McCALL MOUNTAIN PINE BEETLE CONTROL PROJECT REPORT

STATE OF IDAHO
DEPARTMENT OF FORESTRY

ROGER L. GUERNSEY, STATE FORESTER

By
D. M. Romans

September 1963

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IDAHO STATE FORESTRY DEPARTMENT
SOUTHWEST IDAHO AREA

McCALL MOUNTAIN PINE BEETLE CONTROL PROJECT

The infestation of mountain pine beetle (Dendroctonous monticolae Hopk.), located generally between McCall and Cascade, Idaho, was first formally reported in 1961 by the U. S. Forest Service survey. The survey showed the infestation to be epidemic in nature with approximately 5,000 trees infested. No positive control action was taken at that time for the following reasons:

1. Lack of funds.
2. Difficulty of operating on private lands.
3. Low value of the timber being destroyed.

State and U. S. Forest Service personnel decided in early 1962 that a re-evaluation study should be made in 1962. A meeting of the affected landowners was held so as to keep them abreast of the situation. This meeting was held in late spring as part of the State Woodland Forestry program.

In August 1962, the U. S. Forest Service made an aerial survey of the infested area followed by ground checks. The average attack ratio for the entire area appeared to be about one new tree for each old tree with some areas as high as three to one. The survey indicated approximately 12,000 to 15,000 lodgeple pine infested during the 1961 flight period in the area between McCall and Cascade. Egg and larval densities indicated an epidemic infestation.

Control measures were recommended by the survey team with the first step of control to be a pre-control survey. It was noted in the survey report that requests for Federal aid for a control project would have to be submitted to Washington, D. C., by U. S. Forest Service Region IV, prior to November 1, 1962.

The area was inspected in September, 1962 by Gary Tucker of the State Forestry Department and Al Dahlgren of the Payette National Forest. Infested stands were typed on aerial photos and recommendations were made for an intensive survey and evaluation of the infested area.

The pre-control survey under the direction of Galen Trostle, of the U. S. Forest Service was initiated jointly by Federal, State, and private agencies in October, 1962. The purpose of the survey was to determine the number of infested trees and the approximate area involved. The survey consisted of 1/4 chain wide linear samples spaced at 5 chain intervals. Wet weather and shortage of manpower made it necessary to discontinue the sampling in favor of meander strips and off-hand estimates of the number of trees infested per acre to meet the November 1 deadline. The location and mapping of infested areas was facilitated by two short aerial surveys by Gary Tucker of the Idaho State Forestry Department, and by the use of aerial photos borrowed from the Valley County ASC Office. The final compilation of survey data was completed by the U. S. Forest Service and the Idaho State Forestry Department.

The actual cost of the survey is difficult to compute because of the

Owner and Agency Cooperation

The first step in the control project was the declaration of a Zone of Infestation as prescribed by law (Appendix, Page 7), by the State Forester. This served as a legal notice of the intent to enter upon private lands for the purpose of control and gave the State Forester legal authority to do so.

The ownership pattern of land in the infested area required that cooperation be developed and maintained between the State and the private owners. To aid in obtaining this cooperation a second meeting was held in the McCall-Donnelly High School and all Valley County landowners were invited by public notice to attend. In addition personal invitations were sent owners of land within the Zone of Infestation whose addresses could be obtained. The meeting was designed to familiarize the landowners with the insect, and to explain the necessity for control. Additional effort was made to gain owner-agency cooperation by attempting to notify each owner separately prior to entry upon his land. In several cases, owners could not be contacted immediately and it was necessary to begin control without prior notice.

Overall, owner-agency cooperation was excellent with only two complaints formally made by landowners. These complaints arose over a misunderstanding of intentions and the conditions were corrected immediately. One complaint was in regard to a merchantable log that appeared partially destroyed and the other concerned a fence that had been knocked down.

Control Methods and Procedures

Questions considered in determining control methods were:

1. Which agency would be responsible for the control project?
2. What treating methods would be used for control?
3. Should the control work be on a contract with private individuals?
4. Should the landowner be permitted to perform control work on his own land for which he would be paid in part?

Many ideas were discussed in regard to project and area responsibility for the control work. It was determined that one agency should have overall control because of the many owners and, since most of the owners were private, the responsibility fell to the State.

Five methods of treating trees infested with mountain pine beetle were considered:

1. Logging and removal of infested material to a sawmill, or treating plant.
2. Cutting and peeling infested trees.
3. Spraying infested trees with a solution of ethylene di-bromide.
4. Burning infested trees standing.
5. Burning infested trees in decks.

Most of the timber was too small for sawlogs and the scattered ownership

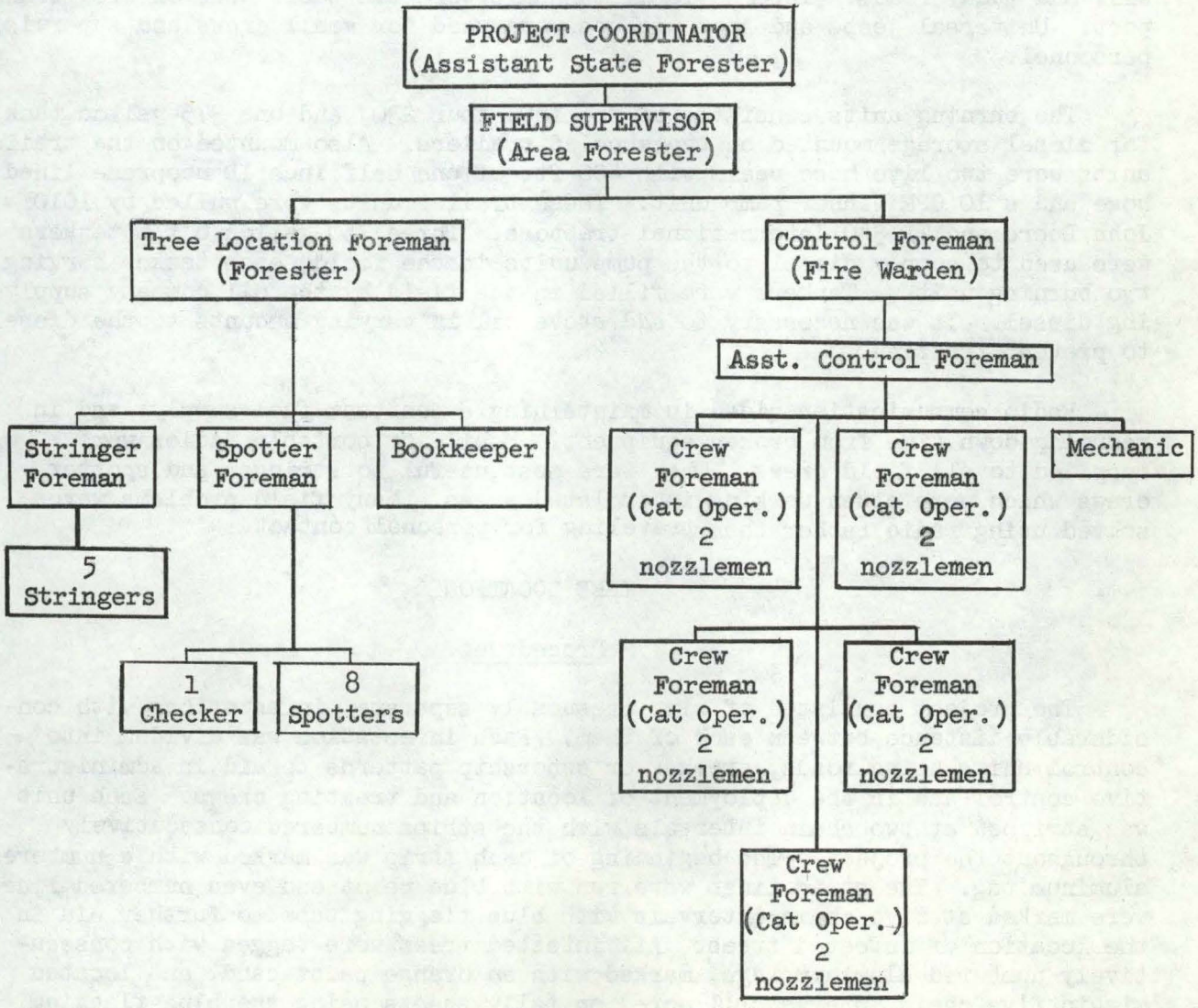
5. Gain valuable landowner contacts for the furtherance of Woodland Forestry in this area.

6. Allow study of possibilities for future owner contracted control in small epidemic areas.

One dollar per tree was offered to the owner as an inducement for him to perform control on his own land. Some savings would be brought about by this method of control. Many of the smaller and some of the larger owners indicated immediate interest, however, much of their interest subsided as the work grew nearer. Contracts were made with three owners, two of whom completed their control in a very satisfactory manner.

Organization - General

The Southwest Idaho Area was charged with the responsibility for control by the State Forester. The following is a chart of the control organization:



counting markers sometimes resulted in erroneous location of trees within the strip; however, this was minor compared to the time saved in treating. Field records for stripping and spotting were turned in to the bookkeeper who transferred the information to the strip sheets (Appendix, Page 10), for use by the treating crews in locating the infested trees. The bookkeeper also maintained a master list of tag numbers which had been placed on infested trees based on information supplied by spotting crew field records.

The treating crews carried the strip sheets to aid them in locating the infested trees. They removed the tag from each tree prior to treatment and turned them in to the bookkeeper each night. He checked the tag numbers against the master list of tags used. After the strips were completed the master tag list was compared to the strip sheet and missed trees were noted for rework by the crew. The tagging and strip sheet method insured almost 100% treatment of spotted trees.

Aerial photos were used to locate control unit boundaries and, in areas where trees were scattered, strips were plotted on 8"/mile aerial photo enlargements and the approximate location of infested trees were marked in the strips. By this method, treating crews could cross strips from infested tree to infested tree. This method was especially useful in the Paddy Flat area where trees were widely scattered and the terrain very rough.

Stringing

The stringer foreman was furnished with aerial photos encased in tracing film on which the units were laid out by the location foreman. String lines were assigned by the stringer foreman to each stringer. Each man was trained in pacing and compass technique and was checked constantly by the stringer foreman. From a given starting point two chain offsets were made along a road or other unit boundary and the stringers moved abreast across the unit, made offsets, and returned. An alternate method of assigning each man two or more strips was used when it seemed beneficial. By moving stringers abreast through a unit, lines were maintained at a more even distance apart; stringers were not working alone in swampy and rough areas; and the foreman could more easily supervise his men. Crew speed was stabilized through individual control.

Stringing crew equipment consisted of:

1	4 x 4 Manhaul
1	Universal Jeep (when working a split crew and for foreman use)
1	5-gallon container for paint thinner
1	Mobile or portable radio
1	Silva compass for each man
1	Nelson paint gun for each man
1	Hand axe for each man
1 pr.	Snowshoes for each man
	Map cases for quart paint cans
	Aerial photos of the work area
	Paint
	Flagging tape
	Pocket sized notebooks
	Nails

widely scattered they were marked with wider bands to assist in location by the treating crews. The first and last tag numbers in a group were recorded with the strip number and location within the strip.

Spotting crew equipment consisted of:

1	4 x 4 Manhaul
1	4 x 4 Universal Jeep
1	Hand Axe for each man
1	Compass (helpful but not necessary) for each man
1	Map case or nail apron to carry pressurized paint for each man
1 pr.	Snowshoes for each man
1	Pocket notebook for each man
	Nails
	Tree tags
	Tag holders

Each spotter turned in a daily work record to the bookkeeper for posting to the master number list and to the strip sheets.

Location statistics were as follows:

Total trees spotted	13,756
Total acres spotted	12,147

Average length of strip spotted/manhour	14.4 chains
Average number of acres spotted/manhour	2.89 acres
Average number of trees spotted/manhour (Infestation intensity 1.1 trees/A)	3.2 trees

Total tree location cost for the project was $1,731.49. Project location costs were $1.61 per tree and $2.12 per acre. The costs per tree in the Paddy Flat area were higher ($5.66 per tree and $1.20 per acre), because of rough terrain and dispersion.

This includes 7 mandays and 100 vehicle miles on intensive survey in the Lower Big Creek area. To determine if need for control existed, one-quarter-chain wide linear samples were taken at 10 chain intervals. Strip width was measured at all points where trees were counted and all infested trees were checked for larval content prior to counting. Permanent sample plots were set up by marking the strip center-line with red paint to expedite future tracking of the infestation in this area. Results of the survey showed 1.79 red tops per acre and 1.73 live infested trees per acre. Control was not considered immediately necessary even though the area was originally included in the project. Most of the infestation is confined to the lower vigor and lower quality trees in the young ponderosa pine stands. Continued spot checking of the Big Creek area is planned.

TREATING

Treatment by State Crews

Six State supervised control crews were planned but only five were organized

trees, terrain, and the size of the trees. The average wage per man for the three man crew was $1.88 per hour.

Treating cost figures for an optimum situation were as follows:

Salaries and wages	$ .72 per tree
Tractor cost (14.3 trees/hr.)	.23 per tree
Diesel (5.5 gallons/tree)	.74 per tree
	$ 1.69 per tree

The above costs were compiled during February when crews were well trained and organized and provided better comparison with areas treated by piling and burning. The costs are not representative of average work or production for the entire project.

Basic equipment for this type of control was:

1	Manhaul per two crews
1	750-gallon 6 x 6 tank truck per two crews
1	Tractor and trailer unit with 180 - 230 gallon tank and pump
2	Bean nozzles with igniters attached
1 set	Mechanics tools
1	Gas container for chain saw
1	Chain saw
1	Ax
2	Face Shields
1	Map case for removed tags
3	Hard hats
3	Rubberized coats for protection from falling sparks

Ponderosa Pine

The method of treating in stands of young ponderosa pine was burning-decks. When considering trees of the same size, this method was more expensive but gave much more positive control. Trees were felled and hand piled or skidded together by tractor and burned completely. Four-man crews were used in this operation: 1 tractor operator, 1 sawyer, 1 fire tender, and 1 man working with the tractor. By the time this method of treatment was started, the stringing and spotting crews were converted to control and supplied the fourth man in each crew.

In the East McCall area (Hubbard Area), trees were comparable in size and average density per acre to most of the lodgepole on other areas but were more closely grouped. Averages for this area were: 1.53 trees per manhour at an average cost of $1.86 per manhour.

Average treating cost figures for this type of treatment were as follows:

Salaries and Wages	$ 1.22 per tree
Tractor cost ($5.38 tree/hr.)	.62 per tree
Diesel (1.02 gallons/tree)	.14 per tree
	$ 1.98 per tree

Spotting costs in the above table are based on the average cost per tree for the entire project.

The actual cost to the landowners was considerably in excess of the $1.00 per tree payment. The data for the following table was given by the contracting owners.

	Boise Cascade	McGinnis	Watson (Blenkinsop)	Total
Total manhours expended	401	150	Contract Forfeited	551
Fair wage rate	$ 2.25/hr.	$2.00/hr.		N/A
Vehicle charges	$ 51.60	$ 84.00		$ 135.60
Equipment charges	$ 235.50	$ 437.50		$ 673.00
Fuel or chemical cost	$ 245.80	$ 45.00		$ 290.80
Supervision	$ 144.00	N/A		None
Additional charges	None	None		None
Value of products	None	$ 50.00		$ 50.00
Additional values	None	None		None
Total expenses	$ 1,579.15	$ 886.50	-	$ 2,465.65
Total receipts	$ 458.00	$ 343.00	-	$ 801.00
Net Cost to owner	$ 1,121.15	$ 543.50	-	$ 1,664.65

Treatment methods varied on each of the three contracted areas. Boise Cascade Corporation treated all trees that could be reached easily by burning standing. A pickup truck was used to haul a diesel tank with a pump and hose reel. The hose was pulled to all trees within ten chains of the one main road through the area. Scattered trees in groups of four or more were treated by spraying Ethylene di-bromide from stirrup pumps on the infested trees. The chemical, oil and pumps were backpacked to each tree.

C. C. McGinnis treated trees on his land by cutting, piling all branches and litter in the area, and charring the infested trees in post lengths on the burning piles.

William Blenkinsop began treating by hand peeling all post and pole material, but forfeited his contract.

Treatment was satisfactory on the two completed areas. It should be noted that treatment on these areas was initiated as a cooperative effort rather than as a money-making venture. This type of effort by private industry is highly commendable.

RECOMMENDATIONS

Survey

Future surveys should be planned sufficiently far in advance to provide

One trained forester should be assigned to owner control on any project of 10,000 or more trees. This forester could also encourage the utilization of material produced by the owner in the form of small products such as hop poles, utility poles, corral poles, and posts. As more cost data is developed on control projects, the amount offered to the landowner possibly could be raised from the $1.00 offered on the McCall project. A larger payment would induce greater participation by owners.

The first item of importance in this form of control is to develop an organization by supplying sufficient personnel for owner control. The second is that costs incurred in owner control exceed the inducement payment.

State: The stringing and spotting technique, used on the McCall Bug Project, made the control portion very easy. All the control crew had to do was look on the strip sheets, read the location of infested trees and go to them. One addition that would help to locate trees faster, would be to flag the tree as well as band it with paint. Some of the paint used would blend into the bark making it very difficult to find.

In organizing the control crews, it would be better to pick local men as crew leaders and tractor operators. They seemed to take more interest in finding all the trees for treatment.

Small crawler tractors pulling trailer mounted tanks, pumps and hose, works very good until you get into steep frozen or snow-covered ground. It would then be better to have the equipment mounted on the tractor. Several breakdowns were caused by the trailer jackknifing while going down hill, damaging pumps, hose reels, or trailers or tearing the tank loose from the trailer. Here again, a local man would be better than an outsider for he would know the country in which he is working.

Where the infestation is scattered instead of grouped, a control crew consisting of one tractor operator, and one nozzleman would be sufficient. They can do as much work as a three man crew, saving the wages of the third man.

In the pile and burn method of treating, a five man crew consisting of tractor operator, sawyer, 2 axe men, and 1 choker setter, is sufficient. One extra man per two crews could be utilized to keep the piles burning, and to assure total burning.

APPENDIX

PROJECT PERSONNEL

OVERHEAD ONLY

Project Coordinator	William A. Scribner, Assistant State Forester
Field Supervisor	Ray A. Miller, Area Forester
Location Foreman	Doyle M. Romans, Forester
Control Foreman	E. J. O'Daniel, Forest Warden
Assistant Control Foreman	Guy Beam, Hazard Reduction Foreman

TREES TREATED BY OWNERSHIP AND AREA

AREA	FEDERAL		STATE		PRIVATE		TOTAL	TOTAL
	Acres	Trees	Acres	Trees	Acres	Trees	Acres	Trees
Paddy Flat	1,480	315	0	0	440	93	1,920	408
Donnelly	110	31	0	0	659	313	769	344
McCall	70	105	250	185	7,508	9,711	7,828	10,001
Gold Fork	0	0	40	28	1,590	3,153	1,630	3,181
TOTAL	1,660	451	290	213	10,197	13,270	12,147	13,934

12911 trees
926
13,887

1023
1090 R
11,927 acres

TABULATION OF PROJECT COSTS BY FUNCTION

SALARIES AND WAGES		
Administration:		
Doyle Romans as payrolled Dec. 1962 thru April 1963	$ 2,573.71	
Ray Miller @ $555/month, Dec. 1962 thru April 1963	2,497.78	
	$ 5,071.49	
Payroll Overhead (18.815%)	954.20	
		$ 6,025.69
Field:		
Miscellaneous Payrolls	$ 40,785.43	
Less Non Qualifying S & W (Miller, Anderson, Atkinson, Bateman)	5,473.45	
	$ 35,311.98	
Payroll Overhead (5.635%)	1,989.83	
		$ 37,301.81
TOTAL SALARIES & WAGES:		$ 43,327.50
OTHER CURRENT EXPENSE		
Travel	$ 1,143.20	
Miscellaneous Purchase (Fuel, Oil, Small Tools, etc.)	26,133.79	
Less Payroll Overhead included in S & W	1,631.67	
TOTAL O. C. E.:		$ 25,645.32
CAPITAL OUTLAY		
Purchase Large Equipment Items	$ 4,427.62	
TOTAL C. O.:		$ 4,427.62
		$ 73,400.44
BOISE OFFICE ADMINISTRATION CHARGE (2%)		$ 1,468.00
		$ 74,868.44
Less Residual Value of equipment acquired for project.		$ 4,164.13
NET COST OF PROJECT:		$ 70,704.31

COST DIRECTLY ASSIGNED TO PADDY FLAT

TREE TREATING COSTS IN PADDY FLAT:

Labor:

40 hours @ $1.65/hour - Bookkeeper	$ 66.00	
60 hours @ $2.30/hour - Foreman	138.00	
308 hours @ $2.05/hour - Cat Operator	631.40	
49.5 hours @ $2.15/hour - Service Man	106.43	
248 hours @ $1.80/hour - Nozzleman	446.40	
	$ 1,388.23	
Added Cost of temporary employee (5.635%)	$ 78.23	
Per diem one man $\frac{1}{4}$ month @ $106/month	26.50	
Total Salaries & Wages:	$ 1,492.96	$ 1,492.96

Vehicles:

6 round trips (40 miles)	$.35/mile - 6x6	$ 84.00	
34 round trips	$.10/mile - 4x4 PU	136.00	
8 round trips	$.12/mile - 4x4 Manhaul	38.40	
9 round trips	$.12/mile - 4x4 Manhaul	43.20	
Total Vehicle Cost:		$ 301.60	$ 301.60

Tractor Rental:

CT-2 15 days @ $20/day	$ 300.00	
CT-9 15 days @ $20/day	300.00	
R-4 22 hours @ $5/hr.	110.00	
D-6 w/oper. 8 hrs. @ $13.65/hr.	109.20	
Total Tractor Rental:	$ 819.20	$ 819.20

Fuel: (Burning)

2901 gal. @ $.1348/gal.	$ 391.05	$ 391.05

TOTAL TREATING COST: $ 3,004.81

PAYROLL OVERHEAD COMPUTATION

Payroll Overhead For Permanent Employees

Social Security	3.625% of Base Wage
Unemployment Insurance	.9 %
Life Insurance	3.18 %
Workmans Compensation	1.11 %
	8.815% of Base Wage

Annual Leave - 12 days/year

Sick Leave - 10 days/year (assume 4/5 used)

Holidays - 6 days/year

Total - 26 days/year ÷ 260 days/year =	10.0000% of Base Wage
Gross cost per man = Base wage +	18.815%

Payroll Overhead For Temporary Employees

Social Security	3.625% of Base Wage
Unemployment Insurance	.9 %
Workmans Compensation	1.11 %
	5.635% of Base Wage

STATE OF IDAHO
DEPARTMENT OF FORESTRY
BOISE, IDAHO

DECLARATION OF ZONE OF INFESTATION
MOUNTAIN PINE BEETLE
VALLEY COUNTY, IDAHO

WHEREAS, the population of the Mountain Pine Beetle which kills lodgepole pine and ponderosa pine has increased to epidemic proportions in parts of Valley County, Idaho, and

WHEREAS, valuable timber lands and recreation areas are threatened, and

WHEREAS, control of this infestation is practical and necessary and funds are available for such control,

NOW THEREFORE, I, Roger L. Guernsey, State Forester, by authority vested in me by Section 38-602 Idaho Code, and with the approval of the State Board of Land Commissioners, do declare a ZONE OF INFESTATION OF MOUNTAIN PINE BEETLE, said zone being described as follows:

All portions of the following listed Townships lying wholly or in part in Valley County, Idaho, to wit:

Township 13 North, Ranges 2, 3 and 4 East BM
Township 14 North, Ranges 2, 3 and 4 East BM
Township 15 North, Ranges 2, 3 and 4 East BM
Township 16 North, Ranges 2, 3 and 4 East BM
Township 17 North, Ranges 2, 3 and 4 East BM
Township 18 North, Ranges 2, 3 and 4 East BM
Township 19 North, Ranges 2, 3 and 4 East BM

Done this 26th day of November, 1962
at Boise, Idaho.

/s/ Roger L. Guernsey
Roger L. Guernsey, State Forester

ATTEST:

/s/ William A. Scribner
William A. Scribner, Assist. State Forester

A G R E E M E N T

WHEREAS, the State of Idaho, acting through the State Forester, is desirous and obligated to effect control of a Mountain Pine Beetle infestation in Valley County, Idaho, and

WHEREAS, it is deemed that the most economical method of control can be affected by individual effort of private landowners under supervision of the State, and

WHEREAS, certain costs will be incurred by the private landowners carrying out control of the beetle infestation on their lands, and

WHEREAS, such control by private landowners is beneficial to the State of Idaho,

NOW THEREFORE, the State Forester hereinafter referred to as the Party of the First Part and _____ of _____, _____ hereinafter referred to as the Party of the Second Part do hereby agree to the following terms:

The Party of the First Part:

1. Agrees to provide instruction and technical supervision for all control activities.
2. Agrees to mark and tag all trees requiring treatment.
3. Agrees to pay the party of the second part at the rate of $1.00 per tree for all trees treated for which tags are returned.

The Party of the Second Part:

1. Agrees to effect control of the Mountain Pine Beetle on the following described tracts:

2. Agrees to locate all exterior boundaries of the above area.
3. Agrees to use one or more of the following methods of control:
   a. Logging and removal of all infested material to a sawmill.
   b. Cutting and peeling all infested trees prior to removal from area of infestation.
   c. Burning all infested trees standing or in decks.
   d. Spraying all infested trees with an approved solution of Ethylene Di-bromide.
4. Agrees to carry out all control measures under standards of the State Forestry Department.
5. Agrees to complete the entire control operation on or before April 15, 1963.

SPOTTERS FIELD SHEET

LOCATION: 8 Chs. N. of Road Junction Near S¼ Cor. of Sec. 24, T8N R.2E. PHOTO # DH2-2P-159
STRIP IS SOUTH OF TAG McCall UNIT 1

STRINGER # DATE	STRIP #	BRG	LENGTH of STRIP	SPOTTER # DATE	TREES SPOTTED	LOCATION OF TREES IN STRIP	CHK BY	TREES SPOTTED
BM-DR 11-29	5	W	24½	L & GC 11-29	2-3	5-10	12-1 DMR	CHANGED #2
		TOTAL TREES = 2					Completed	
BM-DR 11-29	6	E	31½	L & GC 11-29	4-29	5-15	12-1 DMR	212-216
		TOTAL TREES - 31					Completed	
BM-DR 11-29	7	W	38	L & GC 11 29	30-130	5-25	12-1 DMR	270 & 1/2 ORANGE FLAG
		TOTAL TREES = 103					Completed	
BM-DR 11-29	8	E	51½	L & G C 11-30	131-202	5-50	PART DMR 12-1	258-269 293-300
				PART REWORKED RT 12-3	301-307		1/2 ORANGE FLAG	Completed
		TOTAL TREES = 100						
BM-DR 11-29	9	W	54	L & G.C. 11-30	203-211 217-257	5-50	BM 12-6	1101-1123
				REWORK BB-12-4	822-823 825-834	1	1000%	
				REWORK KH 12-5	271-272 274-275			
				REWORK RT & BM 12-7	632-636 1011-1013 1124			
TOTAL TREES = 98								
BM-DR 11-29	10	E	60	K.H 12-5	277-292 401-423	THROUGHOUT STRIP	R.T. 12-5	538-543 544-552
		TOTAL TREES = 53					finished	
NOTE: TAG # 273 REMOVED - DEAD TREE								
TAG # 276 REMOVED - DEAD TREE								
TAG # 543 - LOST								
6 CANS BLUE PAINT, 18 ORANGE PRESS.								

TREATING CREW REPORT FORM

CREW LEADER DAILY REPORT

CREW _____ HOURS WORKED _____

_____ _____

_____ _____

_____ _____

_____ _____

STRIP NUMBERS _____

TREES TREATED TODAY TAGGED _____

UNTAGGED _____

TOTAL TREES _____

TOTAL GALLONS FUEL USED _____

AVERAGE NUMBER OF GALLONS PER TREE _____

PROBLEMS, NEEDED REPAIRS, ETC.

_____ _____

DATE CREW LEADER SIGNATURE