

Proposal
for
Preparation and Implementation of Forest Management Plans
on Selected State Trust Lands

Submitted by; Woodland Management Consultants

Date ; May 7,1995

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Woodland Management Consultants is submitting this proposal to implement forest management on selected state trust lands.

Woodland Management Consultants qualifications will detail the training, experience, and history of similar forest management activities.

Individual characteristics, time lines, and specific requirements of selected trust lands will be developed.

The summary will compare Woodland Management Consultants qualifications and trust land characteristics with the proposal objectives.

I. Profile of Woodland Management Consultants

A. Training

Woodland Management Consultants is a multifaceted forest consulting company which specializes in the implementation of various forest activities. The staff of 2 professional foresters, John Rake and Bill Gherardi, have a broad background in forest management on public and private ownerships.

B. Experience

Exhibit A details Woodland Management Consultants areas of expertise, past accomplishments, and the educational background of the staff. Bill Gherardi will serve as the contact person and responsible individual for preparation and implementation of forest management activities on state trust lands.

C. History

Woodland Management Consultants history of forest management activities have included product sales of transplants, Christmas trees, roundwood, sawtimber and house logs on public and private ownerships.

Woodland Management Consultants first long term contract on public ownership began in 1984, with a 10 year lease. A forest management plan was developed. A series of product sales were executed during the term. Other management activities performed included slash burning, thinning, and boundary surveys.

The second long term lease began in 1985 for a 10 year term. Primary access was negotiated with the surface lessee and the US Forest Service. A sale was executed to remove high risk trees and promote regeneration. Other management activities included slash burning and regeneration stocking surveys.

Finally, a short term lease on 2 seperate public parcels began in 1992, for a 3 year term. Exhibit B is the forest management plan for one of the parcels. Access was negotiated across private land to initiate product sales. Othe management activities included slash burning, boundary surveys, and new road layout.

Similar forest management contracts on private land, as listed in Exhibit A, have been executed and completed. Exhibit C provides references from clients of Woodland Management Consultants.

II. Parcel Profiles

All parcels were examined via a walk thru field survey. Any parcel with a commercial product was quantified by a quick cruise tally for economic viability. The parcels listed below have some degree of economic operability.

A. Characteristics

1. A/#1. This section is composed of narrow timber stands on 50% of the area, interspersed with meadows, see Exhibit D, map A/#1. The forested area is aspen pole timber and lodgepole pole timber with scattered saw timber. The aspen is overmature with heavy rot and cytospora canker. The lodgepole is mature with pockets of misteltoe and old beetle infestation. Management emphasis

will be a single entry to remove misteltoe infected trees and thin healthy lodgepole. The aspen will be left alone, since a harvest without fencing will subject sprouts to heavy elk grazing.

2. A/#2. The section is composed of aspen and lodgepole poletimber, see Exhibit D-map A/#2. The aspen is overmature with heavy elk scars and cytospora canker. The aspen occupies the highest areas of the section, interspersed with sagebrush meadows. Thus, this stand is susceptible to extensive windthrow. The lodgepole is intermixed poletimber and sawtimber with past evidence of mountain pine beetle infestation. Heavy misteltoe occurs in the west $\frac{1}{2}$ of the stand.

Management emphasis will be multiple entries. The first entry will harvest high risk trees. Subsequent entries will thin overstocked areas to promote growth on residuals. The aspen will be left as wind protection.

3. A/#3. The section is composed of 2 separate stands of lodgepole poles and sawtimber divided by a sagebrush meadow, see Exhibit D-map A/#3. Aspen poles occur in small patches within the pine. Past beetle infestation coupled with wind have created a large deadfall area in the northwest corner of the section. Dwarf misteltoe occurs in isolated patches.

Management emphasis will be a single entry to remove high risk trees and promote regeneration.

4. B/#1. The section is dominated by open grown ponderosa poles and sawtimber with small patches of aspen poles. Scattered douglas fir poletimber is intermixed with the ponderosa, see Exhibit D-map B/#1. Topography is broken with rock outcrops. Past logging removed mountain pine beetle trees.

Management emphasis will be multiple entries to;

- a. open up ponderosa to promote multi-species regeneration,
- b. thin overstocked poletimber to promote growth on residuals, and
- c. sell transplants as a revenue source to accomplish precommercial thinning in sapling areas.

5. C/#1. Past forest management activities have removed high risk trees and promoted regeneration, see Exhibit D-map C/#1.

Management emphasis will be multiple entries to sell transplants and thin overstocked sapling stands.

6. C/#2. Past forest management activities have removed high risk trees and promoted lodgepole regeneration, see Exhibit D-map C/#2.

Management emphasis will be multiple entries to thin overstocked poletimber.

7. D/#2. The section is composed of lodgepole poles and sawtimber interspersed with large sagebrush meadows, see Exhibit D-map D/#2. Misteltoe occurs in isolated patches.

Management emphasis will be a single entry to remove misteltoe and thin poles to promote growth on residuals.

8. D/#4. The section is composed of lodgepole poles and sawtimber, with douglas fir and subalpine fir sawtimber along the southern $\frac{1}{4}$ of the section. Small patches of aspen occur within the pine, particularly along draw bottoms, see Exhibit D-map D/#4.

Management emphasis will be multiple entries to remove high risk trees and thin overstocked poletimber.

B. Management Activity Time Frames

Management activities as listed in Section A, above are portrayed over time per Exhibit E.

C. Specific Requirements

All items under II. A and B will be performed provided access to each listed parcel can be secured.

The primary business office of Woodland Management Consultants is located at 1413 Ash Drive, Fort Collins, Colorado. Phone number is 970-221-1336. A satellite office is maintained at 490 Garfield St. Walden, Colorado. Phone number is 970-723-4617. Road miles to selected parcels is listed in Exhibit F.

Compensation to Woodland Management Consultants for the management activities is listed on Exhibit G.

Woodland Management Consultants received the Addendum #1, dated April 24, 1995 to the original Request for Proposals, & Addendum #2, dated May 3, 1995.

III. Summary

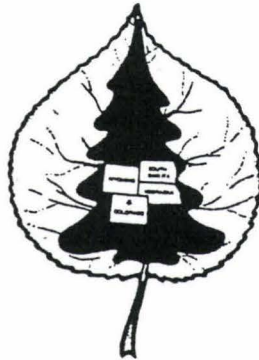
Woodland Management Consultants has the necessary staff, training, and experience in the long term management of forest lands; together with a working knowledge of the resources on state trust lands. Thus, Woodland Management Consultants would best serve the interests of the State Land Board and the Colorado State Forest Service in meeting the objectives of this proposal.

EXHIBIT A

PROFESSIONAL
QUALIFICATIONS STATEMENT
PROJECT EXPERIENCE
AND RESUMES

WOODLAND MANAGEMENT CONSULTANTS

P.O. Box 10
Fort Collins, Colorado 80522
(303) 221-1336



WOODLAND MANAGEMENT CONSULTANTS is a forestry consulting firm specializing in providing the private forestland owner the services for sound and profitable forest management. Our professional capabilities are in the areas of timber and all other forest products. Our approach considers the economics of any forest management over the long term as well as the short term. Our conclusions and recommendations are directed at providing a profit to the landowner for forest products.

WOODLAND MANAGEMENT CONSULTANTS has provided services to a wide variety of clients including State and Federal governments, the wood products industry, and private landowners in Colorado, Wyoming, and South Dakota. Our projects have ranged from small site detailed management plans to large scale timber harvest operations.

The results of our projects provide a wide variety of benefits to our clients. Although the primary objective is profit from the sale of forest products, many aspects of the environment can be effected.

Some examples are:

- an increase in wildlife use of the area
- an increase in forage production where timber is encroaching on grazing lands
- enhanced aesthetics through proper planning
- an increase in water yields
- a decrease in wildfire hazard
- a decrease in losses due to insect or disease problems

WOODLAND MANAGEMENT CONSULTANTS offers a variety of services, depending on the objectives of the client. Our staff has successfully completed projects in the following areas:

MANAGEMENT PLANNING - This is the initial step for forest management. The land is described in detail as to slope, soil conditions, and windfall risk. The trees are described in terms of size, insect and disease problems, and amounts of timber in the different product classes such as sawtimber, firewood, Christmas trees, and transplants. The landowners objectives are outlined in detail. With this as a base, the method of management is outlined with relevant costs and yield of resources.

TIMBER CRUISING - The cruise provides a detailed list of what is on the land. The trees are described as to species, size, and volume.

TIMBER SALE LAYOUT - This service accomplishes the ground application of your objectives. It could be a sale for sawtimber, firewood, Christmas trees, or transplants. The areas to be harvested will be marked with paint, and then sampled to determine the amount of the product for sale. The value of the product will be derived from an appraisal analysis. A contract for the sale will be prepared to reflect your concerns and to describe the area to be harvested, amount of the product, price, and time to complete the work.

SALE ADMINISTRATION - This service provides insurance for the landowner and the buyer of the sale. The landowners concerns are safeguarded by having knowledgeable inspectors.

TREE REGENERATION - Normally, after harvest, trees regenerate naturally. Where a different species or Christmas tree plantation is desired, they can be planted. This requires a thorough analysis of the most cost effective method of completing the task.

INSECT AND DISEASE SURVEYS & TREATMENT - Spruce budworm and mountain pine beetle can be a serious problem. Recommendations for preventing further loss through manual, silvicultural, or chemical control measures can be prescribed.

WILDFIRE HAZARD MAPPING - Loss from wildfire can be minimized through the identification of hazards and the execution of protective practices for an area.

TIMBER APPRAISALS - timber valuation procedures for natural and manmade losses to forestland.

EXPERT WITNESS & LITIGATION SUPPORT

PROJECT EXPERIENCE

The staff at WOODLAND MANAGEMENT CONSULTANTS has had extensive experience in a variety of projects throughout Colorado, Wyoming, South Dakota and Nebraska. A list of clients and projects follows.

PROFESSIONAL RESUMES

A summary of professional records of the principal personnel of WOODLAND MANAGEMENT CONSULTANTS follows.

PROJECT EXPERIENCE

TIMBER SALES

Colorado Board of Land Commissioners, Section 36, Jackson County, CO. Management plan and timber sale of 2.5 M board feet of lodgepole pine. Administered sale.

Colorado Board of Land Commissioners, Section 16, Jackson County, CO. Management plan and timber sale of 1 M board feet of timber on 360 acres. Administered sale.

Indian Creek Park Association, Evergreen, CO. Forest management plan on 2000 acres. Three timber sales over 3 years totaling 1 M board feet and 1900 cords of pine and fir. Administered sales.

Diamond Peak Ranch, Larimer County, CO. Forest management plan on 2500 acres. Timber sale of 1.2 M mbf of timber on 350 acres. Transplant sales. Sale administration.

Stelbar Ranch, Jackson County, CO. Timber sale of 2200 cords of aspen. 100 mbf lodgepole pine sale.

Hagemeister Ranches, Wheatland, WY. Management plan and timber sale of 1 M of ponderosa pine.

Evans Ranch, Evergreen, CO. Management plan and timber sale of 400 mbf of pine and fir. Administered sale.

Berger Land Company, Bailey, CO. Management plan and timber sale of 1.2 M board feet of ponderosa pine. Administered sale.

Kamp Cattle Company, Walcott, WY. Management plan and timber sale of 650 mbf of pine. Administered sale.

True Ranches, Casper, WY. Management plan and silvicultural prescriptions.

Rio Grande National Forest, Monte Vista, CO. Timber sale modification and cruise on 1 M board foot spruce-fir sale.

Fraser Experimental Forest, Fraser, CO. Timber marking in spruce-fir stand for hydrologic case study.

Burns Ranch, Sheridan, WY. Management plan and timber sale of 1.5 M board feet of lodgepole and ponderosa pine. Administered sale.

TIMBER SALES - continued

Colorado Board of Land Commissioners, Section 16, Larimer County, CO. Timber cruise, management plan and sale administration of 550 cord sale.

Colorado Board of Land Commissioners, Section 36, Larimer County, CO. Timber cruise, management plan and sale administration of 1030 mbf of lodgepole pine.

Lahey, Gould, CO. Management plan, and timber sale of 650 mbf of lodgepole pine. Transplant and christmas tree sales.

INSECT & DISEASE

Spruce Budworm spraying- continous program to control spruce budworm on high value trees in Colorado. 1- 4000 acres per year.

Keystone Ski Area, Dillon, CO. Locating mountain pine beetle infestations and prescribing treatment procedures.

Centron Inc., Silverthorne, CO. Locating mountain pine beetle infestations, prescribing treatment procedures and administering treatment procedures.

Colorado State Forest Service, Boulder, CO. Pilot project in the use of cacadic acid to control mountain pine beetle infestations.

APPRAISALS

Bud Dodds, Spearfish, South Dakota. Damage appraisal for timber trespass.

Vern Thorstenston, Rapid City, South Dakota. Damage appraisal for timber trespass.

Doug Watson, Sundance, Wyoming. Damage appraisal on 440 acres due to wildfire.

Bud Hollenbeck, Edgemont, South Dakota. Damage appraisal from wildfire loss.

Glen Swank, Douglas County, CO. Damage appraisal for mountain pine beetle.

Kit Westbroook, Elk Mountain, Wyoming. Damage appraisal for site cleanup to a timber harvest area.

Timber Inventory

Woodland Management Consultants has completed intensive timber inventory projects on 1,000,000 acres of US Forest Service, Bureau of Indian Affairs, and private forest land in Colorado, Wyoming, South Dakota and Nebraska.

Wildfire Hazard Mapping

Routt County Commissioners, Steamboat Springs, Colorado. Derived wildfire hazard rating on 30,000 acres of land to be developed.

Timber Studies

Wilderness Effects on Potential Timber Supply, Cook Lumber Co., Ft. Collins, CO.. Private Forest Land Opportunities, Bighorn Lumber CO., Laramie, WY.. Lodgepole Poletimber Availability Study, Teton West Lumber, Cheyenne, WY..

Private Forest Owner References

Bart Berger	Bailey, CO.	970-898-2278
Bruce Burns	Sheridan, WY.	307-683-2891
Bud Dodds	Spearfish, SD.	605-642-2196
Tom Hayden	Evergreen, CO.	970-670-6102
Duane Lahey	Ft. Collins, CO.	970-221-9115
Robert Moreng	Ft. Collins, CO.	970-482-8997
Peter Thieriot	Elk Mountain, WY.	307-348-7447

PERSONAL RESUME

John H. Rake

EDUCATION: Bachelor of science, 1975, Colorado State University

CURRICULUM: Forestry

Area of specialization: Forest Management

Experience: 1984 to present

Woodland Management Consultants, Ft. Collins, Colorado
Timber sale layout and administration for private landowners,
Management planning, aerial photo interpretation.

1979 to 1984

Timberline Foresters, Inc., Ft. Collins, Colorado
Natural resource contract procurement, Stage II inventory,
TSI, Management marking, Aerial photo interpretation, Timber
cruising, Stand prescriptions, wildland resource consulting.

1978

Bercier Construction, Custer, South Dakota
Stage II inventory, Aerial photo typing

1974 to 1977

U.S. Forest Service, Bighorn National Forest
Timber inventory, timber sale layout, timber marking, 3P
cruising, IR fire crew.

1973

U.S. Forest Service, Arapaho National Forest
Timber sale layout, management marking, timber cruising,
traversing, regeneration surveys, TSI, surveying.

1972

Colorado State Forest Service, Ft. Collins, Colorado
Dutch elm disease survey

PROFESSIONAL MEMBERSHIPS

Society of American Foresters

PERSONAL RESUME

William Gherardi

EDUCATION: Bachelor of Science-Forest Management, University of Minnesota, 1971.

EXPERIENCE: 1980 to present

Woodland Management Consultants, Ft. Collins, CO. Developed workshop for promoting forest management with private landowners. Implemented viable Tree Farm Program in Colorado as chairman. Conducted timber cruises, damage appraisals, log scaling and timber studies for various individuals in Colorado, Wyoming and South Dakota.

1975 to 1980.

Forests West, Pty., Ft. Collins, CO. Developed prototype contracts with US Forest Service in forest inventory and aerial photo interpretation. Conducted sale preparation and administration of private timber in Colorado.

1974 to 1975.

Edwards Hines Lumber Co., Laramie, Wyoming. Conducted timber cruising and appraisals for the timber supply of four sawmills.

1973 to 1974.

US Forest Service, Encampment, Wyoming. Directed office preparation of aerial photos for project work area. Supervised 10 man inventory crew. Monitored quality control of crew.

1972 to 1973.

John Ryan Co., St. Paul, Minnesota. Supported 3 man crew in completing boundary and topography surveys for homes, schools and roads.

1971 to 1972.

US Forest Service, Gunnison, Colorado. Supervised 8 man inventory crew. Prescribed stand treatments from collected data.

PROFESSIONAL MEMBERSHIPS

Society of American Foresters

EXHIBIT B

MANAGEMENT PLAN EXAMPLE

FOREST MANAGEMENT PLAN

Section 36 T. 11 N. R. 77 W.

Prepared by: William Gherardi
Woodland Management Consultants

Date : August, 1992

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I. Objectives

- Regenerate burn area with lodgepole seedlings.
- Improve forest health by alleviating dwarf misteltoe.
- Convert decadent, overstocked lodgepole stands to utilize site productivity.

II. General Description

A. Location

Section 36 lies 4 miles west of the Laramie River Road. The only access is thru property owned by the UT Corporation. The existing 4 wheel drive road enters the section at the northeast corner and continues up a dry draw to the west property line.

La Garde Creek flows thru the SE $\frac{1}{4}$ of the section and Little Jenkins Creek dissects the northwest corner of the section.

This section is adjoined by US Forest Service lands on the west and south and private land on the north and east.

Gross area is 720 acres. Meadow comprises 170 acres, 92 acres are non-commercial forest land, 57 acres contain no live trees, thus 411 acres are commercial forest land.

B. Topography

The average elevation is 8500 feet with slopes lying in a northeast aspect, except for the southeast $\frac{1}{4}$ of the section which has a northwest aspect.

Slopes are generally less than 25% in the area north of La Garde Creek.

Streams crossing the section are La Garde, Little Jenkins and the southerly finger of Little Jenkins Creek.

Sagebrush meadows are scattered thru the southern half of the section. Refer to Exhibit A.

The climate here consists of moist, short growing seasons (May - September) with heavy snowfalls, average snow depth is 30 - 40 inches per year.

C. Economic Conditions

The primary source of income in the surrounding area is cattle ranching. All forest products markets exist along the Front Range which is 87 miles from the section.

Currently there is a market for all wood products, including small diameter roundwood as the USFS timber sale program has been pared down due to preservationist pressure. Existing mills are clamoring for all available timber not only to survive but to capitalize on the good lumber prices.

D. Management Units

Management units are based on timber type, size class and topographic features. Management units are commensurate with the stands shown on Exhibit A.

E. Current / Historical land use

Current land use is light seasonal grazing.

The lodgepole pine on this section is the result of fire 100+ years ago. Scattered remnant trees of Douglas-fir and Ponderosa pine with extensive fire scars attest to the fire history of this area.

A recent forest fire in 1989 consumed 57 acres of this section.

There are no unique ecological / biological features on this section.

F. Desired Forest Condition

To achieve the management objectives will require:

1. Harvest salvable timber from the burn area, followed by planting.
2. Harvest lodgepole stands in patches to mitigate dwarf mistletoe and encourage new seedlings to fully utilize site potential.

G. Impacts

Any harvesting activities will have minimal effect on neighbors. To wit, the surrounding US Forest Service lands are designated as roadless with no potential access. The surrounding private land is used for cattle grazing, by patch clearcutting a portion of this section will show increases in range carrying capacity.

III. Inventory

A. Vegetation

There is 170 acres of non-forest. The meadow areas are concentrated in the south half of the section. They are composed of sagebrush with a light stocking of native grasses. Slopes are greater than 30% with loose surface rock. Light commercial grazing in the summer is the primary use.

92 acres are designated non-commercial forest land. This area is made of aspen poletimber on the flats with Douglas-fir and Englemann spruce poletimber and sawtimber on the steeper ground. This area is located in the Southeast $\frac{1}{4}$ of the section, adjacent to La Garde Creek. Slopes are 30 - 50% with numerous boulders. No harvest activity have been scheduled due to the high road building costs and potential for erosion.

Commercial forest land is composed of four areas in three distinct stands, as shown on Exhibit A.

Stand A is composed of lodgepole sawtimber with scattered poletimber. Individual trees are 105 - 125 years of age with insignificant radial growth in the last 30 years. Site index is 65 on a 100 year basis. Misteltoe occurs in scattered groups thru both areas. This type occupies 110 acres with a 44 acre stand north of the existing road and 56 acres in the middle of the section. 60% of all trees have serotinous cones.

Stand B is the dominant forest type, i.e. lodgepole poletimber and saplings. This 301 acres is characterized by trees which are 100 years old, 3- 7 inches in diameter and 49 feet tall. Stocking levels are high (200 + ft.² of basal area) with the number of stems ranging from 800 - 1400 per acre. Misteltoe is heavy throughout the stand. 50% of the trees have sertinous cones.

Stand C is a burn area of 57 acres. This area was burned 3 years ago from a wildfire started on US Forest Service land to the north. Lodgepole poletimber and sawtimber with an aspen poletimber stringer along the creek was killed. Natural regeneration has occured along the north edge of this stand for 2-3 tree heights from the seed wall. The bulk of the area contains grass cover. The grass is the result of the US Forest Service and Division of Wildlife aerial seeding effort following the fire.

Detailed Stand and Stock Tables are found in Exhibit B for the commercial forest.

B. Insects and Disease

The dominant disease problem is dwarf mistletoe. The heaviest infection is in Stand B with pockets all rating a 6 on the dwarf misteltoe rating system. No significant growth has occurred in the last 30 years and any regeneration is already infected with misteltoe.

Ips beetle occur as isolated individuals or groups of 3- 5 trees particulary along the north edge of the burn, in trees weakened by the fire.

C. Fire Hazard

The majority of the section is in a moderate fire risk, slopes are relatively gentle (25%), but high stocking levels provide an abundance of fuel for wildfire loss, as evidenced by the recent burn of Stand C.

Harvesting activities will break up the continuous forest cover and temporary roads will provide some potential fuel line breaks.

D. Soil Types

Exhibit C depicts the soil types of the section. The dominant soil type is Redfeather series which is sutied to the production of lodgepole pine in even aged stands. The hazard of erosin, equipment limitations and windthrow hazard are moderate.

E. Access Roads

Exhibit D shows the existing access road across UT Corporation property. A wheel drive is required for the portion of the road within Section 36.

A trail exists along the west line from the road to the top of the ridge north of La Garde Creek. Extensive blowdown is prevalent along this trail.

F. Water Features

Exhibit D also shows water features on this section. Little Jenkins Creek in the Northwest $\frac{1}{4}$ of the section is a perennial stream. La Garde Creek is also a perennial stream and flows thru the southeast $\frac{1}{4}$ of the section. The southerly branch of Little Jenkins Creek is also perennial since the forest fire.

There are no other developed springs or reservoirs on this section.

G. Cultural Features

Exhibit D also shows existing fences on this section. There are no buildings present on the section.

H. Noxious Weeds

There are known noxious weeds on this section.

I. Wildlife Species

Deer and elk occur on the section with browsing concentrated in Stand C. Light use occurs in the meadows and adjacent stand edges. Coyotes occur only as they pass thru the section on hunting forays. Pine squirrels are located throughout the section as scattered individuals.

Exhibit E details wildlife habitat potentials according to soil type.

J. Endangered Specoes

There are no known endangered plants or animals on this section.

K. Scenic Qualities

Since 70 % of the section is covered with overstocked Lodgepole pine there is little scenic diversity. The existing meadows provide some aesthetic diversity and will be maintained as such in all future harvesting activities.

L. Archeological Sites

There are no known archeological sites.

IV. Prescriptions by Management Unit

A. Recommendations

Stand A- north section. Patch cut poletimber where dwarf misteltoe occurs. Shelterwood harvest the sawtimber. This will maintain wind protection along the west boundary, stimulate regeneration and protect the Jenkins Creek watershed from potential erosion.

Stand A- south section. Patch ^{cut} sawtimber (8-10 acre patches) to promote regeneration and utilize site potential.

Stand B, patch cut poletimber (3-10 acres) to mitigate dwarf misteltoe and stimulate healthy regeneration. This stand is overstocked , with little radial growth in the last 30 years. Particular attention will be given to active beetle patches along the south end of Stand C.

Stand C. Harvest salvagable material for firewood and replant to lodgepole pine. Leave 4- 6 snags per acre for wildlife nesting sites.

B. Harvest Schedule

Stand	acres	Type of harvest	Volume	
			cords	mbf
A-north	10	patch cut	80	100
	34	shelterwood	60	170
A-south	30	patch cut	150	311
B	100	patch cut	2400	930
C	50	patch cut	600	--
Total	224		3090	1511

Future entries will be premised on stocking levels of patch cut areas. Normally 8-15 years is required to have clearcuts stocked with 6-8 foot trees.

C. Special Requirements

1. Any harvest activity is wholly dependent on access across UT property, there is no other cost effective access to this section. At the field trip with Bob Stovell, the manager for UT, the following concerns were discussed:

- a. Road improvements are needed on the existing road in Section 31 & 32, see Exhibit D. Improvements include; grade and ditch the first 1.6 miles from county road, construct bridge across La Garde Creek, add 1 new culvert and rebury existing culvert, realign and spot gravel .7 mile of road from La Garde Creek to northeast corner of section. Clearing west and north section lines so fences can be constructed for cattle grazing. Control of harvesting operation to prevent access and grazing conflicts. Road users fee for this private land access.

Mr. Stovell was amenable to timber harvesting as long as these concerns were addressed. All of the aforementioned items will be incorporated in the timber sale contract. Specific costs are listed in Section G.

2. To accomplish the actual harvesting will require;
 - a. New temporary road construction of 3.0 miles, with a minimum of 4 culverts.
 - b. Weather will play a key role in harvest activity, with the normal operating season being May 15- October 30. A minimum of 2 operating seasons will be needed for this sale.
 - c. Slash from the patch cuts will be machine piled and burned. This will ensure soil scarification, distribution of serotinous cones and potential loss from wildfire.
3. Stand C is also a special circumstance. This area was burned by a wildfire in 1989. Inadvertantly, as a post treatment to the fire, the US Forest

Service and Colorado Division of Wildlife aurally seeded the burn with grass. Since no distinct property line exists the 57 acres in Section 36 were also seeded.

At the field trip with Steve Steiner, wildlife biologist for the Division of Wildlife, his primary concern was to leave a fringe of trees along the edge of the stand. This will make the elk feel "safe" as they browse the area. Since the area was seeded this will be prime elk habitat for 15-20 years.

Only merchantable material will be harvested, provided a firewood market is available. All roads will be of a temporary nature with controlled access on private land. This will allow little disturbance to big game use on the section.

Once harvest has occurred, planting will be needed on 45 acres. Natural regeneration will occur along the south edge of Stand C for 2-5 tree heights from the seed wall, thus 12 acres will be naturally seeded.

Planting is justified by the high site index (65), gentle slopes and meeting stated objectives for this section. Costs are listed under Section G.

D. New Roads

Exhibit F shows the location of roads needed for harvest.

E. Standards

Following the prescribed treatments will address the concerns of UT Corporation, Division of Wildlife as well as improving the grazing capacity and timber stands on this section.

F. Implementation Priority

The harvesting operation will commence in the spring of 1993, with final work completed in the fall of 1995.

The planting will occur after Stand C is harvested, completion of all planting is dependent of funding and manpower availability.

G. Estimated Costs and Returns

All of the figures are based on best available information as of this date (8-1992).

<u>COSTS</u>	
<u>UT property</u>	\$
- grade and ditch 1.6 miles	1600
- install 2 culverts	500
- bridge on La Garde Creek	4100
- clear/spot gravel .7 mile	1500
sub-total	<u>7700</u>

<u>New road construction - 3.0 miles</u>	\$
- clear and grub 4 acres	4300
- excavation- 8 days with cat	3200
- install 4 culverts	1200
sub-total	9200
<u>Fence clearing- north & west lines</u>	
- clear 2.5 acres, pile slash	1200
<u>Road Use Fee</u>	
- 600 loads @ 10	6000
<u>Reforestation - 45 acres</u>	
- seedlings- 200/acre x 45 acres	9000
- contract labor (250 trees/day)	4500
sub-total	13500
Grand Total - Costs	\$37600

Returns

- 600 cords dead @ \$ 1	600
- 2490 cords-green @ \$10	24900
- 1500 mbf sawlogs @ \$40	60000
Grand Total- Returns	90900

V. Implementation Plan

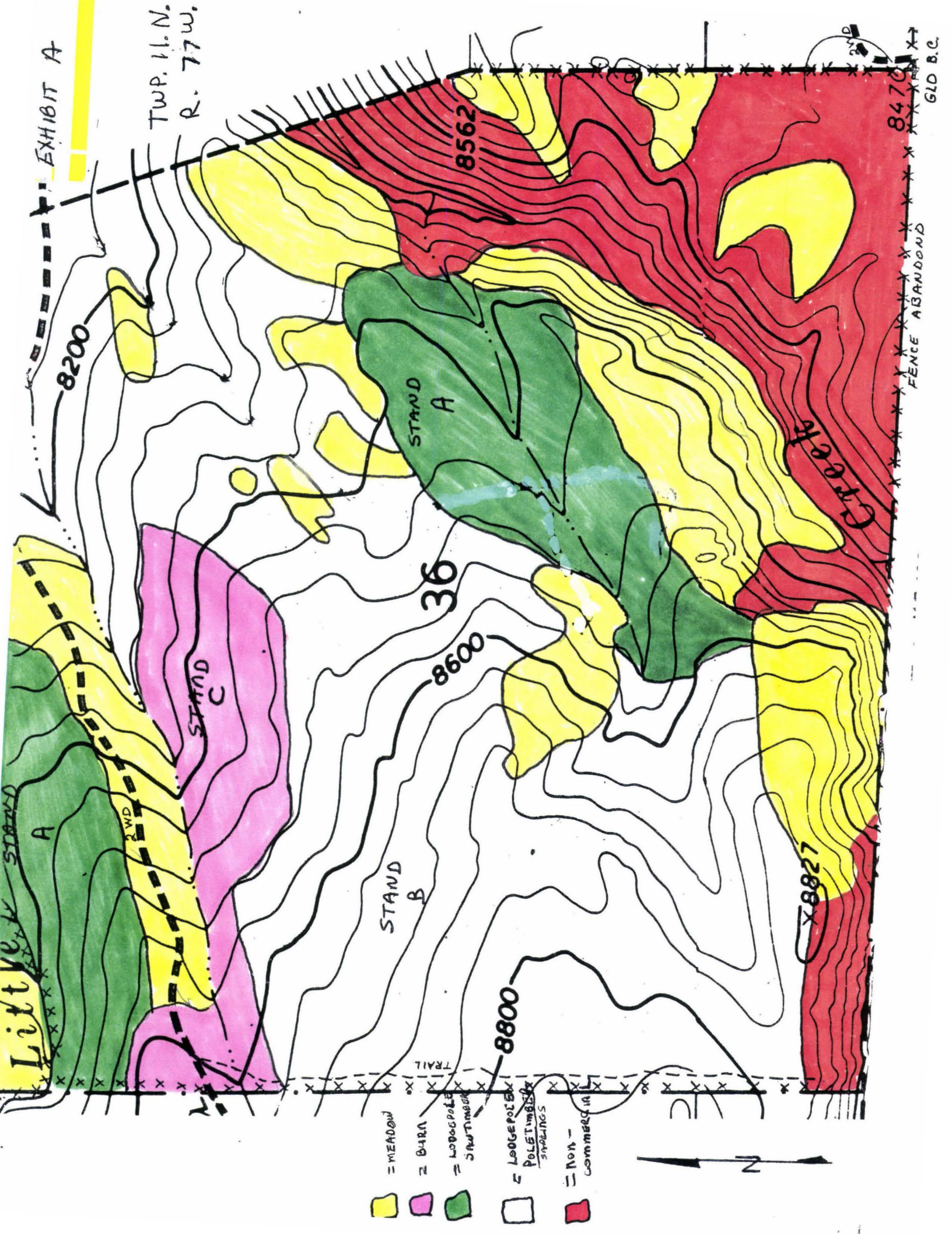
Exhibit G details all accomplishments.

VI. Appendices

- Exhibit A - Forest Vegetation Map
- Exhibit B - Lodgepole Pine Stand and Stock Table
- Exhibit C - Soils Map and Description
- Exhibit D - Cultural Features Map
- Exhibit E - Wildlife Habitat Potentials
- Exhibit F - New Road Location Map
- Exhibit G - Accomplishment Record

EXHIBIT A

TWP. 11. N.
R. 77 W.



- MEADOW
- BURN
- Lodgepole Spruce
- Lodgepole Spruce
- Non-Commercial



FENCE ABANDONED

8470

GLO B.C.

EXHIBIT B
 LODGEPOLE PINE STAND & STOCK TABLE

Parameter	Stand A	Stand B	Stand C
BAF	20	20	20
# plots	8	16	4
# acres	110	301	57
Average dbh	8.7	7.3	6.8
Average height	56	49	53
BA/acre	137	205	106
cubic feet/acre	670	2040	2044
board feet/acre	10700	9300	--
trees/acre	418	794	527
Average age	118	103	100
Site Index	65	50	60
Sample error	11%	15%	12%

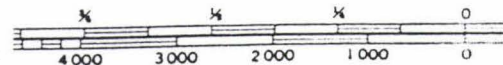
EXHIBIT C SOILS MAP

40° 50' 30"

T. 11 N.

T. 10 N.

560 000
FEET



3/4) moist; massive; hard, very friable; violently effervescent; streaks and small specks of calcium carbonate; moderately alkaline.

Thickness of the mollic epipedon is 20 to 40 inches. The A horizon is loam, fine sandy loam, or sandy loam 5 to 12 inches thick. The B horizon is loam, light clay loam, or sandy clay loam. The A and B horizons range from neutral to mildly alkaline. They are leached of lime but are slightly effervescent in many places because of additions of lime by irrigation water. A sand and gravel substratum is below a depth of 40 inches in some places.

40—Garrett loam, 0 to 1 percent slopes. This level soil is on terraces and fans (fig. 6).

Included with this soil in mapping are a few small areas of soils that have gravel on the surface and a few areas of soils in which gravel is at a depth of 40 to 60 inches. Also included are small areas of Harlan, Otero, Connerton, and Barnum soils.

Runoff is slow. The hazard of erosion is slight, but some areas near stream channels have been cut in places. Lower areas near the channels are flooded at times in spring or early summer.

If irrigated, this soil is suited to corn, sugar beets, beans, barley, alfalfa, and wheat. It is also well suited to pasture. Under dryland management it is suited to wheat and barley and it is well suited to pasture and native grasses. Capability units IIw-1, irrigated, and IIIe-6, dryland; Overflow range site; windbreak suitability group 5.

41—Garrett loam, 1 to 3 percent slopes. This nearly level soil is on terraces and fans. This soil has the profile described as representative of the series.

Included with this soil in mapping are a few small areas of Harlan, Otero, Connerton, and Barnum soils. Also included are a few areas of soils in which gravel is on the surface and at a depth of 40 to 60 inches.

Runoff is medium, and the hazard of erosion is slight or moderate. Areas near the stream channel receive overflow at times and cutting occurs in places.

If irrigated, this soil is suited to corn, sugar beets, beans, barley, alfalfa, and wheat. Under dryland management it is suited to wheat and barley. It is also suited to pasture and native grasses (fig. 7). Capability units IIe-1, irrigated, and IIIe-6, dryland; Overflow range site; windbreak suitability group 1.

Gravel Pits

42—Gravel pits. This unit consists of areas where the soil and underlying gravel deposits have been removed. These areas have no value for farming and little value for grazing. Some areas are filled with water and provide habitat for fish and wildlife. Some areas are used for sanitary landfills. Also included are borrow pits and areas where material was removed in road construction, mainly along Interstate Highway 25. Capability unit VIIIs-1, dryland; not assigned to a range site or windbreak suitability group.

Haploborolls-Rock Outcrop Complex, Steep

43—Haploborolls-Rock outcrop complex, steep. This complex consists of steep and very steep, cool soils and

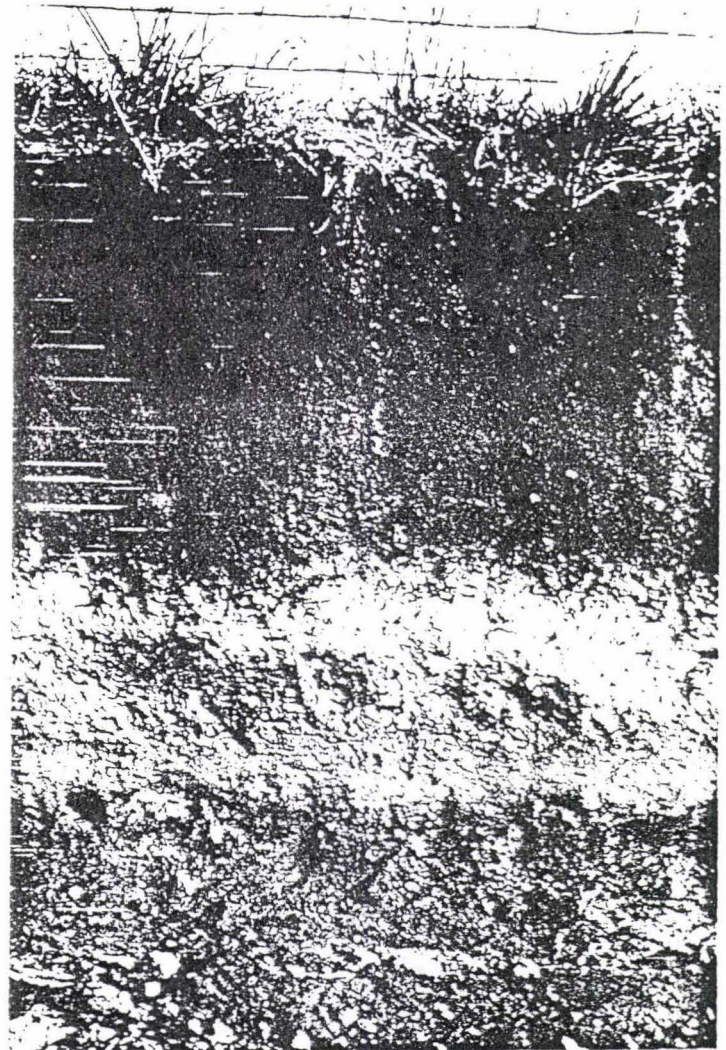


Figure 6.—Profile of Garrett loam, 0 to 1 percent slopes.

Rock outcrop on mountainsides and fans (fig. 8). The soils are extremely variable; about 50 to 70 percent of the unit, however, is stony and cobbly, dark colored soils that range from shallow to deep. These soils mainly have a surface layer and subsurface layer of sandy loam or loam that contain 10 to 25 percent cobbles and 20 to 35 percent stones. Stones that are on the surface are mainly boulders of granite, gneiss, and schist. About 30 to 50 percent of the mapped area is Rock outcrop. It is mainly on the steeper parts of the area, but it is scattered throughout.

Runoff is rapid, and the hazard of water erosion is severe.

These soils are used for a limited amount of grazing and are also used for wildlife habitat and watershed. Capability unit VIIe-1, dryland; Haploborolls in Stony Loam range site and Rock outcrop not assigned to a range site; not assigned to a windbreak suitability group.

Haplustolls, Hilly

44—Haplustolls, hilly. These strongly sloping to

Capability unit VIe-3, dryland; Shallow Foothill range site; not assigned to a windbreak suitability group.

86—Purner-Rock outcrop complex, 10 to 50 percent slopes. This complex consists of moderately steep or steep soils on uplands and ridges. It is about 55 percent Purner fine sandy loam and about 30 percent Rock outcrop. Purner fine sandy loam is smoother and less sloping, and Rock outcrop is steeper commonly on the western side of ridges.

Included with this soil in mapping is about 15 percent areas of Kirtley soils.

Runoff is rapid, and the hazard of erosion is severe.

This soil is suited to native grasses. Capability unit VIIe-1, dryland; Purner soil in Shallow Foothill range site and Rock outcrop not assigned to a range site; not assigned to a windbreak suitability group.

Ratake Series

The Ratake series consists of shallow, well drained or somewhat excessively drained soils that formed in material weathered from granite, schist, or phyllite. These soils are on upland ridges and mountainsides and are underlain by weathered phyllite, schist, or weathered granite at a depth of 10 to 20 inches. Elevation ranges from 6,800 to 8,500 feet. Slopes are 1 to 60 percent. The native vegetation is mainly blue grama, side-oats grama, slender wheatgrass, bluebunch wheatgrass, mountainmahogany, and sage. Mean annual precipitation ranges from 14 to 18 inches, mean annual air temperature ranges from 44° to 46° F, and the frost-free season ranges from 75 to 100 days.

In a representative profile the surface layer is reddish gray channery loam about 10 inches thick. The subsoil is reddish brown very channery loam about 5 inches thick. The underlying material is weathered phyllite or phyllite schist.

Permeability is moderate, and the available water capacity is low. Reaction is neutral.

These soils are mainly used for native grasses.

Representative profile of Ratake channery loam in an area of Ratake-Rock outcrop complex, 25 to 55 percent slopes, in native grass, about 2,350 feet east of the southwest corner of sec. 5, T. 8 N., R. 70 W.:

A1—0 to 10 inches; reddish gray (5YR 5/2) channery loam, dark reddish brown (5Y 3/2) moist; strong fine granular and crumb structure; soft, very friable; 20 percent soft phyllite channers; very high mica content; neutral; clear smooth boundary.

B2—10 to 15 inches; reddish brown (5YR 5/3) very channery loam, reddish brown (5YR 4/3) moist; moderate fine sub-angular blocky structure parting to strong fine granular; soft, very friable; 60 percent phyllite channers; very high mica content; neutral; diffuse boundary.

Cr—15 to 25 inches; weathered phyllite or phyllitic schist; coarse fragments are weathered and can be crushed in the hand with some difficulty but without significant contributions to the fine parts of the soil on first and second breakages;

horizon can be penetrated with a spade with difficulty; very high mica content.

The A horizon is loam or sandy loam 7 to 20 inches thick. The B2 horizon is absent in some profiles. Content of rock fragments, mainly phyllite, schist, or granite $\frac{1}{4}$ inch to 2 inches in size, ranges from 35 to 80 percent.

87—Ratake-Rock outcrop complex, 25 to 55 percent slopes. This complex consists of steep or very steep soils on mountainsides and ridges. It is about 60 percent Ratake channery loam and about 30 percent Rock outcrop. Ratake channery loam is less steep, and Rock outcrop is throughout the complex but commonly is near ridgetops and is steeper.

Included with this soil in mapping is about 10 percent areas of Breece soils along drainageways.

Runoff is rapid, and the hazard of water erosion is severe.

This soil is suited to native grasses. Capability unit VIIe-1, dryland; Rocky Loam range site; not assigned to a windbreak suitability group.

Redfeather Series

The Redfeather series consists of shallow, well drained soils that formed in material weathered from granite. These soils are on ridges and mountainsides and are underlain by granite bedrock at a depth of 10 to 20 inches. Elevation ranges from 8,500 to 9,500 feet. Slopes are 5 to 50 percent. The native vegetation is mainly forest of lodgepole pine, spruce, and some aspen and a thin understory of grass. Mean annual precipitation ranges from 15 to 20 inches, mean annual air temperature ranges from 40° to 44° F, and the frost-free season ranges from 60 to 85 days.

In a representative profile a 2-inch-thick layer of organic material is on the surface. The surface layer is dark grayish brown and light brownish gray sandy loam about 8 inches thick. The subsoil is brown gravelly sandy loam about 4 inches thick and reddish brown gravelly sandy clay loam about 5 inches thick. Below this is hard granite bedrock.

Permeability is moderately rapid, and the available water capacity is low. Reaction is medium acid above a depth of about 1 inch, strongly acid to a depth of about 12 inches, and medium acid below a depth of 12 inches.

These soils are used mainly for forest and recreation.

Representative profile of Redfeather sandy loam, 5 to 50 percent slopes, in forest, approximately 1,300 feet south and 1,000 feet west of the northeast corner of sec. 21, T. 11 N., R. 74 W.:

O1—2 inches to 1 inch; undecomposed organic material, mainly needles, bark, and twigs and remains of understory plants.

O2—1 inch to 0; partly decomposed organic material like that in the O1 horizon.

A1—0 to 1 inch; dark grayish brown (10YR 4/2) sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable; noncalcareous; more than 10 percent gravel and stones; medium acid; clear smooth boundary.

A2—1 inch to 8 inches; light brownish gray (10YR 6/2) sandy loam, dark grayish

brown (10YR 4/2) moist; weak fine granular structure; soft, very friable; about 15 percent gravel and stones; strongly acid; abrupt smooth boundary.

A&B—8 to 12 inches; brown (10YR 5/3) gravelly sandy loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable; few patchy clay films on peds; about 30 percent gravel and stones; strongly acid; clear wavy boundary.

B2t—12 to 17 inches; reddish brown (5YR 5/4) gravelly sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, firm; thin patchy clay films on peds; about 35 percent gravel and 10 percent cobbles; medium acid; gradual wavy boundary.

R—17 to 24 inches; hard granite bedrock.

The A1 horizon is sandy loam or gravelly sandy loam 1 inch to 3 inches thick. The A2 horizon is sandy loam or gravelly sandy loam 5 to 10 inches thick. The B2t horizon is gravelly or very gravelly sandy clay loam. Content of rock fragments, mainly fine granitic gravel and cobbles, in the solum ranges from 35 to 80 percent. Reaction ranges from strongly acid to slightly acid.

88—Redfeather sandy loam, 5 to 50 percent slopes. This strongly sloping to steep soil is on mountainsides and ridges.

Included with this soil in mapping are some small areas of shallow soils that have a darker colored surface layer. Also included are a few small areas of Schofield and Naz soils and areas of Rock outcrop.

Runoff is medium to rapid, and the hazard of erosion is moderate to severe.

This soil is suited to woodland and forestry purposes and to recreation. Some areas are used as sites for summer homes. Capability unit VII_s—1, dryland; woodland suitability group 6d2; not assigned to a range site or windbreak suitability group.

Renohill Series

The Renohill series consists of moderately deep, well drained soils that formed in material weathered from sandstone and shale. These soils are on uplands and are underlain by soft shale at a depth of 20 to 40 inches. Elevation ranges from 4,800 to 5,600 feet. Slopes are 0 to 15 percent. The native vegetation is mainly blue grama, buffalograss, western wheatgrass, and cactus. Mean annual precipitation ranges from 13 to 15 inches, mean annual air temperature ranges from 48° to 50° F, and the frost-free season ranges from 135 to 150 days.

In a representative profile the surface layer is pale brown clay loam about 3 inches thick. The subsoil is pale brown heavy clay loam about 4 inches thick and light yellowish brown clay about 12 inches thick. The underlying material is light yellowish brown clay loam about 10 inches thick. Below this is soft shale.

Permeability is slow, and the available water capacity is medium. Reaction is mildly alkaline above a

depth of 12 inches and moderately alkaline below that depth.

These soils are used mainly for irrigated and dry-farmed crops and for pasture and native grasses.

Representative profile of Renohill clay loam, 3 to 9 percent slopes, in grass, 200 feet north and 700 feet west of the southeast corner of sec. 12, T. 6 N., R. 69 W.:

A1—0 to 3 inches; pale brown (10YR 6/3) clay loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable; mildly alkaline; clear smooth boundary.

B1—3 to 7 inches; pale brown (10YR 6/3) heavy clay loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; very hard, friable; mildly alkaline; clear smooth boundary.

B2t—7 to 12 inches; light yellowish brown (2.5Y 6/3) clay, olive brown (2.5Y 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; extremely hard, very firm; thin nearly continuous clay films on ped faces; mildly alkaline; clear smooth boundary.

B3ca—12 to 19 inches; light yellowish brown (2.5Y 6/3) light clay, light olive brown (2.5Y 5/3) moist; weak medium angular and subangular blocky structure; extremely hard, very firm; thin patchy clay films on ped faces; calcareous; visible secondary calcium carbonate as soft spots; moderately alkaline; gradual smooth boundary.

C1ca—19 to 29 inches; light yellowish brown (2.5Y 6/3) heavy clay loam, light olive brown (2.5Y 5/3) moist; weak medium subangular blocky structure; very hard, friable; calcareous; visible secondary calcium carbonate as soft spots; moderately alkaline; gradual smooth boundary.

C2r—29 to 60 inches; calcareous clay shale.

The A horizon is clay loam or silty clay loam 6 to 11 inches thick in cultivated areas. A B1 horizon is present in some places. The B2t horizon is heavy clay loam, heavy silty clay loam, clay, or silty clay. The combined thickness of the A and B horizons ranges from 15 to 30 inches. Depth to calcareous material generally ranges from 6 to 20 inches, but some pedons are weakly calcareous throughout.

89—Renohill clay loam, 0 to 3 percent slopes. This nearly level soil is on uplands. This soil has a profile similar to the one described as representative of the series, but the combined thickness of the surface layer and subsoil is about 22 inches.

Included with this soil in mapping are a few small areas of soils that are more sloping and a few small areas of soils that have gravel on the surface. Also included are a few small areas of Ulm, Heldt, and Midway soils.

Runoff is medium, and the hazard of erosion is slight to moderate.

If irrigated, this soil is well suited to pasture and



Figure 11.—Area of Tassel sandy loam, 3 to 25 percent slopes, in foreground; Cache La Poudre river valley in background.

6/4) loam, light olive brown (2.5Y 5/4) moist; massive; hard, very friable; calcareous; moderately alkaline; clear smooth boundary.

C2r—37 to 60 inches; light gray (2.5Y 7/2) dry and moist interbedded shale and sandstone.

The A1 horizon is loam or light clay loam 4 to 11 inches thick. The C horizon is loam or light clay loam. Depth to calcareous material ranges from 0 to 6 inches. Reaction ranges from neutral to moderately alkaline. Content of rock fragments ranges from 0 to 15 percent throughout, but particularly in the surface layer.

107—Thedalund loam, 0 to 3 percent slopes. This nearly level soil is on uplands. This soil has a profile similar to the one described as representative of the series, but the surface layer is about 8 inches thick.

Included with this soil in mapping are some small areas of soils that are more sloping and a few small areas of Kim soils.

Runoff is slight, and the hazard of erosion is slight to moderate.

If irrigated, this soil is suited to barley, wheat, and corn and, to a lesser extent, alfalfa and sugar beets. Under dryland management it is suited to wheat and barley. It is also well suited to pasture and native

grasses. Capability units IIIe-3, irrigated, and IVe-3, dryland; Loamy Plains range site; windbreak suitability group 1.

108—Thedalund loam, 3 to 9 percent slopes. This gently sloping to moderately sloping soil is on uplands. This soil has the profile described as representative of the series.

Included with this soil in mapping are a few small areas of soils that are more sloping or less sloping. Also included are a few small areas of soils that have a surface layer of clay loam and small areas of Kim, Cushman, and Midway soils.

Runoff is medium, and the hazard of erosion is moderate.

If irrigated, this soil is suited to barley, wheat, alfalfa, and pasture. Under dryland management it is suited to pasture or native grasses. Capability units IVe-1, irrigated, and VIe-1, dryland; Loamy Plains range site; windbreak suitability group 1.

Thiel Series

The Thiel series consists of deep, well drained soils that formed in alluvium or glacial outwash. These soils are on terraces and high benches and are underlain by sand and gravel at a depth of 20 to 40 inches. Elevation

ranges from 7,500 to 8,500 feet. Slopes are 5 to 25 percent. The native vegetation is mainly Idaho fescue, needleandthread, and sage. Mean annual precipitation ranges from 15 to 18 inches, mean annual air temperature ranges from 42° to 44° F, and the frost-free season ranges from 60 to 85 days.

In a representative profile the surface layer is brown gravelly sandy loam about 4 inches thick. The subsoil is brown very gravelly sandy loam about 8 inches thick and light yellowish brown very gravelly light sandy clay loam about 2 inches thick. The underlying material is very gravelly sandy loam about 16 inches thick over very pale brown extremely gravelly sand.

Permeability is moderately rapid above a depth of about 30 inches and very rapid below that depth. The available water capacity is low to medium. Reaction is neutral above a depth of 8 inches, slightly acid between depths of 8 and 12 inches, and moderately alkaline below a depth of 12 inches.

These soils are used mainly for native grasses.

Representative profile of Thiel gravelly sandy loam, 5 to 25 percent slopes, in native grass, about 2,350 feet east and 100 feet north of the southwest corner of sec. 4, T. 12 N., R. 77 W.:

A1—0 to 4 inches; brown (10YR 4/3) gravelly sandy loam, dark brown (10YR 3/3) moist; strong fine granular structure; soft, very friable; 40 percent fine and very fine angular granite gravel; neutral; clear smooth boundary.

B21t—4 to 8 inches; brown (7.5YR 5/3) very gravelly sandy loam, dark brown (7.5YR 3/3) moist; moderate medium subangular blocky structure parting to strong medium granular; slightly hard, very friable; thin clay films on ped faces and on gravel fragments and as bridges between sand grains; 50 percent fine angular granite gravel; neutral; clear smooth boundary.

B22t—8 to 12 inches; brown (7.5YR 5/4) very gravelly sandy loam, dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure parting to strong medium granular; extremely hard, very friable; common thin clay films on ped faces and on gravel fragments and as bridges between sand grains; 50 percent fine granite gravel; slightly acid; clear wavy boundary.

B3ca—12 to 14 inches; light yellowish brown (10YR 6/4) very gravelly light sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; extremely hard, very friable; few clay films on gravel fragments; few clay bridges between sand grains; 50 percent fine granite gravel; moderate continuous accumulation of secondary calcium carbonate as soft concretions; calcareous; moderately alkaline; diffuse wavy boundary.

C1ca—14 to 30 inches; very pale brown (10YR 8/3) very gravelly sandy loam, pale brown (10YR 6/3) moist; single

grained; extremely hard, very friable; 60 percent fine and very fine granite gravel; strong continuous horizon of secondary carbonate accumulation and carbonate in finely divided marl-like forms; calcareous; moderately alkaline; diffuse wavy boundary.

IIC2ca—30 to 60 inches; very pale brown (10YR 7/3) extremely gravelly sand, brown (10YR 5/3) moist; single grained; very hard, loose; 70 percent fine angular granite gravel; moderate continuous horizon of secondary carbonate accumulation and calcium carbonate mostly in seams and streaks or as coatings on coarse fragments; content of carbonate decreases with depth; calcareous; moderately alkaline.

The A horizon is sandy loam to very gravelly sandy loam 3 to 8 inches thick. The combined thickness of the A and B horizons ranges from 8 to 15 inches. The B horizon is very gravelly sandy loam or very gravelly sandy clay loam. Depth to calcareous material ranges from 6 to 15 inches. Content of rock fragments, mainly fine granitic gravel, ranges from 35 to 80 percent.

109—Thiel gravelly sandy loam, 5 to 25 percent slopes. This strongly sloping or moderately steep soil is on high benches, terraces, and alluvial fans.

Included with this soil in mapping are small areas of soils that lack lime accumulations and a few small areas of soils that are underlain by sand and gravel at a shallow depth.

Runoff is medium to rapid, and the hazard of water erosion is moderate to severe.

This soil is suited to pasture and native grasses. Capability unit VIe-7, dryland; Dry Mountain Loam range site; not assigned to a windbreak suitability group.

Tine Series

The Tine series consists of deep, well drained or somewhat excessively drained soils that formed in material weathered from alluvium or glacial outwash. These soils are on terraces and benches and are underlain by sand and gravel at a depth of 10 to 20 inches. Elevation ranges from 7,500 to 9,000 feet. Slopes are 0 to 40 percent. The native vegetation is mainly wheatgrass, junegrass, sedges, and sagebrush. Mean annual precipitation ranges from 13 to 17 inches, mean annual air temperature ranges from 42° to 44° F, and the frost-free season ranges from 60 to 85 days.

In a representative profile the surface layer is brown gravelly sandy loam about 15 inches thick. The underlying material is yellowish brown very gravelly loamy sand about 3 inches thick over sand, gravel, and cobbles.

Permeability is moderately rapid above a depth of about 15 inches and rapid below that depth. The available water capacity is low. Reaction is slightly acid.

These soils are used mainly for native grasses.

Representative profile of Tine gravelly sandy loam, 0 to 3 percent slopes, in native grass, about 2,000 feet south and 1,700 feet west of the northeast corner of sec. 35, T. 12 N., R. 77 W.:

northwestern location in the United States for this tree.

The woodland areas are about equally divided between private and government ownership. Most of the government-administered land is national forest, but some is State and county owned.

Much of this woodland was logged by early settlers. Little of the privately owned woodland is managed for timber production, although it is used for poles, fenceposts, and firewood. Almost all of the area is used for grazing, recreation, and wildlife habitat. In recent years much of the privately owned woodland has been used as sites for summer and year-round homes.

Woodland suitability groups

The soils in the mountainous part of Larimer County Area have been placed in woodland suitability groups to assist owners in planning the use of their soils for wood crops. Each group is made up of soils that are suited to the same kinds of trees, that need about the same management, and that have the same potential production.

Each woodland group is identified by a three-part symbol, for example, 6o1. The potential productivity of the soils in the group is indicated by the first numeral in the symbol: 1 is very high; 2, high; 3, moderately high; 4, moderate; 5, moderately low; and 6, low. These ratings are based on field determination of average site index. Site index of a given soil is the height, in feet, that the taller trees of a given species reach in a natural, essentially unmanaged stand in a stated number of years.

The second part of the symbol is a small letter. In this survey, *x*, *d*, and *o* are used. The small letter indicates an important soil property that imposes a hazard or limitation in managing the soils for trees. The letter *x* indicates that the soil has major limitations because of rockiness or stoniness. The letter *d* indicates that the soil has a restricted rooting depth. The letter *o* shows that the soils have few limitations that restrict their use for trees.

The third part of the symbol, another numeral, differentiates groups that have the same first and second parts in their identifying symbols.

Soils that have not been placed in a woodland suitability group are not suited to or are not used for woodland. The woodland suitability group is shown at the end of the mapping unit description for applicable soils.

The woodland suitability groups in the survey area are briefly described in the following paragraphs.

Woodland suitability group 6o1.—The soils in this group are suited to the production of ponderosa pine. They are capable of producing about 2,020 cubic feet per acre, or 7,800 board feet, in a managed, even-aged stand of 100-year-old trees. There are no major limitations to the use of the soils for woodland.

Woodland suitability group 6x1.—The soils in this group are suited to the production of ponderosa pine. They are capable of producing about 1,610 cubic feet per acre, or 5,300 board feet, in a managed, even-aged

Woodland suitability group 6x2.—The soils in this group are suited to the production of Engelmann spruce. They are capable of producing about 3,300 cubic feet per acre, or 9,000 board feet, in managed, even-aged stands of 90-year-old trees. Seedling mortality is severe, and the equipment limitations and windthrow hazard are moderate.

Woodland suitability group 6d1.—The soils in this group are suited to the production of ponderosa pine. They are capable of producing about 1,610 cubic feet per acre, or 5,300 board feet, in a managed, even-aged stand of 100-year-old trees. Seedling mortality is severe, and the hazard of erosion, equipment limitations, and windthrow hazard are moderate.

Woodland suitability group 6d2.—The soils in this group are suited to the production of lodgepole pine. They are capable of producing about 2,490 cubic feet per acre, or 4,900 board feet, in a managed, even-aged stand of 90-year-old trees. Seedling mortality is severe, and the hazard of erosion, equipment limitations, and windthrow hazard are moderate.

Windbreaks⁴

The native vegetation on the plains in Larimer County Area is grass. Early settlers planted trees for beautification and protection, mainly around farmsteads. Many of these trees still survive, although most of them, mainly cottonwood and willows, in the plains are along the streams and drainageways.

Windbreaks and tree plantings can be very beneficial to landowners. They help to reduce home heating costs by reducing winds. They help to protect livestock from winter storms and drifting snow. They provide habitat for wildlife and birds and enhance the beauty and value of homesteads.

If windbreaks are planted, care is needed establishing them. Evergreens are among the most desirable trees because they are long lived and resist damage by wind, snow, and disease. They provide protection from winds, which occur before deciduous trees leaf. Evergreens grow much more slowly than deciduous trees for the first few years and should, therefore, be planted in rows separate from the faster growing but short-lived broadleaf trees.

Climatic conditions limit the kinds of trees and shrubs that can be grown, and careful selection, therefore, is necessary. Cultivation reduces competition from weeds and grass and also the hazard of destructive fires.

Replacing trees lost in the first years to develop a continuous, uniform wind barrier. Pruning should be limited to the removal of dead branches.

Protection of newly planted trees from livestock and other animals is important. Rabbits, mice, deer, and antelope can damage trees. Repellants can be applied in fall to help protect the young trees. Providing supplemental water to newly planted trees is beneficial and increases survival. Adequate water should be sup-

⁴ SHERMAN J. FINCH, woodland conservationist, Soil Conservation Service, helped to prepare this section.

plied during the first year to help the plants develop a good root system.

Assistance in planning windbreaks is available through the local office of the Soil Conservation Service or the Colorado State Forest Service.

Windbreak suitability groups

Soils in the eastern part of the survey area have been placed in five groups based on soil properties. The group in which each soil has been placed is shown at the end of the mapping unit description. The soils in each group are suited to similar species and have similar response to management. Table 3 lists the expected performance of a few of the species. The height, growth, and survival estimates are based on general observations and estimates. Group 4 is not rated in this table because it consists of soils on which establishment is marginal or not recommended. Group 5 is not rated in table 3, but the soils in this group have some native trees, mainly cottonwood and willows. The table also gives the expected height that trees and shrubs of each species reach at about 20 years of age and the survival rate of new trees that can reasonably be expected after 1 or 2 years, if replanting is required. The rating in the "Vigor" column refers to the density of foliage, freedom from disease or damage from insects, and the general appearance of the tree.

Soils on foothills and in the mountainous part of the Area have not been placed in windbreak groups, because windbreaks are seldom planted in these areas. Soils on the foothills that are similar to those on the plains can be expected to have growth rates equal to or better than those on plains because of somewhat better moisture relationships.

The windbreak suitability groups in the survey area are briefly described in the following paragraphs.

WINDBREAK SUITABILITY GROUP 1

This group consists of deep and moderately deep, well drained loams, silt loams, and clay loams. It occupies a large part of the plains part of the survey area.

WINDBREAK SUITABILITY GROUP 2

This group consists of deep and moderately deep, well drained sandy loams and fine sandy loams. This group is relatively small in extent and is mainly in the extreme eastern part of the survey area. Soil blowing is a hazard in some places. Leaving a strip of vegetation or stubble between rows of trees helps to overcome this hazard.

WINDBREAK SUITABILITY GROUP 3

This group consists of shallow soils and clayey soils that are well drained but that either have low available water capacity or lack good aeration for tree roots. Also included in this group are some complexes that include soils that are suitable for tree planting and soils that are not. Careful onsite investigation is necessary before planting on the soils of these complexes.

WINDBREAK SUITABILITY GROUP 4

This group consists of soils that are generally unsuitable or unfavorable for tree planting because of one or more limitations. These limitations are salinity,

alkalinity, shallowness, and low available water capacity.

WINDBREAK SUITABILITY GROUP 5

This group consists of deep and moderately deep, poorly drained soils on bottom lands, on low terraces, and in upland valleys. The water table is within the root zone of trees and shrubs. Salinity is slight to moderate. Many of the soils are subject to flooding. These factors limit the establishment of trees, and only water- and salt-tolerant trees and shrubs are suitable for planting. Cottonwood and willows generally grow on these soils, but these trees are seldom planted.

Wildlife⁷

Wildlife is a product of the soil on which it lives. From the soil must come the various components that make up areas where wildlife can find places to feed, breed, rear young, escape enemies, and otherwise survive. Basically, the soil must provide food, cover, and water; these make up wildlife habitat.

The quality and quantity of habitat available largely determine the kinds of wildlife that are present. Although the soils largely determine the availability and kinds of habitat, land use and management and availability of water also greatly influence wildlife populations in Larimer County Area.

Land use, to a large extent, determines the kinds of wildlife that are present and their populations.

The availability of water for irrigation has resulted in land use changes that greatly affected the kinds and numbers of wildlife. Irrigation has changed substantial areas from range, which has limited natural precipitation, to cropland. Wheat, barley, dry beans, corn, and hay are the main irrigated crops. The introduction of grain and, to a lesser extent, forage crops has allowed an excellent population of waterfowl and at least a fair population of pheasants to become established where previously only wildlife species native to range existed.

Soils directly influence the kinds and amounts of vegetation and the amount of water available, and in this way they indirectly influence the kinds of wildlife that can live in an area. Soil properties that affect the growth of wildlife habitat are thickness of the soil useful to crops, surface texture, available water capacity, wetness, surface stoniness or rockiness, hazard of flooding, slope, and permeability.

In table 4 the soils of this survey area are rated for producing seven elements of wildlife habitat and four groups or kinds of wildlife. The ratings indicate relative suitability for various elements. These ratings are good, fair, poor, and very poor.

A rating of *good* means that habitat is easily improved, maintained, or created. There are few or no soil limitations in habitat management, and satisfactory results can be expected.

A rating of *fair* means that habitat can be improved, maintained, or created on these soils, but that moderate soil limitations affect habitat management or development. A moderate intensity of management and fairly frequent attention is required to ensure satisfactory results.

⁷ By ELDIE W. MUSTARD, biologist, Soil Conservation Service.

TABLE 3.—Suitability of windbreak suitability

Soils	Ponderosa pine			Rocky Mountain juniper		
	Height at 20 years	Survival rate	Vigor	Height at 20 years	Survival rate	Vigor
	Feet	Percent		Feet	Percent	
Group 1	18-20	80	Good -----	8-12	80	Good -----
Group 2	20-22	90	Good -----	10-14	90	Good -----
Group 3	12-15	75	Fair -----	8-10	80	Good -----

A rating of *poor* means that habitat can be improved, maintained, or created on these soils, but the soil limitations are severe. Habitat management is difficult and expensive and requires intensive effort in places. Results are questionable.

A rating of *very poor* means that under the prevailing soil conditions it is impractical to attempt to improve, maintain, or create habitat. Unsatisfactory results are probable.

Each soil is rated according to its suitability for producing various kinds of plants and other elements that make up wildlife habitat. The ratings take into account mainly the characteristics of the soils and closely related natural factors of the environment. They do not take into account climate, present use of soils, or present distribution of wildlife and people. For this reason, selection of a site for development of wildlife habitat requires onsite inspection.

The elements of wildlife habitat for which the soils are rated in table 4 are briefly described in the following paragraphs.

Grain and seed crops are annual grain-producing plants, such as barley, wheat, corn, and dry beans.

Grasses and legumes are domestic grasses and legumes that are established by planting and provide food and cover for wildlife. Grasses include tall and intermediate wheatgrasses, meadow foxtail, Russian wildrye, reed canary-grass, and timothy. Legumes commonly used are alfalfa, sweetclover, red clover, and alsike clover.

Wild herbaceous plants are native or introduced perennial grasses and forbs that provide food and cover for upland wildlife. Examples are Indian ricegrass, western wheatgrass, alkali sacaton, blue grama, saltgrass, foxtail barley, alkali cordgrass, and switchgrass. Forbs include loco, fringed sage, hairy goldaster, sunflower, yucca, and pricklypear.

Coniferous plants are cone-bearing trees and shrubs that provide cover and frequently furnish food in the form of browse, seeds, or fruitlike cones. They commonly grow in their natural environment, but can be planted and managed. Examples are pines, juniper, and ornamental trees and shrubs.

Shrubs produce buds, twigs, barks, or foliage that is used as food by wildlife, or they provide cover and shade for some wildlife species. These plants most com-

monly grow in their natural environment. Examples are four-wing saltbush, rabbitbrush, big sagebrush, mountainmahogany, bitterbrush, and serviceberry.

Wetland plants are annual and perennial herbaceous plants that grow wild on moist and wet sites. They furnish food and cover mostly for wetland wildlife. Examples are smartweed, tufted hairgrass, spikerush and other rushes, sedges, cattails, and northern reedgrass. Submerged and floating aquatics are not included in this category.

Shallow water areas are areas of surface water that have an average depth of less than 5 feet that are useful to wildlife. They are natural wet areas or those created by dams or levees or by water-control devices in marshes or streams. Examples are waterfowl feeding areas, wildlife watering developments, wildlife ponds, and beaver ponds.

Table 4 also rates soils according to their suitability as habitat for the four kinds of wildlife in the survey area—open-land, woodland, wetland, and rangeland. These ratings are related to ratings made for the elements of habitat. For example, soils rated as *very poor* for shallow water developments are rated *very poor* for wetland wildlife.

Open-land wildlife consists of birds and mammals in areas of cropland, pasture, meadow, lawns and in areas overgrown with grasses, herbs, shrubs, and vines. Examples are robin, house finch, American kestrel, red-tailed hawk, pheasant, western meadowlark, mourning dove, killdeer, cottontail, jackrabbit, and red fox.

Woodland wildlife consists of birds and mammals in wooded areas containing either hardwood or coniferous trees and shrubs, or a mixture of both. Examples are blue grouse, Steller's jay, Clark's nutcracker, thrushes, vireos, woodpeckers, snowshoe hare, bobcat, mule deer, and black bear.

Wetland wildlife consists of birds and mammals in swampy, marshy, or open-water areas. Examples are ducks, geese, herons, shore birds, rails, red-winged blackbird, kingfishers, muskrat, mink, beaver, and raccoon.

Rangeland wildlife consists of birds and mammals in natural range. Examples are pronghorn antelope, coyote, jackrabbit, mountain plover, lark bunting, golden eagle, and western meadowlark.

(COLO)

26

ROOSEVELT NATIONAL FOREST

EXHIBIT D

CULTURAL FEATURES

30

Spring

SMITH BROWN

BM 7093

29

RIVER

Landing Area

DITCH

4527

Jenkins

Creek

La Garde

PACHE

4526

35

TRAIL

36

31

32

8022

8030

HILLS

LAMB

BM 8101

40°52'30"

4525000m N

T 11 N

35

36

31

32

DITCH

8200

8215

La Garde

Creek

8427

X X X X X

8475

British

Little

Creek

8631

6

Creek

Creek

British

STUART DITCH NOT

McIntyre

STUART DITCH

4524

McGuire

LAMB

8087

8113

8775

8703

8500

4523

3 MI

EXHIBIT E WILDLIFE HABITAT POTENTIALS

Article _____ Date _____

Created By _____
Issued By _____

MADE IN U.S.A.

7-11-1981

200 SON JONES COMPANY

1	2	3	4	5	6	7	8	9	10	11	12	13
Soil Name & Symbol	GRAIN & SEED CROPS	GRASSES & LEGUMES	HERBACEOUS PLANTS	CONIFEROUS PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATER AREAS	POTENTIAL OPEN-LAND	POTENTIAL AS WOODLAND	POTENTIAL AS WILDLIFE HABITAT	WETLAND	SOIL - RANGELAND
HARDBOROLLS - 43	VERY POOR	VERY POOR	VERY POOR	—	FAIR	VERY POOR	VERY POOR	VERY POOR	—	VERY POOR	VERY POOR	POOR
RED FEATHER - 88	VERY POOR	VERY POOR	POOR	VERY POOR	POOR	VERY POOR	VERY POOR	VERY POOR	VERY POOR	VERY POOR	VERY POOR	—
THIEL - 109	POOR	FAIR	GOOD	—	GOOD	VERY POOR	VERY POOR	FAIR	—	VERY POOR	VERY POOR	GOOD

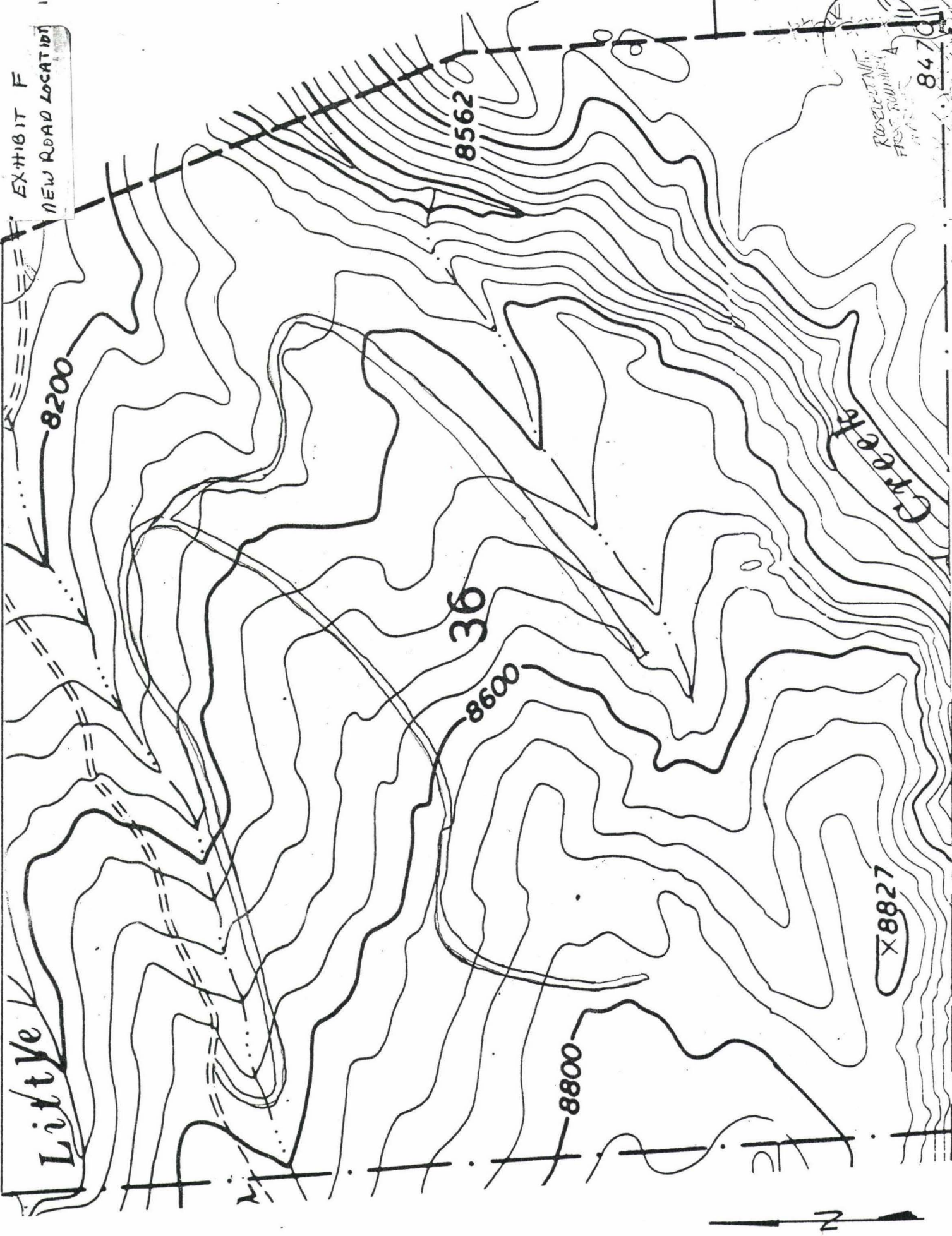


EXHIBIT F
NEW ROAD LOCATION

ROBERTSON
FIS - TOWN - A
8470

MSR 1:8000

[illegible]



United States
Department of
Agriculture

Forest
Service

Routt/Medicine
Bow National
Forest

Brush Creek/Hayden
Ranger District
P.O. Box 187
Encampment, WY 82325

EXHIBIT C
REFERENCES

Reply to: 1600

Date: July 28, 1994

To Whom It May Concern:

This letter is submitted to you at the request of Mr. William Gherardi and is for the purpose of describing my knowledge of Mr. Gherardi's abilities and skills as a professional forester. I am a forester serving as a Forest Service Representative, Timber Sale Administrator and Contracting Officer on timber sales on the Medicine Bow and Routt National Forests as part of the North Zone Sale Administration Group.

First of all, I am happy to comply with Bill's request. I have known Bill since 1973 and have worked with him in the following capacities:

1. District co-worker in the early 1970's on the Encampment/Snake River Ranger Districts, Medicine Bow National Forest. During this time, Bill supervised a Stage II Timber Inventory crew, collecting timber management data on the districts. Bill communicated with me frequently, relaying information as to stand conditions and recommended silvicultural prescriptions in stands that I was considering for treatment under timber sales or thinning contracts.
2. Bill performed a number of Stage II Inventory service contracts in the late 1970's and early 1980's on the Hayden Ranger District, Medicine Bow National Forest. I served as the Contracting Officers Representative on these contracts and worked closely with Bill as the contractor.
3. In the early 1980's Bill worked in preparing timber sales on private land adjoining the Hayden Ranger District. He and I coordinated these sale efforts where private timber was to be hauled over National Forest Land, and where private timber sales adjoined National Forest Sales.
4. Bill and I have communicated with each other on both a friendship and professional basis. His opinion and insight in Forest Management issues and systems are highly valued by me. I have and will continue to value our professional information exchange in the forestry profession.

Bill's qualities and abilities as a Professional Forester are of the highest caliber. He possesses a vast working knowledge of forest inventory, silviculture, forest ecology, logging systems and timber sale contracts. He possesses a unique skill in being able to communicate ideas, concerns and objectives tactfully and understandably with a broad range of people, something that most foresters can never do.



Caring for the Land and Serving People

FS-6200-28(7-82)



Bill is a "grass roots" Forester. He has not forgotten the basics of forest management and is a firm believer in caring for the forest, and tenacious in making sure the results of any management activity are of the highest quality. He is confident of his abilities and backs up this confidence with quality results on the ground. Most importantly, he is a man of his word, he delivers on his promises.

Bill uses his knowledge of forestry to make good decisions and recommendations. These are always well thought out, workable and well stated. He is not afraid to challenge decisions professionally for the good of the resource, and welcomes challenge and comments on his work for the same reason. The condition of the forest resource is always paramount in Bill's mind and is something he refuses to compromise on.

I am confident that anyone using Bill's services as a professional forester will be pleased with his performance, I know that I have. Without hesitation, I recommend Bill G herardi highly as a talented and skillful professional forester.

This is but a short narrative, if you require further information concerning Bill, please feel free to call me at (307) 327-5481.

Thank you for this opportunity to recommend Bill.

Sincerely,


JOHN C. SCHNEIDER
Forester



2330

April 25, 1995

Foothills Campus
Colorado State University
Fort Collins, Colorado 80523
(303) 491-8660
FAX: (303) 491-8645

To whom it may concern:

Bill Gherardi d.b.a. Woodland Management Consultants, has been under agreement with the Fort Collins District of the Colorado State Forest Service to provide management services for two State Land Board "School" sections.

He has prepared management plans for both sections, layed out timber sales, written sale contracts, and negotiated and administered forest product sales. These activities have been carried on for approximately 3 years.

I am completely satisfied with the work and skills demonstrated by Bill while working with the District on these two sections. He has a good working relationship with logging contractors, adjacent private landowners, and myself. Bill is professional in his approach to management of the resources present on Colorado woodlands. I look forward to the June 30 completion of a successful relationship of the current service agreement.

Sincerely,

Ray Mehaffey

Ray Mehaffey
District Forester

April 12, 1995

To: Whom it may concern;

Woodland management and its associates and Bill Gerardi in particular has done my forestry work in Jackson County, Colorado for a number of years.

They perfected a forestry plan and have carried it out in an honest and careful way.

I can recommend them highly as honest and knowledgeable people. They still are working on my property in a relationship that is ongoing!

yours truly
Duane D. Lakey
2401 Cty Rd 305
Jackson Cty, Colo.
or
1647 Adriel way
Ft Collins, Colo.

Phone 970-221-9115 Home
970-723-8419 Ranch

W. BART BERGER
P.O.BOX 300446 DENVER, COLO. 80203
(303) 898-2278

May 2, 1995

To Whom It May Concern:

Since 1980, Mr. William Gherardi & Woodland Management Consultants have worked with the Berger Land Company on its property near Bailey, Colorado, in an ongoing forest management program. This has included, but is not limited to, site inspections, oversight of timber sales and cleanup, insecticide spraying, selective cutting and assistance with new planting programs through the Soil Conservation Service.

Each aspect of Mr. Gherardi's over fifteen year relationship with the Berger Land Company has been professional and productive, and we continue to engage his services.

W. Bart Berger
Berger Land Company



BIGHORN LUMBER CO., INC.

P. O. BOX 479



LARAMIE, WYOMING 82070



PHONE 307 742-3237

May 1, 1995

To Whom This May Concern:

I have called upon Mr. Bill Gherardi many times over the past several years to help us in the purchase of timber. Bill is knowledgeable in all phases of forestry. He is able to cruise any timber we might be interested in purchasing. He gives us an unbiased and accurate estimate of its value.

Mr. Gherardi is reliable and conscientious in his work. We consider his expertise a valuable asset to the timber industry.

Sincerely,

Dean O. Alexander
Secretary
Bighorn Lumber Co., Inc.

DOA/sk

WOOD IS WONDERFUL

EXHIBIT D
A/H - SECTION 16, 15, R. 79 W.

FOREST SYMBOL KEY

- GR = GRASS
- A = ASPEN
- LP = LODGEPOLE PINE
- PP = PONDEROSA PINE
- DF = DOUGLAS FIR
- AF = SUBALPINE FIR

- S = POLETIMBER
- Q = SAWTIMBER

- P = POOR STOCKING
- M = MEDIUM STOCKING

GR = GRASS
A = ASPEN
LP = LODGEPOLE PINE
PP = PONDEROSA PINE
DF = DOUGLAS FIR
AF = SIBBALPINE FIR

p = POOR STOCKING
m = MEDIUM STOCKING

(A) GRAND COUNTY
(2) SECTION 16; 1 SOUTH; 81 W.

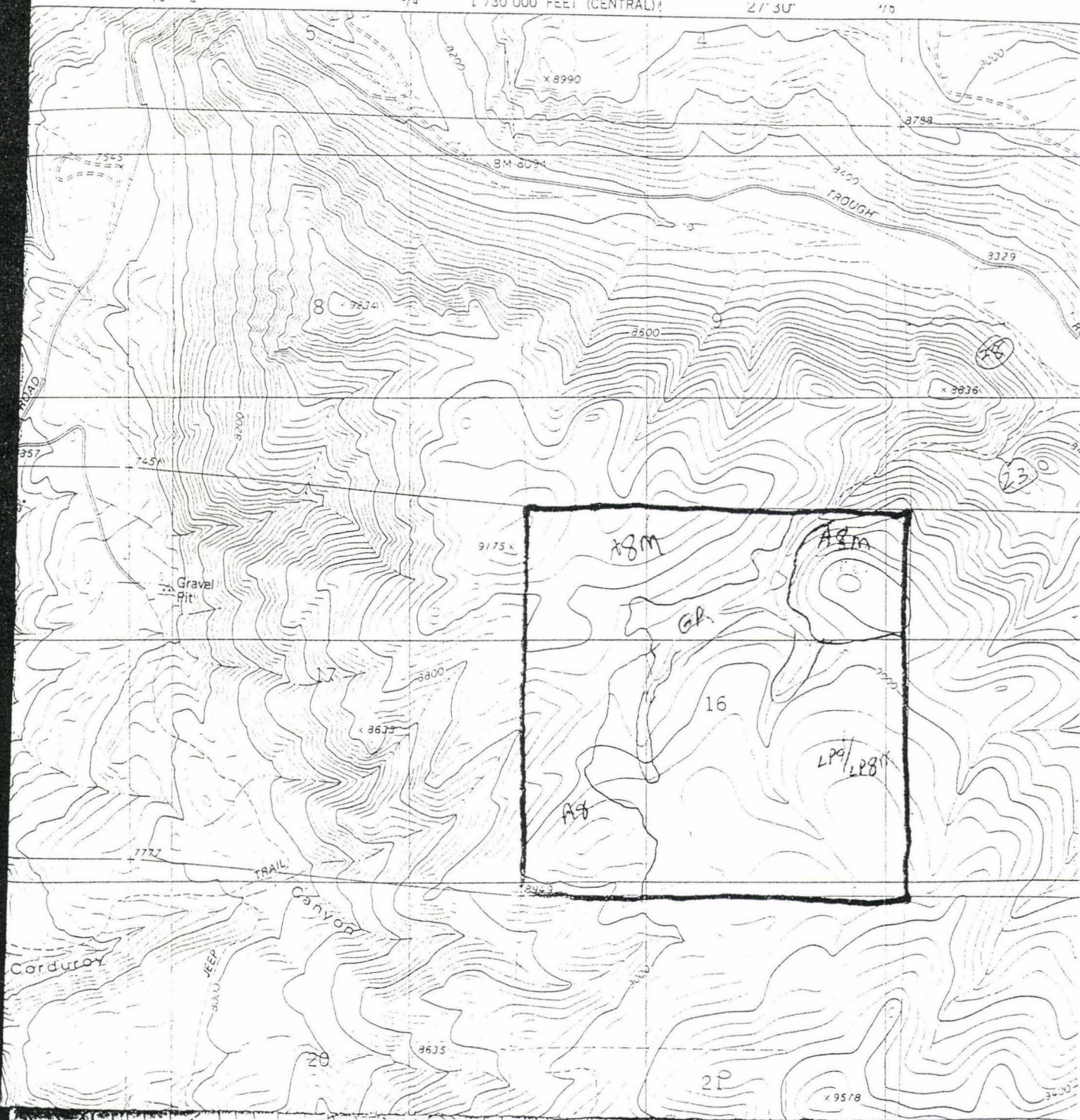
173000mF

374

1 730 000 FEET (CENTRAL)!

21' 30"

475



#3 - SECTION 36; 3 NORTH; 77 WEST.

SKI-LIFT

SKI 88 LIFT

Trail
9357
Mountain

— LINGER

~~GR~~

15R

GA

GR

112

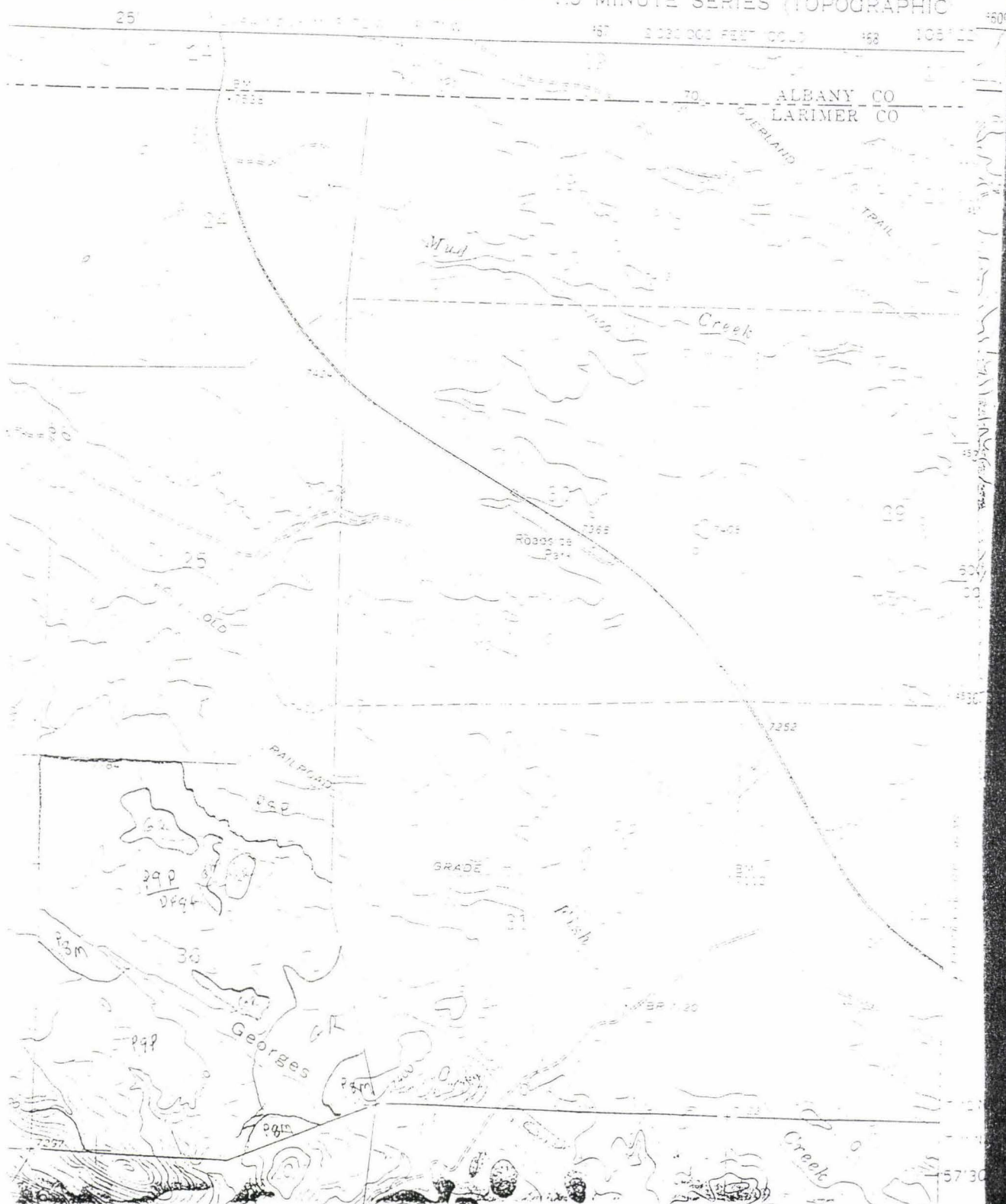
Gaging Sta
2/45

Willow 2 Creek

SPILLWAY ELEVATION
3130

Reservoir

EROKEE PARK QUADRANGLE
COLORADO-WYOMING
15 MINUTE SERIES (TOPOGRAPHIC)



8700
ENDOMILE DITCH

JACKSON COUNTY
SECTION 36, 7N, 28W

BR 8693

8722

+8808

8900

8971

8955

8800

CTM 1

CTM 6

CTM 7

CTM 5

36

NORTH

9000

CTM 1

CTM 2

CTM 3

CTM 4

CTM 9

CTM 8

8900

8955

8993

9133

LEGEND



= ROAD



= FENCE



LODGE POLE
= CLEARCUT



LODGE POLE
CUT TREE
BLOCKS

9300

9400

9300

9400

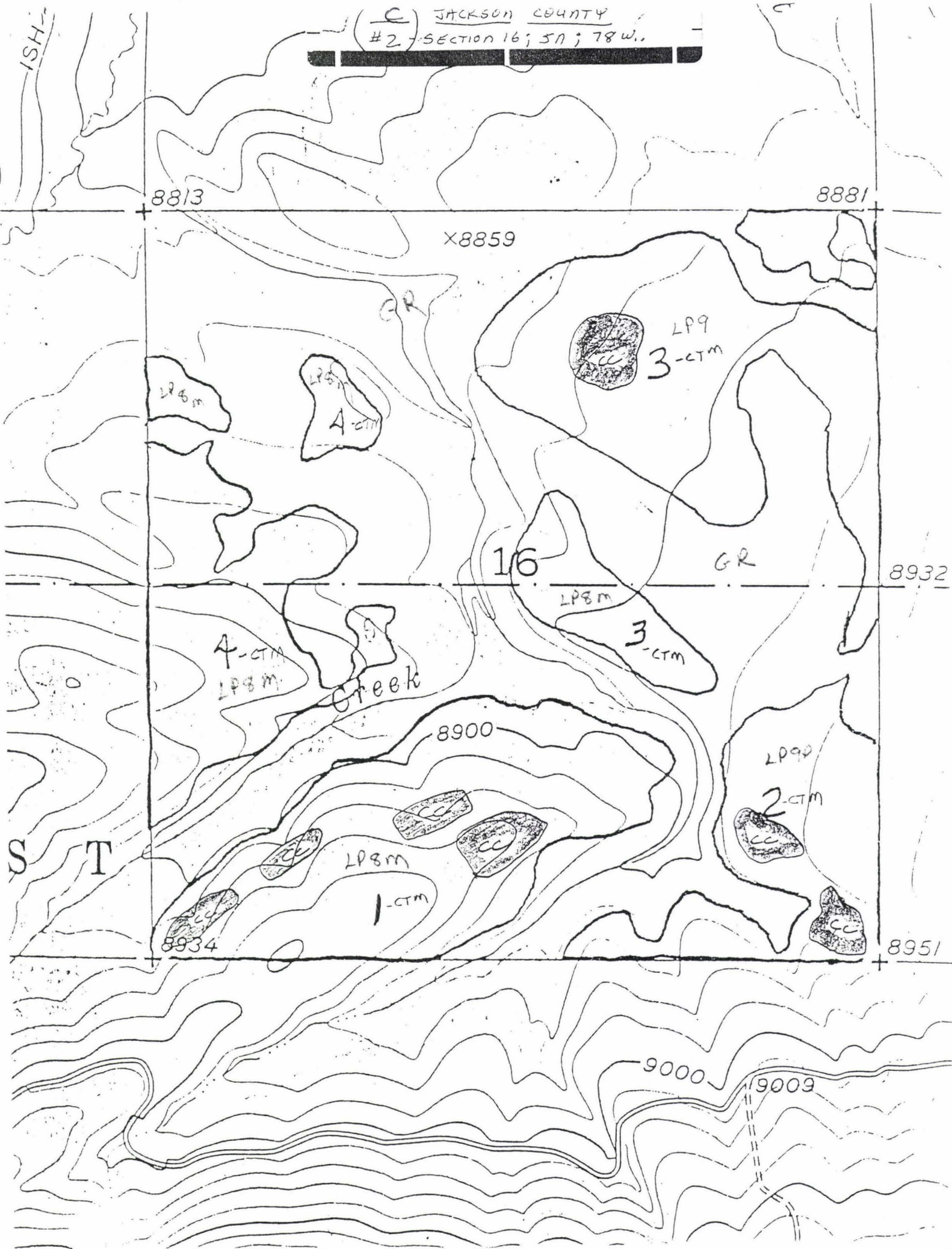
9284

BOUNDARY

FOREST

NATIONAL

(C) JACKSON COUNTY
#2 SECTION 16; 5N; 78W.



ISH

8813

8881

X8859

LP8m

4-CTM

LP9
3-CTM

16

GR

8932

LP8m

3-CTM

4-CTM
LP8m

Creek

8900

LP9

2-CTM

S T

LP8m

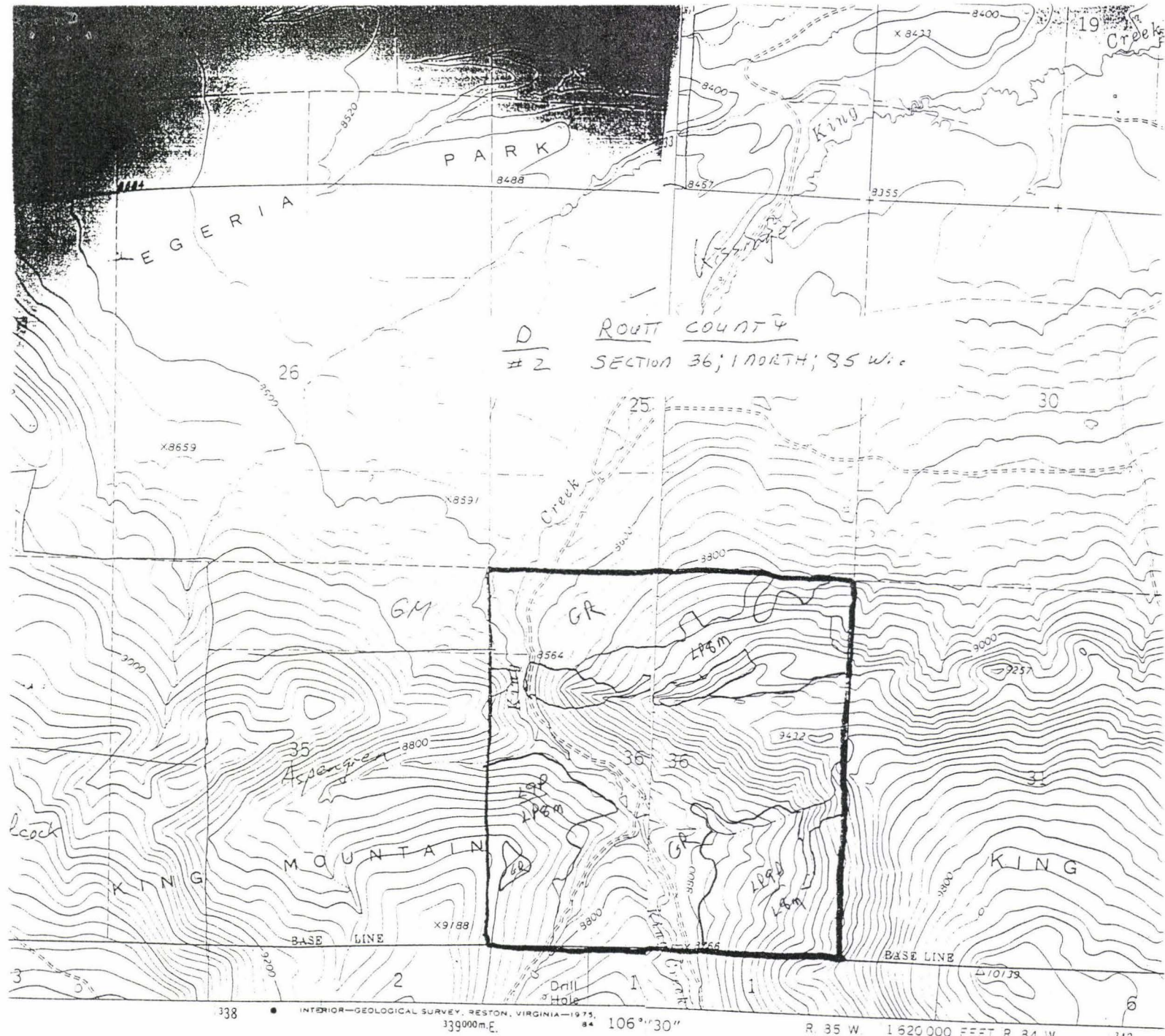
1-CTM

8934

8951

9000

9009



LOCATION

ROAD CLASSIFICATION

- | | |
|------------------------------------|--|
| Primary highway,
hard surface | Light-duty road, hard or
improved surface |
| Secondary highway,
hard surface | Unimproved road |
| Interstate Route | U. S. Route |
| | State Route |

Maped, edited, and published by the Geological Survey
control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial
photographs taken 1971. Field checked 1972
Projection and 10,000-foot grid ticks: Colorado
ordinate system, north zone (Lambert conformal conic)
100-metre Universal Transverse Mercator grid ticks,
line 13, shown in blue. 1927 North American datum
ne red dashed lines indicate selected fence lines
ertain land lines are omitted because of insufficient data

TRAPPER, COLO.
N4000-W10652.5/7.5

1972

AMS 4664 III SW-SERIES V871

ROUTE COUNTY

SECTION 36; 3 NORTH; 85 WEST

D #4

26

25

SPILLWAY
3395

Cloverleaf

35

36

LP 9M
LP 8M

Lansom

James

GRANDE

3M 7536

7555

Cloverleaf

3536

Cloverleaf

Burger James
River

WESTERN

7752

7795

Eagle Rock
Lakes

794

EXHIBIT E

Management Activity Time Line

Parcel #	Year 1	Year 2	Year 3	Year 4	Year 5
----------	--------	--------	--------	--------	--------

A/#1

plan

sale

--

--

--

A/#2

plan

sale

sale

thin

thin

thin

A/#3

plan

sale

--

--

--

B/#1

plan

sale

thin
transplants

thin

thin

C/#1

plan
transpl.

C/#2

plan

thin

thin

thin

--

D/#2

plan

--

sale

--

--

D/#5

plan

thin

thin

sale

thin

EXHIBIT F

Road Miles to Selected Parcels

Parcel #	Road Miles From Ft. Collins	Walden
----------	--------------------------------	--------

A/#1		69
------	--	----

A/#2		49
------	--	----

A/#3		77
------	--	----

B/#1	63	
------	----	--

C/#1	77	
------	----	--

C/#2		28
------	--	----

D/#2		97
------	--	----

D/#4		77
------	--	----

PRICING AND SIGNATURE PAGE

NOTE: THIS PAGE MUST BE FILLED OUT REGARDLESS OF WHETHER A SEPARATE QUOTATION(S) ARE INCLUDED WITH THE RESPONDENTS PROPOSAL.

Please indicate "No Bid" on blank line for parcels you are not submitting a proposal for.

**** REMINDER **** Compensation for Management plan development and implementation of commercial prescriptions is based on a PERCENT OF REVENUE GENERATED from the sale of forest products.

A. Grand County:

- | | | | |
|----|--|-----------|---------|
| 1. | Section 16, township 1 south, range 79 west, 6th PM. | <u>24</u> | Percent |
| 2. | Section 36, township 1 south, range 79 west, 6th PM. | <u>23</u> | Percent |
| 3. | Section 16, township 1 south, range 81 west, 6th PM. | <u>23</u> | Percent |
| 4. | Section 16, township 1 south, range 82 west, 6th PM. | <u>24</u> | Percent |
| 5. | Section 36, township 3 north, range 77 west, 6th PM. | <u>26</u> | Percent |

B. Larimer County:

- | | | | |
|----|---|-----------|---------|
| 1. | Section 36, township 12 north, range 72 west, 6th PM. | <u>25</u> | Percent |
|----|---|-----------|---------|

C. Jackson County

- | | | | |
|----|--|-----------|---------|
| 1. | Section 36, township 7 north, range 78 west, 6th PM. | <u>28</u> | Percent |
| 2. | Section 16, township 5 north, range 78 west, 6th PM. | <u>25</u> | Percent |

D. Routt County:

- | | | | |
|----|--|-----------|---------|
| 1. | Section 16, township 1 north, range 85 west, 6th PM. | <u>28</u> | Percent |
| 2. | Section 36, township 1 north, range 85 west, 6th PM. | <u>28</u> | Percent |
| 3. | Section 36, township 2 north, range 86 west, 6th PM. | <u>23</u> | Percent |
| 4. | Section 36, township 3 north, range 85 west, 6th PM. | <u>23</u> | Percent |
| 5. | Section 16, township 4 north, range 85 west, 6th PM. | <u>23</u> | Percent |

Bill Gherardi
(TYPED NAME OF AUTHORIZED AGENT)

Bill Gherardi
(SIGNATURE OF AUTHORIZED AGENT)

May 7, 1995
(DATE)

RETURN OF THIS FORM WITH YOUR BID IS PREFERRED. BID/RFP# B 900290

MINORITY (MBE) / WOMEN (WBE) BUSINESS PARTICIPATION

By Executive Order dated December 10, 1987, Governor Romer established a goal of 17% for minority participation in the State's business. Vendors, suppliers and contractors doing business with the State of Colorado are encouraged to solicit quotations for supplies and services, where needed to perform work on a State contract, from minority- and women-owned businesses.

Colorado State University has need to track the extent of participation with minority- and women-owned businesses. Please help us by answering the following questions. The answers to these questions will not be used to determine the winning offer for this Invitation for Bid. Response to these questions is not mandatory for your bid to be considered. However, response is a condition of award and will be necessary prior to issuance of a purchase order or contract.

1. Is your firm minority-owned? yes____, no X
2. Is your firm woman-owned? yes____, no X
3. If yours is not a minority-or woman-owned firm, please indicate what percent of the products or services you will be providing to the State, should you be the winning bidder, you will be acquiring from:
 - * minority-owned subcontractors and/or suppliers 0 %
 - * woman-owned subcontractors and/or suppliers 0 %

Please list below the names of these firms and the estimated value of the business you intend to conduct with them.

NAMES OF MBE/WBE FIRMS	DOLLAR AMOUNTS
TOTAL AMOUNT	

Company Name: WOODLAND MANAGEMENT CONSULTANTS
 by: BILL GHERARDI Bill Gherardi
 (Name & Signature)

glossary of terms

basal area	; A measure of density. It is the square footage of stump tops that would be exposed on an acre if all the trees were cut off at 4.5 feet above the ground.
blowdown	; Trees uprooted by the wind.
board foot	; A board foot equals 1 inch by 1 inch by 12 inches.
bole	; That portion of a tree composed of the main stem.
clearcut	; Removal of the entire standing crop of trees.
commercial timber	; Trees that can be sold.
commercial land	; A tract of land capable of growing 20 cubic feet of wood per acre per year.
cubic foot	; A block of wood measuring 12 inches by 12 inches by 12 inches.
cord	; A measure of wood, equivalent to 128 cubic feet of stacked wood. One cord has 80 cubic feet of solid wood.
dbh	; A measure of tree diameter at 4.5 feet above the ground.
dwarf misteltoe	; A parasitic disease of pine trees which thrives off the food and water of its host, resulting in slow death of the host.
dwarf misteltoe rating system	; A system to evaluate trees for the severity of infection, by the presence of fruiting bodies and brooms. Based on a 6 point system. A rating of 3 or more means at least 90% of all trees are infected.
Forest type	; An area of similar tree species, e.g. ponderosa pine.
Ips beetle	; A bark beetle which attacks pine trees, usually a secondary invader, after trees have been weakened by another pathogen.
mbf	; One thousand board feet.
Mountain pine beetle	; A bark beetle which attacks pine trees, notably ponderosa and is a primary invader.
Noncommercial timber	; Trees which cannot be sold.
Noncommercial land	; Land not capable of growing 20 cubic feet per acre per year.
Overstory	; Layer of foliage in a forest canopy including the trees in a timber stand.
patch cut	; A small clearcut, usually 5 to 8 times tree height.
post & poles	; Stand containing a majority of trees in 5 to 8.9 dbh class.
sawtimber	; Stand containing a majority of trees greater than 9.0 dbh.
seedlings	; Five trees with a diameter less than 1.0 inch.
serotinous cones	; Characteristic of lodgepole pine which keeps viable seed encased until cone comes in contact with extreme heat.
silviculture	; phase of forestry dealing with the development and care of forests.
site	; An area considered in terms of its environment. vegetation, soil, aspect and slope are functions of a site.

site index ; measure of the productivity of an area. It is the height of a tree at 100 years of age. on trees less than 100, graphs are used to extrapolate to base age.

slash ; residue left after felling of timber, or accumulations from storms fire or insect infestations.

spruce budworm ; defoliating insect which attacks douglas fir and spruce. 3 to 5 years of defoliation will result in tree death.

stocking ; The number of trees on an area, usually an acre.

suckering ; The ability of aspen to regenerate from its root system.

thinning ; removal of some of the trees in a stand to improve the form and growth of the remaining trees.

understory ; The foliage layer beneath the forest canopy, usually composed of shrubs and grasses.

western gall
rust ; A tree disease characterized by knobs of moon shaped deformities on branches or bole. structurally weakens tree.