

State of Wisconsin  
Department of Natural Resources

**Timber Sale  
Handbook**  
2461

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*This document is intended solely as guidance, and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations, and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.*

CHAPTER 10

GENERAL

Timber sales on public properties are established utilizing up to date forest reconnaissance, science based silvicultural practices, and practical harvest methods to provide forest sustainability.

Timber sales on department owned and County Forest land will be conducted in accordance with the management plan for the specific associated property. Department guidelines associated with silviculture, best management practices for water quality, soils, aesthetics, invasive species, wildlife, and endangered resources should be applied for all forest management practices.

**Note:** Timber sales on all department owned lands must adhere to Master Plan and follow the APIP/APIM process. Timber sales on all county owned lands must be consistent with [s. 28.11](#) of Wis. Statutes, and follow criteria and specific guidance as directed by a 15-year Comprehensive Management Plan.

Timber sales on public land require a high level of attention to detail. Ensuring forest sustainability and resource protection requires ethics and integrity. Providing accurate and precise cruise or marked volume estimates is an important aspect of public land timber sale establishment.

Timber sales on public lands are an important part of sustainable forest management and provide important economic, social, and ecological benefits to our public lands. Revenues from timber sales support department budgets and provide money to the general fund, offsetting taxes and providing financial support to many different programs. Foresters, property managers, and administrators have an obligation to the public to obtain a financial return from the timber sale stumpage value, while providing protection through best management practices for the natural resources. See section [NR 1.24](#), Wis. Adm. Code, Management of State and County Forests, for Natural Resources Board policy relating to timber sales.

The guidelines contained within this Handbook should be used, however exceptions based on rational judgement can be applied. It is the responsibility of all public land foresters to document exceptions or changes and provide justifications for that course of action.

CORDWOOD WEIGHT CONVERSION FACTORS

On Department lands, the following weight conversion factors will be used in the conversion of weight scale to a standard 128 cubic foot cord. This should remain consistent for all sales on a specific property and not changed readily.

The weight conversions in the following table will be used for billing purposes. The weight conversion table is included in the Timber Sale Cover Letter. Weights shown are for average cordwood size wood that is reasonably straight.

**Note: Some county timber sale contracts may have specific weight conversions for some species that differ from these factors.**

Factors for mixed cordwood may be developed by weighted average of cruise estimates based on species volume distribution and/or ocular estimate.

Additional tables for common product conversion factors can be found in the Appendix.

CORDWOOD WEIGHT CONVERSION FACTORS

| <u>Species</u>        | <u>Weight<br/>(lbs)</u> | <u>Cord to<br/>Ton<br/>Conversion</u> | <u>Species</u>       | <u>Weight<br/>(lbs)</u> | <u>Cord to Ton<br/>Conversion</u> |
|-----------------------|-------------------------|---------------------------------------|----------------------|-------------------------|-----------------------------------|
| ASPEN (All Species)   | 4,500                   | 2.250                                 | MAPLE, OTHER         | 4,550                   | 2.275                             |
| ASH (All Species)     | 4,600                   | 2.300                                 | MAPLE, RED           | 4,550                   | 2.275                             |
| BASSWOOD              | 3,850                   | 1.925                                 | MAPLE, SILVER        | 4,550                   | 2.275                             |
| BEECH                 | 5,050                   | 2.525                                 | MULBERRY             | 5,000                   | 2.500                             |
| BALM OF GILEAD        | 4,900                   | 2.450                                 | MIXED CONIFER        | 4,250                   | 2.125                             |
| BALSAM FIR            | 4,250                   | 2.125                                 | MIXED SPECIES - ALL  | 4,600                   | 2.300                             |
| BUTTERNUT             | 5,000                   | 2.500                                 | MIXED HARDWOODS      | 4,800                   | 2.400                             |
| BIRCH, RIVER          | 5,000                   | 2.500                                 | OAK, BLACK           | 5,500                   | 2.750                             |
| BOX ELDER             | 4,550                   | 2.275                                 | OAK, NORTHERN PIN    | 5,500                   | 2.750                             |
| BIRCH, WHITE          | 4,800                   | 2.400                                 | OAK, BUR             | 5,850                   | 2.925                             |
| BIRCH, YELLOW         | 5,350                   | 2.675                                 | OAK                  | 5,500                   | 2.750                             |
| CEDAR (All Species)   | 3,150                   | 1.575                                 | OAK, SOUTHERN PIN    | 5,500                   | 2.750                             |
| CHERRY, BLACK         | 4,300                   | 2.150                                 | OAK, RED             | 5,500                   | 2.750                             |
| COTTONWOOD            | 4,650                   | 2.325                                 | OAK, SWAMP WHITE     | 5,850                   | 2.925                             |
| ELM (All Species)     | 5,000                   | 2.500                                 | OAK, WHITE           | 5,850                   | 2.925                             |
| HEMLOCK               | 4,800                   | 2.400                                 | PINE, AUSTRIAN       | 4,500                   | 2.250                             |
| HACKBERRY             | 5,000                   | 2.500                                 | PINE, JACK           | 4,250                   | 2.125                             |
| HICKORY (All Species) | 5,400                   | 2.700                                 | PINE, RED            | 4,500                   | 2.250                             |
| IRONWOOD              | 5,000                   | 2.500                                 | PINE, SCOTS          | 4,500                   | 2.250                             |
| KENTUCKY COFFEE TREE  | 5,000                   | 2.500                                 | PINE, WHITE          | 4,200                   | 2.100                             |
| LARCH                 | 4,650                   | 2.325                                 | POPLAR, YELLOW       | 4,500                   | 2.250                             |
| LOCUST (All Species)  | 5,300                   | 2.650                                 | SPRUCE (All Species) | 4,000                   | 2.000                             |
| MOUNTAIN ASH          | 5,000                   | 2.500                                 | SYCAMORE             | 5,000                   | 2.500                             |
| MAPLE, SUGAR          | 5,100                   | 2.550                                 | TAMARACK             | 4,650                   | 2.325                             |
| MAPLE, NORWAY         | 5,100                   | 2.550                                 | WALNUT, BLACK        | 5,000                   | 2.500                             |
|                       |                         |                                       | WILLOW (All Species) | 5,000                   | 2.500                             |

CHAPTER 20

TIMBER SALE ESTABLISHMENT – PREWORK AND FIELD WORK PROCEDURES

TREE MARKING CODE AND PRESERVATION OF SURVEY MONUMENTS

Tree Marking Code

This section contains policy and guidance for WI DNR State owned and managed lands; including, but not limited to, State Forests, Fish, Wildlife, and Parks, and Natural Heritage Conservation Lands. It can be used as a reference for County Forest Lands or other State managed lands as well. It is important to note that each County Forest advertises, contracts, and administers timber sales according to its own specific procedures and policies, in accordance with section 28.11, Wis. Stats.

It is important that a uniform tree marking paint code be established and adhered to. This will also serve to obtain better compliance to timber sale contracts if designated colors have specific meanings.

As recommended by the Wisconsin Society of American Foresters, all personnel should use the following code for tree marking colors for the state lands when painting:

- Property boundaries - Blue
- Timber sale area boundaries - Red
- Trees to be cut - Orange
- Trees to be left - Green
- Interior sale boundaries (northern hardwood gaps/RMZ's, etc...) – Purple, Yellow, or other suitable color

Preservation of Monuments and Corner Posts

[Manual Code 8621.2](#) covers the subject of preservation of landmarks, monuments and corner posts (section [59.74](#), Wis. Stats.).

Timber sales are often established adjacent to survey monuments and corner posts. Every effort must be made to prevent damage to these essential references.

When timber sales are established, all monuments and corner posts should be flagged and marked for easy identification during timber harvest operations. Special clauses should be placed in the timber sale contract to prevent destruction of monuments or bearing trees.

Bearing trees should be painted with a six-inch band of paint. Any color except orange or yellow may be used. The band should be six feet from the ground, and marked in a way that does not degrade the bearing mark.

Tree Marking Paint - Safety

The Division of Forestry policy, in relation to minimizing exposure of employees to tree marking paint, includes the following key points:

1. The Division of Forestry provides training to employees on proper tree marking techniques that include:
  - Wearing safety glasses when in the woods
  - Wear long sleeved shirts and pants when marking
  - Marking trees with the wind at your back
  - Mark at a distance of 8 feet from the tree
  - Mark the butt mark first, then the breast height slash
2. Make the MSDS for each brand or type of tree marking paint available to all employees
3. At formal tree marking camps a safety briefing covering the key points of proper tree marking and wearing of appropriate personal protective equipment will be conducted

The Division of Forestry has established a policy of not requiring the use of respirators for accomplishment of tree marking. Scientific literature has demonstrated that there is **minimal exposure** associated with the proper use of either oil-based or waterborne tree marking paint. The Division of Forestry continually reviews the issue as a standing work plan item for the Equipment and Safety Specialist Team.

#### Designated Hiking Trails

The Ice Age Trail (IAT) is designated by yellow paint; and the North Country Scenic Trail (NCT) is designated by blue paint. Attempt to minimize use of similar colored paint adjacent to these trails to avoid confusion to recreational users.

In some cases it may be desirable to use biodegradable plastic ribbon rather than paint for occasions where the marking is of a very temporary nature.

Any paint lines or "ribbon lines" in existence should be indicated on the timber sale map.

#### Suggested Marking Guidelines

- Mark on two sides of the tree, to ensure that paint can be seen from all four sides.
- Stump mark at ground level where paint can be protected.
- Make sure paint line is visible to the interior of the sale as well as between individually painted trees.
- Use distinctly different marks on a tree to indicate the end of a paint line.
- Consider having red lines and marked trees face away from aesthetically sensitive areas.
- Identify Riparian Management Zones with red or purple paint.

## SALES ADJACENT TO PROPERTY BOUNDARY LINES

Timber sales are often established adjacent to property boundary lines. Avoid buffering the boundary line when setting up the sale. This can lead to the perceived movement of the line over time and potentially loss of land or reduced public use of that land.

On state lands, the DNR Property Manager is ultimately responsible for verifying and approving the location of the property boundary lines. The forester may delineate the probable location of boundary lines associated with a timber sale with the property manager's assistance or approval and with the understanding that the property manager is responsible for verification. Review the procedures outlined below regarding establishment and documentation of property boundaries.

On County lands, each County Forest has its own policies and procedures for establishing property boundary lines. However, the procedures outlined below can be used for general guidance.

### Line Established by Registered Surveyor

If the sale is adjacent to a property line established by a registered surveyor, it is appropriate to simply notify the adjacent landowners by letter. Do not use a Cutting Line Agreement Form in this situation. The actual line must be established by a surveyor on the ground pursuant to normal practices (flags, paint, blazes, etc.); a forester or property manager connecting surveyed corners does not suffice.

### Line Established by Forester/Property Manager

For all other sales adjacent to property boundary lines, a cutting line agreement must be mailed to the adjoining landowner(s). This agreement temporarily establishes the line for harvest purposes only, is not exact, and is not for the purpose of ownership, transfer, or possession. It will be null and void upon true line location by a licensed surveyor or as agreed upon at a date in the future. Use only the accepted [Cutting Line Agreement and Cover Letter found in the Public Lands Toolkit](#). This method avoids costly surveys when they are not warranted. A signed agreement is not required to proceed with the sale. Staff should consult with appropriate supervisor and property manager on whether or not to proceed with the sale in the event that a signed cutting line agreement is not received. Document the decision and factors considered in the timber sale file. Signed cutting line agreements should be uploaded to Wisconsin Field Inventory and Reporting System (WisFIRS) Public Lands application in the timber sale Documents tab.

If the forester, the team leader, and the property manager decide to proceed without a signed agreement, the person establishing the cutting line should take reasonable precautions, as defined by [s. 26.09\(5\) Wis. Stats.](#) Documentation of the reasonable precautions taken should be included in the timber sale file, including land ownership record review and method of cutting line location identification.

The purpose is to avoid issues of potential timber theft, which can result in damages of double or quadruple stumpage (or double mill value) depending on whether reasonable precautions were taken in establishing the cutting line. Even if reasonable precautions are taken, timber theft and responsibility for damages of double stumpage are still possible if the line is found to be in error.

Cutting line agreements may also be recorded with the local register of deeds at the adjacent landowner's request and expense.

For salvage sales where lines cannot be adequately established due to storm damage obstructing running a line prior to selling the timber sale, a "Virtual Boundary" can be utilized by referencing lines on maps, the prospective, etc... The following language should be included in the prospectus: *"Bids should be made with an as-is understanding. These sales contain a significant amount of storm damaged timber. Due to the extent of damage, in many cases boundary lines were not able to be established. As damaged wood is cleared the department will work with the contractor to further define sale boundaries."*

If the affected adjoining landowner objects (verbal or written statement) specifically to the cutting line location, the property manager and forester may need to modify the sale or locate the line by official survey, or other formal means, before a DNR forester can sell a timber sale. In such cases, the property manager should work with the neighboring



landowners. If survey work is mutually beneficial, splitting the survey /boundary line establishment costs with neighboring landowners may be pursued. The forester and property manager should work with the program responsible for property management to determine if funding for survey work is available for property boundary establishment.

If a resolution cannot be reached, consult supervisor and Public Lands Specialist for guidance.

#### Line Established via a Cooperating Consultant Forester

In some instances, a cutting line may be too difficult to determine, (lack of pre-existing survey information), and a formal survey may be appropriate, in which case using a cooperating consultant forester to facilitate the completion of a survey is acceptable. If the survey/boundary line establishment is ***directly related to and required for*** establishing a timber sale, the harvest boundary establishment work associated with the timber sale may be accomplished via contracting with a cooperating consultant forester. See Chapter 20, Section 25 of the Timber Sale Handbook for contracting details.

The cost of any potential contracted survey /boundary work should be weighed against the benefits of utilizing that method of line establishment and of the management being implemented. It is prohibited to use timber sale revenues to pay for survey /boundary line establishment ***not directly related to and required for establishing a timber sale.***

#### Mapping

When creating a map for a timber sale, or for other natural resource management purposes, include the following statement: "This map is for informational purposes only and may not have been prepared for or be suitable for legal, engineering or surveying purposes. The user is solely responsible for verifying the accuracy of information before using for any purpose. By using this product for any purpose user agrees to be bound by all disclaimers found here: <https://dnr.wisconsin.gov/legal>." This inclusion is a requirement under s. [443.14\(16\) Wis. Stats.](#), which applies to people who performs services related to natural resources management, including creating any map prepared as a part of those services.

See section 2.2 of the [Property Managers Guidance](#), for additional information on Boundary Issues.

Additional information on the procedure for requesting and contracting a land survey can be found in [Manual Code 8606.1](#)

CRUISE ACCURACY GUIDANCE

It is the intent of this chapter to encourage a reasonable balance between cruising cost and sale value consistent with common sense and good judgment. The standards described below will help achieve the goal of having actual harvested volumes fall within a 20% sampling error of cruise estimates.

Volume estimates for the purpose of establishing timber sales may be obtained in one of several ways. It may be by cruise using approved procedures, measurement of all or a sample of trees counted or marked, a count of products such as Christmas trees, or measurement of cut products such as un-hauled piles sold as firewood.

The following standards will be used in establishing timber sales:

Forest Products Permits:

100% tally  
or  
10% cruise (by area)

Scaled Sales:

Required minimum number of sample plots:

| <u>If area in acres is:</u> | <u>Number of sample points:</u> |
|-----------------------------|---------------------------------|
| Less than 10                | 10                              |
| 11-40                       | 1 per acre                      |
| 41-80                       | 20 + .5 x _____ acres           |
| 81+                         | 40+ .25 x _____ acres           |

Lump Sum Sales:

- Using the number of plots recommended for scaled sales above, complete an initial cruise of the sale area.
- Then, determine the number of plots needed to meet accuracy requirements for a lump sum sale.
  - In Forest Metrix, sampling error and additional plots required are both calculated for timber sales when Foresters run the “Analyze” function on completed cruise data and view the summary.
  - Foresters using Stick Plus Trees should calculate sampling error using the formulas outlined in the [Public Lands Toolkit](#).
- Document the results of these calculations on form 2460-1 in the “Qualifying Comments” section.

Foresters are strongly encouraged to use discretion when selecting the sale method that best fits the character and conditions of timber sales. If after determining sampling error, the number of plots needed is found to be excessive (e.g. more than 1 plot per acre) then the sale is a better candidate for a scaled sale.

## TIMBER CRUISING SYSTEMS

There are three options to tabulate timber cruise data using point sampling: Forest Metrix, cubic cruise and sticks plus trees (based on BAF 10):

- Forest Metrix Pro (FM Pro) is a timber cruising application for mobile devices. FM Pro operates on mobile devices running iOS, which is a mobile device operating system from Apple Inc. FM Pro is completely customizable, can calculate timber volume and value by species, and has on-board reports. The User Manual for Forest Metrix Pro can be found **in the help menu within the app**. General overview, resources, training and support for FM Pro can be found at: <https://wigov.sharepoint.com/sites/dnr-intranet-fd/SitePages/it-and-gis/mobile-technology/apps/forest-metrix/default.aspx>
- Cubic Cruise is a single product cruising system based on the relationship between the volume of a tree and the DBH; more specifically, the volume to basal area ratio, or VBAR. Form correction factors can be developed to modify volumes when the form of the trees being cruised varies from the norm. Cubic cruise is a very efficient system since tree height estimates are not required while taking plots. It provides reasonable accuracy and provides the user with volumes to various top diameters, making it particularly suitable on properties advertising to variable top utilizations, including whole tree.
- Sticks plus trees (and the Stand Exam Tally Sheet) is a point sampling cruising system that is also based on a simplified volume to basal area ratio (VBAR) formula. As such, the volume estimations for small diameter and short trees, or large diameter and tall trees, tend to be over or underestimated, respectively. Complete the Stand Examination Tally (Form 2400-032) or equivalent information for each stand. Thoroughly evaluate the entire area of the stand, collecting as much information as possible from each sample point. The number of plots used per stand will depend upon the size of the stand and the desired sampling intensity. Sticks plus trees is described in the Public Lands Handbook in the discussion on recon procedure and using the Stand Examination Tally Sheet.

## CONTRACTING WITH COOPERATING CONSULTANT FORESTERS

Changes to [s. 28.05](#), Wis. Stats., in 2007 provide for the use of cooperating consultant foresters on state timber sales. The administrative rule can be found in [s. NR 1.26](#), Wis. Adm. Code. DNR Foresters are required to collaborate with local DNR property managers to establish timber sales and on-the-ground management in concert with Master Plan direction. The option of contracting with cooperating consultant foresters provides another tool to get the job done if DNR staff time is unavailable. Prior to contracting for timber sale assistance, the first line supervisor shall approve the request to pursue contracting with cooperating consultant foresters based on workload priorities.

The property manager and DNR forester will jointly agree on which, if any, tasks will be appropriate to contract for on individual timber sales. DNR foresters are responsible for monitoring consultant forester performance.

1. Tasks eligible for contracting
  - Forest reconnaissance leading to timber sale establishment
  - Timber marking and harvest boundary establishment
  - Cruising
  - Recommending timber sale specifications
  - Preparing maps
  - Assisting with sale inspections and scaling
2. Tasks ineligible for contracting (DNR responsibility by code and statute)
  - Selecting areas to harvest
  - Determining the silvicultural prescription
  - Coordinating harvests with Master Plan direction
  - Bidding and awarding of sale
  - Preparing of timber sale cutting notice & report and contract
  - Receiving and remitting bonds and stumpage
  - Ultimate responsibility for administering the sale
  - Monitoring cooperating consultant forester performance
3. Process for contracting with a cooperating consultant forester

Cooperating consultant foresters shall be compensated at the local DNR's choice of a rate per hour, acre or project as established by bids or directly, as allowed within DNR purchasing guidelines. When a need for timber sale assistance is identified the forester shall issue a request for bids or make contact with cooperating consultant foresters serving the county. Eligible cooperating consultant foresters can be found from the [Forestry Assistance Locator](#). Bids shall include labor, travel, equipment and any supplies such as marking paint not identified as provided by the Department. Worker's compensation and liability insurance is required. Timber sale assistance contract awards shall be determined on price alone unless additional evaluation criteria such as specialized training or experience are included in the request for bids.

The general state contract to be used for contracting with cooperating consultant foresters on state timber sales can be found in e-forms (Form [2400-138](#)) on the DNR intranet. The property manager shall sign the contract for the Department.

Contracted services are not to be funded from the local expense budget. Consult with Budget Section Chief for correct expense codes. They contain 4 unique options of program/activity/sub-category codes in order to designate the proper conservation fund account from which to draw the funds. Payment for services does not come directly from the individual timber sale a contractor may be working on.

## SAMPLE SPECIFICATIONS FOR STATE TIMBER SALE CONTRACTING

Job specifications should be included in a bidding prospectus that appends, or is incorporated into, the contract (Form [2400-138](#)). See related guidance materials located in the [Public Lands Toolkit](#). Specifications should be thorough and cover all details similar to a timber sale prospectus and contract. It is recommended to bid projects by acre or job, rather than by hour.

### Task 1: Forest Reconnaissance Leading to Timber Sale Establishment

- Indicate the type of cruising system used, including BAF, variable plot sampling.
- Specify cruising forms to be used (i.e. Stand Examination Tally, DNR Form 2400-032) and include handbook instructions (Public Forest Lands Handbook, pages 110-13 and 14).
- Determine the number of plots per acre/stand, with a minimum of 4 plots per stand.
- Include all information that is needed for accurate completion of Form 2400-026 (Stand Examination Data Sheet).
- Specify size classes for timber products to be cruised.
- Require copies of field data sheets for records.

### Task 2: Timber Marking or Harvest Boundary Establishment

- Indicate the tree marking code to be followed; e.g. Leave trees – light green, property boundaries – blue. (Timber Sale Handbook 21-1 and 2) For harvest boundaries, indicate frequency of marks or ribbons.
- Include if monuments and corner posts need to be marked following guidelines in Timber Sale Handbook, page 22-1.
- Indicate type of paint to be used (e.g. lead-free). Only lead-free paint is to be used on Department timber sales.
- Specify placement, size, and number of butt marks and breast height marks. (e.g. marks on two sides, stump mark).
- Determine if/when plastic ribbon may be used for temporary marking.
- Indicate any paint lines or “ribbon lines” in existence on the timber sale map.
- Ensure that all management activities refer to Wisconsin’s Forestry Best Management Practices (BMP) field manual (PUB-FR-093-97REV) for specific guidelines along waterways.
- Include a thorough silvicultural prescription, including residual BA, order of removal, and wildlife tree retention, to ensure that the extent of timber marking is understood. The [Wisconsin Silviculture Guide](#) may be provided as a reference.
- If marking to a required basal area, indicate the permissible range for individual plots, tolerance of the overall average, and how that will be determined.
- Indicate if there are any expectations for tallying during marking (e.g. 100% tally of sawtimber, tallying total number of pulp trees).

### Task 3: Cruising for Timber Sale Volume Estimation

- Determine the cruising system to be used and desired volume breakdown and product specification. If the sale has potential for whole tree utilization, the cruise should estimate volume for the potential cutting specifications.
- Indicate cordwood weight conversion factors if needed (Timber Sale Handbook, page 12-1)
- Indicate acres, dimension and number of plots to be sampled, and cruise accuracy guides to be followed, with a goal for the final sale volume to be within 20% of cruise estimates. (Timber Sale Handbook, pages 23-1 and 2)
- Indicate the format cruise data is to be presented (i.e. summarized by species/product).
- Require copies of data sheets for records.

### Task 4: Recommending Timber Sale Specifications

- Require that all specifications adhere to Wisconsin’s Forestry Best Management Practices (BMP) field manual (PUB-FR-093-97REV) for specific guidelines along waterways.
- Sale specifications should be based on guidelines listed in the [Wisconsin Silviculture Guide](#).
- Specify cutting, utilization standards, and slash disposal requirements.
- Indicate logging site access and road needs/restoration.
- Determine feasible methods for sale administration and scaling.

Task 5: Preparing Maps

- Indicate any paint or ribbon lines on timber sale map. Cover type boundaries should be clearly identified.
- Identify different cutting units/prescriptions.
- Indicate requirements for format, map scale, key and header information.
- Utilize mapping symbols from Public Lands Handbook Appendix E for all map features, including types of trails, monument corners, etc.

Task 6: Assisting with Sale Inspections and Scaling

- Specify the timing/frequency that inspections and scaling should be conducted, including forms to be completed.
- Indicate all timber sale contract specifications that should be inspected at each visit.
- Scaling methods, calculations, and conversions should be clear and concise.

CHAPTER 30TIMBER SALE ESTABLISHMENT – DOCUMENTATION AND WRITE-UP PROCEDURES

The Timber Sale Cutting Notice and Cutting Report (2460) write up procedure is done in WisFIRS. Refer to the online WisFIRS Training Manual for step-by-step instructions.

FORMS LIST BY STAGE OF SALE

Some of the forms listed below have been superseded by WisFIRS elements or processes but may still be applicable for some situations.

| <u>Proposal to Sell (ESTABLISHMENT)</u>                                | <u>Form Number</u> | <u>Location</u> |
|--|--------------------|-----------------|
| Newspaper Ad (see sample in the Public Lands Toolkit)                  |                    |                 |
| Prospectus (see sample in the Public Lands Toolkit)                    |                    |                 |
| Map of Sale Area (see sample in the Public Lands Toolkit)              |                    |                 |
| Timber Sale Notice and Cutting Report                                  | 2460-001           | E-Forms         |
| Timber Sale Narrative  | 2460-001a          | E-Forms         |
| <u>Bidding</u>   |                    |                 |
| Timber Sale Bid  | 2400-049           | E-Forms         |
| Opening of Bids and Timber Sale Award                                  | 2400-006           | E-Forms         |
| <u>Notification of Sale (SOLD)</u>                                     |                    |                 |
| Timber Sale Transaction/Remittance                                     | 2460-003           | E-Forms         |
| Timber Sale Contract (Copy)  | 2400-005           | E-Forms         |
| Certification of Worker's Compensation (provided by insurance company) |                    |                 |
| Timber Sale Notice and Cutting Report (now housed in WisFIRS)          | 2460-001           | E-Forms         |
| <u>Harvest</u>   |                    |                 |
| Timber Sale Contractor Checklist – Pre-Sale Meeting                    | 2460-009           | E-Forms         |
| Harvest Inspection Record  | 2460-002           | E-Forms         |
| <u>Stumpage Payment</u>  |                    |                 |
| Timber Sale Transaction/Remittance                                     | 2460-003           | E-Forms         |
| Timber Sale Ledger (replaced by WisFIRS, except Legacy sales)          | 2460-006           | E-Forms         |
| Timber Sale Journal (replaced by WisFIRS, except Legacy sales)         | 2460-005           | E-Forms         |
| <u>Scaling/Stumpage Payment</u>  |                    |                 |
| Forest Product Hauling Permit (uncertified)                            | 2400-129           | Darwin Rd.*     |
| Forest Product Hauling Permit (certified)                              | 2400-130           | Darwin Rd.*     |
| Scale Sheets   | 2400-063           | E-Forms         |
| Timber Sale Transaction/Remittance                                     | 2460-003           | E-Forms         |
| Timber Sale Ledger (replaced by WisFIRS, except Legacy sales)          | 2460-006           | E-Forms         |
| <u>FINAL Cutting Report</u>  |                    |                 |
| Timber Sale Close-out Checklist  | 2460-013           | E-Forms         |
| Timber Sale Notice and Cutting Report                                  | 2460-001           | E-Forms         |
| Timber Sale Ledger   | 2460-006           | E-Forms         |
| Timber Sale Close-Out Transaction                                      | 2460-004           | E-Forms         |
| Compartment Examination Record   | 2400-026           | WisFIRS         |

\* Forest product hauling permits can be ordered annually for specific properties with address prefilled or blank versions can be requested from the DNR Darwin Road Warehouse (<https://intranetapps.dnr.wi.gov/otic/Publications.aspx>).

NOTICE AND CUTTING REPORT GUIDE

This guide is to be used in preparing the Timber Sale Notice and Cutting Report (Forms 2460-1) and Narrative (2460-1A). Self-explanatory items have been omitted. The guide is presented in four parts (A-Notice, B-Notice, Partial/Final Cutting Report). The majority of this process now occurs within the WisFIRS platform. There may be differences between state and county processes. Refer to the [WisFIRS Online Training Manual](#) for more information.

SALE ESTABLISHMENT  
Request for Approval to Sell

- Property Code The Property Name and Property four-digit numeric code assigned for each property is auto-populated by WisFIRS.
- Tract Number The purpose of the tract # is to track harvest areas prior to sale and identify them for bidding purposes. A unique tract number should be assigned to differentiate between other proposed sales, some of which may be on different properties but included on the same bid opening. It is recommended that a number be assigned by property running consecutively by calendar year. Example: 1-01, 2-01, 1-05, etc. If multiple properties are included in a bid opening, staff may elect to also use the property code to differentiate between similar tract #'s on different properties. Example: 3505 / 1-12, 3524 /1-12, etc.
- Sale Number Sale numbers should be preceded by the property code, after the sale is sold. E.G. 2621-123 (Indicates sale #123 on the Hay Creek-Hoffman Lake WLA.)
- Type of Sale (Check one appropriate box)
- Regular - Commercial harvest, including thinnings.
  - Salvage - Timber with reduced value due to wind, fire, or insect damaged stumpage. Sanitation cuts should be included also if values are reduced.
  - Cut products sales - Sales in which the product has been severed from the stump. Appraised prices are normally higher than base stumpage prices.
  - Fuelwood - Sales specifically established to provide fuelwood as an energy source.
  - Trespass - Payment received for cutting undesignated trees.
  - Other - Include right-of-way easements, road clearing, etc. Specify the type of "other" sale in the space provided.
- Sale Method Check the two appropriate boxes to indicate whether the sale was sold via advertising or as a direct sale and whether the sale will be scaled or was sold as a lump sum sale.
- Payment Type Check the appropriate box.
- County Special Use Lands Check only if lands are entered as County Forest special use lands (s. 28.11(4)(c), Wis. Stats.).



Certification Check box to indicate certification status.

1. Compartment Number

Compartment number must be entered into WisFIRS.

2. Stand Number

Stand number must be entered into WisFIRS.

*Note: WisFIRS will not allow stand data to be imported into the timber sale summary unless the recon data has been updated within the past 12 months.*

3 & 4. Primary and Secondary Type

Primary, Secondary Type and Size/Density are auto populated in WisFIRS based upon current recon data.

5. Acres Proposed by Stand

Record the acreage proposed for cut in each stand. If a stand is split by a sale, update the recon and create a new stand for the acreage included in the sale. Retain the original stand number for the acreage being deferred. The sum of the stand acreages on line 5 should equal the sum of the proposed cut acreage on line 13. Patches of uncut timber retained within a sale boundary (e.g. green tree retention) should NOT be counted if the patches have a separate stand number than the area actually being harvested. If the patches are managed as inclusions in the stands being harvested (same stand number), then their acreage SHOULD be counted.

6. Acres Cut by Stand

When the sale is closed, record the actual acreage cut by stand. Actual acreages cut by stand on line 6 should equal the sum of the actual cut acreage on line 14. Patches of uncut timber retained within a sale boundary should NOT be counted if they have a separate stand number than the area actually being harvested. If the patches are managed as inclusions in the stands being harvested (same stand number), then their acreage SHOULD be counted.

7. Scheduled Cut Year

Scheduled cut year is auto populated by WisFIRS.

8. Stand Origin

Stand age for even-aged types is auto-calculated by WisFIRS by subtracting the year of origin from the current year.

10. Management Objective

Management objectives are auto populated by WisFIRS. Coding below is informational.

Natural Type Maintenance:

A Type will regenerate or maintain itself naturally

Natural Type Conversion:

B To balsam fir (natural or previously planted)

C To white pine (natural or previously planted)

D To red pine (natural or previously planted)

E To jack pine (natural or previously planted)

F To northern hardwoods

## Timber Sale Handbook

|   |  |
|---|--|
| G | To red maple   |
| H | To aspen   |
| I | To central hardwoods                                       |
| J | To white birch   |
| K | To oak (natural or previously planted)                     |
| L | To other forest or non-forest species (specify in remarks) |

### Forced Type Maintenance

|   |  |
|---|--|
| O | Type must be regenerated by seeding, planting, site preparation, prescribed burning, etc. (forest or non-forest species) |
|---|--|

### Forced Type Conversion (artificial regeneration after harvest)

|   |  |
|---|--|
| R | To spruce  |
| S | To white pine  |
| T | To red pine  |
| U | To jack pine   |
| V | To northern hardwoods                                    |
| W | To oak   |
| X | To other forest or non-forest species (remarks required) |

10a.

### Harvest Type

Harvest type is auto populated by WisFIRS. Coding below is informational.

RE (Even-aged regeneration) or RA (all-aged regeneration)

Treatment type      Code: Treatment:

#### For Natural Regeneration

|    |    |   |
|----|----|---|
| RE | 1  | Coppice (e.g. aspen regeneration cuts)                                      |
| RE | 2  | Clearcut (relying on regeneration by <u>seed</u> )                          |
| RE | 3  | Seed tree harvest   |
| RE | 4  | Shelterwood harvest (usually 50 ft. <sup>2</sup> or greater of residual BA) |
| RE | 5  | Overstory Removal   |
| RA | 6  | Group Selection   |
| RA | 7  | Single Tree Selection   |
| RE | 8  | Other   |
| RA | 9  | Patch Selection Harvest   |
| RA | 16 | Conversion from Even-Age to Uneven-Age                                      |

#### For Artificial Regeneration (relying on future planting or seeding)

|    |    |                           |
|----|----|---------------------------|
| RE | 10 | Clearcut                  |
| RE | 11 | Partial cut (even-aged)   |
| RA | 12 | Partial cut (uneven-aged) |

#### Intermediate Treatments

|   |   |  |
|---|---|--|
| T | 1 | Harvesting scattered mature or over-mature trees |
| T | 2 | Thinning or Improvement cutting                  |
| T | 3 | Salvage or Sanitation cutting                    |

11.

### Pre-Sale Stocking

Present stocking is auto populated by WisFIRS.

12.

### Residual Stocking

**Enter anticipated** stocking after cutting.

13. Proposed Cut Areas

# of Even-Aged patches: Enter the number of even-aged patches on the timber sale that are being harvested by an even-aged method (coppice, clear-cut, overstory removal, shelterwood, seed tree, etc.). Do not include even-aged patches that are not being rotated such as intermediate pine and oak thinnings.

Even-Aged harvest acres: WisFIRS auto-populates the number of acres that are being harvested by an even-aged method. This information is populated from Line 5. Do not include even-aged thinning or intermediate treatment acres here. \*This data is combined with the # of patches to determine the average patch size of even-aged regeneration harvests for a property. (e.g. 3 small clear-cuts are included in the 20 acres of even-aged harvest.)

Uneven-Aged harvest & Thinning Acres: WisFIRS auto-populates the number of acres being harvested by uneven-aged methods and / or even-aged thinnings or intermediate treatments on the proposed sale. This information is populated from Line 5. The total of the two acreage boxes for line 13 should equal the sum of the acres proposed by stand in line 5.

Passively-managed leave islands within a sale area are NOT counted as part of the harvest acreage if they have a stand number different than the acreage actually being harvested. If the patches are managed as inclusions in the stands being harvested (same stand number), then their acreage SHOULD be counted.

If an island IS being harvested differently than the surrounding area, then the acreage should be counted by type of harvest occurring within the island and recorded as a different stand.

The total acres calculations include the sum of the even-age and uneven-age patches.

14. Total Actual Cut Acres

Upon sale closing, enter the # of even-aged patches, even-aged harvest acres, and uneven-aged and thinning acres actually completed when completing the final cutting report following the harvest.

15. Timber Sale Notice Narrative, Form 2460-1A: Keep the narrative clear and concise. Use an appropriate level of detail to communicate relevant sale information to the intended audience.

Timber Sales on State Park properties: There is language included in the section below which addresses some specific Wisconsin State Park System (WSPS) timber harvest considerations. Not all considerations were included.

For complete guidance regarding timber management on State Park properties, reference the current Parks Program Guidance Document in the [Public Lands Toolkit](#).

The narrative should address the following items:

A. General Sale Description

1. Management Objective and Prescription
2. Physical Location - As it relates to county, town, property, lakes, rivers, roads, etc.
3. Soil Type(s) – General description (e.g. sand, clay, wet, dry, nutrient poor)
4. Habitat Classification – Common name and pertinent information such as how the type influences the management objective and natural succession paths available.

5. Topography
6. Merchantability Standards
7. Biomass Suitability
8. Roads, Access, and Landings
9. Adjacent Landowner Contact – Pertains to when sale borders another ownership.

B. Ecological Considerations

1. Management History
2. Silvicultural Systems – e.g. coppice, single tree selection, shelterwood
3. Green Tree Retention – Document the level of retention. If no retention is incorporated due to site specific management objectives, provide justification.
4. Post-Harvest Regeneration Plans – e.g. natural regeneration, planting, seeding
5. Invasive Species Evaluation – Indicate the level of evaluation, and if invasive species are present, document the species and level.
6. Insect and Disease Concern(s) – Includes both pre- and post-harvest considerations.
7. Skidding / Seasonal Restrictions - Summer logging for scarification; oak wilt restrictions; winter logging due to wet conditions or deeryard, etc.
  - a. State Park properties: Special consideration should be given when deciding skidding and seasonal restrictions to reduce disruption of recreational activities and protect recreational trails.
8. Landscape Considerations
9. Natural Heritage Inventory – Indicate whether there are any occurrences of endangered, threatened, or special concern species, but do not include species information. Indicate that the NHI database was searched and state that additional information is included in the Endangered Resources Review document that was generated during the NHI search and is included in the sale file. The ER Review document should be removed from the sale file before it is released to anyone outside of the Department or County Forest.
10. Forest Chemical Use – If chemicals are incorporated into management, document the chemical to be used, ensuring that it is FSC/SFI approved.

C. Water Quality Considerations

1. Lake, River, or Stream – Identify any that lie within or will be affected by the sale.
2. RMZ within sale design – If yes, describe conditions and how it affects sale design.
3. Stream crossing – If yes, answer questions to provide details.
4. Wetland considerations
5. BMP modifications – Describe extent and rationale.

D. Aesthetics Considerations

1. Aesthetic Considerations Addressed – Indicate management techniques that may be used such as leave trees, slash treatment, no-cut areas, to address aesthetic concerns.
2. Leave Trees – Indicate type and level of leave trees.
3. Operational Modifications
4. Slash Treatment

E. Wildlife Considerations – Indicate any special habitat management areas (deeryards, eagle nests)

1. Snag, Den, and Mast Tree Retention – Indicate specific species/trees if applicable.
2. Game Openings

F. Recreation Considerations – (Trails, Campgrounds, Park, etc.)

1. Recreation Impacts – Indicate any impacts to incorporated or adjacent recreation.
  - a. State Park properties: Special consideration should be given to reduce disruption of recreational activities and protect recreational trails.
2. Recreation Stakeholder Contacted – If applicable list name and affiliation of contact.
  - a. Signage Needed on roads, trails, etc.
  - b. State Park properties: Additional consideration should be given to providing public notice and stakeholder outreach.

G. Resources of Special Concern Considerations – Archaeological/Historical Review

1. Results of Cultural Review - An archeological/historical review is required on all State and County Forest lands before a timber sale or other ground-disturbing activities can take place. DNR staff shall check the [Archaeological and Other Cultural Resources maps](#) on the DNR intranet for archaeological and historical occurrences. Contact will be made with the DNR’s Cultural Resource Specialist if a cultural or archeological resource is on site. Record the date that the check was conducted.

16.

Species Code

Enter the appropriate species code:

| Species        | Code |
|----------------|------|
| Aspen          | A    |
| Ash            | AS   |
| Ash, Black     | AB   |
| Ash, Green     | AG   |
| Ash, White     | AW   |
| Balm of Gilead | BG   |
| Basswood       | BA   |
| Beech          | BE   |

| Species              | Code |
|----------------------|------|
| Hackberry            | HB   |
| Hemlock              | H    |
| Hickory, Bitternut   | HI   |
| Hickory, Shagbark    | HS   |
| Kentucky Coffee Tree | KC   |
| Larch                | L    |
| Locust, Black        | LB   |
| Locust, Honey        | LH   |

| Species           | Code |
|-------------------|------|
| Oak, Other        | OO   |
| Oak, Black        | OB   |
| Oak, Bur          | OM   |
| Oak, Northern Pin | OJ   |
| Oak, Swamp White  | OS   |
| Pine, Austrian    | PA   |
| Pine, Jack        | PJ   |
| Pine, Red         | PR   |

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| Species       | Code |
|---------------|------|
| Birch, River  | BR   |
| Birch, White  | BW   |
| Birch, Yellow | BY   |
| Box Elder     | BS   |
| Butternut     | BN   |
| Cedar (White) | C    |
| Cedar (Red)   | CR   |
| Cherry, Black | CH   |
| Cherry, Pin   | CP   |
| Cottonwood    | CW   |
| Elm           | E    |
| Fir (Balsam)  | FB   |

| Species              | Code |
|----------------------|------|
| Maple, Sugar         | MH   |
| Maple, Red           | MR   |
| Maple, Other         | MO   |
| Maple, Norway        | MN   |
| Maple, Silver        | MS   |
| *Mixed Conifer       | CX   |
| Mixed Hardwoods      | MX   |
| *Mixed Species – all | XX   |
| Mountain Ash         | MA   |
| Mulberry             | MV   |
| Oak, Red             | OR   |
| Oak, White           | OW   |

| Species               | Code |
|-----------------------|------|
| Pine, Scots           | PS   |
| Pine, White           | PW   |
| Spruce                | S    |
| Spruce, Black         | SB   |
| Spruce, Norway        | SN   |
| Spruce, White         | SW   |
| Sycamore              | SY   |
| Tamarack              | T    |
| Walnut                | W    |
| Willow                | WI   |
| Yellow Poplar (Tulip) | YP   |

17.

Product Code

Enter appropriate product codes:

| <u>Product</u>   | <u>Code</u> |
|--|-------------|
| Logs (M board feet, Scribner Decimal C)                              | 10          |
| Bolts  |             |
| (sold by the cord -128 cf)   | 15          |
| (sold by the ton)  | 15T         |
| Mixed Products (cords, bolts, logs) *for use with all species types  |             |
| (sold by the cord -128 cf)   | 18          |
| (sold by the ton)  | 18T         |
| Cordwood   |             |
| (sold by the cord -128 cf)   | 20          |
| (sold by the ton)  | 20T         |
| Fuelwood (*only for dead, cull, or not merchantable as cords / logs) |             |
| (sold by the cord – 128 cf)  | 23          |
| (sold by the ton)  | 23T         |
| Cordwood combined with Fine woody material (>4” dib + <4” dib)       |             |
| (*Recommended when selling to variable top dib)                      |             |
| (sold by the cord – 128 cf)  | 24          |
| (sold by the ton)  | 24T         |
| Fine Woody Material (<4” dib – Only)                                 |             |
| (sold by the cord – 128 cf)  | 26          |
| (sold by the ton)  | 26T         |

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|                                    |     |
|------------------------------------|-----|
| Poles and Posts (Pieces)           |     |
| 7 - 8 feet                         | 31  |
| 10 - 12 feet                       | 32  |
| 14 - 16 feet                       | 33  |
| 18 - 20 feet                       | 34  |
| 21 - 30 feet                       | 35  |
| 31 - 40 feet                       | 36  |
| 41 - 50 feet                       | 37  |
| 51 - 60 feet                       | 38  |
| 61 - 70 feet                       | 39  |
| Christmas Trees (Pieces)           | 40  |
| Christmas Trees – Sheared (Pieces) | 41  |
| Boughs                             | 42T |

### Appraisal

18a-18c. All timber must be appraised before sale based on production and market factors. Production and market factors for cordwood and sawlogs are listed on page 32-9. These factors consider production and transportation costs along with quantity and quality.

The timber on each tract is compared to the average timber on the specific property. A total appraisal factor of 1.0 represents average timber.

Each species and product will be appraised separately.

The stumpage appraisal factors are to be personalized to each property for proper application. Short crooked trees may be average for one property and wet sites average for another. Each forester must determine what stand and site characteristics are average for the property in applying market and production factors properly.

A frequent mistake made in factoring is attempting to drastically change the base stumpage rate (Chapter 41) through factoring to match current market conditions. This is normally improper since factoring is used to reflect conditions of logging in the field, rather than the market price. The annual determination of new base stumpage rates, which are subject to field review, is the proper time to adjust base stumpage rates to market conditions rather than through factoring.

19. The total of lines 18a through 18c.
25. The base stumpage rate will be auto calculated from the stumpage area.
26. The appraised value/unit will auto-calculate with information from lines 19 and 25.
27. For those species with 10-codes, enter the total MBF volume, rounded to the nearest whole number. (e.g.: 3250 board feet = 3.25 MBF = 3 MBF). Reference the Rounding Guidelines found in Section 42-1.
28. or 29. Enter the total pulpwood volume in cords or tons for each species being offered, including the fine woody material volume if applicable, as either cords or tons. Do not mix the cords and tons units for the same sale. If a sale is advertised in tons then all sold, partial and final volumes should be reported in tons. MBF and pieces can be used on any sale where there are cords or tons. Reference the rounding guidelines located in section 42-1.
30. Fine woody material consists of tops and branches (biomass) less than 4” DIB. Enter the volume of fine woody material if the sale is eligible for biomass harvesting (see Biomass Harvesting Guidelines). This amount is also included in the total volume already entered on line 28 or 29. If using codes 26 or 26T line 30 should equal line 28 or 29.
31. The total estimated amount of MBF included in lines 27, 28 or 29.

32. The total appraised value (line 32) is the appraised value/unit (line 26) multiplied by the amount of product in line 27, 28, 29, or. This number is auto calculated in WisFIRS. The appraised value/unit (item 26) and total appraised value (item 32) should be the actual amount to the nearest \$0.01.
33. The appraised value/unit may be reduced by up to 30% to allow room for bidding and indicated in the left column (line 33) "Reduced %." Reduction of the appraised value/unit is optional and left to the discretion of the forester and may only be applied to advertised sales. The appraised base stumpage rate is a minimum value. Upward adjustments especially for direct sales are not precluded and often desirable.
- The advertised value/unit is determined by multiplying the appraised value/unit (line 26) by 1.00 minus percent reduced; i.e., a 30% reduction =  $1.00 - .30 = .70 \times \text{line 26} = \text{line 33}$ . The advertised value/unit may be rounded to the nearest \$.10/cord / ton or to the nearest \$1.00/MBF. See page 42-1 for instructions. Indicate the % reduced (0 to 30%). The minimum advertised value/unit may be rounded to the nearest \$.10 per cord or to the nearest \$1.00 per MBF.
34. The total advertised value (item 34) is auto calculated in WisFIRS. It is calculated by multiplying the advertised value/unit (line 33) by the volume (line 27, 28, 29).

Sale Reappraisal

If base stumpage rates are updated between the time the sale is established and when it is advertised, the base stumpage rates do not need to be changed unless the forester or property manager believes it would be beneficial.

When the appraisal is more than two years old, stumpage appraisal values must be re-evaluated before timber is sold. Reappraisal is also necessary whenever any of the original appraisal factors change, such as timber volume, quality, accessibility, etc.

When a reappraisal is required, contact the Public Lands Specialist for next steps.

If the reappraisal changes the appraised value, it must be resubmitted for approval prior to sale.

Appraisal Factors

**Cordwood Factors**

| CATEGORY               | ITEMS TO CONSIDER<br>(NOT ALL-INCLUSIVE)   | PROPERTY STANDINGS<br>(SLIDING SCALE) |
|------------------------|--|---------------------------------------|
| 18a.<br><br>CUT/SKID   | Topography, seasonal restrictions, volume per acre, tree diameter, sticks per tree, tree distribution, rockiness, brushiness, limbiness, slash control, cultural treatment, care of residual stand, wetness, seasonal restrictions, sale design, skidding distance | (Weighting: 33% of total appraisal)   |
| 18b.<br><br>HAUL/ROADS | Length of road, wetness, topography, BMPs, landing and road closure, streams and drainages, rockiness, soil type, cost per cord, sale design, sale timing, road and landing  | (Weighting: 33% of total appraisal)   |



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construction requirements, length and quality of main and secondary road, roughness, seasonal restrictions

18c. Species salability, market  
 MARKET/  
 QUALITY stability, seasonal marketability, (Weighting: 34% of total appraisal)  
 volume to market, amount of defect  
 salvage, percentage of bolts and sawlogs  
 knots, crook

19. TOTAL APPRAISALS- Lines 18a-18.c will auto-sum by WisFIRS

**Sawlog Factors**

| CATEGORY | ITEMS TO CONSIDER<br>(NOT ALL-INCLUSIVE) | <u>PROPERTY STANDINGS</u><br>(SLIDING SCALE) |
|----------|--|--|
|----------|--|--|

|                      |  |                                     |
|----------------------|--|-------------------------------------|
| 18a.<br><br>CUT/SKID | Topography, seasonal restrictions, merchantable length, tree diameter cull, brushiness, rockiness, slash control, cultural treatment, limbiness, care of residual stand, volume per acre, wetness, tree distribution, sale design, equipment restrictions, skidding distance | (Weighting: 25% of total appraisal) |
|----------------------|--|-------------------------------------|

|                        |  |                                     |
|------------------------|--|-------------------------------------|
| 18b.<br><br>HAUL/ROADS | Length of road, wetness, topography BMPs, landing and road closure, streams and drainages, rockiness, soil type, cost per MBF, sale design, sale timing, road and landing construction requirements, length and quality of main and secondary road, roughness, topography, seasonal restrictions | (Weighting: 25% of total appraisal) |
|------------------------|--|-------------------------------------|

|                               |  |                                     |
|-------------------------------|--|-------------------------------------|
| 18c.<br><br>MARKET<br>QUALITY | Species salability, market stability, volume to market, log diameter, seasonal marketability, percentage of high grade logs, knots, crook, salvage | (Weighting: 50% of total appraisal) |
|-------------------------------|--|-------------------------------------|

19. TOTAL APPRAISALS- Lines 18a-18.c will be calculated by WisFIRS

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### SOLD notification of sale

#### Item / Line

#### Sale Number

Assigned in continuous consecutive order when the timber sale is sold. Sale numbers must be preceded by the property code. E.G. 2621-123 (Indicates sale #123 on the Hay Creek-Hoffman Lake WLA.)

#### Contract Ending Date

Provide contract ending date. (Mandatory for state timber sales.)

#### Bond Expiration Date

Provide the timber sale bond expiration date. (Mandatory for state timber sales.)

35.

Enter the SOLD product code for each species. \*This may differ from the advertised product code however **if a sale is advertised by the ton, it should be sold and reported by the ton from that point forward.**

Example 1: A sale was advertised for variable utilization as cordwood combined with fine woody material (code 24) however the highest total bid was only for 4" utilization. Enter code 20 on line 35. Item 17 can remain as 24.

Example 2: A variable utilization sale where the cordwood / fine woody material was advertised by the ton (code 24T) and the whole tree volume was used in line 29. The highest total bid was for 2" utilization. Code 24T would still be used in line 35.

Example 3: If two or more species are expected to be co-mingled (such as in a chipping operation), species may be combined into one species code after the bid opening. Combine the values, calculate a weighted average price and complete lines 35-46 in a new column using the appropriate species code in line 16. In the new column, leave lines 17-34 blank. The original data entered in lines 17-34 can remain on this form for reference purposes. Note these changes in the Qualifying Comments section.

36.

Enter the total volume sold, including the fine woody material volume if applicable.

37a.

Enter the fine woody material volume sold. If only wood larger than 4" is sold, enter 0. In cases where variable utilization is being offered, line 37 may be less than line 30.

37b.

Enter the MBF volume sold.

38.

#### Sold Value/Unit

Report the original sold unit sale price by species and product on line (A).

39.

#### Total Sold Value

Total sold value is calculated by WisFIRS. Total sold volume (line 36) x sold value/unit (line 38A)

## Timber Sale Handbook

|                    |   |
|--------------------|---|
| <u>Item / Line</u> | <u>PARTIAL Cutting Report (Blue Portion): County</u>  |
| 40 & 41.           | <u>Partial Reported Volume and Value</u> (Required under s. <a href="#">28.11(6)(b)4.</a> , Wis. Stats.)<br><br>Within two years of filing the B-Notice, report the volumes and values removed from the sale area. All volumes must be reported in the units in which they were sold (i.e. cords must be reported as cords & tons reported as tons). If conversions are necessary see page 12-1<br><br>In a case where no cutting has been done, a partial report indicating zero volume should be submitted. No other partial report should be filed before submitting the final report.   |
| <u>Item / Line</u> | <u>FINAL Report Volumes and Values</u>  |
| 6 & 14.            | Record actual acres cut by stand on Line 6. Record actual cut acreage for even-aged and uneven-aged/thin on Line 14. The sum of the stand acres on Line 6 must = the sum of actual cut acres on Line 14. Report in whole acres.   |
| 38B & 38C.         | <u>Sold Value/Unit</u><br><br>If contract stumpage rate increases have occurred since the sale was sold, WisFIRS will automatically record the new rates (for state lands only).  |
| 42. & 43.          | Department Properties: Total volume and value of products removed from sale area.<br><br>County Forest: Volume and value of products removed <u>since submitting the partial report.</u><br><br>The volume reported on line 42 (A) and the value on line 43 (A) should correspond with the sold value/unit, Item 38 (A). Similarly, the volume reported on line 42 (B) should correspond with the sold value/unit on Item 38 (B), etc.<br><br>Any additional acreage / volume incurred as salvage (see page 55-1 reference to s. 26.22) may be added as an additional column on Form 2460-1. Modifications to acreage / volume where salvage isn't applicable are only allowed with the necessary approvals (see page 73-1) and only if the appraised value is less than \$10,000 and 500 cord equivalents. |
| 44.                | <u>Total Report Value</u><br><br>Sum of line 43. (For county forests sum of Lines 41 and 43.) Report only the value of the products removed. DO NOT include damage assessments or interest penalties. This information can be added under comments (See Chapter 85).  |
| 45.                | <u>Total Sale Volume</u><br>Total Sale Volume is calculated by WisFIRS. (line 40) + (line 42)   |
| 46.                | <u>Fine Wood Material in 45</u><br>Enter the Final fine woody material volume from line 45  |

### Qualifying Comments

Include remarks explaining lump sum cruise accuracy calculations, over-run/under-run, exceeding 20% deviation, unusually high or low factors, whole tree chipping conversion, damages, penalties, etc.

Over-run/under-run is calculated by total volume divided by cruise volume for the sale, not by individual species.

### Delegated Levels of Approval

On State lands all established timber sales shall be approved by the forestry team leader or first level supervisor, and property manager. The program responsible for property management may have additional approval procedures. On County Forest sales the county forest administrator must approve all timber sale stages along with a representative from the DNR's Division of Forestry. On GNA timber sales, approvals will be assigned/delegated. Approvals are based on the data and conditions as of the date of approval.

### Timber Sale Documents Tab in WisFIRS

The following are examples of supporting timber sale documents that are required and others that may need to be uploaded into a WisFIRS timber sale under the "Documents" tab. The list is not meant to be all-inclusive, nor may every example apply to every timber sale. All documents listed as "required" must be uploaded under the "Documents" tab in the timber sale prior to routing for final ("Completed") approval in order to be included in the sale archive created by WisFIRS. Documents (if applicable for sale) not required to be uploaded, must be in the sale file.

#### *Establishment*

- Timber Sale Map (Required)
- Timber Sale Prospectus (Required)
- Timber Sale Narrative ([Form 2460-001A](#)) (Required)
- Boundary Line Agreements (see 22-1 for more information)
- Road Use Agreements
- Natural Heritage Inventory (NHI) Review (Required if occurrence present)
- Archaeological & Historical Information (Required if occurrence present)

#### *Sold*

- Signed Timber Sale Contract ([Form 2400-005](#)) (Required)
- Performance Bond Information (Letter of Credit or [Form 2460-003](#) for Cash Bond) (Required)

#### *Completed*

- Timber Sale Contract Amendment ([Form 2400-005E](#)) & Timber Sale Contract Amendment Approval ([Form 2460-007](#)) (Required if occurred)
- Breach of Timber Sale Contract Letter
- Performance Bond Release Letter (Required)
- Timber Sale Completion Letter
- Timber Sale Closeout Transaction ([Form 2460-004](#)) (Required)

State APPROVAL AND REPORTING PROCEDURES FOR DEPARTMENT TIMBER SALES

This procedure should be used to process Timber Sale Notice and Cutting Report, Forms [2460-001](#) and [2460-001A](#), for timber sales on Department-owned land.

A district may establish additional review of timber sales to address sensitive sale areas or other issues. The Bureau of Forestry Field Operations may identify specific concerns and negotiate additional protocol with a specific district.

This is a three-stage process and **each stage must be approved by the Property Manager**. Each of the three stages is indicated by different shading of appropriate areas on Forms [2460-001](#) and [2460-1A](#). The Timber Sale Notice, Part A (Established (Est.)), is submitted for approval prior to advertising sale. Timber Sale Notice, Part B (Sold), is submitted before a contract can be awarded or cutting started. The Cutting Report (Final/Completed) is completed and submitted upon completion of the sale.

When timber sale data is entered into WisFIRS the established, sold, partial and completed dates should be entered **as the current date** (i.e. the date on which the data is being entered into WisFIRS). These fields should not be back-dated to the date of the bid opening or contract signing. Back-dating can create reporting errors since historic reported figures would be subject to change and timber sale accomplishments may not be properly accounted for if reporting dates are back-dated.

A “Timber Sale Package Review Checklist” for Department timber sales has been developed to aid foresters and team leaders in the timber sale package development and review process. This document can be found online in the [Public Lands Toolkit](#).

SALE ESTABLISHMENT

- |                 |   |
|-----------------|---|
| Forester        | 1. Prepares draft in WisFIRS. Attaches a sale map, prospectus, and other necessary documentation. Request for review and approval is conveyed through WisFIRS to the Team Leader and the Property Manager.  |
| First Approver  | 2. Reviews and recommends approval or disapproval.  |
| Second Approver | 3. Reviews and approves or disapproves. If questions arise, contacts Area Forestry Leader or designee for consultation. Sales occurring in sensitive areas should be considered for additional review by the District Forestry Leader and/or Bureau of Forestry Field Operations before approval. |
|                 | Sensitive areas include intensive recreational use areas, State Parks, Class A aesthetic zones, adjacent to wild rivers, etc.   |
|                 | If approved by Property Manager and Team Leader, the sale automatically becomes established.  |
| Forester        | 4. Proceeds to negotiate or advertise sale as approved.   |

SOLD Notification of Sale

- |                           |   |
|---------------------------|---|
| Forester/Property Manager | 5. Completes parts 35-38.   |
| Forester                  | 6. Routes for approval to Property Manager. If approved by Property Manager, the sale automatically becomes sold. |

Cutting Report - FINAL (Completed)

When a final timber sale cutting report is completed as part of the timber sale close-out process, the sale status in WisFIRS should be changed to complete. All sales that have been sold must be changed to complete in WisFIRS during close-out, including sales that were not harvested or that were only partially completed.

- |                           |  |
|---------------------------|--|
| Forester/Property Manager | 8. Completes original recon updates and completed treatments in WisFIRS. Final timber sale data can be entered directly by the forester if they have been granted timber sale edit authority in WisFIRS. |
| Forester                  | 9. Routes for approval to Property Manager AND Forestry Team Leader.   |
| Forester                  | 10. Prints and files original form in permanent file.  |

Notes:

- Partial reports shall not be used on state land timber sales. If a sale is extended with a stumpage increase, create a new sold value in WISFIRS showing the price increase. Record any volume harvested under the original price in the original entry and wood harvested after the increase under the new price.
- There may be old established/active sales that were contracted prior to the advent of the WisFIRS financial application. For assistance with managing the financial transactions on such sales, contact a financial specialist.

INCOMPLETE Timber Sales

**An “Incomplete” sale in WisFIRS is a sale that has been established but was never sold.** The sale status should be changed to incomplete only if the sale has never been sold and no further attempts will be made to sell it, or temporarily in rare circumstances associated with timber sale terminations. **Sales that have been sold and not harvested should be coded as “Complete”.** Changing the status from established to incomplete, or to complete in the case of sales that have been sold and are being closed-out, will also allow for the stands that make up the timber sale area to be once again included in the harvest schedule.

Do not enter a date in the “completed date” field when changing sale status to incomplete.

For example, if a sale was entered in WisFIRS as established but was never successfully sold and circumstances have changed to the point where the timber sale will no longer be pursued, its status should be changed to incomplete. The intent is to prevent a growing list of timber sales that are in the “established” category, if indeed they are no longer feasible and will not be sold. Periodically the responsible forester should review the status of sales and typically sales should not remain as “established” in WisFIRS for more than 5 years.

APPROVAL AND REPORTING PROCEDURES FOR COUNTY FOREST LANDS

This procedure will be used to process Timber Sale Notice and Cutting Report (Forms 2460-001 housed in WisFIRS and 2460-1A Narrative) for timber sales on lands entered under the County Forest Law.

This is a three stage process and all performed in WisFIRS. Each of the three stages is indicated by different shading of appropriate areas on Forms 2460-001. The Timber Sale Notice (Sale Establishment) is submitted for approval before advertising a sale. The Sold section is filed once the tract has been sold. The Cutting Report (final or partial) is completed and entered upon completion of the sale or 24 months after the Sold date of the timber sale, whichever applies.

When timber sale data is entered into WisFIRS the established, sold, partial and completed dates should be entered **as the current date** (i.e. the date on which the data is being entered into WisFIRS). These fields should not be back-dated to the date of the bid opening or contract signing. Back-dating can create reporting errors since historic reported figures would be subject to change and timber sale accomplishments may not be properly accounted for if reporting dates are back-dated.

SALE ESTABLISHMENT

- |                             |  |
|-----------------------------|--|
| DNR/County Forester         | 1. Prepares “Draft” Cutting Notice and Report in WisFIRS. Attaches sale map, prospectus, and other necessary documents. Routes draft timber sale to County Forest Administrator. |
| County Forest Administrator | 2. Reviews; recommends approval or disapproval. Routes draft to DNR Liaison or Designee.   |
| DNR Liaison or Designee     | 3. Reviews; recommends approval or disapproval.<br><br>If questions arise, jointly contacts DNR Liaison, Team Leader, and County Forest Administrator for consultation.          |
| County Forest Administrator | 4. Proceeds to negotiate or advertise sale as approved.  |

SOLD Notification of Sale

- |   |  |
|---|--|
| DNR Liaison/Designee Or County Forester | 5. Enters Sold information into WisFIRS, routes for approval to County Forest Administrator. |
| County Forest Administrator             | 6. Reviews and Approves the WisFIRS (sold) notification. Routes to DNR Liaison or Designee.  |
| DNR Liaison or Designee                 | 7. Reviews and Approves the WisFIRS (sold) notification.                                     |
| County Forest Administrator             | 8. Proceeds to draft Timber Sale Contracts   |

Cutting Report - PARTIAL

- |                             |   |
|-----------------------------|---|
| DNR/County Forester         | 9. Within accepted timeframe based on SOLD Approval date, enter sale data (value/volume). Routes County Forester Administrator for Approval |
| County Forest Administrator | 10. Reviews and Approves the WisFIRS (Partial) notification. Routes to DNR Liaison or Designee.   |
| DNR Liaison or Designee     | 11. Reviews and Approves the WisFIRS (Partial) notification.  |

## Timber Sale Handbook

### Cutting Report - FINAL (Completed)

When a final timber sale cutting report is completed as part of the timber sale close-out process, the sale status in WisFIRS should be changed to complete. All sales that have been sold must be changed to complete in WisFIRS during close-out, including sales that were not harvested or that were only partially completed.

- |   |  |
|---|--|
| DNR Liaison/Designee Or County Forester | 14. Enters the final volume and value in WisFIRS. Enters Completed Treatments data for the sale. Routes to County Forest Administrator |
| County Forest Administrator             | 15. Verifies report accuracy and that recon has been updated, approves WisFIRS Completed Sale. Routes to DNR Liaison /Designee         |
| DNR Liaison/Designee & County Forester  | 16. Verifies report accuracy and that recon has been updated, approves WisFIRS Completed Sale.   |
| County Forest Administrator             | 17. Files Completed Form 2460-001 in permanent timber sale file.   |

### INCOMPLETE Timber Sales

An “incomplete” sale in WisFIRS is a sale that has been established but was never sold and no further attempts will be made to sell it as originally configured. Sales that have been sold and not harvested should be coded as “complete”. Changing the status from established to incomplete, or to complete, will allow for the stands that make up the timber sale area to be once again included in the harvest schedule.

Do not enter a date in the “completed date” field when changing sale status to incomplete.

For example, if a sale was entered in WisFIRS as established but was never successfully sold and/or circumstances have changed to the point where the timber sale will no longer be pursued, its status must be changed to incomplete. The intent is to prevent a growing list of timber sales that are in the “established” category, if indeed they are no longer feasible and will not be sold. Periodically, the forester, Team Leader and Property Manager should review the status of sales and typically sales should not remain as “established” in WisFIRS for more than 5 years.



CHAPTER 40

**BASE STUMPAGE RATES**

**STUMPAGE RATE AREAS**

Base stumpage rates for individual and groups of properties (Stumpage Areas) are revised annually based on the formula below and local recommendations. The stumpage rates are calculated using sold timber sale data in WisFIRS. Following the calculation, county forest administrator, or a designee for each stumpage rate area are given the opportunity to review the calculated rates and provide a recommended rate for that year, based on local market knowledge. The calculated and recommended rates are available under the Public Land Stumpage sub-tab of the Timber Sale tab of WisFIRS Public. The recommended base rates will also be posted annually on the Department’s website at <https://dnr.wisconsin.gov/topic/timbersales/dnrmanagedlandsprocess>. For each County Forest and Stumpage Area identified in this chapter, there are both calculated and recommended rates for each year. The **recommended base stumpage rate for the most recent year available is automatically used in appraising timber** on county forests and DNR-owned land.

The base stumpage rates are based upon the following formula:

$$\frac{\left[ \begin{array}{c} \text{weighted average} \\ \text{current year minus 3} \\ \text{stumpage value} \end{array} + \begin{array}{c} \text{weighted average} \\ \text{current year minus 2} \\ \text{stumpage value} \end{array} + \begin{array}{c} \text{weighted average} \\ \text{current year minus 1} \\ \text{stumpage value} \end{array} \right] + \begin{array}{c} \text{weighted average} \\ \text{current year minus 1} \\ \text{stumpage value} \end{array}}{\begin{array}{c} \# \text{ of years of weighted avg} \\ \text{stumpage values} \end{array}} = \text{Weighted Average Stumpage Value}$$

2 (if there is a weighted avg current year minus 1 stumpage value, otherwise it's 1)

The Base Stumpage Rate is then converted back to a 1.00 factor by the following equation:

$$\frac{1}{\begin{array}{c} \text{average} \\ \text{appraisal} \\ \text{factor} \end{array}} \times \text{Weighted Average} = \text{Current Base Stumpage Rate Stumpage Value}$$

$$\text{weighted average current year stumpage value} = \frac{\text{Sum of (volumes X stumpage value) by species}}{\text{Sum of volumes by species}}$$

$$\text{weighted average appraisal factor} = \frac{\text{Sum of (volumes X appraisal factor) by species}}{\text{Sum of volumes by species}}$$

The base rates are calculated annually around the beginning of the state fiscal year. Following the calculation of draft stumpage rates, county forest administrators, or a designee for each Stumpage Area, are given the opportunity to review and provide a recommended rate for that year, based upon the calculated rate and local factors. After the recommended rates have been entered into WisFIRS for the year, those rates will begin to be utilized for appraising state and county timber. If recommended rates are not provided within 30 days of soliciting recommendations, the calculated rates (rounded down to the nearest \$1.00 per cord, ton and MBF) shall be the recommended rate to be utilized as the base stumpage rate for that year.

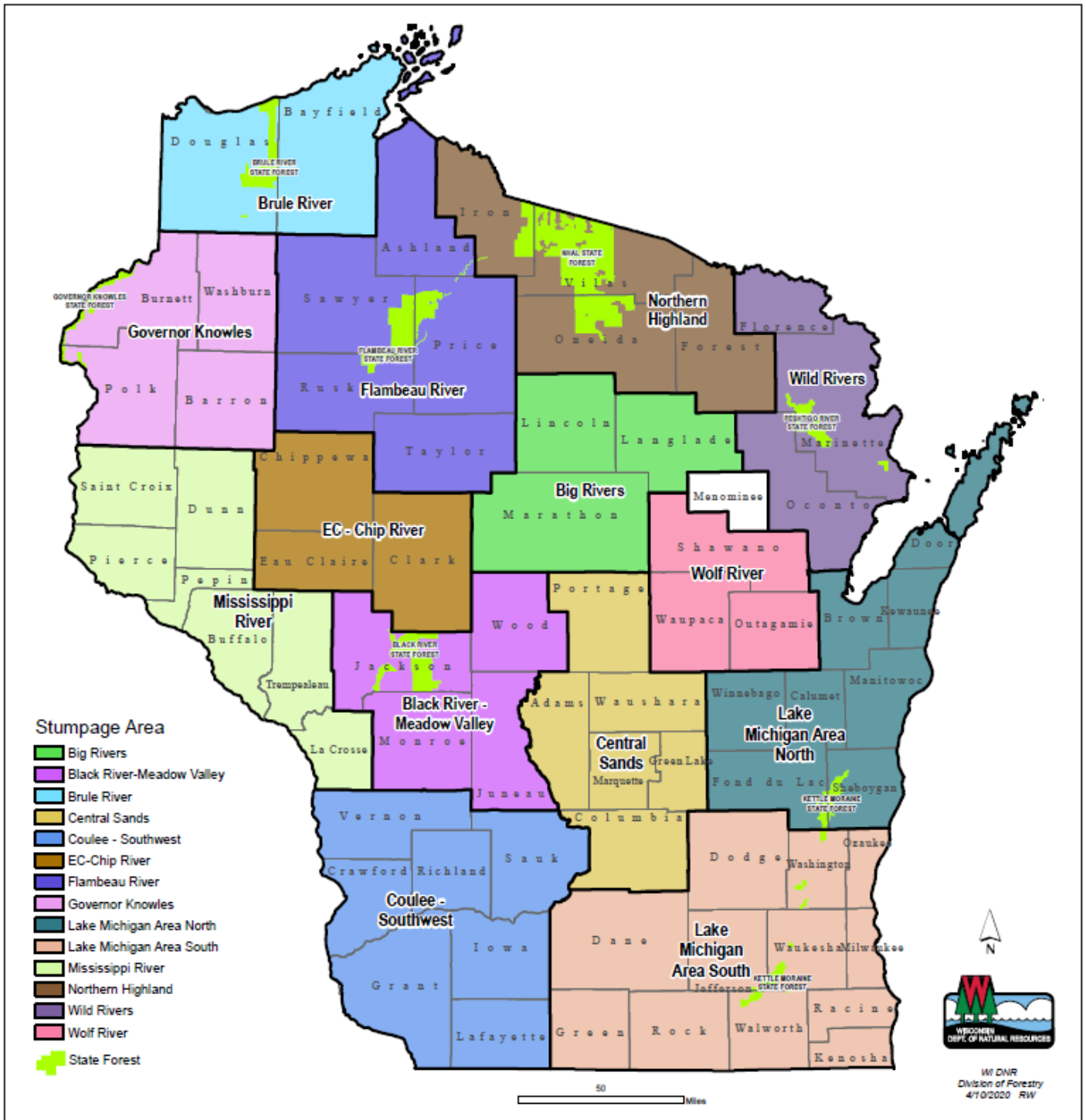
When appraisal factors are being set for a timber sale it is very important to arrive at factors that are as accurate as possible relative to other timber sold on that particular property or property group. It is important that average, as it relates to stumpage appraisal factors, be tied to timber actually put on the market. Sale prices on all timber sold during that period are used in the calculation of the new base stumpage rates each year. All sale prices are adjusted by their associated appraisal factor to arrive at a market value of "average timber." If similar timber is factored significantly above or below 1.0, its selling price will artificially inflate or deflate the future base stumpage rate.

In order to provide some room for bidding and to account for potential declines in market values, when timber sales are sold via advertisement and bidding, the appraised value may be reduced at the discretion of the forester or property manager by an appraisal reduction factor of up to 30%. Foresters should rely on the allowed appraisal reduction percentage to create space for bidding and should not use appraisal factors to simply reduce the appraised value.

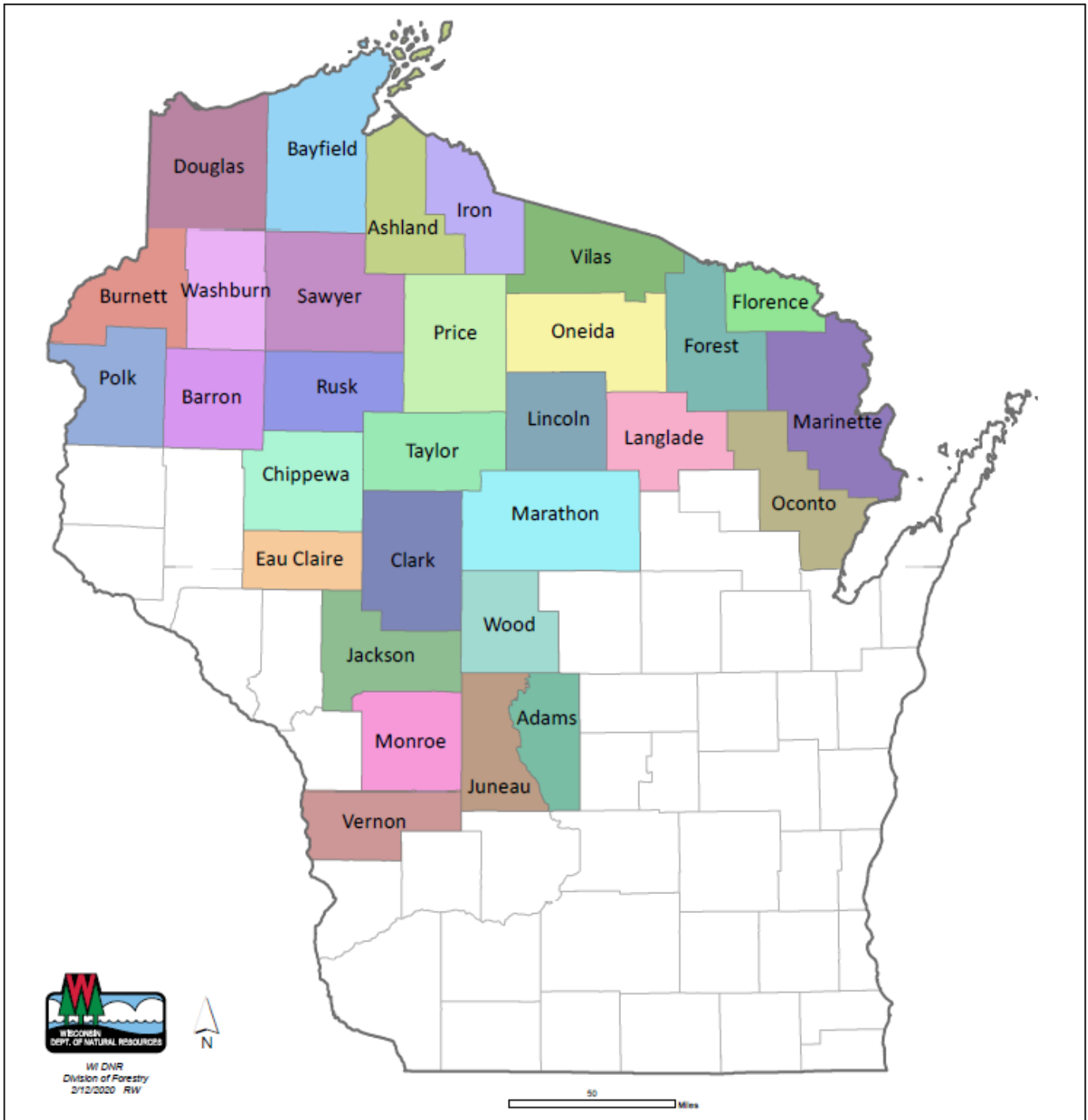
If base stumpage rates are updated between the time the sale is established (approved) and when it is advertised, the base stumpage rates do not need to be changed unless the forester or property manager believes it would be beneficial. If the appraisal is more than two years old, stumpage appraisal values must be re-evaluated before timber is sold. When a reappraisal is required, old rates edited and new rates in for the new appraisal. If a reappraisal requires major changes it may be necessary to prepare a new Form 2460-1.

If the reappraisal changes the appraised value, those that have approved the sale, must be notified and agree with the changes, with documentation of approving in the sale file.

# State Lands Stumpage Areas



# County Forest Stumpage Areas



ROUNDING GUIDELINES

Volume Rounding Guide (Line 27-31 on Form [2460-001](#), Timber Sale Notice and Cutting Report)

Pulpwood volume or number of timber products for each species proposed for cutting should be rounded as follows:

| <u>No. of Units</u> | <u>Round to Nearest</u> |
|---------------------|-------------------------|
| 1 - 10              | 1                       |
| 10 - 100            | 5                       |
| 100 - 500           | 10                      |
| 500 - 1000          | 25                      |
| 1000 +              | 50                      |

Sawtimber volume, rounding for each species proposed for cutting should be as follows:

|                         |                               |
|-------------------------|-------------------------------|
| Mill Scale/Scaled Sales | Round to Nearest 1.0 MBF      |
| Lump Sum Sales          | Can Round to Nearest 0.01 MBF |

Reporting of Cut Products

The amount of timber recorded as cut on the Timber Sale Cutting Report (Partial and Final), Form 2460-001, should be actual scale or count. Cordwood can be recorded to the nearest hundredth of a cord/ton. Sawtimber can be recorded to the nearest ten board feet.

Value Rounding Guide (Line 33 on Form 2460-001)

When listing cordwood stumpage values for advertising on Form 2460-001, the minimum advertising price are automatically rounded to the nearest \$.10 per cord or per ton and Sawlogs are rounded to the nearest \$1 by WisFIRS.

The unit sale price on Timber Sale Notice (Sold Portion), must be actual bid or negotiated value (direct sales).

CHAPTER 50

SALE METHOD

SALE SYSTEMS

The timber sale systems described in this Handbook are to be used on all Department properties. These basic procedures are also highly recommended for use on county forest lands.

The objective of these systems is to reasonably account for the amount of forest products removed during timber harvest operations. Application of sound business practices is essential to the conduct of an accountable timber sale program. The systems for accountability as described in this chapter provide a prudent approach in determining proper payment for all forest products sold.

Timber Sale Handbook

The following table lists standards and procedures for the three basic systems to be used in the sale of forest products. Further details are presented on pages 54-1, 55-1, 56-1, and 57-1.

|                     |  | <b>Forest Products Permit</b>                        | <b>Lump Sum Sale</b>   | <b>Scaled Sale</b>  |
|---------------------|--|--|--|---|
| <b>State/County</b> | <b>Requirements</b>                          | <b>Direct</b>  | <b>Advertised (under \$10,000 and under 500 Cord Equivalent may be sold direct)</b>        | <b>Advertised (under \$10,000 and under 500 Cord Equivalent may be sold direct)</b> |
| State/County        | Max. appraised value                         | \$500  | None   | None  |
| State/County        | Set-up forms                                 | Form 2460-008<br>Cruise / scale documentation        | Form 2460-001<br>Cruise documentation  | Form 2460-001<br>Cruise documentation   |
| State/County        | Approvals<br>(Establishment stage)           | County- CF Administrator;<br>State- Property Manager | County- CF Administrator and DNR Designee: State-Property Manager / Team Leader            | County- CF Administrator and DNR Designee: State-Property Manager / Team Leader     |
| State/County        | Contract-form                                | Form 2460-008 or county form                         | Form 2400-005 or county form   | Form 2400-005 or county form  |
| State               | Payment Provisions                           | Single Prepayment                                    | Single prepayment or 2-4 prepayments with equivalent number of cutting units               | 30 days from billing for qualified contractors. Advance payment otherwise.          |
| State               | Performance Bond                             | None   | Under \$2,000 = optional<br>Over \$2,000 = minimum of 15% or \$1000, whichever is greater* | Required, minimum of 15% or \$1000, whichever is greater*                           |
| State               | Worker's comp. certificate filed             | None   | Required   | Required  |
|                     | Max. length of contract                      | 1 Year<br>No extensions                              | Up to 4 years maximum, including extensions  | Up to 4 years maximum, including extensions   |
| State/County        | Advertisement                                | None   | Required, at \$10,000 or more appraised value, or 500 Cord Equivalent or more              | Required, at \$10,000 or more appraised value, or 500 Cord Equivalent or more       |
| State               | Web Page - Bid Opening Packets / Bid Results | None   | Required   | Required  |

\* For Contractors that are current and maintain good standing with Master Logger Certification, will have bond performance amounts of 10%

ADVERTISED

For Department Land use only: Standardized Cover Letter-Prospectus that will be **mandatory use** for all Department Land Timber Sales. This Cover letter creates uniform, consistent language for all timber sale packets and ensures all major items that apply to every timber sale is covered. The Cover Letter can be found in the [Public Lands Toolkit](#). **Do NOT save this document to your hard drive**, as it will be updated with any policy/contract changes and maintained as the most up-to-date document on the Toolkit. **Within the document, only the text in green may be edited. Black text may not be edited.** There is also a PDF version on the Toolkit, with instructions/additional direction for reference.

For every bid packet, one individual will be identified by the Team Leader(s) to handle putting the entire bid packet together. This person will check all sales for consistency, accuracy, and ensure information does not conflict with the Standardized Cover Letter-Prospectus.

In addition, a new Timber Sale Package Checklist was developed by Public Lands Team (PLT) and approved by FIT to be used by foresters establishing timber sales and assist supervisors in approving sales. This is not a mandatory use, but another resource-tool to assist foresters when developing the paperwork side of individual sales-prospectus-maps. It can be found in the Public Lands Toolkit and is encouraged to be used.

On department lands, public bid openings will be open to the public and a virtual option is to be provided. Virtual options can be a conference call number or a video conference service.

Sales with an Appraised Value of \$10,000 or More OR an Estimated Volume of 500 Cord Equivalents or More

Sales appraised at \$10,000 or more OR 500 cord equivalents or more require advertising prior to sale. See M.C. 9327.1 for detailed procedure.

When several sales are advertised at the same time, it is suggested that staff do not list separate species, volumes and minimum stumpage rates for each sale area. Simply list the overall number of tracts to be offered, total acreage, total volume by species and all town and ranges in which timber will be offered. Also state that more detailed information in the form of a timber sale prospectus may be obtained by contacting the forester's office and list location and telephone number.

A classified advertisement must be used (see s. [28.05\(2\)](#) and s. [28.11\(6\)\(b\)](#), Wis. Stats. for detailed procedure). This requires that it be advertised in a newspaper in the county in which the timber is located and which is likely to give notice to persons affected.

Run the ad once each week for two consecutive weeks, the last being at least one week prior to the bid opening. The advertisement should include the date and time of the bid opening and may also include the date and time of a secondary bid opening for any tracts not sold in the first opening.

Maintain a record of timber sale advertisements in the timber sale files. An affidavit of publication may be requested from the newspaper when the ad is placed to serve as this documentation.

DNR forestry personnel are required to create and post documents of bid packets to the DNR internet <http://dnr.wisconsin.gov/topic/TimberSales/> for upcoming timber sale bid openings, and to post results from bid openings with assistance from the [Division of Forestry's Web Coordinator](#).

Continue to mail timber sale prospectuses to potential bidders, or provide other notification as appropriate.

Sales with an Appraised Value Less Than \$10,000 and an Estimated Volume Less Than 500 Cord Equivalents

Sales appraised at less than \$10,000 and under 500 Cord Equivalents may be sold direct or advertised at the discretion of the forester. **Direct sales that are sold without being advertised must be sold at or above current appraised value.**



DIRECT SALE OF TIMBER

Timber Sales that are required to be advertised, must be advertised a minimum of one time. Sales that are not required to be advertised, may be made available by direct sale. The timber sale administrator must put direct sales on the external timber sales website.

Situations that qualify for Direct Sale:

- Salvage sale ([Wis. Stats. s. 26.22](#)), OR
- Advertised at least once, OR
- Sales below statutory value and volume thresholds
  - Sales with an Appraised Value Less Than \$10,000 and an Estimated Volume Less Than 500 Cord Equivalents.

Timber sales that do not sell via required advertising procedures are eligible for direct sale to responsible buyers, or can be advertised additional times by the County Forest Administrator or Property Manager. Following a failed advertisement process, if the decision is made to pursue a direct sale, the timber sale may be sold at the minimum advertised or appraised value, whichever is less.

Direct Timber Sales Awards Process:

1. Interested Contractor(s) must fill out a MODIFIED Bid Form 2400-049 found on [Public Lands Toolkit](#)
  - a. In the event of multiple interested Contractors:
    - i. Forester can award the sale on first-come-first-served basis, OR
    - ii. Forester can notify interested Contractors of a due date and time to submit the bid form, with the highest responsible bidder awarded the sale.
2. Follow the standard timber sale awarding process, beginning with six weeks to sign and submit the required paperwork.

State Lands- Field Staff are encouraged to reach out to contractors with good standing Master Logger Certification for sales available for Direct Sale purchase. To find a Master Logger: <https://wimlc.com/find-master-logger.htm>

## SCALED SALES

In a scaled sale, the volume offered for sale is estimated but not guaranteed. If the volume of timber exceeds the estimate, as a whole or by species, the purchaser has the obligation to cut it and remove it paying the unit bid price. If there is less timber than estimated, there is no obligation of the landowner to make up the "shortage". The purchaser pays for the actual scaled volume of all species/product. Estimate of cut volumes will be determined either by actual scale on the sale area or by mill scale as specified in the contract.

## SCALING PROCEDURE

Products will be scaled on the sale area unless done at a mill using an agreed upon mill scale ticket system.

All logs shall be scaled with the Scribner Decimal C. Log Rule. Scaling methods shall be in accordance with the National Forest Scaling Handbook. The minimum top diameter for sawlogs should generally be determined by the minimum-sized log as stated in the Guide to Hardwood Log Grading, or for all softwoods as stated in Log Grades for Eastern White Pine, U.S. Forest Service. All sawlogs shall be scaled on the landing and should be marked with paint or crayon after scaling, unless other arrangements are provided for in the contract. Field scaling of cordwood is conducted by measuring the dimensions of product piles on the landing, then determining the cord volume. Cord volumes determined in this manner can be converted to tonnage using the conversion factors listed in section 12-1 of this handbook. Standard cordwood measurements are 4'x 4'x 8' (128 cubic feet).

A scale sheet, Form 2400-063 or equivalent, shall be used to record the products scaled and will be prepared in the field at the time the products are scaled. Volume data from a field scale sheet must be promptly entered into the Journal Tab in WisFIRS. Copies of all field scale slips will be attached to and filed with the station copy of the stumpage detail summary and invoice with which they are associated. Original copies of scale sheets can be mailed to the contractor at their request. **Note: County timber sales may use policy/procedures that fit their individual needs for scaling and billing forest products.**

## MILL SCALE TICKET SYSTEM – SCALING

The following are guidelines for use of a mill scale ticket system for administering a timber sale to determine harvested volumes.

### Equipment Needed

#### 1. Tickets

A three-part ticket set is used. Individual Forest Products Harvesting Permits (tickets) are printed for each property. The ticket contains information as to the sale number, date, time of day the wood is hauled, trucker, destination, species, approximate volume, and truck.

Tickets are numbered sequentially. Tickets are bound in books of 25 three-part sets. The carbon copies of each three-part set share the same ticket number.

Each ticket book has a cover on which to record the name of the forest in bold letters, the timber sale number, and the contractor's name. Tickets are issued to the contractor. A record of ticket numbers is maintained in the Journal.

Contractors are held accountable for all tickets issued.

- Contractors are responsible for assuring that their haulers have the appropriate tickets in their trucks.
- Truck delivery: Truck drivers complete the ticket upon leaving the sale area and deposit the original (top) ticket in the lock box. Upon reaching the destination mill, drivers give the second carbon copy of the ticket to the scaler. The scaler attaches this carbon copy of the ticket to a copy of the scale slip. To facilitate timely invoicing, it is necessary for the contractor and the mills to ensure that all scale slips and tickets are returned to the DNR no later than 30 days from the date of hauling.
- The third carbon copy of the ticket is the contractor's copy.
- Any/all unused tickets must be returned to the Department, or the contractor may be billed for the remaining unused tickets.

## 2. Lock Boxes - Placement

The lock boxes should be placed so that they are easily accessible to the truck driver, yet not be a traffic hazard or susceptible to damage from graders or snowplows. With frozen ground in the winter, it is acceptable to chain a lock box to a tree.

### Procedure

Periodically the lock boxes are emptied. This should be done during weekly field visits to the timber sale. As scale slips are returned with second copies of the tickets attached, these are matched with the ticket copies recovered from the lock boxes. The manager or administrator then has a complete record of the wood removed from the time it left the sale until it was scaled at the destination mill. Scale volumes are entered into the WisFIRS Journal Tab. Then, the appropriate deduction made from the contractor's advanced stumpage payment, or the appropriate amount is charged to the contractor via a stumpage invoice generated via WisFIRS.

## 3. Rail delivery

- The truck drivers complete the ticket as they leave the sale area and deposit the original (top) ticket in the lock box. Since more than one load is required to fill the car, the second carbon copies of the tickets are left in the book until the car is loaded. At that point, the car number is written on each of the second carbon copies, and these are attached to the bill of lading for the car. Contractors mail the bill of lading with the attached ticket carbon copies to the destination mill. When the car reaches the mill, it is scaled, the ticket carbon copies removed from the bill of lading and attached to a copy of the scale slip. The scale slip and tickets are then mailed back to the forest manager. Discrepancies in unmatched ticket carbon copies must be checked and resolved. This process is identical to the process for mill scaling products and is required to account for the tickets used from a particular timber sale.

### Variations

Variations to fit local conditions are possible. Following are some examples:

- The second carbon copies of the tickets and scale slips can be picked up at the mill periodically. This eliminates the need for the mill to mail the carbon copies back.
- The scale may be written on the second carbon copy of the ticket by the scaler. This is acceptable but not as desirable as a bona fide carbon copy of the scale slip.
- In weight scaling situations, the second carbon copy of the ticket could be designed so that it could be inserted into the scale. The weight of the load would be printed directly on the ticket part.
- In instances where wood is shipped through a broker by rail, the bill of ladings are sent by the shipper to the brokers with the second carbon copies of the tickets attached. The brokers remove the ticket carbon copies and hold these until they receive the scale slip from the mill. The ticket carbon copies are then returned by the brokers with a copy of the scale slip. The rail car number on the ticket carbon copies must match the rail car number on the scale slip.
- Where wood is landed at a rail siding, contractors can retain the second carbon copy of the ticket until the wood is shipped. They then attach sufficient ticket copies to cover each car load. When all the wood is shipped, obviously all the ticket carbon copies will have been utilized. In this situation, only wood from one sale can be landed together.
- The scale slip from the mill may be periodically transmitted electronically via email. If mill scale slips are submitted via email, the second carbon copy of the ticket does not need to be mailed back as long as the mill scale document contains all the information that is needed to track a particular load; including, ticket number, sale number, date and time, species and volume. If staff accept electronic mill scales without having originals of the second carbon copy returned, the original of the top ticket collected from the lockbox should be retained in your sale files for fiscal audit for a period of 5 years.

## LUMP SUM SALE

### Definitions

A lump sum sale is a sale of forest products whereby the minimum acceptable bid or negotiated sale value is based on pre-sale volume estimate and appraisal. No scale of the cut products is involved in normal administration of the sale, and no refunds are made for volume adjustment claims.

Per unit stumpage rates by species must be itemized in both the bid and sale contract. This is required to provide for payment for additional volume that may become necessary to cut due to catastrophic losses or in settlement of a contract termination or dispute.

### General

The purpose of lump sum sales is to reduce unreasonable costs which would occur to the buyer or seller using conventional sales methods.

Forest products permits, lump sum and conventional scaled sales may be awarded to a contractor. However, a contractor may not haul from two types of sales on a forest or property at the same time without approval. This is to avoid any questions regarding which type of sale the contractor is transporting forest products from.

**Regular timber sale inspections must be continued to ensure silvicultural aspects of the sale are implemented.**

Financial Limits - Sales of any value may be sold lump sum.

Payment – Prior to hauling payment must be made for the entire sale, by the unit, or by some other means that is mutually agreed upon by the contractor and the DNR. Total payment may be divided into a maximum of 4 payments. If multiple payments are used, an equivalent number of corresponding cutting units must also be used. Full payment for a cutting unit must be received prior to any hauling from that unit.

Cutting Units - Required when multiple payments will be used. Order of cutting units is to be specified in contract, and each must be completed prior to cutting in another unit.

Sale Forms, Approvals - WisFIRS-2460 shall be used and cruise documentation shall be maintained in the permanent file.

Performance Bond - Optional for sales under \$2,000 of appraised value but should be required if there is reason to believe that a problem could occur. Sales of \$2,000 and over require a minimum of 15% of bid value or \$1000, whichever is greater. Contractors that are current and maintain good standing with Master Logger Certification will have bond performance amounts of 10%.

Worker's Compensation - All operators are to comply with the worker's compensation law. Proof of coverage will be required for all employees. See Chapter 60 regarding Worker's Compensation documentation requirements.

Contract, Term, and Extensions - Timber Sale Contract, Form 2400-005, will be used. Contract term will be limited to 4 years.

Reporting Volumes Cut - Standard reporting procedure will apply. Counties filing partial reports in WisFIRS should report "best estimate" of volume cut to date and the balance on the final report.

Total Reported Values - When filling out final reports in WisFIRS, the total reported values should be the same as the total sold values.

CUT AND SEIZED PRODUCTS, SALVAGE AND CHARITABLE TIMBER SALES

Cut Products

The sale of cut forest products are subject to the same guidelines and approvals, as stumpage sales with the following exceptions:

1. Timber Sale Description, (Items 1-14) in WisFIRS 2460 is not required
2. Use of a performance bond for cut or seized products is at the discretion of the:
  - a. County - County Forest Administrator
  - b. State lands - Property Manager. The decision should be guided by the contract provisions and potential for damages.

Approval requirements should be based on cut product value and not on stumpage value. Appraised value should be established by comparison to other transactions in the area of similar quality cut products. Full payment in advance must be obtained from the buyer before any cut products are removed.

Salvage

Section [26.22](#), Wis. Stats., grants the Department authority to sell timber damaged by fire, snow, hail, ice, insects, disease, or wind on any land under the Department's jurisdiction in the method and upon such terms and conditions it deems in the best interest of the state. This includes the sale of timber on a Forest Products Permit (Form 2460-008), the sale of timber without advertisement or competitive bidding if warranted, or the inclusion of timber on an ongoing sale. A significant potential loss of timber value could warrant use of this modified procedure. The decision to move forward with a salvage sale would be at the discretion of the forester and the property manager.

Section [28.11\(6\)\(c\)](#), Wis. Stats., grants the county forest committees the authority to sell timber damaged by fire, snow, hail, ice, insects, disease, or wind on county forest land in the method and upon such terms and in such a manner the committee deems in the best interest of the county. This includes the sale of timber without advertisement or competitive bidding if warranted, or the inclusion of timber on an ongoing sale.

Salvage timber sales must include presale appraisals and cutting notices and reports, following the methods and procedures that have been approved by the Department. Adjustment of stumpage values may be necessary when existing sale areas are damaged by wind or fire before the sale is completed. Fill out a new stumpage appraisal for the damaged timber. Compare the new factor with the old. Adjust current stumpage values proportional to the change in appraisal factors. The forester has discretion to sell at a value that is in the best interest of the state. Value per species product must exceed \$0.01.

Seized Products

Seized material may be sold pursuant to section [26.06](#), Wis. Stats. Products appraised at more than \$500 shall be advertised and sold on sealed bids after a Class 1 legal notice.

Charitable/Educational Timber Sales

*Log a Load for Kids* and other such charitable programs partnering with Forestry are permissible with some reservations. Only one such event may be held annually on a property. Property managers and County Forest Administrators are encouraged to employ the competitive bid process, and also to harvest areas typically difficult to sell or those classified as salvage. Section [28.05\(2\)](#), Wis. Stats. allows for use of direct sales if the estimated value of the sale does not exceed \$10,000 and under 500 cord equivalents. The benefits of education and partnership efforts and assisting others are sound reasons to use the direct sale process. The state must collect timber sale stumpage as the statutes do not allow for a waiver. Counties remain liable for severance tax owed both the state and the towns.

It is permissible to conduct such a program on a sale currently under contract so long as:

- All of the provisions of the contract remain in effect (e.g. Worker's compensation, operational specifications, payment schedules, stumpage rates/increases)
- Original purchaser of the sale retains responsibility for satisfactory sale completion and any impacts to the sale performance bond.

MERCHANTABLE TIMBER CUT IN CONJUNCTION WITH CONSTRUCTION PROJECTS

Construction projects to develop such items as roads, firebreaks, recreational trails, parking lots, etc., sometimes involve the cutting of merchantable timber that may be difficult to sell utilizing standard procedures.

The following options apply to merchantable timber cut in conjunction with such construction:

1. If suitable for regular commercial sale or Forest Products Permit: Follow standard procedure.
2. If not suitable for regular commercial sale or Forest Products Permit: Consult with the property manager and/or Forestry Team Leader for alternatives on case-by-case basis.

ASSISTING OTHER STATE AND LOCAL AGENCIES WITH TIMBER SALES

Occasionally, requests for assistance with the sale of timber may be received from other State and local agencies. Examples include the sale of timber associated with State or local highway or other public works construction or maintenance projects; or the sale of timber from forest management projects on lands that are not part of the County Forest or Community Forest programs. Such requests should be handled in a similar fashion to inquiries from a private landowner. A DNR Forester can evaluate the timber land or timber resource involved and provide basic recommendations (e.g. advice on sale methods, competitive bidding process, provide example contracts, etc). However, a DNR Forester should not act as an agent for another government entity unless a specific, formal agreement is in place. Rather, other agencies should be encouraged to retain the services of a Cooperating Consulting Forester who can act as their agent in administering the contractual and financial obligations related to the sale of timber.

FOREST PRODUCTS PERMIT (Department Lands Only)

Small amounts of Christmas trees, boughs, firewood, fine woody material (including small diameter trees and twigs), or other forest products may be sold using Forest Products Permit, Form 2460-008.

Lands administered by the Department offer an opportunity to citizens seeking forest products. A Forest Products Permit may only be issued for products surplus to the property's needs and objectives. Issuance of a permit should not conflict with the biomass guidelines or the tree retention guidelines in the Silviculture Recommendations and Guidelines.

The forester servicing the property shall be responsible to appraise the forest products and assure the removal or manner of cutting will not be detrimental to the property and its objectives. Administration of this permit system shall be under the supervision of the property manager. Additional information can be found at <https://dnr.wi.gov/topic/TimberSales/DNRManagedLandsNonCommercial.html>.

This procedure will be used only when:

1. A single count or volume estimate will be made
2. A single advanced payment will be made
3. The appraised value does not exceed \$500 each
4. The sale will not exceed 1 year in duration
5. Maximum of 5 Christmas trees per individual
6. Maximum of ten cords per individual

This permit may not exceed 1 year.

Approval of permits is made by the property manager.

The following are not needed in the Forest Products Permit procedure:

1. Contract
2. Performance bond
3. Certificate of Worker's Compensation coverage
4. Timber Sale Notice and Cutting Report
5. Timber Sale Transaction / Remittance, Form 2460-003
6. Timber Sale Close-Out Transaction, Form 2460-004

A permit number should be assigned to each Forest Products Permit starting with number P-1 and running in consecutive order.

Boughs - Small quantities of boughs for personal use will utilize the Forest Products Permit Christmas tree rate. Commercial quantities can be sold using the same form but should be identified as a Commercial Permit. A Commercial Permit allows for the permittee and crew to cut boughs. A Commercial Permit can utilize a statewide rate of:

\$75.00 minimum for permit and the first two tons  
\$25.00 extra for each additional ton

Special conditions to be included for all bough permits include:

1. Boughs will be cut in such a manner as to not kill the tree or render aesthetic damage to the tree
2. Harvesting of boughs will not take place within sight of a town road, state forest road or lettered or numbered highway.
3. Permits will not be issued for special use zones such as aesthetic zones, wilderness zones, etc.

Sap Collection/Tapping – Tapping trees will NOT be permitted unless approved by Property Manager for educational or special circumstances.

Forest Products Permit Reporting

It will be up to the individual field office or property to maintain how many permits are issued, what product (firewood, boughs, fine-woody material, Christmas trees, etc.) and value of permits. WisFIRS does not maintain a statewide database on these permits.

Forest Products Permit Remittance

All Miscellaneous Forest Products permits, and associated fees will be remitted using **Miscellaneous Forest Product Remittance Sheet, Form 9300-029F**. This form replaces previous Form 2460-003 and General Remittance Sheet, Form 9300-029A.

1. Use the drop-down selection for property type (State Forest, Wildlife Area, etc.).
2. The budget coding will auto-populate.
3. Put in the dollar amount for an individual Misc. Forest Products Permit, or combine multiple permits for the same property into a single entry (i.e., three separate firewood permits for \$10/each, enter \$30). Additional rows can be added by clicking the **Add** button to cover multiple permits being remitted for multiple property types.
4. When finished, print the form and keep a copy with the permits.
5. Send payment and form to the address near the top of the remittance form:

DNR Cashier's Office  
PO Box 93151  
Milwaukee, WI 53293-0151

6. Submit remittances monthly, or immediately if a larger dollar amount (>\$200).



CHAPTER 60

SALE OF TIMBER

This section contains policy and guidance for WI DNR State owned and managed lands; including, but not limited to, State Forests, Fish, Wildlife, and Parks, and Natural Heritage Conservation Lands. It can be used as a reference for County Forest Lands or other State managed lands as well. It is important to note that each County Forest advertises, contracts, and administers timber sales according to their own specific procedures and policies. Timber sales on county owned lands must be consistent with s. 28.11 of Wis. Stats., and follow criteria and specific guidance as directed by a 15-year Comprehensive Management Plan.

PROSPECTUS, MAP and BID PACKET COVER LETTER INCLUSIONS

The use of the standardized bid packet cover letter to provide bidding instructions, and to list common provisions applicable to all timber sales, is mandatory on all Department land sales. Bid Cover Letter can be found in the [Public Lands Toolkit](#).

Team Leader appoints a lead individual for reviewing entire timber sale packet for accuracy and consistency across all sales, prior to advertising.

A prospectus and map of the harvest tract (or tracts) must be prepared for each timber sale. The prospectus and map may take the form of one combined document; or they can be produced as separate documents that are attached to one-another. State Forests may use established formats and language that have been developed for their respective properties.

For timber sales on other DNR-managed lands, prospectuses and maps should follow the format outlined in this chapter. Examples of prospectus and map documents can be found in the [Public Lands Toolkit](#).

Items that must be included/addressed on the prospectus or map for a State timber sale are as follows:

- Property name
- Sale name
- Tract number
- Sale location (including county, township, range, section, QQ)
- Sale acreage
- Contract term / ending date (December 31 or June 30)
- Utilization standards
- Estimate of the stumpage being offered by volume & product.
- Total advertised minimum bid value or include “no minimum advertised” statement
- Weight conversion for mill scale sales (if not DNR standard weight)
- Sale method (lump sum or scaled)
- Cutting specifications (e.g. prescriptions, how is harvest designated, harvest timeframes)
- Sale access
- DNR contact name, phone number, email
- Mapping disclaimer statement (map only)
- North arrow (map only)
- DNR logo (map only)

Other items that may be necessary to include:

- Logging site and road restoration
- Special water quality BMP requirements
- Slash disposal requirements
- Water features, recreational trails, and/or power lines/utilities (map only)
- Survey corners or monuments (map only)
- Property boundaries (map only)
- Any other provision that might influence bidding

ADDITIONAL GUIDANCE AND REQUIREMENTS:

- A compilation of “Operational Consideration” language is available on the Public Lands Toolkit. The Operational Consideration section is a menu of example language that can be adopted or adapted for use as appropriate in a prospectus, map, narrative, or contract to address common operational or situational provisions on timber sales.
- Prospective purchasers must be furnished with a filled out Timber Sale Bid Form 2400-049 for each timber sale, along with the prospectus.
- Variable Utilization Prospectus Inclusions:
  - When listing advertised values for variable utilization, the advertised value per unit will vary based on the utilization standard. However, the total value for each utilization standard listed must work out to the same total advertised value for the species. For example: If a variable utilization sale has an estimated aspen volume of 1000 cords for utilization to 4” top, and an advertised value of \$10.00 per cord, this works out to a total advertised value of \$10,000.00. For whole-tree utilization, the listed volume should be increased accordingly (e.g. 1250 cords), and the advertised price/unit decreased accordingly (e.g. \$8.00/cord), to be equal to--or greater than--the same total species value. Forest Metrix is the preferred cruising system to determine volumes. Cubic cruise may be used to generate variable utilization volume estimates for bidding purposes. For other cruising systems, consult a Forest Products Specialist. For further information, see *Timber Cruising* section beginning on page 24-1.
  - Utilization specifications shall be indicated on the State of Wisconsin Timber Sale bid form (Form 2400-049), and bids must be based on volumes listed by utilization standards per the prospectus for the sale.

## OPENING OF BIDS

### Confidential Bid Information

One person for each property where sealed bids are received shall be designated responsibility for the custody of timber sale bids received. Prior to the time set for the opening of bids, the custodian should assure that information as to the number of bids received, or whether any bids have been received, is not released. However, upon request from a bidder, receipt of the sealed bid may be acknowledged. The State will not accept any electronic bids. All bids must be on original Form 2400-049, signed, appropriately concealed, and kept safe from tampering from the time they are submitted until the bid opening.

Prior to the time for opening bids, no Department of Natural Resources employee having knowledge of any bid submitted should make any statement to anyone concerning it, except that receipt may be acknowledged to the bidder, if requested. Verbal statements of intent to bid, whether or not including the prices, should also not be released.

### Opening Bids

1. Sort bids by tract number.
2. Check for accuracy and completeness.
3. Read the bids for each tract in random order and announce the high bid, unless a bid error needs to be addressed as described below. Alternatively, all bids may be announced in a random order based on a draw of the hat or other random selection method.

Three employees of the Department of Natural Resources must be present at the opening of bids. As bids are opened and read they should be checked for mathematical accuracy and sorted by tract. Form 2400-006, Timber Sale Award, shall be filled out listing the people in attendance. All bids should be recorded by species, product, amount, value, and bidder. One copy of this form will be filed at the field station along with the original bids.

If a mathematical error is discovered on a bid form, the price per unit, as indicated on the form by the bidder, multiplied by the estimated volume provided by the Department should be utilized to determine the potential total sale bid value. If the corrected total would result in the highest bid for that tract, the bidder should be contacted, for verification of the intended bid. If a bidder has submitted a bid based upon a number of units other than the estimated volume(s) as provided by the Department, for example based on the bidder's own volume estimate or for a utilization specification that was not allowed for by the prospectus or bid form, then the bid shall be rejected. If there is a mathematical error and one or multiple bid price(s) per unit cannot be determined because they are either illegible or missing on the bid form, then the bid shall be rejected.

The bidder who submitted a potential high bid with an error should not be informed whether the bidder is, or would be, the high bidder prior to confirming their intended bid value. If an error cannot be corrected immediately, the winning bid should not be announced at the bid opening and the potential high bidder that submitted a bid with an error should be contacted as soon as possible to determine their intent. When contacting a bidder regarding a bid error, simply confirm the bidder's intended bid(s) per unit, the number of units being bid upon as provided by the Department, and the resulting total intended sale bid value, providing as little additional information as possible; do not tell the bidder about any other bids received. If the Department has made efforts to contact the bidder but is unable to make contact within two business days to verify the intended bid, the bid shall be rejected, and the sale awarded to the next highest bidder.

Prior to the reading of a bid, a contractor may elect to withdraw the bid. The contractor or representative for the contractor must declare this at the bid opening **before** any bids for the specified tract are read. A withdrawn timber sale bid shall be kept in its envelope and returned to the bidder. A withdrawn bid is not to be recorded or read aloud.

High bid will be announced for each tract. All bidders present should be informed that the bids will be further evaluated and that awarding of contracts will be made within two weeks. If a high bidder fails to sign the contract, the sale shall be awarded to the next highest bidder at the value they bid.

### Tie Bids

In the event of tie bids, the bidders should be offered opportunity to withdraw. If none wish to do so, the person in charge of bid opening may request the bidders to: (1) submit another sealed bid; (2) draw lots; (3) flip a coin; or if they decline, (4) re-advertise the sale at a later time.

### Variable Utilization Bid

Bids for whole tree or to a smaller bole diameter (increased utilization) will be accepted on sales eligible for harvest of fine woody material, as indicated on the timber sale prospectus. Bids for variable utilization specifications must be made based on the volumes provided by the department to all bidders. Volume estimates by utilization (species and diameter) classes will be listed for each sale on which increased utilization bids will be accepted.

Each bidder must indicate the utilization for which he is bidding by species and product. The indicated utilization basis on the successful bid will become the utilization specification on the contract and utilization to this specification must be shown.

Bidding will be on a ton or cordwood equivalent basis. Weight conversion rates listed in Chapter 10 of the Timber Sale Handbook must be used for volume conversions. These rates should be included in the contract. A weighted average per unit sold may be developed and used when different species are hauled and scaled together.

Bids for both variable utilization sales and standard utilization sales must include bid prices per unit for each species and product. Therefore, it is recommended that the prospectus include:

1. Estimated volumes in tons, cords, (or MBF if applicable) for each species/product.
  - a. For sales advertising in "Tons", **do not also list** cord equivalents
2. Total advertised value for the sale.

### Minimum Acceptable Bid

All bids must be by species on a per-unit basis. Acceptable bids must meet or exceed the total advertised minimum bid value. However, a bid will be rejected if any individual species/product bid is \$0.

The timber sale prospectus for State lands will not list "Minimum Acceptable Bids" by species/product. Instead the combined total value of the sale may be listed and described as "Minimum Acceptable Bid".

Listing of a minimum acceptable bid value on a sale prospectus is not required.

### Rejection of High Bid

The Department may reject high bid on a timber sale "for cause". This is unusual. The Department must not only insure that the highest price is obtained but also that an adequate performance is completed. This entails consideration of not only the dollar value of the bid but also responsibility and dependability of the bidder. If practical, contractors who are deemed ineligible to bid should be notified of this prior to the bid opening.

- Bids below minimum advertised price will be rejected. In addition, the following characteristics of the bidder can be "cause" for rejecting a high bid when supported by factual evidence. This list is not all-inclusive. Other reasons for "cause" may apply:
  - Notorious or habitual carelessness with fire
  - Failure to properly complete previous contracts
  - Evidence of financial insecurity
  - Habitual damage to sale areas

Evidence of such bidder characteristics should be in the form of written records, typically including a letter notifying the bidder of the bidder's ineligibility to bid on Department timber sales for a specified period as a result of performance on a previous contract. The Department must exercise this discretion in good faith in the interest of the public not from motives of personal favoritism or ill will.

Rejection of any high bid requires approval of the Bureau of Legal Services. Continued rejection of a high bid for cause shall not exceed a period of two years for a contractor. A bidder may be reinstated when there is evidence that the problem has been corrected. If a high bid is rejected, a 30-day time period (from notice to the high bidder) must pass before the bid is awarded to the second highest bidder.

Rejection of Bids Below the Minimum Advertised Value

Bids will be rejected, and the sale will not be sold, when the total sale bid value is less than the advertised value on advertised sales.

Contingency bids

All tracts are sold individually. The State will not accept any bids on one or more sales if a bidder includes a stipulation on receiving the winning bid of any additional tract numbers. A contractor may submit a written notice requesting withdrawal of bids before opening of additional sale bids if contractor is awarded more than a specified number of sales.

“No-bid” Sales

Timber Sales that required to be publicly bid, must be bid a minimum of one time.

Timber sales that do not sell via required advertising procedures are eligible for direct sale to responsible buyers, or may be advertised additional times by the County Forest Administrator or Property Manager. Direct sales may be sold at the minimum advertised or appraised value, whichever is less. See Chapter 50 for direct sale criteria and procedures.

CONTRACT SPECIFICATIONS

This section contains handbook elements for WI DNR State owned and managed lands; including, but not limited to, State Forests, Fish, Wildlife, and Parks, and Natural Heritage Conservation Lands. It can be used as a guide for County Forest Lands or other managed lands as well. General procedural requirements may apply to County Forest Lands, but each County Forest advertises, contracts, and administers timber sales according to the county’s own specific procedures and policies.

Length of Contract

Timber sale contract length should be kept as short as possible. Maximum contract length, including extensions, on state properties shall be limited to four years for scaled sales and lump sum sales, and one year for forest product permits. Timber sale contracts can only be extended beyond four years with justification and approval by the district forester.

Long contracts result in higher administrative cost and may adversely affect work planning and forest type acreage regulation. Growth or deterioration of timber and changes in stumpage value can result in contractor dissatisfaction or improper payment for stumpage. A three-year contract period is recommended for most sales, with the intent of providing three full winter seasons for completion on sales that require frozen ground conditions. One, two, and four-year initial contract lengths can be specified if circumstances warrant.

The criteria listed below serve as guidance for timber sale contract lengths:

**1 Year Public Lands Timber Sale Contract**

A one-year contract would be applied with the following criteria:

- Blowdown or wind damaged timber with risk of volume and value decrease
- Insect damage or threats of near future reduction of volume and value decrease
- Small harvest area to be treated, 5-20 acres for example
- No seasonal restrictions applied
- Silvicultural advantage to a quick harvest
- Other timing issues involving a social, economic or ecological concern
- Sale administration needs to work with contractor to keep this period realistic

**2 Year Public Lands Timber Sale Contract**

- A two-year contract would be applied with the following criteria: medium size harvest area, 20-40 acres for example
- Market influences that suggest a short contract length
- Little or no seasonal restrictions
- Stand requirements that consider regeneration conditions or Silvicultural considerations
- Lump sum sales that could risk value increases or decreases (growth or mortality)
- Recreational concerns
- Minimal roadwork required that makes transportation access low cost and expedient

**3 Year Public Lands Timber Sale Contract**

A three-year contract would be applied with the following criteria:

- This is the recommended standard contract length for public lands.
- Seasonal restrictions that limit access to the harvest area. Reasons could include: Frozen only, Oak Wilt timing, NHI timing, recreational timing or planning goals that restricts time of harvest operation
- A one-year extension possible for all frozen only sales as standard. (Three frozen seasons would be required in the original time frame to complete the sale.)
- Larger harvest sale size
- Many different timber products to produce and market
- Extensive sale road building and maintenance
- Multiple harvest areas and transportation between harvest areas
- Longer sales keep repeated paperwork and routing time down. (i.e.: Extensions and work to extend insurance and bond coverage to cover contract period.)
- Unexpected delays and weather that keep contractors off these sales
- Contractor advantages by keeping extensions and costs to a minimum and an exception rather than the rule
- Note: One-year extension only that would follow the contract extension policy listed below

**4 Year Public Lands Timber Sale Contract**

A four-year contract would be applied with the following criteria:

- Very large sale areas, 350+ acres for example
- Sales with many restrictions, or a restriction that would make entry into sale areas very short due to specified conditions (ie: restriction time to a few months or less)
- Not eligible for extension without District Forestry Leader approval, for extenuating circumstances

**Contract Periods and Extensions:**

- A specific date (month/day/year) must be included in section 2(a) to specify the exact ending date of the Contract.
- Contract expiration dates will be December 31 or June 30 to coincide with the end of a calendar year or State fiscal year. Frozen operation sales will all expire on June 30 no matter when the contract begins.
- Standard contract extension penalties:
  - No 0% stumpage increase extensions except in rare, extenuating circumstances (see guidance in section 73)
  - Extensions may be given beyond what is described in the table below. Discuss with and receive final approval from the District Forestry Leader and County Forest and Public Lands Specialist.

| Contract Length | Extension # |            |            |
|-----------------|-------------|------------|------------|
|                 | 1st         | 2nd        | 3rd        |
| 1-year          | 5%          | 10%        | 15%        |
| 2-year          | 5%          | 10%        | 15%        |
| 3-year          | 15%         | 15%        | Not given* |
| 4-year          | 15%         | Not given* | Not given* |

\*In rare and unusual circumstances, extensions may be approved following consultations with District Forestry Leader and County Forest and Public Lands Specialist.

- Team Leaders must be involved when considering a contract extension and reasons for the extension approved. See Chapter 70 (sub-section 73) for additional information regarding contract extensions.
- Keeping in mind the concerns related with lengthy contract periods, it is also important for contract to remain in force beyond the time when harvesting is complete to allow time for hauling and stumpage payment. It’s also important to allow time for verifying contractor performance of all contract obligations. The Contract shall not be allowed to expire prior to completion of all responsibilities of the Purchaser. If a contract will expire before these important items can be addressed, then an extension must be considered.

Awarding Contract

The signed timber sale Contract should be received by the Department within six weeks of awarding bids. A copy of the performance bond and required certificate of insurance evidencing worker’s compensation must also be received within six weeks of bid opening and before work is commenced. WisFIRS has a dedicated “Contractor” sub-tab in the “Timber Sales” tab which houses information regarding each contractor, including FISTA training certificate and worker’s compensation documents. If these are out of date, request updated information from the contractor and upload new documents upon receipt.

If the winning bidder fails to execute the contract and submit an acceptable performance bond, the bidder shall be required to forfeit to the department an amount equal to 10% of the bidder’s total bid amount. Failure to forfeit the 10% penalty will result in the bidder being considered ineligible to bid on any state timber sales for a two-year period. Notify the County and Public Forest Specialist if a winning bidder fails to execute the contract and submit a performance bond. The property manager should sign the Contract as soon as practical.

The property manager, or designee, is authorized to sign the timber sale Contract for the Secretary.

Contract Format

The most recent State of Wisconsin Timber Sale Contract (Form 2400-005) is contained in the [Forms Catalog](#). Also see the “Operational Considerations” document located in the [Public Lands Toolkit](#) for examples of language that may be applicable for specific contract provisions.

Notification of Contract Expiration

In an effort to ensure timber sales are being completed by expiration dates, contractors will be notified 1-year in advance of contract end date to encourage communication with DNR employees on sale status or need for extension.

- Central Office will generate a letter for each contract.
- Letters will be distributed to Team Leaders.
- Team Leaders will work with staff to ensure letters are accurate and sent to contractors.
- If harvest operations are complete or completion is imminent, as determined by Team Leader in consultation with Timber Sale Administrator, then the letter may not need to be sent to contractor.



## BID AND PERFORMANCE BONDS

### Bid Bonds

Bid bonds are not required on State timber sales. However, if the winning bidder fails to execute the contract and submit an acceptable performance bond within six weeks of bid opening, the bidder shall be required to forfeit to the department an amount equal to 10% of the total bid amount. Failure to forfeit the 10% penalty will result in the bidder being considered ineligible to bid on any state or GNA timber sales immediately and for a two-year period. Upon payment of the 10% penalty, bidder becomes eligible to bid on state sales. Check payment must clear prior to awarding the contract. Notify the County and Public Forest Specialist if a winning bidder fails to execute the contract and submit a performance bond.

### Performance Bonds

Types of Acceptable Funding Available for Performance Bonds:

1. Personal check
2. Certified check/cashier check/bank money order
3. Irrevocable letter of credit
4. Assurance or Surety bond

Notes:

- Actual cash cannot be accepted for a bond payment. Most DNR stations are not set up to handle cash remittances in accordance with proper business practices. Therefore, a contractor who asks to submit actual cash for payment must be asked to convert the cash to cashier's check or money order.
- The WisFIRs Ledger tab and related guidance refers to "cash" bond amounts: however, in this context "cash" means personal checks, certified/cashier checks, and money orders.

A minimum of \$1,000 or 15 percent of the total bid value of any timber sale, whichever is greater, shall be submitted as a performance bond within 6 weeks from the date of the bid opening. Contractors that are current and maintain good standing with Master Logger Certification will have bond performance amounts of 10%. Contractor must present credentials at the time of being awarded the sale. A higher percentage may be recommended at the discretion of the property manager. The bond will be held intact until the sale is complete according to contract and all stumpage paid. The bond required may be rounded to the nearest \$10. If an irrevocable letter of credit or assurance / surety bond is used as a performance bond, a copy of the performance bond documentation must be uploaded to WisFIRs (*See below for instructions*). For bonds submitted via personal or cashier's checks and via money order, the Timber Sale Transaction/Remittance, Form [2460-003](#), should be used to remit the check to the Milwaukee lock box address. (*See below for instructions*)

### Handling and Processing of Bonds:

#### 1. Personal Check Bond

Personal checks submitted as a performance bond shall clear the bank prior to commencing harvest and should be deposited by following normal remittance procedures. **Contact a Forestry Financial Specialist to determine if the check has cleared. This can take 5-10 business days.**

**Performance Bond funds submitted via personal check, cashier's check, or money order must be remitted to the DNR Accounts Receivable lock box using the Timber Sale Transaction/Remittance/Invoice Form ([2460-003](#)). Please remit to address below:**

**DNR Cashier's Office  
PO Box 93151  
Milwaukee, WI 53293-0151**

#### 2. Certified Check/Cashier Check/Bank Money Order Bond

Follow the instructions on page 83-1 and Manual Code [9341.1](#).

If issues arise during the course of the timber sale process that require a draw on the bond amount, follow the instructions in sections 74-1 and 85-1 for bonds submitted via check. When the sale is closed out, retention or refund of the bond amount as appropriate is accomplished using the procedure outlined in section 85-1.

### 3. Irrevocable Letter of Credit

An irrevocable letter of credit may be used as a performance bond. It must be issued by a financial institution (i.e. bank, credit union, farm credit service institutions). Banks must be members of the Federal Reserve System or insured by FDIC. Credit unions must be members of NCUA. If you receive a Letter of Credit other than issued by financial institute listed above, contact the County Forest & Public Lands Specialist. **The letter must be an original and NOT a copy.**

A letter of credit is a contract between the Department and the issuing bank based on a third-party agreement between the principal and the bank to which the Department is not a party. Some banks may not have a prescribed letter of credit form. In such instances, the bank may prepare a letter of credit on its letterhead.

A letter of credit which provides performance bonding shall be retained for the life of the contract, any extensions thereof, and during close-out of the contract after cutting is completed. The letter of credit must be held to the full amount for the entire contract including any and all extensions.

A letter of credit will not be returned to an issuing bank if a draft has been drawn against it. It will be retained in the file. If a bank requests cancellation of such letter-of-credit, appropriate notice will be issued after collection of the draft amount. (See the [Public Lands Toolkit](#) for an example of a Letter of Credit draw letter.)

The State of Wisconsin Department of Natural Resources may draw on the issuing bank up to the amount stated in a letter of credit. The property manager or superintendent is authorized to approve letters of credit. A letter of credit should be filed locally in the property manager's sale records.

Contents of an irrevocable letter of credit must include the following:

- a. Letter of Credit number.
- b. Timber sale identification – property name and sale or tract number.
- c. A clear statement that it is irrevocable.
- d. Name of the bank's customer; that is the principal.
- e. Amount of credit extended (maximum limit). This limit must equal or exceed the penal sum or penalty for which the letter of credit is pledged to secure.
- f. An authorization to draw sight drafts upon the bank in favor of the Wisconsin Department of Natural Resources.
- g. A clear statement that the letter of credit number appearing on a sight draft is sufficient identification for honoring it. The letter must specify only one identification number.
- h. Expiration of bond: The expiration date must be 1 year beyond the contract expiration date. This timeframe generally allows for one contract extension prior to close-out. In cases where a contract needs a second extension, an extension of the Letter of Credit will also be required one year beyond that contract date.

**If a letter of credit has additional terms outside a-h above, contact the County Forest and Public Lands Specialist.**

An amendment correcting a letter of credit, extending the credit limit and/or expiration date for presentation of a draft becomes a part of the original letter of credit.

**For disposition of letters of credit, see page 85-1.**

### 4. Assurance Bond

**An assurance bond should contain many of the same contents as a letter of credit.** An assurance bond is typically issued by a third-party insurance or bonding company. Assurance bonds should be printed on official letterhead of the bonding company, and must be submitted prior to or at the time of contract signing. Review assurance bonds carefully to verify that they reference the appropriate timber sale or tract, the appropriate bond amount, and the appropriate beneficiary (Wisconsin Department of Natural Resources). 1 year is considered the minimum period of time needed between end of contract term and bond expiration.

**For questions on assurance bonds, contact a Forestry Financial Specialist or the County Forest and Public Lands Specialist.**

## STUMPAGE PAYMENT

Timber sales sold on a scale basis are either field scale, mill scale, or combination of both:

1. Deferred Stumpage Payment – The contractor must make stumpage payments to the State’s bank in Milwaukee – via the “Lock Box” Post Office address - within 30 days of being billed. Invoices will be based on actual scaled volumes, with contracted stumpage rates applied to those volumes. Wood products must either be scaled on the sale area prior to hauling (e.g. saw logs), or they are to be hauled from the landing to the destination mill(s). Each load will be tracked using a DNR Forest Product Hauling Permit issued by the DNR Forester. This option does not apply to lump sum sales, firewood, miscellaneous forest products, or contractors included on the Advance Payment-Only Logging Contractor List (available electronically from the County Forest & Public Lands Specialist).
2. Advanced Stumpage Payment – No cut wood products will be hauled from the sale area until they have been paid for. Cut wood products will be scaled on the sale area by the DNR Forester, and stumpage due will be billed and paid prior to hauling. As an alternative, pulpwood can be hauled using pre-purchased Forest Product Hauling Permits. In this case, a per-ticket, per-load price can be established by determining a weighted average cordwood price and an average volume/weight per load. Forest Product Hauling Permits can then be pre-sold, at the established per-ticket price. This will still require reconciliation between the actual mill-scaled volume and value, versus the pre-paid amount.

For lump sum sales:

- Full payment must be made prior to hauling off the sale area for 1.) the entire sale amount; 2.) a pre-arranged cutting unit; or 3.) by some other arrangement mutually agreed upon by the contractor and the DNR Forester.
- No refunds of lump sum stumpage payments will be made for un-removed wood, or for harvest volume under-runs.
- Any cut wood products or standing stumpage left on the sale area at contract expiration shall revert to the seller.

Late payments – failure to pay within the specified 30-day period:

- The State has generally given latitude of 7 calendar days beyond the due date for receiving payments. Charging an interest penalty for this timeframe can be waived because of the multiple systems in the communication process from the timber sale payment lockbox in Milwaukee to WisFIRS.
- If a contractor fails to submit a stumpage payment by the applicable deadline (plus appropriate allowance described above), the following actions will be taken:
  - The contractor being required to prepay for stumpage on the remainder of that sale.
  - The payment breach is documented by forwarding the contractor’s name to the County Forest and Public Lands Specialist. The contractor’s name will be kept on file and any further payment breaches within the next 2-year period will result in the contractor being placed on an Advance Pay-Only List and having to advance pay on all state sales. A contractor will be removed from this list when they have exhibited compliance on State timber sales over a two-year time frame. A contractor is deemed “compliant” if they have no more than one payment breach over a floating two-year time frame.
  - Upon receiving late payment, a 1.5% late interest penalty will be assessed for every 30 days stumpage payment is overdue. The penalty can be pro-rated. (Example: Payment on day 40 of a \$5000.00 bill would be 10 days late. Late interest would be \$25.00, calculated as follows:  $\$5000.00 \times .015 \times 10/30 \text{ days} = \$25.00$ .) The late interest fee is added to the balance due in the sale ledger.
  - Multiple late interest penalties can only be charged on the original invoice amount, they cannot be compounded.
  - Suspension of logging activity on that particular sale until advanced stumpage payment is secured.

### NOTES:

\*Failure to make payment by a specified deadline is a breach of the Timber Sale Contract. If a contractor fails to remit full payment on time, notify the Forestry Team Leader and County Forest and Public Lands Specialist and consult section 74 of this handbook for guidance.

\*See Public Lands Toolkit for sample letter to be used when billing for late interest.

### Sales Tax on Forest Products

Collection of sales tax on sales of all products from DNR lands is covered in M.C. [9340.2](#). The following instructions expand on those general guidelines and provide specific information on timber sales.

### Sales Tax on Timber Sales and Forest Products Permits

Most timber sales are exempt from sales tax, however it is important to verify the exemption status for each sale. If a particular contractor or a particular sale do not meet the exemption criteria, then timber produced under the affected timber sale contract will be subject to applicable State and local sales tax. The two most common exemptions from sales tax requirements for DNR timber sales are:

1. Timber purchased for resale  
Purchaser must fill out Form S-211 (Wisconsin Sales and Use Tax Exemption Certificate) and submit to the DNR forester administering the sale. The form should check the box for “resale” and indicate “wholesale only” or “exempt sales only” in the space for seller's permit number.
2. Timber purchased for manufacturing by the Purchaser  
Purchaser must fill out Form S-211 (Wisconsin Sales and Use Tax Exemption Certificate) and submit to the DNR forester administering the sale. The form should check the first box under the “manufacturing and biotechnology” heading that references tangible personal property.

If the Purchaser claims a different exemption, the Purchaser should check the box next to the exemption that applies on Form S-211.

To document the Purchaser’s exemption status, it is important to collect a completed and signed Form S-211, the Wisconsin Sales and Use Tax Exemption Certificate from the Purchaser. **At the time of each bid opening, a unique Form S-211 shall be given to the winning bidder at the time that the contract is distributed and should be returned prior to beginning work on the sale. A unique Form S-211 is required for each timber sale unless the Purchaser checks the box for "continuous" at the top of the form, in which case a single Form S-211 may be used to cover multiple sales within a single bid opening. Even with the "continuous" box checked, a new Form S-211 must be collected for each bid opening.**

If the Purchaser does not know how to fill out the form or does not know which exemption applies to them, DNR Foresters can assist by providing the Purchaser with the Department of Revenue’s instructions for filling out the form (<https://www.revenue.wi.gov/DORForms/s-211-inst.pdf>). If the Purchaser needs further clarity, they should contact the Department of Revenue at [DORSalesandUse@wisconsin.gov](mailto:DORSalesandUse@wisconsin.gov). DNR staff may not fill out the form for the Purchaser.

If sales tax is applicable, State and local sales tax amounts must be collected and remitted with each payment for forest products.

### Firewood

Firewood sales for residential use are not taxable. This is in line with sales tax exemption status for all other residential fuels and no sales tax exemption certificate is required.

### Severance Share for County Forests

1. Payment to the Department – For those counties with an outstanding loan balance (project loan or variable acreage loan), the counties pay to the Department a severance share for timber harvested from the county forest. Please reference 28.11(8)(b) Wis. Stats. for details on these loans. This payment is not less than 20% of the actual stumpage sales value of the timber. The Department and the county may agree upon a higher rate. (See s. 28.11(9), Wis. Stats.) Timber which is harvested by the county and not sold has a severance share calculated at 20% of the severance tax schedule in effect under s. 77.06(2), Wis. Stats. All of the acreage share payment paid by the county is restored to the appropriation made by s. 20.370(5)(bu), Wis. Stats., and is credited to the county's forestry fund account. 28.11(8)(b)

No severance share is required if:

- No balance is due in the county's forestry fund account.
- Timber harvested is for individual home heating purposes as described in s. 28.11(3)(k), Wis. Stats.
- The timber is harvested from county forest "special use lands".

2. County Payment to the Town -- The county pays annually to the towns a minimum of 10% of the gross receipts from all county forest timber sales. The payment is based upon the number of acres of county forest land in a township. Both special use and regular class County Forest lands receive this payment.

Penalties

If the county harvests trees without Department approval, the Department will assess a penalty equal to double the stumpage value of the cut products. (See s. [28.11\(6\)\(b\)3.](#), Wis. Stats.) The penalty is not considered a severance tax and, therefore, cannot be credited to a county's indebtedness to the forestry fund account.

## WORKER'S COMPENSATION INSURANCE COVERAGE

Worker's compensation insurance must be addressed for all timber sales. The purchaser must provide proof of current workers compensation insurance coverage for all whom are employed by the purchaser; and the coverage must be in force while any operations (including but not limited to road building or maintenance, cutting, skidding, hauling, machinery repair, etc.) on the contracted timber tract are active. This coverage must be evidenced by submission of an original Certificate of Insurance provided by the insurance company naming the Department as a certificate holder.

The administering forester must check with the purchaser on or before the expiration date of the Certificate to determine whether the coverage has been changed or renewed. Minimum coverage limits on worker's compensation policies are mandated by statute. If the coverage at any time cannot be confirmed, the sale should be stopped until an acceptable Certificate of Insurance is provided by the purchaser. WisFIRS has a dedicated "Contractor" sub-tab in the "Timber Sales" tab which houses information regarding each contractor, including FISTA training certificate and worker's compensation documents. If these are out of date, request updated information from the contractor and upload new documents upon receipt.

### Exception to this Coverage Requirement

Many purchasers do not have any employees and therefore do not carry workers compensation insurance coverage. These purchasers can claim exemption from worker's compensation insurance requirements if the business entity they operate does not have any employees and the purchaser attests to not having employees by affidavit. This option is available only to purchasers without any employees.

To document their exempt, independent status, **the purchaser will be required to submit a signed, notarized affidavit** that affirms their exempt status pursuant to the criteria listed in section [102.07\(7\)\(b\)](#), of the Wisconsin Statutes. The insurance exemption affidavit form can be found in the Public Lands Toolkit website on the DNR intranet.

If a purchaser wins multiple timber sales at a bid opening, the purchaser can fill out the affidavit once. Copies will be required for each individual timber sale. For subsequent bid openings, the purchaser must fill out the affidavit again to ensure that information is still correct.

For additional information, reference the Public Lands Toolkit.

1. Sole Proprietor – Sole proprietor can be a misleading term when used to label Purchasers. Every Forester needs to be aware that sole proprietors may still have employees. As it relates to workers compensation insurance, the critical question is whether the Purchaser has employees, not whether the Purchaser considers themselves a sole proprietor.
2. Forest Products Permits - Do not require proof of worker's compensation.

CHAPTER 70

SALE ADMINISTRATION – CONTRACT MANAGEMENT AND FIELD ADMINISTRATIVE PROCEDURES

This section contains handbook elements for WI DNR State owned and managed lands; including, but not limited to, State Forests, Fish, Wildlife, and Parks, and Natural Heritage Conservation Lands. It can be used as a guide for County Forest Lands or other managed lands as well. General procedural requirements may apply to County Forest Lands, but each County Forest advertises, contracts, and administers timber sales according to the county's own specific procedures and policies. County Forest timber sales must be consistent with [s. 28.11](#) of Wis. Stats.

POSTING OF TIMBER SALE AREAS

Property Managers may determine that posting timber sale areas for safety informational reasons is appropriate, or, timber sale contractors may request permission to post their sale areas to inform the public of logging activities. The following guides may be used in authorizing such posting to assure public use doesn't obstruct the timber operation.

- Signs should be worded to inform but not exclude the public, unless necessary for public safety or unless requested according to state statute chapter [23.116\(4\)](#).
- Signs should be confined to the area designated for cutting in the timber sale contract, woods roads used in the operation and where they join main roads.
- If signs are attached to a tree, all mounting hardware (nails, screws, etc.) should be removed once the sign is no longer in use. Ratchet straps are a good alternative for posting signs.
- Signs may be posted not more than two weeks prior to initiation of active logging operations and shall be removed by the contractor upon termination of logging activities as a result of either completion or interim inactivity.
- Signage use can be recommended or required by forester, but specifications of sign size, language, color, or design otherwise shall not be dictated.

GATING OF TIMBER SALE ROADS

Timber sale contractors may be authorized to gate the entry road to their active timber sale to assure other uses don't obstruct the timber operation. When gating is authorized, it should be specified in the timber sale contract or as a written amendment to the contract.

Gating may be justified in areas where there is a problem of theft of cut products (particularly firewood). It could also reduce vandalism to the contractor's equipment.

Normally, the entry roads involved are dead end spurs leading to the timber sale area where cut products are piled. No gas tax or county forest aid are paid for these access roads. The public continues to have access to the area except by vehicle.

In most instances, the Department should provide the gating material. Gating should follow the Department's [Barrier Marking Standards](#). When trees are used to attach a chain or cable, the upright reflective boards may be fastened to the trees.

To complete attachment of a cable or chain to a tree or post on each side of the spur, the Department should provide a standard Department lock and the contractor a second lock. This will provide access by both the Department and contractor with separate keys.

Inspection of gates should be a standard part of the periodic inspection of each active sale.

RECREATIONAL TRAILS

Recreational trails should be maintained in an operable condition at all times to minimize user conflicts consistent with s. [23.115](#), Wis. Stats., and Department procedures. This may include rerouting, signing, and/or daily inspection and clearing of trails.



## SALE INSPECTION & CONTRACT ADMINISTRATION

### Presale-Meeting

For state lands, it is mandatory that prior to starting a sale the administering DNR forester (or designee) meets on site with the contractor to agree upon road layout, landing locations, and other operational considerations. For county lands, this is recommended. There should also be discussion to ensure there is a thorough understanding of the sale specifications. Timber Sale Contractor checklist ([Form 2460-009](#)) will be used to document the pre-sale meeting on department-owned lands.

### Scheduling Active Harvest Inspections

Personnel involved with timber sales will inspect active sales on a regular basis as operation of the sale dictates. County Forest timber sale inspection will normally be performed by the county forest staff. Where conditions warrant otherwise, the liaison forester and county forest administrator will jointly agree on who will make the inspections and schedule the inspections as the sales dictate. A DNR forester or technician will make a final inspection on all county sales to (1) verify forest reconnaissance (recon) update information; and (2) to review outcome of silviculture recommendations for the sale.

### Inspection Procedure

For state lands, property managers should inspect at least 10% of the active sales. The forestry team leader should inspect at least 5% of the sales established on state land. For county lands, liaisons should inspect every active sale a minimum of one time. These field inspections and office audits should evaluate: (1) silvicultural prescriptions, (2) sale supervision, (3) administration, and (4) recordkeeping.

Inspections of active sales will check for compliance with the contract. Documentation of the inspection is necessary for any legal action. The inspection will be documented on the Timber Sale Inspection Record ([Form 2460-002](#)) or similar County Form indicating date, what was inspected, any contract compliance issues, and any action taken.

Any and all non-compliance or damages should be documented. Non-compliance issues need to be evaluated to determine if breach of contract actions need to be taken, and if a violation of State statute or code has occurred. Observed damages to the timber and other resources need to be evaluated to determine if they exceed established thresholds.

### Damage Thresholds

- Excessive rutting for roads, landings, skid trails and general harvest area:
  - A gully or rut is 6 inches deep or more and results in channelized flow to a wetland, stream, or lake.
- Excessive rutting for roads, landings and primary skid trails:
  - In a riparian management zone (RMZ) or wetland, a gully or rut is 6 inches or deeper and 100 feet or longer.
  - In an upland area (outside of RMZ), a gully or rut is 10 inches or deeper and 66 feet or longer.
- Secondary skid trails and general harvest area:
  - A gully or rut is 6 inches or deeper and 100 feet or longer.

Excessive damage to residual trees in a timber stand is defined as:

- Any tree measuring at least 5 inches and no more than 14 inches in diameter at breast height, with more than 25 square inches of bark removed
- Any tree larger than 14 inches in diameter at breast height with more than 50 square inches of bark removed will be considered damaged.
- Any tree with more than 25% of the crown destroyed by logging operations
- Any tree with more than 25% of the root area exposed or severed within the drip line of the tree's crown
- Any live bole or tree entirely broken off by logging operation
- Any tree tipped more than 10 degrees from its vertical position by logging operations

Given above definitions of damage to individual trees, excessive damage to a stand of trees (i.e. harvest area) can be:

- One or more of the damage elements above occurring cumulatively on more than 5% of the residual trees in a stand.
- Bark removal on tree boles or main stems that sums more than 200 square inches per acre. All bark patches greater than 1 square inch, on trees larger than 5 inches in diameter at breast height, are used to determine this sum.

### Final Sale Inspection

To verify completion of all contract requirements, the entire sale area must be inspected by the administering forester during the completion of operations (cutting, skidding, hauling, etc). To ensure that all aspects of the contract have been met, use [Form 2460-002](#) (Timber Sale Inspection Record). If any conditions of the contract have not been met, contact the contractor to determine their intentions for completing the work or resolving the issues.

1. If sale is satisfactorily completed:
  - a. Send letter to contractor saying sale is satisfactorily completed.
  - b. **Follow the steps on page 85-1 for completing and closing the sale.**
2. If sale area is not satisfactorily completed:
  - a. Send letter to contractor outlining the items which do not meet contract specifications. Include a detailed map when appropriate. Set a date for their reply or set a joint inspection date.
3. If contract will be extended, follow procedures outlined in Chapter 73.
4. If contract extension is not requested, or termination is mandatory, and yet the sale is not completed:
  - a. Cruise uncut and non-utilized timber.
  - b. If cut, scaled, and paid for wood is still decked on the sale, grant a contract extension, if deemed necessary.
  - c. Notify contractor of termination:
    - i. Invoice for damages, unpaid stumpage and value of uncut timber
    - ii. If in the judgment of the sale administrator, the remaining timber is salable, amount due from contractor will include cost of reestablishing a sale on the area and the difference if the resold value is less than the original amount.
  - d. Upon receipt of payment, refund performance bond. If the contractor fails to pay, refer to the contract breach guidance in Chapter 74.

### SEIZURE OF ILLEGALLY CUT PRODUCTS

All Department employees who will be administering or inspecting timber sales must be familiar with s. [26.05](#) (timber theft) and s. [26.06](#) (enforcement, seizure and sale of materials), Wis. Stats., to appropriately address timber theft violations.

Use the following procedure if illegally cut forest products are found on the sale, and seizure of those products is deemed necessary: Contact the Forest Fire Law Enforcement Specialist or the Bureau of Legal Services to discuss the proposed seizure to assure the seizure complies with the law. When seizing wood products, it is **strongly recommended** to notify and involve a Conservation Warden. If the violation is or appears to be criminal in nature, the case **must** be referred to a Conservation Warden. Forestry staff will remain involved as forestry subject matter experts.

If the inspector is not an employee authorized in s. [26.06\(1\)](#) to seize the products, an immediate contact should be made with an employee who is authorized. Once that person is on site, an attempt should be made to determine how much of the product is illegal and what the circumstances are concerning it.

The employee authorized in s. [26.06\(1\)](#) to seize the product should complete [Form 4100-186](#), Forest Product Seizure Notice, and attach it to the illegal product. There should be a minimum of one notice on each side of the pile of cut products. More can be added as deemed necessary by the officer. It is recommended that the form be printed on water resistant paper or laminated for prolonged outdoor exposure. Replacements can be made as often as needed, **but** the date of the first notice should be used in all cases. If there is a need to replace a faded or worn notice, the original date should be entered along with a notation on the back of it that the notice **WAS RENEWED** with the replacement date. The original and any renewal forms should be removed and retained as a part of the officer's evidence case file until the issue is settled.

All contractors and subcontractors involved should be contacted as soon as possible after the seizure and posting, advised of the action and the consequences of removal of the notice or product. A written record of all contacts should be prepared by all Department personnel involved in the incident. The property manager or sale administrator should be informed of the seizure as soon as possible. They should keep the inspector/seizing officer informed of any contacts, negotiations or arrangements regarding the product. If the seizure is made by a Division of Forestry employee, the team supervisor should be informed of the incident and all progress made toward a settlement.

CIVIL LIABILITY FOR UNAUTHORIZED CUTTING, REMOVAL OR TRANSPORTION OF RAW FOREST PRODUCTS

In addition to the forfeitures or other penalties or costs assessed under s. [26.05](#), Wis. Stats., and if liquidated damages under a contract with the Department don't suffice, damages should be pursued under s. [26.09](#), Wis. Stats., on Department lands. Consult and follow s. [26.09](#), Wis. Stats. for guidance.

Secure the assistance of a Non-Sworn Forest Ranger or Conservation Warden to assist in the investigation. Notify supervisor and Bureau of Legal Services. It is ***strongly recommended*** to involve a Conservation Warden upon notice of the violation, regardless of the severity of the violation. However, if the violation is or appears to be criminal in nature, the case ***must*** be referred to a Conservation Warden. Forestry staff will remain involved as forestry subject matter experts.

Inform adjacent landowner or any other party involved that an investigation is ongoing. Contact District Attorney if controversy is apparent or expected. Conduct investigation and if necessary, obtain a certified survey to determine ownership of land from which timber was cut and /or transported. Document all portions of investigations on Case Activity Report ([Form 4100-160](#)) as well as the Forestry Contact Record ([Form 4300-042](#)).

Determine when forest products were cut, by whom, the volume cut, and where marketed.

- Conduct appraisal of timber harvested.
- Compare to adjacent stands, compartment recon and comparable sales.
- Use LSFES, USFS Technical Note #507, 1957 *Diameter at breast height and stump diameter relationship* to help determine quantity of timber from stumps.
- Determine stumpage value. *S. [26.09](#), Wis. Stats. defines stumpage value as those rates established by rule under s. [77.91\(1\)](#) OR the fair market value less the cost of harvesting, whichever is greater.* This requires the forester to determine the stumpage rate, the fair market value, and the cost of harvesting
- Stumpage values shall be derived from NR [46.30](#), Wis. Adm. Code.
- Fair market value (FMV) shall be determined using the mill value where the forest products were hauled. If forest products have not been hauled, or, if mill is unknown, use comparable sale information and values from local mills.
- Cost of harvesting includes the costs of cutting, removing or transporting the forest products. Costs shall be determined using local rates for similar equipment and labor, in similar terrain, and a comparable distance from the mill.

Determine whether “reasonable precautions” were taken per s. [26.09\(5\)](#), Wis. Stats. Consult with Bureau of Legal Services. \*The DA is not involved in a civil damage claim however it would be appropriate to inform the DA if a theft case is also being pursued.

Determine “reasonable costs” under s. [26.09\(3\)\(d\)](#), Wis. Stats. DNR will customarily apply:

1. Determination of trespass & appraisal - DNR Staff time (see Individual Forest Fire Report User Guide, [4305.1](#) for wage rates) and expenses.
2. Line establishment – Costs associated with either a survey or an agreed upon harvest line established by parties.
3. Reforestation (if necessary) - charge for staff time & expenses, any contracting work (site prep, planting) and state nursery stock.
4. Repair of damages or “Cleanup”– Costs (staff time, equipment rental, expenses) associated with any DNR or contracted repair of damages resulting from timber theft.

Process Timber Sale Cutting Notice, Form [2460-001](#), to document the timber that was cut without authorization. Indicate circumstances of the incident in the comment section. Remit resulting funds on timber sale transaction (Form [2460-003](#)).

Note: The Department cannot recover damages under *both* s. [26.09\(3\)\(b\) or \(c\)](#) and s. [26.06\(3\)](#), Wis. Stats. – which allows damages for twice the value of severed forest products. Additionally, the Department cannot recover damages under *both* s. [26.09\(3\)\(d\)3.](#) and s. [26.05\(3\)\(c\)](#), Wis. Stats. [Both sections provide for recovery of costs of determining the value or the volume of harvested timber.] Discuss with Bureau of Legal Services what alternative may best serve the Department on a case-by-case analysis.

CONTRACT AMENDMENT

This procedure should be used to amend timber sale contracts on Department-owned land. Both the Timber Sale Contract Amendment Approval, Form [2460-007](#), and the Timber Sale Contract Amendment, [Form 2400-005E](#), should be routed together. The property code and tract number, along with the contract number, should be indicated on each form. Once approval is obtained on the Timber Sale Contract Amendment Approval, it will be returned to the forester. At this time the forester should obtain the signature of the contractor. The amendment, [Form 2400-005E](#), should be included in the timber sale file and if the amendment alters the contract or bond expiration dates, and attached in the WisFIRS documents tab. A copy should also be routed to a Forestry Financial Specialist if the amendment alters any of the sold value(s) per unit. The extend contract function in WisFIRS should then be used to update the expiration date. Finally, sold value per unit should be increased to reflect the amendment.

Amendments should not be approved unless they are to the benefit of the state or in recognition of extraordinary circumstances. The Bureau of Legal Services is available to render assistance or answer questions.

Factors which may be considered for potential contract amendments include

- Contractor shifting operations to work on salvage harvest operations
- Bad weather (e.g. excess snow, excessively wet, etc.)
- Lack of sufficient frost to harvest or access the sale area
- Identification of additional or removal of existing portions of harvest areas
- Need for salvage in stands adjacent to sale area
- Actual harvest volumes significantly exceeding estimated volumes
- Endangered resource considerations
- Contractor efforts to date
- Unforeseen significant changes to sale access
- Unexpected damage resulting in a reduction in value of stumpage
- Seasonality of harvest
- Forest health concerns (e.g. new oak wilt or emerald ash borer infestation identified)
- Other contractual work necessary prior to harvest (e.g. invasive species control) did not occur.
- Any other substantial changes in sale conditions, stand, property, and landscape level conditions

Contract Expiration Notification – For every timber sale expiring within one year, Central Office will generate a letter to the contractor notifying them their sale will expire. These letters will then be sent to Team Leaders to work with staff to confirm accuracy and distribute to contractors. (See 63-3)

Contract Extensions

Contracts should not extend beyond a total duration of four years. Contract extensions are not guaranteed. Determine circumstances on a case-by-case basis, with consideration of what is in the State’s best interest. All extensions shall be for a period of 1 year. The timber sale contract should specify the length and price increase of any potential extensions. No free extensions can be granted without valid, substantiated, and documented justification. Approval by the Team Leader and Property Manager is required for all extensions.

Make sure all provisions and details are spelled out. A sample of the wording to be used on [Form 2400-005E](#) for a contract extension is as follows:

- "This contract is extended by and between the Department and Purchaser, pursuant to Section 3 of the original contract, to apply in full force and subject to the same conditions until \_\_\_\_\_, which shall constitute a \_\_\_\_\_ month extension."
- "Purchaser agrees to pay stumpage prices increased \_\_\_\_\_% in accordance with Section 8 (Payment Schedule) of the original contract."

A statement of justification should be included on the contract extension/amendment.

Price Increase

Standard extension price increases are:

- 5% stumpage increase penalty for the first extension on 1- and 2-year contract periods
- 10% stumpage increase penalty for the second extension on 1- and 2-year contract periods

- A 15% stumpage increase penalty on 3-year contracts extended to 4 years.
- A 15% stumpage increase penalty on 4-year contracts extended to 5 years (if approved)
- After the second extension on 1- and 2-year contract periods and after the first extension for 3- or 4-year contracts, all subsequent extensions will have a 15% stumpage increase penalty each.

| Contract Length | Extension # |            |            |
|-----------------|-------------|------------|------------|
|                 | 1st         | 2nd        | 3rd        |
| 1-year          | 5%          | 10%        | 15%        |
| 2-year          | 5%          | 10%        | 15%        |
| 3-year          | 15%         | 15%        | Not given* |
| 4-year          | 15%         | Not given* | Not given* |

\*In rare and unusual circumstances, extensions may be approved following consultations with the District Forestry Leader and the County Forest and Public Lands Specialist.

The initial stumpage price increase on 1- and 2-year contracts will be 5% over bid value. The second stumpage price increase will include an additional 10%. Increases are to be based on the timber sale contract payment schedule. For example:

- first increase = 1.05 x bid value
- second increase = 1.10 x first increase value.
- This is a cumulative, compounded price increase.

For lump sum sales, the forester needs to calculate the remaining volume to be harvested. This volume will be used to calculate extension penalties. For example – timber sale contains 1000 tons of aspen, 30% has been harvested, 700 tons remain. This will be required for every extension requiring an increase:

- first increase = 1.05 x current bid rate x volume remaining = total value remaining to pay
- second increase = 1.10 x first increase value x volume remaining = total value remaining to pay.
- This is a cumulative, compounded price increase.

*Note: Under some circumstances contract extensions may be granted without an increase in stumpage prices. However, the extension must be in the interest of the Department, or of benefit to the resource. “No-penalty extensions” require approval from the Team Leader and Property Manager, and consultation with the County Forest & Public Lands Specialist. An example would be if the purchaser agreed to shift their logging operations to another sale involving salvage of fire or wind damaged timber.*

Volume/Value Modification

The contract volume and value may be modified if fire or wind should damage timber before it is removed from the premises. Fire or wind damaged timber on the sale area or on adjacent areas may be added to the sale volume and value regardless of the value involved.

Volume other than that damaged by fire or wind may be added through negotiation either from the sale area or from adjacent area if the appraised value is less than \$10,000 and 500 cord equivalent, the legal limit requiring advertising.

Amendment Procedure

- |  |  |
|--|--|
| Forester                                 | 1. Prepares original and file copies of Forms <a href="#">2400-005E</a> and <a href="#">2460-007</a> . Forwards originals to designated supervisor and property manager. |
| Designated Supervisor & Property Manager | 2. Reviews, approves or disapproves. Returns to forester.  |

## Timber Sale Handbook

Forester

3. Files approved Form [2460-007](#). Obtains contractor signature on Form [2400-005E](#) and provides them with a copy. Files original of both forms in sale file. Completes WisFIRS data entry.

### Contract Amendment Form Examples

Refer to the [Public Lands Toolkit](#) for examples of the *Timber Sale Contract Amendment* Form and *Timber Sale Contract Amendment Approval* Form.

State BREACH OF CONTRACT & TERMINATION OF CONTRACT:

If the purchaser fails or refuses to carry out terms of a timber sale contract or is found to be in breach of contract, the forester responsible for administration of the sale should proceed as follows:

1. a. Contractor Contact. In the event a forester has observed a contract breach or becomes concerned whether the purchaser can or intends to perform (e.g. not enough time left) the forester should make contact with the contractor. Discuss the contract violations and potential remedies. Explain the claims that may be made by the Department, including retention of the performance bond for damages (see number 4 below for cost determination), to rectify any contract breaches. This must be documented in the form of a written letter to the contractor, see section below.
- b. Notice of Non-Compliance. Demand in writing adequate assurance of contract performance stating the reasons for concern, and if applicable, lay out acceptable options to rectify contract breaches. Include all applicable potential consequences (see below) associated with the contract breach and possible contract termination, based on the specific circumstances and *consistent with the actual contract language*. Until the Department receives such assurance, it may suspend harvesting and hauling operations. A reasonable time for response, up to 30 days, must be given for a response. If the reasonable time after receipt of the justified demand passes without such assurance provided, it will be considered a "repudiation" of the contract. After repudiation, the contractor may retract it by proper action if accomplished before the Department acts on the breach, (i.e., drawing on the bond, contract termination, resale, etc... (ss. [402.609 to 402.611](#), Wis. Stats.)). Examples of non-compliance and breach notification letters can be found in the [Public Lands Toolkit](#).
- c. Levels of Contract Breach (not all inclusive):
  - Tier 1
    - Unauthorized hauling (failure to deposit lock box ticket – 1<sup>st</sup> occurrence)
    - Failure to pay stumpage (1<sup>st</sup> and 2<sup>nd</sup> invoices)
    - Violating rutting policy
    - Excessive damage (roads, residual timber, survey monuments)
    - Harvesting outside sale boundary
    - Insurance, FISTA expires during active operations
  - Tier 2
    - Multiple unauthorized hauling (failure to deposit lock box tickets)
    - Refusal to pay stumpage
    - Timber theft
    - Harvesting across property boundary
    - Failure to complete sale during contract period
    - Contractor refuses Contract Extensions
    - Contractor turns sale back
- d. Potential ramifications of a contract breach, considered for all active timber sales under contract:
  - Suspension of harvesting and hauling until the Department receives assurance of contract performance (Tier 1 or 2).
  - Suspension of harvesting and hauling under any other similar timber sale contract entered into by the Purchaser with the State of Wisconsin, following a contract breach by the Purchaser for failure to make payments as scheduled on this Contract, until such time as the outstanding overdue amounts and interest due are paid in full (one or multiple late payment breaches). (Tier 1 or 2).
  - Pre-payment required for the remainder of the sale (one late payment breach). (Tier 1).
  - Pre-payment required for all state timber sales and GNA for a two year period (multiple late payment breaches). (Tier 1).
  - Contract termination. Generally Tier 2, this is breach specific and must be determined in consultation with Team/Area/District Leaders, County Forest and Public Lands specialist, Bureau of Legal Services (BLS).

- Termination of other similar timber sale contracts (Tier 2; breach specific – determined in consultation with BLS).
  - Contractor considered an ineligible bidder for additional timber sales on all state timber sales and GNA until such time as any outstanding overdue (delinquent) stumpage amounts due and interest due are paid in full (one or multiple late payment breaches).
- Contractor considered an ineligible bidder for a two year period on all state timber sales and GNA sales (Tier 2; breach specific – determined in consultation with BLS).\*
  - Failure to complete sale within contract period
    - Contractor makes 0 attempts to harvest sale
    - Partially harvests sale, does not accept extension
    - Extension offered (1<sup>st</sup> extension), contractor refuses
    - Contractor turns sale back in (written documentation)

\* *Note – On a case by case basis, there may be situations where the Department can consider not adding a contractor to the no bid list. Consult with the County Forest and Public Lands Specialist. Examples could include:*

- *Circumstances arise that are outside of the contractor’s control*
  - *Access across private land could not be gained*
  - *Access to sale limited by stream crossing, frozen ground challenges, etc...*
- *The State was not harmed financially*
- *Goals or objectives of the property were changed*
- Charge for or retention of performance bond for double the mill value for products cut, removed or damaged without authorization or in violation of the contract. Pursuant to liquidated damages clause in contract (Tier 2)
- Charge for or retention of performance bond for calculated actual damages, including unpaid stumpage, bid value of timber not removed, cleanup, restoration & completion costs, resale costs, and court costs. (Tier 2)
- Charge for any calculated actual damages which exceed the amount of the performance bond, including unpaid stumpage, bid value of timber not removed, cleanup, restoration & completion costs, resale costs, and court costs. (Tier 2)
- Retention of prepaid stumpage on all lump sum sales and for actual damages on scaled sales. (Tier 2) Refer the case to the ForestFire Law Enforcement Specialist in situations where citation, criminal prosecution, and/or pursuing restitution via a civil complaint may be appropriate. (Tier 2) **Important: These actions should only be taken after contract termination, determined in consultation with Bureau of Legal Services.** Also, see Section 72, *Seizure of Illegally Cut Products* and *Civil Liability for Unauthorized Cutting, Removal, or Transportation of Raw Forest Products* for Statutory and Administrative Code references and process guidance.
- Any legal remedies for the unlawful use of the Seller's property and the cutting, damage or removal of property without consent, including the seeking of criminal or civil charges for theft, timber theft or damage to property. (Tier 2)

2. If the recommendation is to terminate the contract:

- a. The forester should request a recommendation to terminate the contract from the Team Leader, Area Forestry Leader, and District Forestry Leader. Also, obtain approval from the County Forest & Public Lands Specialist, who shall consult with the Public & Private Forestry Section Chief and the Bureau of Legal Services. A request for termination approval should be accompanied by copies of written records, such as unsatisfactory performance notification of contract violations, or written statement by the contractor that they choose to not complete the contract.
- b. Notify contractor by certified mail, with a return receipt requested, indicating the specific contract provisions that were violated and outlining the claims for damages that will be made, including use of the performance bond. Also include additional consequences of sale termination that will apply (see above). Require in writing that the contractor remove all personal property from the sale site within a reasonable amount of time (e.g., within five days of notice) and remind the contractor in writing that no further operations are allowed on the site (including hauling). *Note: on a case-by-case basis, further operations may be allowed, when in the best interests of DNR, but only following pre-approval from DNR’s County & Public Lands Specialist.*



- c. A copy of this letter should be forwarded to the County Forest and Public Lands Specialist, Legal, and the Team/Area/District Leaders.
3. Re-sell remaining timber if salable. This should be completed as soon as practical and at least 2 attempts must be made to resell uncut timber. Time is of the essence in order to return any remaining performance bond to the contractor. ***Make certain that any letter of credit or assurance bond does not expire prior to recovering damages.*** A contractor should be allowed to replace a non-cash performance bond with a cash bond if requested. For any timber to be resold, the new timber sale should be as similar as possible to the timber that was left un-harvested, for the purpose of establishing the difference in value, and typically should not be sold in a way that may further reduce its value.

The timber to be resold should be established as a new timber sale, with a new tract and sale number assigned and a new Timber Sale Notice and Cutting Report [2460-001](#) completed. In order to enter stand data in the recon section of the WisFIRS timber sale section for the newly established timber sale, the status of the sale being terminated should first be changed to Complete (C) as soon as the sale has been closed out, per step 6 below, reflecting the acres and volumes actually harvested. If no activity occurred on the sale, indicate “0 acres harvested” and “0 volume reported”.

4. Calculate actual damages. Itemize costs in a document that shall remain in the sale file. Damages may include, but are not limited to:
  - a. Any unpaid stumpage owed under the contract.
  - b. The Purchaser's bid value of timber not cut and removed under the contract.
  - c. Double the mill value for timber cut, removed or damaged without authorization under or in violation of the contract.
  - d. All costs of sale area cleanup, restoration, and completion of performance not completed by the purchaser.
  - e. All costs of resale of timber not cut and removed as required under the contract. Itemize individual costs incurred, including:
    - i. Time & Mileage - hours and miles required to re-establish, cruise and sell the new sale multiplied by the hourly rates utilized for billing forest fire suppression costs, which can be found in [Individual Forest Fire Report User Guide](#), and mileage fleet rates based on the vehicles utilized.
    - ii. Materials (paint, flagging, etc.)
    - iii. Advertising costs
  - f. Actual and reasonable expenses, including attorneys and expert witness fees, incurred if damages for breach of the contract are sought through court proceedings and the department prevails.

If the sale is resold for less than the original amount or cannot be sold, administrative costs plus the difference in stumpage value should be retained from the performance bond in addition to the cost of sale area cleanup, restoration, and completion. If the sale is resold for more than the original amount, only administrative costs and the cost of any sale area cleanup and restoration should be retained.

5. Charge for actual damages. If the performance bond held is in a form other than cash (check), the contractor will be billed for the calculated damages. If the contractor fails or refuses to pay the invoice for damages, then damages should be drawn from the performance bond (ILOC, assurance bond, savings account, CD). Provide copies of materials that substantiate the damages claimed. If a demand is made on an assurance bond or letter of credit, a copy should be sent to County Forest & Public Lands Specialist, Legal, and Team/Area/District Forestry Leaders for filing. If the performance bond is in the form of cash, retain any damages from the performance bond. Be sure to itemize administrative versus actual damage costs.

**The actual repair to the sale area should not be done with DNR equipment or personnel.** Repairs should be accomplished by contracting through an independent third-party contractor following Department of Administration purchasing guidelines. If local units of government are used, purchasing guidelines do not have to be followed. Damage repairs are limited to the actual costs associated with contract violations.

After repair work is completed, the bill should be sent to the Budgets and Grants Section Chief with the close-out transaction.

6. Close-out the sale with a Timber Sale Close-out Transaction, Form [2460-004](#). On an attached sheet, include itemized actual damages calculated as described above. The Department should determine if the contract was adequately performed within 60 days from notice of completion or the termination date. If the contract was not adequately performed, damages must be determined before any money is to be refunded. Make certain that any letter of credit or assurance bond does not expire prior to recovering damages.
  - a. If performance bond was in cash, subtract damages from performance bond and request refund of balance if performance bond exceeded damages.
  - b. If performance bond held is in a form other than cash, the contractor should have been billed for the calculated damages and that amount should subsequently be remitted.
  - c. If performance bond held is in a form other than cash, and the contractor has been billed but fails or refuses to pay the invoice for damages, then damages should be drawn from the performance bond (ILOC, assurance bond, savings account, CD) and that amount should subsequently be remitted.
  - d. If damages exceed the amount of the performance bond, notify your immediate supervisor, the County Forest & Public Lands Specialist, and the Bureau of Legal Services.

Although the contract provides for liquidated damages (flat fee), the Department will routinely pursue actual damages as provided in 4 above if they can be easily determined.

Examples of contract breach and termination letters can be found in the [Public Lands Toolkit](#).

## UNFORSEEN CONTRACTOR PROBLEMS

### BANKRUPTCY

Timber sale contract requires that contractors who declare bankruptcy provide immediate notification to the Department. If notification has not been provided but there are rumors of possible bankruptcy, Department staff should investigate and make reasonable effort to establish the facts. If rumors appear to be true, the contractor should be contacted for final confirmation.

The following procedure should be followed if the Department becomes aware of a bankruptcy or the Department has received formal notice.

- Administering Forester:
1. Contacts the contractor verbally and in writing to remind them that all sales administered by the Department that were on a deferred payment schedule are immediately switched to an advanced payment schedule, as provided in the timber sale contract and the payment schedule. Can stop all sale activities temporarily, if needed.
  2. Notifies the County Forest and Public Lands Specialist, Legal, and immediate supervisor. Include the following:
    - a. Name and address of the contractor.
    - b. State property and timber sale number involved.
    - c. Financial status of the sale by sending copy of the ledger.
    - d. Method of performance bonding; cash, assurance bonding, or irrevocable letter of credit, including expiration date.
    - e. Name and address of contractor, trustee, and contractor's lawyer.
    - f. Type of bankruptcy declared (ask contractor for documentation)

*If Chapter 11 or 13 bankruptcy (typically, the intent is to continue operations and restructure the business):*

If the contractor expresses a desire to keep the timber sale and the administering forester (in consultation with their immediate supervisor, the County Forest & Public Lands Specialist, and Legal Services) determines that it is in the best interest of the state to allow the sale to continue, contractor can generally be allowed to continue harvest operations on an advance pay only basis. If it is not in the best interest of the state to allow the sale to continue, options for termination can be discussed with Legal Services.

*If Chapter 7 bankruptcy (typically, the business stops all operations and is liquidated):*

Reasonable effort should be made to prevent unauthorized removal of forest products from state property. Only with the consent of the court appointed trustee and Bureau of Legal Services should products be removed.

If the contractor has equipment or other property on state land, the administering forester/property manager should contact the court appointed trustee. The trustee should be requested both verbally and in writing to arrange for prompt removal of the equipment or other property from state land.

Final disposition of the timber sale will be determined by the trustee and Bureau of Legal Services.

### CONTRACTOR UNABLE TO BE CONTACTED

In the circumstance that a contractor is unable to be contacted indefinitely, or the business ceases to exist, the state can:

1. Determine whether there has already been a breach of the contract. If there are other contract breaches (e.g., late payment) the contract can be terminated on that basis, without going through this entire process. The process in this section is intended for situations where the state is unable to contact a Purchaser, but where the contractor has not yet otherwise committed a breach of the timber sale contract.
  - a. Under paragraph 29.b. of the Timber Sale Contract, "If the Purchaser ceases to exist, in fact or by law, the Seller may terminate this Contract without waiving any remedies available to it and take all action necessary to assure its performance."
2. Pursue multiple avenues to make contact with the business or contractor
  - a. Certified Letter (consider multiple attempts over a few weeks)
  - b. Phone Call (document every attempt)
  - c. Email

- d. Visit to any known addresses, with accompanying DNR personnel, if it can be done safely
- e. Consult with Legal Services regarding other steps that can be taken to identify the disposition of the individual or entity in question

#### DEATH OF TIMBER SALE CONTRACTOR

If a timber sale contractor dies before a sale is completed, the contract may be 1) terminated, or 2) continued in the same name of the estate by the personal representative unless the deceased contractor had possessed a particular skill or expertise which would be lost at his or her death and which cannot be replaced by the personal representative. If the contractor dies having made no valid will (intestate), a personal representative may be appointed by the court depending upon the circumstances. If it is desired to continue the sale and the personal representative has not been named, the proper probate court must be petitioned immediately for appointment of a special administrator.

The following procedures will be followed upon death of a timber sale contractor.

- Administering Forester
1. Stops sale operations.
  2. Obtains name of estate personal representative.
  3. Notifies County Forest and Public Lands Specialist, Legal, and immediate supervisor:
    - a. That contractor has died,
    - b. The sale number involved,
    - c. Financial status of sale by sending copy of ledger, and
    - d. Name and address of estate personal representative.
  4. Notifies personal representative of the estate of contract and its status:
    - a. Sends copy of contract.
    - b. States financial status of sale.
    - c. Indicates type of performance bond: cash or assurance bonding.
    - d. Requests decision in writing on disposition of sale.
    - e. Requests name and address of person to be responsible if sale is to be completed.
    - f. Outlines procedures to be followed if sale is to be terminated.

#### IF SALE IS TO BE TERMINATED

5. Estimates volume/value of uncut timber.
6. Invoices estate for uncut timber if unsalable using Timber Sale Transaction/Remittance, Form [2460-003](#).
7. Bills estate for cost of reestablishing sale and for reduced value of uncut timber if salable using Form [2460-003](#).
8. Refunds cash performance bond to estate upon receipt of all payments due using Form [2460-004](#) (Timber Sale Close-Out Transaction).

#### IF SALE IS TO BE CONTINUED

9. Meets with personal representative of estate and/or person who is to be responsible for completion of sale:
  - a. Reviews timber sale contract.
  - b. Conducts tour of sale area.
  - c. Reviews use of performance bond and checks coverage. If an assurance bond is involved, a new bond may be needed to cover the estate.
10. Permits sale to resume operations.

CHAPTER 80

SALE ADMINISTRATION – FINANCIAL TRANSACTIONS, DOCUMENTATION, AND CLOSE-OUT PROCEDURES

THE WISFIRS APPLICATION AND USER ROLES

Most functions for State land timber sale financial accounting and documentation are tracked in and conducted via the Wisconsin Field Inventory & Reporting System (WisFIRS) application. As such, the bulk of this chapter is devoted to explaining WisFIRS functions. The online [WisFIRS Public Timber Sales Training Manual](#), provides detailed, step by step, instructions for the functions outlined in this chapter. The [WisFIRS Public Timber Sales Training Manual](#) can be found on the Forestry Division website on the DNR Intranet in the WisFIRS: Support section. Additional information can be found in the WisFIRS Financials powerpoint slideset in the [Public Lands Toolkit](#).

There are still a few timber sale transactions that must be conducted and documented using paper forms and regular mail. These “manual” transactions and procedures are described in section 85-1.

The information in this chapter is not applicable to County Forest timber sales, as the respective Counties have developed county-specific systems for financial transactions and documentation.

TIMBER SALE ROLE - FORESTER

All foresters who establish and administer State land timber sales are assigned the Timber Sale Edit Authority for a property or properties in WisFIRS. Foresters can enter haul tickets, and stumpage entries for their sales in the WisFIRS Journal tab. Then, the WisFIRS Ledger tab can be accessed to view and print stumpage details and stumpage invoices.

FINANCIAL ROLE - FINANCIAL ADMINISTRATOR

Forestry Financial Specialists and select foresters from each team will also be assigned the WisFIRS Financial Role. This status allows assignees the ability to enter or edit data in all three financial tabs (Journal, Ledger and Invoice). It also enables the ability to generate invoices and create the final reports for a close-out. All Foresters who administer State land timber sales will want to work closely with a Financial Specialist (or another Forester with WisFIRS Financial Role) if data entry or billing questions come up during sale administration and close-out process.

WISFIRS TIMBER SALE JOURNAL

The Journal Tab is used to enter the information from DNR haul tickets and corresponding mill scale slips; and also from scaling slips for timber scaled on the landing. The data from the Journal entries is combined to calculate Stumpage charges and create a Ledger record. The Journal also serves as a log to keep track of the progress of haul tickets assigned.

- Users must have the **Timber Sale Edit Authority** or the **Financial Authority** in WisFIRS to have authority to enter and edit Journal Records.
- The Journal also provides a running summary for the amount sold, amounts scaled or hauled, and over-run or under-run of volume information.

All pre-assigned haul tickets must be entered into the Journal immediately upon issuance so they can be accurately tracked. This will help ensure that all tickets have been invoiced or otherwise accounted for.

As mill scale or landing scale slips come in, the haul tickets and corresponding scale slips are then matched with the tickets listed in the Journal. The dates, destinations, and volumes are reconciled and tallied; and the information from each reconciled slip can be added to the WisFIRS Journal record.

Some things to look for when matching haul tickets:

- Look at the date/time of haul vs. when the mill scale took place.
- Compare the species on the tickets to the mill's information.
- Make sure the mill scale matches how product code was sold on the payment schedule. If it doesn't, then convert it. **Use the standard State conversion rates or the advertised rates for the specific contract.**

Once an appropriate or desired number of load records have been added to the Journal, that batch of records can be turned into an invoice record on the WisFIRS Ledger tab.

## WISFIRS PERFORMANCE BOND TRACKING AND LEDGER ADMINISTRATION

### Performance Bond Tracking in the WisFIRS Ledger Tab.

When a performance bond is received in the form of “cash” (i.e. personal check, cashier’s check, money order), the bond must be remitted using the Timber Sale Transaction/Remittance/Invoice (Form [2460-003](#)). Follow the manual remittance process [on page 64-1.](#), and also enter the bond amount received in WisFIRS.

When a letter of credit (LOC) or surety bond document are submitted for the performance bond, upload the required information into WisFIRS, and enter the bond amount as received. Also record the LOC or performance bond expiration date in the “Sold” section of the Notice and Report tab of the timber sale. The bond document (LOC or bond certificate) must be retained in the original timber sale file, as well as scanned and uploaded into WisFIRS under the timber sale Documents tab.

Follow the procedures outlined [on page 85-1](#) to release or refund the bond amount; or if necessary, to retain or draw on the bond. Also select the appropriate action(s) taken in the Performance Bond section of the WisFIRS record for the damages that will be charged for the sale. The timeframe to release the bond is within **30** days of **the final invoice payment and/or final sale inspection**. However, there may be instances, (e.g. during heavy snow cover), where it will take longer until the sale area can be carefully inspected to ensure that the completed harvest area is in an acceptable condition based on contract provisions.

If a timber sale ends up with a damage value that exceeds the amount of the bond, the contractor **will** be notified that they may be responsible for the damages exceeding the performance bond, and if not paid the Department **may** pursue the collection of the unpaid damages. The Forestry Financial Specialist or Forester will work with the Bureau of Legal Services if collection assistance is needed.

Performance bonds **will not** be applied towards final stumpage payment unless there has been a breach due to failure to comply with payment provisions of the contract. The bond will be refunded after all contract provisions have been met.

**When a timber sale is “Completed” in WisFIRS and sale file is closed out, it is documented via the Timber Sale Close-Out Checklist (Form [2460-013](#)).**

### Timber Sale Stumpage Transaction Ledger

In addition to keeping a running record of performance bond information and status; the Ledger also compiles Journal records to create transactions for timber sale stumpage invoices. Only users with the **Timber Sale Financial Role** can create or edit the Ledger entries or transactions.

There may be instances where Journal entries need editing after a Ledger transaction has been generated. In order to make the needed changes in the Journal, the corresponding stumpage detail record must first be deleted from the Ledger. This can only be done if the Ledger transaction has not already been included in an invoice.

See the [WisFIRS Public Timber Sales Training Manual](#) for detailed instructions on creating and editing timber sale ledger records and stumpage invoices.

## WISFIRS INVOICING

All timber sale invoices are generated in WisFIRS. The **Invoice Tab** calculates a new invoice amount by tallying all scale entries that have not been previously populated from the Journal tab. Once created in WisFIRS, invoices are then transferred into the PeopleSoft system. A Forestry Financial Specialist or Foresters with the Timber Sale Financial Role then prints a paper copy of each invoice and stumpage document and mails them to the contractor. The contractor sends the required payment directly to the DNR Timber Sales lock box address. When the payment is received from the contractor, the payment and invoice are accounted for in PeopleSoft. A confirmation of the receipt with the appropriate amount is then automatically communicated back to the WisFIRS Ledger.

The schedule for generating and sending stumpage invoices on active sales can be variable. This depends on the production capacity and/or the history of each contractor, and the frequency, volume, and value of timber being hauled when a sale is active. To facilitate timely billing, it is necessary for the contractor to ensure that all scale slips are submitted to the DNR (Forester or Financial Specialist) no later than 30 days from the date of hauling.

In keeping with the 30 day reporting timeframe, at minimum a monthly invoice for stumpage due should be issued. Bi-weekly billing (every two weeks) is an accepted custom in many areas. Weekly billing is also done on sales during periods when high volumes of timber are being hauled. Each situation is different. If any questions arise on how to handle unusual circumstances, a Forestry Financial Specialist should be contacted.

**For companies with multiple representatives which are purchasing sales across the state:**

1. Invoices shall be sent to company headquarters.
2. Copy (email or mail) of invoices shall be sent to a company local representative.

In addition to normal stumpage invoices, other transactions such as Correction Invoices, Damage Invoices, and Late Interest Invoices are also created in WisFIRS. These are initiated by creating a “New Transaction” request on the Invoice tab.

For partial payment or late payment interest situations, contact the County Forest & Public Lands Specialist or a Forestry Financial Specialist. Opportunities for a payment agreement or payment plan system may be possible.

**Lump Sum Sales with payment up front:**

1. Create Advance Payment Invoice at start of sale.
2. Contractor submits payment with invoice.

**Note:** If contractor harvests timber not agreed upon in the contract (operational trees, roads/landing building, damaged trees, etc.) and you have to charge the contractor over the lump sum amount, then enter a journal scale record with the additional volumes at the appropriate rate and send it to the ledger. The ledger will show an amount due and you can create an invoice for that additional amount.

Step-by-step details on invoicing and other financial transactions are outlined in the [WisFIRS Public Timber Sales Training Manual](#). In situations where the administrating forester must handle transactions manually (outside of WisFIRS), see Chapter 85-1 for information and procedures.

## FINANCIAL DOCUMENTATION IN WISFIRS

Documentation of financial transactions – via electronic or hard-copy methods – is important. Proper documentation demonstrates that timber sale administration and revenue are being handled in an organized manner that is consistent with ethical and legal standards. In the event of an audit – either 3rd-party or internal – proper record retention documents that we follow the requirements of due process and transparency.

The WisFIRS application includes a Documents tab with the functionality to store document images in “.pdf” format. In addition to the tabular data records in the Journal, Ledger, and Invoice Tabs, the following administrative and financial documentation should be uploaded to the Documents Tab for each timber sale:

- Original timber sale contract plus any amendments.
- Letter of Credit or Surety Bond instrument



## Timber Sale Handbook

- Timber Sale Transaction/Remittance/Invoice Form ([2460-003](#)) to document the receipt of a bond.
- Timber Sale Close Out Transaction Form ([2460-004](#)) for Performance Bond Release/Refund.
- Documentation if needed pertinent to the draw, sight draft, or retention of bond funds.

Additional pertinent information can be uploaded as warranted; consult with the County Forest & Public Lands Specialist or a Forestry Financial Specialist with questions. Also review Chapter 90 of this handbook for timber sale file requirements.

## COMPLETING A TIMBER SALE AND CLOSING OUT THE SALE

Certain timber sale transactions cannot be conducted through WisFIRS and must be remitted and/or documented using Timber Sale Transaction/Remittance/Invoice Form (2460-003) and Timber Sale Close Out Transaction Form (2460-004). Completed copies should be kept in the timber sale file. Consistent with timber sale financial documentation guidance, the completed forms should also be uploaded to WisFIRS under the timber sale “Documents” Tab as appropriate.

### Completing a Timber Sale.

Timber sales must be “Completed” in WisFIRS within 30 days of the final timber sale invoice being paid and a final sale inspection.

1. In WisFIRS, dispose of the performance bond by going to the Ledger/Perf Bond tab and selecting the appropriate action in the actions drop down. In addition, performance bonds will need to be disposed of manually as follows:
  - Refund of performance bond funds that were submitted via check must be requested by using the Timber Sale Close Out Transaction Form (2460-004). Completed 2460-004 forms are sent to the Forestry Finance Section via electronic mail via DNR FR Accounts Payable [DNRFRAccountsPayable@wisconsin.gov](mailto:DNRFRAccountsPayable@wisconsin.gov).
  - Refund of performance bond funds that were submitted via Letter of Credit (LOC) must be returned using a cancellation/release letter to the issuing financial institution. This transaction must also be documented using the Timber Sale Close Out Transaction Form (2460-004). The Form and LOC release letter must then be uploaded into the Documents Tab of the WisFIRS timber sale record.
    - a. A letter of credit will not be returned to an issuing bank if a draft has been drawn against it. It will be retained in the file. If a bank requests cancellation of such letter of credit, appropriate notice will be issued after collection of the draft amount. (See the [Public Lands Toolkit](#) for an example of a Letter of Credit draw letter.)
    - b. A letter of credit against which no draft will be drawn requires a cancellation letter releasing the bank from obligation to the letter of credit. This release letter is typically issued by the forester administering the timber sale and sent to the bank with a copy sent to the contractor. The original letter of credit and a copy of the release letter should be maintained in the sale closeout file as well as uploaded into the Documents tab of the WisFIRS timber sale record. (See the [Public Lands Toolkit](#) for an example of a Letter of Credit cancellation/release letter.)
    - c. If a letter of credit covers more than one contract, the cancellation letter must clearly specify which contract or contracts the release applies to.
  - Retention of performance bond funds to compensate for damages or for unpaid stumpage after sale termination is also documented/requested via the Timber Sale Close Out Transaction Form (2460-004), and to be sent to the email address at DNR FR Accounts Payable [DNRFRAccountsPayable@wisconsin.gov](mailto:DNRFRAccountsPayable@wisconsin.gov).
2. On the Notice and Report Tab, click “Complete Treatments” button for each stand in the sale and enter the cut acres.
3. Ensure that the Ledger balance is zero and from the Journal Tab select Create Final Reports.
4. Run the Final Value/Volume by Extension report. The link is below the Appraisal Information grid on the Notice & Report tab.
5. Upload any documents under the Uploads tab that may be necessary for approval of the completion.

6. Go to the Approvals tab and hit the plus symbol in the Completed section. Fill in the approver information, click the save symbol for each approver, and click “Route for Approval (Completed).”

Examples of the Timber Sale Transaction/Remittance/Invoice Form ([2460-003](#)) and Timber Sale Close Out Transaction Form ([2460-004](#)) are shown [on the following pages](#) for reference. For assistance with filling out these forms, consult a Forestry Financial Specialist.

#### Closing a Timber Sale

Within 60 days of the final timber sale invoice being paid and a final sale inspection, all sales shall be closed out. The close out is considered complete when all the items listed on page 91-2 have been accounted for in the sale file.

Timber Sale Handbook

Clear Data Print... Save...

Note: In order to fill and save this form electronically, it must be opened using Adobe Reader or Acrobat software. Save a copy of the file, open Adobe Reader, select File > Open and browse for the file you saved.

State of Wisconsin  
DNR Cashier's Office  
PO Box 93151, Milwaukee, WI 53293-0151  
dnr.wi.gov

**Timber Sale Transaction / Remittance / Invoice**  
Form 2460-003 (R 03/22) Page 1 of 2

|  |        |          |            |
|--|--------|----------|------------|
| Property Name<br>NORTHERN HIGHLAND-AMERICAN LEGION |        |          |            |
| Property Code                                      | Sale # | Trans. # | Date       |
| 6476   | 1272   | 12       | 04/05/2022 |

|  |             |                   |
|--|-------------|-------------------|
| Sales Tax Exempt?<br><input checked="" type="radio"/> Yes <input type="radio"/> No |             |                   |
| Contractor<br>Blue Lake Harvesters   |             |                   |
| Address<br>6330 Timber Drive   |             |                   |
| City<br>Boulder Junction   | State<br>WI | ZIP Code<br>54512 |

|  |  |   |   |    |
|--|--|---|---|----|
| <b>Performance Bond</b>                |  |   |   |    |
| <input type="radio"/> Personal check   | <input type="radio"/> Certified Check or Money Order | \$  | Bank / Bonding Co.<br>BANK OF THE NORTH |    |
| <input type="checkbox"/> Bond Transfer | From Sale #  | \$  |   |    |
| <input checked="" type="radio"/> ILC   | <input type="radio"/> CD                             | <input type="radio"/> Assignment of Savings |   | \$ |
| <input type="radio"/> Assurance Bond   |  |   |   | \$ |
|  |  |   | Address<br>1225 FOREST DRIVE            |    |
|  |  |   | City<br>SOUTH LAKE                      |    |
|  |  |   | State<br>WI                             |    |
|  |  |   | ZIP Code<br>54111                       |    |

|   |   |  |    |
|---|---|--|----|
| <input type="radio"/> Required Pre-Payment  | <input type="radio"/> Voluntary Pre-Payment | *(For pre-pay only) Starting Balance of Your Account | \$ |
| *Amount Transferred To Stumpage From Sale # |   |  | \$ |
| * Payment (including advances)              |   |  | \$ |

| Species            |   |   |   |   |   |   |   |   |   |   |   |
|--------------------|---|---|---|---|---|---|---|---|---|---|---|
| Product            |   |   |   |   |   |   |   |   |   |   |   |
| Scale/Ticket #     |   |   |   |   |   |   |   |   |   |   |   |
| #                  |   |   |   |   |   |   |   |   |   |   |   |
| #                  |   |   |   |   |   |   |   |   |   |   |   |
| #                  |   |   |   |   |   |   |   |   |   |   |   |
| #                  |   |   |   |   |   |   |   |   |   |   |   |
| #                  |   |   |   |   |   |   |   |   |   |   |   |
| #                  |   |   |   |   |   |   |   |   |   |   |   |
| #                  |   |   |   |   |   |   |   |   |   |   |   |
| Total Volume       |   |   |   |   |   |   |   |   |   |   |   |
| Value / Unit       | / | / | / | / | / | / | / | / | / | / | / |
| Total Scaled Value |   | + | + | + | + | + | + | + | + | + | + |

|  |                  |            |
|--|------------------|------------|
| *Total Scaled Value \$   | **Payment Due \$ | 0.00       |
| (For Required or Voluntary Pre-Payment Only) Ending Balance of Your Account \$ | Payment Due Date | 05/05/2022 |

|                          |                             |
|--------------------------|-----------------------------|
| Preparer<br>LEEANN ISKRA | Date Prepared<br>04/05/2022 |
|--------------------------|-----------------------------|

Comments:  
LOC FOR NORTHERN HIGHLAND PROPERTY PAID IN FY 2022  
IF CASH BOND PLEASE NOTE WHAT FY THE BOND IS PAID IN

Timber Sale Handbook

|            |          |         |
|------------|----------|---------|
| Clear Data | Print... | Save... |
|------------|----------|---------|

State of Wisconsin  
 DNR Cashier's Office  
 PO Box 93151, Milwaukee, WI 53293-0151  
[dnr.wi.gov](http://dnr.wi.gov)

**Timber Sale Transaction / Remittance / Invoice**  
 Form 2460-003 (R 03/22) Page 2 of 2

|  |        |          |            |
|--|--------|----------|------------|
| Property Name<br>NORTHERN HIGHLAND-AMERICAN LEGION |        |          |            |
| Property Code                                      | Sale # | Trans. # | Date       |
| 6476   | 1272   | 12       | 04/05/2022 |

|                                    |             |                   |
|------------------------------------|-------------|-------------------|
| Contractor<br>Blue Lake Harvesters |             |                   |
| Address<br>6330 Timber Drive       |             |                   |
| City<br>Boulder Junction           | State<br>WI | ZIP Code<br>54512 |

| Performance Bond |                  |       |          |               |             |         |                |
|------------------|------------------|-------|----------|---------------|-------------|---------|----------------|
| Business Unit    | Budget Reference | Fund  | Appr.    | Department ID | Account     | Program | Operating Unit |
| 37000            | Current FY       | 21200 | 98500    | 3705511101    | 2700000     | N/A     | N/A            |
| PCBU             | Project          |       | Activity |               | Source Type |         |                |
| N/A              | N/A              |       | N/A      |               | N/A         | \$      |                |

| Payment       |                     |       |             |               |             |         |                |
|---------------|---------------------|-------|-------------|---------------|-------------|---------|----------------|
| Business Unit | Budget Reference    | Fund  | Appr.       | Department ID | Account     | Program | Operating Unit |
| 37000         | Current FY          | 21200 |             |               | 5025000     |         | N/A            |
| PCBU          | Project             |       | Activity    |               | Source Type |         |                |
| 37000         | 370 000 000 000 001 |       | TIMBERSALES |               | REV         | \$      |                |

|  |             |                             |
|--|-------------|-----------------------------|
| Preparer<br>LEEANN ISKRA                                   |             | Date Prepared<br>04/05/2022 |
| Remitter<br>NORTHERN HIGHLAND-AMERICAN LEGION STATE FOREST |             |                             |
| Address<br>4125 FOREST HEADQUARTERS ROAD                   |             |                             |
| City<br>BOULDER JUNCTION                                   | State<br>WI | ZIP Code<br>54512           |

FINANCE

# Timber Sale Handbook

**Note:** In order to fill and save this form electronically, it must be opened using Adobe Reader or Acrobat software. Save a copy of the file, open Adobe Reader, select File > Open and browse for the file you saved.

State of Wisconsin  
 DNR Cashier's Office  
 PO Box 93151  
 Milwaukee, WI 53293-0151  
[dnr.wi.gov](http://dnr.wi.gov)

## Timber Sale Close Out Transaction

Form 2460-004 (R 03/22)

|   |                       |                       |                           |                                       |                    |                          |
|---|-----------------------|-----------------------|---------------------------|---------------------------------------|--------------------|--------------------------|
| Property Name<br><b>NORTHERN HIGHLAND-AMERICAN LEGION STATE FORES</b> |                       |                       |                           | Contractor<br><b>BIG TREE COMPANY</b> |                    |                          |
| Code #<br><b>4475</b>   | Sale #<br><b>1272</b> | Trans. #<br><b>12</b> | Date<br><b>04/05/2022</b> | Address<br><b>2111 SECOND STREET</b>  |                    |                          |
|   |                       |                       |                           | City<br><b>LAKE CITY</b>              | State<br><b>WI</b> | ZIP Code<br><b>54110</b> |

- No monies retained due to failure to perform
- Monies retained or bonding company billed. Documentation on file
- Letter of Credit released - copy attached.

Comments:  
PLEASE NOTE ANY SPECIAL INSTRUCTIONS HERE AND WHEN THE BOND WAS SUBMITTED BY FY.

|                                       |    | ACCOUNTING CODE              |       |               |          |         |                     |                 |             | BOND      | STUMPAGE |
|---------------------------------------|----|------------------------------|-------|---------------|----------|---------|---------------------|-----------------|-------------|-----------|----------|
| <b>ACTION: COMPLETE AS APPLICABLE</b> |    | Starting Ledger Balance      |       |               |          |         |                     |                 |             | 12,550.00 |          |
|                                       |    | Fund                         | Appr. | Department ID | Account  | Program | Project             | Activity        | Source Type |           |          |
| Refund Performance Bond               |    | 21200                        | 98500 | 370 551 1101  | 270 0000 | N/A     | N/A                 | N/A             | N/A         | 12,550.00 |          |
| Retain Performance Bond as Damage     | DR | 21200                        | 98500 | 370 551 1101  | 270 0000 | N/A     | N/A                 | N/A             | N/A         |           |          |
|                                       | CR | 21200                        | 27100 | 370 554 1101  | 592 0000 | CON02   | 370 000 000 000 001 | UNCPROP-DAMAGES | REV         |           |          |
| Refund Excess Stumpage                |    | 21200                        |       | ▼             | 502 5000 |         | 370 000 000 000 001 | TIMBERSAL-ES    | REV         |           |          |
| Retain Excess Stumpage as Damage      | DR | 21200                        |       | ▼             | 502 5000 |         | 370 000 000 000 001 | TIMBERSAL-ES    | REV         |           |          |
|                                       | CR | 21200                        | 27100 | 370 554 1101  | 592 0000 | CON02   | 370 000 000 000 001 | UNCPROP-DAMAGES | REV         |           |          |
|                                       |    | <b>Ending Ledger Balance</b> |       |               |          |         |                     |                 |             |           |          |

|                       |                                  |
|-----------------------|----------------------------------|
| Signature of Preparer | Date Signed<br><b>04/05/2022</b> |
|-----------------------|----------------------------------|

FINANCE

CHAPTER 90

TIMBER SALE FILE COUNTY/STATE

A complete and accurate file of all timber sale activities is considered essential for proper follow-up on unforeseen problems. The following list is considered to be minimum acceptable contents for a timber sale file. This chapter pertains to hard-copy documentation for all timber sales. In addition, see Chapter 80 (Timber Sale Documentation in WisFIRS) for a listing of financial documents that should be uploaded to WisFIRs for each sale.

PROPOSED AND ESTABLISHED TIMBER SALES

This includes sales currently in the establishment process, and sales recently established but not yet contracted. Complete paperwork for each sale should be filed by property, tract number, by year, i.e., 1-01 through 64-01, 1-02 through 59-02, etc.

Each tract represented in the file should have the following information attached.

- A. Timber Sale Notice and Cutting Report (Form [2460-001](#))
- B. Timber Sale Narrative write-up (Form [2460-001a](#))
- C. Stand Examination Tally sheets (Form [2400-032](#)) or other cruise documentation.
- D. Timber sale map and prospectus.
- E. NHI Documentation.

ACTIVE TIMBER SALES

Active timber sales are those that are under contract but not yet completed or closed. These sales remain in this portion of the timber sale file from the signing of the original contract through each subsequent extension until the sale is closed. For State Lands Invoices/Ledger/Journals are maintained in WisFIRS, printing for paper files is optional. Each active sale should be filed in its own file folder with the following information on the tab: 1) Contract Number; 2) Contractor's Name; and 3) Property name and compartment number. These sales should be filed numerically by contract number. Each active sale in the file should include the following information, if applicable:

|  | Dept.<br>Lands | County<br>Forest |
|--|----------------|------------------|
| A. Timber Sale Notice, Cutting Report and Narrative (Form <a href="#">2460-001</a> )                           | X              | X                |
| B. <b>Recon Data (Report 113, Form <a href="#">2400-032</a>, or equivalent)</b>                                | X              | X                |
| C. NHI Documentation   | X              | X                |
| D. Timber Sale Map   | X              | X                |
| E. Timber Sale Contract and all addendum   | X              | X                |
| F. Timber Sale Contractor Checklist – Pre-Sale Meeting (Form <a href="#">2460-009</a> ) **                     | X              | X                |
| G. Timber Sale Inspection Record (Form <a href="#">2460-002</a> )**  | X              | X                |
| H. All correspondence  | X              | X                |
| I. Timber Sale Bid Advertisement   | X              | X                |
| J. Opening of Bids/Timber Sale Award (Form <a href="#">2400-006</a> )  | X              | X                |
| K. All Contractor Bids   | X              | X                |
| L. Scale Sheets (Form <a href="#">2400-063</a> )**   | X              | X                |
| M. Lock Box Tickets and Mill Scale Slips   | X              | X                |
| N. Worker’s Comp. Insurance Certificates or Worker’s Compensation Exemption Affidavit (entire contract period) | X              | X                |
| O. SFI Training Standard (FISTA) Certificates (entire harvest period)  | X              | X                |
| P. Performance Bond/Proof of Payment (entire contract period)  | X              | X                |
| Q. Property boundary documents (cutting- line agreements, surveys, etc.)                                       | X              | X                |
| R. Sales and Use Tax Exemption Certificate (Form S-211)  | X              | X                |

Timber Sale Handbook

\*\* Counties should retain information equivalent to the DNR- referenced forms in appropriate files.

COMPLETED TIMBER SALES

Completed timber sales are those on which the contract has been terminated and no further extensions will be awarded. Completion of a Department audit, and a review of the Records Retention/Disposition Agreements (RDA) 642A requirements, will reduce the number of items required to be retained in timber sale files. Please see notes below for more specific information.

Completed sales should be filed by contract number. A control sheet may be maintained indicating the year of closure, or this information can be retrieved from WisFIRS. The following items should be in the timber sale files, if applicable.

|  | <u>Dept. Land</u> |             | <u>County Forest</u> |             |
|--|-------------------|-------------|----------------------|-------------|
|  | Pre-Audit         | Post-Audit* | Pre-Audit            | Post-Audit* |
| A. Timber Sale Notice, Cutting Report and Narrative (Form <a href="#">2460-001</a> )                           | X                 | X           | X                    | X           |
| B. <u>Recon Data (Report 113, Form <a href="#">2400-032</a>, or equivalent)</u>                                | X                 |             | X                    |             |
| C. NHI Documentation   | X                 | X           | X                    | X           |
| D. Timber Sale Map   | X                 | X           | X                    | X           |
| E. Timber Sale Contract and All Addendum   | X                 | X           | X                    | X           |
| F. Timber Sale Contractor <u>Checklist</u> - Pre-Sale Meeting (Form <a href="#">2460-009</a> ) **              | X                 |             | X                    |             |
| G. Timber Sale Inspection (Form <a href="#">2460-002</a> ) **  | X                 |             | X                    |             |
| H. All Correspondence  | X                 | X           | X                    | X           |
| I. Timber Sale Bid Advertisement   | X                 |             | X                    |             |
| J. Opening of Bids/Timber Sale Award (Form <a href="#">2400-006</a> )**  | X                 |             | X                    |             |
| K. All Contractor Bids   | X                 |             | X                    |             |
| L. Scale Sheets (Form <a href="#">2400-063</a> )**   | X                 |             | X                    |             |
| M. Lock Box Tickets and Mill Scale Slips****   | X                 | <u>X***</u> | X                    | <u>X***</u> |
| N. Worker’s Comp. Insurance Certificates or Worker’s Compensation Exemption Affidavit (entire contract period) | X                 |             | X                    |             |
| O. SFI Training Standard (FISTA) Certificate (entire harvest period)   | X                 |             | X                    |             |
| P. Performance Bond/Proof of Payment (entire contract period)  | X                 |             | X                    |             |
| Q. Timber Sale Close Out Transaction (Form <a href="#">2460-004</a> )**  | X                 |             | X                    |             |
| R. Property boundary documents (cutting- line agreements, surveys, etc.)                                       | X                 | X           | X                    | X           |
| S. Timber Sale Close-Out Checklist (Form <a href="#">2460-013</a> )  | X                 |             |                      |             |
| T. Sales and Use Tax Exemption Certificate (Form S-211)  | X                 |             | X                    |             |
| U. Financial documentation (Ledger, Invoices, Bond-Retention/Release)  | X                 | X           | X                    | X           |
| V. Cruising/Volume Estimation documentation  | X                 |             | X                    |             |

Note: WisFIRS is the centralized repository for each timber sale Journal, Ledger, and Final 2460 print out. Printing these documents for paper files is recommended.



## Timber Sale Handbook

- \* All timber sale documentation must be maintained in accordance with RDA 00642000 and 00642A00 requirements and can only be discarded in accordance with the RDA schedule. The documents that are checked in the Post-Audit columns must be held in perpetuity.
- \*\* Counties should retain information equivalent to the DNR- referenced forms in appropriate files.
- \*\*\* Lock box haul tickets reference Chain of Custody (COC) documentation for hauling certified forest products. Follow RDA 642A for retention requirements.
- \*\*\*\* These tickets and slips may be stored in a separate location but should be part of an organized system.

REPORTS AVAILABLE IN WISFIRS PUBLIC LANDS

In WisFIRS, the “Reports” tab has several lists of reports for various tracking purposes. WisFIRS is regularly updated and users are encouraged to view the “Reports” subheadings. A short description of each report is provided in WisFIRS. For more detailed information on each report, go to the WisFIRS “On-Line Help”.

Sub-tabs found in “Reports” tab

Recon & Assessments

Reports in this sub-tab include cover type acres and recon information

Planning & Schedules

Reports in this sub-tab include long-term and annual harvest goals and schedules for various treatment types

Timber Sales & Monitoring

Progress, status, and history of public lands timber sales

Timber Sale Financials

Volume, value, and related financial summaries by property and contractor

CFL Admin\*

Acreage and loan statements. \*Only available on County Forest properties.

GIS Reports & Sync

Reports comparing GIS and tabular WisFIRS records.

Treatment Reports

Pesticide, worker protection, and some Rx reports.

Custom Reports

Two options for producing spreadsheet data on recon, treatments, timber sales, pesticides, and Rx burns.

Export Data

Download collections of broad data categories for an entire property or a property group.

CHAPTER 110

GATHERING RIGHTS

The gathering of miscellaneous non-timber forest products by Chippewa treaty rights members is regulated by [subch. IV, Ch. NR 13](#), Wis. Adm. Code.

The Department and the six Wisconsin Chippewa Treaty Tribes have entered into a temporary agreement to allow tribal members the ability to self-regulate the issuance of gathering permits for non-timber products on specific state properties in the ceded territory. Non timber products include plants, boughs, bark, lodge poles, and firewood. For properties that are self-regulated by the tribes, DNR does not issue or approve any non-timber forest product permits. Tribal members must show their permit upon request, but it will be a tribal permit allowing the gathering on DNR lands.

The most current tribal gathering regulations and list of Department properties that are self-regulated can be found on the Great Lakes Indian Fish and Wildlife Commission web page by searching “gathering.”

If the DNR property is not included in the tribal self-regulated list, a permit may be issued. The Department may not deny a request to gather miscellaneous forest products on a Department property unless the gathering is inconsistent with the management plan for the property, or gathering will conflict with the pre-existing rights of a permittee, or other person, who has an approval to conduct an activity on the property, or is inconsistent with conservation, public health or safety.

The permits are to be issued using the following forms (found in the [DNR Forms Catalog](#)):

|                         |                 |
|-------------------------|-----------------|
| Bark Gathering          | - Form 2400-105 |
| Bough Gathering         | - Form 2400-106 |
| Firewood Gathering      | - Form 2400-107 |
| Lodge Pole Gathering    | - Form 2400-108 |
| Sap Gathering           | - Form 2400-109 |
| Miscellaneous Gathering | - Form 2400-110 |

The property manager shall respond within 14 days to a request for gathering from a treaty rights tribal member.

Tribal gathering requests not in the ceded territory will follow the standard forest products permit procedures unless other agreements have been established.

Timber Sale Handbook  
**TABLE III** - Long logs, volume according to taper, maximum.  
Scaling length 20 feet  
[Scribner Decimal C rule - board feet in tens]

| Top diam (in.) | 22-foot logs (1 10 and 1 12 foot segments)               |     |     |     |      |       |       |       | 24-foot logs (2 12 foot segments) |     |     |     |      |       |       |       |
|----------------|--|-----|-----|-----|------|-------|-------|-------|-----------------------------------|-----|-----|-----|------|-------|-------|-------|
|                | Taper in inches (difference between diameters of 2 ends) |     |     |     |      |       |       |       |                                   |     |     |     |      |       |       |       |
|                | 1-2  | 3-4 | 5-6 | 7-8 | 9-10 | 11-12 | 13-14 | 15-16 | 1-2                               | 3-4 | 5-6 | 7-8 | 9-10 | 11-12 | 13-14 | 15-16 |
| 6              | 3  | 3   | 4   | 4   | 5    | 7     | 8     | 10    | 3                                 | 3   | 4   | 4   | 5    | 7     | 8     | 10    |
| 7              | 3  | 4   | 4   | 5   | 7    | 8     | 10    | 12    | 4                                 | 5   | 5   | 6   | 8    | 9     | 11    | 13    |
| 8              | 5  | 5   | 6   | 8   | 9    | 11    | 13    | 14    | 5                                 | 5   | 6   | 8   | 9    | 11    | 13    | 14    |
| 9              | 6  | 7   | 9   | 10  | 12   | 14    | 15    | 17    | 6                                 | 7   | 9   | 10  | 12   | 14    | 15    | 17    |
| 10             | 7  | 9   | 10  | 12  | 14   | 15    | 17    | 19    | 7                                 | 9   | 10  | 12  | 14   | 15    | 17    | 19    |
| 11             | 10   | 11  | 13  | 15  | 16   | 18    | 20    | 22    | 10                                | 11  | 13  | 15  | 16   | 18    | 20    | 22    |
| 12             | 12   | 14  | 16  | 17  | 19   | 21    | 23    | 26    | 13                                | 15  | 17  | 18  | 20   | 22    | 24    | 27    |
| 13             | 15   | 17  | 18  | 20  | 22   | 24    | 27    | 29    | 16                                | 18  | 19  | 21  | 23   | 25    | 28    | 30    |
| 14             | 18   | 19  | 21  | 23  | 25   | 28    | 30    | 32    | 20                                | 21  | 23  | 25  | 27   | 30    | 32    | 34    |
| 15             | 21   | 23  | 25  | 27  | 30   | 32    | 34    | 37    | 23                                | 25  | 27  | 29  | 32   | 34    | 36    | 39    |
| 16             | 24   | 26  | 28  | 31  | 33   | 35    | 38    | 40    | 26                                | 28  | 30  | 33  | 35   | 37    | 40    | 42    |
| 17             | 28   | 30  | 33  | 35  | 37   | 40    | 42    | 46    | 30                                | 32  | 35  | 37  | 39   | 42    | 44    | 48    |
| 18             | 31   | 34  | 36  | 38  | 41   | 43    | 47    | 50    | 34                                | 37  | 39  | 41  | 44   | 46    | 50    | 53    |
| 19             | 36   | 38  | 40  | 43  | 45   | 49    | 52    | 56    | 39                                | 41  | 43  | 46  | 48   | 52    | 55    | 59    |
| 20             | 40   | 42  | 45  | 47  | 51   | 54    | 58    | 61    | 44                                | 46  | 49  | 51  | 55   | 58    | 62    | 65    |
| 21             | 44   | 47  | 49  | 53  | 56   | 60    | 63    | 65    | 48                                | 51  | 53  | 57  | 60   | 64    | 67    | 69    |
| 22             | 49   | 51  | 55  | 58  | 62   | 65    | 67    | 70    | 53                                | 55  | 59  | 62  | 66   | 69    | 71    | 74    |
| 23             | 53   | 57  | 60  | 64  | 67   | 69    | 72    | 76    | 58                                | 62  | 65  | 69  | 72   | 74    | 77    | 81    |
| 24             | 59   | 62  | 66  | 69  | 71   | 74    | 78    | 80    | 64                                | 67  | 71  | 74  | 76   | 79    | 83    | 85    |
| 25             | 66   | 70  | 73  | 75  | 78   | 82    | 84    | 88    | 71                                | 75  | 78  | 80  | 83   | 87    | 89    | 93    |
| 26             | 72   | 75  | 77  | 80  | 84   | 86    | 90    | 91    | 78                                | 81  | 83  | 86  | 90   | 92    | 96    | 97    |
| 27             | 78   | 80  | 83  | 87  | 89   | 93    | 94    | 100   | 85                                | 87  | 90  | 94  | 96   | 100   | 101   | 107   |
| 28             | 82   | 85  | 89  | 91  | 95   | 96    | 102   | 105   | 90                                | 93  | 97  | 99  | 103  | 104   | 110   | 113   |
| 29             | 87   | 91  | 93  | 97  | 98   | 104   | 107   | 115   | 95                                | 99  | 101 | 105 | 106  | 112   | 115   | 123   |
| 30             | 94   | 96  | 100 | 101 | 107  | 110   | 118   | 121   | 102                               | 104 | 108 | 109 | 115  | 118   | 126   | 129   |
| 31             | 99   | 103 | 104 | 110 | 113  | 121   | 124   | 128   | 108                               | 112 | 113 | 119 | 122  | 130   | 133   | 137   |
| 32             | 105  | 106 | 112 | 115 | 123  | 126   | 130   | 136   | 114                               | 115 | 121 | 124 | 132  | 135   | 139   | 145   |
| 33             | 109  | 115 | 118 | 126 | 129  | 133   | 139   | 144   | 119                               | 125 | 128 | 136 | 139  | 143   | 149   | 154   |
| 34             | 116  | 119 | 127 | 130 | 134  | 140   | 145   | 151   | 126                               | 129 | 137 | 140 | 144  | 150   | 155   | 161   |
| 35             | 124  | 132 | 135 | 139 | 145  | 150   | 156   | 160   | 135                               | 143 | 146 | 150 | 156  | 161   | 167   | 171   |
| 36             | 135  | 138 | 142 | 148 | 153  | 159   | 163   | 169   | 146                               | 149 | 153 | 159 | 164  | 170   | 174   | 180   |
| 37             | 144  | 148 | 154 | 159 | 165  | 169   | 175   | 178   | 157                               | 161 | 167 | 172 | 178  | 182   | 188   | 191   |
| 38             | 151  | 157 | 162 | 168 | 172  | 178   | 181   | 186   | 164                               | 170 | 175 | 181 | 185  | 191   | 194   | 199   |
| 39             | 160  | 165 | 171 | 175 | 181  | 184   | 189   | 194   | 174                               | 179 | 185 | 189 | 195  | 198   | 203   | 208   |
| 40             | 170  | 176 | 180 | 186 | 189  | 194   | 199   | 205   | 185                               | 191 | 195 | 201 | 204  | 209   | 214   | 220   |
| 41             | 180  | 184 | 190 | 193 | 198  | 203   | 209   | 214   | 196                               | 200 | 206 | 209 | 214  | 219   | 225   | 230   |
| 42             | 189  | 195 | 198 | 203 | 208  | 214   | 219   | 224   | 206                               | 212 | 215 | 221 | 225  | 231   | 236   | 241   |
| 43             | 198  | 201 | 206 | 211 | 217  | 222   | 227   | 233   | 216                               | 219 | 224 | 229 | 235  | 240   | 245   | 251   |
| 44             | 207  | 212 | 217 | 223 | 228  | 233   | 239   | 245   | 225                               | 230 | 235 | 241 | 246  | 251   | 257   | 263   |
| 45             | 214  | 219 | 225 | 230 | 235  | 241   | 247   | 253   | 233                               | 238 | 244 | 249 | 254  | 260   | 266   | 272   |
| 46             | 223  | 229 | 234 | 239 | 245  | 251   | 257   | 263   | 243                               | 249 | 254 | 259 | 265  | 271   | 277   | 283   |
| 47             | 234  | 239 | 244 | 250 | 256  | 262   | 268   | 274   | 254                               | 259 | 264 | 270 | 276  | 282   | 288   | 294   |
| 48             | 243  | 248 | 254 | 260 | 266  | 272   | 278   | 284   | 265                               | 270 | 276 | 282 | 288  | 294   | 300   | 306   |
| 49             | 252  | 258 | 264 | 270 | 276  | 282   | 288   | 295   | 275                               | 281 | 287 | 293 | 299  | 305   | 311   | 318   |
| 50             | 263  | 269 | 275 | 281 | 287  | 293   | 300   | 306   | 286                               | 292 | 298 | 304 | 310  | 316   | 323   | 329   |

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**TABLE III - Long logs, volume according to taper, maximum.**  
 Scaling length 20 feet - Continued  
 [Scribner Decimal C rule - board feet in tens]

| Top diam (in.) | 26-foot logs (1 12 and 1 14 foot segments)               |     |     |     |      |       |       |       | 28-foot logs (2 14 foot segments) |     |     |     |      |       |       |       |
|----------------|--|-----|-----|-----|------|-------|-------|-------|-----------------------------------|-----|-----|-----|------|-------|-------|-------|
|                | Taper in inches (difference between diameters of 2 ends) |     |     |     |      |       |       |       |                                   |     |     |     |      |       |       |       |
|                | 1-2  | 3-4 | 5-6 | 7-8 | 9-10 | 11-12 | 13-14 | 15-16 | 1-2                               | 3-4 | 5-6 | 7-8 | 9-10 | 11-12 | 13-14 | 15-16 |
| 6              | 3  | 3   | 4   | 5   | 6    | 8     | 9     | 11    | 3                                 | 3   | 4   | 5   | 6    | 8     | 9     | 11    |
| 7              | 4  | 5   | 6   | 7   | 9    | 10    | 12    | 14    | 4                                 | 5   | 6   | 7   | 9    | 10    | 12    | 14    |
| 8              | 5  | 6   | 7   | 9   | 10   | 12    | 14    | 16    | 5                                 | 6   | 7   | 9   | 10   | 12    | 14    | 16    |
| 9              | 7  | 8   | 10  | 11  | 13   | 15    | 17    | 19    | 7                                 | 8   | 10  | 11  | 13   | 15    | 17    | 19    |
| 10             | 8  | 10  | 11  | 13  | 15   | 17    | 19    | 22    | 9                                 | 11  | 12  | 14  | 16   | 18    | 20    | 23    |
| 11             | 11   | 12  | 14  | 16  | 18   | 20    | 23    | 25    | 12                                | 13  | 15  | 17  | 19   | 21    | 24    | 26    |
| 12             | 14   | 16  | 18  | 20  | 22   | 25    | 27    | 30    | 15                                | 17  | 19  | 21  | 23   | 26    | 28    | 31    |
| 13             | 17   | 19  | 21  | 23  | 26   | 28    | 31    | 34    | 18                                | 20  | 22  | 24  | 27   | 29    | 32    | 35    |
| 14             | 21   | 23  | 25  | 28  | 30   | 33    | 34    | 38    | 22                                | 24  | 26  | 29  | 31   | 34    | 37    | 39    |
| 15             | 25   | 27  | 30  | 32  | 35   | 38    | 40    | 44    | 26                                | 28  | 31  | 33  | 36   | 39    | 41    | 45    |
| 16             | 28   | 31  | 33  | 36  | 39   | 41    | 45    | 47    | 30                                | 33  | 35  | 38  | 41   | 43    | 47    | 49    |
| 17             | 33   | 35  | 38  | 41  | 43   | 47    | 49    | 54    | 36                                | 37  | 40  | 43  | 45   | 49    | 51    | 58    |
| 18             | 37   | 40  | 43  | 45  | 49   | 51    | 56    | 60    | 40                                | 43  | 46  | 48  | 52   | 54    | 59    | 63    |
| 19             | 42   | 45  | 47  | 51  | 53   | 58    | 82    | 66    | 45                                | 48  | 50  | 54  | 56   | 61    | 65    | 69    |
| 20             | 48   | 50  | 54  | 56  | 61   | 65    | 69    | 72    | 51                                | 53  | 57  | 69  | 64   | 68    | 72    | 75    |
| 21             | 52   | 56  | 58  | 63  | 67   | 71    | 74    | 76    | 66                                | 60  | 62  | 87  | 71   | 75    | 78    | 80    |
| 22             | 58   | 60  | 65  | 69  | 73   | 76    | 78    | 82    | 62                                | 84  | 69  | 73  | 77   | 80    | 82    | 86    |
| 23             | 83   | 68  | 72  | 76  | 79   | 81    | 85    | 90    | 68                                | 73  | 77  | 81  | 84   | 86    | 90    | 95    |
| 24             | 70   | 74  | 78  | 81  | 83   | 87    | 92    | 84    | 75                                | 79  | 83  | 86  | 88   | 92    | 97    | 99    |
| 25             | 78   | 82  | 85  | 87  | 91   | 96    | 98    | 103   | 84                                | 88  | 91  | 93  | 97   | 102   | 104   | 109   |
| 26             | 85   | 88  | 90  | 94  | 89   | 101   | 108   | 107   | 92                                | 95  | 97  | 101 | 106  | 108   | 113   | 114   |
| 27             | 92   | 94  | 98  | 103 | 105  | 110   | 111   | 118   | 99                                | 101 | 105 | 110 | 112  | 117   | 118   | 125   |
| 28             | 97   | 101 | 106 | 108 | 113  | 114   | 121   | 125   | 104                               | 108 | 113 | 115 | 120  | 121   | 128   | 132   |
| 29             | 103  | 108 | 110 | 115 | 116  | 123   | 127   | 136   | 110                               | 115 | 117 | 122 | 123  | 130   | 134   | 143   |
| 30             | 111  | 113 | 118 | 119 | 126  | 130   | 139   | 142   | 119                               | 121 | 126 | 127 | 134  | 138   | 147   | 150   |
| 31             | 117  | 122 | 123 | 130 | 134  | 143   | 146   | 151   | 126                               | 131 | 132 | 139 | 143  | 152   | 155   | 180   |
| 32             | 124  | 125 | 132 | 136 | 145  | 148   | 153   | 160   | 133                               | 134 | 141 | 145 | 154  | 157   | 162   | 169   |
| 33             | 129  | 136 | 140 | 149 | 152  | 157   | 164   | 170   | 139                               | 146 | 150 | 159 | 162  | 167   | 174   | 180   |
| 34             | 137  | 141 | 150 | 153 | 158  | 165   | 171   | 177   | 147                               | 151 | 160 | 163 | 168  | 175   | 181   | 187   |
| 35             | 147  | 156 | 159 | 164 | 171  | 177   | 183   | 188   | 158                               | 167 | 170 | 175 | 182  | 188   | 194   | 189   |
| 36             | 159  | 162 | 167 | 174 | 180  | 186   | 191   | 198   | 171                               | 174 | 179 | 186 | 192  | 198   | 203   | 210   |
| 37             | 170  | 175 | 182 | 188 | 194  | 199   | 206   | 210   | 183                               | 188 | 195 | 201 | 207  | 212   | 219   | 223   |
| 38             | 178  | 185 | 191 | 197 | 202  | 209   | 213   | 219   | 191                               | 198 | 204 | 210 | 215  | 222   | 226   | 232   |
| 39             | 189  | 195 | 201 | 206 | 213  | 217   | 223   | 229   | 203                               | 209 | 215 | 220 | 227  | 231   | 237   | 243   |
| 40             | 201  | 207 | 212 | 219 | 223  | 229   | 235   | 241   | 216                               | 222 | 227 | 234 | 238  | 244   | 250   | 256   |
| 41             | 212  | 217 | 224 | 228 | 234  | 240   | 246   | 252   | 228                               | 233 | 240 | 244 | 250  | 256   | 262   | 268   |
| 42             | 223  | 230 | 234 | 240 | 246  | 252   | 258   | 265   | 239                               | 246 | 250 | 256 | 262  | 268   | 274   | 281   |
| 43             | 234  | 238 | 244 | 250 | 256  | 262   | 269   | 275   | 251                               | 255 | 261 | 267 | 273  | 279   | 286   | 292   |
| 44             | 244  | 250 | 256 | 262 | 268  | 275   | 281   | 288   | 262                               | 268 | 274 | 280 | 286  | 293   | 299   | 306   |
| 45             | 253  | 259 | 265 | 271 | 278  | 284   | 291   | 298   | 272                               | 278 | 284 | 290 | 297  | 303   | 310   | 317   |
| 46             | 264  | 270 | 276 | 283 | 289  | 296   | 303   | 310   | 284                               | 290 | 296 | 303 | 309  | 316   | 323   | 330   |
| 47             | 275  | 281 | 288 | 294 | 301  | 308   | 315   | 322   | 296                               | 302 | 309 | 315 | 322  | 329   | 336   | 343   |
| 48             | 287  | 294 | 300 | 307 | 314  | 321   | 328   | 336   | 308                               | 315 | 321 | 328 | 335  | 342   | 349   | 357   |
| 49             | 299  | 305 | 312 | 319 | 326  | 333   | 341   | 348   | 321                               | 327 | 334 | 341 | 348  | 355   | 363   | 370   |
| 50             | 310  | 317 | 324 | 331 | 338  | 346   | 353   | 361   | 334                               | 341 | 348 | 355 | 362  | 370   | 377   | 385   |

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TABLE III - Long logs, volume according to taper, maximum.

Scaling length 20 feet - Continued

[Scribner Decimal C rule - board feet in tens]

| Top diam (in.) | 30-foot logs (1 14 and 1 16 foot segments)               |     |     |     |      |       |       |       | 32-foot logs (2 16 foot segments) |     |     |     |      |       |       |       |
|----------------|--|-----|-----|-----|------|-------|-------|-------|-----------------------------------|-----|-----|-----|------|-------|-------|-------|
|                | Taper in inches (difference between diameters of 2 ends) |     |     |     |      |       |       |       |                                   |     |     |     |      |       |       |       |
|                | 1-2  | 3-4 | 5-6 | 7-8 | 9-10 | 11-12 | 13-14 | 15-16 | 1-2                               | 3-4 | 5-6 | 7-8 | 9-10 | 11-12 | 13-14 | 15-16 |
| 6              | 4  | 4   | 5   | 7   | 8    | 9     | 11    | 12    | 5                                 | 5   | 6   | 8   | 9    | 10    | 12    | 13    |
| 7              | 5  | 8   | 8   | 9   | 10   | 12    | 13    | 16    | 6                                 | 7   | 9   | 10  | 11   | 13    | 14    | 17    |
| 8              | 6  | 8   | 9   | 10  | 12   | 13    | 16    | 18    | 7                                 | 9   | 10  | 11  | 13   | 14    | 17    | 19    |
| 9              | 9  | 10  | 11  | 13  | 14   | 17    | 19    | 21    | 10                                | 11  | 12  | 14  | 15   | 18    | 20    | 22    |
| 10             | 11   | 12  | 14  | 15  | 18   | 20    | 22    | 25    | 13                                | 14  | 16  | 17  | 20   | 22    | 24    | 27    |
| 11             | 13   | 15  | 16  | 19  | 21   | 23    | 26    | 29    | 15                                | 17  | 18  | 21  | 23   | 25    | 28    | 31    |
| 12             | 17   | 18  | 21  | 23  | 25   | 28    | 31    | 35    | 18                                | 19  | 22  | 24  | 26   | 29    | 32    | 36    |
| 13             | 19   | 22  | 24  | 26  | 29   | 32    | 36    | 38    | 21                                | 24  | 26  | 28  | 31   | 34    | 38    | 40    |
| 14             | 24   | 26  | 28  | 31  | 34   | 38    | 40    | 43    | 25                                | 27  | 29  | 32  | 35   | 39    | 41    | 44    |
| 15             | 28   | 30  | 33  | 36  | 40   | 42    | 45    | 50    | 30                                | 32  | 35  | 38  | 42   | 44    | 47    | 52    |
| 16             | 32   | 35  | 38  | 42  | 44   | 47    | 52    | 54    | 34                                | 37  | 40  | 44  | 46   | 49    | 54    | 56    |
| 17             | 37   | 40  | 44  | 46  | 49   | 54    | 56    | 62    | 39                                | 42  | 46  | 48  | 51   | 56    | 58    | 64    |
| 18             | 43   | 47  | 49  | 52  | 57   | 59    | 65    | 69    | 45                                | 49  | 51  | 54  | 59   | 61    | 67    | 71    |
| 19             | 49   | 51  | 54  | 59  | 61   | 67    | 71    | 76    | 52                                | 54  | 57  | 62  | 64   | 70    | 74    | 79    |
| 20             | 54   | 57  | 62  | 64  | 70   | 74    | 79    | 82    | 58                                | 61  | 66  | 68  | 74   | 78    | 83    | 86    |
| 21             | 60   | 65  | 67  | 73  | 77   | 82    | 85    | 88    | 63                                | 68  | 70  | 78  | 80   | 85    | 88    | 91    |
| 22             | 67   | 69  | 75  | 79  | 84   | 87    | 90    | 95    | 71                                | 73  | 79  | 83  | 88   | 91    | 94    | 99    |
| 23             | 73   | 79  | 83  | 88  | 91   | 94    | 99    | 104   | 78                                | 84  | 88  | 93  | 96   | 99    | 104   | 109   |
| 24             | 81   | 85  | 90  | 93  | 96   | 101   | 106   | 109   | 86                                | 90  | 95  | 98  | 101  | 106   | 111   | 114   |
| 25             | 90   | 95  | 98  | 101 | 106  | 111   | 114   | 118   | 96                                | 101 | 104 | 107 | 112  | 117   | 120   | 124   |
| 28             | 99   | 102 | 105 | 110 | 115  | 118   | 122   | 124   | 105                               | 108 | 111 | 116 | 121  | 124   | 128   | 130   |
| 27             | 106  | 109 | 114 | 119 | 122  | 128   | 128   | 136   | 113                               | 116 | 121 | 126 | 129  | 133   | 135   | 143   |
| 28             | 112  | 117 | 122 | 125 | 129  | 131   | 139   | 143   | 119                               | 124 | 129 | 132 | 138  | 138   | 148   | 160   |
| 29             | 119  | 124 | 127 | 131 | 133  | 141   | 145   | 156   | 127                               | 132 | 135 | 139 | 141  | 149   | 153   | 164   |
| 30             | 128  | 131 | 135 | 137 | 145  | 149   | 160   | 164   | 137                               | 140 | 144 | 146 | 154  | 158   | 169   | 173   |
| 31             | 136  | 140 | 142 | 150 | 154  | 165   | 169   | 174   | 145                               | 149 | 151 | 159 | 163  | 174   | 178   | 183   |
| 32             | 142  | 144 | 152 | 156 | 167  | 171   | 176   | 184   | 152                               | 154 | 162 | 166 | 177  | 181   | 186   | 194   |
| 33             | 149  | 157 | 161 | 172 | 176  | 181   | 189   | 198   | 158                               | 166 | 170 | 181 | 185  | 190   | 198   | 205   |
| 34             | 158  | 162 | 173 | 177 | 182  | 190   | 197   | 204   | 168                               | 172 | 183 | 187 | 192  | 200   | 207   | 214   |
| 35             | 169  | 180 | 184 | 189 | 197  | 204   | 211   | 217   | 180                               | 191 | 195 | 200 | 208  | 215   | 222   | 228   |
| 36             | 184  | 188 | 193 | 201 | 208  | 215   | 221   | 229   | 195                               | 199 | 204 | 212 | 219  | 226   | 232   | 240   |
| 37             | 197  | 202 | 210 | 217 | 224  | 230   | 238   | 242   | 210                               | 215 | 223 | 230 | 237  | 243   | 251   | 255   |
| 38             | 205  | 213 | 220 | 227 | 233  | 241   | 245   | 252   | 219                               | 227 | 234 | 241 | 247  | 255   | 259   | 266   |
| 39             | 218  | 225 | 232 | 238 | 248  | 250   | 257   | 264   | 232                               | 239 | 246 | 252 | 260  | 264   | 271   | 278   |
| 40             | 232  | 239 | 245 | 253 | 257  | 264   | 271   | 278   | 247                               | 254 | 260 | 268 | 272  | 279   | 286   | 293   |
| 41             | 245  | 251 | 259 | 263 | 270  | 277   | 284   | 291   | 261                               | 267 | 275 | 279 | 286  | 293   | 300   | 307   |
| 42             | 257  | 265 | 269 | 276 | 283  | 290   | 297   | 304   | 274                               | 282 | 286 | 293 | 300  | 307   | 314   | 321   |
| 43             | 270  | 274 | 281 | 288 | 295  | 302   | 309   | 317   | 288                               | 292 | 299 | 306 | 313  | 320   | 327   | 335   |
| 44             | 281  | 288 | 295 | 302 | 309  | 316   | 324   | 331   | 300                               | 307 | 314 | 321 | 328  | 335   | 343   | 350   |
| 45             | 292  | 299 | 306 | 313 | 320  | 328   | 335   | 343   | 311                               | 318 | 325 | 332 | 339  | 347   | 354   | 362   |
| 46             | 306  | 312 | 319 | 326 | 334  | 341   | 349   | 357   | 325                               | 332 | 339 | 346 | 354  | 361   | 369   | 377   |
| 47             | 318  | 325 | 332 | 340 | 347  | 355   | 363   | 372   | 339                               | 346 | 353 | 361 | 368  | 376   | 384   | 393   |
| 48             | 331  | 338 | 346 | 353 | 361  | 369   | 378   | 386   | 353                               | 380 | 368 | 375 | 383  | 391   | 400   | 408   |
| 49             | 344  | 352 | 359 | 367 | 375  | 384   | 392   | 401   | 367                               | 375 | 382 | 390 | 398  | 407   | 415   | 424   |
| 50             | 359  | 386 | 374 | 382 | 391  | 399   | 408   | 416   | 382                               | 389 | 397 | 405 | 414  | 422   | 431   | 439   |

Timber Sale Handbook  
**TABLE III - Long logs, volume according to taper, maximum.**  
 Scaling length 20 feet - Continued  
 [Scribner Decimal C rule - board feet in tens]

| Top diam (in.) | 34-foot logs (1 16 and 1 18 foot segments)               |     |     |     |      |       |       |       | 36-foot logs (2 18 foot segments) |     |     |     |      |       |       |       |
|----------------|--|-----|-----|-----|------|-------|-------|-------|-----------------------------------|-----|-----|-----|------|-------|-------|-------|
|                | Taper in inches (difference between diameters of 2 ends) |     |     |     |      |       |       |       |                                   |     |     |     |      |       |       |       |
|                | 1-2  | 3-4 | 5-6 | 7-8 | 9-10 | 11-12 | 13-14 | 15-16 | 1-2                               | 3-4 | 5-6 | 7-8 | 9-10 | 11-12 | 13-14 | 15-16 |
| 6              | 5  | 5   | 6   | 8   | 10   | 11    | 13    | 15    | 5                                 | 5   | 6   | 8   | 10   | 11    | 13    | 15    |
| 7              | 6  | 7   | 9   | 11  | 12   | 14    | 16    | 19    | 6                                 | 7   | 9   | 11  | 12   | 14    | 16    | 19    |
| 8              | 7  | 9   | 11  | 12  | 14   | 16    | 19    | 21    | 7                                 | 9   | 11  | 12  | 14   | 16    | 19    | 21    |
| 9              | 10   | 12  | 13  | 15  | 17   | 20    | 22    | 25    | 10                                | 12  | 13  | 15  | 17   | 20    | 22    | 25    |
| 10             | 14   | 15  | 17  | 19  | 22   | 24    | 27    | 30    | 14                                | 15  | 17  | 19  | 22   | 24    | 27    | 30    |
| 11             | 16   | 18  | 20  | 23  | 25   | 28    | 31    | 34    | 17                                | 19  | 21  | 24  | 26   | 29    | 32    | 35    |
| 12             | 19   | 21  | 24  | 26  | 29   | 32    | 35    | 39    | 20                                | 22  | 25  | 27  | 30   | 33    | 36    | 40    |
| 13             | 23   | 26  | 28  | 31  | 34   | 37    | 41    | 44    | 24                                | 27  | 29  | 32  | 35   | 38    | 42    | 45    |
| 14             | 27   | 29  | 32  | 35  | 38   | 42    | 45    | 49    | 29                                | 31  | 34  | 37  | 40   | 44    | 47    | 51    |
| 15             | 32   | 35  | 38  | 41  | 45   | 48    | 52    | 56    | 34                                | 37  | 40  | 43  | 47   | 50    | 54    | 58    |
| 16             | 37   | 40  | 43  | 47  | 50   | 54    | 58    | 61    | 39                                | 42  | 45  | 49  | 52   | 56    | 60    | 63    |
| 17             | 42   | 45  | 49  | 52  | 56   | 60    | 63    | 70    | 45                                | 48  | 52  | 55  | 59   | 63    | 66    | 73    |
| 18             | 48   | 52  | 55  | 59  | 63   | 66    | 73    | 77    | 51                                | 55  | 58  | 62  | 66   | 69    | 76    | 80    |
| 19             | 58   | 58  | 62  | 66  | 69   | 76    | 80    | 86    | 58                                | 61  | 65  | 69  | 72   | 79    | 83    | 89    |
| 20             | 62   | 66  | 70  | 73  | 80   | 84    | 90    | 93    | 65                                | 69  | 73  | 76  | 83   | 87    | 93    | 96    |
| 21             | 68   | 72  | 75  | 82  | 86   | 92    | 95    | 98    | 72                                | 76  | 79  | 86  | 90   | 96    | 99    | 102   |
| 22             | 75   | 78  | 85  | 89  | 95   | 98    | 101   | 107   | 80                                | 83  | 90  | 94  | 100  | 103   | 106   | 112   |
| 23             | 83   | 90  | 94  | 100 | 103  | 106   | 112   | 118   | 87                                | 94  | 98  | 104 | 107  | 110   | 116   | 122   |
| 24             | 92   | 96  | 102 | 105 | 108  | 114   | 120   | 123   | 97                                | 101 | 107 | 110 | 113  | 119   | 125   | 128   |
| 25             | 102  | 108 | 111 | 114 | 120  | 126   | 129   | 134   | 108                               | 114 | 117 | 120 | 126  | 132   | 135   | 140   |
| 26             | 112  | 115 | 118 | 124 | 130  | 133   | 138   | 140   | 118                               | 121 | 124 | 130 | 136  | 139   | 144   | 146   |
| 27             | 120  | 123 | 129 | 135 | 138  | 143   | 145   | 153   | 127                               | 130 | 136 | 142 | 145  | 150   | 152   | 160   |
| 28             | 126  | 132 | 138 | 141 | 146  | 148   | 156   | 162   | 133                               | 139 | 145 | 148 | 153  | 155   | 163   | 169   |
| 29             | 135  | 141 | 144 | 149 | 151  | 159   | 165   | 177   | 142                               | 148 | 151 | 156 | 158  | 166   | 172   | 184   |
| 30             | 146  | 149 | 154 | 156 | 164  | 170   | 182   | 186   | 154                               | 157 | 162 | 164 | 172  | 178   | 190   | 194   |
| 31             | 154  | 159 | 161 | 169 | 175  | 187   | 191   | 197   | 163                               | 168 | 170 | 178 | 184  | 196   | 200   | 206   |
| 32             | 162  | 164 | 172 | 178 | 190  | 194   | 200   | 209   | 171                               | 173 | 181 | 187 | 199  | 203   | 209   | 218   |
| 33             | 168  | 176 | 182 | 194 | 198  | 204   | 213   | 221   | 178                               | 186 | 192 | 204 | 208  | 214   | 223   | 231   |
| 34             | 178  | 184 | 196 | 200 | 206  | 215   | 223   | 231   | 188                               | 194 | 206 | 210 | 216  | 225   | 233   | 241   |
| 35             | 192  | 204 | 208 | 214 | 223  | 231   | 239   | 245   | 202                               | 214 | 218 | 224 | 233  | 241   | 249   | 255   |
| 36             | 208  | 212 | 218 | 227 | 235  | 243   | 249   | 258   | 220                               | 224 | 230 | 239 | 247  | 255   | 261   | 270   |
| 37             | 223  | 229 | 238 | 246 | 254  | 260   | 269   | 274   | 236                               | 242 | 251 | 259 | 267  | 273   | 282   | 287   |
| 38             | 233  | 242 | 250 | 258 | 264  | 273   | 278   | 285   | 246                               | 255 | 263 | 271 | 277  | 286   | 291   | 298   |
| 39             | 247  | 255 | 263 | 269 | 278  | 283   | 290   | 298   | 261                               | 269 | 277 | 283 | 292  | 297   | 304   | 312   |
| 40             | 263  | 271 | 277 | 286 | 291  | 298   | 306   | 314   | 278                               | 286 | 292 | 301 | 306  | 313   | 321   | 329   |
| 41             | 278  | 284 | 293 | 298 | 305  | 313   | 321   | 329   | 294                               | 300 | 309 | 314 | 321  | 329   | 337   | 345   |
| 42             | 291  | 300 | 305 | 312 | 320  | 328   | 336   | 345   | 308                               | 317 | 322 | 329 | 337  | 345   | 353   | 362   |
| 43             | 306  | 311 | 318 | 326 | 334  | 342   | 351   | 359   | 323                               | 328 | 335 | 343 | 351  | 359   | 368   | 376   |
| 44             | 319  | 326 | 334 | 342 | 350  | 359   | 367   | 376   | 337                               | 344 | 352 | 360 | 368  | 377   | 385   | 394   |
| 45             | 330  | 338 | 346 | 354 | 363  | 371   | 380   | 389   | 349                               | 357 | 365 | 373 | 382  | 390   | 399   | 408   |
| 46             | 345  | 353 | 361 | 370 | 378  | 387   | 396   | 405   | 364                               | 372 | 380 | 389 | 397  | 406   | 415   | 424   |
| 47             | 360  | 368 | 377 | 385 | 394  | 403   | 412   | 421   | 380                               | 388 | 397 | 405 | 414  | 423   | 432   | 441   |
| 48             | 375  | 384 | 392 | 401 | 410  | 419   | 428   | 437   | 396                               | 405 | 413 | 422 | 431  | 440   | 449   | 458   |
| 49             | 391  | 399 | 408 | 417 | 426  | 435   | 444   | 454   | 413                               | 421 | 430 | 439 | 448  | 457   | 466   | 476   |
| 50             | 406  | 415 | 424 | 433 | 442  | 451   | 461   | 471   | 430                               | 439 | 448 | 457 | 466  | 475   | 485   | 495   |

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**TABLE III - Long logs, volume according to taper, maximum.**

Scaling length 20 feet - Continued  
 [Scribner Decimal C rule - board feet in tens]

| Top diam.<br>(in.) | 38-foot logs (1 18 and 1 20 foot segment)                |     |     |     |      |       |       |       | 40-foot logs (2 20 foot segments) |     |     |     |      |       |       |       |
|--------------------|--|-----|-----|-----|------|-------|-------|-------|-----------------------------------|-----|-----|-----|------|-------|-------|-------|
|                    | Taper in inches (difference between diameters of 2 ends) |     |     |     |      |       |       |       |                                   |     |     |     |      |       |       |       |
|                    | 1-2  | 3-4 | 5-6 | 7-8 | 9-10 | 11-12 | 13-14 | 15-16 | 1-2                               | 3-4 | 5-6 | 7-8 | 9-10 | 11-12 | 13-14 | 15-16 |
| 6                  | 5  | 5   | 6   | 9   | 10   | 12    | 14    | 16    | 6                                 | 5   | 6   | 9   | 10   | 12    | 14    | 16    |
| 7                  | 6  | 7   | 10  | 11  | 13   | 15    | 17    | 21    | 6                                 | 7   | 10  | 11  | 13   | 15    | 17    | 21    |
| 8                  | 7  | 10  | 11  | 13  | 15   | 17    | 21    | 23    | 7                                 | 10  | 11  | 13  | 15   | 17    | 21    | 23    |
| 9                  | 11   | 12  | 14  | 16  | 18   | 22    | 24    | 27    | 11                                | 12  | 14  | 16  | 18   | 22    | 24    | 27    |
| 10                 | 14   | 16  | 18  | 20  | 24   | 26    | 29    | 33    | 15                                | 17  | 19  | 21  | 25   | 27    | 30    | 34    |
| 11                 | 18   | 20  | 22  | 26  | 28   | 31    | 35    | 38    | 18                                | 20  | 22  | 26  | 28   | 31    | 35    | 38    |
| 12                 | 21   | 23  | 27  | 29  | 32   | 36    | 39    | 44    | 22                                | 24  | 28  | 30  | 33   | 37    | 40    | 45    |
| 13                 | 25   | 29  | 31  | 34  | 38   | 41    | 46    | 49    | 26                                | 30  | 32  | 35  | 39   | 42    | 47    | 50    |
| 14                 | 31   | 33  | 36  | 40  | 43   | 48    | 51    | 55    | 32                                | 34  | 37  | 41  | 44   | 49    | 52    | 56    |
| 15                 | 36   | 39  | 43  | 46  | 51   | 54    | 58    | 83    | 38                                | 41  | 45  | 48  | 53   | 56    | 60    | 65    |
| 16                 | 41   | 45  | 48  | 53  | 56   | 60    | 65    | 68    | 43                                | 47  | 50  | 55  | 58   | 62    | 67    | 70    |
| 17                 | 48   | 51  | 56  | 59  | 63   | 68    | 71    | 78    | 50                                | 53  | 58  | 61  | 65   | 70    | 73    | 80    |
| 18                 | 54   | 59  | 62  | 66  | 71   | 74    | 81    | 86    | 57                                | 62  | 65  | 69  | 74   | 77    | 84    | 89    |
| 19                 | 62   | 65  | 69  | 74  | 77   | 84    | 89    | 95    | 65                                | 68  | 72  | 77  | 80   | 87    | 92    | 98    |
| 20                 | 69   | 73  | 78  | 81  | 88   | 93    | 99    | 104   | 73                                | 77  | 82  | 85  | 92   | 97    | 103   | 108   |
| 21                 | 76   | 81  | 84  | 91  | 96   | 102   | 107   | 110   | 80                                | 85  | 88  | 95  | 100  | 106   | 111   | 114   |
| 22                 | 85   | 88  | 95  | 100 | 106  | 111   | 114   | 120   | 89                                | 82  | 99  | 104 | 110  | 115   | 118   | 124   |
| 23                 | 92   | 99  | 104 | 110 | 115  | 118   | 124   | 131   | 97                                | 104 | 109 | 115 | 120  | 123   | 129   | 136   |
| 24                 | 102  | 107 | 113 | 118 | 121  | 127   | 134   | 137   | 107                               | 112 | 118 | 123 | 126  | 132   | 139   | 142   |
| 25                 | 114  | 120 | 125 | 128 | 134  | 141   | 144   | 150   | 119                               | 125 | 130 | 133 | 139  | 146   | 149   | 155   |
| 26                 | 124  | 129 | 132 | 138 | 145  | 148   | 154   | 156   | 130                               | 135 | 138 | 144 | 151  | 154   | 160   | 162   |
| 27                 | 135  | 138 | 144 | 151 | 154  | 160   | 162   | 171   | 141                               | 144 | 150 | 157 | 160  | 166   | 168   | 177   |
| 28                 | 141  | 147 | 154 | 157 | 163  | 165   | 174   | 180   | 149                               | 155 | 162 | 165 | 171  | 173   | 182   | 188   |
| 29                 | 154  | 157 | 160 | 165 | 168  | 177   | 183   | 197   | 158                               | 165 | 168 | 174 | 176  | 185   | 191   | 205   |
| 30                 | 163  | 166 | 172 | 174 | 183  | 189   | 203   | 207   | 171                               | 174 | 180 | 182 | 191  | 197   | 211   | 215   |
| 31                 | 172  | 178 | 180 | 189 | 195  | 209   | 213   | 220   | 181                               | 187 | 189 | 198 | 204  | 218   | 222   | 229   |
| 32                 | 181  | 183 | 192 | 198 | 212  | 216   | 223   | 233   | 190                               | 192 | 201 | 207 | 221  | 225   | 232   | 242   |
| 33                 | 188  | 197 | 203 | 217 | 221  | 228   | 238   | 247   | 198                               | 207 | 213 | 227 | 231  | 238   | 248   | 257   |
| 34                 | 199  | 205 | 219 | 223 | 230  | 240   | 249   | 258   | 208                               | 215 | 229 | 233 | 240  | 250   | 259   | 268   |
| 35                 | 213  | 227 | 231 | 238 | 248  | 257   | 266   | 272   | 224                               | 238 | 242 | 249 | 259  | 268   | 277   | 283   |
| 36                 | 233  | 237 | 244 | 254 | 263  | 272   | 278   | 289   | 244                               | 248 | 255 | 265 | 274  | 283   | 289   | 300   |
| 37                 | 249  | 256 | 266 | 275 | 284  | 290   | 301   | 306   | 262                               | 269 | 279 | 288 | 297  | 303   | 314   | 319   |
| 38                 | 260  | 270 | 279 | 288 | 294  | 305   | 310   | 318   | 273                               | 283 | 292 | 301 | 307  | 318   | 323   | 331   |
| 39                 | 276  | 285 | 294 | 300 | 311  | 316   | 324   | 333   | 290                               | 299 | 308 | 314 | 325  | 330   | 338   | 347   |
| 40                 | 294  | 303 | 309 | 320 | 325  | 333   | 342   | 351   | 309                               | 318 | 324 | 335 | 340  | 348   | 357   | 366   |
| 41                 | 311  | 317 | 328 | 333 | 341  | 350   | 359   | 36F   | 327                               | 333 | 344 | 349 | 357  | 366   | 375   | 384   |
| 42                 | 325  | 336 | 341 | 349 | 358  | 367   | 376   | 385   | 342                               | 353 | 358 | 366 | 375  | 384   | 393   | 402   |
| 43                 | 342  | 347 | 355 | 364 | 373  | 382   | 391   | 400   | 359                               | 364 | 372 | 381 | 390  | 399   | 408   | 417   |
| 44                 | 356  | 364 | 373 | 382 | 391  | 400   | 409   | 419   | 375                               | 383 | 392 | 401 | 410  | 419   | 428   | 438   |
| 45                 | 369  | 378 | 387 | 396 | 405  | 414   | 424   | 434   | 388                               | 397 | 406 | 415 | 424  | 433   | 443   | 453   |
| 46                 | 385  | 394 | 403 | 412 | 421  | 431   | 441   | 451   | 405                               | 414 | 423 | 432 | 441  | 451   | 461   | 471   |
| 47                 | 402  | 411 | 420 | 429 | 439  | 449   | 459   | 469   | 423                               | 432 | 441 | 450 | 460  | 470   | 480   | 490   |
| 48                 | 419  | 428 | 437 | 447 | 457  | 467   | 477   | 488   | 441                               | 450 | 459 | 469 | 479  | 489   | 499   | 510   |
| 49                 | 436  | 445 | 455 | 465 | 475  | 485   | 496   | 506   | 459                               | 468 | 478 | 488 | 498  | 508   | 519   | 529   |
| 50                 | 454  | 464 | 474 | 484 | 494  | 505   | 515   | 526   | 477                               | 487 | 497 | 507 | 517  | 528   | 538   | 549   |



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**TABLE III - Long logs, volume according to taper, maximum.**  
 Scaling length 20 feet - Continued  
 [Scribner Decimal C rule - board feet in tens]

| Top diam (in.) | 42-foot logs (3 14 foot segments)                        |     |     |     |     |     |     |       |     |       | 44-foot logs (2 14 foot and 1 16 foot segments) |     |     |     |     |     |     |       |     |     |
|----------------|--|-----|-----|-----|-----|-----|-----|-------|-----|-------|---|-----|-----|-----|-----|-----|-----|-------|-----|-----|
|                | Taper in inches (difference between diameters of 2 ends) |     |     |     |     |     |     |       |     |       |   |     |     |     |     |     |     |       |     |     |
|                | 1  | 2-3 | 4   | 5-6 | 7   | 8-9 | 10  | 11-12 | 13  | 14-15 | 1   | 2-3 | 4   | 5-9 | 7   | 8-9 | 10  | 11-12 | 13  | 14  |
| 6              | 5  | 5   | 6   | 7   | 9   | 11  | 13  | 15    | 18  | 20    | 6   | 6   | 7   | 9   | 11  | 12  | 15  | 16    | 20  | 22  |
| 7              | 6  | 7   | 9   | 10  | 13  | 14  | 17  | 19    | 23  | 25    | 7   | 8   | 11  | 12  | 14  | 16  | 18  | 21    | 25  | 27  |
| 8              | 8  | 9   | 11  | 13  | 15  | 17  | 21  | 23    | 28  | 29    | 9   | 11  | 13  | 14  | 17  | 18  | 23  | 25    | 28  | 31  |
| 9              | 11   | 12  | 15  | 16  | 20  | 22  | 25  | 27    | 32  | 34    | 13  | 14  | 16  | 18  | 21  | 24  | 27  | 29    | 34  | 37  |
| 10             | 14   | 16  | 19  | 21  | 24  | 26  | 30  | 33    | 37  | 40    | 16  | 17  | 21  | 22  | 26  | 28  | 32  | 35    | 40  | 44  |
| 11             | 19   | 20  | 23  | 25  | 29  | 31  | 36  | 38    | 43  | 46    | 20  | 22  | 24  | 27  | 31  | 33  | 38  | 41    | 47  | 49  |
| 12             | 23   | 25  | 29  | 31  | 35  | 38  | 42  | 45    | 50  | 52    | 25  | 26  | 31  | 33  | 37  | 40  | 45  | 49    | 53  | 56  |
| 13             | 28   | 30  | 34  | 36  | 41  | 43  | 48  | 51    | 58  | 60    | 29  | 32  | 36  | 38  | 43  | 46  | 52  | 64    | 60  | 65  |
| 14             | 34   | 36  | 40  | 43  | 47  | 50  | 56  | 58    | 64  | 68    | 36  | 38  | 42  | 45  | 50  | 54  | 58  | 62    | 69  | 71  |
| 15             | 40   | 42  | 47  | 49  | 55  | 58  | 62  | 86    | 71  | 76    | 42  | 44  | 49  | 52  | 59  | 61  | 66  | 71    | 76  | 82  |
| 16             | 46   | 49  | 54  | 57  | 62  | 64  | 71  | 73    | 81  | 85    | 48  | 51  | 57  | 61  | 65  | 68  | 76  | 78    | 87  | 91  |
| 17             | 54   | 56  | 61  | 64  | 69  | 73  | 78  | 83    | 89  | 93    | 56  | 59  | 65  | 67  | 73  | 78  | 83  | 89    | 95  | 100 |
| 18             | 61   | 64  | 70  | 72  | 79  | 81  | 88  | 92    | 100 | 103   | 64  | 68  | 73  | 76  | 84  | 86  | 94  | 98    | 107 | 110 |
| 19             | 69   | 72  | 77  | 81  | 85  | 90  | 98  | 102   | 107 | 109   | 73  | 75  | 81  | 86  | 90  | 96  | 104 | 109   | 114 | 117 |
| 20             | 78   | 80  | 86  | 88  | 97  | 101 | 107 | 110   | 117 | 121   | 81  | 84  | 91  | 93  | 103 | 107 | 114 | 117   | 125 | 130 |
| 21             | 85   | 89  | 95  | 100 | 106 | 110 | 118 | 120   | 128 | 133   | 89  | 94  | 100 | 106 | 112 | 117 | 125 | 128   | 137 | 142 |
| 22             | 95   | 97  | 104 | 108 | 117 | 120 | 126 | 130   | 139 | 141   | 100   | 102 | 110 | 114 | 124 | 127 | 134 | 139   | 148 | 151 |
| 23             | 103  | 108 | 117 | 121 | 128 | 130 | 138 | 143   | 148 | 153   | 108   | 114 | 123 | 128 | 135 | 138 | 147 | 152   | 158 | 162 |
| 24             | 115  | 119 | 127 | 130 | 136 | 140 | 148 | 150   | 157 | 158   | 121   | 125 | 134 | 137 | 144 | 149 | 157 | 160   | 166 | 168 |
| 25             | 128  | 132 | 139 | 141 | 148 | 153 | 157 | 162   | 167 | 174   | 134   | 139 | 146 | 149 | 157 | 162 | 167 | 171   | 177 | 185 |
| 26             | 140  | 143 | 148 | 152 | 159 | 161 | 170 | 171   | 183 | 187   | 147   | 150 | 156 | 161 | 168 | 171 | 179 | 181   | 194 | 198 |
| 27             | 150  | 152 | 158 | 163 | 169 | 174 | 180 | 187   | 193 | 202   | 157   | 160 | 167 | 172 | 179 | 183 | 190 | 198   | 204 | 215 |
| 28             | 157  | 161 | 170 | 172 | 182 | 183 | 192 | 196   | 210 | 213   | 165   | 170 | 179 | 182 | 191 | 193 | 203 | 207   | 223 | 227 |
| 29             | 167  | 172 | 179 | 184 | 187 | 194 | 203 | 212   | 216 | 221   | 176   | 181 | 189 | 193 | 197 | 205 | 214 | 225   | 230 | 235 |
| 30             | 181  | 183 | 190 | 191 | 203 | 207 | 217 | 220   | 232 | 239   | 190   | 193 | 199 | 201 | 214 | 218 | 230 | 234   | 246 | 254 |
| 31             | 190  | 195 | 201 | 208 | 213 | 222 | 232 | 237   | 248 | 254   | 200   | 204 | 211 | 219 | 224 | 235 | 246 | 251   | 263 | 270 |
| 32             | 202  | 203 | 211 | 215 | 231 | 234 | 243 | 250   | 265 | 271   | 211   | 213 | 222 | 226 | 244 | 248 | 257 | 265   | 281 | 288 |
| 33             | 209  | 216 | 227 | 236 | 243 | 248 | 264 | 270   | 279 | 284   | 219   | 227 | 238 | 249 | 257 | 262 | 279 | 286   | 296 | 302 |
| 34             | 224  | 228 | 241 | 244 | 258 | 265 | 274 | 280   | 290 | 297   | 235   | 239 | 254 | 258 | 272 | 280 | 290 | 297   | 308 | 316 |
| 35             | 239  | 248 | 260 | 265 | 275 | 281 | 292 | 297   | 311 | 315   | 250   | 261 | 274 | 279 | 290 | 297 | 309 | 315   | 330 | 334 |
| 36             | 261  | 264 | 272 | 279 | 290 | 296 | 308 | 315   | 325 | 331   | 274   | 278 | 286 | 294 | 306 | 313 | 326 | 334   | 344 | 351 |
| 37             | 276  | 281 | 293 | 299 | 312 | 317 | 330 | 334   | 346 | 352   | 290   | 295 | 308 | 315 | 329 | 335 | 349 | 353   | 366 | 373 |
| 38             | 289  | 296 | 309 | 315 | 326 | 333 | 343 | 349   | 360 | 386   | 303   | 311 | 325 | 332 | 344 | 352 | 362 | 369   | 381 | 388 |
| 39             | 308  | 314 | 326 | 331 | 344 | 348 | 359 | 365   | 378 | 384   | 323   | 330 | 343 | 349 | 363 | 367 | 379 | 386   | 400 | 407 |
| 40             | 327  | 333 | 344 | 351 | 360 | 366 | 379 | 385   | 395 | 402   | 343   | 350 | 362 | 370 | 379 | 386 | 400 | 407   | 418 | 425 |
| 41             | 345  | 350 | 362 | 366 | 379 | 385 | 395 | 401   | 414 | 420   | 362   | 368 | 381 | 385 | 399 | 406 | 417 | 424   | 437 | 445 |
| 42             | 361  | 368 | 379 | 385 | 395 | 401 | 413 | 420   | 432 | 439   | 379   | 387 | 398 | 405 | 416 | 423 | 436 | 443   | 457 | 464 |
| 43             | 380  | 384 | 394 | 400 | 412 | 418 | 431 | 437   | 450 | 457   | 399   | 403 | 414 | 421 | 434 | 441 | 454 | 462   | 475 | 483 |
| 44             | 395  | 401 | 413 | 419 | 431 | 438 | 450 | 457   | 470 | 477   | 414   | 421 | 434 | 441 | 454 | 461 | 475 | 482   | 496 | 504 |
| 45             | 411  | 417 | 429 | 435 | 448 | 454 | 467 | 474   | 488 | 495   | 431   | 438 | 451 | 458 | 471 | 479 | 492 | 500   | 515 | 524 |
| 46             | 429  | 435 | 447 | 454 | 466 | 473 | 487 | 494   | 507 | 515   | 450   | 457 | 470 | 477 | 491 | 498 | 513 | 521   | 536 | 544 |
| 47             | 447  | 453 | 468 | 472 | 486 | 493 | 506 | 513   | 528 | 535   | 469   | 476 | 489 | 497 | 511 | 519 | 533 | 542   | 557 | 566 |
| 48             | 465  | 472 | 485 | 492 | 505 | 512 | 526 | 534   | 548 | 556   | 488   | 495 | 510 | 517 | 531 | 539 | 555 | 563   | 579 | 587 |
| 49             | 485  | 491 | 504 | 511 | 525 | 532 | 547 | 554   | 569 | 577   | 508   | 516 | 529 | 537 | 552 | 566 | 576 | 585   | 600 | 609 |
| 50             | 504  | 511 | 525 | 532 | 546 | 554 | 568 | 576   | 591 | 599   | 529   | 536 | 551 | 559 | 575 | 583 | 599 | 607   | 623 | 632 |

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**TABLE III - Long logs, volume according to taper, maximum.**  
 Scaling length 20 feet - Continued  
 [Scribner Decimal C rule - board feet in tens]

| Top diam (in.) | 46-foot logs (1 14 and 2 16 foot segments)               |     |     |     |     |     |     |       |     |       | 48-foot logs (3 16 foot segments) |     |     |     |     |     |     |       |     |       |
|----------------|--|-----|-----|-----|-----|-----|-----|-------|-----|-------|-----------------------------------|-----|-----|-----|-----|-----|-----|-------|-----|-------|
|                | Taper in inches (difference between diameters of 2 ends) |     |     |     |     |     |     |       |     |       |                                   |     |     |     |     |     |     |       |     |       |
|                | 1  | 2-3 | 4   | 5-6 | 7   | 8-9 | 10  | 11-12 | 13  | 14-15 | 1                                 | 2-3 | 4   | 5-9 | 7   | 8-9 | 10  | 11-12 | 13  | 14-15 |
| 6              | 7  | 7   | 8   | 10  | 12  | 13  | 17  | 18    | 22  | 24    | 8                                 | 8   | 9   | 11  | 13  | 14  | 18  | 19    | 23  | 25    |
| 7              | 8  | 9   | 12  | 13  | 16  | 18  | 20  | 23    | 26  | 28    | 9                                 | 10  | 13  | 14  | 17  | 19  | 21  | 24    | 27  | 29    |
| 8              | 10   | 12  | 15  | 16  | 19  | 20  | 24  | 26    | 30  | 33    | 11                                | 13  | 16  | 17  | 20  | 21  | 25  | 27    | 31  | 34    |
| 9              | 15   | 16  | 18  | 20  | 22  | 25  | 29  | 31    | 35  | 38    | 16                                | 17  | 19  | 21  | 23  | 26  | 30  | 32    | 36  | 39    |
| 10             | 18   | 19  | 22  | 23  | 28  | 30  | 33  | 36    | 42  | 46    | 20                                | 21  | 24  | 25  | 30  | 32  | 35  | 38    | 44  | 48    |
| 11             | 21   | 23  | 26  | 29  | 32  | 34  | 40  | 43    | 49  | 51    | 23                                | 25  | 28  | 31  | 34  | 36  | 42  | 45    | 51  | 53    |
| 12             | 27   | 28  | 32  | 34  | 39  | 42  | 47  | 51    | 55  | 58    | 28                                | 29  | 33  | 35  | 40  | 43  | 48  | 52    | 56  | 59    |
| 13             | 30   | 33  | 38  | 40  | 45  | 48  | 54  | 56    | 62  | 67    | 32                                | 35  | 40  | 42  | 47  | 50  | 56  | 58    | 64  | 69    |
| 14             | 38   | 40  | 44  | 47  | 52  | 56  | 61  | 64    | 72  | 74    | 39                                | 41  | 45  | 48  | 53  | 57  | 62  | 65    | 73  | 75    |
| 15             | 44   | 46  | 51  | 54  | 61  | 63  | 69  | 74    | 80  | 86    | 46                                | 48  | 53  | 56  | 63  | 65  | 71  | 76    | 82  | 88    |
| 16             | 50   | 53  | 59  | 63  | 68  | 71  | 80  | 82    | 90  | 94    | 52                                | 55  | 61  | 65  | 70  | 73  | 82  | 84    | 92  | 96    |
| 17             | 58   | 61  | 68  | 70  | 77  | 82  | 86  | 92    | 99  | 104   | 60                                | 63  | 70  | 72  | 79  | 84  | 88  | 94    | 101 | 106   |
| 18             | 67   | 71  | 77  | 80  | 87  | 89  | 98  | 102   | 112 | 115   | 69                                | 73  | 79  | 82  | 89  | 91  | 100 | 104   | 114 | 117   |
| 19             | 77   | 79  | 84  | 89  | 94  | 100 | 109 | 114   | 119 | 122   | 80                                | 82  | 87  | 92  | 97  | 103 | 112 | 117   | 122 | 125   |
| 20             | 84   | 87  | 95  | 97  | 108 | 112 | 119 | 122   | 131 | 136   | 88                                | 91  | 99  | 101 | 112 | 116 | 123 | 126   | 135 | 140   |
| 21             | 93   | 98  | 105 | 111 | 117 | 122 | 131 | 134   | 143 | 148   | 96                                | 101 | 108 | 114 | 120 | 125 | 134 | 137   | 146 | 151   |
| 22             | 105  | 107 | 115 | 119 | 130 | 133 | 140 | 145   | 155 | 158   | 109                               | 111 | 119 | 123 | 134 | 137 | 144 | 149   | 159 | 162   |
| 23             | 113  | 119 | 129 | 134 | 141 | 144 | 154 | 159   | 165 | 169   | 118                               | 124 | 134 | 138 | 146 | 149 | 159 | 164   | 170 | 174   |
| 24             | 127  | 131 | 140 | 143 | 151 | 156 | 164 | 167   | 174 | 176   | 132                               | 136 | 145 | 148 | 156 | 161 | 169 | 172   | 179 | 181   |
| 25             | 140  | 145 | 153 | 156 | 164 | 169 | 175 | 179   | 186 | 194   | 146                               | 151 | 159 | 162 | 170 | 175 | 181 | 185   | 192 | 200   |
| 26             | 154  | 157 | 163 | 168 | 176 | 179 | 188 | 190   | 203 | 207   | 160                               | 163 | 169 | 174 | 182 | 185 | 194 | 196   | 209 | 213   |
| 27             | 164  | 167 | 175 | 180 | 188 | 192 | 199 | 207   | 214 | 225   | 171                               | 174 | 182 | 187 | 195 | 199 | 206 | 214   | 221 | 232   |
| 28             | 173  | 178 | 188 | 191 | 200 | 202 | 213 | 217   | 232 | 236   | 180                               | 185 | 195 | 198 | 207 | 209 | 220 | 224   | 239 | 243   |
| 29             | 185  | 190 | 198 | 202 | 207 | 215 | 223 | 234   | 240 | 245   | 193                               | 198 | 206 | 210 | 215 | 223 | 231 | 242   | 248 | 253   |
| 30             | 199  | 202 | 209 | 211 | 223 | 227 | 240 | 244   | 257 | 265   | 208                               | 211 | 218 | 220 | 232 | 236 | 249 | 253   | 266 | 274   |
| 31             | 210  | 214 | 220 | 228 | 234 | 245 | 257 | 262   | 274 | 281   | 219                               | 223 | 229 | 237 | 243 | 254 | 266 | 271   | 283 | 290   |
| 32             | 220  | 222 | 232 | 236 | 255 | 259 | 268 | 276   | 294 | 301   | 230                               | 232 | 242 | 246 | 265 | 269 | 278 | 286   | 304 | 311   |
| 33             | 229  | 237 | 249 | 260 | 268 | 273 | 292 | 299   | 310 | 316   | 238                               | 246 | 258 | 269 | 277 | 282 | 301 | 308   | 319 | 325   |
| 34             | 246  | 250 | 265 | 269 | 285 | 293 | 304 | 311   | 322 | 330   | 256                               | 260 | 275 | 279 | 295 | 303 | 314 | 321   | 332 | 340   |
| 35             | 261  | 272 | 287 | 292 | 304 | 311 | 323 | 329   | 345 | 349   | 272                               | 283 | 298 | 303 | 315 | 322 | 334 | 340   | 356 | 360   |
| 36             | 287  | 291 | 300 | 308 | 320 | 327 | 341 | 349   | 360 | 367   | 298                               | 302 | 311 | 319 | 331 | 338 | 352 | 360   | 371 | 378   |
| 37             | 304  | 309 | 322 | 329 | 344 | 350 | 365 | 369   | 383 | 390   | 317                               | 322 | 335 | 342 | 357 | 363 | 378 | 382   | 396 | 403   |
| 38             | 317  | 325 | 340 | 347 | 360 | 368 | 379 | 386   | 399 | 406   | 331                               | 339 | 354 | 361 | 374 | 382 | 393 | 400   | 413 | 420   |
| 39             | 338  | 345 | 359 | 365 | 380 | 384 | 397 | 404   | 419 | 426   | 352                               | 359 | 373 | 379 | 394 | 398 | 411 | 418   | 433 | 440   |
| 40             | 359  | 366 | 379 | 387 | 397 | 404 | 419 | 426   | 437 | 444   | 374                               | 381 | 394 | 402 | 412 | 419 | 434 | 441   | 452 | 459   |
| 41             | 379  | 385 | 399 | 403 | 418 | 425 | 436 | 443   | 457 | 465   | 395                               | 401 | 415 | 419 | 434 | 441 | 452 | 459   | 473 | 481   |
| 42             | 397  | 405 | 417 | 424 | 435 | 442 | 456 | 463   | 478 | 485   | 414                               | 422 | 434 | 441 | 452 | 459 | 473 | 480   | 495 | 502   |
| 43             | 418  | 422 | 433 | 440 | 454 | 461 | 475 | 483   | 497 | 505   | 436                               | 440 | 451 | 458 | 472 | 479 | 493 | 501   | 515 | 523   |
| 44             | 433  | 440 | 454 | 461 | 475 | 482 | 497 | 504   | 519 | 527   | 452                               | 459 | 473 | 480 | 494 | 501 | 516 | 523   | 538 | 546   |
| 45             | 451  | 458 | 472 | 479 | 493 | 501 | 515 | 523   | 538 | 547   | 470                               | 477 | 491 | 498 | 512 | 520 | 534 | 542   | 557 | 566   |
| 46             | 471  | 478 | 492 | 495 | 514 | 521 | 536 | 544   | 561 | 569   | 491                               | 498 | 512 | 519 | 534 | 541 | 556 | 564   | 581 | 589   |
| 47             | 491  | 498 | 512 | 520 | 534 | 542 | 558 | 567   | 582 | 591   | 512                               | 519 | 533 | 541 | 555 | 563 | 579 | 588   | 603 | 612   |
| 48             | 511  | 518 | 533 | 540 | 556 | 564 | 580 | 588   | 605 | 613   | 533                               | 540 | 555 | 562 | 578 | 586 | 602 | 610   | 627 | 635   |
| 49             | 531  | 539 | 554 | 562 | 577 | 586 | 602 | 611   | 627 | 636   | 554                               | 562 | 577 | 585 | 600 | 609 | 625 | 634   | 650 | 659   |
| 50             | 554  | 561 | 576 | 584 | 601 | 609 | 626 | 634   | 652 | 661   | 577                               | 584 | 599 | 607 | 624 | 632 | 649 | 657   | 675 | 684   |

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20' maximum scaling length

| 48'<br>top | Taper in inches (dia. difference of two ends) |     |    |     |    |     |    |       |    |
|------------|---|-----|----|-----|----|-----|----|-------|----|
|            | 1   | 2-3 | 4  | 5-6 | 7  | 8-9 | 10 | 11-12 | 13 |
| 6          | 8   | 8   | 9  | 11  | 13 | 14  | 18 | 19    | 23 |
| 7          | 9   | 10  | 13 | 14  | 17 | 19  | 21 | 24    | 27 |
| 8          | 11  | 13  | 16 | 17  | 20 | 21  | 25 | 29    | 31 |
| 9          | 16  | 17  | 19 | 21  | 23 | 26  | 30 | 32    | 36 |
| 10         | 20  | 21  | 24 | 25  | 30 | 32  | 35 | 38    | 44 |
| 11         | 23  | 25  | 28 | 31  | 34 | 36  | 42 | 25    | 51 |
| 12         | 28  | 29  | 33 | 35  | 40 | 43  | 48 | 52    | 56 |

| 50'<br>top | Taper in inches (dia. difference of two ends) |     |    |     |    |     |    |       |    |
|------------|---|-----|----|-----|----|-----|----|-------|----|
|            | 1   | 2-3 | 4  | 5-6 | 7  | 8-9 | 10 | 11-12 | 13 |
| 6          | 8   | 8   | 9  | 11  | 13 | 14  | 18 | 19    | 23 |
| 7          | 9   | 10  | 13 | 14  | 17 | 19  | 21 | 24    | 27 |
| 8          | 11  | 13  | 16 | 17  | 20 | 21  | 25 | 27    | 31 |
| 9          | 16  | 17  | 19 | 21  | 23 | 26  | 30 | 32    | 36 |
| 10         | 20  | 21  | 24 | 25  | 30 | 32  | 35 | 38    | 44 |
| 11         | 24  | 26  | 29 | 32  | 35 | 37  | 43 | 46    | 52 |
| 12         | 29  | 30  | 34 | 36  | 41 | 44  | 49 | 53    | 57 |

| 52'<br>top | Taper in inches (dia. difference of two ends) |     |    |     |    |     |    |       |    |
|------------|---|-----|----|-----|----|-----|----|-------|----|
|            | 1   | 2-3 | 4  | 5-6 | 7  | 8-9 | 10 | 11-12 | 13 |
| 6          | 8   | 8   | 9  | 11  | 13 | 14  | 18 | 19    | 24 |
| 7          | 9   | 10  | 13 | 14  | 17 | 19  | 22 | 25    | 28 |
| 8          | 10  | 13  | 16 | 17  | 21 | 22  | 26 | 28    | 32 |
| 9          | 16  | 17  | 20 | 22  | 24 | 27  | 31 | 33    | 38 |
| 10         | 21  | 22  | 25 | 26  | 31 | 33  | 37 | 40    | 46 |
| 11         | 25  | 27  | 30 | 33  | 37 | 39  | 45 | 48    | 54 |
| 12         | 30  | 31  | 36 | 38  | 43 | 46  | 51 | 55    | 60 |

| 54'<br>top | Taper in inches (dia. difference of two ends) |     |    |     |    |     |    |       |    |
|------------|---|-----|----|-----|----|-----|----|-------|----|
|            | 1   | 2-3 | 4  | 5-6 | 7  | 8-9 | 10 | 11-12 | 13 |
| 6          | 8   | 8   | 9  | 11  | 14 | 15  | 19 | 21    | 26 |
| 7          | 9   | 10  | 13 | 15  | 18 | 20  | 24 | 27    | 30 |
| 8          | 10  | 13  | 17 | 18  | 22 | 24  | 28 | 30    | 35 |
| 9          | 16  | 18  | 21 | 23  | 26 | 29  | 33 | 36    | 41 |
| 10         | 22  | 23  | 26 | 28  | 33 | 35  | 40 | 43    | 49 |
| 11         | 26  | 28  | 32 | 35  | 39 | 42  | 48 | 51    | 57 |
| 12         | 31  | 33  | 38 | 40  | 46 | 49  | 54 | 58    | 64 |

| 56'<br>top | Taper in inches (dia. difference of two ends) |     |    |     |    |     |    |       |    |
|------------|---|-----|----|-----|----|-----|----|-------|----|
|            | 1   | 2-3 | 4  | 5-6 | 7  | 8-9 | 10 | 11-12 | 13 |
| 6          | 8   | 8   | 9  | 11  | 14 | 15  | 19 | 21    | 26 |
| 7          | 9   | 10  | 13 | 15  | 18 | 20  | 24 | 27    | 30 |
| 8          | 10  | 13  | 17 | 18  | 22 | 24  | 28 | 30    | 35 |
| 9          | 16  | 18  | 21 | 23  | 26 | 29  | 33 | 36    | 41 |
| 10         | 23  | 24  | 27 | 29  | 34 | 36  | 41 | 44    | 50 |
| 11         | 26  | 28  | 32 | 35  | 39 | 42  | 48 | 51    | 57 |
| 12         | 32  | 34  | 39 | 41  | 47 | 50  | 55 | 59    | 65 |

| 58'<br>top | Taper in inches (dia. difference of two ends) |     |    |     |    |     |    |       |    |
|------------|---|-----|----|-----|----|-----|----|-------|----|
|            | 1   | 2-3 | 4  | 5-6 | 7  | 8-9 | 10 | 11-12 | 13 |
| 6          | 8   | 8   | 9  | 11  | 14 | 15  | 20 | 22    | 26 |
| 7          | 9   | 10  | 13 | 15  | 19 | 21  | 24 | 27    | 31 |
| 8          | 11  | 13  | 18 | 19  | 22 | 24  | 29 | 31    | 36 |
| 9          | 17  | 19  | 21 | 23  | 27 | 30  | 34 | 37    | 42 |
| 10         | 23  | 24  | 28 | 30  | 35 | 37  | 42 | 45    | 52 |
| 11         | 27  | 29  | 33 | 36  | 40 | 43  | 50 | 53    | 59 |
| 12         | 33  | 35  | 40 | 42  | 49 | 52  | 57 | 61    | 67 |

| 60'<br>top | Taper in inches (dia. difference of two ends) |     |    |     |    |     |    |       |    |
|------------|---|-----|----|-----|----|-----|----|-------|----|
|            | 1   | 2-3 | 4  | 5-6 | 7  | 8-9 | 10 | 11-12 | 13 |
| 6          | 8   | 8   | 9  | 12  | 14 | 16  | 21 | 23    | 28 |
| 7          | 9   | 10  | 14 | 15  | 20 | 22  | 25 | 29    | 33 |
| 8          | 11  | 14  | 18 | 20  | 23 | 25  | 31 | 33    | 38 |
| 9          | 18  | 19  | 22 | 24  | 28 | 32  | 36 | 39    | 45 |
| 10         | 23  | 25  | 29 | 31  | 37 | 39  | 44 | 48    | 55 |
| 11         | 28  | 30  | 34 | 38  | 42 | 45  | 53 | 56    | 63 |
| 12         | 34  | 36  | 42 | 44  | 51 | 55  | 60 | 65    | 71 |

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PRODUCT CONVERSION FACTORS

The following forest product conversion factors should be used whenever converting forest product information from one unit of measure to another. An example would be the calculation of cord equivalent on timber sale reports. Many variables affect volume relationships. Equivalents shown in this table are averages covering a wide range of product sizes.

| <u>Product</u>                               | <u>Units</u> | <u>Cords<br/>(Rough)</u> | <u>Equivalents<br/>Board Feet 1/<br/>(Scribner Decimal C Log Rule)</u> |
|--|--------------|--------------------------|--|
| <u>Sawtimber - Scribner</u>                  | 1,000 BF     |                          | 1,000  |
| Softwoods                                    |              | 2.44                     |  |
| Hardwoods                                    |              | 2.20                     |  |
| <u>Sawtimber - Int. 1/4"</u>                 | 1,000 BF     |                          | 880  |
| Softwoods                                    |              | 2.00                     |  |
| Hardwoods                                    |              | 1.90                     |  |
| <u>Cordwood - Rough</u>                      | 1 cord       |                          |  |
| Softwoods                                    |              | 1.00                     | 410  |
| Hardwoods                                    |              | 1.00                     | 450  |
| <u>Cordwood - Hand Peeled</u>                | 1 cord       |                          |  |
| Softwoods                                    |              | 1.125                    | 460  |
| Hardwoods                                    |              | 1.125                    | 510  |
| <u>Cordwood - Machine Peeled (see below)</u> |              |                          |  |
| <u>Ring Type or Flail Type</u>               | 1 cord       |                          |  |
| Softwoods                                    |              | 1.16                     | 480  |
| Hardwoods                                    |              | 1.16                     | 520  |
| <u>Stroke delimeter or Processor</u>         | 1 cord       |                          |  |
| Softwoods                                    |              | 1.125                    | 460  |
| Hardwoods                                    |              | 1.125                    | 510  |
| <u>Tie Cuts</u>                              | 1 piece      |                          |  |
| Cross Tie                                    |              | .08                      | 40   |
| Switch Tie                                   |              | .11                      | 50   |
| <u>Christmas Trees</u>                       | 1 piece      | .005                     | 2  |

1/ Board Feet - Scribner Decimal C Log Rule. Average Girard form class is 78 to 79.

Firewood

Scaling of processed firewood in a vehicle (i.e., truck box, etc.) is accomplished by measuring the vehicle length x width x height ÷ 128 cubic feet = standard cords.

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Contents of Poles in Board Feet, by Classes<sup>1/</sup>  
Scribner Decimal C Rule

| Length (ft.)                 | Pole Class <sup>2/</sup> |     |     |     |     |     |     |
|------------------------------|--------------------------|-----|-----|-----|-----|-----|-----|
|                              | 1                        | 2   | 3   | 4   | 5   | 6   | 7   |
| Average top d.i.b. in inches |                          |     |     |     |     |     |     |
|                              | 8.9                      | 8.3 | 7.6 | 7.0 | 6.4 | 5.7 | 5.1 |
| 16                           |                          |     |     |     | 2   | 2   | 2   |
| 18                           |                          |     | 4   | 3   | 2   | 2   | 2   |
| 20                           | 6                        | 5   | 5   | 3   | 3   | 2   | 2   |
| 22                           | 6                        | 5   | 5   | 3   | 3   | 3   | 2   |
| 25                           | 7                        | 5   | 5   | 4   | 3   | 3   | 2   |
| 30                           | 10                       | 8   | 6   | 6   | 4   | 4   | 4   |
| 35                           | 11                       | 10  | 9   | 6   | 6   | 5   | 4   |
| 40                           | 16                       | 13  | 12  | 10  | 9   | 6   | 5   |
| 45                           | 20                       | 16  | 13  | 13  | 10  | 8   | 6   |
| 50                           | 23                       | 19  | 16  | 14  | 11  | 9   | 7   |
| 55                           | 26                       | 22  | 20  | 16  | 13  | 11  |     |
| 60                           | 32                       | 24  | 22  | 19  | 14  | 13  |     |
| 65                           | 35                       | 28  | 28  | 24  | 18  |     |     |
| 70                           | 41                       | 35  | 29  | 26  | 20  |     |     |
| 75                           | 44                       | 40  | 37  | 29  |     |     |     |
| 80                           | 53                       | 44  | 44  | 38  |     |     |     |
| 85                           | 55                       | 47  | 46  | 40  |     |     |     |
| 90                           | 65                       | 55  | 55  | 45  |     |     |     |

<sup>1/</sup> American Standards Assn. specifications.

<sup>2/</sup> All poles scale in 16-ft. lengths or less inside bark to nearest full inch. Average rather than minimum diameter used for each class.

Source: U.S. Forest Service, Region 8, 1941.

Cubic Feet per Cord for Common Species

| <u>Species</u> | <u>Cubic Feet per Cord</u> |
|----------------|----------------------------|
| Ash            | 72                         |
| Aspen          | 78                         |
| Basswood       | 78                         |
| Beech          | 78                         |
| White Birch    | 78                         |
| Yellow Birch   | 78                         |
| Elm            | 70                         |
| Hard Maple     | 74                         |
| Soft Maple     | 74                         |
| Balsam Poplar  | 78                         |
| Balsam Fir     | 82                         |
| Red Pine       | 82                         |
| White Pine     | ?                          |
| Jack Pine      | 78                         |
| Black Spruce   | 82                         |
| White Spruce   | 82                         |

Timber Sale Handbook  
Cubic-Foot Volume of Posts

| Average diameter<br>(in.) | Length of post in feet <sup>1</sup> |      |      |      |
|---------------------------|-------------------------------------|------|------|------|
|                           | 6                                   | 6½   | 7    | 7½   |
|                           | Cubic Feet                          |      |      |      |
| 1.5                       | 0.07                                | 0.08 | 0.08 | 0.09 |
| 2.0                       | .13                                 | .14  | .15  | .16  |
| 2.5                       | .20                                 | .22  | .24  | .26  |
| 3.0                       | .29                                 | .32  | .34  | .37  |
| 3.5                       | .40                                 | .44  | .47  | .50  |
| 4.0                       | .52                                 | .57  | .61  | .65  |
| 4.5                       | .66                                 | .72  | .77  | .82  |
| 5.0                       | .82                                 | .88  | .95  | 1.02 |
| 5.5                       | .99                                 | 1.07 | 1.16 | 1.24 |
| 6.0                       | 1.18                                | 1.27 | 1.37 | 1.47 |
| 6.5                       | 1.38                                | 1.50 | 1.61 | 1.72 |
| 7.0                       | 1.60                                | 1.74 | 1.87 | 2.00 |
| 7.5                       | 1.84                                | 2.00 | 2.15 | 2.30 |
| 8.0                       | 2.09                                | 2.27 | 2.44 | 2.62 |
| 8.5                       | 2.36                                | 2.56 | 2.76 | 2.96 |
| 9.0                       | 2.65                                | 2.87 | 3.09 | 3.32 |
| 9.5                       | 2.95                                | 3.20 | 3.44 | 3.69 |
| 10.0                      | 3.27                                | 3.54 | 3.82 | 4.09 |

Note: Volumes computed by Huber's formula.  
<sup>1/</sup> Posts in excess of 7½" diameter should be measured as logs.