A Timber Management Plan for the Ball Mountain Working Circle Shasta National Forest, Siskiyou County, California

By

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FOUNDATION

SUMMARY AND CONCLUSIONS

Location

The Ball Mountain Working Circle is located eight miles west of Macdoel, Siskiyou County, California, in parts of Townships 46 and 47 N., Ranges 2, 3 and 4 W., M.D.M.

Area

	Acres
Government Land	41,040
Associated Lumber and Box Co.	18,165
Other Private Land	3,117
Total Acreage	62,322

Stand

	Board Feet
Government	334,248,000
Associated Lumber and Box Co.	158,312,000
Other Private	11,520,000
Total Stand	504,080,000

Composition:

	Board Feet
Ponderosa Pine	87,176,000
Sugar Pine	21,772,000
White Fir	170,735,000
Red Fir	157,289,000
Douglas-fir	61,750,000
Incense Cedar	5,358,000
Total	504,080,000

Cutting Cycle

A cutting cycle for the present cutover land has been set at 50 years. No definite cutting cycle has been estimated for the uncut lands. Further studies of growth, yield, and leave are needed before cutting cycles of the uncut lands can be adequately established. These studies can be made during the next 20 years of sanitation cutting on the stand.

Yield

7,482,965 board feet per year.

First Cutting Budget Period (1948-1957, inclusive)

	Board Feet
All lands 10 M. B.M. per acre, 30,393 acres	303,930,000
Cut per year	15,196,500

Predicted Second Cutting Budget Period

Fifteen million board feet per year.

INTRODUCTION

The Ball Mountain Working Circle is a natural unit consisting of a small mountain range bounded by a river on the north, valleys on the east and west, and a low saddle on the south.

Grazing and recreation are important forest uses in this area, but they supplement the use of the area for timber production. These supplementary uses are not included in this report. A separate plan should be made to integrate them with the proposed timber management plan.

A large portion of the people of Dorris, California, depend on the logging operations in this area for their livelihood.

Ownership of Timber

The United States owns 334,248,000 board feet of timber, the Associated Lumber and Box Company owns 158,312,000 board feet, and other small private owners of forest land own 11,520,000 board feet of timber. The largest portion of the virgin stands is owned by the United States.

Previous Cutting

Most of the recent cutting has been accomplished by the Associated Lumber and Box Company. Prior to 1941, the Long Bell Lumber Company cut timber on this area, but since then they have shut down their mill in Dorris.

Purposes of this Plan

The purpose of this study is to set up a timber management plan to insure the stabilization of the community, furnish a continuous source of income to the county, and supply steady employment for local labor.

DESCRIPTION OF THE WORKING CIRCLE

Physiographic Features

Location

The Ball Mountain Working Circle is a portion of Northeastern Siskiyou County, California. It is bounded by the upper slopes of the Little Shasta Valley on the west, Goosenest Mountain on the south, Butte Valley on the east and the Klamath River on the north. The following townships, or parts thereof, are included in the working circle: Townships 46 and 47 N., Ranges 2, 3, and 4 W., Mount Diablo Meridian. The maps accompanying this plan specifically show the location and boundaries.

Acreage

The total land area within this working circle is 62,322 acres, of which 41,040 acres is National Forest land; 18,165 acres is Associated Lumber and Box land; 3,117 acres is other private land. Of this, 30,393 acres is merchantable timber; 18,861 acres have been cut over, and 17,068 acres is non-productive land.

Topography

The land within the working circle is drained by creeks to all four points of the compass. The range in elevation is from 4200 to 7000 feet above mean sea level. The slope varies from gentle to fairly steep, none of which is too steep for "cat" logging.

Climate

The working circle is subjected to a short growing season and fairly long winters. On the upper slopes snow sometimes reaches a depth of 10 feet. Probably due to the elevation of the area, summers

are fairly cool.

Soil

The soil is rather shallow, as a rule, except in the stream bottoms. Rock outcrops can be readily found throughout the area.

Forest Description

Types

Types within the area are neither true west-side nor true east-side types. The type on the lower areas is a mixed conifer type, including: Douglas-fir (Pseudotsuga taxifolia), ponderosa pine (Pinus ponderosa), sugar pine (Pinus lambertiana), and incense cedar (Libocedrus decurrens). The commercial timber on the upper reaches of the circle (above 5000 feet) is of the Shasta red fir (Abies magnifica var. shastensis) and white fir (Abies concolor) types.

A large portion of the area has been cutover, and operations are still progressing on the remaining timber lands. Because it was all logged with "cats", much of the cutover area is in fairly good condition, and a good residual stand remains. Few trees below the 18" d.b.h. class were removed in the logging operations.

Most of the remaining virgin timber is in the red fir-white fir type. This timber is highly decadent, and decay may be greater than growth.

Site

The circle has no Site I land. Most of the land is Site II and III. There are approximately 35,974 acres of Site II land and 9,280 acres of Site III land.

Stand Volumes

The estimated volumes by species are:

ponderosa pine	87,176	M.B.M.,
sugar pine	21,772	M.B.M.,
white fir	170,735	M.B.M.,
red fir	157,289	M.B.M.,
Douglas-fir	61,750	M.B.M.,
incense cedar	5,358	M.B.M., or a total of

504,080 M.B.M.

Situation as to Fire

Fire in this portion of the state creates an ever present summer menace. On the west side fire has destroyed timber lands from the Little Shasta Valley (elevation 3000 feet) up into the red fir-white fir types (elevation 6000 feet). The "Bogus fire" (1928), which started in the Little Shasta Valley, was stopped just below the summit of Eagle Rock. This fire destroyed millions of board feet of virgin timber, and it left a very serious fire hazard of down logs and high brush. Very little reproduction is returning. Due to the presence of flashy grass fuels, detection and suppression must be almost instantaneous to do anything with fires on the lower slopes. On the government owned cut-over land, the brush has been piled and burned, but there still exists quite a hazard in down decadent logs. Other than roadside cleanups, there was little attempt at slash disposal or hazard reduction on private lands. Since the recent enactment of the Forest Practice Rules, residual stand conditions have improved.

For fire protection on the working circle, the Forest Service has a lookout station on Ball Mountain, and usually a hazard reduction crew stationed on Shovel Creek at Upper Crossing. Several lookouts in the vicinity of the working circle are also in a position to detect fires starting within the circle. A Lookout Fireman is stationed on Lakeview Lookout, and it is his duty to detect and suppress fires starting on the west side of the working circle. During

the summer months, lightning presents serious problems.

Insects and Pathogens

At the present time there seems to be no serious threats to the area from insect damage. The Western Pine Beetle (Dendroctunus brevicomis) and the Turpentine Beetle (Dendroctumus valens) have been observed in the circle, but not in the epidemic stage.

The white fir and red fir old-growth timber is being seriously attacked by the Indian Paint fungus (Echinodontium tinctorium). Much of the old-growth timber is unsalvable because of this pathogenic attack. Because of the action of pathogens, the Forest Service is trying to cut out, through timber sales, all timber that they feel will be on the ground within fifteen years. This amounts to nearly 33 per cent of the stand on some areas.

Growth and Yield

Detailed data on growth and yield is very incomplete. Growth in Selectively Cut Ponderosa Pine Forests of the Pacific Northwest, by Walter H. Meyer,(3) was adopted as being the most nearly applicable for the cutover area on the circle. Much of the cutover area represents the types used by Meyer in his studies. Values shown are on the basis of these tables.

Growth on the virgin stands is considered negligible. After cutting these stands by the present method of cutting 10,000 board feet per acre, it is estimated by the Forest Service that growth will be 200 board feet per acre per year. Further studies are needed in predicting growth and yield on these stands.

SOCIO-ECONOMIC DATA

Towns and Communities

No communities, towns, or individual habitations are present within the working circle. The nearest mill-town which has access to the circle by road is Dorris, California. The population of Dorris is 1,250. The number of people employed by the local mills and logging operations is 225. Dorris also depends, to a large extent, on agriculture. The added income from the lumber industry is important to the stabilization of the community of Dorris.

Markets and Mills

Because the Southern Pacific Railroad goes through Dorris, the shipping of wood products to distant markets is facilitated. There is very little local timber marketing business with farmers and townspeople. The Long Bell Mill, one of the three mills in Dorris, is now idle due to a lack of timber. The Associated Lumber and Box Co. owns the other two mills, one of which is a box factory. There are 175 men working in these two mills, and 50 men are working on the logging operation. The capacity of the Associated mills is 100,000 board feet per day. At the present time there is also a small portable mill working in private timber on the east side of the working circle. This mill is also cutting timber from farmlands which are being cleared for agriculture.

Transportation

The logical means of log transportation is by truck. This method has proven most successful in the area. A timber access road has been extended up through the circle as far as Shovel Creek

Meadows (see map). This is a good two-lane gravel road, and is being used by the Associated Lumber and Box Company on the current government timber sale. Practically all log hauling is on the level or down grade. After reaching the valley floor the road is county maintained for a portion, and then it is Associated Lumber and Box Company maintained from the center of Section 19, Township 47 N., Range 1 W. to Dorris. This latter portion is privately owned by Associated Lumber and Box Company.

Ownership Situation

Acreages were computed under the following classifications: "National Forest" ownership, "Associated Lumber and Box Co." ownership and "Other Private" lands. The major portion of the land is in government ownership and Associated Lumber and Box Co. ownership.

	Acres
National Forest	41,040
Associated Lumber and Box Co.	18,165
Other Private land	3,117
Total - - - - - -	62,322

THE MANAGEMENT PLAN

OBJECTIVES OF MANAGEMENT

The objectives of management are:

1. To maintain a source of continuous income for Dorris, California, and Siskiyou County, California, and for the private owners whose cooperation will make this plan possible.

2. To furnish steady employment for the local people in "woods" work, and in the manufacture of forest products.

3. To maintain a permanent industry which will offer a market for timber as it becomes ripe for cutting.

4. To cut over the virgin timber land as soon as possible to remove decadent, mature, and defective timber, in order to put the stand in a growing condition.

5. To coordinate with other forest uses such as grazing and recreation.

SILVICULTURE

Silvicultural Policy

1. Every effort will be made to place the forest-producing area in the best possible silvicultural condition.

2. Marking will be done on the remainder of the mature old-growth stand as the Forest Service Timber Sales Men are now doing it in this area. They are marking all trees that are decayed and trees that are apt to be down within 15 years from the time of cutting. This amounts to approximately 10 M.B.M. per acre. When all the old-growth is cut off, new marking policies can be set up.

3. Wherever young stands are not fully stocked they will be

artificially planted after waiting a reasonable time for natural reproduction to become established.

4. Thinning will be done in young stands, where needed, if economically feasible.

5. In case of serious "blow-down", every effort will be made to log and market all down timber.

6. The stand will be watched closely for any further epidemic outbreaks of insects or pathogens.

7. Silvicultural studies will be continued at all times, with special attention given, during the first two cutting periods, to the study of growth and yield on cutover lands.

Method of Cutting

The method of cutting will be the same as is now being practiced in this portion of the region, that is, partial, or selective cutting. Utilization standards in mills are changing rapidly, therefore, "woods" utilization can only be predicted for a short time. During the first cutting period no sound trees below a 20" d.b.h. class will be removed. All logs with a top diameter above 11.5" for fir and 7.5" for pine shall be taken. Present Forest Service marking practices shall be continued, i.e., all trees more than 33 1/3 per cent sound considered merchantable.

Method of Brush Disposal

All brush within 50 feet of the roads should be piled and burned. All limbs up to a 4" diameter should be disposed of in this manner. This should be done during the first year after cutting because later the needles fall off, and brush piling becomes more difficult.

Method of Logging

All logging will be done by tractors to reduce damage to the residual stand. All of the area is readily adaptable to tractor logging. Most of the area is also adaptable to the use of power saws, whether gas driven or electrically driven.

REGULATION

Cutting Cycle

On the present cutover portion of the stand, a cutting cycle of 50 years has been selected through computations by Meyers' (3) method. A cutting cycle for the virgin timber stands has not been selected due to insufficient information on growth and yield. All the virgin timber will be cutover within the next twenty years, during which time further studies of growth and yield can be made and cutting cycles estimated.

Allowable Cut

Calculations to be found in the Appendix show that an allowable cut on the present cutover land of 14,861 acres to be 1,404,365 board feet per year. On the virgin timber land with the Forest Service growth estimate of 200 board feet per acre per year, the annual cut will be, for the 30,393 acres, 6,078,600 board feet per year. This will make a total annual cut of 7,482,965 board feet. This estimate may be low as much of the stand has a higher percentage of fir than those stands used by Meyer (3) in his calculations. The presence of the more tolerant fir results in a higher number of trees per acre and a greater volume per acre.

The allowable cut for the first cutting period of 10 years has been estimated at 15,196,500 board feet per year. This high cut is permitted to remove all the old-growth past maturity and all the decadent trees.

Cutting Budget

The cutting budget is listed on a separate sheet in the Appendix. For some units a specific year or years of cutting have been designated as the time when cutting may be expected. It is not intended that this should be a mandatory date, but rather that it should be a guide to the approximate time when the unit will be cut. This plan is meant to be as flexible as possible to permit its modification as conditions change.

Planned cutting during the first cutting period will be confined to the following compartments:

Bogus	1948 and 1954
Spannus Springs	1949
Eagle Rock	1950, 1951 and 1955
North Ball Mountain	1952 and 1953
Little Shasta	1956 and 1957

Approximately 10,000 board feet per acre will be removed. During the 10-year period 15,308 acres will be cut over, or a total of 153,080,000 board feet. This will average approximately 15,308,000 board feet per year.

FIRE PROTECTION REQUIREMENTS

The Forest Service fire protective organization seems to be ample for the working circle. For further fire protection a man should be sent up to Eagle Rock Lookout after a lightning storm to look over the area not visible to Ball Mountain Lookout. The phone line to Eagle Rock should be maintained for use during fire season. A Forest Service type iron phone should also be installed somewhere on or near the tower. Several trees should be felled to improve visibility from the tower.

Lakeview Lookout Fireman must maintain close contact with the ranchers in his area by phone. When he goes to a fire he must have a replacement lookout and fire fighters immediately available. Because he is so far from headquarters at Mt. Hebron, he must be a good dependable man with plenty of "common sense" and initiative.

The stationing of a hazard reduction crew at Upper Crossing on Shovel Creek during fire season is of definite advantage in the event of fires on the area. Communication with headquarters at all times of the day and night should be assured. While on the job a radio equipped with a loudspeaker would be an advantage. With the loudspeaker a crew member could continue working without having to call in all the time to ask whether or not there were any fires. The work of the hazard reduction crew, when not on fires, is beneficial to the area. This work consists of piling brush and falling snags along the roads.

ADMINISTRATIVE CORRELATION

1. Administrative powers on the working circle should be vested in the United States Forest Service with close cooperation of the Associated Lumber and Box Co. and other private owners.

2. Every effort should be made to correlate the timber use with other forest uses such as grazing, recreation, and wildlife.

3. Sales will be handled in such a manner as is consistent with the policy stated in the Region 5 Timber Management Handbook.

4. New road developments are needed to finish opening up the working circle. Main roads should be on a standard equal to the access roads in the area.

5. Wherever possible both the Forest Service and the Associated Lumber and Box Co. should purchase or exchange their lands outside the circle for other private lands within the block. This simplifies administration.

REVISION OF THE PLAN

The plan should be revised every ten years as more information and experience is gained. Growth and yield studies should be continued on cutover lands so a more exact allowable cut and rotation can be put into effect. All information should be cumulative and recorded for the use of future foresters.

REFERENCES

1. Eldredge, Inman F., Management Plans with Special Reference to the National Forests. U.S.D.A. Misc. Pub. No. 11, Feb. 1928.

2. Mathews, Donald M., Management of American Forests, McGraw Hill, Inc., New York 1935.

3. Meyer, Walter H., Growth in Selectively Cut Ponderosa Pine Forests of The Pacific Northwest. Tech. Bul. No. 407, U.S.D.A., April 1934.

APPENDIX

TABLE 1

CUTTING BUDGET (1948-1957, inclusive)

Year	Township	Range	Section	Annual Cut (Acres)	Compartment
1948	47 N.	4 W.	13	283	
			24	600	Bogus
	46 N.	4 W.	17	400	
			Total	1,283	
1949	47 N.	4 W.	25	540	
			36	525	Spannus
	46 N.	4 W.	1	469	Springs
			Total	1,543	
1950	47 N.	3 W.	27	360	
			32	213	Eagle Rock
			33	580	
	46 N.	3 W.	4	471	
			Total	1,624	
1951	46 N.	3 W.	5	475	Eagle Rock
			8	243	
			9	595	
			Total	1,313	
1952	47 N.	3 W.	34	600	
			35	560	North Ball
	46 N.	3 W.	2	120	Mountain
			3	296	
			Total	1,576	
1953	46 N.	3 W.	2	120	
			3	296	North Ball
			10	595	Mountain
			11	640	
			Total	1,651	
1954	46 N.	4 W.	12	572	
			13	633	
			14	206	Bogus
			23	200	
			24	385	
			Total	1,996	
1955	46 N.	3 W.	15	100	
			16	600	
			17	533	Eagle Rock
			20	100	
			Total	1,333	

TABLE 1 - Continued

CUTTING BUDGET (1948-1957, inclusive)

Year	Township	Range	Section	Annual Cut (Acres)	Compartment
1956	46 N.	3 W.	14	200	
			15	200	
			21	568	Little Shasta
			22	295	
			27	200	
			Total	1,453	
1957	46 N.	3 W.	28	480	
			29	493	
			33	137	Little Shasta
			34	435	
			Total	1,545	

Periodic Cut (10 yrs) 15,308 acres

Periodic Cut 10 M.B.M. per acre

10,000 x 15,308 = 153,080,000 board feet

Annual Cut - - - - - - - - - - 15,308,000 board feet

TABLE 2

OWNERSHIP IN PRODUCTIVE, NON-PRODUCTIVE AND CUTOVER LANDS
(AREA IN ACRES)

	Merch. Timber	Cutover	Total Productive	Unproductive	Grand Total
National Forest	20,641	9,336	29,977	11,063	41,040
Associated Lumber and Box Co	9,032	4,705	13,737	4,428	18,165
Total	29,673	14,041	43,714	15,491	59,205
Other Private	720	820	1,540	1,557	3,117
Grand Total	30,393	14,861	45,254	17,068	62,322

TABLE 3

VOLUMES BY OWNERSHIP AND SPECIES
(THOUSAND BOARD FEET)

	Ponderosa Pine	Sugar Pine	White Fir	Red Fir	Douglas-fir	Incense Cedar	Total
National Forest	40,922	8,653	128,970	131,181	22,653	1,869	334,248
Associated Lumber And Box Co.	46,254	13,119	37,925	18,428	39,097	3,489	158,312
Total	87,176	21,772	166,895	149,609	61,750	5,358	492,560
Other Private	-	-	3,840	7,680	-	-	11,520
Grand Total	87,176	21,772	170,735	157,289	61,750	5,358	504,080

TABLE 4

AVERAGE VOLUME PER ACRE BY OWNERSHIP
(BOARD FEET)

National Forest	16,539
Associated Lumber and Box Co.	17,972

TABLE 5

CUT AND LEAVE STUDY IN FIR

T. 47 N., R. 3 W.

Minimum Merchantable Tree Must Contain 1 log 32' long, 10" at top end.

18 Acres of Strip

	LEAVE WF			LEAVE RF			CUT WF			CUT RF			SANIT WF			SANIT RF		
	No Trees	Ft.	D.C.	No Trees	Ft.	D.C.	No Trees	Ft.	D.C.	No Trees	Ft.	D.C.	No Trees	Ft.	D.C.	No Trees	Ft.	D.C.
12	7		21	4		20							2		6			
14	20		110	17		100							6		24			
16	20		138	9		60							3		12	6		48
18	18		183	5		81	1		20	1		14	11		94	5		63
20	21		367	15		320	10		211	6		136	6		72	6		125
22	8		196	13		384	13		292	15		476	9		195	3		103
24	16		494	16		637	15		638	19		817	8		254	6		252
26	8		403	10		498	12		649	17		992	3		122	8		437
28	5		300	3		172	13		928	18		1,377	1		81	3		213
30	2		112	2		126	13		949	29		2,996	3		247	8		804
32				2		242	6		721	21		2,587	1		125	4		558
34							9		1,138	32		4,608	2		250	8		1,324
36							4		572	17		2,761	4		660	5		957
38							1		184	18		3,501	1		224	8		1,628
40										23		5,462	3		738	9		2,085
42										11		2,733	1		317	10		2,837
44										10		2,830				7		2,025
46							1		321	4		1,288				5		1,755
48										4		1,372				5		1,821
50										2		559				2		778
52										2		915				2		824
54							1		510	4		1,728				4		1,848
56										2		890				2		974
58																3		1,618
60										2		1,016				1		443
Stand	125		23,240	96		26,400	99		71,330	257		390,580	64		34,210	120		235,200
Stand/Acre	6.9		1,290	5.3		1,470	5.5		3,960	14.3		21,700	3.6		1,900	6.7		13,070
Stand/Acre Both Species	12.2		-	2,760			19.9		-	25,660			10.3		-	14,970		

Ave Total Stand per Acre cruised 43,390 ft. 100.00%

Ave Total Cut 19.9 trees 25,660 ft. 59.14%

Ave Total Leave 12.2 trees 2,760 ft. 6.36%

Ave Total Sanit 10.3 trees 14,970 ft. 34.50%

113,560 ÷ 356 = 31.9" dia. Ave Cut Tree

From a study made by Roy Wagner, Assistant Supervisor, Shasta National Forest.

TABLE 6

GROWTH, YIELD, AND ALLOWABLE ANNUAL CUT

(For Cutover Stands on the Circle)

Average total leave per acre — 2,760 board feet

Average number of trees left per acre (12" +) — 12.2
" growing into 12" class — 5.3

Structure
Per cent of 1's and 2's (Dunning's Classification) — 32%
Per cent of 3's " " — 38%

Mortality — Average

Pole Condition — Average

Site Quality — II

	Board Foot Volume per Acre After Interval of				
	20 years	30 years	40 years	50 years	60 years
Average Gross Yield	4,300	5,000	5,750	6,400	6,900
Correction for Structure & Site II	136%	136%	136%	136%	136%
Correction for Age of Cutting	112%	118%	124%	130%	136%
Corrected Gross Yield	4,816	5,900	7,130	8,320	9,384
Total Gross Increment	2,056	3,140	4,370	5,560	6,624
Less 15% for Mortality	1,748	2,669	3,715	4,726	5,630
Average Net Annual Growth per year	87.7	88.9	92.9	94.5	93.8

Average Net Annual Growth per Cutover Stand 14,861 acres
(Cutting Cycle 50 years) — 1,404,365 bd.ft.

Estimated 200 board foot annual increment on
Virgin Stands - 30,393 acres — 6,078,600 bd.ft.

Total Allowable Annual Cut (board feet) — 7,482,965 bd.ft.

BALL MOUNTAIN WORKING CIRCLE
OWNERSHIP AND CUTOVER MAP

Legend

Orange Background -- Cutover land.
Green Background -- Areas not cutover.
Brown Background -- Non-productive area.

No cross-hatching -- Forest Service land.

Associated Lumber and Box Company land.

Other private lands.
Permanent Lookout Station.
Unoccupied Lookout Station.
Good Logging Road.
Poor Road.

Contour interval, 200 feet.
Scale 1" = 1 mile.
Mount Diablo Meridian.

T 47 N

T 46 N

T

9 | 10
16 | 15

MC GAVIN PEAK

SPANNUS SPRINGS

EAST

1949

1948

1950

1952

1951

1953

1954

1955

1956

1957

WEST

BLOCK

BOGUS

IKES MTN.

28 | 27
33 | 34

EAST BALL MTN.

EAGLE ROCK

LITTLE SHASTA

NORTH BALL MTN.

BALL MOUNTAIN WORKING CIRCLE
SUB-DIVISION OVERLAY

Legend

- Working Circle Boundary
- Block Boundary
- Compartment Boundary
- 1950 Cutting Area 1950
- Permanent Lookout
- Unoccupied Lookout
- Good Logging Road
- Poor Road
- Nearly Impassable Road

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R. 4 W. R. 3 W. 122°10' R. 2 W.

BALL MOUNTAIN WORKING CIRCLE TYPE MAP

Legend

02-11 2	Old growth, medium stocked, ponderosa pine, Site 2.
D6-11 2	Understocked (less than 5%), chaparral and ponderosa pine, Site 2.
01-15 2	Old growth, well stocked, red and white fir, Site 2.
02-15 2	Old growth, medium stocked, red and white fir, Site 2.
01-15 3	Old growth, well stocked, red and white fir, Site 3.
01-12 3	Old growth, well stocked, mixed conifer, Site 3.
01-12 2	Old growth, well stocked, mixed conifer, Site 2.
06-12 2	Old growth, mixed conifer and chaparral, Site 2.
R2-12 2	Young growth, (old growth 20-50%) mixed conifer, Site 2.
02-12 2	Old growth, well stocked, mixed conifer, Site 2.
N8	Non-timbered, woodland grass and broad-leaved trees
D6-15 2	Understocked, red and white fir, Site 2
D6-12 2	Understocked, mixed conifer, Site 2.
D7-11 2	Understocked, ponderosa pine, Site 2.
Y1-15	Young growth, well stocked, red and white fir, more than 20% of trees over 12".
N-16A	Non-timbered, (lodgepole pine).
N-9-6	Non-timbered, (pinion, juniper and chaparral).
R3-6-12 2	Young growth (old growth 20-50%), poorly stocked, mixed conifer and chaparral, Site 2.

T 46 N

41°30'