

STEWARDSHIP INCENTIVES PLAN

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N1/4 NE1/4, Section 29, Township 1 North, Range 71 West,
Sixth Principle Meridian.

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

Dr. Gene Gitin

Date

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STEWARDSHIP INCENTIVES PLAN

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OBJECTIVES

The forestry objectives for this property are:

1. Consistent with the Stewardship Incentives Programs, to improve health and vigor of the forest and enhance its productivity.
2. Practice silviculture and multiple use management, giving particular attention to protection of wildlife habitat.
3. Preserve the aesthetic qualities of the property.
4. Protect soil and water resources.

GENERAL DESCRIPTION

Property Location: The property is located at the north end of Weaver Road on the north side of Sugarloaf Road.

Area: The property contains 38.2 acres, of which 35.0 acres is forested.

A breakdown is shown below:

Stand A	30.2 acres	Moderately-stocked ponderosa pine.
Stand B	5.0 acres	Lightly-stocked ponderosa pine.
Meadow	2.0 acres	
	<u>1.0</u> acres	House and Yard
	38.2 Acres	STEWARDSHIP ACRES

Access: Most of the property is accessible by road or trail; although, the northern edge is somewhat steep. All access is from the south along Weaver Road.

TOPOGRAPHY

Slopes and Aspects: Most of the property slopes south at slopes of about 10%, except for the north edge which is steeper and the meadow which slopes at about 5%.

Elevation: Elevation is about 7300 feet above sea level. The highest point is in the northeast corner and the lowest point is the south corner.

Geology: Precambrian rocks now about 1.8 billion years old were intruded about 1.7 billion years ago by the Boulder Creek Granodiorite Formation. This is the bedrock throughout the property.

A north-northwest trending fault of Precambrian Age passes east of the property. It has occasionally been reactivated.

Lower Paleozoic rocks (Cambrian through Mississippian) are missing in this area. It is thought that these rocks once existed, but were eroded away during early Pennsylvanian times when the area was uplifted on the northeast flank of the Ancestral Front Range uplift, one of several northwest-trending mountain ranges that comprised the late Paleozoic Ancestral Rocky Mountains. These mountains (Ouachita Orogeny) resulted from the reactivation of Precambrian structures when Africa collided with South America and the southern edge of North America. Gravel and sediments washing off the Ancestral Front Range were deposited as the Fountain Formation, which was later uplifted to form the Flatirons. By the late Paleozoic, the Ancestral Front Range was eroded to a set of low hills.

In the early Cretaceous, the area began to subside and was eventually buried under almost 10,000 feet of marine sediment (Pierre Shale).

In the late Cretaceous-Early Tertiary (about 67.5 million years ago), the Laramide Orogeny uplifted a mountain range with much the same configuration as the present day Front Range. Erosion about balanced uplift so that the relief was never great, much less than at present. By the late Eocene the uplift ceased, leaving a low-profile range of hills. Most of the faulting and eastward tilting that raised the Flatirons into position occurred during the Laramide Orogeny.

Intrusive volcanic activity occurred to the east during the Paleocene, creating Valmont Dike and the basalt formation now being mined by Andesite Rock Company. No Paleocene igneous activity involved this property directly; however, the mineralization that created the Colorado Mineral Belt is associated with stocks, dikes and sills that intruded a major northeast-trending Precambrian shear zone about this time.

During the Oligocene this region was reduced to a plain, similar to eastern Colorado today with an elevation of about 3000 feet. In the Miocene, thermal uplift and east-west expansion formed the Rio Grande Rift and began the rise of the modern Front Range, which continues to rise today.

The property has never been glaciated (The nearest glacier made it a few hundred yards east of Barker Dam.), although Wisconsin-age and later climate fluctuations have had major impacts on plant life and continue to have an effect, even now.

Soils: Soil maps for western Boulder County have not been published, but the soil type listed for the area just east of the section line is Juget-Rock-Ferncliff Complex. I conclude that the area we examined with the dwarf-mistletoe infection is Juget very gravelly sandy loam on the north side, giving way to Ferncliff stony sandy loam toward the south and east. The meadow is underlain by Peyton soils.

Juget very gravelly sandy loam occurs on slopes and ridges in sandy residuum weathered from granite. It is shallow and excessively-drained. Slopes range from 9 to 55%. It is occupied by the ponderosa pine/Arizona fecue ecotype. Annual precipitation is 14 to 18 inches; the frost-free growing season is 80 to 120 days.

The surface layer (A1) is dark-gray very gravelly sandy loam about 5 inches thick. There is no subsoil. The C horizon consists mostly of decomposed granite. Hard granite occurs at depths of 11 inches.

Soil reaction is slightly acid; permeability is rapid; available water capacity is low; root penetration is less than 20 inches. Grass cover should always be maintained to prevent erosion. Runoff is rapid; erosion hazard is high (Land capability class VIIIs-1, nonirrigated; tree suitability group 2).

Fern Cliff stony sandy loam occurs in deep, well-drained loamy mixed alluvium on short fans and valley side slopes. It is occupied by the ponderosa pine/Arizona fescue ecotype. Annual precipitation is 18 to 24 inches; the frost-free growing season is 80 to 120 days.

The surface layer (A1) is dark grayish-brown stony sandy loam about 3 inches thick.

Soil reaction is slightly to medium acid; permeability is moderate to moderately-rapid; available water capacity is moderate; root penetration is about 60 inches. Vegetative cover should be maintained to prevent erosion.

Runoff is medium to rapid with high erosion hazard (Land capability class VIIe-1, nonirrigated; tree suitability group 1.).

Land capability class VIIs-1 (Nonirrigated). These sites are generally used for range and wildlife practices. Special care is needed in applying silvicultural practices. Permanent vegetation should be maintained. Suitable range grasses include big bluestem, little bluestem, needlegrass and side-oats grama. A maximum of half the vegetation may be grazed each year. Grass seeding is difficult or impossible due to steep terrain, rocks and stones.

Land capability class VIIe-1 (Nonirrigated). These sites are generally used for woodland and wildlife habitat. Special care is needed in applying silvicultural practices. Permanent vegetative cover should be maintained. Suitable range grasses include Arizona fescue, mountain muhly and pine dropseed. A maximum of half the vegetation may be grazed each year. Grass seeding is difficult or impossible due to steep terrain, rocks and stones.

LOCAL MARKETS

Sawtimber markets in Boulder and vicinity are severely limited. Firewood markets are weaker than they were ten years ago, but still readily able to handle expected cutting.

TYPOLOGY AND STAND IDENTIFICATION

Western forests are typed by the dominant tree species occurring, provided that species makes up a plurality of stocking. Your stands are nearly-pure ponderosa pine.

Size classes are as follows:

- Class 1A: Seedlings (Less than 4.5 feet tall).
- Class 1B: Saplings (4.5 feet tall to 5.0 inches DBH).
- Class 2A: Small poles (5.0 to 7.0 inches DBH).
- Class 2B: Large poles (7.0 to 9.0 inches DBH).
- Class 2C: Near-merchantable (9.0 to 11.0 inches DBH).
- Class 3A: Small sawtimber (11.0 to 15.0 inches DBH).
- Class 3B: Medium sawtimber (15.0 to 21.0 inches DBH).
- Class 4: Large sawtimber (21.0+ inches DBH).
- Class 5: Large old growth (21.0+ inches DBH and dating from pre-settlement).

A stand is classified by adding together stocking figures, starting with the highest class, until a minimum level of 32½ trees per acre, 10 square feet of basal area per acre or 250 board feet per acre is obtained over a minimum 3.0-acre area. This means that trees larger than the listed size class may occur in small numbers. Classes 2C through 5 are typed by board foot volume; classes 1B through 2B are typed by basal area and class 1A is typed by stem count.

There are no Class 4 or Class 5 stands on your property.

Pre-settlement stands in Boulder County are those with stand birthdates (See below.) of 1850 or earlier (Age: about 140 years). Stand birthdates are determined by taking mean age weighted by volume, basal area or stem count, as above, and subtracting that from the current year, rounding the result to the nearest decade. It is possible for a younger, faster-growing class of trees to overtake an older, slower-growing class and change the stand birthdate, without any other change in the stand.

Multiple classes: Real stands are rarely even-aged or all-aged, but consist of in-between mixes. Second and third classes of trees are typed as if they were separate stands, but the result is listed along with the dominant class. Second and third classes frequently differ from the dominant class.

Typology:

- Stand A: Ponderosa pine, small sawtimber (Class 3A), medium stocked, birthdate: 1920.
- Stand B: Ponderosa pine, small sawtimber (Class 3A), lightly stocked, birthdate: 1920.

LAND USE

Current: Current land use is for a homesite and personal recreation. Dr. Gitin is interested in protecting his forest and enhancing its appearance and utility to wildlife. Product values are being considered because they are required by Stewardship Incentives, but they are definitely secondary to protection.

Historical: The current forest typology on the property originated following a major climatic shift at the end of the Pleistocene, about 11,000 years ago. Species that now occur at 9500 to 10,500 feet of elevation, such as Engelman spruce and subalpine fir grew here.

During the Altithermal, about 7000 to 9000 years ago, the climate became even warmer and dryer than it is now. Most of this property was probably grassland or pure stands of ponderosa pine during the Altithermal.

The current forest originated about 1760 following a major fire. This is surmised from the existence of a class of Douglas-firs on nearby property, all dating from about the same decade. The only known agent capable of large-scale land clearing over thousands of acres, is fire.

About 1853 a large fire burned the area west of Boulder, including most of western Boulder County. According to local legend, this fire was set by Arapahos, angry at being cheated by whites. One suspects the legend sprang up later so that whites would not have to take the blame for settlers' carelessness.

There was a large fire in this area, the Boulder Canyon Fire, in 1889, but whether it burned this property is uncertain.

During the 1880s, the area was cut over to supply firewood and timbers for the mines. Mining operations in Boulder County used steam from wood-fired boilers to operate hoists and stampers.

Mountain pine beetles avoided this stand during the epidemic of the 1970s.

DESIRED CONDITIONS

Healthy, vigorous, fully-stocked stands of trees are required by the and Stewardship Incentives Program. This condition need not be achieved immediately, but progress should be made in this direction.

It would be desirable to increase the area's usefulness to wildlife, indirectly enhancing recreational values. In particular, nesting sites for cavity-nesting birds and shelter piles for small animals would be beneficial.

IMPACT ON NEIGHBORS & NEARBY COMMUNITIES

Most cutting will be screened by intervening stands of trees so that it is not visible from the road or nearby homes. Where slash is a problem, it can be cleaned up, or turned into wildlife shelter piles; cost-sharing money is available to help pay for this. Also, in holes created by removal of damaged or deformed trees, seedlings can be planted (also under cost-sharing). No significant impact on neighbors or the public is anticipated.

THREATENED AND ENDANGERED SPECIES

The property is located in the Fort Collins block on the threatened and endangered species list. Protected species in this block include:

1. the American peregrine falcon,
2. the bald eagle,
3. the interior least tern and
4. the greenback cutthroat trout.

For the most part, these species do not make use of the area. The tern is a shore bird and prefers large lakes and rivers; and you do not own a trout stream. The property contains no potential nesting sites for bald eagles or peregrine falcons (No cliffs or good trees.). It is within the hunting territory of several falcon nests.

There are other species listed under the state's program, but these animals are not found here either.

INVENTORY

There follows, a stand-by-stand description of forest resources, including all stands units.

Stand A: The northern stand (30.2 acres) is a ponderosa pine, medium-stocked, small sawtimber stand. Sawtimber stocking totals about 2400 board feet per acre, on average. The stand averages 90 square feet of basal area per acre, except in the main dwarf-mistletoe patch in the northeast-central part of the stand. It originated about 1820, during the wet period that preceeded the Dust Bowl.

Stand A is accessible to fire trucks by way of Weaver Road. A fire in this stand is most likely to come from Weaver Road, anyway.

Harvesting and maintenance operations are only slightly limited by steep terrain toward the north end of the property; most of the property is readily accessible.

There are no wetland or riparian areas in this stand.

Silvicultural objectives for this stand are:

1. Control dwarf-mistletoe patches to prevent their spread to the remainder of the stand, then thin to 80 square feet per acre of basal area.
2. Create nesting sites for cavity-nesting birds. This can be accomplished by girdling selected trees and allowing them to die. It also means preserving suitable habitat trees that are already dead.

No noxious weeds were observed; the crown cover is too thick to allow many understory plants to grow. Under Colorado's new weed ordinance, "weed" is defined by local districts. Exactly what is a "weed" can vary from place-to-place and time-to-time.

Woodpecker nesting holes were observed on several trees.

No endangered or threatened plant species were observed (A thorough survey would require repeated visits to likely

sites throughout the course of a year, something beyond the scope of this plan.).

No part of this stand is visible from a public road. There should be no problems with visual impacts.

There are no known archeological sites within this stand.

Stand B: This is a lightly-stocked ponderosa pine small sawtimber stand. Sawtimber stocking totals about 1200 board feet per acre, on average. The stand averages 90 square feet of basal area, or about 245 trees per acre. It originated about 1920, apparently following the wet period that occurred at that time.

Dwarf-mistletoe occurs in this stand; control is advisable. There is currently minimal risk from mountain pine beetles (Beetles are currently attacking mostly trees already weakened by dwarf-mistletoe or other causes.).

Fire access is along Weaver Road, as in the case of Stand A. The stand is open and should not present a serious risk to firefighters.

The stand is accessible for silvicultural operations.

There are no wetland or riparian areas in this stand.

Silvicultural objectives for this stand are to control dwarf-mistletoe. The stand is already below 80 square feet per acre of basal area.

No cultural features were observed in this stand.

Your neighbor's driveway passes through the southeast end of this stand. He will probably be interested in intensive slash cleanup for any anticipated cultural operation. The stand is not visible from any public road.

There are no known archeological sites within this stand.

PRESCRIPTION BY MANAGEMENT UNIT

Both Stands: Control dwarf-mistletoe by first removing trees with dwarf-mistletoe ratings of five or six, then thinning the stand to 80 square feet of basal area while selecting against dwarf-mistletoe. Finally, prune all residual trees free of visible dwarf-mistletoe. Repeat pruning once a year for at least five years to eliminate incipient infections, or until the stand has been found free of dwarf-mistletoe in three consecutive years.

Stand A: Thin to 80 square feet of basal area per acre.

Both Stands: Plant as needed to bring stocking to 100 growing stock level (Approximate spacing of 11.25 feet between trees.). Use ponderosa pine and white fir seedlings. Do not plant dwarf-mistletoe patches until dwarf-mistletoe is controlled.

Preserve selected dead trees as wildlife den trees and kill a few additional trees to create snags. Pile slash to create constructed wildlife shelter piles ("bunny huts").

Repeat thinning, dwarf-mistletoe interventions at fifteen-year intervals.

Colorado State Forest Service foresters will set work standards for residual stocking. If a contractor is used to do part of the work, standard CSFS cutting regulations will apply. Landowner may set his own rules for slash and cleanup requirements for work that he does.

Accessibility will determine the order in which work is implemented - accessible areas first.

House and Yard (Optional): A Defensible Space strip near the house will give firefighters a chance to stop a fire before it can reach the house. This treatment can be extended if desired; although, cost-sharing is limited to one acre in the immediate vicinity of the house.

The following standards apply:

1. Thin so residual crowns do not touch.

2. Remove "fire ladders (branches, bushes and small trees)" to a height of ten feet so that fire cannot climb from the ground into the tree tops.
3. Chip and/or remove resulting slash and burnable debris.
4. Be sure the Defensible area extends at least 100 feet downhill from the house and at least fifty feet in all other directions. See CSFS publications for more detail.
5. Move wood piles away from building and hazard areas such as propane tanks.
6. Enclose areas beneath open porches and decks.
7. Keep troughs and gutters free of pine needle and leaf accumulations.
8. If roof should need major repairs, replace with metal.

IMPLEMENTATION SCHEDULE and RECORD

RECOMMENDED PRACTICES, YEAR IMPLEMENTED, UNITS COMPLETED

- 1998: 1. Lay out dwarf-mistletoe control areas, mark and begin control program (Talk to forester for more information.). Dwarf-mistletoe is quite extensive and control efforts may need to extend over several years.
2. If desired, implement Defensible Space practice around house.
- 1999: 1. Second dwarf-mistletoe treatment.
2. Thin uninfected part of Stand A.
- 2000: 1. Third dwarf-mistletoe treatment.
2. Plant uninfected part of Stand A (This may have to be delayed depending on cutting progress.).
- 2001: 1. Fourth dwarf-mistletoe treatment.
2. Continue planting program.
- 2002: 1. Fifth dwarf-mistletoe treatment.
2. Continue planting program.
- 2003: Update this plan as needed. "The best-laid plans of mice and men...."
- 2003 - 2008: If previous treatments have been successful, dwarf-mistletoe treatments may be suspended. If infections remain, continue treatments. Continue planting program at about 3 acres per year.
- 2008: Have new plan prepared. This is required if you use cost-sharing money after September 30, 2008. Revisions are only required if there is a need, such as a change in ownership or production schedules that no longer have any relation to the original plan.

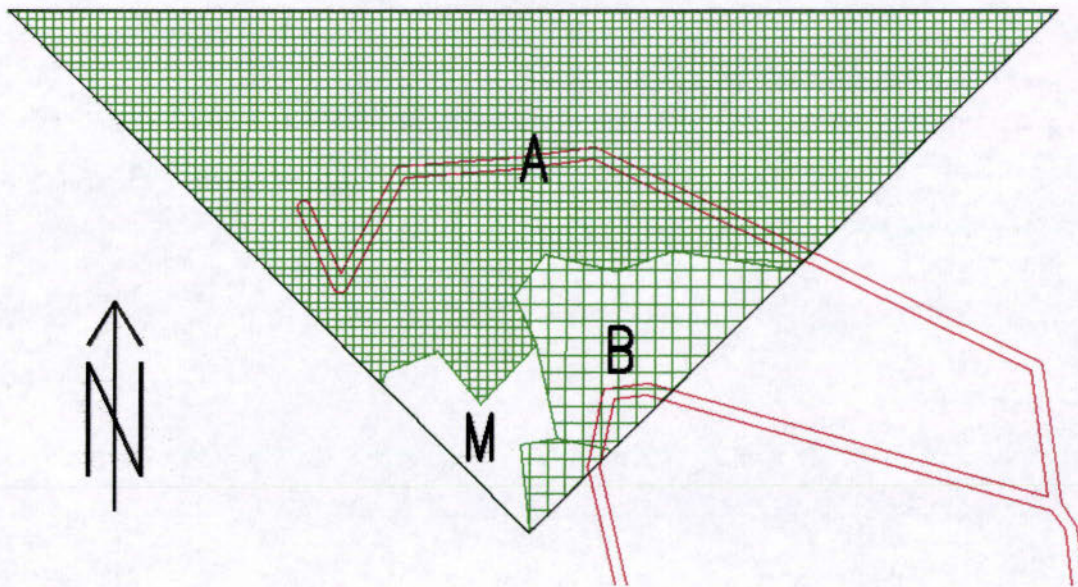
RECORDS and MAPS; TREATMENTS, DATES COMPLETED, VOLUME HARVESTED;
PRICE RECEIVED, MANAGEMENT COSTS

The following section is expandable and meant to serve as a log
of forest management work being done.

STEWARDSHIP INCENTIVES PLAN

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Scale: 1:5844; 1 Inch = 487 Feet



Dr. Gene Gitin

N1/4 NE1/4, Section 29, T1N, R71W, SPM.

— Property Line
== Road

 PP—
 PP=
 Meadow

Drawn By: Douglas J. Stevenson

March 16, 1998

ADDITIONAL READING

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