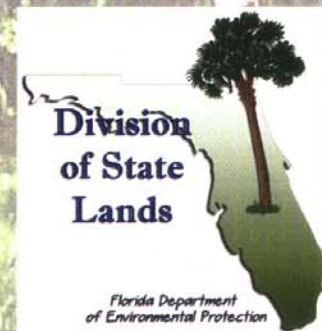


Timber Cruise/ Timber Appraisal (TCTA) Standards



Procedural and Reporting Standards for Timber Cruise
And Timber Appraisals for the State of Florida

Acknowledgements

These standards are the result of the vision and dedicated labors of a team of professional foresters and fee appraisers working in Florida. Inspired by a timber appraisal workshop sponsored by the Division of Forestry at Tall Timbers Research Station in November 2003, this group of individuals met and corresponded over several months to identify and write the essential elements of these guidelines.

It is hoped that this document will provide a more structured and consistent framework in which timber cruise and timber appraisals will be carried out, prepared and reported. This will in turn, provide fee appraisers with a more market-based and better-supported timber valuation- in short- a better product with greater utility to the fee appraiser. This is no small matter given the considerable land acquisition program here in Florida – the largest, public conservation lands acquisition program in the country.

It's significant also to note that these standards represent the first such effort of its kind known in this country...that is...an effort to codify a set of professional standards and guidelines for foresters and fee appraisers for the completion of timber appraisals.

The leadership and work of the following sponsoring organizations recognized.

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Timber Cruise/Timber Appraisal (TCTA) Standards

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List of Acronyms

BAF	basal area factor
BA	Bureau of Appraisal, Florida Department of Environmental Protection
BOT	Board of Trustees, Internal Improvement Trust Fund (Governor and Cabinet)
BIP	bid invitation package
BMP	Silvicultural Best Management Practices for Florida
CV	coefficient of variation (statistics)
DBH	diameter breast height (4.5 feet from ground)
DCF	discounted cash flow (analysis)
DEP	Department of Environmental Protection
DOF	Division of Forestry, Florida Department of Agriculture and Consumer Services
DSL	Division of State Lands, Florida Department of Environmental Protection
DR	discount rate
FA	real estate fee appraiser
FC	forestry consultant
FS	Florida Statutes
NPV	net present value
PM	project manager
SMZ	special management area (silvicultural best management practices)
TA	timber appraisal
TAC	timber appraisal coordinator (outsourced, or DOF)
TAM	timber appraisal manager (DOF)
TAR	timber appraisal review
TCTA	timber cruise / timber appraisal

INTRODUCTION

These standards are prepared and provided as an outline of the process to be followed in contracting, preparing and reviewing timber cruise and timber appraisals (TCTA's) that are used by fee appraisers in developing fee simple and/or less than fee appraisal for land and timber in the State of Florida. In general, these standards develop both the procedure and the expected content of the final timber appraisal report.

The Division of Forestry (DOF) and the Bureau of Appraisal (BA) share responsibility for the development and quality of the timber appraisal product. DOF has general responsibility for the technical quality, as well as, the coordination of all forestry fieldwork and timber valuation reports. BA has the overall responsibility for project management of the fee appraisal and contracting for any timber cruise and timber appraisal, including any timber appraisal coordination work, necessary to the successful completion of a fee appraisal of forest land. The PM has overall responsibility to ensure that appraisal assignments meet any and all appropriate appraisal standards.

In addition to the role currently played by the forestry consultant in cruising timber and preparing timber value estimations, these standards summarize the duties a timber appraisal coordinator (TAC). This position assumes the responsibility for inspecting the forest property, designing the timber cruise, preparing the bid prospectus and coordinating the field and report work of the forestry consulting in cruising, researching and writing the timber appraisal. DOF will maintain technical direction and overall management of the timber cruise and timber appraisal process, handled through its Land Acquisition Section (Bureau of Forest Management). The DOF staff person assigned this role is referred to as the timber appraisal manager (TAM). DOF will be responsible for specific forestry cruise specifications.

The appraisal project manager (PM) in BA shall be responsible for contracting the timber cruise and timber appraisal report to a DOF-listed forestry consultant (FC) company. The TAC will serve in a coordinator role with this firm and shall be responsible for the cruise audit and TCTA report review. DOF will provide an administrative review of both the TCTA and the timber appraisal review.

There is a *project flow chart* (or timeline) suggested for this entire process provided in the Supplemental Reference section in the back of these standards.

Timber Cruise/Timber Appraisal (TCTA) Standards

100 TIMBER APPRAISAL COORDINATOR

101 Purpose and Overview

- A. As the need arises for timber appraisal coordinators, the Bureau of Appraisal (BA) should solicit bids or requests for proposals from a DOF-approved list of forestry consultants. BA should engage one or more such individuals under contract as timber appraisal coordinators (TAC) whose role it will be to assist in developing, coordinating and auditing timber cruise and appraisal projects associated with the State of Florida's land acquisition programs. Alternatively, DOF will carry out some or all of these TAC duties.
- B. The TAC shall coordinate routinely with the BA-assigned appraisal project manager (PM) as well as the DOF timber appraisal manager (TAM) as it relates to the review and approval of all forestry-related performance issues.

102 Limitations

- A. Large forestry consultant firms are encouraged to bid on providing TAC services; however, just one professional forester must be named and used as the TAC. He or she may of course employ and direct any number of other company or contracted personnel, but it shall be just that one individual who will be judged to represent the contracted firm.
- B. Once a forestry consultant firm or individual from that firm is employed as a TAC on a specific acquisition project, neither that firm nor any individual employed by that firm will be permitted to bid on any professional services as it relates to that acquisition project, for its duration.

105 Project Delivery Requirements

- A. Upon assignment date of an acquisition (parcel) project by the project manager (DEP), the timber appraisal coordinator will have up through ___ calendar days to complete a bid prospectus package and for it to be received by the PM at DEP. Failure to meet this deadline may result in a penalty amount of ___ percent of his fee for each working day the report is late.
- B. Upon receipt of a timber appraisal report from a forestry consultant and a *Notice to Proceed* from the PM, within ___ working days, the TAC shall complete his appraisal review and either submit his report of timber appraisal review to the timber appraisal manager (DOF), the PM and the fee appraiser (FA), or have returned the appraisal report to the FC for correction and/or supporting information of a substantive nature (eg. change that would, or could effect value in a significant manner). These transmissions should be by overnight delivery, unless other arrangements are agreed to with the TAM. Failure to meet this deadline may result in a penalty amount of ___ percent of his fee for each working day the report is late.
- C. A final report of timber appraisal review shall be submitted to the PM, FA and TAM within ___ working days after receiving satisfactory corrections and/or clarifications to the initial timber appraisal report. The same penalties for non-compliance apply as listed above.
- D. All contract requirements should be included in the contractor's task or purchase order for service.

110 Bid Consideration Criteria

- A. When reviewing bids or Requests for Proposals to provide timber appraisal coordinator services, BA will evaluate the individual forestry consultants for their professional forestry and timber appraisal background. Some of the areas to be considered include:
 - 1. Experience in timber cruise/timber appraisal work.
 - 2. Experience auditing timber cruises and timber appraisals.
 - 3. Quality and timeliness of work.
 - 4. Timber market knowledge in region of subject.
 - 5. Overall professional forestry experience.
 - 6. Professional forestry, timber and/or real estate appraisal education and training.
 - 7. Professional forestry, real estate appraisal certifications and affiliations.
 - 8. Any relevant personal, business or professional conflicts of interest as it related to the properties and/or owners of the timber being appraised.
 - 9. Price (Dollar amount of the Fee being quoted)

- B. BA shall be responsible for soliciting bids for and managing the contracts of timber appraisal coordinators. All pertinent bid information and project parameters on each acquisition project will be forwarded to the timber appraisal manager (DOF). The TAM will be notified upon final selection of a TAC for a particular project.

120 Duties and Responsibilities

- A. The major duties and responsibilities of the Timber Appraisal Coordinator shall include:
 - 1. Coordinates with DSL staff to identify key timber value issues of the acquisition project (projected for future).
 - 2. Conducts pre-bid timber inspection to identify stands and required cruise intensity.
 - 3. Maps stands (strata), determine acreages, identify CV's, prepare cruise grid.
 - 4. Makes revisions to general DOF specifications (Section 430) within the bid prospectus with the concurrence of the TAM.
 - 5. Prepares Bid Invitation Package with components identified below.
 - 6. Monitors TCTA progress and provide ongoing direction and problem resolution to timber cruise and appraisal firm.
 - 7. Conducts field audits necessary to ensure quality control.
 - 8. Conducts review of timber appraisal report and coordinates any needed revisions with the forestry consultant.
 - 9. Coordinates compliance to technical forestry standards and timber appraisal guidelines and submits TCTA results with recommendation(s) to the PM and TAM for final DOF's review and approval. This includes the documentation of dates of receipt of appraisals, requests for changes, etc. as are discussed in the project delivery requirements for both the TAC and the FC.
- B. The duties and responsibilities of the Timber Appraisal Manager (DOF) shall include:
 - 1. Coordinates with DSL staff in identifying timber appraisal needs on upcoming acquisition projects.
 - 2. Assists, as needed, the TAC and the FC (through the TAC) during the pre-inventory, timber inventory cruise, and timber appraisal process.
 - 3. Determines the need for and rules on any adjustments or changes to the timber cruise and/or appraisal standards for a given project. Reviews and acts to settle any unresolved field or appraisal report discrepancies.
 - 4. Assists in the overall process of the cruise audit, as needed by the TAC.
 - 5. Provides administrative ("desk") review of TCTA (by FC) and TCTA Review (by TAC) reports. Submits recommendation through Forest Management Bureau Chief to PM (BA).
- C. The duties and responsibilities of the Project Manager (BA) shall include:
 - 1. Directs overall fee appraisal and timber appraisal process for individual acquisition project.
 - 2. Solicits and awards bids and manages contracts for timber appraisal coordinator duties as well as forestry consultant contracts for carrying out timber cruise and appraisal assignments.
 - 3. Coordinates and communicates regularly with DOF regarding upcoming projects and scheduling/completion expectations for timber appraisal projects.

200 PRE-BID INVENTORY, CRUISE DESIGN, STATISTICS & BID PACKAGE

201 General

- A. Once employed or tasked with scope of work for a specific appraisal project by an BA project manager, the TAC will initiate contact with pertinent acquisition official(s) to determine the boundaries and landowner information, as well as acquisition issues (eg. conservation easement language) related to conducting a timber appraisal. He or she will be expected also to contact the landowner(s) to attain access information and key(s) as well as additional maps and forest information specific to the parcel being appraised. If BA has employed a fee appraiser at this point, the TAC will also make contact with this individual as appropriate.

210 Pre-Bid Inventory Specifications

- A. The TAC shall visit and inspect the property being appraised for the purpose of identifying; mapping and sampling forest stands (strata).
- B. Using background information provided by acquisition official, landowner, land manager, maps and photos and the site visit, the TAC will map and stratify the property, lay out cruise lines and conduct a pre-bid cruise for the purpose of identifying a coefficient of variation (CV) for all merchantable strata.
- C. Merchantable strata shall be identified and cruised for CV according to the following strata list and associated specifications:
 1. Merchantable Planted Pine Timber
 - a. *Stratum Characteristics* – All merchantable, planted pine regardless of age/species will be considered as one stratum for statistical purposes. The actual TCTA cruise, however, will provide stand information (eg. map location, acreage, stand/stock tables) for each species and age class. Note: There may be circumstances where planted hardwoods represent a significant acreage and will require a unique statistical strata.
 - b. *CV Cruise Grid* – Pre-bid inventory cruise lines shall be established on a square grid or with cruise lines ten chains apart and the calculated distance between plots necessary to sample the required **20 plots** in this stratum.
 - c. *Plot Size* – Plots will be sampled with either variable plot radius sampling using a **10-BAF prism** or with fixed radius sampling with plots of **1/10-acre** in size.
 2. Merchantable Natural Timber
 - a. *Stratum Characteristics* – In many cases just one strata may be sufficient to capture the stands that are consistent regarding timber products, logging conditions, etc. However, some tracts may require multiple natural timber strata be identified, mapped and sampled. For example, such would be the case where areas of upland hammock and/or pine represented a very different timber product than from a wetland stand requiring specialized logging equipment. Similarly, it may be appropriate to establish two wetland strata for a tract with large stands of even-aged cypress and other stands of bottomland hardwoods and loblolly pine. Stratification of natural stands shall be made based on product and market considerations such as acreage, species, product values and logging issues. All merchantable, natural timber, however, regardless of age/species (pine, hardwood and cypress) will be considered as one stratum for statistical purposes (unless in consultation with TAM it's determined that significant acreage of high value timber products and/or other special conditions warrant otherwise). The actual TCTA cruise, however, will provide stand information (eg. map location, acreage, stand/stock tables by species) for each strata (if more than one) identified in the above paragraph..
 - b. *CV Cruise Grid* – Pre-bid inventory cruise lines shall be established on a square grid or with cruise lines ten chains apart and the calculated distance between plots necessary to sample the required **25 plots** in this stratum.
 - c. *Plot Size* – Plots will be sampled with either variable plot radius sampling using a **10-BAF prism** or with fixed radius sampling with plots of **1/10-acre** in size.

3. Pre-Merchantable, Planted and/or Natural Pine
 - a. Unless requested by TAM or upon field reconnaissance by the TAC indicates it is warranted, **no pre-inventory cruise** will be expected of pre-merchantable stands. A **35% CV** or a local or regional average for that species of planted pine will be used by the TAC in designing the pre-merchantable stand cruise.
 - b. Each age class by species will be considered separate strata for purposes of stand mapping and for establishing minimum plot numbers listed below.

230 Cruise Design & Statistics

- A. The Timber Appraisal Coordinator will design an inventory cruise using the results of his field inspection and CV cruise and sample size calculations. Sampling intensity for each of the above strata will be calculated using the formula:

$$n = \frac{t^2 (cv)^2}{(se)^2};$$

where: **n** = number of plots; **t** = t distribution (or number of standard deviations) for the selected probability (or confidence limit) and appropriate degrees of freedom (df) **cv** = coefficient of variation; **se** = sampling error or limit of error at selected confidence limit.

The source for all statistical formulas and two-tailed Student's t distribution data will be ***Elementary Statistical Methods for Foresters, Agriculture Handbook 317, USDA, Forest Service, January 1967.*** If another source is used, it shall be fully referenced.

- B. The number of plots in each stratum to be installed during the appraisal cruise will be guided by the following confidence limits and +/- sampling errors (limit of error or allowable error):
 1. *Merchantable Planted Pine Timber*- The number of plots to be laid out in the cruise grid for this stratum should be sufficient to achieve a sampling error of **+/-10%** at the **95% confidence limit** or probability level (1.960 standard deviations adjusted up for df) for basal area or volume (or weight) per plot for all pine products.
 2. *Merchantable Natural Timber*- The number of plots to be laid out in the cruise for this stratum or strata should be sufficient to achieve a sampling error of **+/-10%** at the **90% confidence limit** (1.645 standard deviations adjusted up for df) for basal area or volume (or weight) per plot for all timber (pine, hardwood and/or cypress combined) products.
 3. *Pre-Merchantable Planted and/or Natural Pine*- The total number of plots to be laid out in the cruise grid should be sufficient to achieve a sampling error in each species/age strata of **+/-10% at the 68% confidence limit** (1.000 standard deviations adjusted up for df), using an estimated 35% CV for trees per acre per plot. The cruise grid shall ensure a **minimum of ten (10) plots per species/age class strata.**
 4. In no case shall more than **one plot per acre** be required in any stratum or in any pre-merchantable planted pine species/age class.
- C. The cruise design shall include specific information, sufficient to direct the implementation of an actual inventory timber cruise by the forestry consultant. At a minimum, the cruise design shall include:
 1. *Inventory map* describing each stratum and showing preliminary stand lines overlaid with a cruise grid with an appropriate plot interval to ensure adequate sampling throughout all areas of the stratum/stand(s). Something between a square 1:1 plot grid and a 5:1 ratio of line width to plot-to-plot distance ratio is recommended. Generally, cruise lines further than ten chains apart should be avoided unless warranted due to the size of the stratum. The number of plots per stratum is described above.

2. *Plot type and size* will be provided for each sampling strata. Merchantable timber will customarily be sampled using variable radius plots. The TAC will identify whether 10-BAF or 20 BAF is to be used. The general goal will be to use the prism factor that will produce, on average, 8 –10 samples per plot. There may be situations that warrant both prism factors be used on a cruise, each in a different stratum (eg. 20 BAF in cypress swamp and a 10 BAF in an upland longleaf stand). Pre-merchantable stands will be routinely cruised using fixed radius plots. Once again the decision by the TAC to use 1/100-acre, 1/20-acre plots, or other size plots, would be to provide for the plot size that will produce, on average, 8-10 stems per sample plot.
- D. Alternatively, the Division of Forestry may elect on a project to establish specific cruise parameters and methodologies, determine the number and type of plots per stratum and the grid size for the pre-inventory cruise and/or the appraisal cruise.

250 Timber Cruise and Appraisal Bid Invitation Package

- A. The Timber Appraisal Coordinator will construct and copy a formal bid invitation package (BIP) that will be submitted to the Bureau of Appraisal project manager (PM).
- B. The bid invitation package may contain the following:
 1. **Bid prospectus** providing brief summary (one page) of completion dates, cruise location, acreage, timber strata, field conditions, cruise grid and plot sampling information.
 2. Inventory map with plots shown in digital and paper format. This map (or aerial photograph) shall include preliminary timber stand lines with the cruise grid overlaid.
 3. Specifications for the TCTA, including plot type and size.
 4. Most recent aerial photograph with boundaries delineated.
 5. Name of contact for access and landowner.
 6. Management history of the tract, if available.
 7. Location map.
 8. Number of tracts to be cruised and appraised separately, number of valuations, number of reports, and report recipients.
 9. Known timber reservations.
 10. Completion deadline for preliminary report.
 11. Due date for price submittal.
 12. Known easements, if available from state agency or landowner.
 13. Known local harvest restriction ordinances if available from state agency or landowner.
 14. The form classes to be used for sawtimber products.
 15. Key or combination to access gates.
- C. The PM (or TAC if requested) will be responsible for mailing the complete BIP to those FC's he may select from the DOF forestry consultant list. The PM will forward any necessary bid specifications and/or submittal sheets to the TAC (if he is handling mailing) including specific information related to when bids are due. The PM will forward copies of the BIP to the TAM and FA (if contracted) at this time.

300 FORESTRY CONSULTANT

305 Bid Consideration Criteria

- A. When reviewing bids to provide timber cruise and appraisal services, BA will evaluate the individual forestry consultants for their professional forestry and timber appraisal background. Some of the areas to be considered include:
 - 1. Experience in timber cruise/timber appraisal work
 - 2. Quality and timeliness of work
 - 3. Timber market knowledge in region of subject
 - 4. Overall professional forestry experience
 - 5. Professional forestry, timber and/or real estate appraisal education and training
 - 6. Professional forestry, real estate appraisal certifications and affiliations
 - 7. Any relevant personal, business or professional conflicts of interest as it related to the properties and/or owners of the timber being appraised
 - 8. Price (total fee and dollar amount per plot being quoted)
- B. BA shall be responsible for soliciting and/or selecting bids for and managing the contracts of forestry consultants. The timber appraisal manager (DOF) will be advised immediately upon the contracting of a forestry consultant for a particular project.
- C. BA shall critique and score key component of contract performance- to include appraisal report quality and accuracy, responsiveness to requests, timeliness, field audit and report review results on each project. These critiques will be monitored and, over time, will aid BA staff in evaluating forestry consultants for future contract or task.

310 Project Delivery Requirements

- A. Upon assignment (through a purchase order or task order) date of an acquisition (parcel) timber cruise/timber appraisal project by the PM (DEP), the FC will have up through ___ calendar days to complete a field cruise, inventory and timber appraisal and for the timber appraisal report to be received by the timber appraisal coordinator (TAC). Failure to meet this deadline may result in a penalty amount of ___ percent of his fee for each working day the report is late.
- B. Should the TAC discover substantive errors or lack of essential supporting information, he shall return the timber appraisal report for corrections. Upon receipt of these requests, the FC shall have ___ working days to make the requested changes and re-submit to the TAC. Failure to meet this deadline may result in a penalty amount of ___ percent of his fee for each working day the report is late.
- C. The original report shall be in hard copy. Any subsequent changes can be transmitted electronically if okayed with the TAC.
- D. All contract requirements should be included in the contract or purchase order for service.

400 TIMBER APPRAISAL CRUISE

401 Purpose

- A. The purpose of a Timber Cruise and Timber Appraisal is to estimate the current market value of the timber resources on land the state is attempting to acquire.

410 Coordination & Problem Resolution

- A. The forestry consultant (FC) must notify the TAC when fieldwork is scheduled to commence.
- B. The FC shall provide the TAC field tally sheets on a daily basis or as requested in order for the TAC to complete the necessary field audits ("hot audit") during the inventory cruise.
- C. The FC shall immediately address any questions and or map/cruise issues to the TAC for resolution. Upon direction from the TAC, the FC shall make any requested modifications and/or corrections.
- D. If the TAC cannot resolve any field tally, map or guideline compliance issue, it shall be referred to the timber appraisal manager (DOF) who will review the situation and determine the appropriate resolution.

430 Field Cruise Specifications

- A. *Cruise Line & Plot Flagging* - All plot centers will be marked with flagging; one piece at eye level and one piece in the hole the cruiser used as plot center. The flagging at eye level will have the cruise line, the plot number, and the cruiser's initials written on it. The first tallied tree, generally the tree closest to plot center, will be flagged, with the remaining tallied trees listed in clockwise order such that TAC can easily verify plot data. If growth data is taken on that plot, the cruiser will write "growth tree" on the flagging placed on the bored tree. Flagging along cruise lines will be placed within visual distance of each other. The beginning and end of each cruise line, and where cruise lines cross trails or roads, must be flagged, which must also have the cruise line and direction and distance to the next plot in chains written on it.
- B. *Radial Growth Plots* - Every 5th plot will be designated a radial growth plot, on which the first tallied dominant or co-dominant pine tree will be bored to determine a 5-year radial growth. A list of all sampled trees, by stand and including the below information, will be provided as part of the TCTA report addenda. Data on each growth tree shall include:
 1. Diameter
 2. Bark thickness
 3. Five-year radial growth
 4. Species
 5. Total height/site index information
- C. *Tree Measurements & Sampling* - All merchantable timber in all plots shall have the DBH measured and tallied. DBH's will be tallied in 1 inch diameter classes, e.g. 5" (4.56" - 5.55"), 6" (5.56" - 6.55"), 7" (6.56" - 7.55"), etc. Sub-sampling of heights in merchantable, planted pine will be allowed and if used, will consist of a height measurement of the planted pine tree closest to plot center. Enough samples will be necessary to have sufficient representation in each diameter AND product class. Sub-sampling of heights will not be allowed in merchantable natural timber. Merchantable heights will be tallied to the nearest merchantable length based on product specifications established by the consulting forester. Total heights will be measured and tallied in one-foot increments.
- D. *Product Specifications* - The forestry consultant will designate (and include in the report) the DBH classes in the various product classes along with merchantable height top diameters, and minimum merchantable lengths based on the market in which the subject property is located. These standards will be identified prior to the cruise and provided to the TAC and included in the final appraisal report. Depending on the market area of the subject, the forestry consultant will designate the product classes which may include, but aren't limited to, the following:
 1. Pine Pulpwood - Tally all trees in this product class that do not qualify for pine sawtimber or pine chip-n-saw. Pine topwood volume should be included as pine pulpwood in the cruise summary, but not used in the statistical analysis for pulpwood.
 2. Pine Small Sawtimber - Tally all trees that are in this product class that are free of defects such as cankers, excessive sweep or limbs, forked, etc.

3. Pine Large Sawtimber - Tally all trees that are in this product class that are free of defects such as cankers, excessive sweep or limbs, ring knots, forked, etc. Specify percentage of total sawtimber volume that is in pole-quality timber and/or veneer/peeler timber and value accordingly.
 4. Hardwood Pulpwood - Tally all trees that are in this product class measured above butt swell or larger trees that do not qualify for hardwood sawtimber, separated into categories of soft hardwood and hard hardwood.
 5. Hardwood Sawtimber - Tally all trees that are in this product class with the DBH measured above butt swell and that are free of defects such as cankers, rot, excessive sweep or limbs, forked, etc. Tally should be separated by species. Tally all gums, magnolia, etc. as soft hardwood. Tally all oaks, hickories, etc. as hardwood. Tally maple and ash as mixed hardwood.
 6. Cypress Mulchwood - Tally all trees that are in this product class with the DBH measured above butt swell that do not qualify as cypress B-grade logs or cypress sawtimber.
 7. Cypress Small Sawtimber - Tally all trees that are in this product class with the DBH measured above butt swell that are free of all defects such as excessive sweep or limbs, forked, etc. These B-log trees should exhibit good form and be capable of being sawed into lumber.
 8. Cypress Large Sawtimber - Tally all trees that are in this product class with the DBH measured above butt swell that are free of defects such as excessive sweep or limbs, forked, etc.
- E. *Weight Equations & Form Class* - Use appropriate published weight equations or tables for all pine and cypress pulpwood, small sawtimber, sawtimber and topwood, if applicable, as approved by TAC and/or TAM. Depending upon the quality of the sawtimber on the parcel, the forestry consultant has the option to use form class 78 or higher for pine and cypress OR the form class specified in the bid specifications. Use appropriate weight equations or log rule scales for form class 80 to determine weight or volume for hardwood sawtimber OR the form class specified in the bid specifications.

500 TIMBER CRUISE MONITORING AND AUDIT

510 Coordination/TAC Monitoring

- A. Once the Bureau of Appraisal employs (by task order or purchase order) a TCTA forestry consultant firm to complete a timber cruise/appraisal project, the TAC will contact the FC to provide any additional information necessary to understand the scope of work. The FC will confirm their schedule of fieldwork with the TAC.
- B. The TCTA firm shall provide plot tally sheets either daily (via fax, email) or immediately at the end of the cruise field work or as requested by the TAC.
- C. The TAC shall be onsite during the initial day or week, as appropriate, of the field cruise to ensure compliance with cruise specifications, monitor work quality and answer any pertinent questions. At this time the TAC shall “hot audit” at least two merchantable timber plots installed by each cruiser and remedy immediately any discrepancies (eg. inconsistencies in count trees, diameters and/or height measurements) for the purposes of improving the accuracy of future inventory work on the cruise project. These audit plots will be included in the statistical paired t-test evaluation described later.
- D. In conjunction with initiation of the field cruise, the TAC will arrange an onsite visit by the FA for purposes of inspecting forest stands with the FC and reviewing any pertinent TCTA issues.

520 Plot Audits and Paired T-Test

- A. Unless other arrangements are made through the TAM (DOF), following completion of the field cruise, the TAC will visit and audit between 3 - 5 percent of the merchantable timber plots and/or 2 – 4 percent of the pre-merchantable timber plots for each forester and/or technician working on the timber appraisal cruise. Plots visited during the cruise (see above) will be included in this percentage. Every effort will also be made to select plots from each of the various strata.
- B. Additional audit plots beyond these guidelines may be warranted should problems be identified with a particular cruiser(s).
- C. The TAC will also make note of any deviations in cruise line and plot location. The TAC will also annotate any difficulties found in locating cruise lines, plots or tally start trees.
- D. The TAC will be required to perform a paired “t” test to compare the audited plot data with the plot data collected by the FC.
- E. Using the paired “t” test for merchantable timber plots:
 1. The variable for the paired “t” test will be *volume, or weight, per plot*, weighted for the relative value of the various timber products present.
 2. These relative product values will be determined by the TAC using those product values established in the TCTA; or, shall be based on his own knowledge of current market values.
 3. In order to *PASS*, the paired “t” test must indicate no significant difference for value-weighted volume (or value) at the 95% confidence interval.
- F. Using the paired “t” test for pre-merchantable timber plots:
 1. The variable for the paired “t” test will be the number of stems per plot.
 2. Similar to above, in order to *PASS*, there shall be no significant difference at the 95% confidence interval.
- G. Should either merchantable or pre-merchantable plots *FAIL* the paired “t” test, the TAC will evaluate plots by individual cruiser to determine if the paired “t” test was failed due to the work of one particular cruiser. The TAC will notify the TAM (DOF) immediately to review for a prompt resolution and decide upon the necessary remedy. Possible remedies may include:
 1. Percentage adjustment of cruiser(s) volume estimates
 2. Re-tally of all or selected cruise plots in stratum contributing to error
 3. Re-tally of all of a specific cruiser’s plots
- H. Should the FC determine that a re-tally of plots will likely cause the TCTA report delivery to exceed the specified deadline, he should contact the PM for an amendment to task or purchase order, extending the due date to allow for the added work. If the deadline is ignored, the FC will be responsible for the penalty.

600 TIMBER CRUISE / TIMBER APPRAISAL REPORT

601 Purpose & Scope

- A. The purpose of these standards is twofold. First, to supplement a real estate appraisal of forest land that must conform to the Uniform Standards of Professional Appraisal Practice (USPAP) and Supplemental Appraisal Standards for Board of Trustees Land Acquisitions by setting forth general principles applicable to the appraisal of standing timber that may be included with any forest land property for acquisition by the Board of Trustees of the Internal Improvement Trust Fund (BOT). Second, to achieve uniformity of self-contained timber appraisal (TA) reports through a format that may serve as a general guide.
- B. These supplemental appraisal guidelines have been prepared to assure uniformity of TA requirements among the various fee appraisers who prepare appraisals of forest land for the various agencies which acquire lands, title to which vests with the BOT, State of Florida, and to assist the timber appraiser in understanding the requirements and suggested format of the TA report.
- C. These guidelines cover the following scope:
 1. General format for self-contained TA reports and discussion of considerations within the format.
 2. General guidelines of a miscellaneous nature.
 3. Although these guidelines are developed to encourage uniform approaches to TA problems and to provide a guide for adequate supporting data and other factual information and reporting used to develop opinions of market value, they are not intended to limit the scope of TA investigations or bias the independent judgment or value opinions of timber appraisers employed by the State.

603 Policy

- A. It is the policy of the BOT, in the acquisition of real property, that the public trust of the citizens of Florida be upheld and protected. Since public funds are involved, it is incumbent upon all who are employed to represent the public interest and the citizens generally. In so doing, care must be taken that the market value opinion is fair, not only to the individual forestland owner, but also to the public which is to pay for the purchase of the forested property.

605 Appraisal Standards & Guidelines Compliance

- A. Consistent with the purpose of these guidelines stated above, the reader should understand that a timber appraisal, in and of itself, is **not** required to comply with USPAP standards.
- B. These timber appraisal standards have been created to serve only as an aid to the development of timber appraisals to be provided to the fee appraisers for their use in preparing forest land appraisals and appraisal reviews attendant to the land acquisition process embodied in Sections 253.025, F.S., for non-conservation properties and 259.041, F.S., lands acquired for conservation and recreation purposes. In reference to those forestland appraisals that will utilize the TA, The Uniform Standards of Professional Appraisal Practice (USPAP) shall serve as the most appropriate standards when preparing forestland appraisals for state land acquisitions.
- C. It is recognized that appraising is a professional practice that involves judgment. To this extent, nothing in these TA standards is intended to substitute for reasonable judgment with respect to the TA and/or the TA review process. Notwithstanding the mandates of applicable statutes and administrative rules, appraisers and review appraisers retained or employed by an acquiring governmental agency or qualified non-profit organization may substitute reasonably prudent procedures with appropriate reasoning and support, when necessary, provided the public's interest is reasonably protected.
- D. Strict compliance is not mandatory for all guidelines contained herein; however, a timber appraiser's quality point rating with the Bureau of Appraisal may be lowered if a guideline is overlooked or ignored. *Substantive guidelines* (such as failure to include a highest and best silviculture use analysis, the omission of an appropriate approach to value, etc.) are those that if omitted, ignored or violated, are likely to result in a change in value. Compliance with substantive guidelines is required.
- E. *Non-substantive guidelines* are those that if omitted, ignored or violated, are not likely to result in a change in value. Compliance with non-substantive guidelines is not required; however, it is highly recommended.

- F. Discretion relative to compliance issues will rest with the Division of Forestry and their representatives, regarding Timber Cruise issues, and the Department of Environmental Protection, Bureau of Appraisal or their representatives regarding Timber Appraisal issues.

610 Standardized Report Table of Contents

- A. The appraisal report shall include a table of contents for a self-contained appraisal outline for the complete appraisal. The table of contents should include, at minimum, the following items with the correlating report section numbers found in timber appraisal guideline 620 (following) in which these sections and sub-sections are explained in greater detail.

100	INTRODUCTION
110	Letter of Transmittal
120	Table of Contents
130	Certification
140	General Assumptions and Limiting Conditions
150	Extraordinary Assumptions
160	Executive Summary
170	Subject Maps and Subject Photographs
200	PREMISES OF THE APPRAISAL
210	Purpose of the Appraisal
220	Timber Rights Appraised
230	Definition of Market Value & Other Terminology Used
240	Effective Date of Value Estimate
250	Date of Appraisal Report
260	Intended Use and Intended User
270	Scope of the Appraisal
280	Appraisal Problem and Proposed Solution
300	PRESENTATION OF SUBJECT DATA
310	Timber Products Market Area Description and Analysis – Regional and/or Local
320	Description and Analysis of the Land
330	Description and Analysis of the Standing Timber
340	History of Past Timber Management Practices and Timber Sales
350	Legal Constraints Which Influence Timber Management and Harvesting (Public and Private Restrictions and Constraints)
360	BMP Summary and Application/Relevance to the Subject Timber
400	ANALYSIS AND CONCLUSIONS
410	Highest and Best Silviculture Use of the Merchantable/Pre-merchantable Timber
420	Summary and Relative Accuracy of Timber Cruise Data & Methodology
430	Approaches to Value
440	Merchantable Timber Valuation
450	Pre-merchantable Timber Valuation
460	Conservation Easements
470	Overall Value/Reconciliation

- 500 ADDENDA
 - 510 Merchantable Timber Inventory
 - 520 Stand and Stock Tables
 - 530 Pre-Merchantable Timber Inventory
 - 540 Forest Stand Maps
 - 550 Radial Growth Summary
 - 560 Market Sales Data Sheets with a Sales Location Map
 - 570 Other Supporting Data

620 Timber Appraisal Report Content & Discussion

- A. The timber cruise and appraisal report shall be prepared by the FC using the above table of contents as and outline. The following discussion is referenced to each of these headings and provides guidelines as regards the minimum acceptable content in each area. The numbering system shown here should be used for reference and continuity purposes in each appraisal report.

100 INTRODUCTION

110 Letter of Transmittal

- A. The final total value should be included, along with the date of value, an abbreviated value definition and any extraordinary assumptions upon which the final value is based.
- B. Statement of compliance (e.g. TCTA standards and specifications, etc.)

120 Table of Contents

- A. Pagination listing of section headings (100, 110, etc.). See above section 610.
- B. Include page numbers of Maps and Exhibits.

130 Certification

- A. A signature of the person taking full responsibility for the work product and final value estimate should be included.

140 General Assumptions and Limiting Conditions

- A. This is a general list that will typically apply to all TCTA reports.

150 Extraordinary Assumptions

- A. These are specific to the subject timber and the factors used to estimate its value as of the date of appraisal

160 Executive Summary

- A. A required format is included in section 930 of these standards. Summarizes salient facts and conclusions about the subject stumpage.

170 Subject Maps and Subject Photographs

- A. Include appropriate maps, photographs, sketches, and/or exhibits of the subject property

200 PREMISES OF THE APPRAISAL

210 Purpose of the Appraisal

- A. Typically, the purpose of the TCTA is to determine both the inventory and market value of the subject standing timber.
- B. Standing Timber and other terms used herein should be defined; (a.k.a. Stumpage. See the attached Glossary to be used in establishing the definitions to be used by the timber appraiser.)

220 Timber Rights Appraised

- A. *Fee-Owned Timber*¹ -The timber that is presently owned free and clear. The term fee comes from the legal phrases fee simple and fee simple absolute. A company's fee-owned timber includes timber on land owned by the firm and also may include the timber that is owned by the firm but is on land owned by another party. (R.S. Means)
- B. When timber rights are to be impacted by a proposed Conservation Easement, the proposed easement language, as it affects the timber value being estimated, must be clearly described.

¹ Dictionary of Real Estate Appraisal, 4th Edition; Appraisal Institute, 2002

- C. Typically, the rights associated with the buying/selling of standing timber include the right of access, tree management and harvesting. In many cases, the buyer will acquire these additional rights on a temporary basis, until the terms of the contract are fulfilled. The report should comment on these additional rights so as to cover any liability the landowner might incur for these activities.

230 Definition of Market Value

- A. Unless otherwise stated in the timber appraisal assignment and contract, the estimate of value sought shall be that of market value. Market value is defined as:

The most probable price which standing timber should bring in a competitive and open market under all conditions requisite to fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition is the consummation of a sale as of a specified date and the passing of fee-owned timber rights from seller to buyer under conditions whereby:

1. buyer and seller are typically motivated;
2. both parties are well informed or well advised, and acting in what they consider their best interests;
3. a reasonable time is allowed for exposure in the open market;
4. payment is made in terms of cash in United States dollars or in terms of financial arrangements comparable thereto; and
5. the price represents the normal consideration for the timber sold unaffected by special or creative financing, tax consequences or sales concessions granted by anyone associated with the sale.

- B. This is a market value that addresses the standing timber as a stand-alone value separate from the property as a whole, which includes temporary rights of access, management and harvest. That is to say, this is a value for only one “stick” in the full fee simple “bundle of rights” of the property as a whole. Accordingly, this should not necessarily be interpreted as a direct contribution to the whole or as one part of a summation of all the “sticks” in a fee simple estate.
- C. In order to avoid confusion or any misunderstanding, the term “liquidation value”, should not be used as a substitute for the term “market value.”

240 Effective Date of Value Estimate

- A. This should be the last date of inspection of the subject timber unless otherwise specified. Include any representatives of the owners and/or the client, who accompanied the timber appraiser on the site inspection. Use names, titles or affiliations; whatever is available.

250 Date of Appraisal Report

- A. The date the final value estimate is certified with the timber appraiser’s signature. If the timber appraiser chooses to recertify his report after changes, corrections, etc. are made, the date of the report will change accordingly. This may be the case, if revisions impact the final value, which warrants a recertification of the appraisal report.

260 Intended Use and Intended User

- A. The intended use of the TCTA is to assist the fee appraiser with his/her related task of valuing the property as a whole; which by definition will include the contributing value of the standing timber.
- B. The intended user should be identified (DEP/BA, DOF, etc.)

270 Scope of the Appraisal

- A. Elements of the following definition should cover the work associated with the development of the inventory and with the development of the timber appraisal:

*Scope Of Work:*² The amount and type of information researched and the analysis applied in an assignment. Scope of work includes, but is not limited to, the following:

1. The degree to which the property is inspected or identified;
 2. The extent of research into physical or economic factors that could affect the property;
 3. The extent of data research; and
 4. The type and extent of analysis applied to arrive at opinions or conclusions.
- B. Indicate any related information provided by others. (e.g. Title Work, Inventory Information, Mapping, Aerial Photographs, etc.)

280 Appraisal Problem and Proposed Solution

- A. As a summary-like statement to the Scope of Work above, a clear statement as to what the appraiser is trying to accomplish, given all the above information impacting his work.

300 PRESENTATION OF SUBJECT DATA

310 Timber Products Market Area Description and Analysis - Regional and/or Local

- A. Identify the area wherein the subject timber could feasibly be marketed and discuss the timber related issues that impact supply and demand factors of the timber industry that characterize that area. This should include:
1. Locations and types of mills
 2. Transportation issues
 3. Climate issues
 4. Predominant soils conditions
 5. Regional competitors in the timber market
- B. Include any price trends of recent years and the market's reaction. Also discuss what impact these factors have had on the purchase decisions of buyers of standing timber.
- C. Summarize the information above into a brief conclusion of the subject's Market Area, defined as follows:

*Market Area Analysis*³ : "The objective analysis of observable and/or quantifiable data indicating discernible patterns of urban growth, structure, and change that may detract from or enhance property values; focuses on four sets of considerations that influence value: social, economic, governmental, and environmental factors."

For the purposes of these timber appraisal guidelines the following modification of the above definition is more appropriate:

The objective analysis of observable and/or quantifiable data indicating discernible patterns of various supply/demand factors and/or changes in trends that may detract from or enhance timber values. This may focus on four sets of considerations that influence value: social, economic, governmental, and environmental factors.

² Dictionary of Real Estate Appraisal, 4th Edition; Appraisal Institute, 2002

³ Source: "Dictionary of Real Estate Appraisal", 4th Edition; Appraisal Institute, 2002 and modified for the purposes of these guidelines.

320 Description and Analysis of the Land

- A. Discuss all relevant land characteristics contributing to the past and future growth of the existing timber, as of the date of appraisal. This could include, but not be limited to the following:
 - 1. Size/Plottage Contiguity of the Parcel
 - 2. Location
 - 3. Soils and related Site Indices for the pine portions of the property
 - 4. Uplands/Wetlands
 - 5. Interior network of roadways for management and harvesting purposes
 - 6. Terrain or changes in elevation
 - 7. Site drainage; etc.

330 Description and Analysis of the Standing Timber

- A. Identify the characteristics of the subject timber that are relevant to the purpose and intended use of the TCTA, including but not limited to:
 - 1. Sufficient information to identify subject timber on a stand level;
 - a. Provide adequate reference to corresponding tract/stand maps including species, age and size of all planted and natural stands.
 - b. Summarize the Cruise data – including product types, product mix, age, size, and basal area and harvestability. Pre-merch data should include site index, age and surviving stems per acre.
 - c. Describe the level of confidence in the accuracy of the cruise and the methodology employed, relative to the land issues discussed above
 - 2. Sufficient detailed information to describe the quantity and quality of the subject timber, including adequate supporting material and/or reference to data/tables in Addenda (report section 500). All merchantable timber must be summarized in stand and stock tables by previously described strata OR summarized in the cruise report in a stand summary by product class and species showing diameter class, stems per acre, total stems, volume per acre, and total volume, which shall be reported in tons.
 - 3. A summary of current product specifications, including DBH's, top diameters, and any other qualifying features will be included in the report.

340 History of Past Timber Management Practices and Timber Sales

- A. Other physical characteristics of the subject timber and/or site having a material effect on value.
- B. Identify the level of professional management of the subject timber. Include any relevant information on past silvicultural practices (e.g. bedding, chemical herbicide, fertilization, prescribed burning)
- C. Discuss any timber (standing or sold directly to a mill by the owner) that has been sold within the past three (3) years. If possible, report the sale prices, describe the product that was sold and report any terms of the sale, adding a comment on whether or not this is relevant to today's values

350 Legal Constraints Which Influence Timber Management and Harvesting

- A. Any known restrictions, easements, encumbrances, leases, covenants, contract reservations, declarations, special assessments, zoning and/or Land Use ordinances, deed restrictions or other items of a similar nature having a material effect on timber value. Any reasonably probable changes that could affect timber values should also be considered.

360 BMP Summary and Application /Relevance to the Subject Timber

- A. Include a brief summary of the concept of BMP's and cite the source that may require any such practices within the subject boundaries and the nature of any enforcement of such.
- B. Discuss any voluntary BMP's at the subject and identify the managing entity of the subject, making future contact possible for further discussions, if needed.
- C. Discuss generally the nature and size of any existing special management zones (SMZ's) and/or wetlands and what considerations were made to adjust timber volumes/values. Explain how any adjustments were calculated. Reference maps where these areas are identified.

400 ANALYSIS AND CONCLUSIONS

410 Highest and Best Silviculture Use

- A. Develop an opinion of the highest and best silviculture use of the subject merchantable and pre-merchantable timber considering:
 1. The physical nature of the subject timber
 - a. Comment on Soil/Site Index
 2. Legal constraints
 3. Financial feasibility
 4. Maximally productive use
 - a. Comment on preferred species selection
 - b. Comment on preferred thinning regime
- B. In developing an opinion regarding the highest and best silviculture use of the timber, separate and apart from the value of the land, the consulting forester should consider whether or not the physical and location characteristics of the property are well suited to a commercial timber operation, and/or a specific sale of timber, including but not limited to proximity to mills, topography, soil conditions, shape and other relevant factors.
 1. This should be based on a timber industry's point of the view, which may or may not be consistent with the fee appraiser's final conclusion of the highest and best use of the whole property, based on other market factors primarily impacting the land.
 2. Evaluation of timber (stumpage) to indicate if the maximum productive use would guide the prudent buyer/owner to delay harvest in order to capture growth into a higher per unit product class (e.g. A stand whose growth from a predominantly pulpwood category into, in the near future, a stand with substantive volume of chip-n-saw products). Such consideration may warrant an income valuation approach to determine realistic current values.

420 Summary and Relative Accuracy of Timber Cruise Methodology

- A. A description of the method of cruise should be included in the report. It shall include at least the type of sample plot, (variable plot radius vs. fixed radius plots), total plots in merchantable and pre-merchantable timber, sampling grid, days of fieldwork conducted, and the names of the timber cruisers.
- B. The weight tables approved by the TAC and/or the Division of Forestry and all conversion factors used must be documented in the report and must be based on outside bark measurements. The report shall provide justification for the use of weight tables used and why it is applicable to the subject parcel OR use weight tables approved by the TAC and/or the Division of Forestry. Such justification may include information such as what geographical region where the data was gathered, the species and whether it was gathered from a plantation or natural stand. If requested by DOF, a copy of the weight tables used shall be provided to DOF unless weight tables, approved by the TAC and/or the Division of Forestry, were used. It must be clearly stated in the report which form class was used and why.
- C. A statistical analysis and summary of the total cruise by previously described strata (see Section 230 B) must be included in the report. Merchantable timber statistical analysis shall be based upon either basal area per acre or weight or volume per acre. Pre-merchantable timber statistical analysis shall be based on stems per acre, and will include a total tract analysis and a stand level analysis. Both merchantable and pre-merchantable timber summary analyses shall, at a minimum, include: total tract or stand acreage cruised, number of sample points, the per acre mean, the standard deviation, the coefficient of variation, the standard error of the mean, and the limit of error for the appropriate confidence limit and degrees of freedom.
- D. Reference the cruise/plot map in the Addenda.
- E. Describe again your level of confidence in the accuracy of the cruise or any disclaimer, etc., as applicable.

430 Approaches to Value

- A. Briefly discuss the theory behind all three standard approaches, as they might apply to the subject timber. Conclude with a discussion of which approaches will be applied to the subject merchantable and pre-merchantable timber and why.
 - 1. The timber appraiser must reflect an awareness of, an understanding of, and correctly employ those recognized methods and techniques that are necessary to produce a credible timber appraisal.

440 Merchantable Timber Valuation

- A. Discuss in somewhat greater detail the approaches to be utilized for the subject's merchantable timber and why.
- B. When applying the Sales Comparison Approach, the appraiser must analyze such comparable sales of merchantable timber as are available to indicate a value conclusion. Product prices indicated by the comparable sales of timber should be adjusted, as appropriate, to account for differences between the subject timber and the timber in the comparable sales. These differences shall first consider:
 - 1. Market Conditions (changes in the specific market since the date of sale)
 - 2. Sales Terms and/or Conditions (e.g. owner financing, harvest schedule, etc.)
 - 3. Reconcile the above for an initial typical cash equivalent indication, then proceed to:
 - a. Timber quantity & type;
 - b. Timber quality & age/maturity;
 - c. Logging conditions;
 - d. Accessibility;
 - e. Regulations;
 - f. Size of tract;
 - g. Distances to markets;
 - h. Any other factors that would be expected to significantly affect the value of the subject timber.
- C. When applying the Cost Approach, the appraiser shall determine the standing value of the subject merchantable timber by reducing the delivered mill prices for the various subject timber products by the total cost of typical and unique itemized costs of harvesting and delivering the products to the mill(s), including entrepreneurial profit.
 - 1. The price and cost information should be obtained from cited local timber market sources and be verified and documented, as such, by the timber appraiser or listed as proprietary and confidential.
- D. When applying the Income Approach to value merchantable timber, the appraiser should use recognized discounted cash flow (DCF) analysis methodology or other appropriate techniques. The assumptions used by the appraiser in the DCF shall be consistent with market evidence and prevailing market attitudes, the sources of which must be disclosed and verified as current. In addition, the consideration of the impact of any long-term agreements regarding any of the timber stands should be included, as applicable. At minimum, the appraiser shall make the following assumptions to employ the DCF analysis:
 - 1. Determine a typical commercial management regime (eg. thinning and/or rotation age) and harvest period for the timber;
 - 2. Project the future growth of the subject timber using accepted published or proprietary growth equations or models;
 - 3. Estimate future timber prices (identify as standing or mill prices);
 - 4. Estimate the value of future timber harvests (gross income);
 - 5. Estimate any appropriate costs associated with ongoing management (such as recurring costs such as forester fees, prescribed fire). Site preparation costs are typically allocated to land value in the income capitalization approach.
 - 6. Discuss and justify assumptions made regarding inflation and real rate product price increases.
 - 7. Calculate the final estimate of Net Operating Income;

8. Recognizing the lack of adequate support inherent in reliance on a single method of determining an appropriate discount, the selected rate should be based on a reconciliation of more than one of the following methods. Note the weight on “market” evidence is stressed, and needs to be documented to the fullest extent possible.
 - a. Obtain the discount rate from market transactions involving timber, or
 - b. Obtain the discount rate from reliable documented surveys of market participants, or
 - c. Derive the discount rate by using an alternative capital market investment. Adjustments should be made in the alternative investment to account for differences in risk, liquidity, term, and any other relevant factors, such as investment maturity dates and their relevance to the maturity of the subject stand of trees, if applicable, or
 - d. Any other recognized method that is market-derived and can be demonstrated that it reflects the expectations and perceptions of market participants.
 - e. Relevant source materials (e.g. Treasury-Bill/Bond rates, price or inflation indices, market surveys) should be referenced and included in Addenda (section 550)
 9. Conclude a net present value (NPV) of the standing timber to a typical buyer.
- E. The FC shall reconcile the quality and quantity of data available and analyzed within the approaches used to value the merchantable timber and the applicability or suitability of the approaches used.

450 Pre-Merchantable Timber Valuation

- A. Because of their younger age, smaller diameters and shorter heights, these stands have no immediate commercial value for liquidation purposes. However, continued growth and adequate survival will ensure that these stands can likely achieve commercial value for harvesting, over time. As a result, these stands can represent a premium in market value over bare land. The TA must use the approach(es) appropriate to determine what a typical buyer will pay for the subject’s standing, young trees. Accordingly, discussion, in somewhat greater detail, of the approach(es) to be utilized for the subject’s pre-merchantable timber, the reasons why is warranted.
- B. When applying the Sales Comparison Approach, the appraiser must analyze such comparable sales of pre-merchantable timber as are available to indicate a value conclusion. Prices indicated by the comparable sales of pre-merchantable timber should be adjusted, as appropriate, to account for differences between the subject timber and the timber in the comparable sales. These differences shall first consider:
 1. Market Conditions (Changes if the specific market since the date of sale;
 2. Sales Terms and/or Conditions (e.g. owner financing, harvest schedule, etc.)
 3. Reconcile the above for an initial typical cash equivalent indication, then proceed to:
 - a. Site quality, Soil/Index;
 - b. Stocking;
 - c. Species;
 - d. Cultural treatments (e.g. fertilization, herbicides);
 - e. Accessibility;
 - f. Regulations;
 - g. Size of tract;
 - h. Distances to markets;
 - i. Any other factors that would be expected to significantly affect the value of the pre-merchantable timber, such as market trends and product supply/demand characteristics.

- C. When applying the Cost Approach, the appraiser shall determine accumulated costs of reproducing the current stand(s) by establishing the value of the subject pre-merchantable timber by carrying current establishment costs and recurring expenses forward at an appropriate interest rate representing the cost of borrowing money (eg. prime rate+) or a well supported and documented, site-specific internal rate of return, to a point at which the stand becomes merchantable, or beyond. As an alternative, a rate of growth (straight line) method can be used. The establishment cost and rate of growth used shall be market-derived and based on the typical establishment cost attributed to pre-merchantable timber stands in the local market, by market participants. Data included will be verified and documented.
1. Site prep, seedling and planting costs should be obtained from cited local sources and be verified and documented, as such, by the timber appraiser.
 2. Include a discussion of the appropriateness of site preparation methods in establishing the pre-merchantable stand.
 3. Recurring expenses included should represent a net of annual costs (such as prescribed burning, forester fees) necessary to reproduce the existing forest stand.
 4. Discuss actual planting densities and current stocking and whether any adjustment for actual condition of the plantation is necessary due to poor survival (eg. offsite pine) comparative to an industry-accepted, age-specific, stocking range. In such cases the actual should be compared to a defined standard, and the resulting ratio used to adjust the subject stand.
- D. When applying the Income Approach to value pre-merchantable timber the appraiser must use recognized discounted cash flow (DCF) analysis methodology. The assumptions used by the appraiser in the DCF shall be consistent with market evidence and prevailing market attitudes, the sources of which must be disclosed and verified as current. In addition, the consideration of the impact of any long-term agreements regarding any of the timber stands should be included, as applicable. At a minimum, the appraiser shall make the following assumptions to employ the DCF analysis:
1. Determine a typical commercial management regime (eg. thinning and/or rotation age) and harvest period for the timber, keeping in mind that clearcutting the stand at the earliest merchantable age may not reflect the preferred or profitable management strategy.
 2. Project the future growth of the subject timber using accepted published or proprietary growth equations or models;
 3. Estimate future timber prices, (identify as standing or mill prices);
 4. Estimate the value of future timber harvests (gross income);
 5. Estimate any appropriate costs associated with ongoing management (such as recurring costs such as forester fees, prescribed fire). Site preparation costs are typically allocated to land value in the income capitalization approach.
 6. Discuss and justify assumptions made regarding inflation and real rate (real appreciation) product price increases.
 - 7 Calculate the final estimate of Net Operating Income;
 - 8 Recognizing the lack of adequate support inherent in reliance on a single method of determining an appropriate discount, the selected rate should be based on a reconciliation of more than one of the following methods:
 - a. Obtain the discount rate from market transactions involving timber, or
 - b. Obtain the discount rate from reliable documented surveys of market participants, or
 - c. Derive the discount rate by using an alternative capital market investment. Adjustments should be made in the alternative investment to account for differences in risk, liquidity, term, and any other relevant factors, or
 - d. Any other recognized method that is market-derived and can be demonstrated that it reflects the expectations and perceptions of market participants.
 9. Relevant source materials (e.g. Treasury Bill/Bond rates, price or inflation indices, market surveys) should be referenced and included in Addenda (Section 504)

10. Conclude a net present value (NPV) of the standing timber to a typical buyer.
- E. The FC shall reconcile the quality and quantity of data available and analyzed within the approaches used to value the pre-merchantable timber and the applicability or suitability of the approaches used.

460 Conservation Easements

- A. If the FC is asked to review carefully the language of the conservation easement in order to consider the impact of an easement on the value of the timber, the following factors should be considered:
1. In formulating his or her opinion of the difference in the pre-easement and post-easement value of the timber, the FC should consider whether or not the typical buyer would or would not voluntarily comply with BMP's, if this is not specified in the Conservation Easement language. If the typical buyer would voluntarily comply with BMP's, the timber should be valued as if it would be harvested in compliance with BMP's.
 2. In formulating his or her opinion of the after value of the timber, the FC should consider whether or not any limitations placed on harvesting, fertilization, mechanical chopping, herbicides, or other factors impact the value of the existing timber.
 3. All calculations performed to establish pre- and post-easement values should be explained fully and supporting information provided as necessary. The pertinent sections of the easement should be included in the Addenda's Other Supporting Data section.

470 Overall Value/Reconciliation

- A. The final reconciliation to a total value of all the subject timber combined, as of the date of value, will combine the values obtained independently for the merchantable and the pre-merchantable timber. A discussion of any potential for discounting the combined value, as summed, should be included and applied, if necessary.
1. Given the local/regional market (quotas) conditions and given the volume, species, and logging conditions of the subject stumpage, consideration should be applied to larger tracts, of the need to extend harvests beyond the immediate time (eg. twenty-four (24) months). In such situations where harvests must be deferred, then some discount or premium may be applied on larger tracts to arrive at a present market value for the timber. Any methodology used in this regard, should be justified and supported as the appropriate approach and one common to the forestland investment and real estate market.
 2. Final reconciliation should be based on the typical buyers' investment goals and/or expectations in the market place. Such information should be current, via the identification of verified sources, and documented.

500 ADDENDA

510 Merchantable Timber Inventory

- A. Include pertinent backup information, maps and/or data related to inventory cruise and sampling statistics – such as cruise plot map, plot tally information.

520 Stand and Stock Tables

530 Pre-Merchantable Timber Cruise Inventory (see 510)

540 Forest Stand Maps

550 Radial Growth Summary – from radial/site index plot cruise data

560 Market Sales Data Sheets with a Sales Location Map

570 Other Supporting Data

630 Standard Report Media

- A. The required media format for timber appraisal reports in preparing tract and strata maps will be ArcView.
- B. The required media format for timber appraisal reports will be Microsoft Word; any spreadsheets will be Microsoft Excel and any graphic files will be in PDF format.
- C. The PM or TAM may require some or all of the cruise data and or TCTA report to be provided in digital format as well as in hard copy.

650 Appraisal Report Updates and Revisions

- A. Following the completion and approval of a TCTA report, Revisions or Updates may be required for a variety of reasons. In some cases, this is very minor (as with a final survey that notes a relatively small change in acreage) or changes can be of major consequence.
- B. Depending on the circumstances, the PM will typically be consulted by DSL acquisition staff.
- C. The TAC will be contacted, as needed, to determine the work that will be required. If extensive, a new task or purchase order for the TAC may be warranted.
- D. The work required will be discussed with the FC, who will determine any new fee and time requirements that may be warranted and a new task or purchase order will be issued. A new bid procedure may or may not be initiated.
- E. The TAM will be kept informed of the circumstances and status, as they develop.
- F. The primary differences between the Revision and the Update focus on the issues related to the Date of Value, as follows:
 - 1. A Revision will retain the Date of Value stated in the original report, as these changes tend to be related to the physical characteristics of the subject.
 - 2. An Update, on the other hand, will change the Date of Value to a more current date and this change will also warrant dealing with changes in market dynamics and market data, in addition to any physical characteristics and/or issues.

700 TIMBER APPRAISAL REVIEW

701 Purpose

- A. In performing a TCTA review, the TAC, acting as a reviewer, must develop and report a credible opinion as to the quality of another forestry consultant's work and must clearly disclose the scope of work performed in the review assignment.
- B. The reviewer's opinion about quality must encompass the completeness, adequacy, relevance, appropriateness, and reasonableness of the work under review, within the context of the requirements applicable to that work.
- C. The review must demonstrate the competency of the reviewer in the two technical areas of the TCTA:
 - The Timber Cruise (Sections 400 and 500) and
 - The Timber Appraisal (Section 600).

This involves the reviewer's ability to correctly employ those recognized methods and techniques necessary to develop credible TCTA review opinions and also avoid material errors of commission or omission that could be construed as misleading or even fraudulent review reporting.

- D. The TCTA review requires the reviewer to prepare a separate report or a file memorandum setting forth the scope of work and the results of the review.

705 Report Content

- A. Identify and state the reviewer's client and intended users, the intended use of the reviewer's opinions and conclusions and the purpose of the review assignment.
 - 1. The intended use is in the context of the client's use of the reviewer's opinions and conclusions. Examples include: quality control, audit, qualification or confirmation.
 - 2. The purpose of the review assignment relates to the reviewer's objective. Examples include: to evaluate compliance with relevant requirements (general and technical) of the client (See Sections 400, 500 and 600 of these *Timber Cruise/Timber Appraisal Standards*) and all applicable regulations. (Note that if the person signing the timber appraisal portion of the report under review states that he/she is a State Certified Real Estate Appraiser, the report under review should conform to Standard 8 of the "Uniform Standards of Professional Appraisal Practice" {USPAP}).
- B. Identify and state the following details:
 - 2. Subject of the TCTA review assignment.
 - 3. Date of the review.
 - 4. Property and ownership of the interest appraised in the work under review.
 - 5. Date of the work under review and the effective date of the opinion and conclusion in the work under review.
 - 6. Name(s) of who completed the work under review.
- C. Identify and state the nature, extent and detail of the review process undertaken (i.e. the Scope of Work involved in the review).
- D. Identify and state an opinion as to the completeness of the work under review within the context of the requirements applicable to that work.
- E. Identify and state an opinion as to the apparent adequacy and relevance of the data and the propriety of any adjustments to the data, given the scope applicable to the TCTA assignment.
- F. Identify and state opinion as to overall accuracy of the timber inventory, including statistical (sampling) error as well as any non-sampling error (eg. biases, mapping errors, etc.)
- G. Identify and state an opinion as to the appropriateness and accuracy of the TCTA report methods, weight calculations and summaries, and techniques used, given the scope of work applicable in the assignment and identify and state the reasons for any disagreement.
- H. Identify and state an opinion as to the whether the analyses, opinions, value calculations, and conclusions are appropriate and reasonable, given the scope of work applicable in the assignment and identify and state the reasons for any disagreement.

- I. Include all pertinent information.
1. The reviewer must be certain that the information provided is sufficient for the client and intended users to adequately understand the rationale for the reviewer's opinions and conclusions.
- J. Include a signed certification that is similar in content to the following form:

I certify that, to the best of my knowledge and belief:

- *The facts and data reported by the reviewer and used in the review process are true and correct.*
- *The analyses, opinions and conclusions in this review report are limited only by the assumptions and limiting conditions stated in this review report and are my personal, impartial and unbiased professional analyses, opinions and conclusions.*
- *I have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved.*
- *I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.*
- *My engagement in this assignment was not contingent upon developing or reporting predetermined results.*
- *My compensation is not contingent on an action or event resulting from the analyses, opinions or conclusions in this review or from its use.*
- *My analyses opinions and conclusions were developed and this review report was prepared in conformity with "Timber Cruise/Timber Appraisal (TCTA) Standards" prepared by the Florida Division of Forestry and the Florida Department of Environmental Protection.**
- *I (we) have (or have not) made a personal inspection of the subject of the work under review. (If needed, specify the individual signer(s) that inspected the property.)*
- *No one provided significant TCTA review assistance to the person(s) signing this certification. (If there are exceptions, name any who assisted.)*

- K. The signed certification is an integral part of the TCTA review report. A reviewer, who signs any part of the review report, must also sign this certification.
- L. Any reviewer(s) who signs a certification accepts full responsibility for all elements of the certification, for the review assignment results and for the contents of the TCTA review.
- M. When a signing reviewer has relied on work done by others who do not sign the certification, the signing reviewer is responsible for the decision to rely on their work. The signing reviewer is required to have a reasonable basis for believing that those individuals performing the work are competent and that their work is credible.

* If a signer of this report and this certification is a State Certified Real Estate Appraiser, this must include the statement that the review conforms to USPAP, Standard #3.

710 Procedures

- A. A *Notice to Proceed* will be issued to the TAC by the PM upon receipt of the TCTA draft. The TAM will be copied as well as the fee appraiser(s). The task description will set the number of days for the review process to be completed, or will specify a due date. At this point, the users (eg. fee appraiser(s)) of the TCTA report may submit clarification requests and/or questions to the TAC.
- B. TAC (reviewer) telephone and letter communications to the FC, who prepared the TCTA, should be confirmed and/or copied to the PM and TAM. The task description will also set the number of days for these various parts of the review process.
- C. The FC will make the necessary corrections and provide clarifications, in the form requested by the TAC (reviewer) and in the time reasonably set by the TAC, depending on whether another site visit may be necessary.
- D. The TAC will prepare and submit a draft review to the PM and the TAM. The TAM will submit questions and/or corrections through the PM, who will make suggestions to the TAC as to the readability* of the review report consistent with the report content requirements above. The draft will be due by a stated number of days prior to the final due date and the PM/TAM will have a stated number of days to return the draft for corrections. These time requirements will be stated on a task description that is made part of the scope of the work originally submitted to the TAC (in Section 710 A).
- E. The final review will be delivered by the final due date. Penalties for late postmarking will be specified in the original task/purchase order and these will need to be enforced.
- F. After receipt of the final review report/memorandum along with the corrected TCTA report, the TAM will issue an Administrative Review in the form of a one-page memo/letter accepting the TCTA for its intended use.
 1. The Administrative Review simply acknowledges that a user of the TCTA could move forward with a business decision, (in this case to enter into negotiations for a potential acquisition of the standing timber alone, irrespective of the land) based upon the reported value of the timber in the TCTA.
 2. None of the technical aspects of the TCTA will be addressed in the Administrative Review.

* It is understood that the technical aspects of the Timber Cruise portion of the TCTA will have been addressed at the time of the cruise, during the TAC's visits to the site while the cruise is being completed.

800 GLOSSARY OF TERMS AND REFERENCES

Introduction

The definition of terms that follows should help create a more uniform work product in the reporting of standing timber inventories and market values. This can only be accomplished with your help as either a Timber Appraisal Coordinator or as a Forestry Consultant. Therefore, both of these individuals should refer to the definitions of the terms in this glossary as they prepare their reports. This will be a significant help to strengthening education of the readers of timber appraisal reports and reviews – from the local fee appraiser to the Governor and Cabinet members and their aides. Working toward greater uniformity of language and common understanding will be of great benefit and will be much appreciated.

The following represents commonly understood definitions of significant terms and phrases used in the forestry and timber appraisal community. The list is arranged alphabetically.

Accuracy – the accuracy of a forest inventory refers to the TOTAL error which includes both the sampling error and the effects of biases and non-sampling errors. See *sampling error* and *non-sampling error*.

Basal Area – An expression of stand density using the cross-sectional area of standing trees measured at 4.5' above the ground; usually expressed as square feet per acre.

Bedding: use of a special disk to build up low ridges of soil during site preparation on poorly drained sites. Bedding improves conditions for seedlings planted on the ridges by raising their roots above high water tables and concentrating topsoil and organic matter in the root zone. “Double bedding” is a second pass along the beds, usually several months later, to decrease competing vegetation and better form the beds.

BMP (Best Management Practices): a series of guidelines or minimum standards for proper application of forestry operations, designed primarily to prevent soil erosion and water pollution, and to protect certain wildlife habitat values in riparian and wetland areas.

Board foot: a unit of measure (solid wood product) of volume measuring one foot square and one inch thick (before planing). In estimating timber volumes, allowance for saw kerf is included in tables

Breast Height: 4.5 feet above ground level. See “dbh.”

Buffer strip: a belt of relatively undisturbed planted or natural vegetation maintained along streams to reduce erosion and siltation, or along roads and field edges to reduce poaching and wind erosion, and to improve scenery. Buffer strips also provide wildlife travel corridors and habitat.

Chain: a unit of linear measure used in forestry and surveying, equal to 66 feet (or approximately 20 meters).

Chip-n-saw – When used as a tree category, it generally refers to that class of trees larger than pulpwood size but smaller than saw-timber trees. Often includes trees, which are 8-11 inches DBH. These trees are used to produce both pulp chips and lumber.

Clear-cut – To harvest all the trees in a stand at one time

Climax: the final stage in ecological succession; the persistent community of species that will develop on a site in the absence of disturbance. In forests, the climax ecosystem is dominated by tree species capable of reproducing in their own shade. Periodic disturbances, however, can prevent the formation of a climax ecosystem and maintain a site at an earlier successional stage. For example, the longleaf pine-wiregrass association, which is maintained by periodic fires, historically dominated much of the Southeast's forest lands. In the absence of fire, shade tolerant hardwoods compose the climax vegetation in this region.

Co-dominant tree: a tree with its crown in the upper level of the canopy of surrounding trees, and receiving direct sunlight from above and comparatively little sunlight from the sides. See also "dominant" and "suppressed."

Coefficient of variation – A measure of relative variability or dispersion computed as the ratio of the standard deviation to the mean, and generally expressed as a percentage. This is a most important statistical measure for foresters for describing the relative uniformity of a stand or stratum. CV's are defined for a sample mean such as basal area or volume (or value) per acre for a specific parameter (eg. for all timber; or for specific products and or species) being sampled. Typically, when sampling for basal area (all species), planted pine stands will have lower CV's (range from 25 – 50% commonly) than natural stands (range from 75 – 125% commonly). Fewer samples therefore, will be required for planted stands versus natural stands in order for a cruise to produce the same statistical accuracy. Different stands with the same CV require the same number of plots to produce means of equal statistical accuracy, regardless of the size of the stand.

Confidence limits or intervals – The statistical way of indicating reliability of an estimate is to establish confidence limits. Confidence limits then is a term that refers to the probability of the true population mean falling within a stated percentage of the sample mean (sampling error or limit of error). For normally distributed populations, the confidence limits are given by the mathematical statement: Estimate $\pm(t)(\text{Standard Error})$; where the "t" value represents the number of standard deviations on either side (+ and -) of the estimate of the population mean for a given confidence limit (as obtained from the Student's t distribution table). For a 95% confidence interval with a 10% sampling error, the sample mean should fall within 10% of the true mean 95 times out of 100 or unless a one-in-twenty chance has occurred. See *coefficient of variation* and *sampling error*.

Commercial forestland – USFS defines this as land capable of growing at least 20 cubic feet per acre year of industrial wood in natural stands.

Commercial forestry – The practice of forestry with the object of producing timber and other forest produce as a business enterprise or for sale to a business enterprise.

Community type: a unique combination of plants and animals that occur in a particular location and are adapted to similar environmental conditions.

Compartment: a land area that is managed as a unit because of geographic or ownership boundaries (for example, roads, streams, fence lines) and/or because of similar characteristics within the area (for example, soil types, vegetation, productivity, topography).

Competition: the process in which organisms with similar requirements contend for resources-light, water, nutrients, and space that are in limited supply.

Correlation coefficient – A measure of the closeness of the relationship between two variables over time. The correlation can range from -1.0 to +1.0.

Cost of capital – The required rate of return on some investment. An investment's cost of capital is a function of its risk level. **Also refers to the term "Discount Rate".**

Cost of Establishment – The total cost of establishing a stand of timber. Generally includes burning, mechanical and chemical site preparation treatments, cost of seedlings, and planting costs. May also include fertilization treatments and first year post-planting herbicide treatments.

Cruise, cruising – 1. A forest survey to locate and estimate the quantity of timber on a given area according to species, size, quality, possible products, or other characteristics. 2. The estimate obtained from such a cruise

Cruise grid – The spacing of sample points or plots used to achieve the number of samples desired in a stand or tract of timber being cruised. Usually expressed in chains (66’).

Cull: a tree of such poor quality that it has no merchantable value in terms of the product being cut.

Cypress dome: a cypress stand with a characteristic dome-shape (tall in the center, shorter on the edges) that occurs in stillwater swamps.

Custodial costs - Annually recurring expenses such as property taxes and certain regular forest management expenditures.

dbh: diameter of a tree at breast height, or 4.5 feet above ground level, the accepted point of diameter measurement for most trees. The abbreviation generally is written without capital letters or periods.

Degrees of freedom (*df*) – a statistical term for an adjustment to the “*t*”-value for a given confidence limit due to the number of the sample plots. Mathematically, degrees of freedom are computed as one less than the number of sample plots ($n - 1$).

Diameter at breast height (DBH) – The diameter of a tree at 4.5 feet above the average ground level.

Diameter class: a grouping of diameter measurements used to simplify tallying of trees during a cruise. If 1-inch size classes are used, all trees with a dbh between 7.6 and 8.5 inches would be recorded as 8-inch trees, and all trees with a dbh between 8.6 and 9.5 inches would be recorded as 9-inch trees. Two-inch size classes are used frequently. For a 2-inch size class, all trees between 7.0 and 8.99 inches dbh would be recorded as 8-inch trees.

dib: diameter inside bark. Measurements for log grading are taken inside the bark at the log’s small end. The abbreviation generally is written without capital letters or periods.

Digital map – A machine-readable representation of a geographic phenomenon stored for display or analysis by a digital computer.

Dominant tree: a tree with its crown extending above the general level of the canopy of surrounding trees, and receiving full sunlight from above and partly from the sides.

Doyle Rule: one of several log rules designed to estimate the lumber yield from logs. The Doyle Rule tends to underestimate the Board-foot volume in small logs and overestimate volumes in large logs, compared to other log rules. See “log rule”.

Ecosystem: a complex of interacting organisms (plants, animals, fungi, bacteria, etc.) together with its physical environment, considered as a unit.

Even-aged stand: a stand of trees in which the age difference between the oldest and youngest trees is less than 20 percent of the stand age when mature. Even-aged stands are produced by cutting all trees within a relatively short period, or by natural disturbances that eliminate most vegetation in the previous stand.

Discounted cash flow – The various costs and benefits anticipated in future years discounted to the present and their values expressed as (a) the difference, based on their net present value, (b) the benefit cost ratio, or (c) the discount rate that equates them, giving the internal rate of return which, in forestry, is equal to the financial yield.

Discounted rate –An interest rate used to convert future payments or receipts into present value. The discount rate may or may not be the same as the internal rate of return (IRR) or yield rate depending on how it is extracted from the market and/or used in the analysis. See also risk rate; safe rate; yield rate (Y). See Cost of Capital

Fertilization & Herbicide Treatments – The addition of fertilizer or herbicides intended to improve the growth of trees in a timber stand.

Flatwoods: a site with flat to gently-sloping topography, and relatively poorly drained, sandy soils which often have standing water during wet weather. This is the most extensive group of forest soils in Florida.

Forest cover type: a descriptive classification of forestland, based on the tree species that presently occupy a site, and named after the predominant tree species. This method of classification, based on present occupancy of a site, contrasts with other classification methods that are based on the potential climax plant community for an area. “Forest cover type” is often used interchangeably with “forest type,” “cover type,” and “association.” The Society of American Foresters recognizes about 150 forest cover types, for example, “longleaf pine,” “slash pine,” “longleaf pine-slash pine,” and “longleaf pine-scrub oak.” Forest cover types with similar characteristics are lumped together into broader categories or forest type groups. Examples of SAF type groups are “southern yellow pines,” “oak-pine,” and “bottomland.” For similar forest cover types, the U.S. Forest Service uses type groups such as “longleaf-slash pine,” “loblolly-shortleaf pine,” “oak-pine,” “oak-hickory,” and “oak-gum-cypress.”

Forest fragmentation: the splitting of forestlands into smaller, detached areas as a result of road building, farming, suburban development, and other activities. This can isolate wildlife populations, and may result in forested areas too small to meet the habitat requirements of some species. Wildlife corridors help remedy this problem.

Forest wetland: an area characterized by woody vegetation over 20 feet tall, where soil is at least periodically saturated with or covered by water. See “wetland”.

Form class: trees with similar taper of the trunk, expressed as a ratio of the diameter at the top of the first log, to the diameter at breast height (dbh). See “taper”.

Form Class – Any of the intervals into which a numerical expression of the taper (of a tree stem or log) may be divided for classification or use, i.e., commonly a range of form factors, form quotients, or form-point heights. (D.F., SAF)

Hardwood: tree species in the angiosperm group (the flowering plants, that produce seeds enclosed in a fruit). Hardwood trees are characterized by broad leaves (as opposed to needles) and are usually deciduous, although in Florida there are numerous evergreen hardwoods including live oak, holly, and magnolia. See “softwood”.

Hardwood hammock: an “island” of primarily hardwood trees and associated understory plants growing on an elevated, well-drained site, surrounded by vegetation characteristic of lower, wetter surroundings. The term “hammock” is also used to describe any of the temperate hardwood forests in Florida, which may include dry, mesic, and wet sites.

Harvest Costs - The costs associated with harvesting the trees from the stand and hauling them to a receiving mill. These costs, along with entrepreneurial profit for the buyer and/or Management &

Administration costs (if either are applicable) are subtracted from the price paid by the receiving mill to determine stumpage value in the Cost Approach for merchantable timber.

Hedging of risk – The process of reducing one’s risk by taking an offsetting long or short position in the same asset. For example, an owner of a lumber inventory could hedge his or her position during some time period by selling an appropriate number of lumber futures contracts.

High grading - removing all mature, good quality trees from a stand, while leaving inferior trees and less desirable species uncut. Natural regeneration from the retained trees will likely produce a poor-quality stand. High grading should be distinguished from uneven-aged management wherein some (but not all) trees in all diameter classes are removed in order to create a high-quality stand. See “uneven-aged management”.

Highest and Best Silvicultural Use – The reasonably probable and legal use of the subject timber as a commercial timber crop. This use must meet the four criteria of being legally permissible, physically possible, financially feasible, and maximally productive. For the purpose of this analysis, it is assumed the time necessary to manage and harvest the subject timber to produce the highest and best silvicultural use would be available.

Growth Models – Mathematical equations designed to predict the future volumes, or weights, of timber stands.

Improvement cut – A cutting made in a stand past the sapling stage for the purpose of enhancing its composition and character by removing trees of less desirable species, form, and condition in the main crown canopy. An improvement cut is sometimes executed at the same time as a thinning operation.

Indicator species: an organism that occurs only in areas with specific environmental conditions. Because of their narrow ecological tolerance, the presence or absence of these species on a site is a good indicator of environmental conditions. Foresters often use the distribution of indicator under-story plants to get a quick estimate of site conditions, for example, drainage and fertility. Biologists may use indicator species to evaluate the health of an ecosystem. For example, the decline of mussels in a stream may indicate deteriorating water quality and a threat to other stream organisms and the species that feed on them.

Inflation Rate –The erosion of the purchasing power of money over time expressed as an annual percentage rate.

Institutional investor – In contrast to an individual investor. Includes such entities as bank trust departments, insurance companies, mutual funds, pension funds, and university endowment funds.

Intermediate crown class: trees with crowns extending into the middle canopy, and largely overtopped by the dominant and co-dominant trees. Crowns are generally small and crowded on all sides. These trees receive little direct sunlight from above and none from the sides.

Internal rate of return – A criterion for evaluating investment alternatives in terms of an annual rate of return on investment. It is the discount rate, which equates the cost of the investment with the present value of all its ensuing cash flows.

International Rule: one of several log rules designed to estimate the lumber yield from logs. Of the three main log rules in the South, (Doyle, Scribner, and International), the International rule estimates the most volume for a given log. See “log rule”.

Intolerance: the inability of a tree species to survive in the shade of other trees. See “shade tolerance”.

Keystone species: an organism that has a greater role in maintaining ecosystem function than would be predicted based on its abundance. For example, in longleaf pine sand hill communities, the gopher tortoise is considered a keystone species because it digs burrows, which provide refuge for many other wildlife species, which, in turn, play important roles in the community. All would be disrupted if the gopher tortoise disappeared. Named after the wedge-shaped keystone that holds together the parts of an arch. If removed, the arch collapses.

Limit of error – See *sampling error*.

Liquidation value: Refers to the value of stumpage when clearcutting all merchantable trees immediately or as soon as they (as a stand) reach the minimum average DBH to have market value.

Liquidity – One criterion for evaluating the attractiveness of an investment alternative. It is an indication of the ability to trade an asset quickly with minimal loss of value. An asset's liquidity is a function of its degree of marketability and price volatility.

Log: section of the main stem of a harvested tree. Standard logs measure 16 feet long. Half logs are 8 feet long.

Log rule: a table of numbers used to estimate the amount of lumber that can be sawn from logs of various lengths and diameters. Such tables may have specific names. See, for example, “Doyle Rule”, “International Rule”, and “Scribner Rule”.

Logging & Transportation Costs – The costs associated with harvesting the trees from the stand and hauling them to a receiving mill. These costs, along with entrepreneurial profit for the buyer and/or Management & Administration costs (if either are applicable) are subtracted from the price paid by the receiving mill to determine stumpage value in the Cost Approach for merchantable timber.

Management & Administration Costs – The costs associated with either timberland management or a specific timber sale. These can include fees for using a consultant forester, the cost of accounting for per unit sales, the cost for advertising the sale, marking sale boundaries, etc.

Market value - The most probable price which standing timber should bring in a competitive and open market under all conditions requisite to fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition is the consummation of a sale as of a specified date and the passing of fee-owned timber rights from seller to buyer under conditions whereby:

1. buyer and seller are typically motivated;
2. both parties are well informed or well advised, and acting in what they consider their best interests;
3. a reasonable time is allowed for exposure in the open market;
4. payment is made in terms of cash in United States dollars or in terms of financial arrangements comparable thereto; and
5. the price represents the normal consideration for the timber sold

unaffected by special or creative financing, tax consequences or sales concessions granted by anyone associated with the sale.

Mature: generally refers to financial maturity, or the point in time when the growth rate of a tree (or stand) begins to slow, and the incidence of decay begins to increase at a rate that affects value. Average age at maturity varies widely among species and on different sites.

MBF: abbreviation signifying 1000 board feet. See “Board feet”.

Merchantable – Term used to designate the portion of a stand, which can be profitably marketed under given economic conditions.

Merchantable height: the height of a tree stem from ground level to the point at which it is too thin to meet the diameter limit requirements for a certain product. Limits are: for saw-log trees, the point at which the stem is less than 8 inches in diameter (dib); for pulpwood trees, the point at which the stem is less than 3 or 4 inches (dib); for trees with defects, the point at which a defect is found that cannot be removed during processing.

Multiple-use forestry: managing a forested area to simultaneously provide more than one of the following resource objectives: fish and wildlife, wood products, recreation, aesthetics, grazing, watershed protection, and historic or scientific values.

Natural regeneration: young plants produced from natural seed fall or from stump or root sprouting in openings formed after existing plants are cut, burned or blown over.

Natural stand – Any group of trees originating from natural seeding and/or sprouting as opposed to planting.

Nonindustrial private forestland (NIPF): forest land owned by a private individual, group, or corporation not involved in wood processing.

Non-Merchantable – Timber or trees that has no commercial value or are not accepted at receiving mills. For example, live oak, titi, are not accepted at receiving mills and some species that are accepted may be too small or have other defects that prevent their sale. This should not be confused with Pre-Merchantable timber, which consists of trees that are currently too young to be sold but will grow into merchantable size at some future date.

Non-Productive – Usually applies to timber stands that will not yield merchantable timber or have such a limited amount that harvest is economically unfeasible.

Non-sampling errors – Contribute to the total error (accuracy) of forest inventory and arise from numerous causes, including poorly/incorrectly located sample plots, consistent measurement errors (bias), mistakes in mathematical computations,

Net present value – A criterion for evaluating investment alternatives. Net present value equals the present value of the investment less the initial outlay. Present value represents the expected net cash flows to be generated by some investment, discounted to the present time at an appropriate interest rate.

Overmature: the stage at which trees exhibit a decline in growth rate, vigor, and soundness as a result of old age.

Overstocked: a stand in which trees are so closely spaced that they are competing for required resources, resulting in less than full growth potential for individual trees.

Overstory: the trees in a forest of more than one story that form the upper canopy layer.

Paired “t” test: a statistical test used in evaluating field audits of timber cruises. “Pairing” the cruiser’s plot volume data, weighted for product values, with that of the data collected later, during the audit cruise, this statistical method compares the results of the two cruises by testing the hypothesis that there is no real difference at the specified confidence level (in this case, 0.05 level) between the cruise means. A sufficient number of sample plots must be evaluated.

Peeler log: a high-quality, large-diameter log from which veneer is peeled for the manufacture of plywood. See “veneer”.

Pine straw: fallen pine needles, primarily of longleaf and slash pines, that are raked, baled, and removed from the forest stand for sale as landscaping mulch.

Ply-log timber – Trees that are sufficiently large enough and straight enough to be used in the production of plywood. These are generally larger than sawtimber trees and have greater stumpage value.

Pole timber – Trees that possess sufficient straightness, height, and DBH so that they can be manufactured into such products as telephone poles and pilings. A superior price can generally be commanded for pole timber.

Pre-merchantable growing stock – Trees of a desirable species that are not yet large enough for harvest or any commercial use.

Prescription: a schedule of activities for a stand or forest property which, when carried out, should produce the outcome desired by the landowner. Prescriptions have three elements: (1) land-type classification, location, soils, species, stocking, etc.; (2) activity schedule timing of operations, methods, etc.; and (3) projections of growth and yield for current and subsequent stands. Prescriptions can apply to individual stands and/or to the entire forest property.

Present net worth (PNW) – The residual when the present value of costs is deducted from the present value of benefits – note if the present value of costs exceeds the present value of benefits, the residual is shown as a negative number – synonym net present worth, net present value, present net value.

Prism cruising: using a glass wedge prism of a known thickness to estimate basal area of a stand of timber. Volumes can then be estimated.

Product Specifications – The upper and lower diameter limits, minimum length requirements, and quality requirements for timber products.

Productive – A stand of timber that is capable of producing trees for harvest for commercial use.

Pulpwood – Wood cut or prepared primarily for manufacture into pulp for subsequent manufacture into paper, fiberboard, or other products, depending largely on the species and the pulping process. Cut from trees, which are either too small, the wrong species, or of inferior quality for processing into lumber or plywood.

Radial Growth – A measurement of the growth of a tree measured from the inner edge of the bark to a point inside the tree directly towards the center of the tree (i.e. along a radius). Commonly, a five year growth is measured by measuring the last five tree rings present adjacent to the inner bark.

Real Rate—A rate of return, interest rate, or other financial rate expressed as net of inflation.

Regeneration: the replacement or renewal of a forest stand by natural or artificial means. Also, the term “regeneration” may refer to the young tree crop itself. See “artificial regeneration”, “afforestation”, and “natural regeneration”.

Residual stand: trees remaining uncut following any cutting operation.

Riparian zone: the land and vegetation bordering flowing or stand water (streams, river, lakes and ponds).

Risk – The probability that unforeseen events will occur resulting in the return on an investment being less than expected.

Risk rate – The annual rate of return on capital that is commensurate with the risk assumed by the investor; the rate of interest or yield necessary to attract capital. See also safe rate.

Rotation age – The age at which timber stands are scheduled for harvest. These will vary from site to site depending on the quality of the soil, the receiving mills in the area, and the management goals for the landowner.

Safe rate – The minimum rate of return on invested capital. Theoretically, the difference between the total rate of return and the safe rate is considered a premium to compensate the investor for risk, the burden of management, and the illiquidity of the capital invested.

Sampling Error (or limit of error or allowable error) – a measure of the precision of a forest inventory. Excludes the effects of bias and non-sampling error. Can be defined as the difference between a sample statistic and the characteristic that would have been found if the entire population had been tested. Sampling error is most commonly expressed as a percentage of the standard error over (and below) the estimated population mean – for a given level of probability or gambling odds. Probability is expressed as a “t”-value (Student’s normal distribution), where the “t”-value is a measure of the number of standard deviations on either side (+/-) of the estimated population mean for the selected confidence limits. In a normal distribution there are gambling odds of two chances out of three that the sampling results fall within one standard deviation of the actual population mean.

Sandhill: a site characterized by pure sand deposits (may be 30 or more feet deep). Lack of available water and nutrients limits tree growth on these sites, but sand pine may grow successfully.

Sawtimber – Trees that will yield logs suitable in size and quality for the production of merchantable lumber or plywood.

Scale: measurement of log diameter, length and quality, either on a truck or at a mill, to determine merchantable (useful) volume. The term is also used to refer to weight measurements to determine timber sale payments.

Seed-tree method – A silvicultural system that produces an even-aged stand. It is an approach for reproducing a stand in which all mature timber except the seed trees are harvested. A seed tree is any tree left in a cutover stand, which bears seed. The seed trees are left to provide the seed for natural regeneration.

Selection method – A silvicultural system that produces an uneven-aged stand. Removal of mature timber, usually the oldest or the largest trees, either individually or in small groups at relatively short intervals, repeated indefinitely, in order to maintain an uneven-aged stand through continuous establishment or natural reproduction.

Shelterwood method – A silvicultural system which involves the removal of mature timber in a series of cuttings, which extends over a period of years equal to not more than ¼ and often not more than 1/10 of the time required to grow the crop, by means of which the establishment of natural reproduction under the partial shelter of trees is encouraged.

Silvicultural system – The method used to establish and maintain a forest. *See Clearcutting method, Seed-tree method, Selection method, Shelterwood method, and Silviculture.*

Silviculture Best Management Practices – A list of procedures originally established by the State of Florida in the mid 1970s in response to the Clean Water Act of 1972. They were revised by a Technical

Advisory committee with the latest revision occurring in 2003. They are designed to establish and maintain sound, responsible, guiding principles for silviculture operations in the State of Florida.

Silviculture – The art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands to meet the diverse needs and values of landowners and society on a sustainable basis.

Site index (SI): a measure of forest site quality (i.e., the actual or potential productivity of a site) based on the height of dominant trees at a specified age. Twenty-five years is often used for Southern pines.

Site index curve – A curve showing the expected height growth pattern for trees of the specified stand component in even-aged stands of a given site index.

Site preparation – Manipulation of a site, designed to enhance the success of regeneration – note treatments may include bedding, burning, chemical spraying, chopping, disking, drainage, raking, and scarifying and are designed to modify the soil, litter, or vegetation and to create microclimate conditions conducive to the establishment and growth of desired species.

Softwood: any tree in the conifer group, including pines, hemlock, cypress, larch, spruce, fir and junipers. So named because many of the species have wood that is less dense than that of many angiosperm trees. See “hardwood”.

Solid-wood products – As opposed to pulpwood products. Includes such products as lumber, plywood, export logs, waferboard, and oriented strand board.

Special Management Zone (BMP) – The 2003 BMP manual defines SMZ’s as “An area of varying width adjacent to a watercourse in which special management precautions are necessary to protect natural resources.”

Stand: a group of trees sufficiently uniform in species composition, size, age, structure, spatial arrangement, and condition to be distinguished from surrounding stands and managed as a single unit.

Stand & Stand Map – A stand is a description of an area that usually has homogenous attributes so that it can be described as a unit or separated from other similar timber types for management purposes. A stand map is a map showing the different stands on a timber tract.

Stand & stock tables - –A listing of the number of trees and their proportional volumes by species and diameter classes.

Stand density: a quantitative measure of how completely a stand of trees occupies a site, usually expressed in terms of number of trees, or tree basal area per acre or per hectare. See “basal area” and “stocking”.

Stand table – A summary table showing the number of trees by species and diameter for a given area.

Standard deviation – a statistical measure of variation among individual units of a population. It characterizes the dispersion of individuals about the mean. On the average, about two-thirds of the unit values of a normal population will be within one standard deviation of the mean.

Standard error of the mean – a statistical measure of the variation among sample means. It can be thought of as a standard deviation among sample means. Mathematically, it’s for large populations, it’s defined as the standard deviation divided by the square root of the number of sample plots.

Statistical analysis –The application of statistical formulas for the purpose of making inferences about a population based upon information contained in a sample. Included in this analysis is usually a procedure for measuring of the reliability of the inference. See *coefficient of variation*; *confidence limit*; and, *sampling error*.

Stocking: a ratio that compares the density of a forest stand to a reference stand having the “ideal” density for best growth and management. For example, if a stand has a basal area of 60 and the “ideal” fully stocked stand has a basal area of 120, our stand would be 50% stocked. Stands may be described as well stocked, understocked, or overstocked.

Our example is understocked for timber production (although it may be ideal for other objectives).

Stratification: division of a forest, or any ecosystem, into distinct layers (or strata) of vegetation.

Stratified random sample – A sample drawn from a stratified population consisting of a random sample from each stratum and permitting the sampling fraction to vary by stratum to (a) improve efficiency of sampling, (b) obtain separate estimates for strata, or (c) improve the precision of the population estimate

Stratum – 1. A distinct layer of vegetation within a forest community, 2. A subdivision of a population, used in stratified sampling

Structure: the presence, size, and physical arrangement of vegetation in a stand. Vertical structure refers to the variety of plant heights, from the canopy to the forest floor. Horizontal structure refers to the types, sizes, and distribution of trees and other plants across the land surface. Forest lands with substantial structural diversity provide a variety of niches for different wildlife species.

Stumpage – In general sense, the standing timber itself. Or, the amount paid for the right to cut and remove specified standing timber.

Suppressed: trees with crowns below the general level of the canopy, and receiving no direct sunlight. Suppressed trees are characterized by low growth rate and low vigor due to competition with overtopping trees. See “overtopped”.

Sustainable: generally refers to land management practices that provide goods and services from an ecosystem without degradation of the site quality, and without a decline in the yield of goods and services over time.

Sustained yield: forest management objective, wherein the volume of wood harvested is equal to the amount of new wood being grown within the forest as a whole. Wood harvest in one stand is balanced by wood growth in the forest’s remaining stands.

Sweep: a tree defect resulting from a gradual curve in the main stem of the tree.

Tally: a system of recording trees counted during a timber cruise.

Taper: the gradual decrease in the diameter of a tree stem or log from the base upward. See “form class”.

Thinning – A process whereby the number of trees in a stand is reduced. Thinning is undertaken to reduce tree densities so that the rate of growth of the remaining trees will increase, the average quality of the remaining trees will improve, and perhaps to generate intermediate earnings. Commercial thinning removes trees that are large enough to be sold. Pre-commercial thinning is implemented before the trees in a stand are merchantable.

Timber - A commodity consisting of trees (usually un-severed) that have not been processed into an end product.

Timber Appraisal – The valuation of timber on a particular tract.

Timber stand improvement – Includes activities that enhance the condition of the stand without generating immediate revenues. Examples are culling and pruning.

Tolerance: the ability of an organism to subsist under particular environmental conditions. In forestry, tolerance generally refers to the capacity of trees to develop and grow in the shade of surrounding trees (see “shade tolerant:). Intolerant trees are “light demanders”; tolerant trees are “shade bearers”. For wildlife, tolerance refers to a species’ ability to adjust to different conditions or disturbed habitats.

Tree improvement – Activities oriented toward producing additional stumpage volume through genetic gains.

Uneven-aged – Term applied to a stand in which there are considerable differences in ages of trees and in which three or more age classes are represented.

Variable radius plots – Timber inventory sampling plots, which do not have a fixed radius distance. This method, associated with prism cruises, selects trees to be sampled based on their sizes rather than their frequency of occurrence as in fixed radius plots.

Volume (and Weight) tables – Tables developed to predict the volume (and weight) of usable wood inside various sized trees. Tables are established for specific forest products (eg. pulpwood, sawtimber, etc.)

Weight scale, also log scale – Weight Scales are tables developed to predict the weight of usable wood inside various sized trees. Log scales are tables developed to predict the number of board feet inside various sized trees.

Wetlands (BMP) – For the purposes of the TCTA specifications, wetlands are those defined by the 2003 Silviculture Best Management Practices published by the Florida Division of Forestry as listed in Appendix 5. For regulatory purposes, wetlands are defined by the presence or absence of specific types of vegetation, soils, and hydrologic conditions, but it is not the intent or within the scope of the BMP Manual to define wetlands for regulatory purposes or to use any particular regulatory definition.

Yield rate – A rate of return on capital, usually expressed as a compound annual percentage rate. A yield rate considers all expected property benefits, including the proceeds from sale at the termination of the investment.

Glossary References

Definitions are borrowed from the following sources. Specific references are available from DOF: *“The Dictionary of Forestry”* published by The Society of American Foresters 1998 edition;

“Timberland Investments – A Portfolio Perspective” by F. Christian Zinkhan, William R. Sizemore, George H. Mason, & Thomas J. Ebner; published by Timber Press, Portland Oregon, 1992;

“Silviculture Best Management Practices”; published by the Florida Department of Agriculture and Consumer Services, Charles Bronson, Commissioner, 2003.

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“The Dictionary of Real Estate Appraisal” – fourth edition; published by the Appraisal Institute, 2002.

“Elementary Statistical Methods for Foresters” by Frank Freese; Agriculture Handbook 317; published by US Department of Agriculture, Forest Service. January 1967.

“Forest Mensuration” by Bertram Husch, Charles I. Miller, & Thomas W. Beers; published by Ronald Press, NY NY. 1972.

“Service Foresters Handbook”; Misc. Report SA-MR 10; published by US Department of Agriculture, Forest Service, Southeastern Region. September 1982.

905 Timber Cruise & Appraisal (TCTA) Process

PROJECT FLOW CHART

State of Florida

AGENCY-POSITION	DESIRED NUMBER OF DAYS FROM START OF PROCESS										
	0	7	14	21	28	35	42	48	55	62	65
Prior to START of Process:											
- OES (DEP) Environmental Services (or Other Outside Organization)	o Requests Forestry Resource Assessment (FRA)										
- FMB (DOF) Forest Mgt Bureau	o Completes FRA o Lists Parcels likely to need TCTA										
Following Board of Trustees Project Approval:											
- DSL (DEP) Acquisition Agent	o Prioritizes Parcels for Appraisal Work										
- DEP Bureau of Surveying/Mapping	o Orders Title Work & Appraisal Maps										
- DEP Bureau of Appraisal	o Begins the TCTA Process - Based on the FMB, FRA Parcel List										
TCTA PROCESS STARTS:											
BA - Project Manager (PM)	(2 days) Hires TAC			(2 days) Selects FC's to get Bids/ Prospectus to FC's, TAM & FA	(2 days) PM Award s FC				(1 day) Issues Notice to Proceed	(3 days) PM reviews TCTA. Discusses with TAM, as needed & Comments to TA	
FMB - Timber Appraisal Manager (TAM)			(as needed) TAM Helps TAC to Resolve Cruise Issues					(3 days) Adm.Review of Cruise Audit Results		(3 days) Adm. Review of TCTA Submitted to PM	
Contracted - Timber Appraisal Coordinator (TAC)	(14 - 21 days) TAC completes site inspection, CV Cruise and Cruise Design. Then Prepares TCTA Bid Prospectus			(2 days) Meets FC Onsite & Conducts 'Hot' Audit			(1 day; ongoing) Completes audit/ Reviews Cruise/ Resolves Issues	(5 days) Reviews TCTA, Lists Items & Returns to FC. Copies PM & TAM	(3 days) TAC sends Review Draft to TAM, PM & FA	(2 days) Final TCTA & Review to TAM, PM & FA	
Contracted - Forestry Consultant (FC)				(5 days) FC(s) Submit Bids	(21 days) FC meets onsite w/TAC (& FA), Completes Timber Cruise & Sends to TAC. Prepares Draft TCTA & Sends to TAC, TAM, PM & FA			(3 days) FC Revises & Completes Final TCTA			
Contracted - Fee Appraiser(s) (FA)					(1 day) Inspects Site with TAC & FC			(21 days) FA Begins Fee Appraisal; Asks for Comments and Clarifications (as needed) of the TAC & FC			

**CONFIDENTIAL
EXECUTIVE SUMMARY**

Project Identification:

Name:
B/A File #:

Parcel Identification:

Tax Parcel ID #:
Owner's Name:

Timber Appraiser:

Name:
Company:

Source of the Cruise Data:

Supervisor:
Company:

**Summary Table of the
Subject Timber:**

(Use Table Headings to Facilitate Comparison with Sales Data)

Dates:

Effective Date of the Cruise:
Date of the Cruise Report:
Date of Standing Timber Value:
Date of the Timber Appraisal Report:

Interest Appraised:

Fee-Owned Timber (Less than or more than, as in the case of other temporary land use rights included.)

Parcel Size:

Gross Acreage:
(Show acreage breakdown by strata in a table.)

Historical (3 yrs) Sales of Timber from

Subject's Aggregate Ownership: *(Tabulation)*

Parcel Access:

Legal *(offsite)*:
Physical *(offsite)*
(internal/onsite):

Zoning/Future Land Use:

(Harvesting Restrictions?)

Current Use(s):**Primary:****Secondary:****Soils/Site Index:** *(Tabulation)***Easements: Identify:****Impact on Timber production/Management:**

Site Inspection: (Who and When)

Other Encumbrances: Type:
Impact on Timber production/Management:

Highest and Best Silviculture Use: *(Summarize the highest and best use of the, standing timber (stumpage) separate and apart from the land.)*

Present Use: *(Brief comment on suitability of current product and management with optimum site characteristics.)*

Opinion of Value:	Merchantable	Pre-Merch.	Total
Overall Fee-Owned Standing Timber Value:			
Sales Comparison Approach:			
Cost Approach:			
Income Approach/Discounted Cash Flow:			

Special Assumptions or Limiting Conditions Under Which Value(s) Are Based: *(State briefly & comment on any potential impact on value.)*

Reconciled Subject Unit Values <u>by Stratum</u> :	Acres	Unit Weight (tons/acre)	Total Weight (tons)	Adjusted Price (per ton)	Market Value	Value per acre
<i>(List by species and/or product)</i>						

Sales Data Unit Values:	# Units Sold	\$/Unit Sold
<i>(List by product and show the range of prices)</i>		

(The above tables may not be applicable in every case and should be modified where necessary to best communicate their intended purpose.)

SALES (MARKET DATA) FORMAT

(Headings not pertinent may be omitted)

(Headings may be placed in left column alignment if desired)

SALE NO.:**TYPE OF SALE:***(Standing/mill; with/w-out land)***LOCATION:** *(Brief description of location; indicate proximity to product mill.)***COUNTY:****SOURCE OF DATA:****SELLER:** *(Name and type)***BUYER:** *(Name and type)***PROPERTY DATA:** *(Tabulated product summary)***PRICE & PRICE/UNIT:** *(Tabulate by product)***DATE OF SALE:****PROPERTY RIGHTS CONVEYED:** *(Any beyond the fee-owned timber?)***TERMS:** *(Financing)***CONTRACT LENGTH:** *(# of months)***VERIFICATION:** *(By Whom and With Whom)***CONDITIONS OF SALE:** *(Special market conditions that may have caused temporary inflated or deflated prices. Discuss any tax consequences to either the buyer or the seller, if known.)***HIGHEST AND BEST SILVICULTURE USE OF THE TIMBER:****COMMENTS:** *(Other pertinent information, such as any unusual pressure on the buyer or the seller, any unusual harvesting costs, etc. Do not include analysis or comparison to subject on this page. Attach separate page if analysis or comparison discussion is to be included here on each sale.)*



April 2004

**Florida Division of Forestry
Florida Division of State Lands**