April 10, 1917

Descriptive Report

Of the

BURNT RIVER TIMBER SURVEY PROJECT

Whitman National Forest

1916

Alfred A. Griffin,

Chief of Party.

CONTENTS

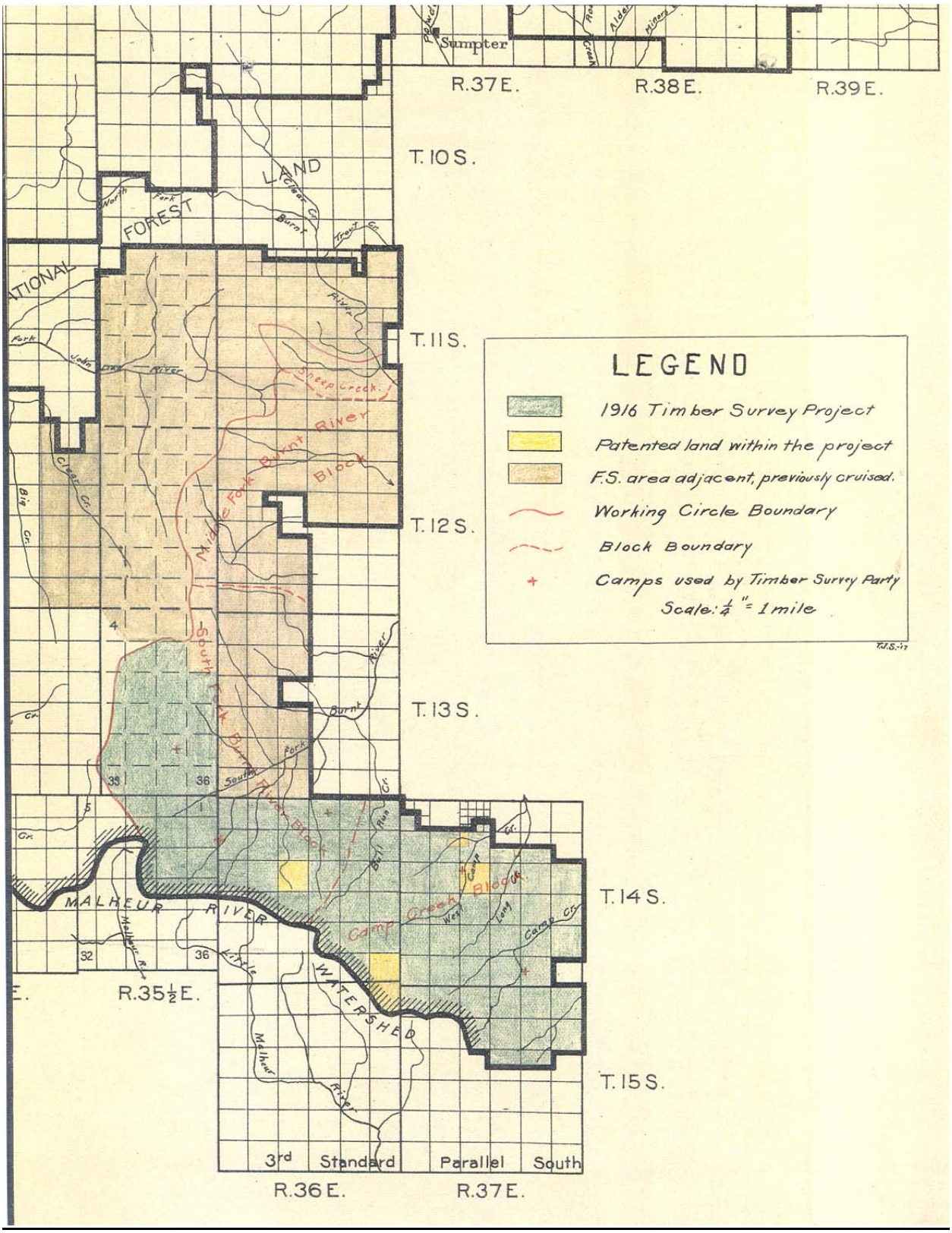
Descriptive Report

I. INTRODUCTION

The Burnt River, 1916, project is a continuation of 1915 work by F. A. Matz. The party, averaging six men, was in the field from July 6 to October 26, 1916. The temporary men were Field Assistants Wood, Larsen, Hawkinson, Hartley, Gardner, Burnham and Anderson; the yearlong men, O. M. Porter, F. W. Mattson and W. E. White, with A. A. Griffin in charge. Mr. T. J. Starker, Mr. Porter and Miss Erma F. Bell did much of the office work.

The accompanying map shows the location of the project in a thick crescent facing northeast between T 13 S, R 35E, and T 15 S, R 37E, W. M. Only the incomplete T 13 S, R 35 ½ E, is unsurveyed. The total area is 59,701 acres, with 475 million board feet of timber.

The west half of this project joins directly to that of 1915 as a single large market unit. The east side of the project can easily be divided into several small sale areas for portable mill outfits which supply local needs. The blocks into which the project may thus be divided are shown on the accompanying map. Transportation and merchantability are the bases for farther division into the logging chances which are shown in the base maps and tables.



II. STATUS AND OWNERSHIP

The patented land, principally state school sections, amounts to about 2,700 acres and shown on the accompanying map. Other private interests consist of several small irrigation ditches, about 40 miles of the old Eldorado mining ditch, three agricultural special uses and ten homestead applications covering 750 acres, two operating quartz mills, a large number of quartz claims, two sawmills, and a small timber sale on Kings Creek. The area of possible agricultural land is confined closely to the north boundary of the Forest in Range 15 East and has already been covered by intensive land classification, but not reported.

Other improvements consist of two Forest Service telephone lines, several roads, one Forest Service trail and several cabins. The telephone line reaches from Baldy Mt. Lookout, just west of the project, sixteen miles across the north side of the project. Most of this was built and is to be maintained by the owners of the Eldorado Ditch, but is used cooperatively. An old road, now partly out of repair, also follows the ditch. The sawmills, and the quartz mills on Bullrun and Amelia Creeks, are reached by good summer roads. There are short roads, in fair condition, up Elk, Bear, Long, East Camp and Willow Creeks, and into West Camp Creek. The Elk, Bullrun and Willow Creek Roads are used by ranchers in getting poles. The last mentioned was built in connection with an old sawmill; most of the others by the Eldorado Ditch management.

Of the four Ranger Station withdrawals on this project, Murray Ranger Station, on the northeast, has a house, barn, pasture and two phone lines; Midway, on the east boundary, is partly cultivated under special use permit, while Ironside and Lookout, on the southeast and southwest respectively, are not improved.

III. SILVICS

Western Yellow Pine

The yellow pine type covers 19,400 acres, about one-third of the project, and 98% of it is mature, with a stand of 15-25 M. Ft. B. M. per acre. It is found on the warmer sites with moderate moisture up to an elevation of 6,000 ft. The south and west slopes are preferred, except on the east side of the project, where the soil appears to be too dry. On the rocky ridges western juniper is found in moisture or alone and in the cool, moist draws western larch, lodgepole and the firs are gradually supplanting the yellow pine.

The timber is of fairly good quality, tall and quite straight, with frequently two and sometimes three logs clear of limbs. On different representative forties, the timber averages from 7 to 5 logs per M., with a tendency toward the latter figure. Many of the trees are, however, old and conky, especially on the east side of the project on the dry sites. Old "graybeards" with their lower branches dead, whitened and covered by "black moss" are too frequent.

The following table shows the average stand:

Table 1.

The number of trees per acre by diameter classes in representative western yellow pine type.

(Averaged from five selected four-acre tally sheets)

D.B.H. Inches	W.Y.P.	D.F.	W.L.	W.F.
4-7	6	1	1	
8-11	6	1		
12	3	1		1
14	2		1	
16	2			1
18	3	1		
20	2			
22	3			1
24	2			
26	2			1
28	1			
30	2			
32	1			
34				
36	1			
38				
40	1			
Over 41	.4			
Total No.	37	4	2	3
Vol. Ft. B.M.	15,000	200	200	500

Fir-Larch

The mixture of western larch with white and Douglas firs, etc., covers 17,700 acres, about 30% of the entire project, and is 99% mature or overmature. It is found on the cool, moist, north and east slopes up to above 7,000 ft. elevation, but on the more moist soils is replaced by small areas of pure lodgepole. One group of western white pine was found in this type.

This timber is often of poor quality. Douglas fir is usually short, limby and diseased. White fir is very seldom sound over 18 inches d.b.h. and generally is short. Larch is tall and clear, with the large trees shaky. On high sites the larch is often small, averaging 400-500 ft. per tree. Yellow pine is usually excellent and the lodgepole small but good.

The average composition is as follows:

Table 2

The number of trees per acre by diameter classes
for a representative fir-larch type

(Averaged from five selected four-acre tally sheets)

D.B.H. Inches	W.Y.P.	D.F.	W.L.	W.F.	L.P.	E.S.
4-7		6	10	6	16	
8-11	1	7	6	7	10	1
12		2	2	3	1	
14		2	2	2		
16		3	2	2		
18		2	1	2		
20		2	2	1		
22	1	1	1	1		
24		1	1			
26				1		
28						
30						
32		1				
Totals	2	27	27	25	27	1
Vol. Ft. B.M.	500	3,000	3,100	3,200	100	30

Lodgepole Pine

The timber type of third importance is lodgepole pine, occupying 4,900 acres, or 8% of the total area, of which nearly 90% is immature,--under 12 inches in average diameter. Most of the trees reaching a diameter of over 16 inches are open grown and therefore of low value. In this region well stocked stands very seldom attain a large average diameter.

Alpine

The last timber type, composed largely of alpine fir, covers 440 acres, less than 1% of the project. White fir and lodgepole pine are mixed in. The trees are scrubby, mostly immature. This type is found on the slope north of Bullrun Rock, the highest point on the project.

Woodland

There is about 900 acres (2% of the project) of western juniper mixed with mountain mahogany and other brush. The juniper is so scrubby as to be of but little value even for fenceposts. It is found only on rocky, dry ridges. In the draws of the northeast part of the project are some "strings" of small-sized aspen.

Open Land

Nearly 25% of the project, or 14,400 acres, is covered with sagebrush, which has a fair growth of grass underneath. It is found on the driest portions of the project, especially in the northeast portion and on the hilltops elsewhere. There are about 500 acres (1%) of brush and barren land, usually mountain mahogany, mountain laurel, currant, etc., on dry ridges. About 700 acres of grassland are found on the east end of the Malheur-Burnt River divide. There is considerable rain at this high elevation. About 20 acres of cultivated land are contained in a Special Use area. On the unpatented homesteads there are fenced areas of about 100 acres under partial cultivation which the type map shows only as sagebrush, the natural cover.

Forest Enemies

Although there are many trees with "catface" and other signs of fire, it appears that most of the damage is old, occurring 25 years or more ago. The large burns on the slopes toward Bullrun Rock are reforesting well with lodgepole pine and alpine fir. In the spring of 1916 a fire on Willow Creek covering about 10 acres caused the fall of several large pines. In general the fire danger appears comparatively low. The Forest travel is largely by local users.

Insect damage is confined to a "normal infestation" of bark beetles, with few noticeable centers of infection. During early September large numbers of the "pine butterfly" were at work. The visible damage, however, was nil.

The fungus damage is much more serious for all species except, perhaps, lodgepole pine. Yellow pine is seriously attacked by butt rot (Polyporus schweinetzii), ring rot, and red heart or top rot (Fomes laricis). The last mentioned is probably the most serious and is very common in the pine cut in the timber sale on Kings Creek. Throughout the area the many large dead limbs in the tops are an indication of rot on the inside.

The larch, as usual, appears to be comparatively free from rot. Douglas fir is less sound and the average defect in all normal trees (over 70% sound) is more than 6%. Fire scars and staghead are quite frequent. Tables in the appendix show the average defect figures for each important species in each section.

The white fir is very conky and unsound. In the judgment of local timbermen, practically all of the trees over 20 inches d.b.h. are unmerchantable. An average reduction of 15% was made for defect in the normal trees. Including the abnormal trees, a total deduction of 50% to 60% has been made.

Lodgepole pine and Engelmann spruce are comparatively free from defect.

Mistletoe attacks are serious on larch and Douglas fir, causing suppression in trees of all sizes, the death of some and a lowered merchantability of the rest. On both these species, and to a lesser extent on both the pines too, large brooms lower the vitality and sometimes kill the branch or the entire tree. Douglas fir seedlings do not suffer from this pest, but clumps of yellow pine frequently do.

Windfall in the virgin forest is unimportant, but not so when it comes to seed trees left after cutting. The rather shallow soil makes this an open danger on the entire area.

Previous cuttings have removed a large part of the yellow pine originally in the Willow Creek Valley. This occurred about thirty years ago. Some scattered cuttings have been made by prospectors and miners, especially on East Camp and Bullrun Creeks.

Reproduction

In the yellow pine type, samplings are comparatively scarce and occur almost entirely in groups. Seedlings, also grouped, are quite plentiful, giving a little over a two-thirds stocking for the whole area. On the north slopes in this type there is a considerably proportion of invading Douglas fir and some white fir.

In fir-larch, and sometimes in lodgepole pine, types there is an excess of reproduction of all ages. More frequently here than in yellow pine, it is so thick as to make grazing of little value. White fir predominates, then Douglas fir, larch and lodgepole. Lodgepole favors even-aged stands.

The absence of fire for many years past has allowed a considerable increase of reproduction in the timber and in the open as well. As a result, the sagebrush country is being invaded by yellow pine saplings and seedlings, usually in a scattered stand because of the severe climatic conditions.

Undergrowth

In the yellow pine forest of this project, there is but little brush except scattered mountain mahogany and currant bushes. Needles and litter occupy most of the surface with herbage of pine grass, bunch grass, arnica, sunflower and other weeds.

The fir-larch reproduction takes up much of the ground-space in that type, but there is some Ceanothus, buck brush, huckleberry and other shrubs, also weeds.

In the open lodgepole pine stands there is a valuable cover of bunch grass; in the dense stands there are only a few weeds and bushes.

IV. LOGGING CONDITIONS

The surface conditions on this area are generally favorable to logging, although some of the yellow pine and a large part of the fir-larch type is on steep slopes with a fairly rocky surface. Rock outcrops are few, slopes are moderate and the ground is free from dense brush and windfalls.

The topography, however, presents some difficulties. On the east half the timber lies in strips along the creeks, with high ridges between, so that logging from one drainage to another would be very expensive. The timber bodies are too small to justify a railroad for some time to come. On the west half a large part of the pine is on the benches

between the steep bottoms of creeks, such as Barney and Bear Creeks. This arrangement increases the probable expense of railroad construction and of skidding.

V. MANAGEMENT RECOMMENDATIONS

This project covers but part of a large body of timber below the present lumbering operations at Whitney. All the National Forest timber west of Bullrun can economically be railroaded either across the low divide to a mill located on the Sumpter Valley Railroad or to a millsite on Burnt River. The latter method will necessitate building a standard gauge railroad up Burnt River from the O. W. R. & N. at Durkee. By providing a short, downhill haul from stump to a mill on a standard gauge road and by providing transportation to a growing valley region, it becomes the more logical project. About 600 million feet of Government stumpage and 1,300 million of private timber would be tapped by this railroad.

The Camp Creek block requires directly opposite treatment; the timber is in patches, suitable for a portable mill. The development will be simply an extension of the roads and mills already built. The ranches on Burnt River and Willow Creek will require gradually increasing amounts of timber as time goes on. Some mining claims on Bullrun Creek and westward are being developed, but do not promise very much.

The standard marking rules for District 6 (East Side) can be applied with comparative freedom, except at the edge of forest growth and on the very dry south slopes of Thirsty Gulch in Chance No. 14 of the South Fork Block. Here the soil is very thin and the reproduction scattered. The marking in the fir-larch type will have to depend largely on the requirements of the market, but a determined effort should be made to clean out the old trees so thoroughly that the new stand, though it must be largely of the same species, may be thrifty, free from fungus and mistletoe.

Inferior species can be partially cleaned up by free uses. It is believed that permits for green material might be confined to white fir over 16 inches in diameter at the stump and to lodgepole pine under 10 inches in diameter at the stump. If such a step is possible from an administrative point of view it will assist materially in cleaning out the old rotten fir and the lodgepole thickets on Bullrun, Elk and Last Chance Creeks. Other material is valuable and quite durable. In 1915 there were 80 free use permits for about 250 M ft. B.M. and the increase is gradual. Close utilization is impossible for some time to come, as there is a large amount of very defective white fir, with much mistletoe-covered Douglas fir and larch. Improvement of the stand by introducing western white pine may be possible at a future date.

The present method of brush disposal after logging on this area is piling and burning to decrease the fire hazard. Further experiments in disposal of the brush by scattering, to improve the soil quality and conserve moisture for both seedlings and forage plants, would be of considerable value. Further consideration is also required of the probable insect damage to advance seedlings. Ips and Dendroctonus brevicomis are the insects to be guarded against. The fire danger can well be reduced by burning the brush on the bottom land and in fire-lanes up the draws where the fire danger is probably greatest

and the need for moisture is least. The trampling by livestock and crushing by deep snows will further diminish the fire danger by breaking up the needles and small twigs. The present conditions for forest reproduction south slopes and rocky points are very severe.

In this project management for sustained annual yield is needed only on an area sufficient to satisfy local requirements. The rest can be governed by other considerations. It will probably be most convenient, however, to handle the Camp Creek Block as a unit. On the yellow pine type, of about 10,000 acres here, the annual yield, at an average of 150 ft. B.M. per acre*, will be about 1,500 M ft. B.M. Other types (6,500 acres) can yield an amount nearly equal to this. The amount of timber taken from the entire project area yearly is probably under 600 M, or about one-fifth of the yield of this one block under management. The supply seems to be sufficient to provide for the possible future development for a long time to come. This indicates that small sales can be encouraged in this block. Easy country and good timber in moderate quantity make excellent chances on both Long and East Camp Creeks.

The grazing capacity of the area within the project is 3,100 horses or cattle and 7,300 sheep. At the present rates, this will provide a gross income of $1,788 per year. Reproduction and brush are encroaching on the range in some places. The damage to forest reproduction seems to be unimportant. One spring and a few salting grounds are already improved.

The recreational use of the area brings in no financial returns, but is of importance nevertheless. In 1916 about thirty separate parties came on this watershed, of which twenty were on the South Fork proper. Local residents and Forest users predominated and no forest fires were started. While the camping places were left in fairly good condition, it is believed that good results would attend the use of "catchy" signs requesting or gently suggesting that camping places should be kept clean. But few such educational signs are at present used by the Forest Service. It may be possible some time to develop a summer home tract on the South Fork, or on West Camp Creek, but none is needed yet and no areas need be reserved for that use or for scenic purposes.

Watershed protection is important on this area, as the irrigated areas on Burnt River and Camp Creek amount to 8,250 acres above their junction and all available water is needed. Fourteen small streams, with a total mean flow of about 40 second-feet during July and August, as measured by the U. S. Geological and State Water Surveys arise and receive practically all of their volume within the boundaries of this project. No areas or stands need be especially reserved for the protection of this resource, as it is probable that on the steep hillsides natural reproduction will be vigorous. The headwaters of most of the streams, furthermore, have stands of material unmerchantable for a long time to come. There are but few steep areas, small and very dry, where planting would be of value for this purpose.

* U.S. Dept. of Agriculture Bulletin 418, by Thornton T. Munger.

VI. SILVICAL SUMMARY

The 1916 Whitman timber survey project covers an area of about three townships at the southern headwaters of Burnt River next to the Malheur Forest and watershed. One-third is sagebrush with high grazing value and on which pine seedlings are encroaching; one-third is mature yellow pine with a stand of 300 millions; the rest is a mixture of larch, Douglas fir, decayed white fir and small lodgepole, amounting to 175 millions.

The management will be about normal. Some experiments and improvements are needed. Most of the timber can be safely included in a large sale to improve transportation facilities in the valley below.

VII. STATISTICAL SUMMARY

The volume tables used in computing the estimates are as follows:

Yellow pine	Blue Mountain Volume Table
Western larch	Austin Larch Volume Table
Engelmann spruce	Austin Larch Volume Table
White fir	Pelican Bay Volume Table
Douglas fir	Burnt River 1915 Volume Table for short trees
Lodgepole pine	Ochoco Volume Table

The following set of tabulations will summarize the estimates by townships and sections and species for use where these units are more convenient than is the logging chance.

Table 3.

Burnt River 1916 Timber Survey Project

Summary of estimate by townships and species, M ft. B. M.
On National Forest land only.

Twp.	13S-35½E	14-35 ½	14-36	15-36	14-37	15-37	Project total	Per cent
Acreage, gross	11,811	5,429	17,436	660	17,458	6,907	59,701	
F.S. land only	11,811	5,429	16,079	70	15,986	6,907	56,282	
M ft. Y. P.	75,255	11,973	100,883	-	67,275	43,728	299,114	61
M ft. D. F.	9,653	2,715	15,058	-	12,041	5,337	44,804	10
M ft. W. L.	16,821	7,045	21,897	-	4,893	2,875	53,531	12
M ft. W. F.	25,605	7,269	17,174	-	2,663	3,982	56,693	12
M ft. L. P.	2,475	9,984	5,183	-	2	56	17,700	5
M ft. E. S.	618	309	603	-	-	-	1,530	
M ft. A. F.	1,089	--	143	-	-	-	1,232	
M ft. all species	131,516	39,295	160,941		86,874	55,978	474,604	100

The average stand for the net National Forest area is 8.4 M ft. B.M. per acre. Of this 5 M is yellow pine, 1 M white fir, 1 M western larch and nearly 1 M is Douglas fir.

Table 4.

Stand of timber by sections and species, M ft. B.M.
Township 13 South, Range 35 ½ East

Sec.	Yellow pine	Lodge-pole pine	Western larch	Douglas fir	White fir	Alpine fir	Engel-mann spruce	Total
1	1,384	14	820	233	487	-	-	2,939
2	223	11	9	178	3	-	-	424
9	-	125	558	375	442	-	-	1,500
10	1,890	14	705	236	903	-	-	3,748
11	5,986	28	610	591	874	-	-	8,089
12	5,104	29	715	1,132	736	-	-	7,717
13	10,439	28	492	338	1,527	-	-	12,824
14	5,877	75	775	459	1,626	-	-	8,812
15	640	8	663	208	1,565	-	-	3,084
16	-	185	547	-	823	-	-	1,555
21	3	465	109	191	860	62	-	1,690
22	1,538	32	1,150	895	2,620	0	66	6,301
23	4,709	74	512	500	2,867	-	60	8,722
24	8,627	28	714	293	1,492	-	16	11,170
25	8,978	58	936	494	1,645	-	4	12,115
26	5,387	4	771	775	1,425	-	34	8,396
27	505	266	1,142	421	1,072	6	10	3,422
28	20	368	2,589	467	183	529	-	4,156
33	140	430	437	337	421	466	-	2,231
34	3,285	123	669	473	752	27	257	5,586
35	3,846	17	624	326	1,504	-	42	6,359
36	6,675	93	1,270	731	1,784	-	127	10,680
Total	75,253	2,477	16,817	9,651	25,611	1,090	616	131,515

Table 5.

Stand of timber by sections and species, M ft. B.M.
(All forest land)
Township 14 South, Range 35 ½ East

Sec.	Yellow pine	Lodgepole pine	Western larch	Douglas fir	White fir	Engelmann spruce	Total
1	1,564	51	1,596	106	1,257	6	4,580
2	2,343	236	825	371	708	-	4,483
3	-	192	814	99	600	59	1,764
4	-	77	294	-	26	-	397
10	-	1,204	286	-	195	-	1,685
11	570	905	1,648	636	738	19	4,516
12	5,943	64	660	371	1,737	62	8,837
13	1,517	834	843	672	1,555	162	5,609
14	35	965	78	155	227	-	1,460
15	-	853	-	-	193	-	1,046
22	-	-	-	-	-	-	-
23	-	1,473	-	303	-	-	1,776
24	-	3,129	-	-	34	-	3,163
Total	11,972	9,983	7,044	2,713	7,270	308	39,290

Table 6

Stand of timber by sections and species, M ft. B.M.
(Private land excluded)
Township 14 South, Range 36 East

Sec.	Yellow pine	Lodge-pole pine	Western larch	Douglas fir	White fir	Alpine fir	Engel-mann spruce	Total
1	1,817	-	271	334	-	-	-	2,422
2	5,003	-	192	1,280	-	-	-	6,475
3	11,215	-	468	723	129	-	-	12,535
4	13,199	-	619	1,029	215	-	-	15,062
5	11,240	5	426	840	242	-	4	12,757
6	7,000	37	1,480	594	1,292	-	53	10,456
7	6,154	54	730	460	844	-	92	8,334
8	8,967	74	982	799	1,402	-	5	12,229
9	9,824	33	866	663	987	-	55	12,428
10	5,366	4	1,110	751	120	-	30	7,381
11	1,389	6	533	238	184	-	-	2,350
12	2,226	-	196	878	41	-	12	3,353
13	2,073	44	946	1,726	431	-	27	5,247
14	4,516	18	1,523	213	625	-	38	6,923
15	2,398	118	841	1,105	367	-	43	4,872

Sec.	Yellow pine	Lodge-pole pine	Western larch	Douglas fir	White fir	Alpine fir	Engel-mann spruce	Total
17	764	164	1,500	257	863	-	77	3,625
18	259	1,446	2,137	580	1,099	-	103	5,624
19	-	609	-	-	117	-	-	726
20	-	1,092	1,250	90	376	134	8	2,950
21	-	909	228	158	1,114	-	-	2,409
22	2,010	249	2,504	972	1,616	-	6	7,357
23	2,545	120	1,393	580	1,934	-	62	6,634
24	-	-	53	129	242	-	-	424
25	1,802	-	609	80	1,059	-	-	3,550
26	618	-	55	262	1,294	-	-	2,229
27	403	39	110	205	37	9	-	803
28	-	148	28	25	147	-	-	348
35	89	17	847	86	402	-	-	1,441
Total (F.S. net)	100,877	5,186	21,897	15,057	17,179	143	605	160,944

Table 7

Stand of timber by sections and species, M ft. B.M.
Township 14 South, Range 37 East.

Sec.	Yellow pine	Lodgepole pine	Western larch	Douglas fir	White fir	Total
6	38	-	-	90	-	128
7	104	-	53	647	-	804
8	821	-	163	126	-	1,110
9	637	-	-	-	-	637
10	213	-	-	-	-	213
13	2	-	-	-	-	2
14	244	-	-	-	-	244
15	5,002	-	-	172	-	5,174
16*	3,492	-	-	340	-	3,832
17	849	-	94	783	-	1,726
18	118	-	74	1,462	2	1,656
19	1,198	-	73	310	66	1,647
20	2,580	-	279	805	34	3,698
21	4,759	-	224	640	98	5,721
22	3,233	-	145	159	-	3,537
23	518	-	-	27	-	545
24	1,090	-	44	75	-	1,209
25	2,873	-	108	210	-	3,191
26	4,994	-	561	647	12	6,214

Sec.	Yellow pine	Lodgepole pine	Western larch	Douglas fir	White fir	Total
27	2,606	-	342	207	4	3,159
28	4,345	-	212	1,232	184	5,973
29	463	-	251	1,080	11	1,805
30	3,155	2	168	886	360	4,571
31	5,555	-	596	456	740	7,347
32	3,522	-	310	603	558	4,993
33	5,264	-	519	828	442	7,053
34	6,869	-	620	480	153	8,122
35	6,328	-	196	126	-	6,650
Total	70,872	2	5,032	12,391	2,664	90,961
Alienated*	3,596		135	340		4,071
F.S. Only	67,276	2	4,897	12,051	2,664	86,890

Note: Part of Sec. 8 is alienated.

Table 8

Stand of timber by sections and species, M ft. B.M.
(All forest land)
Township 15 South, Range 37 East

Sec.	Yellow pine	Lodgepole pine	Western larch	Douglas fir	White fir	Total
1	1,871	-	86	161	-	2,118
2	3,923	-	163	217	110	4,413
3	5,595	-	324	656	119	6,694
4	1,683	-	62	452	113	2,310
5	3,572	17	433	1,182	836	6,040
6	6,165	12	268	591	1,072	8,108
8	697	-	73	34	30	834
9	5,417	4	456	514	689	7,080
10	6,122	20	592	850	405	7,989
11	1,493	3	169	144	257	2,066
12	1,371	-	70	217	21	1,679
14	3,410	-	112	188	301	4,011
15	2,410	-	67	132	29	2,638
Total	43,729	56	2,875	5,338	3,982	55,980

The figures in the tables by townships were rounded to thousands B.M. before totaling the forty estimates and therefore vary slightly from the totals of the section tables.

A summary of the types on the entire area included within the project is shown in Table 9. The areas are obtained by planimetering the original township type maps.

Table 9

Burnt River Timber Surveys, 1916
Summary of types by townships

	T13S-R35½E Acres	14-35 ½ Acres	14-36 Acres	15-36 Acres	14-37 Acres	15-37 Acres	Total 1916 Proj.* Acres	Per cent
Barren	-	19	64	-	-	12	95	-
Brush	12	-	12	-	312	92	428	1
Sage	-	-	3,160	-	9,604	1,635	14,399	24
Grass	-	30	24	-	-	612	666	1
Cultivated	-	-	-	-	20	-	20	-
Juniper	-	-	668	-	124	136	928	2
Yellow pine								
Mature	4,252	575	6,304	60	5,130	2,830	19,151	32
Poles	-	-	52	-	216	-	268	½
Saps.	-	-	36	-	20	8	64	
Fir-Larch								
Mature	5,767	1,951	6,144	600	2,012	1,570	18,044	30
Immature	20	168	-	-	20	12	220	½
Lodgepole								
Mature	520	160	-	-	-	-	680	1
Immature	920	2,526	852	-	-	-	4,298	7
Alpine fir	320	-	120	-	-	-	440	1
Total	11,811	5,429	17,436	660	17,458	6,907	59,701	100

*Alienated land is included.

Following are tabulations of the average per cents of defect of each species, the average breakage, and the number of snags per section of all species. Only the snags which are at least 12 inches d.b.h. and 16 ft. tall are included. The breakage figures are averages of the estimates on the separate tally-sheets. The defect figures apply only to the trees less than 30% unsound. Much of the fir and some of the other species is up to 100% defective.

Table 10

Township 13 South, Range 35½ East

	Average percentage of defect						No. of snags over 16' tall			
Sec.	Y.P.	D.F.	W.F.	W.L.	L.P.	Breakage	12-20" dbh	21-30" dbh	Over 30" dbh	Total
9	-	16	17	5	2	1	80	-	-	80
10	2	7	20	3	2	2	1,250	530	70	1,850
11	2	8	18	2	2	2	830	760	220	1,810
13	4	5	20	3	2	2	1,110	660	230	2,000
14	4	4	16	3	2	1	1,450	530	40	2,020
15	2	6	15	2	1	2	2,320	580	60	2,960
16	-	-	11	6	2	1	178	40	-	218
21	-	4	2	5	2	2	188	-	-	188
22	2	5	16	2	1	2	1,200	600	260	2,060
23	3	5	14	3	2	2	847	368	100	1,315

	Average percentage of defect						No. of snags over 16' tall			
Sec.	Y.P.	D.F.	W.F.	W.L.	L.P.	Breakage	12-20" dbh	21-30" dbh	Over 30" dbh	Total
24	4	5	16	2	2	2	518	410	183	1,111
25	4	6	30	3	2	2	580	440	220	1,240
26	2	6	18	2	1	2	590	560	90	1,240
27	5	6	20	5	2	2	800	240	80	1,120
28	-	-	-	2	5	-	750	-	-	750
33	-	3	2	3	-	2	320	-	-	320
34	5	5	18	5	-	2	1,280	380	160	1,820
35	2	5	16	2	1	2	960	460	120	1,540
36	4	6	31	4	2	2	991	360	120	1,471
Total							16,242	6,918	1,953	25,113
Aver.	3	6	17	3	2	2	855	364	103	1,322

Table 11

Township 14 South, Range 35½ East

	Average percentage of defect						No. of snags over 16' tall			
Sec.	Y.P.	D.F.	W.F.	W.L.	L.P.	Breakage	12-20" dbh	21-30" dbh	Over 30" dbh	Total
1	3	9	14	3	1	2	540	240	40	820
2	5	4	15	4	-	2	1,080	340	100	1,520
3	-	-	15	3	-	2	760	320	-	1,080
4	-	-	8	2	2	2	-	-	-	-
10	-	-	10	4	4	2	259	29	-	288
11	5	5	13	5	2	2	140	160	20	320
12	2	11	16	3	1	2	440	620	80	1,140
13	5	6	17	5	2	2	584	495	90	1,169
14	-	10	-	-	-	1	480	-	-	480
15	-	-	-	-	-	-	634	-	-	634
23	1	3	-	-	-	-	-	-	-	-
24	-	-	6	-	3	-	-	-	-	-
Total							4,917	2,204	330	7,451
Aver.	4	7	13	4	2	2	546	245	37	828

Table 12

Township 14 South, Range 36 East.

	Av. Percentage of defect					No. of snags over 16' tall			
Sec.	Y.P.	D.F.	W.F.	W.L.	Breakage	12-20" dbh	21-30" dbh	Over 30" dbh	Total
1	2	8	-	4	2	166	30	-	196
2	2	8	-	4	2	269	108	19	396
3	4	7	16	5	3	447	330	79	856
4	4	6	24	4	2	773	400	130	1,303
5	4	4	19	4	2	462	660	241	1,363
6	4	4	22	5	3	1,210	590	150	1,950
7	3	8	14	3	2	840	310	60	1,210
8	4	4	21	4	2	890	490	170	1,550
9	5	5	22	3	2	784	694	130	1,608
10	4	6	19	4	2	650	307	61	1,018

	Av. Percentage of defect					No. of snags over 16' tall			
Sec.	Y.P.	D.F.	W.F.	W.L.	Breakage	12-20" dbh	21-30" dbh	Over 30" dbh	Total
11	3	7	19	4	2	399	105	-	504
12	3	7	20	5	3	578	140	64	782
13	3	8	18	5	2	970	613	40	1,623
14	3	6	19	5	3	945	300	102	1,347
15	4	7	16	4	2	1,227	147	63	1,437
17	3	5	16	4	2	550	346	60	956
18	4	6	18	5	3	906	303	40	1,249
19	-	-	18	-	-	180	-	-	180
20	-	10	10	5	1	280	80	-	360
22	3	6	35	5	2	2,131	230	59	2,420
23	4	8	20	5	3	2,170	524	142	2,836
25	5	3	20	4	3	260	-	-	260
Total						17,087	6,707	1,610	25,404
Aver.	4	6	19	4	2	777	305	73	1,155

Table 13

Township 14 South, Range 37 East.

	Av. Percentage of defect					No. of snags over 16' tall			
Sec.	Y.P.	D.F.	W.F.	W.L.	Breakage	12-20" dbh	21-30" dbh	Over 30" dbh	Total
6	2	7	-	-	1	60	-	-	60
7	4	5	-	3	-	10	15	-	25
8	4	10	-	2	2	220	-	-	220
14	5	-	-	-	2	-	-	-	-
15	3	4	-	-	1	58	152	83	293
16	2	10	-	-	1	147	143	80	370
17	3	5	-	3	2	80	80	20	180
18	3	6	6	2	1	60	56	16	132
19	4	6	8	3	2	118	11	31	160
20	5	5	12	2	2	410	204	40	654
21	5	6	16	3	1	257	125	29	411
22	5	4	-	4	1	19	68	-	87
23	4	4	-	-	2	-	12	-	12
24	5	6	-	3	2	-	50	-	50
25	5	5	-	2	1	102	72	30	204
26	5	5	-	5	2	180	172	35	387
27	5	5	-	2	2	138	195	54	387
28	3	7	28	2	2	365	265	47	677
29	2	9	-	2	2	237	50	20	307
30	3	7	11	4	2	370	161	-	531
31	3	8	11	6	2	210	392	20	622
32	5	8	12	2	2	262	110	29	401
33	3	6	16	2	2	548	302	59	909
34	8	8	18	2	2	563	338	90	991
35	7	2	-	3	2	100	170	80	350
Total						4,514	3,143	763	8,420
Aver.	4	6	14	3	2	188	131	32	351

Table 14

Township 15 South, Range 37 East

		Av. Percentage of defect				No. of snags over 16' tall			
Sec.	Y.P.	D.F.	W.F.	W.L.	Breakage	12-20" dbh	21-30" dbh	Over 30" dbh	Total
1	2	8	-	7	1	179	128	18	325
2	2	6	8	38	2	361	157	51	569
3	4	5	18	2	1	774	336	100	1,210
4	4	5	14	2	1	94	49	46	189
5	4	6	17	2	1	720	325	108	1,153
6	3	5	16	2	1	558	301	94	953
8	5	8	8	1	1	17	-	-	17
9	5	5	12	2	2	614	222	77	913
10	5	5	14	3	2	836	328	186	1,350
11	3	7	11	6	2	91	28	23	142
12	3	8	9	6	2	315	54	-	369
14	3	7	8	5	2	181	218	41	440
15	4	5	8	2	1	135	66	36	237
Total						4,875	2,212	780	7,867
Aver.	4	6	12	6	1	375	170	60	605

The Grand Summary tables following give briefly the results of the cruise by watersheds and logging units of three grades – chance, block and working circle.

/s/ Alfred A. Griffin

Forest Examiner

Approved:

Forest Supervisor

Amount of National Forest timber by Chance and Species
SOUTH FORK BURNT RIVER BLOCK
(1915-16 work combined)

Chance No.	Name	Area - Acres		Volume by species, M ft. B.M.							
		Patented and pending	National Forest	Y.P.	D.F.	W.L.	W.F.	L.P.	E.S.	A.F.	Total
1	S. Pole Cr.	-	3,163	23,277	3,233	3,739	2,365	58	-	-	32,672
2	Pole Creek	-	876	2,567	1,187	2,269	1,042	9	2	-	7,076
3	Steep Creek	-	1,566	24,745	1,848	1,202	1,656	2	-	-	29,453
4	Sheep Creek	-	1,756	19,044	1,693	1,230	1,427	9	-	-	23,403
5	Rail Gulch	-	3,035	31,547	2,580	1,660	1,959	33	-	-	37,806
6	Last Chance	-	2,145	19,630	1,874	2,716	4,370	77	145	-	28,812
7	Elk Creek	-	2,831	24,248	2,799	4,635	5,737	228	371	16	38,034
8	Bear Creek	-	1,878	23,515	2,191	3,897	2,154	95	28	-	31,880
9	Stevens Creek	-	1,560	18,678	1,901	2,170	1,429	81	47	-	24,306
10	Barney Creek	400	2,212	34,680	2,503	1,757	1,230	33	55	-	40,258
11	Amelia Creek	20	2,423	20,450	3,473	2,595	449	125	30	-	27,122
12	Lookout Creek	-	1,488	11,578	1,317	1,941	3,213	414	325	-	18,788
13	Spring Creek	-	1,745	12,716	1,388	4,306	4,462	557	134	-	23,563
14	Thirsty Gulch	-	2,168	28,143	1,620	2,262	4,332	148	2	-	36,507
15	Upper Last Ch.	-	3,619	1,964	2,241	6,671	7,398	1,796	31	683	20,784
16	Upper So. Fork	-	3,576	342	1,209	2,868	2,650	7,738	80	390	15,277
17	Table Rock	240	2,312	472	1,090	4,663	3,274	5,719	144	134	15,496
Total		660	38,353	297,623	34,147	50,581	49,147	17,122	1,394	1,223	451,237

Amount of National Forest Timber by Chances and Species
CAMP CREEK BLOCK

Chance No.	Name	Area - Acres: Patented and pending	Area - Acres: National Forest	Volume by species, M ft. B.M.: Y.P.	D.F.	W.L.	W.F.	L.P.	E.S.	A.F.	Total
1	Middle Willow	-	2,839	10,412	774	488	558	-	-	-	12,232
2	Kings Creek	-	6,453	41,739	3,775	2,990	1,540	27	-	-	50,071
3	East Camp	-	3,686	26,130	3,945	2,042	2,384	17	-	-	34,518
4	Long Creek	670	3,990	16,605	2,898	758	256	-	-	-	20,517
5	West Camp	437	2,033	4,318	1,075	210	34	-	-	-	5,637
6	Skull Gulch	365	1,234	870	2,308	222	2	-	-	-	3,402
7	Bullrun	57	4,232	15,460	5,074	5,637	3,914	281	178	-	30,544
8	Crystal	460	2,037	3,328	661	895	1,839	-	-	-	3,402
9	Upper Bullrun	180	1,614	944	573	2,157	2,416	321	-	9	6,420
10	Upper W. Camp	590	1,896	9,945	1,996	1,017	1,670	14	-	-	14,642
Total		2,759	30,014	129,751	23,079	16,416	14,613	660	178	9	184,706

Amount of National Forest Timber by Species and Blocks
On Burnt River South of Whitney, Oregon, and not under contract

Block	Area - Acres: Patented	Area - Acres: National Forest	Volume by species, M ft. B.M.: Y.P.	D.F.	W.L.	W.F.	L.P.	E.S.	A.F.	Total	Stand per Acre
Camp Creek	2,759.00	30,014.00	129,751	23,079	16,416	14,613	660	178	9	184,706	6.1 M
South Fork	660.00	38,352.82	297,623	34,147	50,581	49,147	17,122	1,394	1,223	451,237	11.7 M
Middle Fork	1,038.35	19,127.98	140,541	24,553	11,782	5,767	213	-	-	182,856	9.5 M
Sheep & Lick	-	3,300.00	29,781	3,415	1,988	2,512	55	-	-	37,751	11.4 M
Total	4,457.35	90,794.80	597,696	85,194	80,767	72,039	18,050	1,572	1,232	856,550	

By deducting the upper slope areas which could not be included
in a prospective sale, the following amounts are given for the South Fork Block

	Area - Acres		Volume by species, M ft. B.M.								
Block	Patented	National Forest	Y.P.	D.F.	W.L.	W.F.	L.P.	E.S.	A.F.	Total	Stand per Acre
Totals	660.00	38,352.82	297,623	34,147	50,581	49,147	17,122	1,394	1,223	451,237	11.7 M
Chances 15-16-17	240	9,507.00	2,778	4,540	14,202	13,322	15,253	255	1,207	51,557	
Amts. In Y.P. areas	420	28,845.82	294,845	29,607	36,379	35,825	1,869	1,139	16	399,680	13.8 M

April 5, 1917

Cost Report

BURNT RIVER TIMBER SURVEY

Whitman National Forest

1916

Alfred A. Griffin,
Chief of Party.

CONTENTS

SUMMARIZED COSTS
of the
BURNT RIVER TIMBER SURVEY PROJECT

I. **Statement of Conditions**

The party consisted of seven field assistants and four yearlong men, who, because of the delay in appropriations, were in the party for various periods. All had previous experience in timber mapping and estimating.

Supplies were obtained from local stores at Unity and from nearby ranchers. The Forest Service team hauled one load from Sumpter. Local Forest officers also brought in men and supplies.

The region is sufficiently developed that four of the five camps could be reached by wagon. Only the north end of the project was on rolling ground, the rest being in very mountainous country. The land survey—1882—covers most of the project.

About one-third of the area is covered by yellow pine timber, one-third by lodgepole and fir-larch type and one-third by sagebrush and other open types which could be covered less intensively. The yellow pine was cruised on a 10% basis by log heights, and the fir-larch, because of its low quality, on a 5% basis.

Acreage and Mileage

1. Total gross area mapped (including patented and Government land)	59,701 acres
Area of alienated land	3,419 acres
2. Area covered by 10% cruise	17,000 acres
3. Area covered by 5% cruise	29,900 acres
4. Area covered by 3 ½ % cruise	12,800 acres
5. Control line, chiefly retracement by compass, topographic tape, and double abney method	112 miles
6. Miles of strip cruising	445 miles

II. Expenses

1. Subsistence supplies	$516
2. Cook's wages	163
3. Cost of packing, moving camp, etc. (including $50. in contributed time)	120
4. Travel expenses	135

5. Equipment and supplies	57
Total expenses	$991
Average daily expense per man	$1.58

III. Field Work

1. Average size of crew (excepting the cook) 627 man days in 114 days' time		5.5 men
2. Average monthly salary		$80.00
3. Intensive control work	Man days	147
	Salary	$388
	Expense prorated	232
	Total	$620
4. Strip cruising	Man days	250
	Salary	$660
	Expense prorated	395
	Total	1,055
5. Camp computing and map compilation	Man days	46
	Salary	$121
	Expense prorated	73
	Total	$194
6. Supervision by Chief	Man days	34
	Salary	$90
	Expense prorated	54
	Total	144
7. Travel and establishing camp	Man days	55
	Salary	$145
	Expense prorated	87
	Total	232
8. Sundays, rain and leave	Man days	95
	Salary	$250
	Expense prorated	150
	Total	400
9. Total cost of field work	Man days	627
	Salary	$1,654
	Expenses	991
	Total	$2,645

IV. Office Work

All of the office work was done in Portland, by three technical men and a computing clerk. The costs cover all expenses for three sets of the estimate sheets, working plan maps, descriptive and cost reports.

Travel expenses are included with the field work.

	Distributed Costs			
	Mapping	Computation	Reports	Total
Man days	90	162	15	267
Salaries	$320	$552	$54	$926
Blueprinting and typewriting	27	0	10	37
Total cost	$347	$552	$64	$963

V. Total Cost

		Cost per acre
The entire cost of the project is as follows:		
Preliminary examination and field work	$2,649	$.044
Office work	963	.016
Total cost	$3,612	$.060

	Costs per acre and per M.
59,701 acres gross area	$.0605 per acre
56,282 acres net (unclaimed)	.0642 per acre
474,604 M Ft. B. M.	.0075 per M

/s/ Alfred A. Griffin
Chief of Party