

LOGGING COSTS IN GOVERNMENT TIMBER APPRAISALS

Joe H. Smith



Forest Engineering 507

April 22, 1952

TABLE OF CONTENTS

Summary Page 2

Definitions Page 3

Introduction Page 3

Forest Service Page 4

 Appraisal Formulas

 Logging Costs

 Availability of Information

Bureau of Land Management Page 6

 Appraisal Formulas

 Logging Costs

Conclusion Page 8

SUMMARY

Characteristics of the government appraisal systems most widely used in Oregon follow.

<u>FOREST SERVICE</u>	<u>BUREAU OF LAND MANAGEMENT</u>
Believes there is a competitive log market in most areas.	Believes there is no competitive log market.
Uses average actual logging costs.	Uses time requirements to compute estimated costs.
Estimated costs vary from average according to judgment of the ranger.	Costs vary with log size, stand per acre, slope, etc., as individually estimated.
Stumpage set after allowing profit as per cent of total estimated cost.	Stumpage set at one-half difference between logging and milling costs and sale price of lumber.

Author's Note: The development of the above summary is believed to be factual. There are, however, occasional expressions of the author's opinion, which is knowingly based on limited information. With this warning the reader can detect those opinions without further direction.

DEFINITIONS

Timber appraisal is the consideration of characteristics of a stand of timber in relation to the sale price of logs or timber (in this paper) in order to set a stumpage price.

Stumpage is the value (estimated, paid, asked, etc.) per thousand board feet of standing timber.

Logging costs are all costs incurred in converting standing timber to logs and transporting them to mill.

INTRODUCTION

Why are logging costs as used in government timber appraisal significant? About one-half of the forested area and two-thirds of the volume of timber in Oregon is owned by the government. Of this the Forest service manages about eleven million acres and the Bureau of Land Management about two and one-half million acres. The public must keep informed as to the general features of this key to Oregon's first industry.

Most foresters will work for the government or use its timber.

Since small operators are proving more efficient loggers than large ones, the large timber-holding and timber-buying users must determine an equitable stumpage or logging price to assure the "gyppo" some profit but not too much. Thus a study of all logging cost estimating systems behooves the operator who contracts his logging.

Managerial control is more haphazard in logging than in most enterprises. A study of logging cost estimates of the government can aid the logging manager in accurately determining his standard costs.

FOREST SERVICE

The Forest Service uses one of these formulas in determining stumpage value.

Overturn method:

$$V = S_{Lg} - [Lc + P \& R], \text{ where } P \& R \text{ is a } \% (Lc + V)$$

$$\text{this reduces to } V = \frac{S_{Lg}}{1 + \%} - Lc$$

$$\text{or: } V = S_{Lbr} - [Lc + Mc + P \& R]$$

Investment Method:

$$V = S_{Lbr} - [Lc + Mc + D + \% \left(\frac{\text{fixed and working capital}}{\text{annual cut}} \right)]$$

V is stumpage value.

S_{Lg} is sale price of logs from the Pacific Northwest Loggers Association.

P & R is profit and risk.

% is a predetermined per cent usually about twelve in the overturn method.

S_{Lbr} is sale price of lumber.

Mc is milling cost of lumber.

D is depreciation.

The overturn method is used on small timber sales and the investment method on large, long-term sales.

LOGGING COSTS

Cost figures are collected throughout a region from "average, efficient" operators. Averages per thousand are figured for various logging jobs for given localities, such as the Coos Bay area. These figures usually represent costs of two to six operators with adjustments

as necessary for accounting differences.

In calculation, costs are distributed equally on a per thousand basis between species except that Douglas-Fir carries all the road construction costs. This usually allows the lower valued species to have a positive value.

Comparatively small tables are distributed to timber sales officers on each forest. There are few variables in the use of the tables. Both cable, and cable and tractor costs are given. These costs may vary widely, but are determined on a particular sale by the ranger.

The only breakdown of construction features is (1) surfaced, (2) unsurfaced, and (3) spurs with no specifications. The ranger may go outside the tabulated averages according to the apparent construction show. There are no cubic yards, slope, per cent rock, nor other specific information about averages.

Truck hauling costs are broken down for logging roads and highways with a basis of the legal rate in Washington.

Slash disposal and snag falling are charged from averages.

AVAILABILITY OF INFORMATION

Some of the doubt as to the apparent unsoundness of the Forest Service appraisal system might disappear if one could get precise answers to questions about the system. Perhaps some of the observations listed here are inaccurate; if so, the errors are due in part to the Forest Service's hiding its system from the public.

Questions often heard and seldom adequately answered concerning the Forest Service appraisals follow. How accurate are the average costs? How are "average, efficient" operators determined? Why are advertised stumpages of some sales over bid two or three times? Is the appraisal system at fault? Why is it that one company needing timber will not consider a nearby sale, but another goes well over the appraised price and profits?

A frequent question has been answered by a local sales officer. "Bids are always higher than appraised price anyway, why appraise the timber?" An estimated fifty per cent of sales representing twenty per cent of total sales volume are sold at appraised price.

BUREAU OF LAND MANAGEMENT

The acreage under Bureau of Land Management administration is only one-fifth that of the Forest Service. Either the smaller acreage or a better appraisal system may allow the Bureau of Land Management to enjoy more popularity.

The Bureau of Land Management assumes that there is no free log market anywhere and that their cost estimation may be inaccurate, so they split the difference between costs and sale price of lumber with the operator.

$$V = \frac{S_{Lbr} - (Lc + Mc)}{2}$$

The milling costs are the weakest portion of their Economic Appraisal System. Average actual costs of milling are used.

LOGGING COSTS

Logging costs are quite accurately determined. The Bureau of Land Management has analysed time and cost studies in logging, selected a few critical factors which consistently correlate with time consumed, and constructed tables according to present day costs based on long standing time studies.

Falling and bucking tables have arguments*, per cent recovery and average diameter breast high. Their lowest cost is between four and five feet which contrasts with Forest Service figures showing lower costs for second growth than for old growth.

High-lead rigging, yarding, and loading costs are grouped in one table entered by log size and volume per acre. Costs are based on a BX - 200 Skagit yarder, FOB Portland, depreciated in ten years. Mainline of 1 3/8" plow steel is expected to last 8 million board feet.

The tractor yarding cost table is also entered through log size and volume per acre. Costs are all lower than high lead, though they tend to equalize in heavy stands and with large logs. Costs are based on Caterpillar D-8, with angle dozer, Hyster winch and arch, FOB Portland, depreciated in five years.

Swing costs vary with length of swing. No cat swing costs are given since the Bureau of Land Management frowns on use of the system.

*Argument here means a variable by which one enters a mathematical table.

Road construction costs are tabulated with arguments, per cent slope perpendicular to the center line, and material classification. A second column gives cost including gravel. Allowance is made for overhaul of gravel if over one mile.

Truck hauling costs are based on a 145 horsepower gasoline truck with trailer and legal load. Forty minutes dead time per trip are allowed. Through the use of two tables of several columns hauling costs are calculated. Tables are entered through per cent grade, speed, surface of the road, log weight per board foot, and per cent of gross log scale recovered.

Dumping, rafting, and towing costs are determined by the Public Utilities Commission.

Administration costs are most variable, but are set at one dollar per thousand as in the Forest Service Appraisal.

CONCLUSION

Men of the Forest Service and Bureau of Land Management are traditionally honest and efficient, but neither of their appraisal systems is faultless. The Bureau of Land Management is, we believe, the more progressive in its approach; however, their system costs more and has the weakness of including average milling costs. Although these systems are well-rooted and/or complex, there is need for more accurate and less expensive predetermination of logging costs.