FEATURES

Revisiting the Valuation of Timberland—Terminology, Methods, and Case Studies

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ABSTRACT

Appraising acreage improved with timber can be a challenge to an appraiser when it is not a part of an appraiser's normal course of business. This article reviews some of the relevant literature on the valuation of timber, explains common timber terminology, and presents real-world examples of methods that can be used to value timberland when a quantitative timber survey is not practical or too costly to meet the client's needs or expectations. While a forester's timber cruise survey will give a client the most quantitative valuation of the timber, the cost of a timber cruise survey may be too expensive for the client's needs. Thus, alternative qualitative approaches should be evaluated and considered by the appraiser.

A *timber cruise* is a forest survey that is done to locate and estimate the quantity of timber in a given area according to species, size, quality, possible products, and other characteristics.[1] The timber cruise is accomplished by the physical survey of the timber by an experienced and qualified person knowledgeable in determining the quality and quantity of the harvestable timber. The cruise can be completed by surveys of the entire timber tract or by selective sampling methods.

Recently, several estate-planning clients asked the authors' appraisal firm to value a large number of forested land parcels, ranging from 50 acres to over 60,000 acres in size, in Texas and Louisiana. (The parcels contained pine timber of varying ages.) Although the firm had experience both in reviewing appraisals of timberland and in the sale of timber that was sent to sawmills, it strongly recommended that the clients hire a forester to perform a timber cruise for this portion of the assignment. However, due to the extensive costs of completing a comprehensive timber cruise, the clients requested that the appraisers proceed with their own investigation of comparable market sales (the sales comparison approach) to discover if there were sufficient comparable sales data to develop an opinion of value for the various tracts of timberland with the differing ages of pine timber. The purpose of this article is to help appraisers faced with similar requests from their clients.

This article (1) briefly summarizes some of the literature on timberland valuation that is relevant to the case studies presented, (2) provides an explanation of standard timberland nomenclature that may be confusing to the appraiser who is not a forester, and (3) provides case study examples of how timberland may be valued as well as some alternative approaches that may be employed if the client does not want to hire a forester for a timber cruise. The case studies

1. Society of American Foresters, *The Dictionary of Forestry* (2008), accessed July 20, 2011, http://www.dictionaryofforestry.org/dict.

represent research in Texas and Louisiana, but may be useful to appraisers facing similar client needs in other locations.

Overview of the Literature

A number of articles on different aspects of timberland valuation have been published in *The Appraisal Journal* as well as elsewhere.[2]

A 1987 article by Klemperer discusses the differences between the price per unit volume of timber depending on whether the timber is slated for future or immediate harvest.[3] He differentiates between *immediate harvest value* or *stumpage value* for immediate cutting purposes and the net present value of future timber income (market value). Klemperer argues that in the absence of relevant comparable sales data, the appraiser should use a discounted cash flow (DCF) methodology to value large timber tracts slated for future harvest. According to Klemperer, valuation factors for young timber can vary widely depending on real interest rates and future stumpage price expectations.[4]

Anglyn's 1991 article focuses on a federal court case ruling in Georgia specifying that the State of Georgia's timberland assessment procedures are inequitable.[5] Anglyn goes on to propose a discounted cash flow methodology called the *productive land method*, which could resolve inequities associated with the assessment of standing timber based on a particular site's capacity to produce marketable timber via the use of an income analysis. This approach would likely only be applicable in situations involving taxing authorities and issues related to the equity or fairness of a timberland assessment.

Healy and Bergquist in their article discuss the use of the sales comparison approach as a secondary valuation approach after the income approach, and they note that the sales comparison approach can be an excellent indicator of market value.[6] They go on to summarize the various adjustments that can be applied to comparable sales, including adjustments for size, time (which may be supported by a market data trend analysis), volume, species mix, timber quality, and reproduction timber age as well as site features such as terrain type, proximity to a main highway, and road construction costs to extract the timber.

Straka and Bullard discuss the importance of utilizing the land expectation value (LEV) as a discounted cash flow technique to value the net present value of the net income stream produced by timberland.[7] The LEV calculates the net present value of all revenues and costs associated with growing timber on the land in perpetuity. Straka and Bullard argue that the LEV calculation is not normally used by appraisers because the formula requires judgments with respect to stumpage prices, reforestation costs, and forest yield, which are beyond the scope of expertise of most appraisers. They suggest that LEV is also useful in the valuation of immature timber and uneven-aged timber.

In their 2005 article, Mayo and Straka focus on the appraisal of premerchantable and immature timber.[8] They note that the present value of timber usually exceeds the sale revenue that could be obtained if the timber were harvested yesterday. Mayo and Straka offer definitions of standing timber, merchantable and premerchantable standing timber, stumpage liquidation value, holding value, and financial maturity. The most important observation in this article is the assertion that all timber, including premerchantable timber, is real property. The authors further state that in practice, premerchantable timber tends to be appraised at holding value while mature timber stands tend to be appraised at liquidation value. They propose using shift-in-midstream and straight-line approaches to transition from holding value and liquidation value.[9]

Mellette's white paper on timber valuation notes that it is not necessary for an appraiser to be forester, nor is it necessary to have a crash course in forestry in order to take a valuation assignment involving land that contains trees.[10] He observes that it is important

2. Appraisers and other readers can review other literature sources on timber valuation by searching the Internet.
3. W. David Klemperer, "Valuing Young Timber Scheduled for Future Harvest," *The Appraisal Journal* (October 1987): 535–547.
4. Ibid., 544.
5. William Ted Anglyn, "Timber Assessment Procedures—A Critical Analysis," *The Appraisal Journal* (April 1991): 205–211.
6. Martin J. Healy, Jr., and Kevin Bergquist, "The Sales Comparison Approach and Timberland Valuation," *The Appraisal Journal* (October 1994): 587–595.
7. Thomas J. Straka and Steven H. Bullard, "Land Expectation Value Calculation in Timberland Valuation," *The Appraisal Journal* (October 1996): 399–405.
8. Jefferson H. Mayo and Thomas J. Straka, "The Holding Value Premium in Standing Timber Valuation," *The Appraisal Journal* (Winter 2005): 98–106.
9. Ibid., 104.
10. Morgan R. Mellette, "Timber Valuation," white paper, October 2008; available at http://www.melletteforestry.com/resources.

to have a basic understanding of tree species, timber products, forest management, and the timber market unique to the region where the property is located so that the appraiser and forester can better communicate, and the forester can understand the information the appraiser needs to properly complete the appraisal assignment.[11]

From these articles as well as discussions with local timber market participants and knowledgeable brokers who work with buyers and sellers of timberland, it is evident that the most precise and accurate means of evaluating and estimating timber value would involve the use of an experienced and qualified forester who holds a designation through the Association of Consulting Foresters of America (ACF) or the Society of American Foresters (SAF) to perform a timber cruise.[12] However, discussions with clients have indicated that this approach is often too costly and too time consuming for their business needs.

A summary of terminology and definitions is provided next to help appraisers become familiar with and better understand the terms used most often by the timber industry and appraisers in valuing timberland.

Terminology and Definitions

The timber-related literature uses terms that are specific to the forest industry and that may be unfamiliar to most appraisers. Appraisers involved in valuing timberland need to understand the terminology used in the timber industry. The following section defines and discusses terms that appraisers are likely to encounter. While the terminology discussed here is not all inclusive, it does include basic terms needed by an appraiser valuing timberland.

Terminology Related to Cultivation of Timber

The term *timber* is defined as forest stands and their products or wood in forms that are suitable for heavy constructions.[13] *Timberland* (or a timber stand) means agricultural property from which merchantable timber is harvested periodically, usually every 20, 50, or 80 years depending on the species and growing conditions.[14] Timberland may include trees categorized as softwood or hardwood. *Softwood* includes coniferous trees, such as a fir or pine.[15] *Hardwood* includes trees such as oak, chestnut, and cherry;[16] the actual wood of a hardwood tree may be either physically hard or soft depending upon the species of the tree.

Silviculture is a branch of forestry dealing with the development, reproduction, and care of forests.[17] Development of forests may call for *thinning*, which is a cultural treatment made to reduce stand density of trees primarily to improve growth, enhance forest health, or recover potential mortality.[18] Forest development also may call for *rotation*, or a period between regeneration establishment and final cutting. Rotation may be based on many criteria, including mean size, age, culmination of mean annual increment, attainment of particular minimum physical or value growth rate, and biological condition.[19]

Timber is categorized by the age and size of the trees. Appraisers may encounter the following categories related to trees' physical age and size:

- *All-Aged Stand*—A stand with trees of all or almost all age classes, including those of exploitable age.[20]
- *Two-Aged Stand*—A growing area with trees of two distinct age classes separated in age by more than twenty percent of rotation.[21]
- *Uneven-Aged Stand*—A stand with trees of three or more distinct age classes, either intimately mixed or in small group.[22]

11. Ibid., 1.
12. Two professional organizations, the Society of American Foresters (SAF) and the Association of Consulting Foresters (ACF), provide competency and credentialing standards for foresters. The main difference between the two lies in how specific the certification is. The SAF offers its members a Certified Forester (CF) designation, which is open to all types of professional foresters, whereas the ACF offers its membership specifically to Consulting Foresters, which are foresters available to assist private forests' owners on a fee basis.
13. Appraisal Institute, *The Dictionary of Real Estate Appraisal*, 5th ed. (Chicago: Appraisal Institute, 2010), 357.
14. Ibid.
15. *Merriam-Webster Online Dictionary*, accessed July 20, 2011, http://www.merriam-webster.com/dictionary.
16. Ibid.
17. Appraisal Institute, *The Dictionary of Real Estate Appraisal*, 353.
18. Society of American Foresters, *The Dictionary of Forestry*.
19. Ibid.
20. Ibid.
21. Ibid.
22. Ibid.

- *Even-Aged Timber*—Timber that consists of trees that are all of the same physical age.[23]
- *Multi-Aged (Multicohort) Stand*—A stand with two or more age classes or cohorts.[24]
- *Breast Height*—The standard height from ground level for recording the diameter girth or basal area of tree; in the US, equal 4.5 feet. Ground level may be the highest point of the ground touching the stem or the mean of the highest and lowest point.[25]
- *Pole*–A tree of a size between a sapling and a mature tree; the size of a pole varies by region.[26]

Terminology Related to Value and Use of Timber

Appraisers valuing real estate with timber need to consider the *contributory value of the timber*, which is the contribution that timber makes to the overall value of a parcel or tract of timberland, and it can be greater than, less than, or equal to the market value of the timber, assuming that the highest and best use includes timber production.[27]

A *forest inventory* is the procedure for obtaining information on the quantity and quality of the forest resource and many characteristics of the land on which the trees are growing. A complete forest inventory for timber evaluation provides the following information: estimates of area, description of topography, ownership patterns, accessibility, transportation facilities, estimates of timber quantity and quality, and estimates of growth and drainage.[28]

Disaggregation is a technique used by timberland appraisers in which the total value of the tract is broken down into several components.[29] Land speculators frequently use simple disaggregation when they buy a tract of timberland and sell the timber before selling the then bare or vacant land. Real estate investment trusts (REITs), timberland investment management organizations (TIMOs), and other institutional investors take this to even greater lengths when investing in timberland as part of a portfolio by spinning off significant assets or components after initial purchase. This involves sophisticated discounted cash flow software and accounting expertise that goes beyond the valuation of the real property. In Texas and Louisiana disaggregation is often used by buyers in the sales comparison approach, with the timber component broken into harvestable timber, preharvestable timber, and raw land (land without the timber).

Excess timber is a term used when an amount of timber can be removed from a forested tract by selective cutting without significantly damaging the aesthetic value of the property.[30] This is most applicable when the interim highest and best use is for timber production, and the future most probable highest and best use is something else, such as a residential subdivision, planned community, or mixed-use commercial development. In the case of excess timber, a landowner may cut trees that have been determined by a forester to be mature and ready for harvest. Additionally, the owner may thin trees based on a forester's recommendation. The thinned or select cutting may be used as pulpwood, or if the trees are large and mature, as graded lumber. In some cases, the owner may take the harvested trees for personal use in the construction of a residence, barn, or shed.

Holding value is considered the net present value or the discounted cash flow of holding the timber until it is ready to be harvested or its financial maturity. Holding value involves future cash flows, opportunity cost(s) or risk, and timber maturity, which is part of financial maturity and is not easily calculated.[31]

The maturity of timber can affect value. *Merchantable timber* is a stand of timber that has reached sufficient size and maturity to justify being harvested.[32] *Premerchantable timber* is timber that is

23. Robert F. Wittwer, Steven Anderson, and Dave Marcouiller, *Even and Uneven-Aged Forest Management*, fact sheet NREM-5028 published by Oklahoma State University Cooperative Extension Service; available at http://www.forestry.ok.gov/Websites/forestry/Images/Even%20and%20Uneven-Aged%20Forest%20Management.pdf.
24. Society of American Foresters, *The Dictionary of Forestry*.
25. Appraisal Institute, *The Dictionary of Real Estate Appraisal*, 335.
26. Society of American Foresters, *The Dictionary of Forestry*.
27. Mellette, "Timber Valuation."
28. Bertram Husch, Charles I. Miller, and Thomas W. Beers, *Forest Mensuration*, 3rd ed. (Malabar, Florida: Krieger Publishing Co., 1993), 150.
29. J. Brian Fiacco, October 18, 2008 (3:11 p.m.), comment on disaggregation, "Valuing Timberland I," *The Timberland Blog*, http://thetimberlandblog.blogspot.com.
30. Mellette, "Timber Valuation."
31. Mayo and Straka, "Holding Value," 99.
32. Appraisal Institute, *The Dictionary of Real Estate Appraisal*, 347.

too small to economically justify its being harvested or thinned.[33]

Stumpage value is the current value of the timber as it stands uncut or *on the stump*.[34] It is a very confusing term for an appraiser in that it relates to the value of the uncut standing trees in the woods. Stumpage value is not the same as the value of the cut logs delivered to the mill because stumpage includes the cost of cutting and hauling the timber to the mill, and the profit realized by the timber buyer. Most foresters consider stumpage as real property whereas logs are personal property; thus one would have to extract the log value to determine the stumpage value. Stumpage value can only be accurately quantified by using a qualified, experienced forester who will perform a cruise or timber cruise.

Liquidation value is the immediate sale value of timber resulting from a harvest today. Liquidation value is the same as stumpage value and is easily calculated from the timber volume and stumpage value.[35]

The specific use of timber also affects value. Timber use can be categorized as follows:

- *Logs* are the tree segments suitable for lumber, e.g., peeler log, saw log.[36]
- *Peeler* is a high-grade log from which veneer is peeled on a lathe or sliced for the production of plywood.[37]
- *Sawtimber* includes trees or logs cut from trees with minimum diameter and length and with stem quality suitable for conversion to lumber.[38]
- *Pulpwood* or *pulp logs* are defined as a product used in the pulp or paper industry.[39] Pulp logs are the lowest sort quality for a cut tree. The value paid for these logs is low compared to higher grades of domestic logs.

Approaches to Valuing Timber

The literature on timberland discusses the various approaches to valuation. Most authors are of the opinion that the income capitalization approach using a discounted cash flow analysis is the preferred valuation technique for timberland, with the sales comparison approach used only as a secondary technique.

Cost Approach

The cost approach is not used in the literature. However it may have applicability as both a test of the highest and best use, and as a test of an alternative highest and best use if the land is currently planted in other crops—particularly cotton or peanuts, or similar rotational crops in the southern states. The cost approach could be used by an appraiser as a test of financial feasibility for timberland production. This is evidenced by cooperative extension bulletins like the Alabama Cooperative Extension System Bulletin ANR-1132, published by Alabama A&M University and Auburn University, in which there are extensive discussions on how much the land is worth if trees are planted. These articles tend to focus on the financial aspect and discuss discount rates, management costs, significant risk in planting trees due to irregular revenues that begin often more than ten years after trees are planted, and income that only occurs periodically until final harvest (if a true final harvest ever really occurs).

In some circumstances, the appraiser may want to consider the cost approach to assist clients in their business decisions. But, there must be sufficient data to determine land values already existing in the market for raw land (without trees), and local expertise, provided by the forester, to estimate the costs of planting, weed control, prescribed burning, thinning, and stumpage prices when ready for harvest.

Based on experience and review of thousands of reports over the last twenty-five years, the cost approach is too often ignored by appraisers for reasons beyond discourse in this article. However, the cost approach may be appropriate in a market if sufficient vacant raw land sales can be discovered, if there is readily available market evidence that others in the market are actively selling or buying timberland and harvesting timber, and the costs of developing a harvestable timber crop can be demonstrated.

33. Ibid., 350.
34. Mayo and Straka, "Holding Value," 99.
35. Ibid., 100.
36. Appraisal Institute, *The Dictionary of Real Estate Appraisal*, 346.
37. Society of American Foresters, *The Dictionary of Forestry*.
38. Ibid.
39. Appraisal Institute, *The Dictionary of Real Estate Appraisal*, 350.

Income Capitalization Approach

The income capitalization approach is obviously a very reliable method of estimating the value of timberland when there is already a demonstrated highest and best use of the land for timber harvesting. In this situation, there is historical data from the property and other sources providing timber prices, and there are costs or expenses of continuing to plant and harvest timber over a long period (ten years or longer before actual timber harvesting can occur).

Klemperer, Straka and Bullard, Mayo and Straka, and Mellette in their articles all discuss the details, formulas, and various steps in development of the income capitalization approach for timberland. The level of sophistication, experience, and knowledge regarding the use of the income capitalization approach has evolved significantly over the last several years as financial advisors and their investors have diversified their real estate investment portfolios into both timber companies and timber-producing land.

Sales Comparison Approach

The sales comparison approach, while often given only a secondary valuation by appraisers of timberland, can become overly complicated when attempting to struggle with how best to make adjustments of the comparable sales to the subject. Healy and Bergquist in their article present an excellent example of how, in Oregon, they have evolved and developed sales comparison adjustments using date of sale, average volume per timberland acre, site features, timber quality, average age of timber, and primary species of timber.

Mellette in his adjustments for the sales comparison approach uses the desirability of the timber (poor stand or excellent stand) and subcategories that include timber volume per acre, total volume of the tract, size of tree, frequency of limbs and knots, and desirability of the timber stand location (poor stand or excellent stand). Further subcategories include exterior access, interior access, average numbers of months logging per year, distance to delivery point, and quality of the transaction (price weakening or price strengthening).

Mellette's analysis also looks at the number of bids, whether the seller is poorly informed or under financial stress, whether the buyer is facing a facilities shutdown due to low wood supply, the spread between bid results, sales in which the cutting contract is six months or less, the involvement of a middleman, and whether there is a below-market interest rate or deferred payment as part of the purchase.

Recent discussions with the brokers of buyers and sellers in Texas and Louisiana using the sales comparison approach indicate that, depending on the level of sophistication and the size of the transaction, a disaggregation approach in which one estimates the contributory value of the timber to the raw land may be a valid alternative to the income capitalization approach when quantitative surveys of timber by a certified forester surveyor are not practical or are cost prohibitive.

Thus, depending on one's region of the country, the access and availability of data on local sales in the market, and the willingness of primary parties to the transaction to disclose information, there are many ways to develop adjustment factors for use in the sales comparison approach for timberland.

Case Studies

The following presents three case studies showing approaches to valuation of property with timber where the uses of the parcels and the timber differ.

Case Study 1: A Lesson in What Does Not Need To Be Done

In the first case study, the subject is a 10,000-acre tract of forested land with five lakes and various improvements. The client, legal counsel, and accountants decided that the subject is to be legally set up and transferred as a restricted conservancy so the land will never be developed beyond its current improvements and uses. The property will never be sold since it is to be placed in a legal entity where sale is not allowed. There is a full-time manager on-site whose primary role is to take the land back to its ecological condition prior to human influence (approximately 200 years). The timberland's highest and best use will remain as an ecologically sensitive, mature pine forest.

The topography is generally level and includes several perennially running creeks and several hundred acres that have been designated as prairie. There are mature pine forests capable of being harvested on the majority of the land, with an understory of brush that is atypical of the original forest. Creek areas contain hardwoods of oak, cypress, and maple.

A management plan was prepared and provided to the appraiser indicating that restoration of the

land to its prehuman influence includes removal of the brush understory and selective thinning of young timber to leave older pine trees that can serve as a habitat for native endangered species, such as the woodpecker and native turkey.

Any money received from the sale of selectively harvested timber will be used for continued maintenance and restoration of habitat. Thus, the harvesting of the timber is not considered as contributing value above the land, since the income is to be used for maintenance and forest improvement and not strictly for economic gain. This interim income may have value if it can be proven and supported that the income received from selective harvesting exceeds yearly expenses.

Without the establishment of restrictions of the conservancy to the property and a management plan, it would not be possible to conclude that the timber itself did not contribute value. However, since the land can never be sold and the timber is not harvested for income, but rather on an interim basis for restoration to a mature pine forest under a conservancy, only nominal additional value can be attributed to the timber in the conclusion of value and in the analysis under a sales comparison approach.

Sales used in comparison to the case study subject were either similarly restricted or adjusted to reflect similar restrictions. While it could be argued that there is other intrinsic value in the property, attempts to quantify the value of wildlife, aesthetics, and other items would have been costly and beyond the scope of the clients' needs. In this case, the assignment evolved in scope and purpose to meet the client's needs.

Case Study 2: Do Buyers and Sellers Take into Consideration Timber's Contributory Value?

The second case study assignment involves land parcels containing pine forest. The parcels are included in partnerships, with the long-term concept of developing the parcels as single-family residential lots that will be sold to individuals who will eventually build their own homes. There are a total of five parcels ranging in size from 50 acres to 200 acres. This type of partnership has a demonstrated history of holding such land parcels for as long as thirty years before development of the residential lots with roads, and water and electrical services. The timing of development is dependent on market conditions, including population growth and the availability of similar supply.

Inspection of each of the subject properties shows that the forested land in adjacent parcels had been recently logged or thinned, indicating demand for the timber. Further discussions with those involved with the partnership indicate that excess timber has been selectively harvested from the subject parcels to enhance the long-term potential of the property, and the income from the selective timber harvest often has been used to offset real estate taxes. Due to the small acreage size of the parcels, the timber is primarily harvested as pulpwood since mature trees will enhance marketability when the parcels are eventually developed and sold as residential lots.

The smaller size of the subject land parcels made the search for comparable sales challenging. Confirmation of comparable sales with buyers and sellers indicate that most parties had little, if any, knowledge of the specific contributory value of the timber on those parcels, but all considered the harvest of timber as a plus for offsetting taxes or eventual sale to another buyer. All those surveyed thought the timber contributed value,[40] but none could quantify the contributory value of the timber to the land. The data was inconsistent across the board with regards to the rationale and reasoning motivating the buyers and sellers. Some of the buyers and sellers recognized the timber did have some intrinsic value, but they were not capable of quantifying the contribution of the timber even though there was evidence of recent timber harvesting on the surrounding properties.

The situation was investigated further by contacting knowledgeable forestry experts familiar with the local market and the land parcels in question. The consensus among the experts surveyed indicates a minimum attributable value of the timber, regardless of age, of $300 per acre as pulpwood, with a maximum value of the timber of $800 per acre if a timber survey were completed.

In the valuation, all the comparable sales were adjusted for factors such as size, location, market conditions, and anticipated time before development potential. In a perfect world, sales of raw land without timber and sales of land with timber would be available to help differentiate and distinguish the difference in values between land with timber on it and land without timber on it. Unfortunately, no sales of land without timber were found; all the comparable sales had timber of varying maturity, but mostly under ten years of age.

40. The only exception was one buyer who planned to take some timber for personal use in building a barn.

After consulting with a local forester familiar with the property, it was concluded that the trees had minimal contributory value. Assigning any contributing value beyond this would require a timber survey to be completed by a qualified, experience forester. A $300-per-acre adjustment was added for the contributory value of the timber as pulpwood. It was critical that the maturity of trees had been verified with local loggers familiar with the properties and the current market for timber.

While this approach is less than ideal, limited data and the sensitivity of the information involved did not allow for provision of further detailed information. It is suggested that in certain circumstances, and in agreement between the appraiser and the client, this approach may be beneficial and reasonable under difficult market conditions.

Case Study 3: Knowledgeable Buyers and Sellers Represented by Timber Brokers

The third case study assignment involves the market value of six parcels of timberland, ranging in size from 7,000 acres to 70,000 acres. The parcels are within a 10- to 20-mile radius of each other and consist of short-leaf and long-leaf pines of different maturity. A breakdown of acres of timber immediately harvestable was requested and received; the remaining acres cannot be harvested for at least ten years. All the parcels are managed through a forester consultant, but are not to be surveyed via a timber cruise.

Fourteen confirmed timberland sales were identified (Table 1).[41] Data on these sales were provided by the brokers to these transactions. In these sales, both the buyers and sellers understood timber value. In each case, brokers to these transactions had both knowledge and experience in handling timber transactions for both buyers and sellers and were able to differentiate the contributory value of the timber from the raw land. From the fourteen sales, nine sales were selected as the most representative of the subject (Table 2).

The raw land value of Sale 5 of the representative sales (Table 2) was enhanced by the fact it was also a prime hunting-lease property. The remaining representative sales indicate a range in value for the raw land of $595 per acre to $900 per acre. Sale 4 provides an interesting insight, in that the timber had been recently harvested from that parcel, so no value could be attributed to the timber in that sale. Thus, Sale 4 gives a base line for raw land of about $760 per acre.

The contributory value of the timber can be broken down into two categories: (1) land purchased with timber mature enough to harvest if the buyer decides to do so ($560 to $700 per acre), and (2) timber at least ten years away from harvest with no short-term possibility of harvest ($300 to $350 per acre, valued as pulpwood). In the analysis, the midpoint of $630 per acre is used for the contributory value of mature timber ready to harvest, and $325 per acre is used for timber a minimum of ten years from harvesting, assuming the timber could be harvested as pulpwood. Raw land values of anywhere from $800 per acre to as high as $1,000 per acre were found, depending on the adjustments. The value of the land and the contributory value of the timber can be established by combining this information with data provided by the forester consultant, as shown in the following example.

20,000 acres of raw land
Value of raw land:
20,000 ac × $800/ac = $16,000,000

5,000 acres of mature timber capable of harvest (ACF surveyor estimate)
Contributory value of mature timber:
5,000 ac × $630/ac = $3,150,000

10,000 acres of immature timber not harvestable for at least 10 years (ACF surveyor estimate)
Contributory value of immature timber:
10,000 ac × $325/ac = $3,250,000

Value conclusion

Value of 20,000 acres raw land:	$16,000,000
Contributory value of timber:	$6,400,000

In this case study, the final valuation reports do not combine the value of the raw land and the timber, although it is clear that some appraisers in some markets would do so. Given the nature of the assignment and the needs of the client, it was mutually agreed that it was better to list each element separately for internal business decisions and for both legal counsel and accountants.

Conclusion

This article presents an overview of some of the relevant current timber value literature, terminology,

41. The locations of the sales have been modified to protect the confidential nature of the assignment.

Table 1 Case Study 3—Confirmed Sales

Sale No.	Sale Date	Location	Sale Price	Size (ac.)	Price/Ac.	Est. Timber Contrib.	Est. Raw Land Value
1	2008	Between Burkeville and Sabine River	$778,520	544	$1,430	$430	$1,000
2	2008	North of Saratoga	$2,928,375	2,069	$1,415	$565	$850
3	2007	East of Saratoga	$1,156,124	1,217	$950	$350	$600
4	2007	East side of Sabine River	$16,200,000	13,975	$1,159	$564	$595
5	2007	East of Hwy 171	$414,837	474	$875	NA	$875
6	2006	Near Indian Village	$530,250	505	$1,050	NA	$1,050
7	2007	Texas, Louisiana, Georgia, and Alabama	$2,380,000,000	1,550,000	$1,535	$700	$835
8	2010	Northeast Texas	$16,080,000	9,470	$1,698	$500	$1,198
9	2008	East Texas	$9,616,060	5,400	$1,781	$700	$1,081
10	2010	East Texas	$21,250,000	19,097	$1,113	$100	$1,013
11	2009	Louisiana	$7,614,640	4,153	$1,834	$700	$1,134
12	2010	Liberty County, Texas	$19,774,584	14,583	$1,356	$600	$756
13	2010	Louisiana	$84,000,000	70,000	$1,200	$300	$900
14	2010	Southwest Louisiana	$20,625,000	15,000	$1,375	$600	$775

Table 2 Case Study 3—Representative Confirmed Sales

Sale No.	Sale Date	Location	Sale Price	Size (ac.)	Price/Ac.	Est. Timber Value	Est. Raw Land Value	Data Source
1	2010	Southwest Louisiana	$20,625,000	15,000	$1,375	$600	$775	Listing
2	2010	Louisiana	$84,000,000	70,000	$1,200	$300	$900	Offer
3	2010	Texas	$19,774,584	14,583	$1,356	$600	$756	Sale
4	2010	Texas	$21,250,000	19,097	$759	NA	$759	Sale
5	2009	Louisiana	$7,614,640	4,153	$1,834	$700	$1,134	Sale
6	2008	North of Saratoga	$2,928,375	2,069	$1,415	$565	$850	Sale
7	2007	Texas, Louisiana, Georgia, and Alabama	$2,380,000,000	1,550,000	$1,535	$700	$835	Sale
8	2007	East of Saratoga	$1,156,124	1,217	$950	$350	$600	Sale
9	2007	East side of Sabine River	$16,200,000	13,975	$1,159	$564	$595	Sale

and methods of valuing timberland. This information should be useful to those appraisers that on occasion are presented with similar needs by their clients when the client is unwilling to incur the cost of obtaining a quantitative and qualitative survey from a recognized forest surveyor.

The article offers some brief examples that will encourage thought, dialog, and discussion points among appraisers facing similar appraisal assignment challenges. Although in an ideal appraisal situation the appraiser would receive a quantitative survey of the timberland by an experienced and qualified timber ACF surveyor, in the real world, client cost and time constraints may limit the appraiser's ability to use such information. When a quantitative forester survey is not possible due to financial and time constraints, the approaches provided in the case studies may aid the appraiser in providing qualitative values of the timber if the client is made aware that this approach is quite subjective and limited in scope. Thus, it is hoped that this article provides both insight and some practical ideas on how to approach such timberland assignments.

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Web Connections

Internet resources suggested by the Y. T. and Louise Lee Lum Library

American Forest and Paper Association
http://www.afandpa.org/

American Loggers Council
http://www.americanloggers.org/

American Tree Farm System
http://www.treefarmsystem.org

Association of Consulting Foresters of America, Inc.
http://acf-foresters.org

Forest Landowners
http://www.forestlandowners.com/

International Union of Forest Research Organizations
http://www.iufro.org/

National Association of State Foresters
http://www.stateforesters.org

National Council of Real Estate Investment Fiduciaries (NCREIF) Timberland Index
http://www.ncreif.org/timberland-returns.aspx

National Timber Tax Website
http://www.timbertax.org

Society of American Foresters
http://www.safnet.org

US Forest Service
http://www.fs.fed.us/

World Forestry Center–United States Forestry Industry
http://wfi.worldforestry.org/media/publications/marketbriefs/US_brief.pdf