

**Forest Service Handbook
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Forest Service Handbook 2409.13 – Timber Resource Planning Handbook

Zero Code

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Approved by: F. Dale Robertson, Chief

Date approved:

Responsible Staff:

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Digest: Following is an explanation of the changes throughout the directive by section.

This amendment is a reissuance of FSH 2409.13 to conform the format and structure of the Handbook to the requirements of electronic directive issuance.

This amendment makes no substantive changes to the text. The only changes made are those necessary to meet new format requirements or to correct spelling, punctuation, or unit names.

This Handbook is now available electronically in the National Information Center in the same format as the paper copy. Henceforth, amendments to this Handbook will be issued to Forest Service units electronically on a document basis.

This handbook provides procedural policies and direction for planning the management of the timber resource and for the development of the Resources Planning Act assessment and program, Regional guides, and forest plans. The policies and procedures are also applicable to other levels of planning, budget proposals, and responses to requests for timber resource information. Use the handbook in concert with 36 CFR 219, FSM 1900, and FSM 1920. Timber resource planning objectives, policies, and responsibilities are found in FSM 2410.

05 - Definitions

(36 CFR 219.3, FSM 1900, and FSH 4809.11). Terminology not defined in this section or in 36 CFR 219.3, FSM 1900, and FSM 1920 shall conform to Terminology of Forest Science, Technology, Practice, and Products, Society of American Foresters, current edition.

1. Allowable Sale Quantity. The quantity of timber that may be sold from the area of suitable land covered by the forest plan for a time period specified by the plan. This allowable sale quantity (ASQ) is usually expressed on an annual basis as the "average annual allowable sale quantity." (FSM 1900).

For timber resource planning purposes, the allowable sale quantity applies to each decade over the planning horizon and includes only chargeable volume. Consistent with the definition of timber production, do not include fuelwood or other nonindustrial wood in the allowable sale quantity.

2. Base Sale Schedule. A timber sale schedule formulated on the basis that the quantity of timber planned for sale and harvest for any future decade is equal to or greater than the planned sale and harvest for the preceding decade and that this planned sale and harvest for any decade is not greater than the long-term sustained-yield capacity. This definition expresses the principle of nondeclining flow.

3. Chargeable Volume. All volume included in the growth and yield projections for the selected management prescriptions used to arrive at the allowable sale quantity, based on regional utilization standards.

Consistent with the definition of timber production, planned production of fuelwood is not included in the allowable sale quantity and therefore is nonchargeable.

4. Commercial Forest Land. Forest land that is producing or is capable of producing crops of industrial wood and (a) has not been withdrawn by Congress, the Secretary, or the Chief; (b) existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity, or watershed

conditions; and (c) existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that adequate restocking can be attained within 5 years after final harvesting.

5. Culmination of Mean Annual Increment. The age at which the average annual growth is greatest for a stand of trees. Mean annual increment is expressed in cubic feet measure and is based on expected growth according to the management intensities and utilization standards assumed in accordance with 36 CFR 219.16(a)(2)(i) and (ii). Culmination of mean annual increment (CMAI) includes regeneration harvest yields and any additional yields from planned intermediate harvests.

6. Departure. A sale schedule that deviates from the principle of nondeclining flow by exhibiting a planned decrease in the sale schedule at any time during the planning horizon. A departure is characterized by a temporary increase, usually in the beginning decade(s) of the planning horizon, over the base sale schedule originally established. This increase does not impair the future attainment of the long-term sustained yield capacity.

7. Forest Land. Land at least 10 percent occupied by forest trees or formerly having had such tree cover and not currently developed for nonforest use. Lands developed for nonforest use include areas for crops, improved pasture, residential, or administrative areas, improved roads of any width, and adjoining roadclearing and powerline clearing of any width. (FSM 1900).

8. Forest Land Not Appropriate for Timber Production. Lands not selected for timber production in the forest plan alternative because of the fact that: (a) the multiple-use objectives for the alternative preclude timber production, (b) other management objectives for the alternative limit timber production activities to the point where it is not possible to meet management requirements set forth in 36 CFR 219.27; or (c) the lands are not cost-efficient, over the planning horizon, in meeting forest objectives that include timber production. In the preferred alternative and forest plan, designate lands not appropriate for timber production as unsuitable.

9. Forest Trees. Woody plants having a well-developed stem and usually more than 12 feet in height at maturity.

10. Fuelwood. Wood that is round, split, or sawn and/or otherwise generally refuse material cut into short lengths or chipped for burning.

11. Growing Stock Trees. Live trees, meeting specified standards of quality or vigor, included in growth and yield projections to arrive at the allowable sale quantity.

12. Industrial Wood. All commercial roundwood products, except fuelwood.
13. Integrated Prescription. A planning prescription in which the Forest ID team identifies and quantifies out-puts, effects, benefits, and costs of all forest resources to the extent practical. The management emphasis may be single or multiple use.
14. Long-term Sustained Yield Capacity (LTSYC). The highest uniform wood yield from lands being managed for timber production that may be sustained, under a specified management intensity, consistent with multiple-use objectives. (FSM 1900).
15. Nonchargeable Volume. All volume not included in the growth and yield projections for the selected management prescriptions used to arrive at the allowable sale quantity.
16. Nondeclining Flow. See base sale schedule.
17. Nonforest Land. Lands that never have had or that are incapable of having 10 percent or more of the area occupied by forest trees; or lands previously having such cover and currently developed for nonforest use.
18. Planning Horizon. In the planning process, the overall time period that spans all activities covered in the analysis or plan and all future conditions and effects of proposed actions that would influence the planning decisions. (FSM 1900).

For timber resource planning purposes, the overall time period shall extend far enough into the future so that it is possible to achieve and maintain the allowable sale quantity at the long-term sustained yield capacity. In some situations, this may require that the planning horizon be long enough to provide the opportunity to access all suitable lands.
19. Rotation. The number of years required to establish (including the regeneration period) and grow timber crops to a specified condition or maturity for regeneration harvest. Selected management prescriptions in the forest plan provide the basis for the rotation age.
20. Roundwood Products. Logs, bolts, or other round sections cut from trees.
21. Sale Schedule. The quantity of timber planned for sale by time period from the area of suitable land covered by a forest plan. The first period, usually a decade, of the selected sale schedule provides the allowable sale quantity. Future

periods are shown to establish that long-term sustained yield will be achieved and maintained. (FSM 1900). For timber resource planning purposes, consider the sale schedule and allowable sale quantity to be synonymous for all periods or decades over the planning horizon.

22. Stand. A community of trees or other vegetation sufficiently uniform in composition, constitution, age, spatial arrangement, or condition to be distinguishable from adjacent communities and so form a silvicultural or management entity.

23. Stocking. The degree to which trees occupy the land, measured by basal area and/or number of trees by size and spacing, compared with a stocking standard, such as, the basal area and/or number of trees required for full utilization of the land's growth potential.

24. Suitable Forest Land. Land to be managed for timber production on a regulated basis.

25. Tentatively Suitable Forest Land. Forest land that is producing or is capable of producing crops of industrial wood and: (a) has not been withdrawn by Congress, the Secretary, or the Chief; (b) existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity, or watershed conditions; (c) existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that it is possible to restock adequately within 5 years after final harvest; and (d) adequate information is available to project responses to timber management activities.

26. Timber Production. The purposeful growing, tending, harvesting, and regeneration of regulated crops of trees for cutting into logs, bolts, or other round sections for industrial or consumer use. For purposes of forest planning, timber production does not include fuelwood or harvests from unsuitable lands. (FSM 1900).

27. Timber Sale Program Quantity. The volume of timber planned for sale during the first decade of the planning horizon. It includes the allowable sale quantity (chargeable volume) and any additional material (nonchargeable volume) planned for sale. The timber sale program quantity usually is expressed as an annual average for the first decade.

28. Unsuitable Forest Land (Not Suited). Forest land not managed for timber production because: (a) Congress, the Secretary, or the Chief has withdrawn it; (b) it is not producing or capable of producing crops of industrial wood; (c) technology is not available to prevent irreversible damage to soils productivity, or watershed

conditions; (d) there is no reasonable assurance based on existing technology and knowledge, that it is possible to restock lands within 5 years after final harvest, as reflected in current research and experience; (e) there is, at present, a lack of adequate information about responses to timber management activities; or (f) timber management is inconsistent with or not cost efficient in meeting the management requirements and multiple-use objectives specified in the forest plan.

06 - Timber Volume and Measurement Standards

Board Foot/Cubic Foot Ratios. Convert cubic foot volume to board foot volume for display purposes as follows:

1. Sawtimber. Calculate the sawtimber conversion ratio based on the average-size tree and, if appropriate, tree species planned for sale. This ratio may vary through time.
2. Small Roundwood. The board foot/cubic foot ratio for small roundwood (material smaller than sawtimber utilization standards established in the Regional guide) is 4 board feet equal 1 cubic foot.^{1/} Use this ratio for all small roundwood product volume including fuelwood, both chargeable and nonchargeable against the allowable sale quantity.
3. Regional Average Ratio. Calculate a Regional average conversion ratio based on the expected mix of sawtimber and small roundwood products. Director of Timber Management in consultation with the Director of RPA shall approve this ratio for use in all national and Regional planning outputs. The ratio may vary through time.

^{1/} The board foot/cubic foot ratio is based on the estimated Scribner decimal C board foot content and the cubic foot content of a small roundwood piece of average size assumed to have a small-end diameter range of 2 inches to 5.5 inches. The assumed scaling diameter is 4 inches and the length is 16 feet 6 inches, so the Scribner decimal C scale is 1 (10 board feet). The cubic volume of the average piece using the Smalian Formula is 2.4 cubic feet (cubic feet = $0.005454 (LD^2 + SD^2)/2 * L$). The ratio is 10 board feet divided by 2.4 cubic feet equals 4.17, rounded to 4.