

FOREST STEWARDSHIP PLAN

Paul, Bryan w. Family Limited Partnership

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Weston County, Wyoming

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Prepared by:

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June 13, 2007
Date

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Approved by:

Bill Kohlenstein
District Forester

6/21/07
Date

"This management plan has been prepared at my request to guide my stewardship management activities which I will voluntarily apply on my property. I believe that the activities recommended in this plan are appropriate to meet my objectives and will benefit the natural resources on my property."

Accepted by:

[Signature]
Landowner

General Partner
Date

[Signature]
Landowner

JUNE 13 2007
Date



LANDOWNER OBJECTIVES

1. Maintain and improve forest health and derive periodic income from the sale of forest products.
2. Maintain and improve wildlife habitat.

GENERAL DESCRIPTION

A. Legal Location

This ranch is located 8 miles north of Newcastle, WY in Weston County. This property encompasses all or parts of sections 9, 10, 11, 15, 14, 21, 22, 23, and 27 in Township 46 N, Range 61 W. This ownership is in the Freshwater Creek drainage a tributary of Salt Creek with a total acreage of 2760. Pine encroachment is occurring in the meadows and canyon bottoms to the extent that the entire acreage will soon be forested.

B. Property Description

This property is bordered by private and state land. The topography consists of forested hill sides that rise, sometimes sharply, from the valley floor.

The elevation ranges from 4900 to 5800 feet above sea level. Slopes are moderate to very steep and all slope aspects are present. The hills are dissected by numerous valleys and canyons, some of which contain springs and small creeks.

Forest management activities have resulted in numerous roads that access most of the property.

A cabin and some corals are located in the valley bottom.

C. Temperature and Precipitation

Average annual precipitation is 15 to 19 inches. Average annual air temperature is 45 degrees F. The frost free season is 100 days (U.S. Department of Agriculture, Soil Survey of Weston County, 1990).

D. Past, Current and Future Use

This property was used primarily as grazing land for cattle. Timber production was also an important use for this land. This ranch was recently purchased by the current owner where the main focus will be wildlife management and increasing the hunting potential, along with forest health.

E. Socioeconomic Conditions

The local economy is generated by livestock production, dryland farming, oil and gas, minerals and the forest products industry. Rural real estate values have seen large increases since the early 1990's. Tourism and hunting leases provide some income to area residents.

The stumpage price, which is the price paid for standing timber, is subject to local, national and even global market fluctuations. Social, political and economic changes all have an impact on current market value.

The sale of forest products will occur as a consequence of management to improve forest health and not necessarily as a means to generate income.

INVENTORY

A. Vegetation

This property is a typical Black Hills ponderosa pine (*Pinus ponderosa*) forest with other minor associated tree components of Rocky Mountain juniper (*Juniperus scopulorum*), aspen (*Populus tremuloides*), cottonwood (*Populus deltoides*) and boxelder (*Acer negundo*). Understory brush includes: mountain mahogany (*Cercocarpus montanus*), skunkbush sumac (*Rhus trilobata*), chokecherry (*Prunus virginiana*), Oregon grape holly (*Mahonia repens*), currant (*Ribes*), wild rose (*Rosa arkansana*), snowberry (*Symphoricarpos albus*), common juniper (*Juniperus communis*), redosier dogwood (*Cornus sericea*), Kinnickinnick (*artostaphylos uva-ursi*) and Russet buffaloberry (*Sheperdia canadensis*).

Forbs observed include: horsemint (*Monarda menthaefolia*), pasqueflower (*Pulsatilla patens*), red raspberry (*Rubus idaeus*), yarrow (*Achillea millefolium*), hounds tongue (*Cynoglossum officinale*), stinging nettle (*Urtica dipcia*), fringed sage (*Artemisia frigida*), western meadowrue (*Thalictrum occidentale*), Canada goldenrod (*Solidago canadensis*), purple coneflower (*Echinacea purpurea*), arrow leaf balsam root (*Balsamorhiza sagittata*), and Rocky Mountain iris (*Iris missouriensis*). Little bluestem (*Andropogon scoparius*), sideoats grama (*Bouteloua curtipendula*), Kentucky bluegrass (*Poa pratensis*), brome (*Bromus polyanthus*), timothy (*Phleum pratense*), Canada bluegrass (*Poa compressa*), and Blue grama (*Bouteloua gracilis*) occur along with several other grass species.

B. Habitat types

This property has two main habitat type classification present, the Ponderosa pine-Rocky mountain juniper, and the Ponderosa pine -Common juniper habitat types. The following information was adapted from "Forest Vegetation of the Black Hills National Forest of South Dakota and Wyoming: A Habitat Type Classification" (Hoffman and Alexander, 1987).

1. "Description - The *Pinus ponderosa*-Rocky Mountain juniper habitat type occurs in the dry southern part of the Black Hills, mainly on steep, rocky slopes. Stands vary from open to closed. The habitat type is recognized by the overstory dominance of ponderosa pine, the presence of Rocky Mountain juniper as a major shrub, and a rather poorly defined and unevenly dispersed undergrowth. Principal undergrowth species are side oats gramma, little seed rice grass, pasque flower, fringed sage and bluebell.

Management implications - Timber production potential in this dry, low-elevation habitat type is low. Moreover, because of low precipitation and competition from juniper, regeneration of ponderosa is less reliable than on more productive habitat types. This habitat type is spring-fall range for livestock and winter range for big game. It has low to moderate potential for forage production for livestock and moderate potential for deer. Use by deer can be heavy in the winter. However, timber harvesting and thinning activities in the ponderosa pine-Rocky Mountain juniper habitat type may be directed at maintaining hiding cover for big game.

Average annual precipitation in this habitat type is low for the Black Hills-17 inches or less - and the potential for significant increases in streamflow is low. This habitat type provides watershed protection. The potential for developed and dispersed recreation is low to moderate."

2. "The ponderosa pine/common juniper habitat type is widely distributed on Limestone Plateau in the western part of the Black Hills. It also can occur on soils derived from igneous rock. The elevational range of this habitat type overlaps all pine-dominated habitat types, except the ponderosa pine/Rocky Mountain juniper habitat type at lower elevations. This habitat type is recognized by the dominance and reproductive success of ponderosa in the overstory, and the presence and abundance of common juniper (4% to 42% coverage) in the undergrowth. Aspen can be an important seral species in this habitat type following wildfires. Paper birch and Black Hills Spruce also may occur occasionally in both the overstory and as reproduction. Shrubs are the most important undergrowth life forms. In addition to common juniper, kinnikinnick, Oregon grape, wild rose, birch leaf spirea, and snowberry have high constancy. The most important herbaceous species are smooth brome, western yarrow, and virginia strawberry.

Management implications - Timber productivity for this habitat type is average to above average for ponderosa pine. Shelterwood cutting methods are the preferred timber harvesting alternative in even-aged stands to be managed for timber production. Either group selection or individual tree selection cutting can be used where even-aged management does not meet the requirements of other resources. Regeneration usually

is prompt after shelterwood cutting. It is less certain following clearcutting, seed-tree cutting, and wildfires. At higher elevations where lush stands of graminoids and forbs become established, pine regeneration can be precluded for long periods of time. Aspen can be readily regenerated by clearcutting or fire if it is present as a seral species in stands in this habitat type. Aspen is sensitive to overgrazing and can be eliminated by livestock and/or big game use.

The habitat type is summer-fall range for livestock and big game. Forage production potential for livestock is low to moderate, but can be increased in proportion to the amount of graminoids in the undergrowth by reducing overstory density with a two-step shelterwood to low stocking levels and with proper grazing management. Big game forage production may be higher than in the drier ponderosa pine habitat types, but the potential for production of shrubby browse on winter range is low. If big game management emphasis in this habitat type is for big game cover, shelterwood cutting with medium residual stocking levels are recommended. This habitat type also provides food and cover for a large number of birds and small mammals. Common juniper typically is important nesting cover for turkey. Prescribed burning can greatly decrease the amount of fire-sensitive juniper, and increase the representation of graminoids and forbs in the undergrowth. However, the increase in potential livestock forage production is at the expense of big game cover. Introduced graminoids, such as rice grass species, can grow well in this habitat type, especially in the seral stages.

Average precipitation in this habitat type ranges from 18 to 28 inches. Natural streamflow ranges from 3 to 7 inches, but runoff can be increased by reducing stand density. The increase is inversely proportional to the reduction in stand density and the amount of precipitation received. Cutting methods that create small openings are more effective than partial cutting. Erosion, sedimentation, and mass movement potentials may be higher than in the drier pine habitat types. The potential for developed and dispersed recreation also is higher than in the drier ponderosa pine-dominated habitat types."

C. Insects and Diseases

At present this property does not exhibit any serious insect or disease problems. Mountain pine beetle populations are increasing in the Black Hills, therefore a close watch for beetle infestations should be maintained. Below is a checklist of common disease and insect problems known to occur in the area.

Insects

Mountain pine beetle (*Dendroctonus ponderosae*) usually attacks sawlog size trees. Successful attacks can be identified by marble sized excretions, on the trunk of the tree, comprised of red frass (sawdust) mixed with pitch. Reddish frass around the base of the tree is a further indicator of successful attack.

Various control methods are available. In the event of significant M.P.B. buildup State Forestry officials should be contacted (see Appendix A).

Managing stands for vigorous trees is the most effective method of repelling M.P.B. attack. Vigor can be improved by thinning to reduce competition and harvesting stressed or low vigor trees.

Pine Engraver (*Ips pini*), attacks small trees and the tops of larger ones. "Ips" breeds in logging slash and infestations often occur in or adjacent to harvesting and thinning operations.

Small piles of frass on the trunk or branches of trees are usually the first sign of attack.

Attacks can be reduced by restricting thinning operations to late summer, fall, and winter when cooler temperatures inhibit Ips attack.

Pine Tip Moth (*Rhyacionia bushnelli*) and (*Rhyacionia neomexicana*) consume buds and young shoots, reducing tree vitality and form. Tip moths can seriously affect regeneration quality.

Diseases

Red Rot (*Polyporus anceps*), is a fungal disease usually introduced through dead branches often causing major losses of sound wood. Detection of red rot is difficult.

Pruning is probably the best control method. Pruned branch stubs are rarely the site of infection by red rot. Sound silvicultural practices further reduce incidence of red rot.

Western Gall Rust (*Endrocronarium barknessii*), is a rust that affects the form, lumber content and growth rate of pines. It is not known to destroy entire stands. W.G.R. infects pine of all ages.

W.G.R. can be identified by a canker on the trunk of the tree, often one to five feet from ground level.

Prudent thinning of trees containing trunk cankers and pruning lower branches which contain gall minimizes the adverse effects of the disease. Infected individuals trees should be removed during timber harvest (Boldt and Van Deusen, 1974).

Elytroderma needlecast (*Elytroderma deformans*) is a fungal disease affecting pine. The mycelium of the fungus invades the twigs and branches causing stunting of needles, reddened foliage, defoliation and conspicuous withches'-brooms or "flagging branches". Needles turn straw color to grey with age.

Black knot (*Apiosporina morbosae*) is a fungus that causes elongated swelling or knots on the limbs of susceptible chokecherry and wild plum.

Knots are greenish and soft when newly formed becoming hard and black with age.

Fruiting capacity of hosts is markedly reduced when the disease is not controlled because extensive pruning is required to remove diseased branches.

Isolated chokecherry bushes are infected on this ownership.

Horsehoof rot (*Phellinus tremulae*) is a trunk rot fungus that causes decay in the trunks of aspen.

Horsehoof rot can be recognized by conks growing from the trunk. Several aspen trees exhibit the horsehoof shaped conks. Aspen in general, however, appear healthy and thriving, and not in imminent threat of serious destruction by horsehoof rot.

D. Wildlife.

This property provides habitat for several species of birds and animals. Species expected to occur include: mule deer, elk, mountain lion, bob cat, coyote, red fox, porcupine, skunk, jack rabbit, cottontail rabbit, red squirrel, marmot, least chipmunk, mice, voles, Merriams' turkey, sharp tail grouse, black-capped chickadee, slate-colored junco, white-breasted nuthatch, red-breasted nuthatch, hairy woodpecker, downy woodpecker, pine siskin, evening grosbeak, mountain bluebird and American robin.

E. Fire Hazard and Risk Rating

Hazards include: areas of thick, sapling size pine that serve as ladder fuels; steep slopes; lack of water sources higher up in elevation; difficult access on higher slopes.

Past forest management has served to reduce risk of fire. The numerous trails and natural openings serve as natural fire breaks, and access for fire suppression.

F. Esthetics and Recreation

The variety of land form, species mix, texture and color range all contribute to pleasant scenery in the Black Hills. Natural forest openings and cultural activities such as ranching all add to the diversity which is essential to enjoyable esthetics.

Potential recreation activities includes wildlife observation, photography, hunting, cross country skiing, snowmobiling, hiking, horse back riding, and picnicking

G. Wetlands

The U.S. Fish and Wildlife Service identified several areas as wetlands (see figure 2). Fresh Water Creek is listed as PEMA (Palustrine Emergent Temporarily Flooded).

H. Soils

As the landscape changes from the fresh water valley bottom to Mt. Pisgah, the U.S.D.A. soil survey recognizes 7 major different soil types. A copy of the soil survey map (see figure 3) is included, and a brief description of types is as follows:

92-Rock outcrop - Vanoker complex - This unit is 40% rock outcrop and 30 %

Vanoker gravelly loam, 50 to 60 % slopes. The surface layer is brown gravelly loam about 2 inches thick. The subsoil is brown very channery clay loam about 14 inches thick. The Vanocker soil is moderately suited for the production of wood products. The site index for this site ranges from 60 to 65. The main concerns in producing and harvesting timber are the steepness of slope, hazard of erosion, and susceptibility to landslides during periods of snowmelt and high rainfall. This map unit is in capability subclass VIIe The T factor is 3.

57-Lakoa-Crownest complex. This unit is 40 percent Lakoa loam on the lower slope and 30 percent Crownest channery sandy loam on the upper slopes. Sandy soil is largely responsible for the rapid and vigorous regeneration of ponderosa pine on this site. As moisture percolates rapidly through the sandy soil more moisture is available for tree growth. The Lakoa soil is moderately suited to the production of wood

products. The Lakoa soil is deep and well drained. It formed in residuum derived dominantly from inter bedded sandstone and shale. Permeability is moderate. Available water capacity is high. Effective rooting depth is 60 in. or more. Runoff is rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight. The steeper areas are subject to landslides during periods of snowmelt and high rainfall.

Trees on this soil type show fast growth initially but rarely achieve the heights found elsewhere in the Black Hills. This unit is moderately suited to the production of wood products. The site index is 65 . The map unit is in capability subclass Vlle with a T factor of 5 for the Lakoa ,and 1 for crownest.

16-Citadel-Lakoa loams, 10 to 60 percent slopes. The Citadel soil is deep and well drained. It formed in residuum derived dominantly from calcareous sandstone, limestone and shale. Permeability is moderately slow. Available water capacity is high. Effective rooting depth is 60 in. or more. Runoff is rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Lakoa soil is deep and well drained. It formed in residuum derived dominantly from inter bedded sandstone and shale. Permeability is moderate. Available water capacity is high. Effective rooting depth is 60 in. or more. Runoff is rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The main concern during forest management activity is that the steeper areas are subject to landslides in times of snowmelt or high rainfall. Landslides may occur naturally or in road cuts

27- Cosavage-Bahl Variant clay loams, 2 to 10 percent slopes. This unit is 45 percent Colsavage clay loam, and 35 percent Bahl Variant clay loam. The surface layer is grayish brown clay loam about 5 inches thick. The underlying material to a depth of 30 inches is light brownish gray clay. This unit is used as rangeland and wildlife habitat. The soil capability subclass is Vle, and the erosion T factor is 2 in the Colsavage, and 5 in the Bahl Variant.

13- Chinook- Theedle Variant complex, 3 to 10 percent slopes. This unit is on valley sides and back slopes. It is 60 percent Chinook fine sandy loam and 30 percent Theedle Variant loam. The Chinook soil is well drained, the surface layer is a light brownish gray loam about 3 inches thick. The underlying material to a depth of 30 inches is light gray loam. This unit is used as rangeland and wildlife habitat. This map unit is in the capability subclass lVe with an erosion T factor of 3 in the Chinook, and 6 in the Theedle Variant.

30-Crownest-Regnaps complex, 2 to 10 percent slopes. This unit is on foothills, 40 percent Crownest channery sandy loam, and 40 percent Renaps loam. The Crownest soil is shallow and well drained. The surface layer is grayish brown channery sandy loam about 4 inches thick. The underlying material to a depth of 12 inches is a grayish brown channery sandy loam. The Regnaps soil is well drained. The surface layer is pale brown loam about 4 inches thick. The subsoil is brown clay loam about 12 inches thick. This unit is used as rangeland and wildlife habitat. This map unit is in capability subclass Vle with a erosion T factor of 1 in the Crownest and 2 in the Regnaps.

98-Samoist-Colsavage clay loams, hilly. This unit is 60 percent Samoist clay loam and 30 percent Colsavage clay loam. The Samoist soil is shallow and well drained. The surface layer is dark grayish brown clay loam about 5 inches thick. The underlying material to a depth of 12 inches is light brownish gray clay. The Colsavage soil is moderately deep and well drained. The surface layer is grayish brown clay loam about 5 inches thick. The underlying material to a depth of about 30 inches is light brownish gray clay. This unit is used as rangeland and wildlife habitat. This map unit is in capability subclass Vlle with an erosion T factor of 1 for Samoist and 2 for Colsavage.

I. Noxious Weeds

This property does not have a serious noxious weed problem at this time. A few noxious weeds that were noticed in the area are Canada thistle, houndstongue, and wild licorice.

Contact the Weston County Weed and Pest Control for positive identification and treatment information (see Appendix A).

J. Threatened and Endangered species

None found

J. K. Known cultural and/ or Historical sites

A records check of the SHPO data base on 5/6/07 yielded negative results on this ownership. This may mean that no cultural resources exist or that no survey has been preformed. Before any federal cost share practice that would disturb the ground can take place on this site, the NRCS office should be notified.

SAMPLING METHODS

Please note that information given on ages, diameters, heights, basal area, site index, growth increment, slope and trees-per-acre (T.P.A.) is based on data obtained with a preliminary timber cruise. Greater accuracy would require a more thorough cruise.

Basal area data for all pine and T.P.A. data for pine 8 in. and bigger is obtained using a random sample, variable plot cruise.

Trees- per-acre data for seedling and sapling sized pine is obtained using random sample fixed plots, with a plot size of 1/300 acre.

MANAGEMENT UNITS

Forest land on the north ranch is divided into 6 management units (M.U.'s), (see figure 1).

MU1: This unit contains 255 acres in the northeast corner of the property. A logging practice, that removed almost all of the saw timber, occurred in this area many years ago. The stand that remains contains thick patches of pole size timber and small saw logs with an average age of 82 years old. Six to twelve foot high seedlings are

invading the openings. The average slope is 15%. The average diameter at breast height (DBH) is 10.3 inches in the sawlog sized trees (8 inches and larger), with an average height of 40 feet. The tree spacing is too close for adequate growth to occur with an average diameter growth of .55 of an inch in the last ten years.

MU2: This unit contains 157 acres on the north end of the ranch. This unit was heavily logged in the late 70s. Sixty two acres was thinned in 1988 and 27 acres in 1990. The stand of timber in the thinned areas is fairly open with a basal area of 30. The average DBH is 11.3 inches and 34 feet height. The thinned trees are growing well with an average of 2.75 inches of diameter growth in the last ten years. Abundant regeneration of pine, from a few inches to six feet high exists in most areas. The understory is a thick mat of sod forming grasses. The average slope is 9%.

MU3 : This unit is in the north west corner of the north ranch encompassing 378 acres. Most of the sawlog sized trees were logged from this unit many years ago. With an average diameter increase of .68 of an inch in ten years the trees have not grown much since the last logging entry. The average DBH of the over 8 inch class is 11.2 inches with a 41 foot average height. The stand contains thick patches of pole size timber and small saw logs with an average age of 93 years old. Pine saplings are present in the more open areas. The average slope is 8%.

MU4 : This unit is 692 acres on the east side of the ranch. Logging has been completed around 2000 on this unit. A post and pole operation and thinning was completed in 2005. The average DBH of the 8 inch and larger trees is 10.1 inches with a 40 foot average height. At the present .625 of an inch is the average ten year diameter

growth, but the growth increments should improve greatly with the thinning of the pole sized timber which is growing way too thick. The average slope in this unit is 11%.

MU5 : This unit contains 341 acres on the south west corner of the ranch. Thinning has taken place on 177 acres of this unit, 58 acres was thinned in 1986, 63 acres was thinned in 1996, and 56 acres was just completed in 1999. This unit was just logged a couple of years ago, with a light cut in the 1986 thinning area which left a stand of healthy trees with a average of 85 basal area. Most of the sawlogs were removed from this unit at this time leaving a 9.5" average DBH in the 8" and over class with 43' being the average height. The average diameter growth in 10 years in the unthinned areas is .6", and 2.00" in the older thinnings. The average slope is 13%.

MU6: This unit contains 290 acres on the west side of the ranch. This management unit has not been logged in a long time. This unit has not been thinned so little growth has resulted since the logging. The average DBH in the 8" and larger class is 11.1 inches even though several trees sampled had twenty plus inch DBHs. The average tree height is 41', and the average slope is 11%. The average ten year diameter growth is .7 of an inch.

MANAGEMENT RECOMMENDATIONS

A. Forest Health

1. Thinning

One of the most needed activity to maintain forest health and stimulate tree growth on this ownership is thinning. Pre-commercial thin sapling sized pine once timber harvest is complete. Contact the Wyoming State Forestry Division or the NRCS for information on the, equip program which serve to provide technical, and possibly cost-share, assistance to private landowners (see Appendix A).

During thinning and harvesting the trees left standing should be of highest quality. When evaluating tree quality desirable traits to look for include: straight stems; cone shaped crowns; one top (not forked); small diameter limbs; branches projecting horizontally from stem and averaging four or less per whorl; free of insect or disease problems; free of mechanical damage from vehicles and equipment; long dark needles covering most of the branch; dominance in height growth relative to other trees in the stand.

In management units 4, 2, and 5 thinning operations should continue until all areas are thinned. In units 6 and 3 thinning operations will take place following harvest. Roads will be in place at this time and trees damaged during harvest can be removed. Thinning on unit 1 could occur before harvest or after harvest, depending on completion of the other thinnings and where the harvest rotation falls.

Restrict thinning operations to early spring, late fall or winter to reduce chance of Ips pine beetle infestation. Thinning continually through the summer and into the cold season is considered acceptable because it allows for a continual food source for the beetle in the form of thinning slash. In the event thinning operation ceases, slash no longer becomes available and Ips populations will move into live trees.

Commercial thinning utilizes products-other-than-lumber (P.O.L.). Posts, poles, firewood, Christmas trees and wood chips are a few such products. Any utilization of POL will only help reduce the over stocked condition, as long as a good stand of the best possible trees with a minimum a 14'x14' average spacing is maintained.

2. Method of harvest

A two-cut shelterwood harvest method is recommended for this ownership. Under this method overmature and poorly formed trees that do not contain nests or wildlife cavities are harvested so as to leave the stocking at 60 sq. ft ba/ac. Remove trees with form defects such as forked tops, crook, sweep and bark damage. Dominant trees should be left. Dominant trees are characterized by their superior height, vigor and crown development. They are generally the same age as the smaller trees in the understory, but have achieved superior size due to their dominance in the stand. Avoid harvest based solely on a diameter limit. Harvest trees from each diameter class using the criteria listed above. After harvest, growth in remaining trees is expected to accelerate. Optimum growth is predicted for the next 15 to 35 years at the end of which a second harvest can occur.

The second cut in this system will remove sawlog size trees down to 40 sq. ft ba/ac. Trees left after this second entry should be of the highest quality. These trees

will make up the seed source and ultimately determine the quality of future forest stands.

If adequate regeneration is not seen in 15 to 20 years a third cut, leaving 20 sq. ft/ac of the best quality trees, may be necessary to stimulate regeneration. When the regeneration reaches 15' to 20' tall the overstory can be removed.

3. Slash

Slash from timber harvest and thinning operations can be either lopped and scattered or piled. Slash decomposes and returns nutrients to the soil if lopped and scattered and also supplies protection to pine seedling regeneration. Scattered slash, however, can be a fire hazard as well as a barrier to the movement of wildlife, horses, and recreational vehicles.

Piled slash should be placed in forest openings positioned where winds will not carry flames into surrounding trees. Best results for total combustion when burning piles occurs when needles have turned red and remain on branches. This usually occurs after two years. Piles should be burned only when there is heavy snow cover, cold temperatures and low winds. Best results often occur after the first heavy snow of winter when cold temperatures are expected to continue for an extended period after burning. Notify the County Fire Warden before burning (see Appendix A).

4. Roads

Harvest activities should take place when ground is dry or frozen. Previously constructed roads provide good access. Due to a high erosion hazard associated with soils on this ownership new road construction should be carefully considered.

Prevent contamination of water from accidental spills of fuels, lubricants and other harmful materials. Crowning roads will move water off road to ditches. Please see attached copy of Wyoming Forestry Best Management Practices, (BMP's).

Construct waterbars or rolling dips deep enough into the subgrade so that traffic will not obliterate them. Ensure that drainage features are fully functional prior to spring or fall runoff. Never allow road drainage to flow directly into a stream.

In the event a road will not be used again for a long period and is not necessary for fire access, restoration is suggested to minimize erosion and noxious weed problems. Pull up roadside berms, rip compacted areas; restore natural drainage; reseed all disturbed areas with beneficial plants such as: annual rye grass, green needle grass, alsike clover, hard fescue, timothy, slender wheat grass.

B. Wildlife

Snags" are standing dead trees. "Den trees" are living trees with a natural or man-made cavity in the trunk or limb(s). Snag replacement or "recruitment" trees are candidates for future snag designation.

A variety of bird and wildlife species depend on snags and den trees for food, shelter and nesting habitat. A few snags or snag replacement trees protected on this ownership would be beneficial.

Two to three piles of slash per acre will benefit small mammals including rabbits and squirrel . Pile branches on a stump or pitch post to slow the decay process.

Small patches, approximately 100'x50', of densely grown trees left unthinned will benefit deer and elk by providing hiding and thermal cover. Cover is defined by the W.G.F.D. as vegetation capable of hiding a deer from human view at a distance of 200 ft. or less.

Critical areas of cover are: northeast facing slopes where animals escape summer heat; along roads used by hunters; surrounding watering facilities; and travel corridors.

Potential Turkey roost trees should be identified and left during logging and thinning operations. Ideal turkey roosts consists of a group of three to four mature trees with the following four qualities: 1) less than fifty feet apart to provide thermal and wind protection, 2) large horizontal branches without needles at least two feet from the trunk so there is room for turkeys to fly up and roost, 3) located on the bottom or side of a slope, ideally just below some level ground, to make it easy for turkeys fly to roost, 4) located with in one half mile of water.

Winter forage availability is critical to deer survival. Browse plants such as chokecherry, aspen, skunkbush sumac, Mountain mahogany, and wild rose currently provide a food source in the winter when snow may cover other plants. Encourage these plants by cutting openings in the pine forest of 1 to 5 acres.

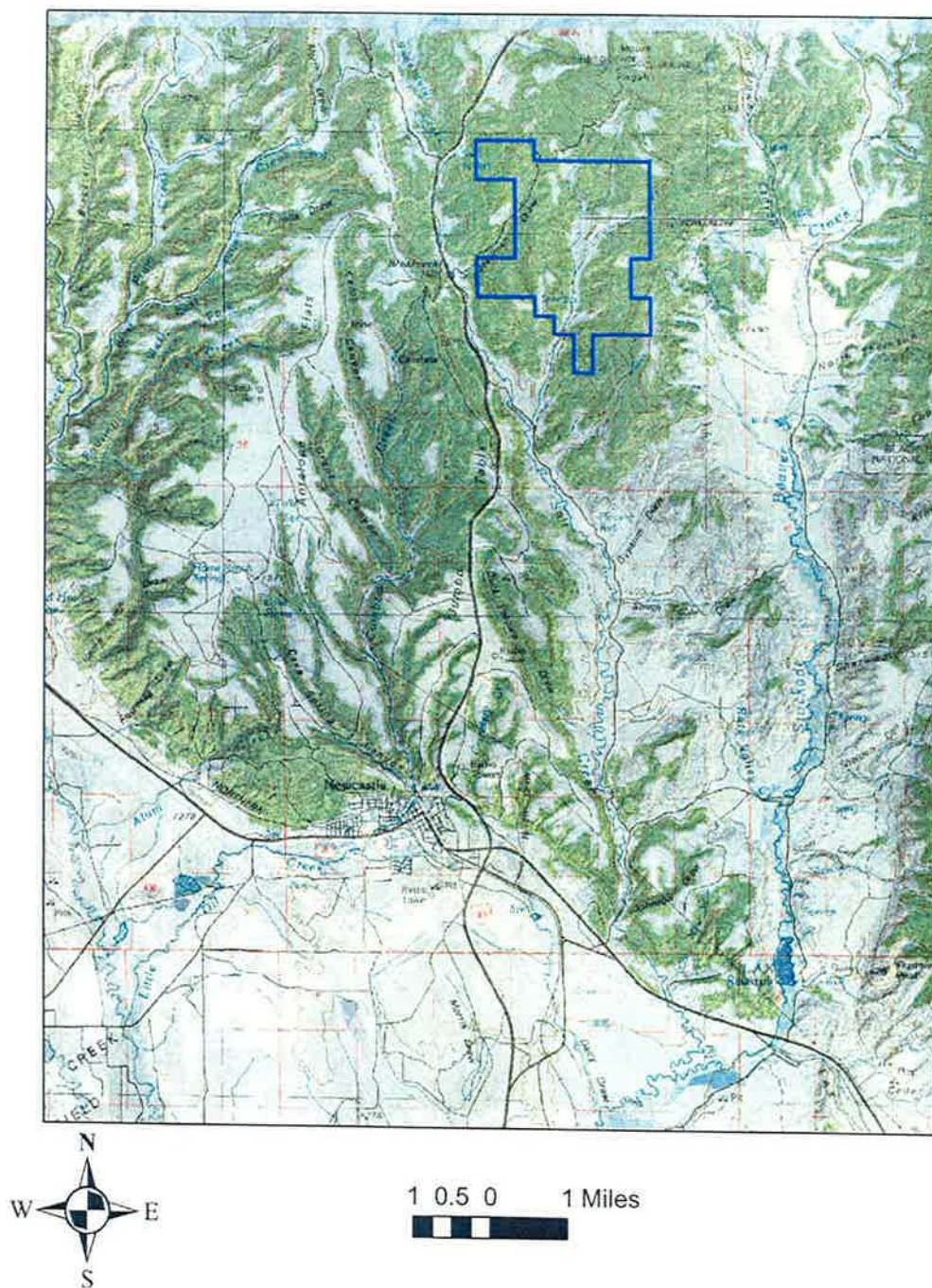
Supplemental plantings of a crop that deer and elk find very palatable, such as alfalfa would be beneficial for drawing in and holding more of these big game animals.

Further information on wildlife habitat preservation can be obtained from the Wyoming Game and Fish Division (see Appendix A).

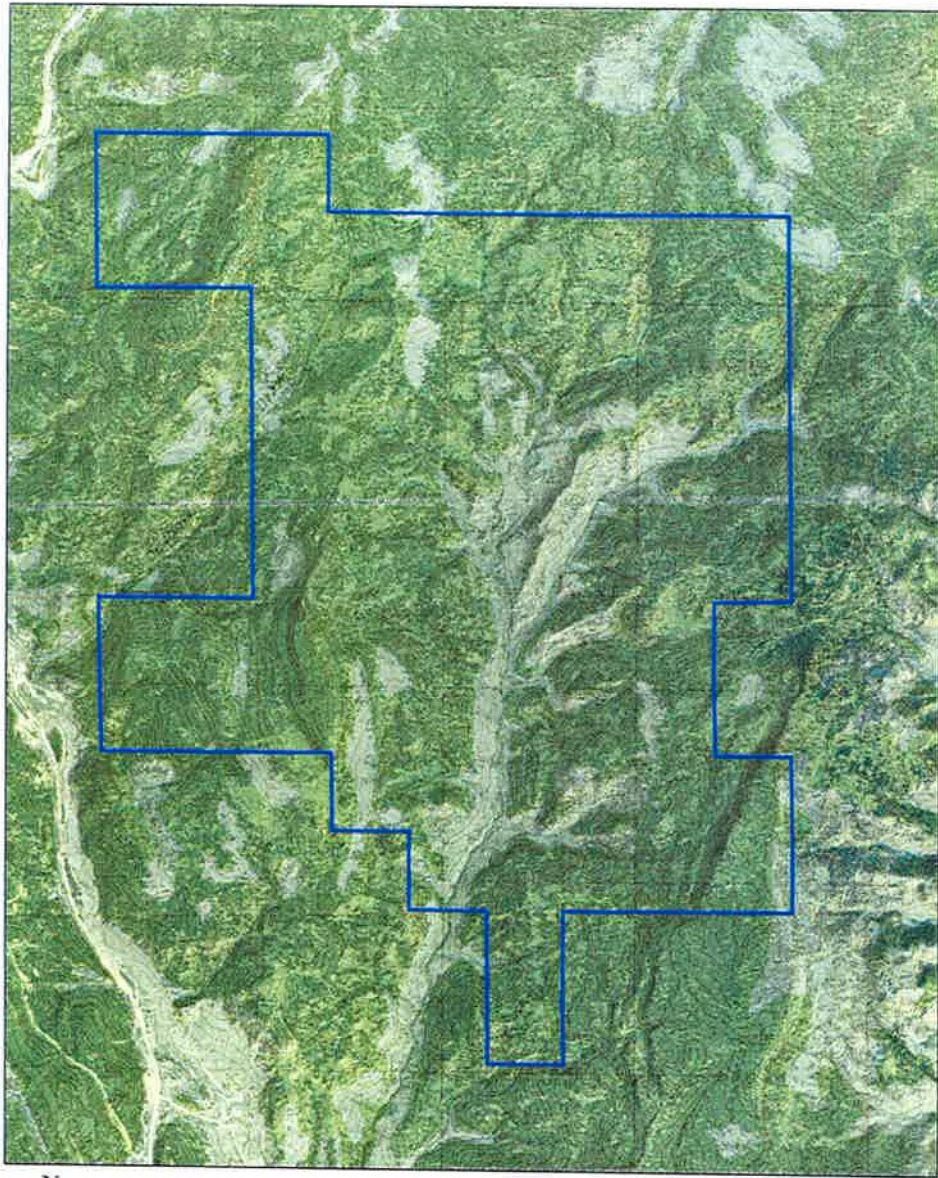
IMPLEMENTATION SCHEDULE

<u>Year</u>	<u>Practice</u>	<u>Unit</u>
2008	Thinning	north half of 4
2009	Logging	6
2010	Thinning	unthinned parts of 5
2011	Thinning	unthinned parts of 2
2012	Thinning	6
2013	Logging	3
2014	Thinning	3
2015	Logging	1
2016	Thinning	1
2017	Logging	5
2025	Logging	2
2029	Logging	4

Bryan Paul vicinity map



Bryan Paul property



2,200 1,100 0 2,200 Feet



Management units

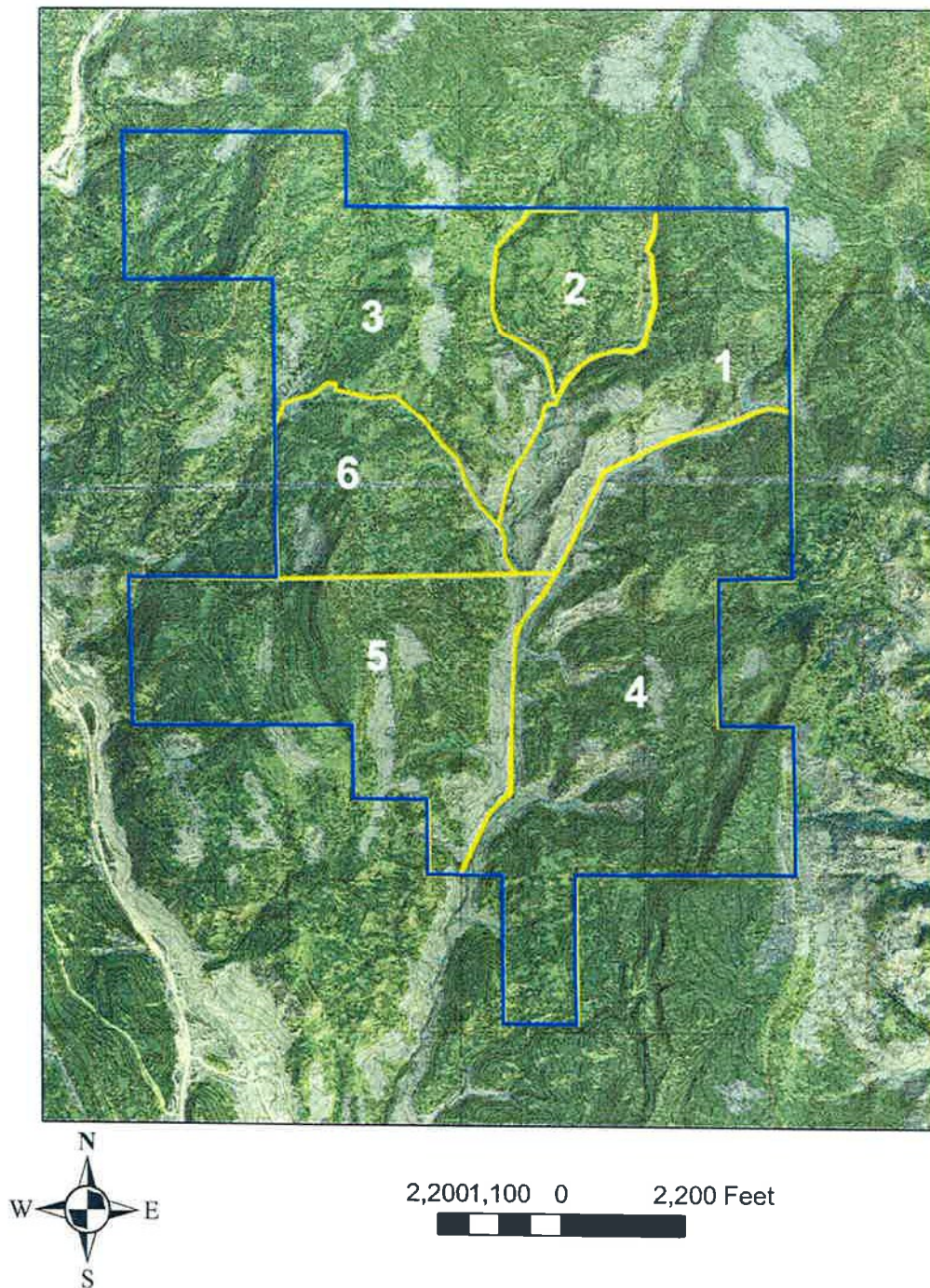


Figure 7

