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Detail Surveying and Exploration in Relation to the Management of EASTERN TIMBERLANDS

BY

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GENERAL TIMBER ESTIMATES
DETAIL TIMBER ESTIMATES
WATER POWER ESTIMATES
LAND SURVEYING
DETAIL SURVEYING AND EXPLORATION 
IN RELATION TO THE 
MANAGEMENT OF EASTERN TIMBERLANDS

The writer desires to state in this pamphlet the items taken up by him in making a detail survey and exploration of timberland, and to explain those situations where his work prevents unnecessary forest waste.

ITEMS OF DETAIL SURVEY AND EXPLORATION

1. LAND SURVEYING
   (a) Boundary Lines
   (b) Section Lines

2. ESTIMATE OF TIMBER ON ENTIRE TERRITORY
   (a) 12" and up, diameter breast high
   (b) 6"-12", diameter breast high

3. ESTIMATE OF TIMBER IN EACH SECTION. (MILE SQUARE)
   (a) 12" and up, diameter breast high
   (b) 6"-12", diameter breast high

4. LOGGING CONDITIONS IN EACH SECTION
   (a) Distribution of timber on each quarter section
   (b) Size of timber
   (c) Quality of timber
   (d) Character of swamping
   (e) Character of ground
5. MAP OF TERRITORY
   (a) Boundary Lines
   (b) Section Lines
   (c) Streams
   (d) Brooks
   (e) Runs
   (f) Lakes
   (g) Swamps
   (h) Bogs
   (i) Burns
   (j) Mountains
   (k) Hills
   (l) Slope of Land
   (m) Dams, Piers and Abutments

6. DRIVING
   (a) Size of Streams
   (b) Location of Quick water
   (c) Location of Dead water
   (d) Location and description of Stream Banks
   (e) Location and description of Stream Bed, Bends and Obstructions
   (f) Lakes
   (g) Dams, Piers and Abutments
   (h) Water Storage

7. MANAGEMENT
   (a) Clean cutting of merchantable timber
   (b) Tops and Stumps
   (c) Blowdowns
   (d) Diameter limit of cutting
   (e) Logging locations
   (f) Inspection
   (g) Rate of growth
EXPLAINING THE OBJECT OF DETAIL SURVEYING AND EXPLORATION

AID TO MANAGEMENT

A detail survey and exploration of timberlands increases the efficiency of the logging superintendent and foremen and gives to the owner, or manager not engaged in the woods, a means of dictating and enforcing a policy of timberland management with a knowledge of the actual situation which could not otherwise be obtained.

UNNECESSARY FOREST WASTE

Unnecessary forest waste occurs mainly from the loss or depreciation of merchantable timber left behind in logging operations; or by mistake in fixing the diameter limit down to which trees are cut.

Merchantable timber is often left behind in logging operations, either because it stands on rough or soft ground, or in the midst of windfalls; or because it is skipped when hidden from the choppers by thickets, swamps, blowdowns, or by snow on the underbrush; it may also be neglected because trees containing merchantable logs are partly defective; or the number of trees tributary to a logging location may be miscalculated so that an insufficient working force is provided to cut them. In addition to such causes a logging operator may cut intentionally only the thickest and most accessible stands in the forest.

As a consequence of leaving merchantable timber behind in logging works, or tributary to a location, it happens that part of the timber will never be cut, either because the cost of picking up scattered stands and individual trees is too high, or because trees which are mature, exposed to the wind, or defective, may blow down before there is another favorable opportunity to cut them.

Other timber which is cut in a subsequent operation becomes depreciated in value on account of the following addition to logging costs: the time lost by men and horses in travelling to scattered bunches and individual trees, over land that has already
been logged; the labor of clearing old roads of windfalls and tops; of re-skidding roads and swamping through old tops; of again preparing and maintaining the main roads for hauling, i.e., of re-skidding, "breaking-in," ploughing, icing, rutting, etc., all of which represents an unnecessary fixed charge corresponding in degree to the amount of timber previously taken out on the same roads.

The application of a fixed diameter limit down to which trees are cut may be another source of unnecessary waste, for there are occasionally heavy stands of timber which reach maturity and die before attaining the diameter limit applicable to the rest of the forest. Growing timber in certain other positions, left behind by reason of small size, will blow down after being opened to the rake of the wind, unless included in the first cut.

**VALUE OF A DETAIL SURVEY**

A survey which blocks a tract of timberland into mile square sections, or other units of measurement, should be used to locate the position of timber, the amount, and the logging conditions. It should also be the means of confining a logging operator to a specified territory.

**INCREASING THE EFFICIENCY OF THE LOGGING SUPERINTENDENT**

A detail survey and exploration of timberland increases the efficiency of the logging superintendent, as it furnishes the means of planning and supervising a series of operations with greater economy and thoroughness than would be otherwise possible, without the neglect of other duties.

With such information at hand, he may decide the size and position of each logging operation with proper regard for the timber tributary to it and the relation of one location to another, and he may organize each season's work so as to secure the most economical handling of the land. He can then watch the cutting of the timber with a knowledge of the weak and the strong points of every position.
He may lay out logging roads beforehand in such position as will tend to force economic work, both by entering all territory tributary to the logging location (so that no land will be skipped on account of being too far from the main roads) and at the same time by preserving the best balance between the number of trees felled by the choppers and the length of time taken to drag them to the main road.

He may consider and watch during the process of cutting the following stands of timber according to the needs of the situation:— territory where scattered growth should be handled before the snow comes; territory that may be advantageously left till later in the season; bunches of timber or individual trees which may be skipped on account of standing on rough or soft ground, or in the midst of windfalls; timber which may be overlooked when concealed by undergrowth, swamps, blowdowns, or by snow on the bushes; or timber which may be neglected because partly defective.

**INCREASING THE EFFICIENCY OF THE LOGGING FOREMEN**

A detail survey and exploration increases the efficiency of the logging foremen by giving them a knowledge beforehand of the entire territory in which they are to operate. Under these circumstances they run less risk of mistake in planning their work, make their timber locations more quickly, and may consequently give more time to the management of their men.

**MANAGEMENT OF TIMBERLANDS AT HEADQUARTERS**

A detail survey and exploration of timberlands furnishes the owner, or manager not engaged in the woods, the means of dictating and enforcing a policy of timberland administration with a knowledge of the actual situation which could not otherwise be obtained.

Among the advantages of such procedure are the following:— It gives the owner or his representative an opportunity to place a superintendent or operator within specified bounds, in such position as may be most favorable to each location and its bearing on outlying timber. It gives him the opportunity of knowing the
situations where merchantable timber is likely to be left behind in the works, and consequently to plan and supervise the cutting of such places with greater care. It gives the opportunity of comparing the amount of timber cut, on a given territory with the amount of the actual stand on the same ground, and consequently indicates the efficiency of the superintendent or foreman. It gives the opportunity of judging their work fairly, both by knowing the difficulties of each situation and the relation between the amount cut and the total stand on the same territory. It gives the opportunity of specifying a suitable diameter limit of cutting, both in regard to a general limit applicable to the whole forest, and a special diameter limit where timber should be taken to smaller size, either because of likelihood of blowdown, or because of certain stands which reach maturity before attaining the diameter limit applicable to the rest of the forest.

Finally it gives the owner or manager, an opportunity to take up for discussion with the woods superintendent, or other woods- men, important points of Forest Management and their relation to logging, the existence or importance of which they would not know, without a detailed description of their timber property.

SUMMARY

In making the foregoing statement of the advantages of a detail survey and exploration of Eastern Timberlands, I have aimed to explain to those unacquainted with the timberland situation, or the scope of the Forester's work, some of the sources of unnecessary waste, and means by which it may be eliminated.

I beg to call further attention to the subject by noting that whereas one of the important features of modern manufacturing organization is the large amount of time and money expended in the elimination of waste, the managers of timberlands do not begin to pay the same attention to this matter. On account of the large amount of capital invested in timberlands, it seems inconsistent that the owners should not devote the same attention to the elimination of waste, that is given to manufacturing organization, especially since, owing to the hidden character of the forest, the liability of waste is greater.
I feel no hesitancy in stating that without following the method of detailed work outlined above, it is impossible for managers of timberlands who are not engaged in the woods, to measure or eliminate some of the most important sources of unnecessary forest waste.

I am enclosing an addressed post card, and would be glad to have it returned by anyone interested in present or prospective timberland exploration, or in further literature on the subject written by me.

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