

# FINAL ECONOMIC EFFICIENCY ANALYSIS

## TOOLBOX FIRE RECOVERY AND SALVAGE PROJECT

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### Introduction

Economic concepts were used throughout the development of this EIS. On a daily basis Interdisciplinary Team members debated ways of achieving the objectives of the various alternatives in a cost effective manner and developed activities that would achieve desired effects at the least cost. The units proposed for timber harvest in Alternative E were selected on the basis of their positive contribution to net present value. That process is described in a separate report entitled "Developing Alternative E", by Haugen and Pierce.

This analysis will address the broader issues of economic efficiency for the long term.

Economic efficiency analysis examines the long-term costs and returns associated with managing the study area under the various alternatives as well as other benefits and costs associated with implementing each alternative. It includes the costs and returns of all connected, reasonably foreseeable future actions and even future actions that are so distant in time that they may not be considered "reasonably foreseeable" in the NEPA sense. Thus, this analysis addresses many actions that are not included in the Record of Decision for this project. While these future actions may not be reasonably foreseeable, they are consistent with long-term management of the area in accordance with the Fremont National Forest Land and Resource Management Plan as amended. The costs and returns that can be expressed in dollars derived from market transactions are combined and expressed as a present net value for each alternative. That is the focus of this analysis. There are additional costs and benefits that cannot be reasonably expressed in dollar terms. These are discussed subjectively in other sections of this EIS and in specialist reports. The decision maker will consider these net subjective values along with the present net value when choosing the alternative with the largest net public benefit for implementation. In a manner of speaking, the net public benefit is the sum of present net value and net subjective value. The Record of Decision describes why the decision maker sees the selected alternative as the one with the best net public benefit. Present net value is one of many considerations in making this selection.

The key issue associated with economic efficiency involves long term Forest Management. In this case, where a large area has burned, future management can be affected by the way in which the area is managed in the short term. Most alternatives include salvage harvest in units that may be uneconomical, on their own, from a timber purchaser perspective. The cost for a purchaser to harvest these units is offset by the profits made on other units, so that a timber sale is a viable option. This allows more acres to be harvested and treated for fuels and reduces costs of planting and future management. The question then is: which alternative is the most economically efficient for long-term management of the area? The no-action alternative includes no harvest in the short term and thus maximizes the cost of long-term management due to the large amount of large down wood that will cover the area in a few years. However, the cost and returns of short-term management are minimized. Alternative C harvests the largest acreage. It thus minimizes the expense of future management, but does not necessarily maximize returns in the short-term. Alternative E was designed to maximize returns in the short-term, but it does not minimize costs in the long run. Because the series of alternatives address these extremes as well as intermediate points in this range, one of the alternatives will be revealed as most efficient for long-term management in terms of present net value.

### Economic Efficiency Analysis

The purpose of this analysis is to develop an economic comparison of the alternatives. The analysis is from the point of view of the U.S. Forest Service and should not be construed as an indicator of whether or not any proposed timber sales will sell at the indicated rates. Review of the alternatives and the likely behavior of wildfire suggests that the alternatives will vary in the need for wildfire suppression over time. Variations in fuels on the ground are the primary indicator of this likelihood. This further suggests that costs for suppression activities would vary over time and from alternative to alternative. However, we do not have a sufficient historic perspective to be able to predict variations in acres burned across the alternatives to the degree necessary to incorporate that information into this analysis. Instead, others will discuss these relationships subjectively, so that they may be considered in the decision-making process.

## Unit Costs

All costs in this analysis are in 2003 dollars. Table 1, Costs of Other Activities, displays the total costs associated with non-timber sale activities. Some of those costs were developed by the specialists associated with the affected resource and are used here as a lump sum, rather than unit cost. The Record of Decision will address whether or not any of these activities will be pursued.

**Table 1 - Costs of Other Activities**

Activity	Years of Activity	Estimated Total Cost By Alternative					
		Alt. A	Alt. C	Alt. D	Alt. E	Alt. G	Alt. H
Aquatic Habitat Restoration	2	-	\$26,840	\$26,840	\$26,840	\$26,840	\$26,840
Road Reconstruction	1	-	\$108,400	\$60,100	\$108,400	\$108,400	\$108,400
Pre-Commercial Thinning	1-3	-	\$287,820	\$287,820	-	\$287,820	\$287,820
Fuels Treatment w/i units	2	-	\$1,721,000	\$954,000	1,129,000	\$1,907,000	\$1,524,000
Fuels Treatment o/s units	1	-	-	-	-	\$1,119,000	-
Reforestation	1-6	-	\$8,318,000	\$8,891,000	\$8,183,000	\$8,096,000	\$8,136,000
Prescribed Fire	3	-	\$357,200	\$245,000	-	\$357,200	\$245,000
Riparian Planting	1	-	\$158,400	\$158,400	-	\$158,400	\$158,400
Aspen Enhancement	2 - 4	-	\$103,500	\$103,500	-	\$103,500	\$103,500
Road 2917413 Improvement	1	-	\$1,821	\$1,821	-	\$1,821	\$1,821

Other costs include components that vary by alternative and are more clearly displayed on a unit cost basis. Those costs are displayed in the following table as well as in Appendix A – Analysis Layout as unit costs. In some cases, the total costs for the current decision are shown in Table 1 and the associated unit costs are shown in Table 2:

**Table 2 – Unit Costs**

Activity	Unit Cost
Reforestation	
Site Prep	\$140/ac
Fuels (additional)	\$30/ac
Planting	\$350/ac
Pre-commercial Thinning	\$130/ac
Additional Fuel Treatment in Salvage Units *	\$168/ac
Additional Fuel Treatments Outside of Salvage Units within ¼ mile of private boundary	\$200/ac
Prescribed Fire	\$100/ac
Road Decommissioning	\$695/mile
Road Closures	\$125/closure or \$375/mile

\* Fuel treatment is based upon application of a variety of treatments including jackpot burning, broadcast burning, under burning, mastication, crushing, buncher piling and

burning, machine piling and burning, grapple piling and burning and landing pile burning. An estimate of \$150 per acre reflects a typical combination of these activities. In addition, within salvage units, it is estimated that 5% of the acreage will be treated by handpiling and burning at \$500 per acre. Thus, the overall average is \$168/acre  $[(0.95 \times 150) + (0.05 \times 500) = \$168]$ . Since the units outside of salvage units, adjacent to private lands will involve more of the expensive treatments, the cost is estimated at \$200/acre.

## Unit Returns

All returns in the analysis are in 2003 dollars and are based upon current market conditions. Market conditions are certain to change in the future and raise or lower returns from timber sales. While these changes are expected, they cannot be reasonably predicted. The relative economic performance of the alternatives should be fairly constant regardless of changing market conditions.

Dollar returns come in the form of timber sale receipts. The receipts depend upon the price bid for the sale in a competitive bidding process. Bidders typically look at the value of the timber and subtract their costs to arrive at a bid price that allows them a reasonable profit. The values used here come from a specialist report, in the project records, prepared by Glenn Pierce, Forester. In summary, the process described there determined that overall the value of the timber on tractor ground is \$300/mbf and on helicopter ground is \$315/mbf. These values vary because the types of timber on the helicopter ground is more valuable than the typical timber found on the flatter, tractor ground. Logging costs vary, on a per-acre basis, by alternative because yarding distances and volumes-per-acre vary. In addition, the alternatives have varying amounts of helicopter logging that costs more, per acre, than tractor logging. Logging costs from stump to mill, (except fuels treatment and road reconstruction, but including temporary road work) are subtracted from the values to arrive at the \$/mbf values shown in Table 3. Since costs and values are based upon transaction evidence, purchaser profit and risk are incorporated within the figures shown.

**Table 3 – Net Timber Value**

ALTERNATIVE	TOTAL VOLUME	NET VALUE	TOTAL NET RETURN
A	0	-	\$0
C	73,300 mbf	\$82.25/mbf	\$6,247,000
D	33,700 mbf	\$91.09/mbf	\$3,070,000
E	66,100 mbf	\$95.95/mbf	\$6,344,000
G	73,200 mbf	\$85.40/mbf	\$6,248,000
H	63,800 mbf	\$85.81/mbf	\$5,478,000

Future management is also expected to produce timber sales. Based upon Forest Plan direction for the desired future condition of the area, it is expected that commercial thinning followed by individual tree selection harvest will be used. Silviculturist Sue Puddy (May 5, 2003, Personal Communication) estimates that commercial thins at about age 60 will produce 6.5 mbf per acre with an average diameter of about 13 inches. This is similar to the timber being harvested in alternative G, so a net value of \$85/mbf will be used in this analysis. About 100 years in the future, when individual tree selection harvests occur, it is expected that they will produce 8.8 mbf per acre of trees with an average dbh of 20 inches. Current data indicates a value of \$525/mbf for this kind of material. Logging costs, as described in “Developing Alternative E”, by Haugen and Pierce (in the project record), are about \$159/mbf. Thus the net value is estimated at \$366/mbf. Table 4 summarizes the situation.

**Table 4 – Future Timber Volume and Value**

<b>HARVEST TYPE</b>	<b>AGE</b>	<b>AVERAGE DBH</b>	<b>MBF/ACRE</b>	<b>\$/MBF</b>
<b>Commercial Thin</b>	60	13 inches	6.5 mbf/acre	\$85
<b>Selection Harvest</b>	100	20 inches	8.8 mbf/acre	\$366

### **Value Decline Due to Deterioration**

Due to drying, decay and staining by fungus, trees killed by the fires will lose a substantial portion of their economic value as a source of forest products if they are not salvaged promptly. The speed at which deterioration occurs depends on several factors including tree species and size. Smaller diameter trees are more susceptible to loss of commercial value than larger diameter trees. In addition, dead trees that still contain sound wood may become infected with blue stain fungus, which does not weaken the wood, but does decrease the value and grade of lumber that can be produced.

One study entitled *Lumber Recovery from Dead Ponderosa Pine in the Colorado Front Range* (PNW Research Paper 428, September 1990), found about a 10% decline in value in the first year after death, primarily because of blue stain. This study was oriented toward trees dead two years and longer and it had only a small sample of trees dead just one year. A second PNW study, entitled *Deterioration of Fire-Killed and Fire-Damaged Timber in the Western United States* (PNW-GTR-292, April 1992), reviewed other literature on the subject and notes that one study found that blue stain had deteriorated 25% of the cubic volume. This study includes no estimate of economic deterioration in ponderosa pine. A third, undated study (circa 1990) entitled *Evaluation of Fire-Killed Ponderosa Pine for Volume and Value Loss* by the Timber Quality Research Unit of the PNW Research Station revealed that timber processed within the first year saw an 18% decrease in value by grade. After the first year, value recovered from logs would be equivalent to grading them all at the lowest pine grade. The latter study used data derived from the August/September 1988 Teepee Butte Fire in the Hells Canyon National Recreation Area.

While the rate of value decline varies by the time of year of the burn, burn intensity, weather conditions after the burn, the delay before processing and other factors, it is clear from the above research that delays in processing fire-damaged timber will cause the value of that timber to decline dramatically and rapidly. For the purposes of this analysis, it is assumed that timber harvest will begin in 2004 and be completed in 2005. Trees that are expected to lose their value by 2005 are not included in the salvage volume estimates. Those that are not retained for other resource reasons (down woody material, snags etc.) are accounted for in fuels treatment costs since they will remain in the forest after salvage harvest and contribute to the fuels situation.

### **Time Frame**

This analysis examines the economic efficiency of the alternatives in three time frames. The first is the standard analysis of the activities involved in this decision. In the no action alternative, there are no costs or returns to consider and the PNV is zero. The other alternatives include activities out to 2009 when planting and road decommissioning and closures are completed.

The second time frame is the future beyond 2009 where management will be affected by the way in which the lands are managed in the short term. In general this time frame starts with an established plantation and carries potential treatment costs and returns out to 2105 when the first selection harvest of mature trees can occur.

The third time frame spans the entire short and long-term from 2004 through 2105. This allows a look at the overall efficiency of converting a fire-damaged ecosystem into the desired future condition described in the Forest Plan.

Other than the reasonably foreseeable action of planting some of the burn area, described here as a variation on the no action alternative, the future management actions are distant enough in time to be considered speculative. Nonetheless, it is

important for the decision maker to consider the consequences of present actions on future generations (inter-generational equity). Assumptions about future management, as described below are necessary to allow this consideration.

The alternatives are described, in economic terms, as follows:

### Alternative A – No Action

**Alternative A – No Planting.** This alternative would not salvage the timber from the area or include any planting or other recovery activities. Thus, its PNV is zero (no costs and no returns).

However, under direction of the Fremont National Forest Land and Resource Management Plan, timber in the area would be managed in the future. While the decision to undertake these activities is not being made at this time, long-term timber management may occur given present management direction. Natural regeneration and development of the stand will produce a different long-term management scenario than under the action alternatives. One factor is the increased cost of future management due to the large numbers of down logs that will remain on the ground into the future. In addition, without planting, the stands will need to regenerate from natural seed sources that are sparse. These conditions will delay the development of stands that will be suitable for management.

The long-term management scenario without future planting is:

**Table 5: Management Scenario (Alternative A – No Planting)**

MODEL YEAR	YEAR	ACTIVITY	QUANTITY	UNIT COST	UNIT RETURN
81	2085	Timber Stand Improvement	15,000 acres	\$400/acre	-
101	2105	Prescribed Burn	15,000 acres	\$100/acre	-

This scenario envisions periodic wildfires that burn portions of the area. By 2085 about 15,000 acres of lands scheduled for timber management would have trees of a size that management would be beneficial. Due to the rate of regeneration and growth in this scenario, there would be no opportunity for commercial timber harvest within 100 years.

**Alternative A – Future Planting.** Should future analysis and decision-making lead to an aggressive effort to achieve the desired conditions for this area, considerable effort would go into planting the area as indicated in the following scenario. This is a plausible scenario because the National Forest Management Act emphasizes the importance of prompt reforestation :

**Table 6: Management Scenario (Alternative A –Planting)**

MODEL YEAR	YEAR	ACTIVITY	QUANTITY	UNIT COST	UNIT RETURN
18	2022	Fuels Treatment and Plant	15,000 acres	\$850/acre	
21	2025	Fuels Treatment and Plant	15,000 acres	\$1200/acre	
26	2030	Planting Maintenance and Replanting	30,000 acres	\$300/acre	
31	2035	Planting Maintenance and Replanting	30,000 acres	\$100/acre	
61	2065	Timber Stand Improvement	15,000 acres	\$50/acre	
66	2070	Prescribed Burn	15,000 acres	\$100/acre	
79	2083	Resource Support (NEPA)	195,000 mbf	\$15/mbf	
80	2084	Sale Preparation	195,000 mbf	\$15/mbf	
81	2085	Commercial Thin 30,000 ac @ 6.5mbf/ac 13" avg dbh	195,000 mbf	-	\$85/mbf
81	2085	Sale Administration	195,000 mbf	\$10/mbf	

This scenario also envisions some wildfire prior to the initial planting that would reduce some of the fuels in the area. It also envisions some future wildfire activity although it is less extensive than the previous alternative due to aggressive fuels treatments. Under this scenario, some commercial timber harvest could be expected to occur at about year 81 and tree sizes would be about 13 inches dbh, average.

### **Alternative C – Modified Proposed**

This alternative implements the “other” activities as shown in table 1. In addition, 73.3 mmbf will be harvested under this project. Because of the initial treatments, the timing of post-harvest treatments (site preparation, fuels treatment and planting ) is spread over six years. For example, acres that had been harvested prior to the fire can be site prepped immediately while other acres cannot be prepped until harvest is complete. In addition, potential future management, beyond the management activities covered by this decision, varies by the way in which units are treated now. The short- and long-term management scenario is presented in the following table:

**Table 7: Management Scenario (Alternative C)**

<b>MODEL YEAR</b>	<b>YEAR</b>	<b>ACTIVITY</b>	<b>QUANTITY</b>	<b>UNIT COST</b>	<b>UNIT RETURN</b>
0	2004	Precommercial Thin	738 acres	\$130/acre	
0	2004	Riparian Planting	1 lump sum	\$158,400	
0	2004	Road Reconstruction	1 lump sum	\$108,400	
0	2004	Road 2917413 Improvement	1 lump sum	\$1,821	
0	2004	Reforestation Site Preparation	1,000 acres	\$140/ac	
0	2004	Timber Sales (Salvage)	36,650 mbf		\$82.25/mbf
1	2005	Timber Sales (Salvage)	36,650 mbf		\$82.25/mbf
1	2005	Fuel Treatment Within Units	10,244 acres	\$168/acre	
1	2005	Aquatic Habitat Restoration	1 lump sum	\$26,840	
1	2005	Precommercial Thin	738 acres	\$130/acre	
1	2005	Reforestation Fuels Treatment	3,000 acres	\$30/acre	
1	2005	Reforestation Site Preparation	3,301 acres	\$140/acre	
1	2005	Reforestation Planting	5,003 acres	\$350/acre	
1	2005	Aspen Enhancement	230 acres	\$150/acre	
2	2006	Reforestation Fuels Treatment	3,974 acres	\$30/acre	
2	2006	Prescribed Fire	3,572 acres	\$100/acre	
2	2006	Reforestation Planting	5,000 acres	\$350/acre	
2	2006	Aspen Enhancement	230 acres	\$150/acre	
2	2006	Precommercial Thin	738 acres	\$130/acre	
3	2007	Aspen Enhancement	230 acres	\$150/acre	
3	2007	Reforestation Fuels Treatment	1,668 acres	\$30/acre	
3	2007	Reforestation Planting	5,000 acres	\$350/acre	
4	2008	Reforestation Site Preparation	1,000 acres	\$140/acre	
4	2008	Reforestation Planting	5,102 acres	\$350/acre	
5	2009	Reforestation Planting	4,801 acres	\$350/acre	
5	2009	Road Decommissioning	69.0 miles	\$695/mile	
5	2009	Road Closures	72.9 miles	\$375/mile	
14	2018	Timber Stand Improvement (A+E)	9,912 acres	\$50/acre	
14	2018	Timber Stand Improvement (C)	2,045 acres	\$500/acre	
14	2018	Timber Stand Improvement (D)	4,648 acres	\$600/acre	
14	2018	Timber Stand Improvement (D1)	4,301 acres	\$100/acre	
18	2022	Prescribed Fire	20,906 acres	\$100/acre	
31	2035	Prescribed Fire	20,906 acres	\$100/acre	
46	2050	Prescribed Fire	20,906 acres	\$100/acre	

59	2063	Resource Support (NEPA)	136,000 mbf	\$15/mbf	
60	2064	Sale Preparation	136,000 mbf	\$15/mbf	
61	2065	Commercial Thin 20,906 ac @ 6.5mbf/ac 13" avg dbh	136,000 mbf		\$85/mbf
61	2065	Sale Administration	136,000 mbf	\$10/mbf	
66	2070	Prescribed Fire	20,906 acres	\$100/acre	
81	2085	Prescribed Fire	20,906 acres	\$100/acre	
99	2103	Resource Support (NEPA)	184,000 mbf	\$15/mbf	
100	2104	Sale Preparation	184,000 mbf	\$15/mbf	
101	2105	Individual Tree Selection Cut 20,906 ac @ 8.8 mbf/ac 20" avg dbh	184,000 mbf		\$366/mbf
101	2105	Sale Administration	184,000 mbf	\$10/mbf	

### **Alternative D**

This alternative implements the "other" activities as shown in table 1. In addition, 33.7 mmbf will be harvested under this project. Because of the initial treatments, the timing of post-harvest treatments (site preparation, fuels treatment and planting ) is spread over six years. For example, acres that had been harvested prior to the fire can be site prepped immediately while other acres cannot be prepped until harvest is complete. In addition, potential future management, beyond the management activities covered by this decision, varies by the way in which units are treated now. The short- and long-term management scenario is presented in the following table:

**Table 8: Management Scenario (Alternative D)**

MODEL YEAR	YEAR	ACTIVITY	QUANTITY	UNIT COST	UNIT RETURN
0	2004	Precommercial Thin	738 acres	\$130/acre	
0	2004	Riparian Planting	1 lump sum	\$158,400	
0	2004	Road Reconstruction	1 lump sum	\$60,100	
0	2004	Road 2917413 Improvement	1 lump sum	\$1,821	
0	2004	Reforestation Site Preparation	1,500 acres	\$140/ac	
0	2004	Timber Sales (Salvage)	16,850 mbf		\$91.09/mbf
1	2005	Timber Sales (Salvage)	16,850 mbf		\$91.09/mbf
1	2005	Fuel Treatment Within Units	5,680 acres	\$168/acre	
1	2005	Aquatic Habitat Restoration	1 lump sum	\$26,840	
1	2005	Precommercial Thin	738 acres	\$130/acre	
1	2005	Reforestation Fuels Treatment	2,776 acres	\$30/acre	
1	2005	Reforestation Site Preparation	3,000 acres	\$140/acre	
1	2005	Reforestation Planting	5,094 acres	\$350/acre	
1	2005	Aspen Enhancement	230 acres	\$150/acre	
2	2006	Reforestation Fuels Treatment	2,000 acres	\$30/acre	
2	2006	Reforestation Site Preparation	2,500 acres	\$140/acre	
2	2006	Prescribed Fire	2,450 acres	\$100/acre	
2	2006	Reforestation Planting	5,070 acres	\$350/acre	
2	2006	Aspen Enhancement	230 acres	\$150/acre	
2	2006	Precommercial Thin	738 acres	\$130/acre	
3	2007	Aspen Enhancement	230 acres	\$150/acre	
3	2007	Reforestation Site Preparation	2,603 acres	\$140/acre	
3	2007	Reforestation Planting	5,079 acres	\$350/acre	
4	2008	Reforestation Site Preparation	1,000 acres	\$140/acre	
4	2008	Reforestation Planting	5,500 acres	\$350/acre	
5	2009	Road Closures	75.5miles	\$375/mile	
5	2009	Road Decommissioning	71.6 miles	\$695/mile	
5	2009	Reforestation Planting	4,000 acres	\$350/acre	
14	2018	Timber Stand Improvement (A+E)	6,046 acres	\$50/acre	
14	2018	Timber Stand Improvement (C)	363 acres	\$500/acre	
14	2018	Timber Stand Improvement (D)	4,731 acres	\$600/acre	
14	2018	Timber Stand Improvement (D1)	9,603 acres	\$100/acre	
18	2022	Prescribed Fire	20,743 acres	\$100/acre	
31	2035	Prescribed Fire	20,743 acres	\$100/acre	
46	2050	Prescribed Fire	20,743 acres	\$100/acre	
59	2063	Resource Support (NEPA)	135,000 mbf	\$15/mbf	
60	2064	Sale Preparation	135,000 mbf	\$15/mbf	
61	2065	Commercial Thin 20,743 ac @ 6.5mbf/ac 13" avg dbh	135,000 mbf	\$85/mbf	
61	2065	Sale Administration	135,000 mbf	\$10/mbf	
66	2070	Prescribed Fire	20,743 acres	\$100/acre	
81	2085	Prescribed Fire	20,743 acres	\$100/acre	
99	2103	Resource Support (NEPA)	183,000 mbf	\$15/mbf	
100	2104	Sale Preparation	183,000 mbf	\$15/mbf	
101	2105	Individual Tree Selection Cut 20,743 ac @ 8.8 mbf/ac 20" avg dbh	183,000 mbf		\$366/mbf
101	2105	Sale Administration	183,000 mbf	\$10/mbf	

## Alternative E

This alternative was designed to include only units that are likely to be profitable to harvest. It implements fewer of the “other” activities as shown in table 1. In addition, 66.1 mmbf will be harvested under this project. Because of the initial treatments, the timing of post-harvest treatments (site preparation, fuels treatment and planting ) is spread over six years. For example, acres that had been harvested prior to the fire can be site prepped immediately while other acres cannot be prepped until harvest is complete. In addition, potential future management, beyond the management activities covered by this decision, varies by the way in which units are treated now. The short- and long-term management scenario is presented in the following table:

**Table 9: Management Scenario (Alternative E)**

MODEL YEAR	YEAR	ACTIVITY	QUANTITY	UNIT COST	UNIT RETURN
0	2004	Road Reconstruction	1 lump sum	\$108,400	
0	2004	Reforestation Site Preparation	1,000 acres	\$140/ac	
0	2004	Timber Sales (Salvage)	33,050 mbf		\$95.95/mbf
1	2005	Timber Sales (Salvage)	33,050 mbf		\$95.95/mbf
1	2005	Fuel Treatment Within Units	6,723 acres	\$168/acre	
1	2005	Aquatic Habitat Restoration	1 lump sum	\$26,840	
1	2005	Reforestation Fuels Treatment	3,000 acres	\$30/acre	
1	2005	Road Decommissioning	14.6 miles	\$695/mile	
1	2005	Reforestation Site Preparation	1,530 acres	\$140/acre	
1	2005	Reforestation Planting	5,000 acres	\$350/acre	
2	2006	Reforestation Fuels Treatment	2,759 acres	\$30/acre	
2	2006	Reforestation Site Preparation	1,800 acres	\$140/acre	
2	2006	Reforestation Planting	5,221 acres	\$350/acre	
3	2007	Reforestation Planting	5,000 acres	\$350/acre	
4	2008	Reforestation Site Preparation	1,000 acres	\$140/acre	
4	2008	Reforestation Planting	5,232 acres	\$350/acre	
5	2009	Road Closures	67.4 miles	\$375/mile	
5	2009	Road Decommissioning	14.6 miles	\$695/mile	
5	2009	Reforestation Planting	4,300 acres	\$350/acre	
14	2018	Timber Stand Improvement (A+E)	7,037 acres	\$50/acre	
14	2018	Timber Stand Improvement (C)	3,042 acres	\$500/acre	
14	2018	Timber Stand Improvement (D)	6,344 acres	\$600/acre	
14	2018	Timber Stand Improvement (D1)	4,330 acres	\$100/acre	
18	2022	Prescribed Fire	20,753 acres	\$100/acre	
31	2035	Prescribed Fire	20,753 acres	\$100/acre	
46	2050	Prescribed Fire	20,753 acres	\$100/acre	
59	2063	Resource Support (NEPA)	135,000 mbf	\$15/mbf	
60	2064	Sale Preparation	135,000 mbf	\$15/mbf	
61	2065	Commercial Thin 20,753 ac @ 6.5mbf/ac 13” avg dbh	135,000 mbf	\$85/mbf	
61	2065	Sale Administration	135,000 mbf	\$10/mbf	
66	2070	Prescribed Fire	20,753 acres	\$100/acre	
81	2085	Prescribed Fire	20,753 acres	\$100/acre	
99	2103	Resource Support (NEPA)	183,000 mbf	\$15/mbf	
100	2104	Sale Preparation	183,000 mbf	\$15/mbf	
101	2105	Individual Tree Selection Cut 20,753 ac @ 8.8 mbf/ac 20” avg dbh	183,000 mbf		\$366/mbf
101	2105	Sale Administration	183,000 mbf	\$10/mbf	

## Alternative G

This alternative implements the “other” activities as shown in table 1. In addition, 73.2 mmbf will be harvested under this project. Because of the initial treatments, the timing of post-harvest treatments (site preparation, fuels treatment and planting ) is spread over six years. For example, acres that had been harvested prior to the fire can be site prepped immediately while other acres cannot be prepped until harvest is complete. In addition, potential future management, beyond the management activities covered by this decision, varies by the way in which units are treated now. The short- and long-term management scenario is presented in the following table:

**Table 10: Management Scenario (Alternative G)**

MODEL YEAR	YEAR	ACTIVITY	QUANTITY	UNIT COST	UNIT RETURN
0	2004	Precommercial Thin	738 acres	\$130/acre	
0	2004	Fuels Treatments Outside Units	5,596 acres	\$200/acre	
0	2004	Riparian Planting	1 lump sum	\$158,400	
0	2004	Road Reconstruction	1 lump sum	\$108,400	
0	2004	Road 2917413 Improvement	1 lump sum	\$1,821	
0	2004	Reforestation Site Preparation	1,000 acres	\$140/ac	
0	2004	Timber Sales (Salvage)	36,600 mbf		\$85.40/mbf
1	2005	Timber Sales (Salvage)	36,600 mbf		\$85.40/mbf
1	2005	Fuel Treatment Within Units	11,354 acres	\$168/acre	
1	2005	Aquatic Habitat Restoration	1 lump sum	\$26,840	
1	2005	Precommercial Thin	738 acres	\$130/acre	
1	2005	Reforestation Fuels Treatment	4,500 acres	\$30/acre	
1	2005	Reforestation Site Preparation	2,180 acres	\$140/acre	
1	2005	Reforestation Planting	4,928 acres	\$350/acre	
1	2005	Aspen Enhancement	230 acres	\$150/acre	
2	2006	Reforestation Fuels Treatment	4,351 acres	\$30/acre	
2	2006	Prescribed Fire	3,572 acres	\$100/acre	
2	2006	Reforestation Planting	4,950 acres	\$350/acre	
2	2006	Aspen Enhancement	230 acres	\$150/acre	
2	2006	Precommercial Thin	738 acres	\$130/acre	
3	2007	Aspen Enhancement	230 acres	\$150/acre	
3	2007	Reforestation Fuels Treatment	1,499 acres	\$30/acre	
3	2007	Reforestation Planting	5,000 acres	\$350/acre	
4	2008	Reforestation Fuels Treatment	1,000 acres	\$30/acre	
4	2008	Reforestation Planting	4,850 acres	\$350/acre	
5	2009	Reforestation Site Preparation	400 acres	\$140/acre	
5	2009	Road Closures	10.4 miles	\$375/mile	
5	2009	Road Decommissioning	71.6 miles	\$695/mile	
5	2009	Reforestation Planting	5,000 acres	\$350/acre	
14	2018	Timber Stand Improvement (A+E)	12,620 acres	\$50/acre	
14	2018	Timber Stand Improvement (C)	1,638 acres	\$500/acre	
14	2018	Timber Stand Improvement (D)	3,290 acres	\$600/acre	
14	2018	Timber Stand Improvement (D1)	3,180 acres	\$100/acre	
18	2022	Prescribed Fire	20,728 acres	\$100/acre	
31	2035	Prescribed Fire	20,728 acres	\$100/acre	
46	2050	Prescribed Fire	20,728 acres	\$100/acre	
59	2063	Resource Support (NEPA)	135,000 mbf	\$15/mbf	
60	2064	Sale Preparation	135,000 mbf	\$15/mbf	
61	2065	Commercial Thin 20,728 ac @	135,000 mbf		\$85/mbf

		6.5mbf/ac 13" avg dbh			
61	2065	Sale Administration	135,000 mbf	\$10/mbf	
66	2070	Prescribed Fire	20,728 acres	\$100/acre	
81	2085	Prescribed Fire	20,728 acres	\$100/acre	
99	2103	Resource Support (NEPA)	182,000 mbf	\$15/mbf	
100	2104	Sale Preparation	182,000 mbf	\$15/mbf	
101	2105	Individual Tree Selection Cut 20,906 ac @ 8.8 mbf/ac 20" avg dbh	182,000 mbf		\$366/mbf
101	2105	Sale Administration	182,000 mbf	\$10/mbf	

## Alternative H

This alternative implements the “other” activities as shown in table 1. In addition, 73.3 mmbf will be harvested under this project. Because of the initial treatments, the timing of post-harvest treatments (site preparation, fuels treatment and planting ) is spread over six years. For example, acres that had been harvested prior to the fire can be site prepped immediately while other acres cannot be prepped until harvest is complete. In addition, potential future management, beyond the management activities covered by this decision, varies by the way in which units are treated now. The short- and long-term management scenario is presented in the following table:

**Table 11: Management Scenario (Alternative H)**

MODEL YEAR	YEAR	ACTIVITY	QUANTITY	UNIT COST	UNIT RETURN
0	2004	Precommercial Thin	738 acres	\$130/acre	
0	2004	Riparian Planting	1 lump sum	\$158,400	
0	2004	Road Reconstruction	1 lump sum	\$108,400	
0	2004	Road 2917413 Improvement	1 lump sum	\$1,821	
0	2004	Reforestation Site Preparation	1,000 acres	\$140/ac	
0	2004	Timber Sales (Salvage)	31,900 mbf		\$85.81/mbf
1	2005	Timber Sales (Salvage)	31,900 mbf		\$85.81/mbf
1	2005	Aquatic Habitat Restoration	1 lump sum	\$26,840	
1	2005	Fuel Treatment Within Units	9,070 acres	\$168/acre	
1	2005	Precommercial Thin	738 acres	\$130/acre	
1	2005	Reforestation Fuels Treatment	4,000 acres	\$30/acre	
1	2005	Reforestation Site Preparation	2,295 acres	\$140/acre	
1	2005	Reforestation Planting	4,950 acres	\$350/acre	
1	2005	Aspen Enhancement	230 acres	\$150/acre	
2	2006	Reforestation Fuels Treatment	3,535 acres	\$30/acre	
2	2006	Prescribed Fire	2,450 acres	\$100/acre	
2	2006	Reforestation Site Preparation	1,000 acres	\$140/acre	
2	2006	Reforestation Planting	4,903 acres	\$350/acre	
2	2006	Aspen Enhancement	230 acres	\$150/acre	
2	2006	Precommercial Thin	738 acres	\$130/acre	
3	2007	Aspen Enhancement	230 acres	\$150/acre	
3	2007	Reforestation Planting	5,000 acres	\$350/acre	
4	2008	Reforestation Site Preparation	400 acres	\$140/acre	
4	2008	Reforestation Planting	5,168 acres	\$350/acre	
5	2009	Road Decommissioning	71.6 miles	\$695/mile	
5	2009	Road Closures	72.9 miles	\$375/mile	

5	2009	Reforestation Planting	4,700 acres	\$350/acre	
14	2018	Timber Stand Improvement (A+E)	8,805 acres	\$50/acre	
14	2018	Timber Stand Improvement (C)	1,950 acres	\$500/acre	
14	2018	Timber Stand Improvement (D)	5,671 acres	\$600/acre	
14	2018	Timber Stand Improvement (D1)	4,295 acres	\$100/acre	
18	2022	Prescribed Fire	20,721 acres	\$100/acre	
31	2035	Prescribed Fire	20,721 acres	\$100/acre	
46	2050	Prescribed Fire	20,721 acres	\$100/acre	
59	2063	Resource Support (NEPA)	135,000 mbf	\$15/mbf	
60	2064	Sale Preparation	135,000 mbf	\$15/mbf	
61	2065	Commercial Thin 20,721 ac @ 6.5mbf/ac 13" avg dbh	135,000 mbf		\$85/mbf
61	2065	Sale Administration	135,000 mbf	\$10/mbf	
66	2070	Prescribed Fire	20,721 acres	\$100/acre	
81	2085	Prescribed Fire	20,721 acres	\$100/acre	
99	2103	Resource Support (NEPA)	182,000 mbf	\$15/mbf	
100	2104	Sale Preparation	182,000 mbf	\$15/mbf	
101	2105	Individual Tree Selection Cut 20,906 ac @ 8.8 mbf/ac 20" avg dbh	182,000 mbf		\$366/mbf
101	2105	Sale Administration	182,000 mbf	\$10/mbf	

Costs and returns are in 2003 dollars.

## **Discount Rates**

Discount rates account for the time value of money. Costs and returns now have larger impacts upon our lives than costs and returns far in the future. The discount rate adjusts future costs and returns, so that they have appropriately less value than present costs and returns. A discount rate of zero percent implies that costs and returns in the future are as important to us as costs and returns in the present. The basic discount rate used by the Forest Service to evaluate long-term investments and operations in land and resource management is a real rate of 4 percent, which does not include an inflation factor. Since 1969 the basic rate for all Federal agencies not covered by specific legislative requirements or guidelines has been 10 percent. This rate is used to test the sensitivity of analyses to changes in discount rates. This analysis will use three discount rates: 0%, 4% and 10%.

## **Comparison of Alternatives**

A consequence of the fires is that the burned area is far from the desired future conditions called for in the Forest Plan. Without human intervention, the forest will eventually return to its desired condition. With human intervention, and cost, that process can be hastened while also contributing raw materials for use by society.

The table below displays the key economic parameters for each alternative. The economics associated with the activities addressed in the decision are separated from the economics of future management, so that the relative efficiency of the different short-term management alternatives can be compared to the potential long-term effects of implementing each alternative.

Present Net Value (PNV) is the factor that summarizes the economic efficiency of each alternative. Given a discount rate greater than zero, PNV is maximized when returns are achieved early in the time period and costs are delayed as long as possible. Here, the salvage of fire-damaged timber is the only significant source of returns early in the time frame. Restoration efforts, such as habitat improvements and planting trees, are quite costly and would best be delayed for as long as possible, from a purely economic efficiency standpoint. Alternative A (No Action) eliminates the costs, but also

eliminates the potential returns. Alternative E eliminates many of the short-term costs while capturing as much timber value as possible.

The discounted “future management” PNV for each alternative is very low simply because there are no up-front returns to offset the up-front costs of managing the forest.

All of the calculated PNV’s are displayed in Table 12. The sections following Table 12 discuss the implications.

**Table 12 – Economic Comparison of Alternatives**

**Millions of Dollars**

Alternatives	Discount Rate = 0%			Discount Rate = 4%			Discount Rate = 10%		
	PV Returns	PV Costs	PNV	PV Returns	PV Costs	PNV	PV Returns	PV Costs	PNV
<b>A- No Action</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
A- Planting	16.57	52.80	-36.22	0.69	19.60	-18.91	0.01	6.21	-6.20
A-No Planting	0.00	7.50	-7.50	0.00	0.29	-0.29	0.00	0.00	-0.00
C-Current	6.03	12.56	-6.53	5.91	11.86	-5.95	5.75	10.99	-5.24
C-Future	78.90	27.99	+50.91	2.34	5.87	-3.53	0.04	1.96	-1.92
<b>C-Total</b>	<b>84.93</b>	<b>40.55</b>	<b>+44.38</b>	<b>8.25</b>	<b>17.73</b>	<b>-9.48</b>	<b>5.79</b>	<b>12.95</b>	<b>-7.16</b>
D-Current	\$3.07	12.20	-9.13	3.01	11.50	-8.49	2.93	10.61	-7.68
D-Future	78.45	27.37	+51.08	2.32	5.57	-3.25	0.04	1.82	-1.78
<b>D-Total</b>	<b>81.52</b>	<b>39.58</b>	<b>+41.94</b>	<b>5.33</b>	<b>17.07</b>	<b>-11.73</b>	<b>2.97</b>	<b>12.43</b>	<b>-9.47</b>
E-Current	6.34	10.88	-4.54	6.22	10.22	-4.00	6.05	9.40	-3.35
E-Future	78.45	29.21	+49.24	2.32	6.67	-4.35	0.04	2.35	-2.31
<b>E-Total</b>	<b>84.80</b>	<b>40.09</b>	<b>+44.70</b>	<b>8.54</b>	<b>16.90</b>	<b>-8.35</b>	<b>6.09</b>	<b>11.76</b>	<b>-5.67</b>
G-Current	6.25	13.62	-7.37	6.13	12.93	-6.80	5.97	12.07	-6.10
G-Future	78.09	26.79	+51.30	2.32	5.24	-2.93	0.04	1.67	-1.63
<b>G-Total</b>	<b>84.24</b>	<b>40.41</b>	<b>+43.93</b>	<b>8.45</b>	<b>18.18</b>	<b>-9.73</b>	<b>6.01</b>	<b>13.74</b>	<b>-7.73</b>
H-Current	5.47	12.07	-6.59	5.37	11.39	-6.02	5.22	10.54	-5.31
H-Future	78.09	28.29	+49.80	2.32	6.15	-3.83	0.04	2.10	-2.06
<b>H-Total</b>	<b>83.56</b>	<b>40.36</b>	<b>+43.20</b>	<b>7.6</b>	<b>17.53</b>	<b>-9.85</b>	<b>5.26</b>	<b>12.64</b>	<b>-7.37</b>

## **Standard Analysis**

The standard way of looking at economic efficiency is described in the Forest Service Manual System. In essence the analysis looks at the activities currently being considered using a 4% discount rate. These results from Table 12 are shown in Table 13 by alternative:

**Table 13: PNV Current Projects Only – 4%**

<b>ALTERNATIVE</b>	<b>PNV AT 4% DISCOUNT</b>
<b>A</b>	\$0.00 million
<b>C</b>	-\$5.95 million
<b>D</b>	-\$8.49 million
<b>E</b>	-\$4.00 million
<b>G</b>	-\$6.80 million
<b>H</b>	-\$6.02 million

Table 13 shows that the PNV is negative for all action alternatives. This is a result of significant costs associated with reforestation, fuels treatments, road reconstruction and decommissioning, and habitat improvements. These costs simply exceed the net return expected from the salvage sales. Alternative E performs the best because it was designed to maximize the net returns from timber management while reducing some of the other costs. Alternative D performs poorly because it harvests the smallest amount of timber and thus generates the lowest returns while still including most of the activities included in the other alternatives.

**Table 14: PNV Current Projects Only – 10%**

<b>ALTERNATIVE</b>	<b>PNV AT 10% DISCOUNT</b>
<b>A</b>	\$0.00 million
<b>C</b>	-\$5.24 million
<b>D</b>	-\$7.68 million
<b>E</b>	-\$3.35 million
<b>G</b>	-\$6.10 million
<b>H</b>	-\$5.31 million

Table 14 shows the same type of PNV calculation except that a 10% discount rate is used. The fact that Alternative E still performs best of the action alternatives and Alternative D still performs poorly reveals that the results of the analysis are not sensitive to the discount rate.

## **Future Management Analysis**

Concerns about economic returns to society from future management of this area cannot be addressed in the typical analysis discussed above. In addition to the information about the current project, some assumptions about future management are necessary. Due to the time frame involved (100 years) the assumptions must be considered speculative. It is simply impossible to be certain that future actions will actually occur that far into the future. This speculation is nonetheless required if we are to consider the consequences of present actions on long-term management of the area. The no action alternative is a bit different. It is reasonably foreseeable, given direction in the National Forest Management Act, that some reforestation effort would take place in a future project even if the No Action alternative were selected at the conclusion of this analysis.

Tables 5 through 11 include activities that define the anticipated future management of the area.

**Table 15: PNV Long Term Management – 4%**

ALTERNATIVE	PNV AT 4% DISCOUNT
A	-\$18.91 million
C	-\$9.48 million
D	-\$11.73 million
E	-\$8.35 million
G	-\$9.73 million
H	-\$9.85 million

Again, Alternative E performs best. When long-term management is considered, the modified No Action Alternative becomes the least efficient alternative. This is a result of no up-front returns from salvage followed by a series of costly management activities that only culminate in a commercial thinning 81 years in the future. While Alternative D performs better than Alternative A, it still does poorly still as the result of relatively low returns early in the time frame.

**Table 15: PNV Long Term Management – 10%**

ALTERNATIVE	PNV AT 4% DISCOUNT
A	-\$6.20 million
C	-\$5.79 million
D	-\$9.47 million
E	-\$5.67 million
G	-\$7.73 million
H	-\$7.37 million

Again, Alternative E performs best and, again, the result is demonstrated not to be sensitive to the discount rate used.

**Table 17: PNV Long Term Management – 0%**

ALTERNATIVE	PNV AT 0% DISCOUNT
A	-\$36.22 million
C	+\$44.38 million
D	+\$41.94 million
E	+\$44.70 million
G	+\$43.93 million
H	+\$43.21 million

When a discount rate of zero is used, Table 17, the time value of money is ignored and the value of the forest to future generations is given greater consideration. All of the returns are simply added together then the costs are subtracted from the returns to get the PNV as shown in Table 17. Again Alternative E does the best and Alternative D does most poorly of the action alternatives. In fact the modified No Action alternative is the only alternative where the costs were larger than the returns over the 100-year time frame.

## Components of PNV

As discussed above, the PNV of the alternatives at 4% and 10% discount rates is negative as a result of including a variety of activities that, in total, cost more than the anticipated, discounted returns from timber sales. Table 18, below, displays more specifically how these activities affect the PNV by alternative.

**Table 18: Components of Long-Term Present Net Value  
4% Discount Rate**

Category	PNV Contribution By Alternative - Millions of Dollars					
	Alt. A	Alt. C	Alt. D	Alt. E	Alt. G	Alt. H
Fuels Treatments	\$0.00	-\$1.72	-\$0.95	-\$1.13	-\$3.03	-\$1.52
Prescribed Fire	-\$0.12	-\$2.67	-\$2.55	-\$2.31	-\$2.65	-\$2.55
Reforestation	-\$19.06	-\$9.05	-\$9.61	-\$8.93	-\$8.84	-\$8.89
Restoration	\$0.00	-\$0.29	-\$0.28	-\$0.03	-\$0.28	-\$0.28
Roads						
Closure	\$0.00	-\$0.03	-\$0.03	-\$0.02	-\$0.01	-\$0.02
Decommission	\$0.00	-\$0.04	-\$0.04	-\$0.01	-\$0.04	-\$0.04
Reconstruction	\$0.00	-\$0.11	-\$0.06	-\$0.11	-\$0.11	-\$0.11
Drainage Repair	\$0.00	-\$0.00	-\$0.00	\$0.00	-\$0.00	-\$0.00
TOTAL ROADS	\$0.00	-\$0.18	-\$0.13	-\$0.14	-\$0.16	-\$0.17
Timber Sales						
Resource Support	-\$0.14	-\$0.27	-\$0.27	-\$0.27	-\$0.27	-\$0.27
Sale Preparation	-\$0.13	-\$0.26	-\$0.26	-\$0.26	-\$0.26	-\$0.26
Sale Administration	-\$0.08	-\$0.16	-\$0.16	-\$0.16	-\$0.16	-\$0.16
Sale of Timber	+\$0.69	+\$8.25	+\$5.34	+\$8.55	+\$8.45	+\$7.69
TOTAL TIMBER SALES	+\$0.34	+\$7.56	+\$4.65	+\$7.86	+\$7.76	+\$7.00
Timber Stand Improvement	-\$0.07	-\$3.13	-\$2.86	-\$3.67	-\$2.53	-\$3.44
<b>PNV</b>	<b>-\$18.91</b>	<b>-\$9.48</b>	<b>-\$11.73</b>	<b>-\$8.35</b>	<b>-\$9.73</b>	<b>\$-9.85</b>

It is clear from Table 18 that reforestation is the most costly activity involved in this project. Returns from the sale of timber are well above the costs associated with making that timber available for sale.

## Conclusions

Alternative E is the most economically efficient of the action alternatives because the harvest units were selected to maximize net returns from the initial salvage harvest and some other activities (timber stand improvements, restoration activities, etc.) were dropped. While the No Action alternative does the best when only the components of this decision are considered, it does very poorly when future management of the land is considered. The other action alternatives vary in their economic efficiency primarily by the size of the salvage harvest. Alternative G, with the same salvage volume as Alternative C is a bit less efficient because it includes additional fuels treatments adjacent to private lands.

## **Appendix A – Analysis Layout**

This analysis was developed using Quick-Silver Software (see <http://www.fs.fed.us/emc/nris/hd/qsilver/>). The Quick-Silver models developed for this analysis are on a CD-ROM attached to this report in the planning records. The reports in this appendix were derived from the Quick-Silver models.

**Alternative: A-No Action - No Planting**

<b>COST</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Future TSI Fuels - Moderate (Timber Stand Impr	Forest Service	One time	81	15,000.00 Ac	\$400.00	0.00	2003	5/1/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	101	15,000.00 Ac	\$100.00	0.00	2003	5/1/2003

**Alternative: A-No Action - Planting**

<b>COST</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Fuels Treatment and Plant Low (Reforestation)	Forest Service	One time	18	15,000.00 Ac	\$850.00	0.00	2003	5/5/2003
Fuels Treatment and Plant High (Reforestation)	Forest Service	One time	21	15,000.00 Ac	\$1,200.00	0.00	2003	5/5/2003
Plant Maint and Replant High (Reforestation)	Forest Service	One time	26	30,000.00 Ac	\$300.00	0.00	2003	5/5/2003
Plant Maint and Replant Low (Reforestation)	Forest Service	One time	31	30,000.00 Ac	\$100.00	0.00	2003	5/5/2003
Future TSI Fuels Treatment - Light (Timber Stan	Forest Service	One time	61	15,000.00 Ac	\$50.00	0.00	2003	5/5/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	66	15,000.00 Ac	\$100.00	0.00	2003	5/5/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	79	195,000.00	\$15.00	0.00	2003	7/15/2003
Sale Preparation (Timber Sales)	Forest Service	One time	80	195,000.00	\$15.00	0.00	2003	7/15/2003
Sale Administration (Timber Sales)	Forest Service	One time	81	195,000.00	\$10.00	0.00	2003	7/15/2003

<b>BENEFIT</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Commercial Thin (Future) (Timber Sales)	Forest Service	One time	81	195,000.00	\$85.00	0.00	2003	5/5/2003

**Alternative: C-Current**

<b>COST</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
PC Thin (Timber Stand Improvement)	Forest Service	Annual	0-2	738.00 Acres	\$130.00	0.00	2003	4/30/2003
Aspen Enhancement (Restoration)	Forest Service	Annual	1-3	230.00 Acres	\$150.00	0.00	2003	5/5/2003
Reconstruction (Roads)	Forest Service	One time	0	1.00 Lump S	\$108,400.00	0.00	2003	5/14/2003
Riparian Planting (Restoration)	Forest Service	One time	0	1.00 Lump S	\$158,400.00	0.00	2003	4/30/2003
Road 2917413 Drainage (Roads)	Forest Service	One time	0	1.00 Lump S	\$1,821.00	0.00	2003	4/30/2003
Site Preparation (Reforestation)	Forest Service	One time	0	1,000.00 Acr	\$140.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	1	3,000.00 Acr	\$30.00	0.00	2003	4/30/2003
Large Woody Debris Placement (Restoration)	Forest Service	One time	1	1.00 Lump S	\$26,840.00	0.00	2003	5/5/2003
Planting (Reforestation)	Forest Service	One time	1	5,003.00 Acr	\$350.00	0.00	2003	4/30/2003
Site Preparation (Reforestation)	Forest Service	One time	1	3,301.00 Acr	\$140.00	0.00	2003	5/6/2003
Within Cut Units (Fuels Treatments)	Forest Service	One time	1	10,244.00 Ac	\$168.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	2	3,974.00 Acr	\$30.00	0.00	2003	4/30/2003

Planting (Reforestation)	Forest Service	One time	2	5,000.00 Acr	\$350.00	0.00	2003	4/30/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	2	3,572.00 Acr	\$100.00	0.00	2003	5/5/2003
Fuels Treatment (Reforestation)	Forest Service	One time	3	1,668.00 Acr	\$30.00	0.00	2003	4/30/2003
Planting (Reforestation)	Forest Service	One time	3	5,000.00 Acr	\$350.00	0.00	2003	4/30/2003
Planting (Reforestation)	Forest Service	One time	4	5,102.00 Acr	\$350.00	0.00	2003	4/30/2003
Site Preparation (Reforestation)	Forest Service	One time	4	1,000.00 Acr	\$140.00	0.00	2003	4/30/2003
Closure (Roads)	Forest Service	One time	5	72.90 Miles	\$375.00	0.00	2003	5/14/2003
Decommission (Roads)	Forest Service	One time	5	69.00 Miles	\$695.00	0.00	2003	5/14/2003
Planting (Reforestation)	Forest Service	One time	5	4,801.00 Acr	\$350.00	0.00	2003	4/30/2003

#### **BENEFIT**

	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Initial Salvage (Timber Sales)	Forest Service	One time	0	36,650.00 M	\$82.25	0.00	2003	5/7/2003
Initial Salvage (Timber Sales)	Forest Service	One time	1	36,650.00 M	\$82.25	0.00	2003	5/7/2003

#### **Alternative: C-Future**

#### **COST**

	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Future TSI Fuels - Very Light (Timber Stand Imp	Forest Service	One time	14	9,912.00 Acr	\$50.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Heavy (Timber Sta	Forest Service	One time	14	2,045.00 Acr	\$500.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Light (Timber Stan	Forest Service	One time	14	4,301.00 Acr	\$100.00	0.00	2003	5/7/2003
Future TSI Fuels Treatment - Very Heavy (Timbe	Forest Service	One time	14	4,648.00 Acr	\$600.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	18	20,906.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	31	20,906.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	46	20,906.00 Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	59	136,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	60	136,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	61	136,000.00	\$10.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	66	20,906.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	81	20,906.00 Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	99	184,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	100	184,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	101	184,000.00	\$10.00	0.00	2003	5/6/2003

#### **BENEFIT**

	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Commercial Thin (Future) (Timber Sales)	Forest Service	One time	61	136,000.00	\$85.00	0.00	2003	5/6/2003
Selection Cut (Future) (Timber Sales)	Forest Service	One time	101	184,000.00	\$366.00	0.00	2003	5/6/2003

#### **Alternative: C-Total**

<b>COST</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
PC Thin (Timber Stand Improvement)	Forest Service	Annual	0-2	738.00 Acres	\$130.00	0.00	2003	4/30/2003
Aspen Enhancement (Restoration)	Forest Service	Annual	1-3	230.00 Acres	\$150.00	0.00	2003	5/5/2003
Reconstruction (Roads)	Forest Service	One time	0	1.00 Lump S	\$108,400.00	0.00	2003	5/14/2003
Riparian Planting (Restoration)	Forest Service	One time	0	1.00 Lump S	\$158,400.00	0.00	2003	4/30/2003
Road 2917413 Drainage (Roads)	Forest Service	One time	0	1.00 Lump S	\$1,821.00	0.00	2003	4/30/2003
Site Preparation (Reforestation)	Forest Service	One time	0	1,000.00 Acr	\$140.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	1	3,000.00 Acr	\$30.00	0.00	2003	4/30/2003
Large Woody Debris Placement (Restoration)	Forest Service	One time	1	1.00 Lump S	\$26,840.00	0.00	2003	5/5/2003
Planting (Reforestation)	Forest Service	One time	1	5,003.00 Acr	\$350.00	0.00	2003	4/30/2003
Site Preparation (Reforestation)	Forest Service	One time	1	3,301.00 Acr	\$140.00	0.00	2003	5/6/2003
Within Cut Units (Fuels Treatments)	Forest Service	One time	1	10,244.00 Ac	\$168.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	2	3,974.00 Acr	\$30.00	0.00	2003	4/30/2003
Planting (Reforestation)	Forest Service	One time	2	5,000.00 Acr	\$350.00	0.00	2003	4/30/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	2	3,572.00 Acr	\$100.00	0.00	2003	5/5/2003
Fuels Treatment (Reforestation)	Forest Service	One time	3	1,668.00 Acr	\$30.00	0.00	2003	4/30/2003
Planting (Reforestation)	Forest Service	One time	3	5,000.00 Acr	\$350.00	0.00	2003	4/30/2003
Planting (Reforestation)	Forest Service	One time	4	5,102.00 Acr	\$350.00	0.00	2003	4/30/2003
Site Preparation (Reforestation)	Forest Service	One time	4	1,000.00 Acr	\$140.00	0.00	2003	4/30/2003
Closure (Roads)	Forest Service	One time	5	72.90 Miles	\$375.00	0.00	2003	5/14/2003
Decommission (Roads)	Forest Service	One time	5	69.00 Miles	\$695.00	0.00	2003	5/14/2003
Planting (Reforestation)	Forest Service	One time	5	4,801.00 Acr	\$350.00	0.00	2003	4/30/2003
Future TSI Fuels - Very Light (Timber Stand Imp)	Forest Service	One time	14	9,912.00 Acr	\$50.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Heavy (Timber Sta	Forest Service	One time	14	2,045.00 Acr	\$500.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Light (Timber Stan	Forest Service	One time	14	4,301.00 Acr	\$100.00	0.00	2003	5/7/2003
Future TSI Fuels Treatment - Very Heavy (Timbe	Forest Service	One time	14	4,648.00 Acr	\$600.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	18	20,906.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	31	20,906.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	46	20,906.00 Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	59	136,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	60	136,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	61	136,000.00	\$10.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	66	20,906.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	81	20,906.00 Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	99	184,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	100	184,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	101	184,000.00	\$10.00	0.00	2003	5/6/2003

<b>BENEFIT</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
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Initial Salvage (Timber Sales)	Forest Service	One time	0	36,650.00 M	\$82.25	0.00	2003	5/7/2003
Initial Salvage (Timber Sales)	Forest Service	One time	1	36,650.00 M	\$82.25	0.00	2003	5/7/2003
Commercial Thin (Future) (Timber Sales)	Forest Service	One time	61	136,000.00	\$85.00	0.00	2003	5/6/2003
Selection Cut (Future) (Timber Sales)	Forest Service	One time	101	184,000.00	\$366.00	0.00	2003	5/6/2003

**Alternative: D-Current**

<b>COST</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
PC Thin (Timber Stand Improvement)	Forest Service	One time	0	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Reconstruction (Roads)	Forest Service	One time	0	1.00 Lump S	\$60,100.00	0.00	2003	5/14/2003
Riparian Planting (Restoration)	Forest Service	One time	0	1.00 Lump S	\$158,400.00	0.00	2003	5/6/2003
Road 2917413 Drainage (Roads)	Forest Service	One time	0	1.00 Lump S	\$1,821.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	0	1,500.00 Acr	\$140.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	1	230.00 Acres	\$150.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	1	2,776.00 Acr	\$30.00	0.00	2003	5/6/2003
Large Woody Debris Placement (Restoration)	Forest Service	One time	1	1.00 Lump S	\$26,840.00	0.00	2003	5/6/2003
PC Thin (Timber Stand Improvement)	Forest Service	One time	1	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	1	5,094.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	1	3,000.00 Acr	\$140.00	0.00	2003	5/6/2003
Within Cut Units (Fuels Treatments)	Forest Service	One time	1	5,680.00 Acr	\$168.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	2	230.00 Acres	\$150.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	2	2,000.00 Acr	\$30.00	0.00	2003	5/6/2003
PC Thin (Timber Stand Improvement)	Forest Service	One time	2	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	2	5,070.00 Acr	\$350.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	2	2,450.00 Acr	\$100.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	2	2,500.00 Acr	\$140.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	3	230.00 Acres	\$150.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	3	5,079.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	3	2,603.00 Acr	\$140.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	4	5,500.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	4	1,000.00 Acr	\$140.00	0.00	2003	5/6/2003
Closure (Roads)	Forest Service	One time	5	75.50 Miles	\$375.00	0.00	2003	5/14/2003
Decommission (Roads)	Forest Service	One time	5	71.60 Miles	\$695.00	0.00	2003	5/14/2003
Planting (Reforestation)	Forest Service	One time	5	4,000.00 Acr	\$350.00	0.00	2003	5/6/2003

<b>BENEFIT</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Initial Salvage (Timber Sales)	Forest Service	One time	0	16,850.00 M	\$91.09	0.00	2003	5/6/2003
Initial Salvage (Timber Sales)	Forest Service	One time	1	16,850.00 M	\$91.09	0.00	2003	5/6/2003

**Alternative: D-Future**

<b>COST</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Future TSI Fuels - Very Light (Timber Stand Imp	Forest Service	One time	14	6,046.00 Acr	\$50.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Heavy (Timber Sta	Forest Service	One time	14	363.00 Acres	\$500.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Light (Timber Stan	Forest Service	One time	14	9,603.00 Acr	\$100.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Very Heavy (Timbe	Forest Service	One time	14	4,731.00 Acr	\$600.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	18	20,743.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	31	20,743.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	46	20,743.00 Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	59	135,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	60	135,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	61	135,000.00	\$10.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	66	20,743.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	81	20,743.00 Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	99	183,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	100	183,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	101	183,000.00	\$10.00	0.00	2003	5/6/2003

<b>BENEFIT</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Commercial Thin (Future) (Timber Sales)	Forest Service	One time	61	135,000.00	\$85.00	0.00	2003	5/6/2003
Selection Cut (Future) (Timber Sales)	Forest Service	One time	101	183,000.00	\$366.00	0.00	2003	5/6/2003

**Alternative: D-Total**

<b>COST</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
PC Thin (Timber Stand Improvement)	Forest Service	One time	0	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Reconstruction (Roads)	Forest Service	One time	0	1.00 Lump S	\$60,100.00	0.00	2003	5/14/2003
Riparian Planting (Restoration)	Forest Service	One time	0	1.00 Lump S	\$158,400.00	0.00	2003	5/6/2003
Road 2917413 Drainage (Roads)	Forest Service	One time	0	1.00 Lump S	\$1,821.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	0	1,500.00 Acr	\$140.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	1	230.00 Acres	\$150.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	1	2,776.00 Acr	\$30.00	0.00	2003	5/6/2003
Large Woody Debris Placement (Restoration)	Forest Service	One time	1	1.00 Lump S	\$26,840.00	0.00	2003	5/6/2003
PC Thin (Timber Stand Improvement)	Forest Service	One time	1	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	1	5,094.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	1	3,000.00 Acr	\$140.00	0.00	2003	5/6/2003
Within Cut Units (Fuels Treatments)	Forest Service	One time	1	5,680.00 Acr	\$168.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	2	230.00 Acres	\$150.00	0.00	2003	5/6/2003

Fuels Treatment (Reforestation)	Forest Service	One time	2	2,000.00 Acr	\$30.00	0.00	2003	5/6/2003
PC Thin (Timber Stand Improvement)	Forest Service	One time	2	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	2	5,070.00 Acr	\$350.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	2	2,450.00 Acr	\$100.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	2	2,500.00 Acr	\$140.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	3	230.00 Acres	\$150.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	3	5,079.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	3	2,603.00 Acr	\$140.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	4	5,500.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	4	1,000.00 Acr	\$140.00	0.00	2003	5/6/2003
Closure (Roads)	Forest Service	One time	5	75.50 Miles	\$375.00	0.00	2003	5/14/2003
Decommission (Roads)	Forest Service	One time	5	71.60 Miles	\$695.00	0.00	2003	5/14/2003
Planting (Reforestation)	Forest Service	One time	5	4,000.00 Acr	\$350.00	0.00	2003	5/6/2003
Future TSI Fuels - Very Light (Timber Stand Imp	Forest Service	One time	14	6,046.00 Acr	\$50.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Heavy (Timber Sta	Forest Service	One time	14	363.00 Acres	\$500.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Light (Timber Stan	Forest Service	One time	14	9,603.00 Acr	\$100.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Very Heavy (Timbe	Forest Service	One time	14	4,731.00 Acr	\$600.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	18	20,743.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	31	20,743.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	46	20,743.00 Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	59	135,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	60	135,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	61	135,000.00	\$10.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	66	20,743.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	81	20,743.00 Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	99	183,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	100	183,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	101	183,000.00	\$10.00	0.00	2003	5/6/2003

## **BENEFIT**

	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Initial Salvage (Timber Sales)	Forest Service	One time	0	16,850.00 M	\$91.09	0.00	2003	5/6/2003
Initial Salvage (Timber Sales)	Forest Service	One time	1	16,850.00 M	\$91.09	0.00	2003	5/6/2003
Commercial Thin (Future) (Timber Sales)	Forest Service	One time	61	135,000.00	\$85.00	0.00	2003	5/6/2003
Selection Cut (Future) (Timber Sales)	Forest Service	One time	101	183,000.00	\$366.00	0.00	2003	5/6/2003

## **Alternative: E-Current**

### **COST**

	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Reconstruction (Roads)	Forest Service	One time	0	1.00 Lump S	\$108,400.00	0.00	2003	5/14/2003
Site Preparation (Reforestation)	Forest Service	One time	0	1,000.00 Acr	\$140.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	1	3,000.00 Acr	\$30.00	0.00	2003	5/6/2003

Large Woody Debris Placement (Restoration)	Forest Service	One time	1	1.00 Lump S	\$26,840.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	1	5,000.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	1	1,530.00 Acr	\$140.00	0.00	2003	5/6/2003
Within Cut Units (Fuels Treatments)	Forest Service	One time	1	6,723.00 Acr	\$168.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	2	2,759.00 Acr	\$30.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	2	5,221.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	2	1,800.00 Acr	\$140.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	3	5,000.00 Acr	\$350.00	0.00	2003	5/6/2003
Decommission (Roads)	Forest Service	One time	4	14.60 Miles	\$695.00	0.00	2003	5/14/2003
Planting (Reforestation)	Forest Service	One time	4	5,232.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	4	1,000.00 Acr	\$140.00	0.00	2003	5/6/2003
Closure (Roads)	Forest Service	One time	5	67.40 Miles	\$375.00	0.00	2003	5/14/2003
Planting (Reforestation)	Forest Service	One time	5	4,300.00 Acr	\$350.00	0.00	2003	5/6/2003

<b>BENEFIT</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Initial Salvage (Timber Sales)	Forest Service	One time	0	33,050.00 M	\$95.95	0.00	2003	5/6/2003
Initial Salvage (Timber Sales)	Forest Service	One time	1	33,050.00 M	\$95.95	0.00	2003	5/6/2003

**Alternative: E-Future**

<b>COST</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Future TSI Fuels - Very Light (Timber Stand Imp)	Forest Service	One time	14	7,037.00 Acr	\$50.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Heavy (Timber Sta	Forest Service	One time	14	3,042.00 Acr	\$500.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Light (Timber Stan	Forest Service	One time	14	4,330.00 Acr	\$100.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Very Heavy (Timbe	Forest Service	One time	14	6,344.00 Acr	\$600.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	18	20,753.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	31	20,753.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	46	20,753.00 Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	59	135,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	60	135,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	61	135,000.00	\$10.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	66	20,753.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	81	20,753.00 Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	99	183,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	100	183,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	101	183,000.00	\$10.00	0.00	2003	5/6/2003

<b>BENEFIT</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
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Commercial Thin (Future) (Timber Sales)	Forest Service	One time	61	135,000.00	\$85.00	0.00	2003	5/6/2003
Selection Cut (Future) (Timber Sales)	Forest Service	One time	101	183,000.00	\$366.00	0.00	2003	5/6/2003

**Alternative: E-Total**

<b>COST</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Reconstruction (Roads)	Forest Service	One time	0	1.00 Lump S	\$108,400.00	0.00	2003	5/14/2003
Site Preparation (Reforestation)	Forest Service	One time	0	1,000.00 Acr	\$140.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	1	3,000.00 Acr	\$30.00	0.00	2003	5/6/2003
Large Woody Debris Placement (Restoration)	Forest Service	One time	1	1.00 Lump S	\$26,840.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	1	5,000.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	1	1,530.00 Acr	\$140.00	0.00	2003	5/6/2003
Within Cut Units (Fuels Treatments)	Forest Service	One time	1	6,723.00 Acr	\$168.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	2	2,759.00 Acr	\$30.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	2	5,221.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	2	1,800.00 Acr	\$140.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	3	5,000.00 Acr	\$350.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	4	5,232.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	4	1,000.00 Acr	\$140.00	0.00	2003	5/6/2003
Closure (Roads)	Forest Service	One time	5	67.40 Miles	\$375.00	0.00	2003	5/14/2003
Decommission (Roads)	Forest Service	One time	5	14.60 Miles	\$695.00	0.00	2003	5/14/2003
Planting (Reforestation)	Forest Service	One time	5	4,300.00 Acr	\$350.00	0.00	2003	5/6/2003
Future TSI Fuels - Very Light (Timber Stand Imp)	Forest Service	One time	14	7,037.00 Acr	\$50.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Heavy (Timber Sta	Forest Service	One time	14	3,042.00 Acr	\$500.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Light (Timber Stan	Forest Service	One time	14	4,330.00 Acr	\$100.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Very Heavy (Timbe	Forest Service	One time	14	6,344.00 Acr	\$600.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	18	20,753.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	31	20,753.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	46	20,753.00 Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	59	135,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	60	135,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	61	135,000.00	\$10.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	66	20,753.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	81	20,753.00 Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	99	183,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	100	183,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	101	183,000.00	\$10.00	0.00	2003	5/6/2003
<b>BENEFIT</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Initial Salvage (Timber Sales)	Forest Service	One time	0	33,050.00 M	\$95.95	0.00	2003	5/6/2003
Initial Salvage (Timber Sales)	Forest Service	One time	1	33,050.00 M	\$95.95	0.00	2003	5/6/2003
Commercial Thin (Future) (Timber Sales)	Forest Service	One time	61	135,000.00	\$85.00	0.00	2003	5/6/2003

Selection Cut (Future) (Timber Sales)	Forest Service	One time	101	183,000.00	\$366.00	0.00	2003	5/6/2003
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**Alternative: G-Current**

<b>COST</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Outside Cut Units (Fuels Treatments)	Forest Service	One time	0	5,596.00 Acr	\$200.00	0.00	2003	5/6/2003
PC Thin (Timber Stand Improvement)	Forest Service	One time	0	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Reconstruction (Roads)	Forest Service	One time	0	1.00 Lump S	\$108,400.00	0.00	2003	5/14/2003
Riparian Planting (Restoration)	Forest Service	One time	0	1.00 Lump S	\$158,400.00	0.00	2003	5/6/2003
Road 2917413 Drainage (Roads)	Forest Service	One time	0	1.00 Lump S	\$1,821.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	0	1,000.00 Acr	\$140.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	1	230.00 Acres	\$150.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	1	4,500.00 Acr	\$30.00	0.00	2003	5/6/2003
Large Woody Debris Placement (Restoration)	Forest Service	One time	1	1.00 Lump S	\$26,840.00	0.00	2003	5/6/2003
PC Thin (Timber Stand Improvement)	Forest Service	One time	1	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	1	4,928.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	1	2,180.00 Acr	\$140.00	0.00	2003	5/6/2003
Within Cut Units (Fuels Treatments)	Forest Service	One time	1	11,354.00 Ac	\$168.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	2	230.00 Acres	\$150.00	0.00	2003	5/7/2003
Fuels Treatment (Reforestation)	Forest Service	One time	2	4,351.00 Acr	\$30.00	0.00	2003	5/6/2003
PC Thin (Timber Stand Improvement)	Forest Service	One time	2	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	2	4,950.00 Acr	\$350.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	2	3,572.00 Acr	\$100.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	3	230.00 Acres	\$150.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	3	1,499.00 Acr	\$30.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	3	5,000.00 Acr	\$350.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	4	1,000.00 Acr	\$30.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	4	4,850.00 Acr	\$350.00	0.00	2003	5/6/2003
Closure (Roads)	Forest Service	One time	5	10.40 Miles	\$375.00	0.00	2003	5/14/2003
Decommission (Roads)	Forest Service	One time	5	71.60 Miles	\$695.00	0.00	2003	5/14/2003
Planting (Reforestation)	Forest Service	One time	5	5,000.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	5	400.00 Acres	\$140.00	0.00	2003	5/6/2003

<b>BENEFIT</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Initial Salvage (Timber Sales)	Forest Service	Annual	0-1	36,600.00 M	\$85.40	0.00	2003	5/7/2003

**Alternative: G-Future**

<b>COST</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
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Future TSI Fuels - Very Light (Timber Stand Imp	Forest Service	One time	14	12,620.00 Ac	\$50.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Heavy (Timber Sta	Forest Service	One time	14	1,638.00 Acr	\$500.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Light (Timber Stan	Forest Service	One time	14	3,180.00 Acr	\$100.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Very Heavy (Timbe	Forest Service	One time	14	3,290.00 Acr	\$600.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	18	20,728.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	31	20,728.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	46	20,728.00 Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	59	135,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	60	135,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	61	135,000.00	\$10.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	66	20,728.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	81	20,728.00 Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	99	182,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	100	182,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	101	182,000.00	\$10.00	0.00	2003	5/6/2003

## **BENEFIT**

	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Commercial Thin (Future) (Timber Sales)	Forest Service	One time	61	135,000.00	\$85.00	0.00	2003	5/6/2003
Selection Cut (Future) (Timber Sales)	Forest Service	One time	101	182,000.00	\$366.00	0.00	2003	5/6/2003

## **Alternative: G-Total**

## **COST**

	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Outside Cut Units (Fuels Treatments)	Forest Service	One time	0	5,596.00 Acr	\$200.00	0.00	2003	5/6/2003
PC Thin (Timber Stand Improvement)	Forest Service	One time	0	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Reconstruction (Roads)	Forest Service	One time	0	1.00 Lump S	\$108,400.00	0.00	2003	5/14/2003
Riparian Planting (Restoration)	Forest Service	One time	0	1.00 Lump S	\$158,400.00	0.00	2003	5/6/2003
Road 2917413 Drainage (Roads)	Forest Service	One time	0	1.00 Lump S	\$1,821.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	0	1,000.00 Acr	\$140.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	1	230.00 Acres	\$150.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	1	4,500.00 Acr	\$30.00	0.00	2003	5/6/2003
Large Woody Debris Placement (Restoration)	Forest Service	One time	1	1.00 Lump S	\$26,840.00	0.00	2003	5/6/2003
PC Thin (Timber Stand Improvement)	Forest Service	One time	1	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	1	4,928.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	1	2,180.00 Acr	\$140.00	0.00	2003	5/6/2003
Within Cut Units (Fuels Treatments)	Forest Service	One time	1	11,354.00 Ac	\$168.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	2	230.00 Acres	\$150.00	0.00	2003	5/7/2003
Fuels Treatment (Reforestation)	Forest Service	One time	2	4,351.00 Acr	\$30.00	0.00	2003	5/6/2003
PC Thin (Timber Stand Improvement)	Forest Service	One time	2	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	2	4,950.00 Acr	\$350.00	0.00	2003	5/6/2003

Prescribed Fire (Prescribed Fire)	Forest Service	One time	2	3,572.00 Acr	\$100.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	3	230.00 Acres	\$150.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	3	1,499.00 Acr	\$30.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	3	5,000.00 Acr	\$350.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	4	1,000.00 Acr	\$30.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	4	4,850.00 Acr	\$350.00	0.00	2003	5/6/2003
Closure (Roads)	Forest Service	One time	5	10.40 Miles	\$375.00	0.00	2003	5/14/2003
Decommission (Roads)	Forest Service	One time	5	71.60 Miles	\$695.00	0.00	2003	5/14/2003
Planting (Reforestation)	Forest Service	One time	5	5,000.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	5	400.00 Acres	\$140.00	0.00	2003	5/6/2003
Future TSI Fuels - Very Light (Timber Stand Imp	Forest Service	One time	14	12,620.00 Ac	\$50.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Heavy (Timber Sta	Forest Service	One time	14	1,638.00 Acr	\$500.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Light (Timber Stan	Forest Service	One time	14	3,180.00 Acr	\$100.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Very Heavy (Timbe	Forest Service	One time	14	3,290.00 Acr	\$600.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	18	20,728.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	31	20,728.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	46	20,728.00 Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	59	135,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	60	135,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	61	135,000.00	\$10.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	66	20,728.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	81	20,728.00 Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	99	182,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	100	182,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	101	182,000.00	\$10.00	0.00	2003	5/6/2003

**BENEFIT**

	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Initial Salvage (Timber Sales)	Forest Service	One time	0	36,600.00 M	\$85.40	0.00	2003	5/6/2003
Initial Salvage (Timber Sales)	Forest Service	One time	1	36,600.00 M	\$85.40	0.00	2003	5/7/2003
Commercial Thin (Future) (Timber Sales)	Forest Service	One time	61	135,000.00	\$85.00	0.00	2003	5/6/2003
Selection Cut (Future) (Timber Sales)	Forest Service	One time	101	182,000.00	\$366.00	0.00	2003	5/6/2003

**Alternative: H-Current****COST**

	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
PC Thin (Timber Stand Improvement)	Forest Service	One time	0	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Reconstruction (Roads)	Forest Service	One time	0	1.00 Lump S	\$108,400.00	0.00	2003	5/14/2003
Riparian Planting (Restoration)	Forest Service	One time	0	1.00 Lump S	\$158,400.00	0.00	2003	5/6/2003
Road 2917413 Drainage (Roads)	Forest Service	One time	0	1.00 Lump S	\$1,821.00	0.00	2003	5/6/2003

Site Preparation (Reforestation)	Forest Service	One time	0	1,000.00 Acr	\$140.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	1	230.00 Acres	\$150.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	1	4,000.00 Acr	\$30.00	0.00	2003	5/6/2003
Large Woody Debris Placement (Restoration)	Forest Service	One time	1	1.00 Lump S	\$26,840.00	0.00	2003	5/6/2003
PC Thin (Timber Stand Improvement)	Forest Service	One time	1	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	1	4,950.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	1	2,295.00 Acr	\$140.00	0.00	2003	5/6/2003
Within Cut Units (Fuels Treatments)	Forest Service	One time	1	9,070.00 Acr	\$168.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	2	230.00 Acres	\$150.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	2	3,535.00 Acr	\$30.00	0.00	2003	5/6/2003
PC Thin (Timber Stand Improvement)	Forest Service	One time	2	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	2	4,903.00 Acr	\$350.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	2	2,450.00 Acr	\$100.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	2	1,000.00 Acr	\$140.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	3	230.00 Acres	\$150.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	3	5,000.00 Acr	\$350.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	4	5,168.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	4	400.00 Acres	\$140.00	0.00	2003	5/6/2003
Closure (Roads)	Forest Service	One time	5	72.90 Miles	\$375.00	0.00	2003	5/14/2003
Decommission (Roads)	Forest Service	One time	5	71.60 Miles	\$695.00	0.00	2003	5/14/2003
Planting (Reforestation)	Forest Service	One time	5	4,700.00 Acr	\$350.00	0.00	2003	5/6/2003

#### **BENEFIT**

	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Initial Salvage (Timber Sales)	Forest Service	One time	0	31,900.00 M	\$85.81	0.00	2003	5/6/2003
Initial Salvage (Timber Sales)	Forest Service	One time	1	31,900.00 M	\$85.81	0.00	2003	5/6/2003

#### **Alternative: H-Future**

#### **COST**

	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Future TSI Fuels - Very Light (Timber Stand Imp	Forest Service	One time	14	8,805.00 Acr	\$50.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Heavy (Timber Sta	Forest Service	One time	14	1,950.00 Acr	\$500.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Light (Timber Stan	Forest Service	One time	14	4,295.00 Acr	\$100.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Very Heavy (Timbe	Forest Service	One time	14	5,671.00 Acr	\$600.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	18	20,721.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	31	20,721.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	46	20,721.00 Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	59	135,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	60	135,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	61	135,000.00	\$10.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	66	20,721.00 Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	81	20,721.00 Ac	\$100.00	0.00	2003	5/6/2003

Resource Support (NEPA) (Timber Sales)	Forest Service	One time	99	182,000.00	\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	100	182,000.00	\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	101	182,000.00	\$10.00	0.00	2003	5/6/2003

<b>BENEFIT</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Commercial Thin (Future) (Timber Sales)	Forest Service	One time	61	135,000.00	\$85.00	0.00	2003	5/6/2003
Selection Cut (Future) (Timber Sales)	Forest Service	One time	101	182,000.00	\$366.00	0.00	2003	5/6/2003

**Alternative: H-Total**

<b>COST</b>	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>	<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
PC Thin (Timber Stand Improvement)	Forest Service	One time	0	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Reconstruction (Roads)	Forest Service	One time	0	1.00 Lump S	\$108,400.00	0.00	2003	5/14/2003
Riparian Planting (Restoration)	Forest Service	One time	0	1.00 Lump S	\$158,400.00	0.00	2003	5/6/2003
Road 2917413 Drainage (Roads)	Forest Service	One time	0	1.00 Lump S	\$1,821.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	0	1,000.00 Acr	\$140.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	1	230.00 Acres	\$150.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	1	4,000.00 Acr	\$30.00	0.00	2003	5/6/2003
Large Woody Debris Placement (Restoration)	Forest Service	One time	1	1.00 Lump S	\$26,840.00	0.00	2003	5/6/2003
PC Thin (Timber Stand Improvement)	Forest Service	One time	1	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	1	4,950.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	1	2,295.00 Acr	\$140.00	0.00	2003	5/6/2003
Within Cut Units (Fuels Treatments)	Forest Service	One time	1	9,070.00 Acr	\$168.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	2	230.00 Acres	\$150.00	0.00	2003	5/6/2003
Fuels Treatment (Reforestation)	Forest Service	One time	2	3,535.00 Acr	\$30.00	0.00	2003	5/6/2003
PC Thin (Timber Stand Improvement)	Forest Service	One time	2	738.00 Acres	\$130.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	2	4,903.00 Acr	\$350.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	2	2,450.00 Acr	\$100.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	2	1,000.00 Acr	\$140.00	0.00	2003	5/6/2003
Aspen Enhancement (Restoration)	Forest Service	One time	3	230.00 Acres	\$150.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	3	5,000.00 Acr	\$350.00	0.00	2003	5/6/2003
Planting (Reforestation)	Forest Service	One time	4	5,168.00 Acr	\$350.00	0.00	2003	5/6/2003
Site Preparation (Reforestation)	Forest Service	One time	4	400.00 Acres	\$140.00	0.00	2003	5/6/2003
Closure (Roads)	Forest Service	One time	5	72.90 Miles	\$375.00	0.00	2003	5/14/2003
Decommission (Roads)	Forest Service	One time	5	71.60 Miles	\$695.00	0.00	2003	5/14/2003
Planting (Reforestation)	Forest Service	One time	5	4,700.00 Acr	\$350.00	0.00	2003	5/6/2003
Future TSI Fuels - Very Light (Timber Stand Imp)	Forest Service	One time	14	8,805.00 Acr	\$50.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Heavy (Timber Sta	Forest Service	One time	14	1,950.00 Acr	\$500.00	0.00	2003	5/6/2003
Future TSI Fuels Treatment - Light (Timber Stan	Forest Service	One time	14	4,295.00 Acr	\$100.00	0.00	2003	5/6/2003

Future TSI Fuels Treatment - Very Heavy (Timber Sales)	Forest Service	One time	14	5,671.00	Ac	\$600.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	18	20,721.00	Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	31	20,721.00	Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	46	20,721.00	Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	59	135,000.00		\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	60	135,000.00		\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	61	135,000.00		\$10.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	66	20,721.00	Ac	\$100.00	0.00	2003	5/6/2003
Prescribed Fire (Prescribed Fire)	Forest Service	One time	81	20,721.00	Ac	\$100.00	0.00	2003	5/6/2003
Resource Support (NEPA) (Timber Sales)	Forest Service	One time	99	182,000.00		\$15.00	0.00	2003	5/6/2003
Sale Preparation (Timber Sales)	Forest Service	One time	100	182,000.00		\$15.00	0.00	2003	5/6/2003
Sale Administration (Timber Sales)	Forest Service	One time	101	182,000.00		\$10.00	0.00	2003	5/6/2003

**BENEFIT**

	<i>Partner</i>	<i>Type</i>	<i>Year(s)</i>	<i>Quantity</i>		<i>Value</i>	<i>Rate(%)</i>	<i>Base</i>	<i>Update</i>
Initial Salvage (Timber Sales)	Forest Service	One time	0	31,900.00	M	\$85.81	0.00	2003	5/6/2003
Initial Salvage (Timber Sales)	Forest Service	One time	1	31,900.00	M	\$85.81	0.00	2003	5/6/2003
Commercial Thin (Future) (Timber Sales)	Forest Service	One time	61	135,000.00		\$85.00	0.00	2003	5/6/2003
Selection Cut (Future) (Timber Sales)	Forest Service	One time	101	182,000.00		\$366.00	0.00	2003	5/6/2003

## **Appendix B – Detailed Analysis Results**

This analysis was developed using Quick-Silver Software (see <http://www.fs.fed.us/emc/nris/hd/qsilver/>). The Quick-Silver models developed for this analysis are on a CD-ROM attached to this report in the planning records. The reports in this appendix were derived from the Quick-Silver models.

## DISCOUNT RATE: 0.000

### *A-No Action - No Plant*

Cash Flows (number)	2
PV-Costs (\$)	-\$7,500,000.00
PV-Benefits (\$)	\$0.00
Present Net Value (\$)	-\$7,500,000.00
B/C Ratio	0.00
Investment Length (years)	101
Net Annual Equivalent (\$)	NA
Composite Rate of Return (percent)	NA
Internal Rate of Return (percent)	NA

### *A-No Action - Plant*

Cash Flows (number)	10
PV-Costs (\$)	-\$52,800,000.00
PV-Benefits (\$)	\$16,575,000.00
Present Net Value (\$)	-\$36,225,000.00
B/C Ratio	0.31
Investment Length (years)	81
Net Annual Equivalent (\$)	NA
Composite Rate of Return (percent)	-1.42
Internal Rate of Return (percent)	NA

### *C-Current*

Cash Flows (number)	27
PV-Costs (\$)	-\$12,558,765.50
PV-Benefits (\$)	\$6,028,925.00
Present Net Value (\$)	-\$6,529,840.50
B/C Ratio	0.48
Investment Length (years)	5
Net Annual Equivalent (\$)	NA
Composite Rate of Return (percent)	-13.65
Internal Rate of Return (percent)	NA

### *C-Future*

Cash Flows (number)	17
PV-Costs (\$)	-\$27,990,000.00
PV-Benefits (\$)	\$78,904,000.00
Present Net Value (\$)	\$50,914,000.00
B/C Ratio	2.82
Investment Length (years)	101
Net Annual Equivalent (\$)	NA
Composite Rate of Return (percent)	1.03
Internal Rate of Return (percent)	2.28

### *C-Total*

Cash Flows (number)	44
PV-Costs (\$)	-\$40,548,765.50
PV-Benefits (\$)	\$84,932,925.00
Present Net Value (\$)	\$44,384,159.50
B/C Ratio	2.09
Investment Length (years)	101
Net Annual Equivalent (\$)	NA
Composite Rate of Return (percent)	0.73
Internal Rate of Return (percent)	NA

***D-Current***

Cash Flows (number)	28
PV-Costs (\$)	-\$12,203,545.50
PV-Benefits (\$)	\$3,069,733.00
Present Net Value (\$)	-\$9,133,812.50
B/C Ratio	0.25
Investment Length (years)	5
Net Annual Equivalent (\$)	NA
Composite Rate of Return (percent)	-24.12
Internal Rate of Return (percent)	NA

***D-Future***

Cash Flows (number)	17
PV-Costs (\$)	-\$27,374,200.00
PV-Benefits (\$)	\$78,453,000.00
Present Net Value (\$)	\$51,078,800.00
B/C Ratio	2.87
Investment Length (years)	101
Net Annual Equivalent (\$)	NA
Composite Rate of Return (percent)	1.05
Internal Rate of Return (percent)	2.34

***D-Total***

Cash Flows (number)	45
PV-Costs (\$)	-\$39,577,745.50
PV-Benefits (\$)	\$81,522,733.00
Present Net Value (\$)	\$41,944,987.50
B/C Ratio	2.06
Investment Length (years)	101
Net Annual Equivalent (\$)	NA
Composite Rate of Return (percent)	0.72
Internal Rate of Return (percent)	NA

***E-Current***

Cash Flows (number)	18
PV-Costs (\$)	-\$10,882,646.00
PV-Benefits (\$)	\$6,342,295.00
Present Net Value (\$)	-\$4,540,351.00
B/C Ratio	0.58
Investment Length (years)	5
Net Annual Equivalent (\$)	NA
Composite Rate of Return (percent)	-10.24
Internal Rate of Return (percent)	NA

***E-Future***

Cash Flows (number)	17
PV-Costs (\$)	-\$29,208,750.00
PV-Benefits (\$)	\$78,453,000.00
Present Net Value (\$)	\$49,244,250.00
B/C Ratio	2.69
Investment Length (years)	101
Net Annual Equivalent (\$)	NA
Composite Rate of Return (percent)	0.98
Internal Rate of Return (percent)	2.09

***E-Total***

Cash Flows (number)	35
PV-Costs (\$)	-\$40,091,396.00
PV-Benefits (\$)	\$84,795,295.00
Present Net Value (\$)	\$44,703,899.00
B/C Ratio	2.12
Investment Length (years)	101
Net Annual Equivalent (\$)	NA
Composite Rate of Return (percent)	0.74
Internal Rate of Return (percent)	NA

***G-Current***

Cash Flows (number)	29
PV-Costs (\$)	-\$13,620,815.00
PV-Benefits (\$)	\$6,251,280.00
Present Net Value (\$)	-\$7,369,535.00
B/C Ratio	0.46
Investment Length (years)	5
Net Annual Equivalent (\$)	NA
Composite Rate of Return (percent)	-14.42
Internal Rate of Return (percent)	NA

***G-Future***

Cash Flows (number)	17
PV-Costs (\$)	-\$26,786,000.00
PV-Benefits (\$)	\$78,087,000.00
Present Net Value (\$)	\$51,301,000.00
B/C Ratio	2.92
Investment Length (years)	101
Net Annual Equivalent (\$)	NA
Composite Rate of Return (percent)	1.06
Internal Rate of Return (percent)	2.43

***G-Total***

Cash Flows (number)	46
PV-Costs (\$)	-\$40,406,815.00
PV-Benefits (\$)	\$84,338,280.00
Present Net Value (\$)	\$43,931,465.00
B/C Ratio	2.09
Investment Length (years)	101
Net Annual Equivalent (\$)	NA
Composite Rate of Return (percent)	0.73
Internal Rate of Return (percent)	NA

***H-Current***

Cash Flows (number)	27
PV-Costs (\$)	-\$12,068,340.50
PV-Benefits (\$)	\$5,474,678.00
Present Net Value (\$)	-\$6,593,662.50
B/C Ratio	0.45
Investment Length (years)	5
Net Annual Equivalent (\$)	NA
Composite Rate of Return (percent)	-14.62
Internal Rate of Return (percent)	NA

***H-Future***

Cash Flows (number)	17
PV-Costs (\$)	-\$28,287,850.00
PV-Benefits (\$)	\$78,087,000.00
Present Net Value (\$)	\$49,799,150.00
B/C Ratio	2.76
Investment Length (years)	101
Net Annual Equivalent (\$)	NA
Composite Rate of Return (percent)	1.01
Internal Rate of Return (percent)	2.20

***H-Total***

Cash Flows (number)	44
PV-Costs (\$)	-\$40,356,190.50
PV-Benefits (\$)	\$83,561,678.00
Present Net Value (\$)	\$43,205,487.50
B/C Ratio	2.07
Investment Length (years)	101
Net Annual Equivalent (\$)	NA
Composite Rate of Return (percent)	0.72
Internal Rate of Return (percent)	NA

## Discount Rate: 4.000

### *A-No Action – No Planting*

Cash Flows (number)	2
PV-Costs (\$)	-\$290,006.02
PV-Benefits (\$)	\$0.00
Present Net Value (\$)	-\$290,006.02
B/C Ratio	0.00
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$11,825.38
Composite Rate of Return (percent)	NA
Internal Rate of Return (percent)	NA

### *A-No Action - Planting*

Cash Flows (number)	10
PV-Costs (\$)	-\$19,603,804.20
PV-Benefits (\$)	\$691,437.70
Present Net Value (\$)	-\$18,912,366.51
B/C Ratio	0.04
Investment Length (years)	81
Net Annual Equivalent (\$)	-\$789,426.12
Composite Rate of Return (percent)	-0.21
Internal Rate of Return (percent)	NA

### *C-Current*

Cash Flows (number)	27
PV-Costs (\$)	-\$11,861,040.75
PV-Benefits (\$)	\$5,912,984.13
Present Net Value (\$)	-\$5,948,056.61
B/C Ratio	0.50
Investment Length (years)	5
Net Annual Equivalent (\$)	-\$1,336,094.79
Composite Rate of Return (percent)	-9.52
Internal Rate of Return (percent)	NA

### *C-Future*

Cash Flows (number)	17
PV-Costs (\$)	-\$5,867,782.65
PV-Benefits (\$)	\$2,338,761.67
Present Net Value (\$)	-\$3,529,020.98
B/C Ratio	0.40
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$143,900.49
Composite Rate of Return (percent)	3.06
Internal Rate of Return (percent)	2.28

### *C-Total*

Cash Flows (number)	44
PV-Costs (\$)	-\$17,728,823.40
PV-Benefits (\$)	\$8,251,745.81
Present Net Value (\$)	-\$9,477,077.59
B/C Ratio	0.47
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$386,440.35
Composite Rate of Return (percent)	3.22
Internal Rate of Return (percent)	NA

***D-Current***

Cash Flows (number)	28
PV-Costs (\$)	-\$11,497,044.84
PV-Benefits (\$)	\$3,010,699.67
Present Net Value (\$)	-\$8,486,345.17
B/C Ratio	0.26
Investment Length (years)	5
Net Annual Equivalent (\$)	-\$1,906,263.22
Composite Rate of Return (percent)	-20.45
Internal Rate of Return (percent)	NA

***D-Future***

Cash Flows (number)	17
PV-Costs (\$)	-\$5,571,973.08
PV-Benefits (\$)	\$2,324,024.22
Present Net Value (\$)	-\$3,247,948.86
B/C Ratio	0.42
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$132,439.40
Composite Rate of Return (percent)	3.10
Internal Rate of Return (percent)	2.34

***D-Total***

Cash Flows (number)	45
PV-Costs (\$)	-\$17,069,017.92
PV-Benefits (\$)	\$5,334,723.89
Present Net Value (\$)	-\$11,734,294.03
B/C Ratio	0.31
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$478,481.33
Composite Rate of Return (percent)	2.81
Internal Rate of Return (percent)	NA

***E-Current***

Cash Flows (number)	18
PV-Costs (\$)	-\$10,225,334.66
PV-Benefits (\$)	\$6,220,327.79
Present Net Value (\$)	-\$4,005,006.87
B/C Ratio	0.61
Investment Length (years)	5
Net Annual Equivalent (\$)	-\$899,633.13
Composite Rate of Return (percent)	-5.84
Internal Rate of Return (percent)	NA

***E-Future***

Cash Flows (number)	17
PV-Costs (\$)	-\$6,671,867.80
PV-Benefits (\$)	\$2,324,024.22
Present Net Value (\$)	-\$4,347,843.59
B/C Ratio	0.35
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$177,289.06
Composite Rate of Return (percent)	2.92
Internal Rate of Return (percent)	2.09

***E-Total***

Cash Flows (number)	35
PV-Costs (\$)	-\$16,896,855.52
PV-Benefits (\$)	\$8,544,352.01
Present Net Value (\$)	-\$8,352,503.51
B/C Ratio	0.51
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$340,584.36
Composite Rate of Return (percent)	3.30
Internal Rate of Return (percent)	NA

***G-Current***

Cash Flows (number)	29
PV-Costs (\$)	-\$12,930,608.55
PV-Benefits (\$)	\$6,131,063.08
Present Net Value (\$)	-\$6,799,545.47
B/C Ratio	0.47
Investment Length (years)	5
Net Annual Equivalent (\$)	-\$1,527,362.27
Composite Rate of Return (percent)	-10.42
Internal Rate of Return (percent)	NA

***G-Future***

Cash Flows (number)	17
PV-Costs (\$)	-\$5,244,742.94
PV-Benefits (\$)	\$2,317,056.13
Present Net Value (\$)	-\$2,927,686.81
B/C Ratio	0.44
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$119,380.29
Composite Rate of Return (percent)	3.16
Internal Rate of Return (percent)	2.43

***G-Total***

Cash Flows (number)	46
PV-Costs (\$)	-\$18,175,351.49
PV-Benefits (\$)	\$8,448,119.21
Present Net Value (\$)	-\$9,727,232.29
B/C Ratio	0.46
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$396,640.74
Composite Rate of Return (percent)	3.21
Internal Rate of Return (percent)	NA

***H-Current***

Cash Flows (number)	27
PV-Costs (\$)	-\$11,386,764.46
PV-Benefits (\$)	\$5,369,395.73
Present Net Value (\$)	-\$6,017,368.73
B/C Ratio	0.47
Investment Length (years)	5
Net Annual Equivalent (\$)	-\$1,351,664.17
Composite Rate of Return (percent)	-10.52
Internal Rate of Return (percent)	NA

***H-Future***

Cash Flows (number)	17
PV-Costs (\$)	-\$6,148,037.06
PV-Benefits (\$)	\$2,317,056.13
Present Net Value (\$)	-\$3,830,980.93
B/C Ratio	0.38
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$156,213.30
Composite Rate of Return (percent)	3.00
Internal Rate of Return (percent)	2.20

***H-Total***

Cash Flows (number)	44
PV-Costs (\$)	-\$17,534,801.51
PV-Benefits (\$)	\$7,686,451.86
Present Net Value (\$)	-\$9,848,349.65
B/C Ratio	0.44
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$401,579.46
Composite Rate of Return (percent)	3.15
Internal Rate of Return (percent)	NA

## DISCOUNT RATE: 10.000

### *A-No Action - No Plant*

Cash Flows (number)	2
PV-Costs (\$)	-\$3,037.96
PV-Benefits (\$)	\$0.00
Present Net Value (\$)	-\$3,037.96
B/C Ratio	0.00
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$303.82
Composite Rate of Return (percent)	NA
Internal Rate of Return (percent)	NA

### *A-No Action - Plant*

Cash Flows (number)	10
PV-Costs (\$)	-\$6,210,467.10
PV-Benefits (\$)	\$7,356.07
Present Net Value (\$)	-\$6,203,111.03
B/C Ratio	0.00
Investment Length (years)	81
Net Annual Equivalent (\$)	-\$620,586.52
Composite Rate of Return (percent)	1.22
Internal Rate of Return (percent)	NA

### *C-Current*

Cash Flows (number)	27
PV-Costs (\$)	-\$10,990,706.12
PV-Benefits (\$)	\$5,754,882.95
Present Net Value (\$)	-\$5,235,823.17
B/C Ratio	0.52
Investment Length (years)	5
Net Annual Equivalent (\$)	-\$1,381,196.96
Composite Rate of Return (percent)	-3.35
Internal Rate of Return (percent)	NA

### *C-Future*

Cash Flows (number)	17
PV-Costs (\$)	-\$1,960,068.36
PV-Benefits (\$)	\$38,957.30
Present Net Value (\$)	-\$1,921,111.06
B/C Ratio	0.02
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$192,123.78
Composite Rate of Return (percent)	5.81
Internal Rate of Return (percent)	2.28

### *C-Total*

Cash Flows (number)	44
PV-Costs (\$)	-\$12,950,774.48
PV-Benefits (\$)	\$5,793,840.25
Present Net Value (\$)	-\$7,156,934.23
B/C Ratio	0.45
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$715,740.64
Composite Rate of Return (percent)	9.13
Internal Rate of Return (percent)	NA

***D-Current***

Cash Flows (number)	28
PV-Costs (\$)	-\$10,611,007.20
PV-Benefits (\$)	\$2,930,199.68
Present Net Value (\$)	-\$7,680,807.52
B/C Ratio	0.28
Investment Length (years)	5
Net Annual Equivalent (\$)	-\$2,026,177.67
Composite Rate of Return (percent)	-14.96
Internal Rate of Return (percent)	NA

***D-Future***

Cash Flows (number)	17
PV-Costs (\$)	-\$1,823,900.13
PV-Benefits (\$)	\$38,679.37
Present Net Value (\$)	-\$1,785,220.76
B/C Ratio	0.02
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$178,533.85
Composite Rate of Return (percent)	5.88
Internal Rate of Return (percent)	2.34

***D- Total***

Cash Flows (number)	45
PV-Costs (\$)	-\$12,434,907.33
PV-Benefits (\$)	\$2,968,879.05
Present Net Value (\$)	-\$9,466,028.28
B/C Ratio	0.24
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$946,665.28
Composite Rate of Return (percent)	8.45
Internal Rate of Return (percent)	NA

***E-Current***

Cash Flows (number)	18
PV-Costs (\$)	-\$9,404,562.37
PV-Benefits (\$)	\$6,054,008.86
Present Net Value (\$)	-\$3,350,553.51
B/C Ratio	0.64
Investment Length (years)	5
Net Annual Equivalent (\$)	-\$883,867.57
Composite Rate of Return (percent)	0.72
Internal Rate of Return (percent)	NA

***E-Future***

Cash Flows (number)	17
PV-Costs (\$)	-\$2,354,127.00
PV-Benefits (\$)	\$38,679.37
Present Net Value (\$)	-\$2,315,447.62
B/C Ratio	0.02
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$231,560.04
Composite Rate of Return (percent)	5.62
Internal Rate of Return (percent)	2.09

***E-Total***

Cash Flows (number)	35
PV-Costs (\$)	-\$11,757,996.31
PV-Benefits (\$)	\$6,092,688.23
Present Net Value (\$)	-\$5,665,308.08
B/C Ratio	0.52
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$566,568.18
Composite Rate of Return (percent)	9.29
Internal Rate of Return (percent)	NA

***G-Current***

Cash Flows (number)	29
PV-Costs (\$)	-\$12,070,514.89
PV-Benefits (\$)	\$5,967,130.91
Present Net Value (\$)	-\$6,103,383.98
B/C Ratio	0.49
Investment Length (years)	5
Net Annual Equivalent (\$)	-\$1,610,057.32
Composite Rate of Return (percent)	-4.46
Internal Rate of Return (percent)	NA

***G-Future***

Cash Flows (number)	17
PV-Costs (\$)	-\$1,666,868.26
PV-Benefits (\$)	\$38,655.23
Present Net Value (\$)	-\$1,628,213.03
B/C Ratio	0.02
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$162,832.05
Composite Rate of Return (percent)	5.98
Internal Rate of Return (percent)	2.43

***G-Total***

Cash Flows (number)	46
PV-Costs (\$)	-\$13,737,383.15
PV-Benefits (\$)	\$6,005,786.14
Present Net Value (\$)	-\$7,731,597.02
B/C Ratio	0.44
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$773,210.71
Composite Rate of Return (percent)	9.10
Internal Rate of Return (percent)	NA

***H-Current***

Cash Flows (number)	27
PV-Costs (\$)	-\$10,536,499.72
PV-Benefits (\$)	\$5,225,829.00
Present Net Value (\$)	-\$5,310,670.72
B/C Ratio	0.50
Investment Length (years)	5
Net Annual Equivalent (\$)	-\$1,400,941.56
Composite Rate of Return (percent)	-4.39
Internal Rate of Return (percent)	NA

***H-Future***

Cash Flows (number)	17
PV-Costs (\$)	-\$2,102,724.55
PV-Benefits (\$)	\$38,655.23
Present Net Value (\$)	-\$2,064,069.33
B/C Ratio	0.02
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$206,420.55
Composite Rate of Return (percent)	5.73
Internal Rate of Return (percent)	2.20

***H-Total***

Cash Flows (number)	44
PV-Costs (\$)	-\$12,639,224.28
PV-Benefits (\$)	\$5,264,484.23
Present Net Value (\$)	-\$7,374,740.05
B/C Ratio	0.42
Investment Length (years)	101
Net Annual Equivalent (\$)	-\$737,522.66
Composite Rate of Return (percent)	9.05
Internal Rate of Return (percent)	NA

## References

- Fahey, et al. circa 1990. Evaluation of Fire-Killed Ponderosa Pine for Volume and Value Loss. Timber Quality Research Unit PNW Research Station
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- Lowell, Eini, et al. 1992. Deterioration of Fire-Killed and Fire Damaged Timber in the Western United States. General Technical Report PNW-GTR-292.
- Pierce, G. 2003. Logging Systems and Logging Economics Resource Report, Specialist report in the project records
- Vasievich, Mike, et al. . 2000. Draft Quick-Silver User Guide, see <http://www.fs.fed.us/emc/nris/hd/qsilver/>
- Willets, Susan, et al. 1990. Lumber Recovery from Dead Ponderosa Pine in the Colorado Front Range. Research Paper PNW-RP-428

## Use of This Report

This Toolbox Fire Recovery Project specialist report was prepared during March, April and May of 2003. It will be used, along with specialist reports from multiple resource areas, to prepare a Draft Environmental Impact Statement (DEIS) for the Toolbox Fire Recovery project. This specialist report will become a part of the planning record for the project, filed under:

“Toolbx/ Planning Record/ E\_Specialists\_reports\_data\_inventory\_and\_collection”

This report will be filed both in the ‘hard-copy’ planning record binders, on file at the Silver Lake Ranger District, and on the Fremont National Forest “K-Drive”. In the interest of planning process efficiency, particularly in light of time and budget constraints, editing that occurs to the content of this report during the preparation of the DEIS will be reflected in the DEIS and will not necessarily be entered back into the content of this report. To insure the accuracy of such edits, I will review the content of both the DEIS and the (Final) FEIS and certify that their content is consistent with the analytical conclusions in this report. If during DEIS or FEIS editing, substantially different conclusions or interpretations are reached or substantial additional analysis is prepared from that displayed in this report, an addendum to this report will be prepared.

Specialist: /S/ Jerry Haugen

Discipline: Economics

Date: 7/15/03