatgrass as determined by the Bailey-Kuchler Ecosystems of the United States. This system is being used in wilderness studies by the U.S. Forest Service and BLM to classify lands into ecosystems based on climate, vegetation,

soils and landforms. At the present time, there is one area in the O57 subgroup in the NWPS. In addition, there are 15 areas Presidentially-endorsed and awaiting Congressional action. There are also 14 areas presently under study in this subgroup.

The three Pryor Mountain study units are located within Ecoregion A3140, Wyoming Basin province. Three Federal agencies manage land in this area (see Figure 3.13).

All three of the Pryor Mountain study units are located in Subgroup O56, Foothills prairie (*Agropyron-Festuca-Stipa*). There are currently two areas in this subgroup designated as components of the NWPS. There are also four areas which have been Presidentially-endorsed and are awaiting Congressional action. There are 19 other areas currently being studied in this subgroup. The highest regional target set by the Forest Service for this ecotype is five. Appendix 3.6 shows the wilderness representation in Montana and nationally of those ecotypes found in the four study units.

Wilderness Opportunities

Proximity to Population Centers

There are three standard metropolitan statistical areas (SMSAs) identified by the U.S. Bureau of the Census, within 5 hours driving time (250 miles) of the three study areas in the Pryor Mountains and two within 5 hours of Twin Coulee. Billings, Montana has a population of 66,800 and a countywide population of 108,035 according to the 1980 census. Great Falls, Montana has a population of 56,725 with a metropolitan area population of 80,696. Casper, Wyoming has a population of 51,016 with a countywide population of 71,856. The Casper SMSA is outside the day's driving distance of the Twin Coulee WSA.

Billings, Great Falls and Casper are within 5 driving hours of abundant and diverse wilderness areas. There are 11 areas containing a total of 4,559,142 acres within 250 miles of Billings, 18 areas totalling 8,673,567 acres within 250 miles of Great Falls, and 18 areas containing 4,022,461 acres within 250 miles of Casper. These three cities are also near a number of administratively-endorsed wilderness study areas. Billings is within 250 miles of 54 administratively-endorsed wilderness study areas totalling about 3,446,800 acres and 107 other WSAs totalling 2,457,496 acres. There are 68 administratively-endorsed study areas of 4,617,100 acres and 70 other WSAs totalling 1,720,578 acres within 250 miles of Great Falls. There are 35 administratively-endorsed study areas of 3,658,295 acres and 94 other WSAs totalling 4,022,461 acres within 250 miles of Casper. Appendix 3.7 is a tabular representation of the wilderness areas within 5 hours of the major population centers.

Montana Statewide Wilderness Summary

Table 3.17 and Appendix 3.8 are status listings of all designated wilderness and wilderness study areas by agency, in Montana.

Regional Wilderness Analysis

Montana, Wyoming and Idaho are combined into a region for this analysis. Visitors from this region have good access to central Montana and are within reasonable driving distance to visit any areas included in this study. Residents of these states have similar economic and social backgrounds and presumably similar demands for wilderness resources.

In the region, there are 26 wilderness areas containing 9,234,954 acres, 118 units comprising 5,911,096 acres of administratively-endorsed wilderness areas, and 199 other wilderness study areas with 4,536,243 acres. Overall, the region has 19,682,293 acres in 343 areas either designated wilderness or with the potential of designation. Table 3.17 shows the distribution of designated and potential wilderness areas by state.

Social and Economic Conditions

Approximately 144,000 people live within the eight Montana counties in the Billings Resource Area. The 1980 population of Billings was 66,800; in that year Yellowstone County contained 75% of the population of the entire resource area. Other major communities in the resource area include Hardin, Red Lodge, Roundup, Columbus, Big Timber, Harlowton and Laurel. The populations of these communities range from 1,200 to 5,500 people.

Table 3.18 displays the population characteristics for the counties in the resource area and for Montana. For most characteristics there are dramatic differences in the figures between urbanized Yellowstone County and the surrounding rural counties. During the 1960's all the rural counties lost population due to high rates of out-migration because of the lack of employment opportunities. During the 1970's the out-migration slowed and almost all counties registered a population growth. Population projections for the years 1985, 1990 and 2005 (BLM Economic/Demographic Model) predict a great deal of variation in growth rates. The population of Golden Valley County is expected to decrease in both the short and long term, while Yellowstone County is expected to grow to over 150,000 by the year 2005.

Tables 3.19 and 3.20 show county employment and personal income by source for 1979. The distribution by source varies a great deal among the counties. Generally, in the more rural counties such as Golden Valley, Stillwater, Sweetgrass and Wheatland, agriculture, government and retail trade contribute the largest proportions of employment and income. In most cases, agriculture contributes a larger proportion of the employment than income. Big Horn and Musselshell Counties derive a substantial portion of their employment and income from mining. The retail trade and service sources in Yellowstone County contribute the largest employment and income portions because Billings is the major trade and service center in the region. Table 3.21 shows the projected employment figures for the resource area. Total employment is expected to increase 31% from 1981 to 2005 while agricultural employment is projected to decrease by 8% during the same period.

Figure 3.13: All Agencies Wilderness Study Status — Pryor Mountains.

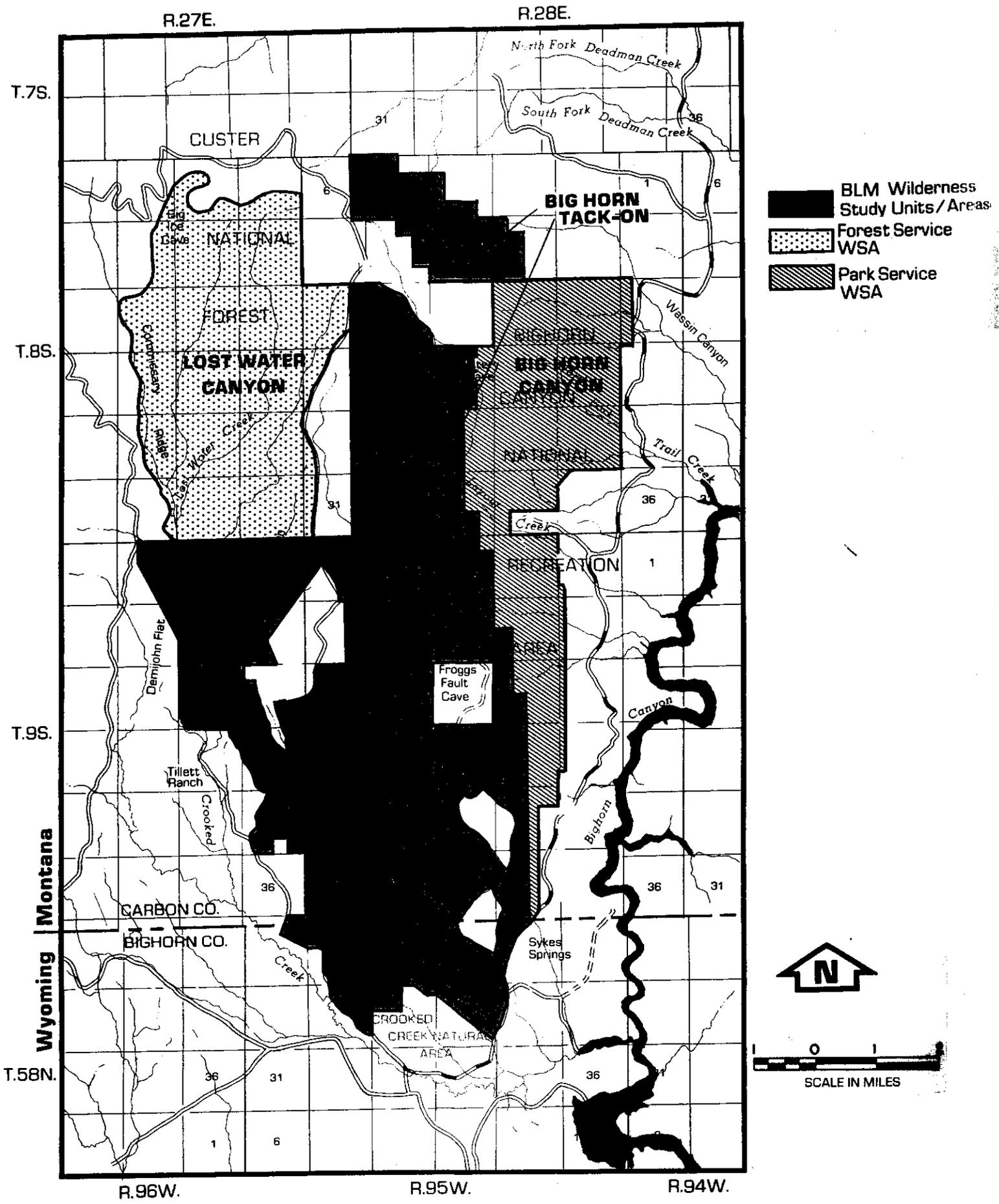


TABLE 3.17: WILDERNESS REGIONAL ANALYSIS SUMMARY

State	BLM	Approximate Acreage (Number of Areas)			State Total
		USFS	NPS	USFWS	
STATUTORY WILDERNESS (STATE AND AGENCY)					
Montana	N/A	3,107,342 (11)	N/A	64,997 (3)	3,172,339 (14)
Idaho	N/A	3,825,069 (5)	42,243 (1)	N/A	3,868,312 (6)
Wyoming	N/A	2,194,303 (6)	N/A	N/A	2,194,303 (6)
TOTAL					9,234,954 (26)
ADMINISTRATIVELY ENDORSED (STATE AND AGENCY)					
Montana	N/A	681,812 (34)	1,084,660 (2)	161,480 (15)	1,927,952 (51)
Idaho	N/A	1,077,200 (43)	69,800 (1)	N/A	1,147,000 (44)
Wyoming	N/A	987,400 (21)	1,848,744 (2)	N/A	2,836,144 (23)
TOTAL					5,911,096(118)
WILDERNESS FURTHER STUDY AREAS (STATE AND AGENCY)					
Montana	427,767 (43)	1,207,769 (25)	7,645 (1)	N/A	1,643,181 (6)
Idaho	1,246,901 (61)	673,100 (13)	N/A	N/A	1,920,001 (74)
Wyoming	578,161 (48)	414,900 (8)		N/A	973,061 (56)
TOTAL					4,536,243(199)

Source: BLM, 1981