

# The FORSight Resource

Volume 2, Issue 2

May 1, 2005

## Upcoming Events...

Western Forest Economists Meeting  
May 2-4, 2005  
Welches, OR  
Email: garlandp@peak.org



Global Forest & Paper Summit  
June 1-3, 2005  
Vancouver, BC  
globalforestpapersummit.com



V Int'l Conference on Forest Vegetation Management  
June 20-24, 2005  
Oregon State University  
Corvallis, OR  
http://outreach.cof.orst.edu/



SAF National Convention  
Oct 19-23, 2005  
Dallas Fort Worth, TX  
www.safnet.org/natcon/



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## Due Diligence Checklist

It would be much easier to give a complete description of the human circulatory system than to discuss due diligence. Instead of providing a detailed checklist which would undoubtedly be incomplete, this article will address the process in very general terms. In a sea of details it is important to step back at frequent intervals and assess both the process and the findings.

Lets start with a **definition**. Due diligence is the process by which a party conducts inquiries for the purpose of timely, sufficient and accurate disclosure of all material statements and information written or otherwise which may influence the outcome of a transaction.

In an ideal world where

time and money were no object, the goal for a due diligence investigation would be to uncover all things that may influence the outcome of the transaction. In the world we live in, the goal should be to uncover the things that will have the most significant impact on the outcome of the transaction.

It has been said that a moment spent planning saves 3 or 4 in execution. This adage is very appropriate with regard to due diligence. Formulation of a clear **strategy** cannot be emphasized enough! This strategy should address at minimum, the following areas:

- ◆ Due Diligence Team (DDT)
- ◆ Value Drivers

- ◆ Soft Issues
- ◆ Interviews
- ◆ Schedule

**Due Diligence Team** - there are three general areas that must be adequately represented by your DDT:

- ◆ Legal
- ◆ Financial
- ◆ Business

The business team members will be the ones focusing on revenue generation potential and cash flow from operations. There is no substitute for industry specific experience here. Knowledge of the region in which the acquisition is located is also critical. Silvicultural regimes, site productivity & markets are just a few of the things that can be drastically different from region to re-

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## FORSight Celebrates First Year in Business

FORSight Resources celebrated their first year anniversary on February 27, 2005. Starting with only the equity contributions from the members, FORSight has weathered the challenges that face many start-up businesses with astounding success. To date the company has been able to generate sufficient cash flow from operations to continue growing without the need

for additional financing.

FORSight's client list has expanded significantly. Starting essentially from ground zero, our current clients are responsible for the management of approximately 15 million acres of timberland throughout the U.S. and Canada. While the Timber Investment Management Organizations (TIMO's)

have been the predominate market for FORSight, industrial forestland owners have recently surfaced as another major market.

FORSight's narrow focus has created substantial capacity in the company's areas of expertise typically resulting in quick project turn around. FORSight now services all forested regions

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# Ice Damage Assessment Utilizing Remote Sensing and High Resolution Imagery

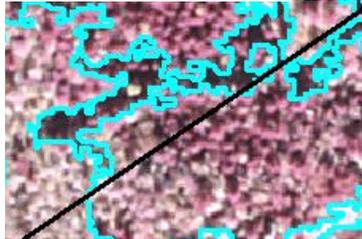
In the last issue, remote sensing was introduced as a means to quickly and efficiently collect information regarding the condition of a property. This article will take that concept from the theoretical to a practical application.

An ice damage assessment was performed for a client whose property was subject to a particularly severe ice storm. This property was located in the southern U.S. and consisted of predominately loblolly pine plantations. Of particular interest were those stands that were scheduled to be harvest over the next several years.

FORSight used eCognition to initially create stand lines utilizing imagery provided by the client. This image processing software evaluates imagery at an object level rather than a pixel level. The analysis begins with a single pixel object, and then iterates combining smaller image objects into bigger ones. Heuristics are used to minimize variation of the image objects over a whole scene. The variation is based not only on the standard deviation of the image objects but also on their shape. This process guarantees a regular spatial distribution of image objects.

A sample of the raw output from eCognition is shown in Figure 1. The cyan lines are the stand lines differentiated by eCognition.

Figure 1



These lines are very detailed, following the boundaries of pixels. To reduce the complexity, allow for easier editing and reduce file size, FORSight generalized the lines through a smoothing process. In the sample shown below (Figure 2) the number of arc segments has been reduced by 58%.

Figure 2



The images were combined into five batches, then clipped using the stand boundaries defining the area of interest with the imagery. By sub-setting the imagery, variation was minimized making the overall identification process simpler. Stand boundaries were then generated using the technique described above. Aerial photo interpretation techniques were subsequently used to determine if a polygon (sub-stand) had been damaged by the ice storm. After classifying all polygons, this layer was overlaid with the original stand boundaries layer and through intersection analysis, the percentage of area affected was calculated.

While this exercise assessed damage on an area basis, volume estimates of damage could be obtained as well. Accurate inventory estimates are a prerequisite to assessing damage in volumetric terms.

Deliverables for this project were 1) a report/map showing the percent of area by stand that experienced significant ice damage. Stands were tagged with a data field containing the percent by area that was considered damaged and 2) the shapefile that resulted from overlaying the damaged stands with the original stand layer.

## Due Diligence...

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gion. Legal and financial team members concentrate on things that may put the revenue generating potential of the property in jeopardy. The focus of this article will be on the business side understanding that the business team members will provide input for both legal and financial team members.

**Value Drivers** - You will never be able to conduct a complete due diligence investigation. In most transactions you will have to exercise judgment on which areas to investigate and how thorough that investigation should be.

Value drivers are those things that will

have the largest impact on a valuation. Here are a few key ones with respect to a timberland acquisition:

- ◆ Discount Rate
- ◆ Price Assumptions
- ◆ Inventory
- ◆ Harvest Level
  - Growth
  - Regulatory Environment

Verification of the standing inventory figures you receive from the seller is a wise course of action. An inventory design can ensure that it be done quickly and efficiently. Harvest levels are dependent upon growth, current merchantable inventory and the regulatory environment. A clear understand-

**“Business is a series of great opportunities brilliantly disguised as impossible situations”**

**Anonymous**

ing of the merchantable specifications is essential. Detailed definitions of products and their units of measure are key. While regulations are black and white (generally), projecting growth on a property is not. An understanding of how the seller models growth can give insight as to how the current harvest levels have been set. Modeling growth is of course the most sophisticated way to estimate growth but it shouldn't be

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# Growth Model Review - CACTOS

	PARTICULARS
<b>Author</b>	Lee C. Wensel et. al. U.C. Berkeley
<b>Species</b>	Conifer and Hardwood Species
<b>Region</b>	Mixed Conifer Region of Northern California
<b>Silviculture</b>	Intermediate & Final Harvest Options
<b>Model Type</b>	Individual Tree
<b>Add'l Info</b>	<a href="http://www.cnr.berkeley.edu/~wensel/cactos/cactoss.htm">http://www.cnr.berkeley.edu/~wensel/cactos/cactoss.htm</a>

CACTOS is designed to provide a means of predicting changes that are likely to take place in young-growth conifer stands. Stand descriptions containing the following per tree attributes are used as input:

- ◆ Species Code
- ◆ DBH in inches
- ◆ Total height in feet
- ◆ Live crown ratio
- ◆ Trees per acre

If all data items are not present, a stand generator routine (STAG), is available to assist in 'filling in' missing data values. Ingrowth can be modeled through the use of a separate ingrowth file. CACTOS also allows the user to define species groups for summary reporting. Calibration of height and basal area by species is possible but care must be taken to ensure the calibration factors do not

undermine the integrity of the growth equations.

Silvicultural treatments are limited to intermediate and final harvest options. Using the 'cut' command, the user can access the menu-driven harvest routines and simulate a variety of harvest treatments.

CACTOS is capable of batch-processing multiple stand descriptions through multiple prescriptions by using a 'batch command' file.

A variety of outputs are available in tabular and graphical formats. Diameter distribution graphs, stand profiles, diameter class tables, etc.

CACTOS offers a scientifically-based growth modeling option to those involved in forestry in northern California....a unique environment to be sure.

## Due Diligence...

*(Continued from page 2)*

the only way. As a check on model outputs, try to determine growth on a per acre per year basis. Whether tons, board feet or cunits, the seller should have someone on staff that has intimate knowledge of the property and consequently growth. Ideally, employees of the seller will share this information and can be extremely helpful in revealing historical silvicultural practices both successful and otherwise.

**Soft Issues** - these are the issues that generally deal with people and relationships. The numbers may be starting to take shape on paper but if you plan on retaining the seller's work force, an assessment of the current organization's perception of the acquisition would be prudent. Perceptions can range from openly hostile to genuine excitement at the prospect of working for a new entity. Any and all discussions with the future work force should be straight forward and to the point. The phrase, 'do what you say your going to do' is the measuring stick that

the work force will use in deciding whether to support the acquisition or not. Respect and straight forward dialogue can go a long way towards gaining buy-in from key employees.

**Interviews** - if possible, interview as many people currently on the seller's staff as possible. This is by far the best way to learn about material facts that can't be found on a balance sheet or income statement.

**Schedule** - a fairly thorough due diligence can be completed in a month if the stars are aligned, people answer their telephones and the data provided by the seller is presented in a logical, intuitive fashion. Due diligence time allowances by the seller that are less than one-month should be a cause for concern.

FORSight Resources has considerable experience in assisting clients in the due diligence process. For more information or specific requests email us at: [info@FORSightResources.com](mailto:info@FORSightResources.com)



Okanogan Mountain Fire near Kelowna, B.C. August, 2003  
Courtesy of Chris Gray...

## FORSight's First Year...

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of the U.S. and Canada from our three office locations (South Carolina, Washington and Maine). Companies interested in obtaining the maximum value from their timberland assets have realized the value of the services we provide. From evaluating potential acquisitions, to development of customized information systems, a high demand for our services is evident. Many thanks go out to those who have been instrumental in our early success. We intend to be around for a very long time and look forward to building new relationships with others in the forest industry.

## **FORSight Speakers Converge on Economist Conferences**

Bruce Carroll recently spoke at the Southern Forest Economist Worker's meeting held in Baton Rouge, L.A. The topic of his discussion was **Forest Management Plan Implementation: The Economic Implications of Straying from the Optimal Strategy.**

Karl Walters will be speaking at the upcoming Western Forest Economist meeting to be held in Welches, OR. Karl's paper will address the new NFMA requirements for National Forest Planning Models.

For copies of either of these papers please contact us at:  
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**FORSight Resources** is a leading provider of decision support services for natural resource management. The company's offerings include forest planning, inventory, growth and yield modeling, GIS analysis and custom programming, acquisition due diligence, wood supply analysis, forest finance, forest economics, and a host of other decision support services geared specifically towards natural resource management.

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***World-class decision support for natural  
resource management...***

**"The world is full of willing people.  
Some willing to work. The rest  
willing to let them."**

**Robert Frost**

## **The FORSight Library...**

**Enhanced mortality equations for trees in the mixed conifer zone of southwest Oregon.**

For a copy of this article, please contact us at [info@FORSightResources.com](mailto:info@FORSightResources.com)

### **ABSTRACT**

Hann, David W., and Mark L. Hanus. 2001. *Enhanced mortality equations for trees in the mixed conifer zone of southwest Oregon.* Research Contribution 34, Forest Research Laboratory, Oregon State University, Corvallis.

Equations for predicting the probability of a tree's dying in the next 5 years are presented for eight conifer and eight hardwood tree species from southwest Oregon. A logistic equation form was used to characterize the probability of

mortality. The parameters of the equation were estimated using weighted, maximum likelihood procedures. These equations are being incorporated into the new southwest Oregon version of ORGANON, a model for predicting stand development. In particular, the equations extend the previous model to older stands and stands with a heavier component of hardwood tree species.

## **In the Next Issue...**

*Post-Acquisition Due Diligence*

*Case Study - T.B.D.*

*Growth Model Review*

*Data Management - Is Ancient Data Worth Holding On To?*

*The FORSight Library*

*Letter from the Editor*

**"Minds are like parachutes...they  
only work when open"**  
**Anonymous**

**Business  
Partners**

