2006 WMSP ECONOMIC ASSESSMENT

Conducted for

White Mountain Stewardship Contract Multi-party Monitoring Board

Conducted by

Lay James Gibson, Ph.D.

March 28, 2007

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Introduction.

In early 2006 work was completed on the 2005 White Mountain Stewardship Project's Economic Assessment. The work program was initiated by the White Mountain Stewardship Contract Multi-party Monitoring Board to provide a data-based objective evaluation of the regional economic impacts of stewardship driven timber harvesting. The 2005 assessment was seen as being the first of an annual series of assessments.

This report deals with the assessment of the 2006 calendar year. Findings are "generally comparable" to those reported for the 2005 year but they are not always "specifically comparable." The reason is simple – the data collection instrument used for the 2005 data was "fine tuned" before the 2006 data were collected. In most cases the changes were small, e.g., Hawley Lake and Hon Dah/McNary were dropped as places of residence for workers and Heber/Overgaard and Alpine/Nutrioso were added. And the final question dealing with the significance of the Future Forest Company as a harvester of raw material was changed from "… purchased from the "Future Forest" company?" to "… purchased from/by the "Future Forest" Company.

The biggest change came with question 15. Ten types of (economic) goods were listed and estimates of both total 2006 expenditures and the percentage of these expenditures going to White Mountain firms were called for.

The 2006 data for most questions are generally comparable to those collected for 2005. Expenditure data should not be compared but the loss of comparability is more than compensated for by the increased breadth and depth of expenditure data in the current report.

Overview.

For decades Arizona's forests were managed using the modern conservationist's "multiple use" model. In the 1970's and 1980's, at least in some circles, the notion of "conservation" was replaced by the notion of "preservation" and the multiple use model was sometimes scaled back to become a "limited use" model. The harvesting of forest products was the most conspicuous casualty on the multiple use menu. In some cases harvesting policies were modified, in other cases they were simply suspended. Whereas disruption of harvests was intended to allow for the development and implementation of new procedures designed to strike a better balance between consumptive and non-consumptive management strategies there were unintended consequences. Perhaps most significant was the build-up of forest density and debris which created an environment susceptible to destructive fires and poor forest health. Also significant was a reduction in commercial harvests and the entrepreneurial activity and employment associated with harvesting and manufacturing operations. In many parts of the West the economic dislocations were severe.

The so-called Healthy Forests Initiative and the oversight in the White Mountain Region by the White Mountain Stewardship Multi-party Monitoring Board marked a significant policy shift. Specifically, two notions were formally recognized. First, that thoughtful harvesting plans could improve forest health, reduce forest susceptibility to destructive and unmanageable fires, and assure a flow of harvested material that could meet the needs of processing industries. Secondly, that the goals of a cross-section of constituencies could be served by the creation of a heterogeneous "stewardship board." This board was created to provide an advisory role when it came to strategically thinking about healthy forest management issues.

The study which is the subject of this report was commissioned by the stewardship board. The idea is to have a factual and critical baseline which quantitatively describes changes in firms that harvest and process forest products, which measures the

economic impacts of forest industries on the White Mountain Regional Community, and which points to new ways that the White Mountain Region might capitalize on current and potential industry to get even more economic benefit from the forest cluster.

Scope and Nature of the Assignment.

The Stewardship Committee determined early-on that a focused study with real data would be more useful and more informative than a broader study that traded breadth for depth. They concluded that a study of this sort would be appropriate if it were to achieve three goals:

First. Identify the firms that are directly involved in harvesting and processing the forest products made available through the Future Forest, LLC contract.

Second. Better understand the nature and extent of these firms in general, and their stewardship-related work in particular and the implications for the White Mountain Region's Economic System.

Third. Determine ways that the impacts of the stewardship contract might be enhanced and identify the economic development strategies that will be needed to assure that the White Mountain Region sees even greater economic benefit in the longer term.

The Region and Procedures. This project is focused on Arizona's White Mountain Region. For purposes of this study the White Mountain Region is the contiguous area anchored on the east by Springerville-Eagar-Alpine, on the south by Whiteriver, on the west by Heber and Overgaard and on the northwest by Snowflake-Taylor.

The findings reported in this study come largely from a questionnaire (Appendix A) that was initially developed in the fall of 2005. It was subsequently revised in 2006 and administered in December 2006. The questionnaire was administered to 15 firms

engaged in harvesting and processing forest materials in association with the contract with Future Forest, LLC. Most, but not all, of the significant players in the White Mountains forest economy are included. Questions were designed to provide full contact information for all firms included in the study, detailed employment data, economic base bifurcation data to support multiplier analysis, data on dependence on Future Forest, LLC for material inputs, data on geographic markets for outputs, and data on major expenditures for goods and services by specific type. All data are best estimates provided by a ranking company official.

It is anticipated that the questionnaire will be administered each December through 2014. Inasmuch as most questions will remain the same it will be possible to measure change (growth or decline) in activity by firm as the stewardship harvest evolves. The one question that has changed in the short term is the question on expenditures by firm. The question asked in 2005 was intended to inform researchers about important expenditure types. In 2006 this question was more focused; additional fine tuning may or may not be required in 2007 and in subsequent years. In any case, the answers to this question will help determine the need for more locally available goods and firms to service and supply the forest harvesting and processing industries.

Findings.

Existing Firms. We identified 15 firms that met our criteria – they were engaged in the harvesting or processing of forest products and they had purchased, or were positioned to purchase, material supplied by Future Forest, LLC. The firms were highly concentrated in just two communities – Springerville/Eagar and Snowflake/Taylor. The firms are listed in Table 1 along with the types of inputs received from Future Forest, LLC. A complete directory of firms is offered in Appendix B.

Table 1. Woody Biomass Products Delivered by Future Forest, LLC (2006)

	Woody Biomass Inputs				
Purchasing Firm	**Clean Chips**	**Dirty Chips**	**Roundwood**	**Saw Timber**	**Harvesting Woody Biomass**
Arizona Log & Timberworks (Eagar)			X	X	
Forest Energy Corp. (Show Low)	X	X	X		
Future Forest (Pinetop)					X
Mountain Top Wood Products (Snowflake)			X	X	
Nutrioso Logging (Nutrioso)					X
Reidhead Bros. Lumber (Nutrioso)			X	X	
Reidhead Bros. Re-manufacturing plant (Springerville)	N/A	N/A	N/A	N/A	
Renergy: Renewable Energy from Biomass (Snowflake)		X			
Round Valley Wholesale Lumber (Eagar)			X	X	
Snowflake Lumber Moulding (Snowflake)				X	
TriStar Logging, Inc. (Snowflake)			X		X
WB Contracting (Eagar)					X
Western Moulding (Snowflake)				X	
Western Renewable Energy (Eagar)		X			
Winner's Circle Soils, Inc. (Taylor)	X	X	X		

Source: Survey by Author, December 2006

Employment and Cross-Commuting. Employment data were initially collected by gender and by full-time, part-time, and seasonal status. These data were subsequently converted to a FTE or full-time equivalent value to facilitate comparisons between firms. In many studies the difference between headcount employment and FTE employment is substantial. But in this study the numbers are very close. Most employees are full-time, year-round employees. Only a handful are part-time. And whereas some 11% of all headcount employees are seasonal, most seasonal workers are employed the better part of the year, e.g., 10 months or so.

Headcount employment is 263; The 2005 number was 464. Of the 201 employees "lost," 200 are accounted for by a firm in Phoenix which ceased being a Future Forest customer.

2005	**2006**
414 Full time employees	222 Full time employees
6 Part time employees	13 Part time employees
44 Seasonal employees	28 Seasonal employees
464 Total	263 Total
FTE value = 449.90	FTE Value = 245.52

The loss of the Phoenix based firm has clearly reduced total employment and the mix of full time, part time, and seasonal works has changed a bit. But on balance, employment in the White Mountain Region per se has changed little – 249.90 FTE in 2005 vs. 245.52 FTE in 2006.

The 15 firms included in our survey have employment structures that are male-dominated. Some 82% of the full- and part-time employees are males. Whereas we do not have gender data on seasonal employment we know that most are males.

One more comment on employment is called for before we move on to cross-commuting. Specifically, our definition of an employee includes owners, family members, managers, and of course hourly workers. Our definition covers most all "economically active individuals" who are associated with the firms covered by this study. Most governmental definitions focus on hourly workers and perhaps a few others; our definition is much more comprehensive.

Data on cross-commuting are useful because they describe the extent to which employment and a firm's impacts are spread throughout a region – or even beyond a region (Table 2). For example, Snowflake and Taylor employs 118.46 FTE workers in firms that purchased forest products from Future Forest, LLC. but only 59.28 FTE actually live in Snowflake and Taylor. Heber and Overgaard, on the other hand have no Future Forest driven employers but they serve as a place of residence for 29.88 FTE. Heber and Overgaard are exporters of jobs and the payrolls that come with them whereas Heber and Overgaard are importers.

The importance of this to local economic development efforts will be discussed later in this report. Are there winners and losers? Yes. Snowflake/Taylor are providing jobs for workers who will contribute very little to the community in economic terms. Heber/Overgaard, on the other hand, is getting economic benefit from workers who are employed elsewhere. From a regional standpoint it is a zero sum game. From the standpoint of individual communities there are clearly winners and losers.

Table 2. Cross Commuting. Estimated Number of FTE Employees by Place of Work and Place of Residence

Place of Residence → / Place of Work ↓	Lakeside/ Pinetop	Show Low	Snowflake/ Taylor	Heber/ Overgaard	Springerville/ Eagar	Alpine/ Nutrioso	Whiteriver/ Fort Apache	Outside Region	Total (by place of work)
Lakeside/Pinetop		1.0			1.0				2.0
Show Low	9.0	16.00			1.0	1.0	1.0	8.0	36.0
Snowflake/Taylor	4.0	6.15	59.28	29.88			1.0	18.15	118.46
Heber/Overgaard									
Springerville/Eagar					62.73		0.75		63.48
Alpine/Nutrioso					19.08	4.5		2.0	25.58
Whiteriver/Fort Apache									
Outside Region									
Total (by place of residence)	13.0	23.15	59.28	29.88	83.81	5.5	2.75	28.15	245.52

Source: December 2006 Survey by Author.

Forestry as an "Export Engine." Economic base theory tells us that employees who produce goods which are "exported," i.e., shipped out of the local region are "basic" to the local economy inasmuch as they bring new money into the region. Without these basic jobs there would be no local-serving or non-basic jobs. The way that we express the relationship between total employment and basic employment is the "multiplier". From a region-building perspective we might say... "any new job is good but basic jobs are especially good because workers support themselves and additional workers through the multiplier process." (An expanded discussion is found in Appendix C.)

Based on previous research studies we can estimate the average multiplier in the White Mountain Region to be 1.591; this means that on average every export or non-basic employee will support another 0.591 non-basic local serving employees. Using bifurcation estimates reported in the December 2006 field survey we can estimate the full impact of the 15 firms covered by our study.

Table 3 tells an interesting story. White Mountain Region firms with a Future Forest connection have a total of 217.37 FTE employees. Of these, 72.91 are local serving (non-basic) and 144.46 are basic (export) employees with a multiplier impact. We estimated that these 144.46 basic FTE support another 85.38 non-basic FTE throughout the White Mountain Region. In others words the 15 White Mountain Region firms considered support a total of 302.75 FTE workers; the 2005 total was 317.8.

In the following discussion we will sort out the Future Forest related employment. Up to this point, our intention has been simply to show the general importance of the firms upon which we are focusing.

Table 3. Estimated Basic and Non-basic FTE Employees Living and Working in the White Mountain Region and Employed by Firms with a Future Forest Connection.

Place of Work ↓	Basic FTE Employment	Non-basic FTE Employment	Total FTE Employment
Lakeside/Pinetop	0.00	2.00	2.00
Show Low	26.32	1.68	28.00
Snowflake/Taylor	92.24	8.07	100.31
Springerville/Eagar	17.40	46.08	63.48
Alpine/Nutrioso	8.50	15.08	23.58
Grand Total	144.46 (66.46%)	72.91 (33.54%)	217.37

Source: December 2006 Survey by Author.

The Specific Role of Future Forest, LLC. The discussion of forestry as an export engine shows that the 15 firms actually located in the White Mountains are major players but they do not tell us about “extra production” that has been made possible by the Stewardship Contract. Those estimates are shown in Table 4.

- Whereas the 15 firms described in Table 3 gave the White Mountain Region 217.37 FTE employees, only 90.15 FTE employees can be traced back to Future Forest, LLC (Table 4).
- Whereas the 15 firms gave the Region another 85.38 FTE employees through the multiplier process only 26.54 of them are tied to Future Forest, LLC.

The estimate effect of Future Forest, LLC is summarized in Table 5.

The 15 “engine firms” which are based in the region directly and indirectly support 302.75 FTE employees who live in the White Mountain Region. Over one-third of this total (116.69 FTE) have their jobs because of Future Forest, LLC. This number has the potential to grow as Future Forest, LLC increases its production in absolute terms.

Table 4. Estimated Basic and Non-Basic FTE Employees Living and Working in White Mountain Region who are Directly Supported by Material Harvested by Future Forest LLC.

Place of Work ↓	Basic FTE Employment	Non-basic FTE Employment	Total FTE Employment
Lakeside/Pinetop	0	2.0	2.0
Show Low	13.69	0.87	14.56
Snowflake/Taylor	9.8	5.43	15.23
Springerville/Eagar	17.16	26.12	43.28
Alpine/Nutrioso	4.25	10.83	15.08
Grand Total	44.9	45.25	90.15

Source: December 2006 by author.

Table 5. Estimated Employment Impact of Forest Industries on the White Mountain Region with Future Forest, LLC and without Future Forest, LLC.

	Total	Portion Attributable to Future Forest, LLC	Portion Independent of Future Forest, LLC
Total Direct Employment	217.37	90.15	127.22
Total Indirect Employment Through Multiplier	85.38	26.54	58.85
Total Direct and Indirect	302.75 (100.0%)	116.69 (38.54%)	186.07 (61.46%)

Source: Estimates Provided in Tables 3 and 4. Multiplier estimated by author.

Local Expenditures. Another important part of the impact equation is expenditures for goods and services. The employment generated has already been accounted for in the discussion of indirect multiplier impacts. But what about the dollar values and the types of goods and services? Table 6 does not provide definitive answers to these questions but it does represent a start. The 2006 economic assessment has built upon the information offered in Table 6 and provides information that can support pro-active economic development initiatives. Specifically, the goal is to internalize more of the expenditures for goods and services within the White Mountain Region. This would benefit the firms that harvest and process forest products by improving their access to critical supplies and it would benefit the region by reducing sales leakage.

It is important to remember when examining Table 6 that the data describe only major expenditures, not total expenditures for the 15 firms included in our study.

Easily the key expenditure item is raw material (clean and dirty chips, roundwood, and saw timber). Raw materials are harvested by a number of entities – including, but not limited to, Future Forest LLC. Next come outsourced hauling, petroleum products, heavy equipment, mill equipment, heavy equipment parts, and electricity. These are all "million dollar" categories. Less impressive but certainly substantial are expenditures for mill parts, vehicle parts and tires, and transportation equipment. The 10 categories which were used account for estimated expenditures of over $22 million including almost $16 million in local sales. In several major categories most all sales are made by local firms (raw material, electricity, petroleum products are three). Mill equipment, mill parts, heavy equipment, and heavy equipment parts, on the other hand often are purchased outside the region.

From an economic development standpoint it would be ideal to have all expenditures for goods and services made within the White Mountain Region. But this rarely happens in any region and does not appear to be something that could ever be achieved in the White Mountains. Local businesses should continue to explore new ways of reaching the

Region's markets but in all likelihood the near and intermediate futures will not see local firms improving very much on the present local capture percentage of 70.62% (Table 6).

Table 6. Estimated 2006 Expenditures. Estimated Total and Local (White Mountain Region) Expenditures for Selected Goods.

Expenditures for	**$ Expenditures 2006**	**Share of Total Spent in White Mountain Region**
Raw Material	$8,255,261	$7,695,261
Hauling (outsourced)	$3,023,882	1,998,452
Electricity	$1,041,037	$1,041,037
Mill Equipment	$2,263,813	$4,600
Mill Parts	$638,877	$247,274
Transport Equipment	$306,000	$228,600
Petroleum Products	$2,519,255	$2,519,255
Vehicle Parts, Tires	$467,800	$413,800
Heavy Equipment	$2,393,175	$765,928
Heavy Equipment Parts	$1,702,563	$1,054,909
Total	$22,611,663	$15,969,116 (70.62%)

Source: December 2006 survey by author.

Conclusions and Recommendations.

The forest harvesting and processing industries in the White Mountains of Arizona are impressive in a variety of ways – magnitude of employment, number of firms and variety of processes and products. Further, judging from data which describe the role of the White Mountain Stewardship Contract in increasing material supply for the processing industries the contract has already produced positive results. But conclusions after the second year of evaluation are still tentative and preliminary. The current study builds on the 2005 study but it is still a "work in progress." The 2005 study was designed to be replicated annually in a way that assures comparability from year to year and the power to see changes in the industry over time; the same is true of this study.

Conclusions. Perhaps two general conclusions reached in the 2005 study and still true today are a) the Stewardship Contract has already contributed to "health and safety" and economic well-being in the White Mountain Region and b) the Multi-party Monitoring Board helps assure balance in the forest management process.

Additionally we can conclude that:

- Having an objective basis for measuring the impacts of the Stewardship Contract over time is essential for sound management;
- Having 15 firms involved, or on the verge of being involved with the Stewardship Contracts suggests substantial acceptance in the market-place;
- Innovative technologies are clearly in play to support demand for a variety of harvest outputs (clean chips, dirty chips, roundwood, and saw timber) including materials that historically had little or no value;
- Impacts are not always localized. Data on cross-commuting suggest that impacts (and community benefits) can be spread over the entire White Mountain Region;

- The “forestry cluster” is a major employer - firms surveyed employ some 245 full time equivalent employees.
- The “forestry cluster” is an important economic engine which indirectly supports an additional 85 FTE employees in the White Mountain Region through the multiplier process;
- Despite the fact that Future Forest, LLC is a new player it is already an important player. Of the 302.8 FTE who live and work in the White Mountain Region, over one-third are employed to harvest and process Future Forest, LLC material – 90 FTE directly and 27 FTE indirectly through the multiplier process;
- Local expenditures by the 15 firms surveyed are substantial; the grand total spent by these firms in the White Mountain Region is almost $16,000,000 annually.

Recommendations. At this point in the evaluation process some recommendations are made cautiously. But at least four are made boldly;

- Invest substantial effort in monitoring and evaluating supply, demand, price, and maximum sustainable yield information;
- Keep the White Mountain Stewardship Contract Multi-party Monitoring Board fully engaged in the Stewardship Contract process;
- Continue to conduct an annual economic assessment to assure the flow of objective data to describe the outcomes of the Stewardship Contracts;
- Disseminate findings of the economic assessment and other assessments widely to a variety of constituencies including the forest cluster industry itself, the White Mountain Region’s business community, and elected officials and public sector managers.

And finally, encourage local providers of goods and services to pay close attention to the needs of timber harvestors and processors. There may be unmet needs for goods

and services that they can meet if they are alerted to the changing needs of existing customers.

Appendix A

December 2006

Community _____ Subarea _____

Date _____ Interviewer _____

White Mountain Area Employer Questionnaire

Hello! I'm _____and I'm a researcher from the University of Arizona. We are working on a study here in the region that we hope will tell us something about the role of forestry in the area's economic structure. May I have a few minutes to ask you some questions?

A. GENERAL

1. What is the formal name of this establishment? _____

_____

2. What is the street address? _____

3. PO Box _____ Community _____ Zip _____ Phone _____

4. Who is the principal local official and what is his/her title?

Name _____ Title _____

5. What is the principal function of this establishment (primary product or service)? _____

_____

SIC Code _____ NAICS Code _____

B. WORK FORCE DESCRIPTION

6. Including yourself, members of your family, and those on salary, how many employees do you have? (Average for the past 12 months) _____

7. How many are:

a. Year-round full-time male employees? _____

b. Year-round full-time female employees? _____

c. Year-round part-time male employees? _____

d. Year-round part-time female employees? _____

8. On the average, how many hours per week do these part-time employees work? (Note if total or per employee) _____

9. How many of these year-round full-time employees live in the White Mountain Region communities listed below.

Lakeside/Pinetop _____
Show Low _____
Snowflake/Taylor _____
Heber/Overgaard _____
Springerville/Eagar _____
Alpine/Nutrioso _____
Whiteriver/Fort Apache _____
Outside the Region _____

10. How many of these year-round part-time employees live in the White Mountain Region communities listed below.

Lakeside/Pinetop _____
Show Low _____
Snowflake/Taylor _____
Heber/Overgaard _____
Springerville/Eagar _____
Alpine/Nutrioso _____
Whiteriver/Fort Apache _____
Outside the Region _____

11. How many seasonal employees did you hire during the last year? _____

12. How many weeks (annually) did you employ seasonal workers? _____

13. How many of your seasonal workers live in the White Mountain Region communities listed below.

Lakeside/Pinetop _____
Show Low _____
Snowflake/Taylor _____
Heber/Overgaard _____
Springerville/Eagar _____
Alpine/Nutrioso _____
Whiteriver/Fort Apache _____
Outside the Region _____

C. ECONOMIC BASE

14. Approximately what percent of your sales are made to individuals or firms in the White Mountain communities listed below.

Lakeside/Pinetop _____
Show Low _____
Snowflake/Taylor _____
Heber/Overgaard _____
Springerville/Eagar _____
Alpine/Nutrioso _____
Whiteriver/Fort Apache _____
Elsewhere in Arizona _____
Elsewhere in the U.S. _____
Non-U.S. _____

15. We have listed eight important expenditure categories below. What were your total expenditures for each category in 2006? What portion of each expenditure was made in White Mountain Region? Would you like to add to the list?

Major Expenditures	**Total $ Expenditure Amounts Calendar 2006**	**Percent Purchased in White Mountains**
Raw Material		
Hauling (Outsourced)		
Electricity		
Mill Equipment		
Mill Parts		
Transport Equipment		
Petroleum Products		
Vehicle Parts, Tires		
Heavy Equipment		
Heavy Equipment Parts		

16. Finally, what portion of your total production is based on inputs purchased from/by the “Future Forest” company? _____%

Appendix B

Firms that had Purchased, or were Positioned to Purchase, Material Supplied by Future Forest, LLC in 2005

Contacts: (N=13)

Randy Nicoll, Secretary/Treasurer
Arizona Log and Timberworks
1990 W. Central Ave.
Eagar, AZ 85925
Phone: 928-333-2751
Fax: 928-333-2758
Remanufacture of roundwood.

Rob Davis, President
Forest Energy Corporation
1001 N. 40th St.
Show Low, AZ 85901
Phone: 800-246-3192
Fax: 928-537-1661
Cell: 928-587-4168
Email: crogers@forestenergy.com
Manufacture of densified wood products for fuel and animal bedding.

Dwayne Walker, Manager
Mary Kay Simpson, Administrator
Future Forest, LLC
1630 E. White Mountain Blvd., Suite C-3
Pinetop, AZ 85935
Phone: 928-367-0057
Fax: 928-367-0059
Cell: 928-521-4100
www.futureforest.info
dwalker@futureforest.info
mksimpson@futureforest.info
Management of forest stewardship contract.

Neil Brewer, Owner
Mountain Top Wood Products (plant north of Snowflake)
PO Box 423
Show Low, AZ 85902
Phone: 928-537-2884
Remanufacture of roundwood (posts, poles, log homes)

Jerold Reidhead, General Partner
Nutrioso Logging
County Road 18
PO Box 79
Nutrioso, AZ 85932
Phone: 928-339-1946
Timber thinning and harvesting

Terry Reidhead, Proprietor
Reidhead Brothers Lumber, Inc.
93 County Rd. 2180
PO Box 84
Nutrioso, AZ 85932
Phone: 928-339-4542
Rough lumber and timbers.

Kenyon Peters, Manager
Reidhead Brothers Re-Manufacturing Plant
804 Airport Rd.
Springerville, AZ 85938
Phone: 928-333-5347
Wood re-manufacture.

Brad Worsley, Logistics Manager
Renegy: Renewable Energy from Biomass
PO Box 3026/50
Apache Railway Yard
Snowflake, AZ 85938
Phone: 928-536-5486
Fax: 928-536-4877
Cell: 928-521-0821
Electricity from biomass.

Terry Reidhead, Proprietor
Round Valley Wholesale Lumber
Transfer Site Rd.
PO Box 460
Eagar, AZ 85928
Phone: 928-521-2561
Manufacture of dimension lumber and planning mill.

Charlie Reidhead, General Manager
Snowflake Lumber Moulding
1720 W. Snowflake Highway
Snowflake, AZ
Phone: 928-536-2428
Millwork.

Steve Reidhead, President
Tri Star Logging, Inc.
140 S. Otto Dr.
Snowflake, AZ 85938
Phone: 928-536-7848
Fax: 928-536-7712
Cell: 602-270-4414
Email: sreidhead1@frontiernet.net
Logging.

Lea Walker, Office Manager
WB Contracting
1074 S. Line St.
PO Box 411
Eagar, AZ 85928
Phone: 928-333-2866
Forest thinning and harvesting of forest materials. NAICS code: 115310.

Don Gonsalves, Owner
Western Moulding
1033 W. Brown St.
PO Box 70
Snowflake, AZ 85937
Phone: 928-536-2131

John A. Cantrell, General Manager
Western Renewable Energy
PO Box 1480
Eagar, AZ 85925-1480
Phone: 928-333-2285
Fax: 928-333-4983
Email: jwre@frontiernet.net
Electricity from biomass.

Keith Baldwin, President
Winner's Circle Soils, Inc.
1820 N. Centennial Blvd.
Taylor, AZ 85939-0128
Phone: 928-536-7398
Fax: 928-536-2464
Email: wincircle@frontiernet.net
Wood waste is processed to make animal bedding, mulch, potting soil, landscape material.

APPENDIX C

SOME TECHNICAL ISSUES REGARDING ECONOMIC BASE THEORY AND REGIONAL ECONOMIC ANALYSIS

As noted in the text, basic or export jobs are those that bring money into the region by producing goods sold outside the region. It is important to note that jobs are rarely purely basic or non-basic--most workers are at least a little of each. How do we bifurcate the employment data for each firm? The answer is simple--we use sales data. We asked the manager of each of the 15 firms that we visited to estimate the portion of his/her annual sales made outside the region. If, for example, the answer was 62% we then assumed that 62% of his/her employees must be working to produce that 62% and conversely, that 38% of the employees must be working to supply local (non-basic) markets.

A second question that is sometimes raised in "why use an employment multiplier instead of a dollar multiplier?" An answer to this question is fairly straight-forward too--employment data are more willingly provided than sales data and perhaps, easier to understand also. Put another way, we can get employment data per firm whereas experience has shown us that most firms will not supply dollar data for sales. Additionally, the approach employed in this study is much richer in White Mountain-specific detail per research dollar spent than the detail provided by an "off the shelf" IO (input-output) model that would provide more generic estimates expressed in dollar terms. If this study were a regional economic analysis of the entire White Mountain economy an IO approach might have been called for. But this study focuses on just 15 firms; the attributes of these firms can be described in detail--so why estimate these attributes? Further, this study has the benefit of having access to a detailed White Mountain-specific multiplier analysis based on a survey of virtually 100% of all firms in the region. Again, why estimate when you have answers from a region-specific 100% sample?

Third, we are sometimes asked if the multiplier is the same thing as "velocity" or "trade turnover." The answer is "no." The multiplier tells us how many local serving indirect and induced employees (or dollars) are supported by each export/direct employee (or dollar). The trade turnover measure tells us how many times a dollar, or some part of a dollar, is spent before it goes to zero. This might be interesting information if our purpose is to fully understand the detailed workings of the regional economy but it is of at most minor value to the task at hand--an impact analysis of the forest products industry on the regional economic system.