A Cost-Benefit Analysis of the Elliott State Forest Common School Fund Lands

Prepared for:

Oregon Department of State Lands
Oregon Department of Forestry

Prepared by:

Carl F. Ehlen and Roger G. Lord

MB&G

Mason, Bruce & Girard, Inc.

January 12, 2005

Table of Contents

EXECUTIVE SUMMARY

At recent levels of timber harvest, the Net Present Value of income to Oregon's Common School Fund from the Elliott State Forest is $282 million. Higher levels of harvest expected from current plan revisions and re-negotiated HCP could increase the value of the forest to between $318 and $381 million. An alternative would be sale of Elliott Common School Fund lands to the private sector for an estimated market value of between $265 and $489 million, followed by transfer of the proceeds to other Common School Fund investments. Net income from a sale after HCP mitigation and transaction costs would be $245 to $488 million. The Net Benefit of this alternative ranges from a $136 million loss to a $206 million gain for the Common School Fund. In addition to direct benefits to the Fund, the state economy would benefit from added employment, income, and tax receipts. These benefits may range as high as $400 million. Non-market benefits would also be affected. The primary non-market impact of the sale of the Elliott would be a decline in provision of late-successional habitat for endangered northern spotted owl and marbled murrelet.

The Elliott State Forest covers 93,000 acres of coastal Douglas-fir forest in Oregon's mid-coast area of Coos and Douglas Counties. The majority of the forest, 84,000 acres, is owned by the Oregon State Land Board and managed as a trust asset of the Common School Fund (CSF) an Admission Act trust established to benefit K-12 schools statewide. The Department of State Lands administers the program and the Oregon Department of Forestry manages the property. The forest has been well-managed and represents a unique resource in many respects. It generates revenue for the CSF while its mature forests provide habitat for endangered species including northern spotted owl, marbled murrelet, and Coho salmon.

Declining timber revenues resulting from spotted owl and murrelet protections have led some to question whether the State would be better off selling the forest and investing the proceeds into the Common School Fund investment portfolio.

This report estimates the Elliott CSF forest's income value under two alternatives:

- **Continued State Ownership of the Elliott** *(Net Present Value of CSF Income)*:
    - At current harvest level……..……..$282 million
    - At expected harvest level under revised plan and HCP……$318 – 381 million

- **Sale of the Elliott and Investment of Proceeds** *(CSF Income from sale)*:
    - Range in sale value……... $265 – 489 million
    - Sale costs (HCP mitigation and transaction cost)……...$1 – 20 million
    - Range of net income…… $245 – 488 million

The forest's income value under continued state ownership was derived by estimating the net present value (NPV) of future annual income to the Common School Fund. Under the current forest plan's harvest of 27 million board feet (mmbf), annual future income is estimated at $14.2 million. Assuming a market value for the timberland of $489 million, the Elliott's current Return on Asset Value is 2.9 percent. However, the forest plan and HCP is under revision and it is anticipated that annual harvests will rise to between 30 and 36 mmbf as a result. If this occurs, annual CSF income will rise to between $16.0 and $19.6 million and Return on Asset Value would be 3.3 to 4.0 percent.

The forest's market value was estimated for four private ownership groups with differing investment characteristics. Valuations were developed for each ownership group under two management scenarios yielding eight values ranging from $265 to 489 million.

The highest valuation was for a Timberland Investment Management Organization (TIMO) under a high harvest scenario. TIMOs are organizations which manage timberland investments for a variety of institutional investors such as pension funds, endowments and foundations, as well as other clients. TIMOs have dominated the timberland marketplace for the last decade, acquiring 93 percent of major timberland transactions during 2002 – 2003. We would expect TIMOs to set the market price were the Elliott to be sold.

Our assumptions for private owners include termination of the current Habitat Conservation Plan and increased timber harvest in unoccupied owl and murrelet habitat. However, we assumed that one-third of the forest, mostly in older age classes, is unavailable for harvest due to the presence of endangered species or set-asides for riparian buffers and landslide and visual quality protection.

Costs include possible mitigation costs for terminating the Habitat Conservation Plan and transaction-related costs. The HCP mitigation cost is difficult to predict and would most likely be in the form of a habitat set aside. We have estimated this equivalent value of this to be no more than $10 million, either as a direct cost to the State or reduced purchase price from the land transaction. The sale transaction cost is estimated at $1.3 – $10.0 million.

After subtracting HCP mitigation and sale transaction costs, we estimate a net income of $245 to $488 million would be realized from the sale of the Elliott CSF timberlands.

The Net Incremental Benefit is the difference between the net income from the sale of the lands and the NPV under continued state ownership and is the measure of direct benefit to the CSF from the sale alternative. The following table summarizes the Net Incremental Benefit for the range of values estimated:

	Million Dollars	
	Min	Max
Net Incremental Benefit from Sale:		
Net Income from Sale	245	488
- Less NPV under State Ownership	381	282
Net Incremental Benefit to CSF from Sale of Forest	(136)	206

If the land was sold near the low end of the estimated market price range, the Net Incremental Benefit would be negative even if the State was unable to increase future timber revenues as a result of the current plan revision. If the land were sold near the high end of the estimated market value, the Net Benefit would be positive even under the more optimistic views of future revenue levels under continued State ownership.

Other economic benefits of sale of the forest to the private sector arise due to an expected increase in timber harvest from the property. These benefits include added employment in the lumber & wood products sector and general economy, additional state income and harvest tax receipts, and property tax receipts in Coos and Douglas Counties.

We estimate that the increased harvest volume would generate between 84 and 200 direct jobs in the Lumber & Wood Products sector. These would likely occur primarily through shift additions or incremental expansions at existing mills the Willamette Valley rather than in the Coastal region. These gains in employment and income may be off-set by losses in state government and recreation and tourism employment.

Indirect economic impacts are more difficult to determine. If patterns of spending an employment held constant, additional harvest on the Elliott would create between 100 and 200 additional jobs in sectors other than Lumber & Wood Products. The NPV of these economic effects, direct and indirect, over 50 years ranges from $215 to $404 million. However, a change in ownership may significantly affect expenditure and employment patterns so there is uncertainty surrounding these numbers.

Non-quantifiable benefits considered include Ecosystem Services and Social Benefits. Primary Ecosystem Services provided by the Elliott include air and water quality, fish and wildlife habitat, and soil stabilization. The primary impact of privatization of the Elliott would be a reduction in the provision of late successional forest conditions that provide nesting, roosting and foraging habitat for the northern spotted owl as well as suitable habitat for the marbled murrelet. The forest will be managed on shorter rotations where harvest is not prohibited by the occupancy by owls and/or murrelets. Species that favor early-successional stages, such as deer and elk, will benefit at the expense of those that favor late stages. The Elliott may provide less benefit as a source of northern spotted owls to re-populate surrounding federal reserves. However, we assume that a responsible private landowner would protect existing sites occupied by owls and murrelets under ESA regulations.

Social Benefits considered include Scenic Resources, Cultural Resources, Special Forest Products, Wood Products Sustainability, and Existence Value. It is difficult to predict how these benefits would be impacted under private ownership because private owners provide various levels of public access for recreation. We believe it is reasonable to assume some reduction of scenic and cultural resource benefits although these are protected by Forest Practices Act and other regulations.

The Elliott State Forest Common School Fund land represents a valuable resource to the State of Oregon and its people. Only some of these values can be expressed in dollars.

We provide a realistic range of values for the Elliott from the perspective of various types of private investors. We provide estimates of the economic impact of a change in ownership as well as observations on the likely effects of the more important non-market resources. MB&G hopes that this information is useful to the Board as it considers future plans for the Elliott forest.

1.0 Introduction

1.1 Background

The Elliott State Forest covers approximately 93,000 acres of coastal Douglas-fir forest in Oregon's mid-coast area of Coos and Douglas Counties. Ninety-one percent of the forest is owned by the Oregon State Land Board (SLB) and is managed as a trust asset of the Common School Fund (CSF) which benefits K-12 public schools statewide. The Department of State Lands (DSL) administers the program and the Oregon Department of Forestry (ODF) manages the property under contract to DSL.

At the DSL's budget hearing during the 2003 legislative session there was interest expressed by members of the Ways and Means Natural Resources Subcommittee in the idea of selling the common school forest lands within the Elliott State Forest and reinvesting the proceeds in the Common School Fund investment portfolio. The basic issue is "the belief that the lands are not producing to capacity, revenue-wise, due to the environmental constraints associated with state and federal endangered species law."[1] In passing out the DSL's budget the subcommittee directed the Board of Forestry and State Land board to provide a Cost-Benefit Analysis (CBA) comparing: (1) revenues to be gained from selling the Elliott State Forest and depositing revenues from the sale in the Common School Fund to earn interest from investments to (2) maintaining the forest and earning revenue from timber harvests.

In response to this request the Land Board, through the ODF, solicited proposals for completion of the cost-benefit study. In September, 2004, Mason, Bruce & Girard, Inc., a natural resource consulting firm in Portland, Oregon, was awarded the contract for developing the report.

1.2 Purpose

The purpose of this study is to analyze the implications of selling the CSF lands within the Elliott State Forest. It provides an estimate of the current value of the CSF timberland on the Elliott in today's market place, recognizing the effects of the federal and state Endangered Species Acts and other state and federal laws. The study discusses financial rate of return and other factors that would be considered by different types of private management entities in developing a valuation of the Elliott CSF lands. In addition to direct financial implications, it includes a discussion of indirect economic impacts as well the non-market costs and benefits of each alternative. With regard to the non-market costs and benefits, a qualitative analysis is provided where quantitative economic values are not easily derived.

1.3 Scope

Given the introductory comments and the purpose of this project above, Mason, Bruce & Girard, Inc. (MB&G) prepared this study with the following scope:

> *MB&G will estimate a current value for the Elliott (CSF timberlands only) under current proposed operating plans, i.e., a new Habitat Conservation Plan and a new Forest Management Plan. MB&G will also prepare estimated values for different private entities as noted above based on our knowledge of expected returns, management strategy, length of ownership, rotation lengths, etc. These values will all be summarized and compared. A list of assumptions used for each of these valuations will be included in this report.*

1.4 Description of Elliott State Forest

1.4.1 Physical Description

The Elliott State Forest is located in the Oregon Coast Range in Coos and Douglas Counties (Figure 1.1). The forest is comprised of a large, contiguous block of approximately 93,000 acres with an additional 4,000 acres of scattered CSF lands. These state-owned lands are administered by two state agencies. Ninety-one percent is owned by the State Land Board and nine percent by the Board of Forestry (BOF). We are examining the 84,000 acres of CSF land only in this analysis.

The land is cut by a myriad of streams and knife-edged ridges creating a steep landscape. ODF has done an impressive job of managing the Elliott with a well constructed and maintained road system, excellent reforestation results over difficult terrain, and a well distributed mosaic of stand ages from recent clearcuts to 160 year and older timber stands. Many of the older stands have been commercially thinned over the years significantly increasing the growth rates in these stands and resulting in a high volume per acre on fewer larger, high quality trees.

According to the ODF inventory, the total merchantable timber inventory on the Elliott is about 2.7 billion board feet. The inventory on the CSF portion of the Elliott is 2.4 billion board feet (see Table 2.1).

1.4.2 History of Management under State Ownership

The Elliott holds the honor of being Oregon's first state forest, officially established in 1930. Two catastrophic events in the last 150 years have shaped the forest of today; the Coos Bay Fire of 1868 and the Columbus Day Storm of 1962. The Coos Bay Fire burned 90 percent of the present day forest and a total of 300,000 acres in the area. The Columbus Day Storm blew down an estimated 100 million board feet of timber, primarily

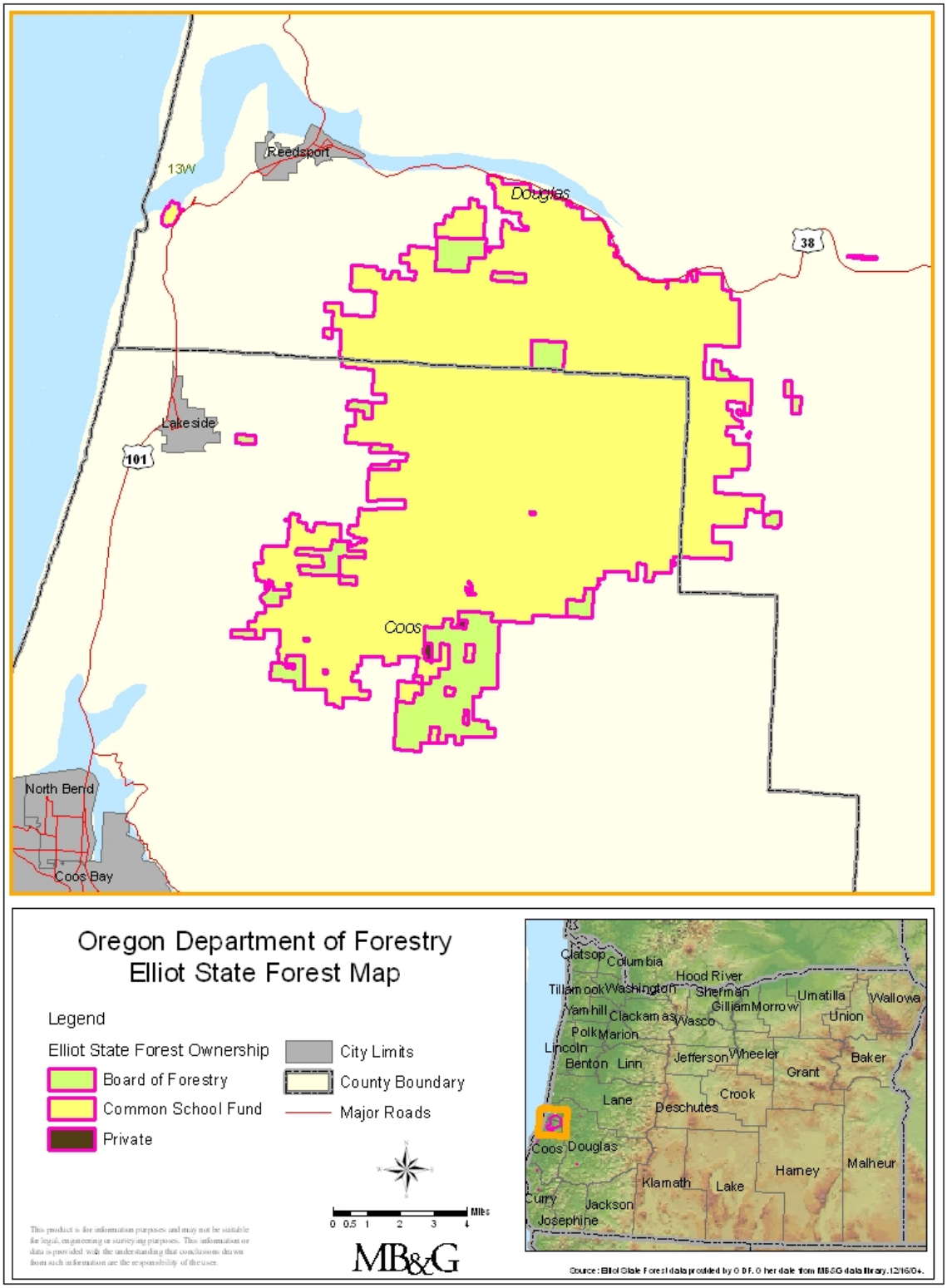


Figure 1.1 – Elliott State Forest Location Map.

in the western half of the forest. The road system on this portion is a result of the efforts to salvage as much of the timber as possible. A majority of the timber stands in the forest are 90 to 160-plus years old.

The forest has been managed by the ODF since its inception and was originally designed to be managed as a demonstration forest for private landowners, to show the value of investing in forest management. By the 1950's timber management became a higher priority and in 1955 the Oregon Legislature created a revolving fund for monies collected from the Common School Fund Land timber sales on the Elliott.

In addition to the economic benefits, the Elliott also provides recreational opportunities and as ODF continues to learn more about non-timber resources it is taking the precautions necessary to protect those species that live in the forest.

1.4.3 Common School Forest Lands

The State Land Board currently manages about 2.3 million acres of land in Oregon for the CSF. Of this about 133,000 acres is forest land. The Elliott makes up the bulk of this. These forest lands are managed for the DSL by ODF to produce income for the CSF as mentioned above. Annual revenues from timber sales are not directly distributed to school districts in the same year. Instead, revenue from forest lands is invested into the CSF. Over time, returns from the CSF investments are distributed to school districts across the state.

Table 1.1 summarizes CSF revenues from all Common School Fund forests over the last five years. Actual Revenue Transfer to CSF is the amount of money that the Department of State Lands (DSL) transfers to the CSF from timber and forest product sales.

Table 1.1 - Common School Fund Income from all forests.

Fiscal Year	Actual Revenue Transfer to CSF	Million Board Feet Harvested
2000	$24,377,943	49.7
2001	$16,787,101	36.6
2002	$13,671,493	29.6
2003	$8,550,000	24.3
2004	$15,360,073	

1.4.4 Board of Forestry Lands

Through the ODF, the Oregon Board of Forestry manages the remainder of the state's public forestland ownership. These lands comprise about 647,000 acres and are managed to provide social, environmental, and economic benefits to Oregonians. Approximately 9,000 acres of Board of Forestry Lands are included in the Elliott.

1.4.5 Long-term Management Plan

In 1990, the U.S. Fish and Wildlife Service listed the northern spotted owl as a threatened species. This led the ODF to conduct intensive surveys for owls on the Elliott and take steps to protect spotted owl habitat. These actions had a substantial impact on the timber sale program. In December 1991, the State Land Board passed a motion initiating a new long-range management plan for the Elliott.

ODF was directed to work with DSL and the Oregon Department of Fish and Wildlife and other state agencies to develop the plan. It was stipulated that the plan must depart from the circle management of spotted owls, address the entire forest ecosystem, and be consistent with the timber management contract between DSL and ODF. The result was the 1995 Elliott State Forest Management Plan: a comprehensive, integrated forest management plan that takes into account a wide range of forest values including timber, threatened and endangered species, wildlife, fish, water quality, recreation and other resources.

The forest is currently in the midst of another round of strategic planning. A draft plan was made available for public comment in 2004. The planning process also entails revisions to the Habitat Conservation Plan described in the following section.

1.4.6 Habitat Conservation Plan

In 1994, in order to comply with federal and state Endangered Species Acts, ODF applied for and received an incidental take permit (ITP) for northern spotted owls (a 60-year term) and marbled murrelets (a six year conditional term). Incidental take is defined as the result of removing habitat for a particular species in the course of undertaking management activities. An ITP accepts some risk of short-term jeopardy to species or habitat in exchange for the likelihood of a better outcome in the long-run.

The HCP was negotiated to end the logjam that had brought timber harvest to very low levels in the early 1990's after the listing of the spotted owl. In exchange for the ITP which allowed harvest of suitable habitat, the state agreed to create more nesting, roosting & foraging habitat elsewhere on the forest over time, creating a variety of habitats that allowed timber harvest while protecting the endangered species.

The ODF is revising this HCP to provide for multiple species on the Elliott. Critical to this effort will be an ITP for murrelets over a 50 or 60 year period which will lead to a harvest level that more closely matches the Elliott long-term growth potential. The Elliott is "murrelet rich" putting the managers of the Elliott in the challenging position of a "take-avoidance" strategy for murrelets in order to harvest timber. This means that they must survey for murrelets prior to all timber sales rather than

having the safety net of the ITP. When murrelets are found, the sale must be altered in favor of maintaining habitat.

1.4.7 Current Uses

The Elliott is currently used for the growing and harvesting of high quality timber as well as picnicking, camping, fishing, hunting (deer and elk) and other woods-type recreation. It is also used to grow and enhance wildlife habitat, particularly for the northern spotted owl and marbled murrelet and for fish habitat protection. It has an important role in the conservation of the endangered northern spotted owl, serving as a geographic link between late successional reserves on surrounding federal lands and providing a source to re-populate those areas over time.

1.4.8 Potential for Timber Production

A useful benchmark for putting harvest levels in context is the maximum timber production potential of the forest if all lands were available for harvest. Our estimate of the biological potential of the 84,000 acres of CSF land is 65 million board feet annually. We estimated from this our forest model by finding the harvest level that maintains the current inventory level for 50 years. This represents a growth rate of 770 board feet per acre per year, which seems reasonable for the region given the age of the forest.

1.4.9 Timber Markets

Timber markets in the region surrounding the Elliott are robust, providing many outlets for the timber harvested from the forest. There are 19 sawmills, eight plywood and two veneer mills operating in the three county area of Douglas, Coos and Lane counties. The estimated annual log usage at these mills is 1.4 billion board feet. Tab 1 in the Appendix document provides a list of these mills.

2.0 Study Methodology

2.1 Benefit-Cost Analysis Overview

A Cost-Benefit Analysis (C-BA) estimates and totals up the equivalent monetary value of the benefits and costs of a project or operation to establish whether it is worthwhile. As far as possible, values must be expressed in common units so that a direct comparison of costs and benefits of the alternatives can be made. In the case of this analysis, monetary values will be expressed in today's dollars using a discounted cash flow (DCF) model. Non-monetary or non-economic costs and benefits are also important considerations. However, it is not always possible to put monetary worth on all values, particularly for environmental projects that have significant non-market benefits and costs. Where it is not possible, qualitative impacts are described so that policy-makers can weigh them in the decision process.

2.2 Point-of-View

The Point-of-View of a cost-benefit analysis defines what costs and benefits are considered – whose costs and benefits are being assessed. It is obvious that a cost from one person's or group's point of view can be a benefit from another's. For example, from the point of view of a government agency, increased tax revenue can be considered a benefit; however, from the point of view of a taxpayer faced with additional taxes, the tax is certainly viewed as a cost.

MB&G is approaching this C-BA from two distinct point-of-views. First, from the fiduciary point of view of the State Land Board, the most relevant financial criteria is the comparison of income to the CSF between alternatives. The SLB has a fiduciary responsibility as trust manager to "manage and protect these lands for the maximum, long term benefit of the public schools, consistent with sound stewardship, conservation and business management principles."[2] The analysis will compare the present value of future income to the CSF under continued ownership and management by the state versus a one-time lump sum payment to the CSF resulting from the sale of the Elliott State Forest.

In addition to the SLB fiduciary point-of-view, we will examine the broader point-of-view of the state government in general. State government in general has the responsibility to consider issues beyond revenue maximization. The Land Board is not required to maximize present income without regard to other considerations. Rather, the SLB's duty is to maximize the value of, and revenue from, Trust Lands over the long term. The state government also has an interest in the indirect economic and non-economic impacts of this decision on the citizens of the state. For example, property tax revenues to counties may be impacted by this decision and this is relevant from the point-of-view held by state government. Impacts on employment and incomes are relevant from this

viewpoint. Likewise, non-economic benefits and costs are considered under this point-of-view.

2.3 Methodology

We are using elements of standard appraisal methodology to develop a valuation of the Elliott. However, this report should not be interpreted as a complete appraisal subject to the rigorous standards of the Uniform Standards for Professional Appraisal Practice. The general approach we have used is consistent with industry practice for preparing offers for timberland purchases, with the exception that data has not been independently verified. As is the industry practice, we have constructed a discounted cash flow (DCF) model which projects future cash flows and calculates the Present Net Value of the property. The spreadsheet-based model of the forest simulates harvest, growth and age class transitions for a 50-year period along with an integrated financial model of the forest. In our opinion, the model is sufficient for the purposes of providing a valuation only. It is not a model that is sufficiently detailed to produce an operational forest plan.

A comparable sales analysis, which is a second common method of timberland valuation, was not conducted for this study. Several unique aspects of the Elliott, including the age class distribution heavily weighted to stands older than 100 years, the associated high timber volume per acre, as well as the abundance of northern spotted owls and marbled murrelets, in our opinion make it unlikely that any timberland sales would be found that are more similar than dissimilar.

Analysis of other costs and benefits was synthesized from a review of literature and other sources as described in the text.

2.4 Data Sources

A full appraisal of the property would require independent verification of all critical data including the acreage and timber inventory. Due to time and budget limitations as well as the intended purposes of the report, an independent verification of data was not conducted by MB&G. Although we did conduct a site visit of the property, we relied on ODF data for the analysis. We have assumed that ODF data on total acreage, acreage by various land classes and the timber inventory accurately characterize the forest.

The merchantable timber inventory used in our analysis is summarized in Table 2.1. Since the new stand-based inventory system is not yet complete on the Elliott, our initial inventory is a blend of the new Stand Level Inventory (SLI) and the old Ownership, Site, Cover, Use, and Recommendations (OSCUR) inventory. The SLI data includes a strata classification for each stand based on cover type, size class and stocking class. Our initial inventory for each stand was based on the average inventory for measured stands in the same strata. Age for

each stand was taken from the OSCUR database. Stand inventories and acres were then summed by 10-year age class.

Table 2.1 - Initial inventory on Common School Fund portion of Elliott State Forest.

10-Year Age Class	Gross Acres	Inventory (million board feet)				
		Douglas-fir	Whitewoods	Cedar	Hardwood	Total
Bare Land	829					
1-10	3,536	7	0	0	1	9
11-20	8,671	20	1	0	5	25
21-30	15,008	69	3	0	11	82
31-40	7,747	94	4	0	16	114
41-60	2,525	43	4	0	21	68
51-60	586	24	11	0	18	54
61-70	360	62	6	1	18	87
71-80	934	119	3	1	16	139
81-90	673	171	4	0	14	189
91-100	2,765	250	4	1	14	269
101-110	7,780	352	5	0	15	372
111-120	14,042	446	7	2	23	477
121-130	12,141	276	4	0	15	294
131-140	3,701	96	1	0	5	103
141+	2,849	84	2	2	5	92
Total	84,148	2,112	58	8	196	2,374

MB&G also obtained from ODF two alternative geographic information system (GIS) coverages which were developed for the on-going forest planning process for the Elliott. These GIS databases represent alternative models of how the forest would be allocated among various land uses such as riparian buffers, northern spotted owl and marbled murrelet habitat, other reserves, and timber production.

ODF's "Model 9" coverage was used as the basis of our valuation under continued ownership and management by the state. Model 9 represents the anticipated direction of management by the ODF under a new forest management plan and features emphasis on structure-based management to provide complex older forest structures valuable as wildlife habitat.

MB&G used the "Model 6" coverage as the basis for its land classification assumptions under the private ownership scenarios. Model 6 was described by ODF staff as being representative of the land allocations made under the 1995 HCP and in our opinion is a reasonable starting point for a private acquisition analysis.

Analysis of these coverages allowed us to develop alternative management strategies and estimate the acreage by age class of timberland available for timber production as well as its associated timber inventory. The area of Reserved Forest area by age class, representing the portion of the forest that will not be harvested, was also estimated in this manner.

2.5 Key Assumptions

This type of analysis unavoidably involves a number of assumptions. We describe key assumptions in the body of the report and have included detailed assumptions and model results under the various tabs in a separate appendix document.

Although there are industry-standard approaches to timberland valuation, there is always much uncertainty and subjectivity in the process. Each potential bidder has differing goals and objectives and these vary widely within private ownership types as well as between them. In order to complete this assignment, we have made certain assumptions about each type of private landowner that we believe are representative of that type, but they are not cast in stone. This should provide the SLB with the opportunity to compare relative values and provide the knowledge needed to make decisions regarding the management of the Elliott.

3.0 Alternatives Evaluated

3.1 Base Case – Continued State Ownership of the Elliott

Under the Base Case, the CSF lands in the Elliott State Forest are maintained under state ownership and continue to be managed to provide annual income for the Common School Fund. The Base Case is described in Chapter 4.

3.2 Alternative Case – Sale of the Elliott and Investment of Proceeds

Alternative A is the sale of the Elliott to a private sector buyer followed by investment of the sale proceeds by the SLB into other assets such as stocks and bonds for the benefit of the Common School Fund. Alternative A is described in Chapter 5.

4.0 Base Case – Continued State Ownership of the Elliott

4.1 Introduction

Under the Base Case, the CSF lands in the Elliott are maintained under state ownership and continue to be managed to provide annual revenues for the Common School Fund.

The future timber harvest level is the critical factor in determining a value of the CSF lands under the Base Case. The on-going forest planning effort for the Elliott lends considerable uncertainty to predicting future harvests and resulting income flows to the CSF. In this report, we approximate the likely outcome of the planning effort, and re-negotiation of the HCP, based on input from ODF personnel actively involved in the process. The average annual harvest on the CSF portion of the Elliott between FY1997 and FY2004 was 27 mmbf. The Coos District Forester estimates that the new Elliott plan will result in a harvest level of between 30 and 36 mmbf on the CSF portion of the forest.[3] Therefore, we will assume this range of harvest level and provide a corresponding range of annual income to the CSF. Once the planning process is completed, it would be a simple matter to update the analysis based on the new forest plan.

This chapter describes the management scenario we have assumed for the Elliott under continued state management. From this, we develop a cash flow model to predict future income to the Common School Fund.

4.2 Management Scenario

4.2.1 Land Classification

As discussed in Chapter 3, we obtained GIS data from the ODF representing various management scenarios being modeled under the Elliott forest planning process. "Model 9" was used as the basis of our valuation under continued ownership and management by the state. Model 9 represents the anticipated direction of management by the ODF under a new forest management plan[4] and features emphasis on structure-based management to provide complex older forest structures valuable as wildlife habitat.

It should be understood that this land allocation as well as the DCF model is a simplification of a complex spatial model the ODF is using to produce the new forest plan for the Elliott. We believe the model is adequate for appraisal purposes in which the focus is estimating the future cash flow for the forest.

From the Model 9 GIS coverage we calculated net forested acreage (excluding roads) by 10-year age class for various classifications of land

designated by the ODF. We assigned each acre to one of three land use classifications.

Reserved Forest

The following areas were assigned to the Reserved Forest category from which no timber harvesting occurs:

- Riparian Special
- SUV (Steep, Unique, Visual)
- T&E Core

The Riparian Special classification includes all acres in the stream bank zone and inner riparian zone. SUV acres include steep, unique or visual areas which have been administratively withdrawn from harvesting because of site-specific conditions. T&E Core areas include areas identified as habitat occupied by northern spotted owls and/or marbled murrelets.

A total of approximately 22,000 acres, 27 percent of the forest, was assigned to Reserved Forest.

Structure-Based Management

A second land class, Structure-Based Timber Management, will be managed primarily through commercial thinnings with the goal of providing a certain amount of older, complex forest structures in each watershed basin across the forest. The following lands were included in this class:

- Riparian Focused
- 20,500 acres of other non-reserved lands

The Riparian Focused category includes land in an outer riparian buffer along streams and water bodies. The ODF's Model 9 scenario calls for an additional 23,000 acres of otherwise non-reserved land to be managed using structure-based management. Since the CSF lands represent approximately 90 percent of the Elliott, we assumed the share of this "Complex Target Outside Reserves" coming from CSF lands would be 20,500 acres. We further assumed that this would come proportionally across the age class distribution from the remaining unreserved acres. Total land placed in the Structure-Based Management classification is approximately 40,000 acres or 48 percent of the forest.

Even-Aged Management

The remaining land, approximately 20,000 acres or 25 percent of the forest, was assigned to the Even-Aged Timber Management category. From this category our forest model applied regeneration harvests on an oldest-first basis. These stands are reforested following final harvest and remain in the Even-Aged management category in subsequent rotations.

Table 4.1 details the land allocation assumptions made for the Base Case analysis.

Table 4.1 - Land allocation assumptions for the Base Case.

				ODF DESIGNATIONS					FINAL LAND CLASSIFICATION		
AgeClass	Total	Road Right-of-Way	Net Forested	Riparian Special	Riparian Focused	Non-Riparian Admin. Removed (SUV)	Non-Riparian, Non-SUV T&E Core	Complex Target Outside Reserves*	Reserved Forest	Structure-Based Timber Mgt	Even-Aged Timber Mgt
						Acres					
0	829	16	814	74	195	9	6	265	89	461	264
1 - 10	3,536	98	3,438	303	792	13	22	1,158	339	1,949	1,150
11 - 20	8,671	241	8,431	1,134	2,420	109	182	2,300	1,425	4,721	2,285
21 - 30	15,008	404	14,604	2,009	4,002	228	264	4,064	2,501	8,066	4,036
31 - 40	7,747	246	7,501	1,108	1,787	359	235	2,013	1,702	3,800	1,999
41 - 50	2,525	66	2,459	343	527	84	80	715	507	1,242	710
51 - 60	586	12	574	104	95	7	54	158	165	252	157
61 - 70	360	9	351	71	67	11	43	80	125	147	79
71 - 80	934	18	916	151	191	4	28	272	183	463	270
81 - 90	673	9	664	93	117	12	81	181	186	298	180
91 - 100	2,765	50	2,715	382	548	78	304	703	765	1,251	699
101 - 110	7,780	111	7,669	1,165	1,684	554	917	1,680	2,636	3,364	1,668
111 - 120	14,042	228	13,813	1,835	2,918	513	1,767	3,401	4,116	6,320	3,378
121 - 130	12,141	186	11,955	1,752	2,619	885	1,637	2,540	4,274	5,159	2,522
131 - 140	3,701	63	3,638	501	737	391	808	603	1,700	1,340	599
141+	2,849	65	2,784	404	539	415	695	367	1,514	906	364
Total	84,148	1,822	82,326	11,431	19,239	3,673	7,125	20,500	22,228	39,739	20,359
% of Total	100.0%	2%	98%								
% of Net Forested			100%	14%	23%	4%	9%	25%	27%	48%	25%

4.2.2 Timber Yields

Under a separate contract with ODF, MB&G is developing timber yield tables for the Elliott and other state forests as part of the agency-wide forest planning project. The yield tables developed for the Elliott provided the basis for yield assumptions used in this analysis. Yields from commercial thinnings in the Structure-based Timber Management land class were developed from an analysis of an array of thinning prescriptions and represent average per acre yields expected from thinnings by age class over time. Yields for the Even-Aged Timber Management land class were developed from yield tables with no commercial thinning. Yields by cover type, stocking level and site class were averaged into general age class-based yield tables using acre-weighted averaging. Timber yields are shown in the model details in the Appendix document.

4.2.3 Future Harvest Level

As stated in section 4.1, a likely range in future harvests from the CSF portion of the Elliott is 30 – 36 mmbf. In the description below, we assume a mid-point harvest of 33 mmbf.

During the first decade of the model, one-third of the harvest comes from the area designated for Structure-Based Management land class. Over a 50-year period, approximately 35 percent of the harvest comes from the Structure-Based Management with the remaining volume coming from the Even-Aged Timber Management land class.

The timber inventory on the Even-Aged Timber Management portion of the forest is slowly drawn down as older stands are converted to new plantations and managed on a shorter rotation length. Inventory on this portion of the forest declines from 664 mmbf in 2005 to 503 mmbf in 2055 as this conversion is made. Harvest volume from the Structure-Based Management land class comes entirely from thinnings and averages 280 bd.ft./acre/year during the first decade. Because harvest is less than growth, the inventory increases 77 percent from 1.1 Bbf in 2005 to 1.9 Bbf in 2055. Inventory on Reserved Forest increases 93 percent; rising from 668 mmbf in 2005 to 1.3 Bbf after 50 years. Figure 4.1 illustrates the change in inventory projected by the model.

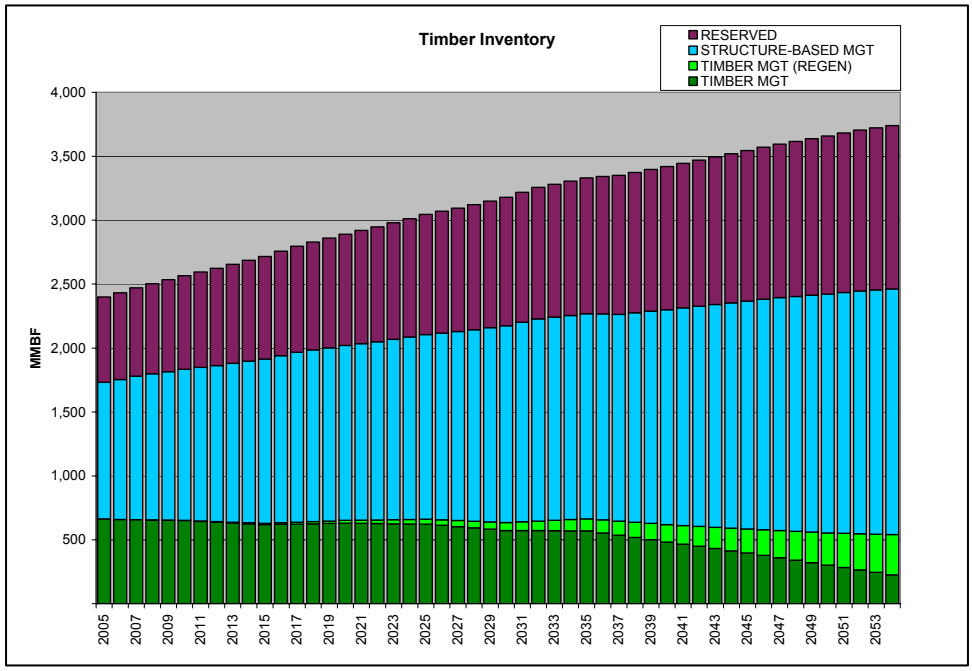
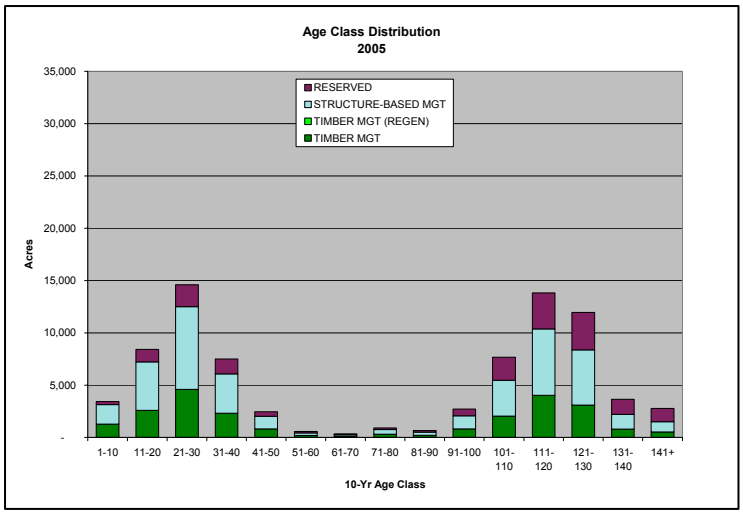
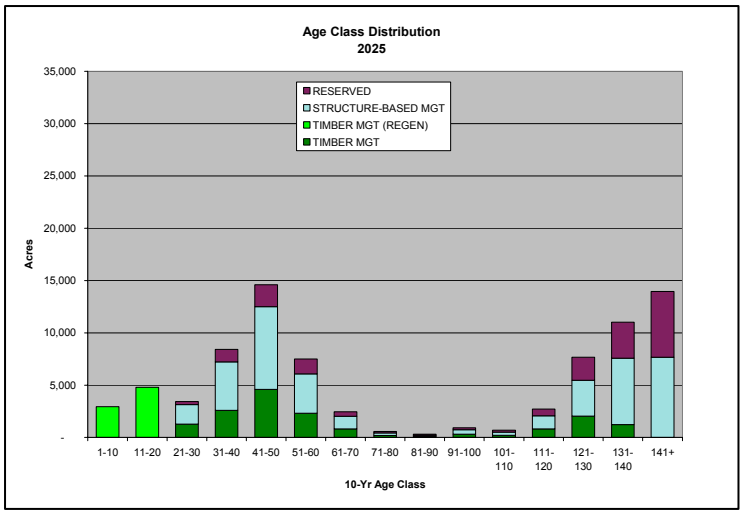


Figure 4.1- Projected inventory by Land Class under the Base Case.

The age class distribution evolves over time as shown in Figure 4.2. The initial bi-modal age class distribution ages over time and more acres in the Reserved Forest and Structure-Based Management land classes accumulate in the 140+ age class. After 50 years, over 31,000 acres in the Reserved and Structure-Based Management classes are older than 140 years. The Timber Management land class meanwhile is subject to final harvests. The average age of these stands decreases over time as





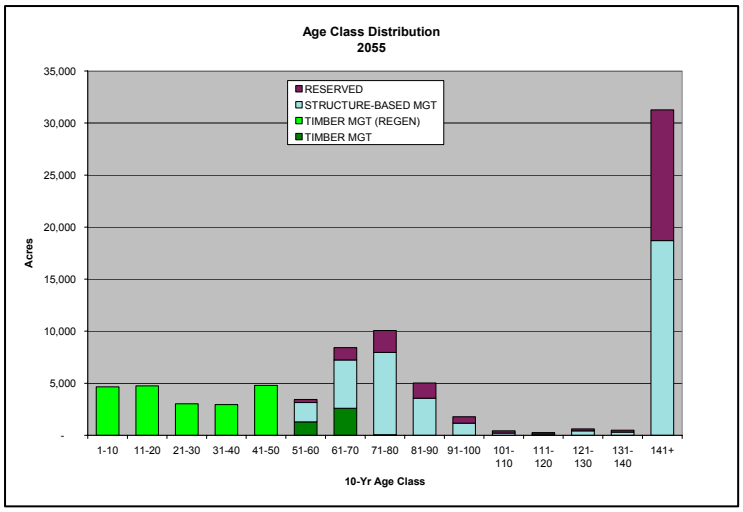


Figure 4.2 - Projected age class distribution in 2005, 2025 and 2055 under the Base Case.

older stands in this class are regenerated. After 50 years, few acres are older than 70 years in this class.

Details of the forest model assuming a 30 and 36 mmbf harvest are provided in Tabs 3 and 4 of the Appendix document.

4.3 Other Assumptions

4.3.1 Revenues

4.3.1.1 Log Prices

Estimated delivered log prices were developed from an analysis of market prices reported by the Oregon Log Market Report, Log Lines Price Reporting Service, Pacific Rim Wood Marketing Report, and internal sources. Additionally, we reviewed prices reported for ODF timber sales on the Coos District as reported by Timber Data Company. The analysis takes into account the expected product distribution by log grade based on recent ODF harvests, as shown in Table 4.2.

Table 4.2 - Distribution of harvest by log grade for the Base Case.

Species Group	Log Grade	Percent Of Harvest
Douglas-fir	3P	5%
	SM	11%
	2S	60%
	3S	21%
	4S	3%
Whitewoods	2S	32%
	3S	50%
	4S	18%
Cedar	CR	100%
Red Alder	2S	33%
	3S	47%
	4S	20%

Logging cost assumptions are based on an analysis of ODF costs as reported by Timber Data Company. These take into account the expected mix of commercial thinnings and clearcuts. Haul costs take into account the historic proportion of sales delivered to the Coos Bay and Willamette valley markets.

Delivered log prices, logging costs and the resulting stumpage values used in this analysis are presented in Table 4.3. The assumed distribution of harvest by species is based on the proportional representation in the

inventory. Ninety-five percent of the harvest volume is Douglas-fir which mirrors the percentage of Douglas-fir on the forest as a whole.

Additional data supporting log price assumptions is provided under Tab 2 of the Appendix document.

Table 4.3 – Delivered log prices, logging & hauling cost and stumpage rates for Base Case.

Species Group	Delivered Log Price $/MBF	Logging & Hauling Cost $/MBF	Stumpage Rate $/MBF
Douglas-fir	$825	$195	$630
Whitewoods	$585	$200	$385
Cedar	$880	$270	$610
Red alder	$695	$210	$485

4.3.1.2 Other Revenues

We are not aware of any significant non-timber income produced on the Elliott and have assumed in this analysis that there will be no material non-timber revenue in the future.

4.3.2 Costs

4.3.2.1 Silvicultural Costs

Silvicultural costs for the establishment of regenerated stands along with the age of treatment and assumed percentage of regeneration needing each treatment are shown in Table 4.4.

Table 4.4 - Stand establishment costs and schedule for Base Case.

Treatment	Age	Percent of Regen Acres	Cost $/Acre
Site Preparation & misc.	0	100%	$220
Tree Planting	0	100%	$180
Animal Control	0	75%	$45
Brush Control	1	100%	$60
Brush Control	2	50%	$60
Pre-commercial Thinning	10	85%	$100

Silvicultural costs on a per acre basis on the Coos District lands averaged $3.15/acre in the mid-1990s. Silvicultural costs on all CSF land managed by the ODF were $3.33 per acre in FY2002.[5] The costs listed above were calibrated to result in average silvicultural expenditures in the DCF model of $3.24 per acre during the first five years, so these costs in aggregate are close to recent actual expenditures.

4.3.2.2 Other Costs

Other management costs are described in Table 4.5. County property taxes are not assessed on the Elliott as public forestlands are exempt from this tax. However, the Forest Product Harvest Taxes are due based on volume harvested whether the property is publicly or privately owned.

Table 4.5 - Other management cost assumptions for Base Case.

Description	Basis	Cost
Property Tax	$/acre/year	$0.00
Administration	$/acre/year	$24.50
Legal, inventory	$/acre/year	$1.50
Road Costs (fixed)	$/acre/year	$1.50
Road Costs (variable)	$/mbf harvested	$2.00
Forest Prod. Harvest Tax	$/mbf harvested	$2.95

A recent review of management of the Elliott CSF lands reports that management costs, including direct expenditures by the Coos District and Salem overhead, averaged $2.8 million annually between 1998 and 2002.[6] Fiscal Year 2004 data provided by ODF indicates direct expenditures on the CSF portion of the Elliott of just under $2 million. To that we added a proportional share of overhead costs from the Salem headquarters of $712,000 for total direct and indirect expenses of $2.7 million. This equates to an average expenditure of $32.00/acre over the first five years of the DCF model.

4.3.3 Income to the Common School Fund

Over the last 7 fiscal years, the average harvest from the Elliott CSF lands has been 27 million board feet. This yields an annual income to the CSF of $14.2 million using our assumptions on prices and costs.

Assuming an annual harvest of 33 million board feet is achieved as a result of the on-going planning revisions, income to the Common School Fund would rise to $17.8 million dollars annually. As previously discussed, there is a range of uncertainty regarding the final harvest levels that will result from the on-going planning process. A range from 30 to 36 mmbf annually is predicted by ODF staff. Harvest at the low end of this range would return $16.0 million to the CSF annually. Harvest at the high end of the range would bring $19.6 million into the CSF.

The Discounted Cash Flow models assuming 30, 33 and 36 mmbf harvests are available in Tabs 5 – 7 of the Appendix document.

5.0 Alternative Case – Sale of the Elliott and Investment of Proceeds

5.1 Introduction

A major objective of this study is to estimate the value of the Elliott State Forest Common School Fund timberlands in today's timberland marketplace. The goal of the analysis is to provide a reasonable range of sale prices that could be expected in the event that the State Land Board chooses to pursue sale of the timberlands. Should the DSL chose to retain the forest this analysis provides a useful benchmark by which to evaluate the financial performance of the CSF asset.

In order to make this assessment, a set of assumptions including expected rate of return, likely management strategies and other factors was constructed for each of four private forest management entities representing potential buyers of the property. The four types of entities considered are:

- Timberland Investment Management Organization (TIMO)
- Real Estate Investment Trust (REIT)
- Medium-sized Forest Products Manufacturer
- Large, Integrated Forest Products Company

These four types of private entities represent an array of potential private bidders that may be interested in acquiring the Elliott in the event that it was sold. Because they have significantly different organizational and investment characteristics, it can be expected that each type would value the Elliott differently.

It is important to recognize that we are not attempting to portray any particular individual private firms. Any potential bidder for timberland property will have its own unique set of assumptions, conditions and factors which enter into the decision of whether to bid and how much to bid on a particular timberland property. These are likely to differ significantly even between firms of the same type. For instance, two TIMO's may value the same property differently because of different rate of return expectations of their clients, divergent opinions on future timber markets, different viewpoints on how the forest is best managed in the future, how the asset fits with other timberlands they own, and many other considerations. The generalizations of groups of potential buyers presented here are drawn from MB&G's experience in working with a variety of private companies. Where possible, we have consulted relevant literature to guide our analysis.

In the following sections, each private ownership category will be described along with a brief discussion of its unique investment characteristics, considerations and our key assumptions regarding the ownership.

5.2 Private Timberland Ownership Categories

5.2.1 Timberland Investment Management Organization

Management of timberland by timberland investment management organizations (TIMOs) has increased dramatically since 1990, spurred by the widespread divestment of timberlands by integrated forest products businesses as well as changes to laws governing pension funds which encourage diversification of portfolio holdings. Institutional investment in timberland increased from about $1 billion in 1989 to an estimated $11 – 12 billion in 2002. TIMOs currently manage an estimated ten million acres of timberland, including holdings in the U.S. and internationally.[7] There are an estimated 120 institutional timberland investors, of which about 75 percent are public and private pension funds.[8]

TIMOs are private entities which manage timberland assets for institutional clients such as pension funds, endowments, trusts, and other investment entities, as well as for high net worth families and individuals. TIMOs typically do not own the timberlands they manage. They provide management services to their clients including the acquisition, management and divestiture of a portfolio of timberlands owned by the client.

TIMOs and their clients generally do not operate wood manufacturing facilities. Timber from land managed by TIMOs is most often sold on the open market. Long-term supply agreements for a portion of their production are often arranged with nearby mills but these are generally tied to open market prices. Because of their relative independence from manufacturing facilities, it is generally held that TIMOs benefit from the ability to market their timber products in ways that increase returns over those of integrated manufacturers.

Timberland investments by institutional investors are generally a portion of a diversified portfolio of assets and are managed to provide a financial return from the revenues generated by on-going management as well as appreciation of the asset's value during the life of the investment. Acquisitions are generally financed entirely with equity.

The investment life varies considerably depending on the investor but generally range from eight to 15 years.[9] Closed-end funds require that the property be sold at the end of a pre-determined investment term in order to capture any appreciation in property value during the investment and return principle to the investors. However, other forms of investment do not require that the property be sold at the end of the investment term. Partial sales of the asset often occur during the life of the investment. This is especially true of parcels identified as having Higher and Better Use values that are higher than their value for timber production.

Institutional investors such as pension funds are generally tax-exempt entities; hence there is no tax on income earned on timberland investments. This provides these entities with an advantage over taxable entities when competing for a timberland acquisition opportunity. The lack of tax burden results in a lower required rate of return than would otherwise be the case, implying higher valuations and bids.

The target rate of return, or discount rate, of timberland investments varies with the investor, the risk profile and characteristics of the timberland, and other factors. Expected rates of return are key to making competitive bids for timberland acquisitions and are not normally disclosed by investors. One analyst has estimated that the real discount rate for timberland investments by the investment community has ranged between 5.8 and 8.5 percent between 1990 and 2002.[10] Because timberland returns have declined over the last five years, we believe return expectations and hence discount rates have declined as well. In this analysis we will assume a discount rate of 7.5 percent for the TIMO buyer category. This is a real return, net of inflation.

5.2.2 Real Estate Investment Trust

A Real Estate Investment Trust (REIT) is a specialized investment entity that owns and manages a pool of commercial properties, mortgages and other real estate assets. Most REITs invest in commercial real estate such as shopping malls, office buildings and the like. Few have ventured into timberland investments. The only two publicly-traded timberland REITs are Plum Creek Timber Company and Rayonier, Inc. Plum Creek holds approximately eight million acres of timberland in the U.S. Rayonier owns two million acres of timberland in the U.S. and New Zealand.

REITs are tax-advantaged forms of real estate ownership in which most of the earnings are passed to the owners/shareholders as dividends. Income is not subject to tax at the corporate level. REIT shareholders pay tax at the individual level on dividends received from the REIT at the reduced rate for capital gains. REIT ownership shares may be publicly traded like stocks or may be held by a group of investors as a private REIT.

Timberland REITs can be considered a special form of institutional investor and as tax-exempt entities probably view timberland investment from a similar vantage point. One exception is the term or length of investment. Because REITs own and manage timberland as their core business, it is likely that they will tend to hold properties for a longer period of time than an investment entity that holds timberland as part of a diversified financial portfolio. Although there has been only limited real world experience with timberland REITs, we have assumed in this analysis that REITs have an investment horizon of 25 years.

We have also assumed that REITs have a higher real discount rate compared to institutional investors. This is due to our belief that REITs would be more likely to use some form of debt financing to fund any significant timberland acquisition. In this analysis we are assuming 8.5 percent as the discount rate for REITs.

5.2.3 Medium-sized Forest Products Manufacturer

Another type of potential buyer of the Elliott State Forest timberlands is the mid-sized forest products company. Typically, these corporations own from one to half-dozen or so regional solid wood manufacturing facilities and may own timberland as a source of raw material. They may be either publicly or privately owned. There are a small number of such companies with mills within hauling distance of the Elliott already and potentially others who may be interested in constructing a mill in the vicinity.

A corporate tax burden combined with the probability of at least partial debt-financing of the timberland purchase would result in a higher discount rate compared to the TIMO or REIT ownership class. Therefore, we will assume a 9.0 percent rate for this analysis. We also believe that the investment horizon of an entity with capital invested in manufacturing facility would be longer than for financial players and have therefore assumed a 50-year investment period for this buyer category.

5.2.4 Large, Integrated Forest Products Company

A final type of private ownership is a large, integrated forest products company. This type of owner typically has a large number of manufacturing facilities including both paper and solid wood mills, across the U.S. and possibly internationally. This owner often owns and manages more than a million acres of timberland to support its manufacturing operations. It is typically but not always a publicly owned corporation traded on the NYSE.

It has been assumed here that this type of buyer would be interested in the Elliott property as a long-term source of logs for an existing or new facility. The tax burden faced by corporations as well as the likely use of borrowed capital to finance a timberland acquisition of this size implies a high discount rate. Although it's larger size increases its access to capital markets over smaller borrowers, it also increases the competition internally for limited available capital. As a result, we have assumed a 10.0 percent discount rate. Again, we have assumed an investment horizon of 50 years would be used in a timberland valuation by this buyer category.

5.2.5 Summary

Table 5.1 summarizes the key financial assumptions by type of buyer:

Table 5.1 - Discount rate and investment horizon by type of buyer.

Buyer Group	Real, Pre-Tax Discount Rate	Investment Horizon
TIMO	7.5%	15 years
REIT	8.5%	25 years
Medium-Size Manufacturer	9.0%	50 years
Integrated Manufacturer	10.0%	50 years

The discount rate is a real rate (net of inflation) and before taxes. A before tax rate is being used to simplify the analysis, avoiding the need to make assumptions regarding tax implications for the entities subject to corporate income taxes. The higher pre-tax discount rate for the manufacturing entities already takes into account the income reducing effects of taxation.

5.3 Management Scenarios

5.3.1 Introduction

Any potential bidder on timberland faces the problem of determining how they will manage the property, how much timber they will be able to harvest over time, and what the costs and revenue stream will be during the investment period. In doing so, they analyze the current timber inventory data, review past management practices and costs, assess the potential markets for timber products, and consider the impacts of regulations such as state forest practice laws and threatened and endangered species restrictions. From this they develop a cash flow scenario and calculate a valuation for the property.

Under Alternative A we have developed two management scenarios – Sustainable Harvest and Accelerated Harvest – that we believe represent the range of what prudent buyers would consider in valuing the property. The scenarios are much simpler than management under state ownership, with less focus on creating habitat and more on minimizing regulatory costs. In each scenario, we have partitioned the property into actively managed Operable Timberlands and Reserved Forest which is set aside for protection of riparian areas and core threatened and endangered species habitat. The scenarios diverge in how much timber is harvested from the actively managed portion of the land base.

5.3.2 Land Classification for Private Purchasers

In classifying the land into operable and reserved areas for the private landowner groups, we started with the ODF's Model 6 GIS coverage which approximates the land allocation decisions made in the 1995 Elliott forest plan and associated Habitat Conservation Plan.

Of the total of 82,300 acres (net of roads) of Common School Fund Lands in the database, we assigned 7,500 acres of riparian buffers and

11,100 acres of northern spotted owl and marbled murrelet reserves to the Reserved Forest category. In addition, we reserved 1,400 acres along the Umpqua River corridor. Most of this steep area above Highway 38 could not be harvested under Forest Practices high landslide hazard location rules.

The largest regulatory uncertainty a new owner faces is the impact of new marbled murrelet nest sites on the forest. ODF murrelet surveys identify new sites on about 25 percent of new timber sale areas.[11] In these cases, the harvest plan must be altered to avoid a "take" and the sites, which average 55 acres, become unavailable for harvest. To account for this uncertainty, we assigned 25 percent of the remaining acres aged 90 and older to the reserved category. This withdrawal represents the likelihood that new murrelet nesting areas will be found as timber sales are planned and that these will result in additional set-asides.

The total area in Reserved Forest is 27,000 acres or 33 percent of the total land base. No harvest was assumed to be available from the reserved lands. The remaining area available for timber harvest is 55,300 acres. Of this, 22,300 acres are merchantable stands greater than 50 years old and 33,000 acres are less than 50 years old. Table 5.2 details the acreage allocations by age class.

The merchantable inventory on Elliott CSF timberland is estimated at 2.4 billion board feet (Bbf) with 1.3 Bbf on Operable Timberlands and 1.1 Bbf on Reserved Forests.

On private lands, setting aside one-third of the land base and nearly half of the merchantable inventory primarily for protection of threatened and endangered species represents a very high level of protection. This may be an area where we have been too conservative in our analysis and have therefore undervalued the property. However, given the unique nature of the Elliott, this level of protection may be required. There is wide-spread knowledge of T&E species presence on the Elliott by both environmental groups and the federal services. There is risk that this could have an impact on management by a new owner, including the possibility of legal action by the federal government or a third party.

Table 5.2 - Land allocation assumptions for Alternative A.

AgeClass	Total	Road Right-of-Way	Net Forested	RESERVED					Total Operable
				Riparian Buffers	Non-Riparian Reserve	Steep Slopes	Additional Withdrawal for MM	Total Reserved	
0	829	16	814	18	3	6	-	27	787
1 - 10	3,536	98	3,438	103	74	-	-	177	3,260
11 - 20	8,671	241	8,431	588	166	106	-	859	7,571
21 - 30	15,008	404	14,604	1,021	547	101	-	1,669	12,935
31 - 40	7,747	246	7,501	707	340	195	-	1,242	6,259
41 - 50	2,525	66	2,459	231	59	-	-	289	2,170
51 - 60	586	12	574	103	34	-	-	137	437
61 - 70	360	9	351	55	37	1	-	93	258
71 - 80	934	18	916	113	30	-	-	143	773
81 - 90	673	9	664	68	52	-	-	120	544
91 - 100	2,765	50	2,715	271	469	64	494	1,297	1,418
101 - 110	7,780	111	7,669	829	1,563	103	1,319	3,814	3,855
111 - 120	14,042	228	13,813	1,389	2,715	264	2,427	6,795	7,018
121 - 130	12,141	186	11,955	1,322	2,704	356	1,982	6,365	5,591
131 - 140	3,701	63	3,638	368	1,124	70	537	2,099	1,539
141+	2,849	65	2,784	320	1,181	98	321	1,919	865
Total	84,148	1,822	82,326	7,505	11,096	1,364	7,080	27,045	55,281
% of Total	100%	2%	98%						
% of Net Forested			100%	9%	13%	2%	9%	33%	67%

5.3.3 Timber Yields

Timber yields assumed for the private sector analysis are the same as those used for the Base Case. Section 4.2.2 describes their development. Thinning yields were not used in Alternative A.

5.3.4 Habitat Conservation Plan

Under the Implementation Agreement between the State of Oregon and the U.S. Fish and Wildlife Service (USFWS) for the Elliott State Forest Habitat Conservation Plan, a prospective purchaser of the property may elect to take over the HCP agreement. If the purchaser declines this option, the State must provide notice of termination of the agreement to the USFWS. Termination may result in mitigation in accordance with the requirements of the Endangered Species Act for any take that has occurred during the term of the HCP.

Our opinion, based on a review of the provisions of the HCP, is that the successful private purchaser would be unlikely to accept the terms of the current HCP. Although some of the private parties interested in the property may appraise the property and bid on the basis of retaining the HCP we feel certain that at least one, and probably many, private entities would value the property based on a higher harvest level, which we believe precludes the continuation of the current agreement.

The HCP includes a number of limitations that restrict the ability of the owner to increase timber harvest from current levels. These limitations were designed as mitigation to compensate for the habitat that was to be harvested under the accompanying Incidental Take Permit. Two limitations are of particular note because they go beyond the set-aside of a portion of the forest into reserves. The first is the requirement for long rotations in ten of the 17 basins. Secondly, the restriction on annual

harvest of potential owl habitat limits access to the vast majority of the merchantable inventory.

The HCP divides the forest into 17 management basins ranging in size from 4,200 to 7,800 acres. Of these, seven basins can be managed under an 80 year rotation length. The remaining ten basins are managed under extended rotation lengths of between 135 to 240 years with a management emphasis of developing mid- and late-successional forest conditions. These rotation lengths, the shortest of which is 30 to 35 years longer than rotations on private timberlands, represent an unacceptable condition from the perspective of a private investor, in our opinion.

Secondly, the HCP places limits, which vary by decade, on acres of potential owl habitat harvested annually. Potential habitat is defined as stands in the 80-year age class and older. For 2004-2013, the annual limit is approximately 410 acres. This restricts harvest on over half the forest that is classified as potential habitat. In addition, there is very little merchantable timber below the 80-year age class. Only about 700 acres of stands in the age range of 45 to 75 years could be harvested. We believe that these two limitations would make the current HCP untenable to private sector owners.

We cannot predict whether a private landowner would pursue a new HCP agreement with the federal agencies; the answer depends on the individual company's strategies and attitudes toward risk. The HCP process itself is expensive and risky with no assurance that an agreement can be achieved. The burden is on the landowner to propose how they plan to comply with ESA and the Federal Services respond as to the adequacy of what is proposed. The view that a private landowner would opt for an HCP is supported by the conclusions of a recent report.[12] The report surveyed public and private owners of properties with similar owl and murrelet issues. Each respondent recommended pursuing a multi-species HCP. However, it must be pointed out that because the study only surveyed landowners who had already received an HCP, it is a biased sample. There are many examples of private landowners, large and small, with similar T&E species issues that have not pursued the HCP strategy.

Our private scenarios assume that the current HCP for owls will be terminated as a result of the land sale. We have not made an explicit assumption regarding development of a new HCP between the new owner and the Services. However, the reservation of one-third of the land base provides protection of riparian areas, known owl and murrelet sites as well as a contingency for new owl and murrelet locations. We speculate that it may represent sufficient protection to merit an HCP but cannot offer proof of this. On the other hand, we believe there are private purchasers that

would offer less protection and accept more risk around T&E species issues than we have assumed.

5.3.5 Sustainable Harvest Strategy

The first private harvest scenario represents the conservative, lower end of what we believe private entities would consider in valuing and managing the forest. However, given the risks regarding threatened and endangered species issues on the property, it may be considered as one that has a high probability of successful implementation. If the perceived competition for the tract is low or risk-aversion is high, a bidder will be more likely to use a conservative strategy such as this to develop a valuation.

In the Sustainable Harvest Strategy we assume that a private owner will harvest timber from the Operable Timberlands at a rate which maintains the current operable inventory level for an indefinite period. Although it is likely that additional timber could be harvested from the Reserved Forests either through commercial thinning or carefully planned final harvests, we assume none in our analysis.

Given the mature condition of the forest, we assume that timber would be harvested entirely from final harvest cuts rather than commercial thinnings. Commercial thinnings are higher cost operations and may yield lower value log products compared to clearcuts. We believe a private owner will focus on regenerating the mature and over-mature stands on the Elliott rather than treating younger stands with thinning regimes. We also assume that the harvesting will proceed in the oldest stands on Operable Timberland first, and then progress down through the age class structure over time. In practice, this will probably not be the case as site specific issues such as green-up and adjacency constraints, the need to treat swiss needlecast infected areas, and other considerations will impact harvesting decisions. However, we do not believe that these issues materially impact the valuation of the forest. A minimum rotation age of 50 years is assumed. We further assume all harvested stands will be successfully regenerated within a year of harvest.

Our model of the forest indicates a sustainable annual harvest of 45 mmbf would be feasible under this strategy. At this rate of harvest, the inventory on Operable Timberlands remains steady at 1.3 - 1.4 Bbf during the 50 year period (Figure 5.1). After five decades, nearly 13,000 acres of 56,000 acres of Operable Timberlands have not yet been clearcut and these stands range in age from 51 to 80 years.

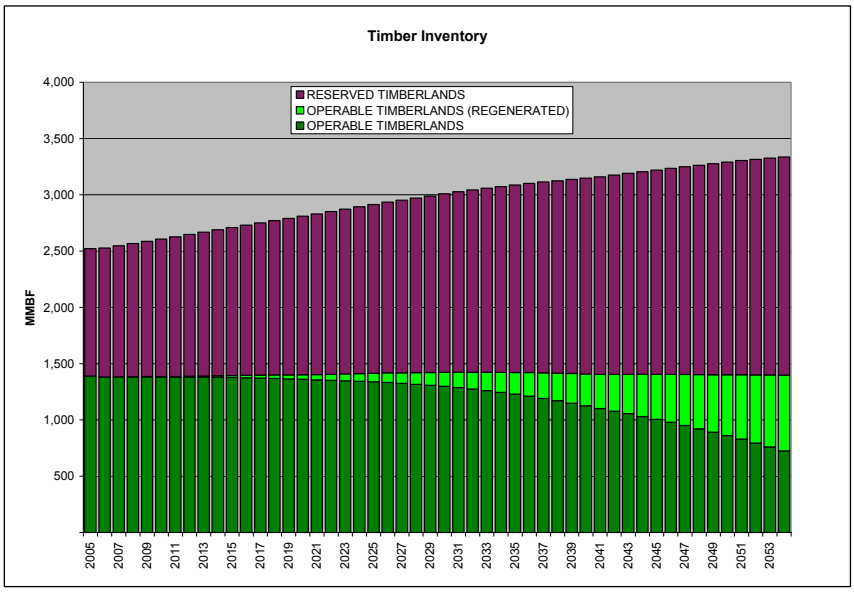
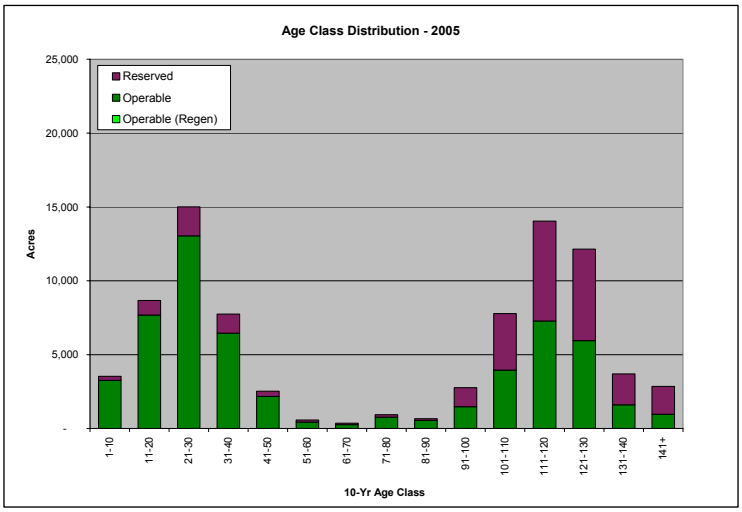
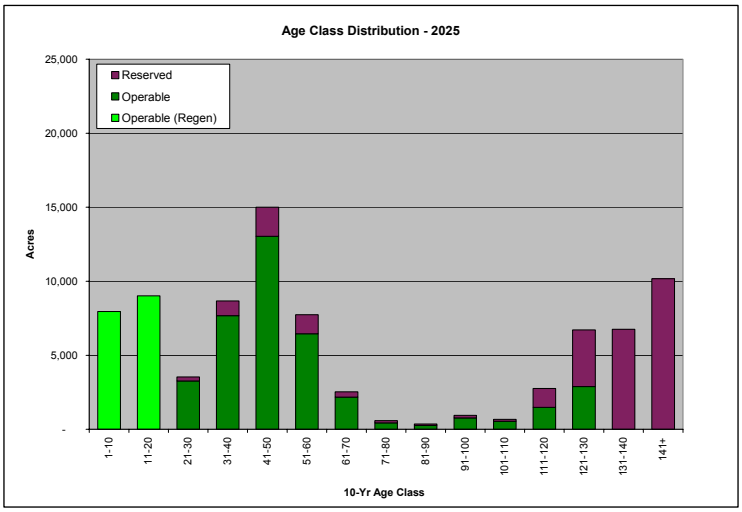


Figure 5.1 - Projected timber inventory by Land Class under the Sustainable Harvest Strategy.

No harvesting is assumed on Reserved Forest, which comprises one-third of the land base. The inventory on Reserved Forests rises from 1.1 Bbf in 2005 to nearly 2.0 Bbf five decades later. This Reserved Forest provides a significant amount of older forest habitat with an estimated 80 percent over 140 years old after 50 years. Figure 5.2 illustrates the change in age class distribution over time.

Additional details of the Sustainable Harvest Strategy are presented under Tab 8 of the Appendix document.





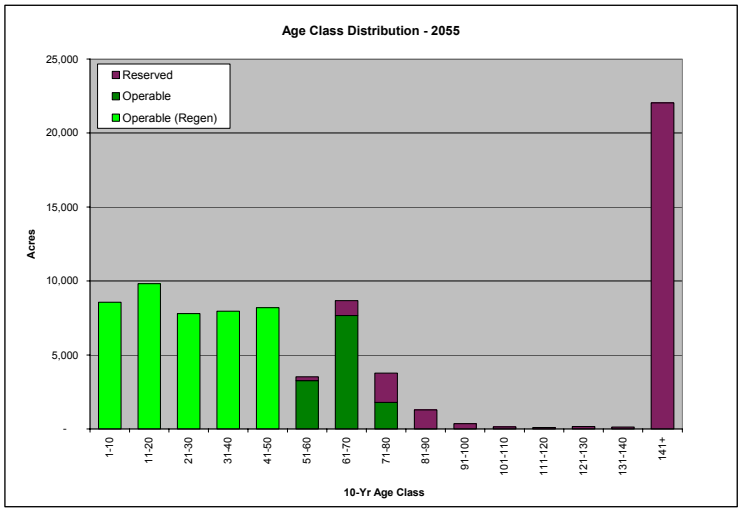


Figure 5.2 - Projected age class distribution in 2005, 2025 and 2055 under Sustainable Harvest Strategy.

5.3.6 Accelerated Harvest Strategy

A more aggressive harvesting strategy is likely to be considered by private buyers. Accelerated harvest levels commonly follow a change in timberland ownership as the new owner seeks to pay off debt incurred by the purchase as well as earn favorable returns. Merchantable inventory levels usually decline in the first years following a timberland transaction. This strategy represents a higher risk in terms of successful execution but we believe it is within the range of what would be considered in a valuation process.

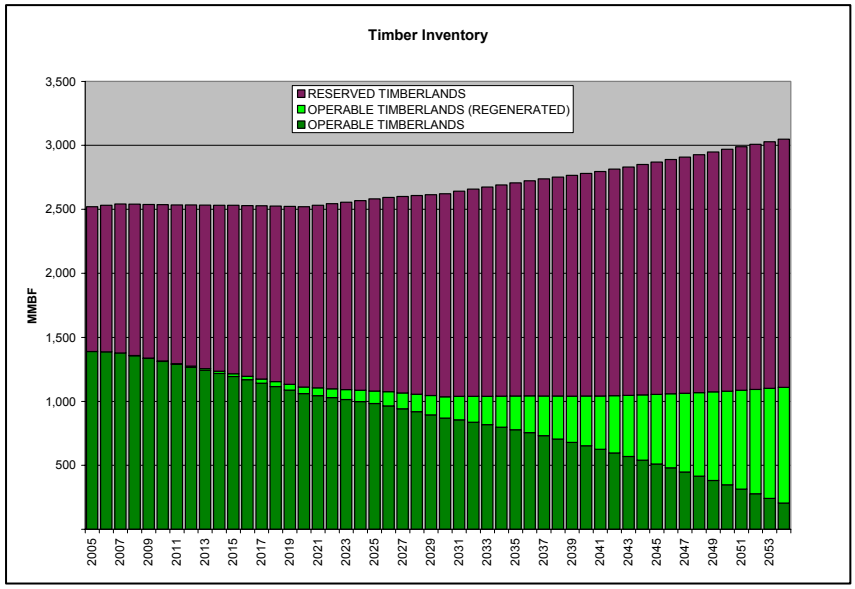
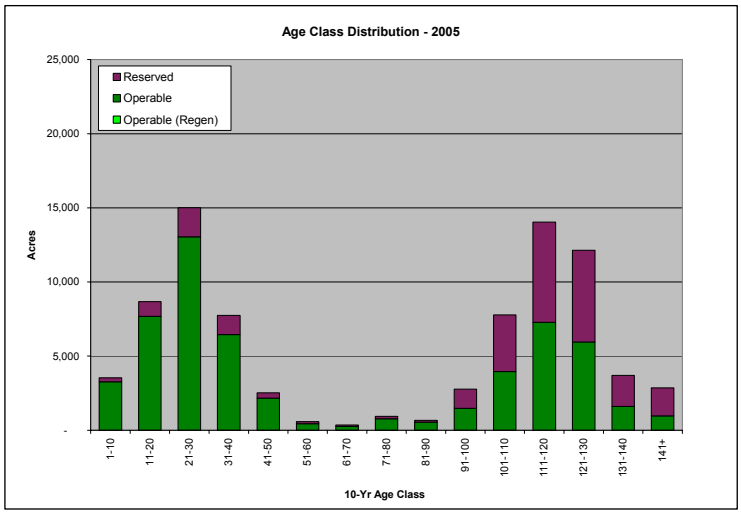
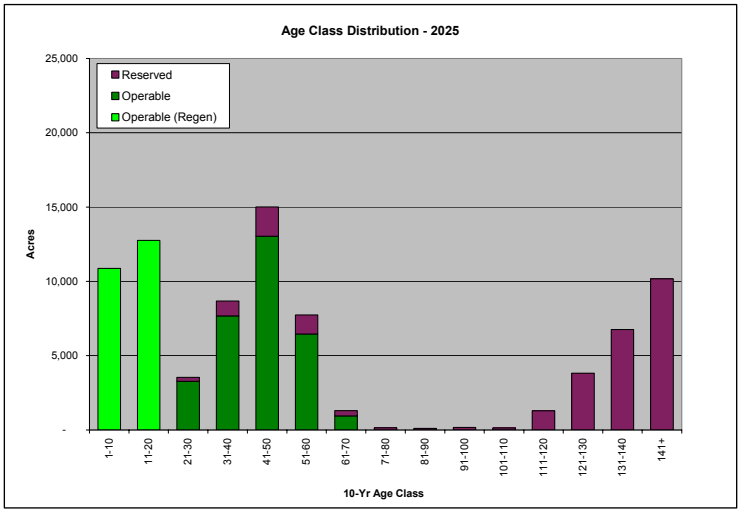


Figure 5.3 – Projected inventory by Land Class under the Accelerated Harvest Strategy.

Under this scenario, we assume the landowner would draw down the inventory on Operable Timberland 20 percent by 2020. Harvest for the first two years of operations would be 40 and 55 mmbf, respectively as the operation develops plans, makes necessary harvest notifications and perhaps, negotiates an HCP. Following the first 2 years of start-up, the harvest level reaches 65 mmbf for the next ten years. In 2022, the harvest level declines to 50 mmbf for the following ten year period and the operable inventory declines at a slower rate from 1.1 Bbf in 2020 to a 1.0 Bbf in 2030. After 2030, the harvest drops to 40 mmbf per year and the Operable inventory stabilizes at 1.0 Bbf indefinitely. At the end of the five decades, the Operable Timberland has been put on a regulated 50-year rotation with only about three percent of the acres older than 50 years. Figures 5.3 and 5.4 illustrate inventory and age class changes under this scenario.





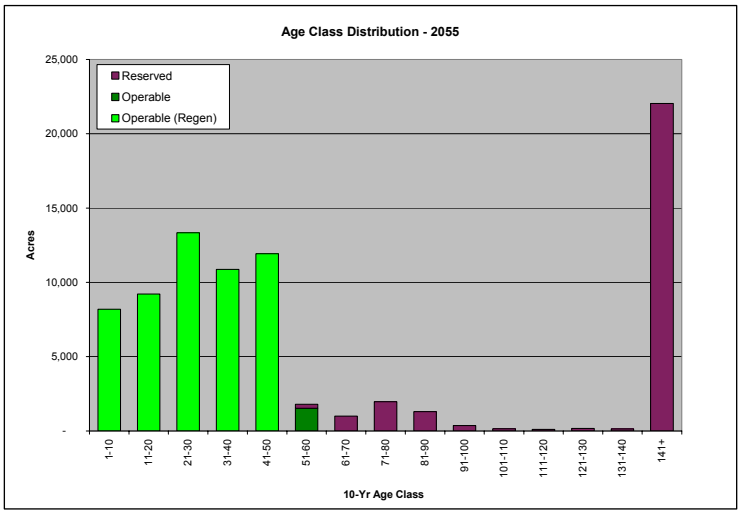


Figure 5.4 - Projected age class distribution in 2005, 2025 and 2055 under the Accelerated Harvest Strategy.

As for the Sustainable Harvest Strategy, all harvesting is assumed to be from final harvests of stands on an oldest first basis. Again, this will not be the case as site specific issues such as green-up and adjacency constraints as well as the need to treat swiss needlecast infected areas impact harvesting decisions. A minimum rotation age of 50 years is assumed and harvested stands are successfully regenerated within a year of harvest.

No harvesting is assumed on Reserved Forest. In this regard, the strategy remains conservative as there is opportunity for thinning operations in some of the reserved area. The inventory on Reserved Forests rises from 1.1 Bbf in 2005 to nearly 2.0 Bbf 50 years later. This Reserved Forest provides a significant amount of older forest habitat with an estimated 80 percent over 140 years old after 50 years.

Details of the Accelerated Harvest Strategy are presented in Tab 9 of the Appendix document.

5.4 Other Assumptions

5.4.1 Revenues

5.4.1.1 Log Prices

Estimated delivered log prices were developed from an analysis of market prices reported by the Oregon Log Market Report, Log Lines Price Reporting Service, Pacific Rim Wood Marketing Report, and internal sources. Additionally, we reviewed prices reported for ODF timber sales on the Coos District as reported by Timber Data Company. No adjustment was made to the log grade distribution assumptions under the Base Case.

We elected to include domestic prices only as recent experience suggests that the historic premiums received for log exports from the Pacific Northwest have dropped considerably. Local mills now appear to be purchasing logs at or above the export prices. It is possible that some of the potential purchasers of the Elliott forest, particularly a TIMO or REIT, may choose to export some portion of the log harvest. This presents an opportunity for increased revenues should log export price premiums return in the future. We have not accounted for that potential in our valuation.

Delivered log prices used in this analysis are presented in Table 5.3. The assumed distribution of harvest by species is based on the proportional representation in the inventory. Ninety-five percent of the harvest volume is Douglas-fir.

Table 5.3 - Delivered log prices, Logging & hauling cost and stumpage rate for Alternative A.

Species Group	Delivered Log Price $/MBF	Logging & Hauling Cost $/MBF	Stumpage Rate $/MBF
Douglas-fir	$825	$165	$660
Whitewoods	$585	$170	$415
Cedar	$880	$225	$655
Red alder	$695	$200	$495

Stumpage prices are about $30/MBF higher under Alternative A compared to the Base Case assumptions (refer to Table 4.3). This is because logging costs are $30/MBF less under Alternative A reflecting reliance on lower-cost clearcutting harvesting versus a mix of commercial thinning and clearcutting under the Base Case.

5.4.1.2 Other Revenues

Our analysis did not include any projected income from resources other than timber harvesting.

The Elliott State Forest currently produces no oil, gas or minerals. Although quarries on the property in the past have provided rock for building construction and roads, there are no active locations. While some potential may exist for minerals development we do not believe potential buyers would place any value on it.

A potential source of revenue is the sale of selected tracts for Higher and Better Use values such as residential and commercial development. This is particularly true in the Reedsport area where the forest is in close proximity with existing development. Assessment of this potential, however, is an involved process that was not possible within the time frame of this study.

5.4.2 Costs

5.4.2.1 Silvicultural Costs

Silvicultural costs for the establishment of regenerated stands along with the age of treatment and assumed percentage of regeneration needing each treatment are shown in Table 5.4. Based on the conclusion of a recent report that stated that there is no evidence that silvicultural costs on the Elliott are out of line with those experienced by other owners of similar forestland, we have not adjusted these costs between the Base Case and Alternative A.[13]

Table 5.4 - Stand establishment costs and schedule for Alternative A.

Treatment	Age	Percent of Regen Acres	Cost $/Acre
Site Preparation & misc.	0	100%	$220
Tree Planting	0	100%	$180
Animal Control	0	75%	$45
Brush Control	1	100%	$60
Brush Control	2	50%	$60
Pre-commercial Thinning	10	85%	$100

5.4.2.2 Other Costs

Other management costs are described in Table 5.5. They are assumed to be constant across all private ownership types.

Table 5.5 - Other management cost assumptions for Alternative A.

Description	Basis	Cost
Property Tax	$/acre/year	$3.34
Administration	$/acre/year	$18.00
Legal, inventory	$/acre/year	$1.50
Road Costs (fixed)	$/acre/year	$1.50
Road Costs (variable)	$/mbf harvested	$2.00
Forest Prod. Harvest Tax	$/mbf harvested	$2.95

Property tax represents an additional cost that would be paid by private owners which is not currently paid by the state. The annual rate of $3.34 per acre is based on the estimated property tax as described in section 6.2.4. We have adjusted the Administration cost down from the Base Case to adjust for less "corporate" overhead that would be incurred by a private entity as compared to a state agency. Otherwise, we have not varied these cost assumptions between the Base Case and Alternative A.

5.5 Discounted Cash Flow Analysis

A discounted cash flow model was developed for each of the four private ownership categories and two harvest strategies, yielding eight alternative valuations of the Elliott CSF. Details of each cash flow model are presented in Tabs 10 – 17 of the Appendix document. The resulting valuations by type of buyer and harvest strategy are presented in Table 5.6.

Table 5.6 - Summary of valuations by type of buyer and harvest strategy.

Type of Buyer	Sustainable Harvest Strategy	Accelerated Harvest Strategy
	Million Dollars	
TIMO	$344	$489
REIT	$309	$409
Medium-Size Manufacturer	$294	$384
Integrated Manufacturer	$265	$348

5.6 Income to the Common School Fund

Income to the Common School under Alternative A depends on who the ultimate purchaser of the tract is, and it is of course impossible to say with any certainty what the outcome would be were the property to be actually offered for sale.

Timberland markets over the past ten years have been dominated by sales to institutional investors such as pension funds, which are represented here by the TIMO buyer. From this analysis, it is not difficult to see why. A lower required rate of return due to favorable tax status as well as other factors allows institutional investors to bid more for a given tract of timberland than other types of buyers. REITs have similar advantages. Conventional wisdom is that there remains a very large amount of investor money "sitting on the sidelines" waiting for timberland acquisition opportunities. We believe one or more TIMOs or REITs would be interested in acquiring the Elliott and that it is likely that bids would approach the high-end of our valuation range.

6.0 Analysis of Benefits

6.1 Introduction

In this chapter we analyze the incremental benefit of Alternative A, the sale of the Elliott CSF timberlands, compared to the Base Case, retention of the Elliott CSF timberlands under state ownership. We examine both quantifiable and non-quantifiable benefits.

6.2 Quantifiable Benefits

6.2.1 Common School Fund Trust Income

This section compares income to the Common School Fund under each scenario. Because of the uncertainties discussed under both the Base Case and Alternative A, the incomes and incremental benefits must be described in terms of ranges.

In Chapter 4, we estimate an annual income of $14.2 million under the current forest plan and between $16.0 and $19.6 million if current expectations are realized under a revised plan. The net present value (NPV) of these annual income estimates must be calculated using an appropriate discount rate in order to make a fair comparison with the lump-sum income from the sale of the property under Alternative A. We use a 5.0 percent real discount rate.[14]

The NPV of future CSF income under the current forest plan's 27 mmbf harvest level is $282 million. If the new forest plan includes a harvest of between 30 and 36 mmbf, the range of NPV is $318 – 381 million.

In Chapter 5, we estimate a market value for CSF timberlands of between $265 and $489 million. This would represent immediate lump-sum income to the CSF upon the sale of the property so no discounting is required.

As we noted earlier, TIMOs and their investor clients have dominated timberland purchases for more than a decade and as a result are defining the market price. Financial institutions represented by TIMOs acquired 93 percent of the major timberland transactions in the U.S. during 2002 – 2003 according to one estimate.[15] We would therefore attach significantly more weight to the results for this ownership group and would expect TIMOs to set the market price were the Elliott to be sold.

6.2.2 Timber-Related Economic Benefits

6.2.2.1 Introduction

In addition to the direct impact of the sale of the Elliott CSF lands to the private sector, it can be expected that there would be broader impacts on the local and state economy as well. To assess these impacts we rely on a 2001 report by the ODF coordinated by Gary Lettman, the agency's principle economist.[16] The purpose of the report was to provide an overview of short-term economic consequences of alternative strategies for the Elliott. Thus, it serves as a useful source of information for this C-BA. However, as we note in the text, the change in land ownership may lead to changes in economic patterns that make these estimates somewhat suspect, especially for indirect economic impacts.

The ODF report includes a comprehensive analysis for two resource outputs: recreation and timber harvest. Econometric modeling was used to estimate the marginal impacts on employment, personal income and tax revenues.

The 2001 report focused on short term economic impacts defined as impacts that occur within the first ten years. Therefore, we emphasize that the impacts described below are limited to this time period.

From the point-of-view of state government (see section 2.2), it is customary to include incremental changes in tax revenue as a benefit considered in a decision. It should be noted, however, that this is the somewhat controversial since, from the point-of-view of society as a whole, taxes represent transfer payments that are costs to some and benefits to other.

6.2.2.2 Employment, Personal Income and State Tax Receipts

The ODF economic impact report developed an estimate of the incremental change in employment, personal income and personal and corporate state income tax payments from a one million board foot change in harvest levels on the Elliott. Table 6.1 summarizes the projected benefits to the Oregon economy of Alternative A relative to the Base Case. These are impacts on the state-level economy.

The economic impacts described here are relative to a Base Case harvest of 33 mmbf, the mid-point of the 30-36 mmbf range that is expected to result from the revised forest management plan for the Elliott. Although we have not shown them in this analysis, impacts

of Alternative A compared to the *current* forest management plan, with its 27 mmbf harvest, would be greater.

Table 6.1 – First Decade Incremental Impact on Jobs, Personal Income and State Tax Receipts of Alternative A compared to Base Case State Harvest of 33 Million

	Avg Annual Harvest in the First Decade	Increase in Harvest over Base Case	Total Employ-ment	Lumber & Wood Products Employ-ment	Personal Income	Personal & Corporate State Income Tax Payments	Harvest Tax Payments
	Million Bd.Ft.		*Number of Jobs*		*Thousands of Dollars*[2]		
Per Million Bd.Ft.[1]			15	7	$ 1,039	$ 60	$ 3
Alternative A							
Sustainable Harvest	45	12	180	84	12,465	722	35
Accelerated Harvest	62	29	428	200	29,604	1,714	84

[1] *Source: Lettman et. al.*, p. 121.

[2] Income dollars have been adjusted to 2004 dollars from original report

An estimated seven jobs would be created in the Lumber and Wood Products sector (L&WP) for each additional million board feet of timber harvest. Alternative A includes an increase in harvest over the Base Case of between 12 and 29 mmbf, implying an increase in L&WP sector employment of between 84 and 200 jobs. Implicit in this is an assumption that increased harvesting on the Elliott would result in an increase in timber processing in regional mills and not simply substitute Elliott timber for harvest from another ownership. Since we are assuming long term increases in harvest from the Elliott, and given the current regional processing capacity and timber markets, we believe this is a reasonable assumption.

Since most of the existing manufacturing capacity is in the Willamette Valley region rather than the Coast, we would anticipate that most job creation would be in the inland Valley and probably in the form of added shifts or incremental expansion of existing capacity. We would not anticipate development of new manufacturing facilities based solely on the increased harvest from the Elliott.

The direct job gains in L&WP sector would likely be offset by reduction in state government employment. Sale of the Elliott CSF lands would presumably lead to closure or at least significant reductions at the Coos Bay District office, affecting approximately 20 ODF jobs in the Coos Bay/Reedsport area. Reductions might also result at the Salem ODF headquarters as sale of the Elliott would reduce total state forest acreage by about eleven percent.

Conversely, the new private owner would be likely to maintain local staff in Coos Bay/Reedsport as well as contract for field labor. Private owners typically contract for silvicultural work such as tree planting, timber sale preparation and other tasks; in other cases they are employed by the firm. More intensive forest management practices may or may not create enough jobs to offset the presumed loss of state jobs.

Direct job creation in the L&WP sector could be less if productivity increases in manufacturing have occurred since the economic study was completed in 2001 or if logs are exported rather than being processed within the state.

The ODF economic report also projects indirect employment changes resulting from change in harvest levels on the Elliott. Using the multipliers developed by the ODF study, between 96 and 228 jobs would be added in other sectors as a result of increased harvest of between 12 and 29 mmbf.

These multipliers assume no change in the existing economic patterns. However, a change in Elliott ownership may significantly change spending and employment patterns, so these job estimates as well as income and tax effects are uncertain. Currently, most of the income from the Elliott CSF lands is invested into the CSF by the State Treasurer, where it earns returns that are eventually distributed to school districts across the State. Some portion of the income also goes to the ODF to pay for management activities such as reforestation, fire protection and wildlife management. Some of the purchases of goods and services under State ownership are from the local and regional economies while other expenditures probably are from out-of-state.

This flow of funds would certainly change under new ownership. Net income from the timberlands would flow to the private owner(s), which may or may not be located in Oregon. Some portion would be reinvested into land management and in the process many of the same local goods and services, e.g. tree planting and contract labor, would be purchased. At the same time, the influx of funds from the land sale into the CSF would result in more funds being distributed to school districts across the state over time. This would change school district spending and employment patterns as well. These combined effects would ripple through the State economy in ways that are difficult or impossible to predict.

Each additional million board feet harvested increases personal income by over one million dollars, according to the ODF study.

Under Alternative A, personal income rises by $12 – 30 million; however, these figures should be viewed in light of the earlier caveats regarding the reliability of the indirect economic impacts.

State income taxes from individuals and corporations increase by $60,000 dollars for each million board feet of harvest. Income tax receipts are projected to be $0.7 – 1.7 million dollars higher under Alternative A compared to the Base Case. These numbers are also uncertain for reasons cited above. For example, if a taxable entity were to purchase the property, it would be subject to state corporate income tax on the entire income; not just the incremental increased harvest. On the other hand, some timberland owning entities are tax-exempt. Income taxes would still be paid by others in the economic linkages that are affected – loggers, sawmills, their suppliers and employees.

The Forest Products Harvest Tax (FPHT) is assessed on all timber harvested from public and private forests in Oregon. The current rate is $2.95 per MBF. The annual increase in FPHT revenue for Alternative A, compared to the Base Case, would be $35,000 - $84,000.

6.2.3 Recreation & Tourism Benefits

6.2.3.1 Introduction

The Elliott provides the public with a variety of recreational opportunities in a forested setting. Recreational use is concentrated in several small areas of the forest with the remainder receiving little recreational use. Opportunities for camping are provided along roads and streams and use levels vary widely. During hot, dry summer weekends, nearly all camping areas may be occupied while on other weekends use is sporadic. Motorized use, including four-wheel drive and all-terrain vehicles and motorcycle occurs on the existing roads as well as old skid roads and trails. In addition, non-motorized recreation including horseback riding and mountain biking occurs across the forest. Winter steelhead fishing is popular as well as occasional trout fishing.[17]

A recreational use survey conducted on the Elliott by the ODF during the fall/winter of 2000 and summer of 2001 provides some quantitative information on recreational use. During the fall and winter survey period, 90 percent of those contacted cited hunting as one of their activities. Other uses cited included wildlife viewing (42 percent), sightseeing (39 percent), camping (24 percent), OHV use (20 percent) and hiking (17 percent). Hunting was cited as the primary purpose of the trip by 87 percent of the respondents. Most popular activities cited by respondents during in the summer were

sightseeing (65 percent), camping (62 percent), wildlife viewing (60 percent), fishing (43 percent), OHV riding (38 percent) and hiking (35 percent). Camping was most often cited as their primary purpose, at 51 percent.[18]

Hunting probably represents the largest single recreational use of the forest. Most occurs during big game hunting season from late August through November. An estimated 12,100 hunter days annually were spent on the Elliott between 1992 and 1999.[19]

6.2.3.2 Employment and Income

For two reasons, it is not possible to accurately quantify the relative benefits of recreational value under the Base Case and Alternative A. First, with the exception of big game hunting, there is no information on total recreational use on the Elliott, so it very difficult to develop a baseline estimate of the total recreational value provided by the forest under the Base Case. Secondly, the impact of the potential sale of the forest to the private sector is uncertain. Current large private landowners offer a range of public access to private timberlands in Western Oregon ranging from full access, to controlled access to no access. The decision regarding access and whether use fees would be collected depends on the successful purchaser and cannot be predicted with any certainty.

We can gain some order-of-magnitude perspective by examining a worse-case scenario and making an assumption regarding total recreational use. For this purpose, we assume that hunting represents one-half of total recreational use and that hunting use has not changed from the 1992-1999 average. Further, we assume the average visit is three days as reported in the ODF recreation survey.

The ODF economic impact report estimated the impact of recreation on the Southwest Oregon economy in terms of jobs and income as shown in Table 6.2 below. The impact described in the report was expressed in terms of impact in employment and income for a change of 1,000 visits to the forest. Given the assumptions noted above, we estimate there are approximately 24,000 visitor-days and 8,000 recreational visits per year to the Elliott.

The worst case under Alternative A would be complete loss of these recreational opportunities caused by a closure of the forest to public access. This would result in the loss of about 19 jobs in the recreation and tourism industry and loss of $632,000 in total income. The average wage of the lost jobs is estimated as $21,000.

Table 6.2 - Economic impact to SW Oregon of changes in recreational use on the Elliott State Forest.

	Total Employ-ment[2]	Total Wages & Salary	Average Wage/Job	Proprietors & Property Income	Total Income
Change per 1,0000 Visits[1]			*Thousand Dollars*		
Hunting	3.0	66	22	37	103
All other recreation	1.7	35	21	20	55
Change assuming loss of 8,000 Visits					
Hunting (4,000 visits)	(12)	(262)	22	(148)	(410)
All other recreation (4,000 visits)	(7)	(141)	21	(81)	(221)
Total	(19)	(403)	21	(229)	(632)

[1]Source: Lettman et. al. *Elliott State Forest Management Plan: Connection to Local Economies,* p. 131-132.

[2]Notes: 1. Total number of recreation visits to the Elliott State Forest is unknown
2. Totals may be off because of rounding. Dollar figures have been adjusted to 2004 dollars
3. Includes all jobs, part-time and full-time.

Several factors, however, argue against such a total loss in recreational jobs and income. First, as we pointed out large private landowners often allow public access on timberlands at least to some extent. So, it should not be assumed out of hand that the prospective private owner of the Elliott property would eliminate public access. Secondly, it cannot be assumed that recreational expenditures in the Southwest Oregon economy would be impacted by the loss of access to the Elliott if alternative similar venues exist in the area. For instance, hunters will likely not stop hunting if access to the Elliott is ended; they will go somewhere else. Nearby national forests and other timberlands offer alternative destinations for similar activities. The ODF recreational survey found that 58 percent of the subjects that included the Elliott as part as a multiple destination trip would still have made the trip if the Elliott were not available, indicating that a number of substitute sites are available.

6.2.3.3 Other Recreation Value

Beyond the income and employment contributions of the Elliott's recreational activities, there is another component of recreational value that represents the value experienced by the participant. This value represents the visitor's "consumer surplus," which can be described as the difference between what the individual paid for the experience and the value, expressed in monetary terms, of the experience. The ODF recreation survey asked respondents to approximate their willingness to pay additional costs for their trip to the Elliott as a means of quantifying this value. The average willingness to pay was $45.80 per day.[20] Again using our

assumption of 24,000 visitor-days on the forest annually, the total consumer surplus is approximately $1.1 million annually.

A benefit not accounted for here is the impact of recreational use changes on state personal and business income tax receipts. No information is available to estimate this impact; however, any impact would be relatively modest.

6.2.4 County Property Tax Receipts

As a publicly owned forest, the Elliott is exempt from county property taxes. Under Alternative A, the property is sold to a private entity and becomes subject to property taxes.

Private timberland ownerships greater than 5,000 acres are taxed based on the minimum of the Maximum Special Assessment Value (MSAV), determined by statute, and Special Assessment Value (SAV) which is set annually by the state Department of Revenue. SAV and MSAV vary by Forestland Class, which is based on site index. In 2004, the MSAV was the lower than SAV for all classes and therefore is the relevant value.

The tax rate is dependent on the physical location of the property which determines which taxing districts apply. Using information provided by the assessors from Douglas and Coos counties, we estimate 2004 tax rates of 11.5367 for Douglas County and 9.5708 for Coos County.[21] Rates are expressed in dollars of tax per $1,000 of assessed value.

Total property tax for the CSF lands is estimated at $281,000 including Coos County revenue of $161,000 and Douglas County revenue of $119,000. Details are shown in Table 6.3.

Table 6.3 - Estimated property tax revenues by county for Alternative A.

Forestland Class	Est. CSF Acres		MSAV ($/ac)	Estimated Property Tax ($000)		
	Coos	Douglas		Coos	Douglas	Total
FA	7,803	4,788	463.50	35	26	60
FB	6,665	4,090	367.71	23	17	41
FC	31,252	19,176	307.97	92	68	160
FD	2,346	1,440	261.62	6	4	10
FE	2,094	1,285	174.04	3	3	6
FF	1,267	778	125.66	2	1	3
FG	573	351	52.53	0	0	1
FX	149	92	6.18	0	0	0
TOTAL	52,150	31,998		161	119	281

6.3 Non-Quantifiable Benefits

6.3.1 Introduction

Forests, public and private, provide many benefits which are difficult to quantify let alone express in terms of dollar values that can be compared with more readily estimated economic benefits. Nonetheless, it is important for decision makers to consider these values as they make decisions about the future of the Elliott. In this section, we describe the most significant of these benefits and offer observations on the potential impact of the Alternative Case, selling the Elliott to the private sector, on the level of benefits provided compared to the Base Case of retaining the Elliott under current public ownership.

This is not intended to be a comprehensive analysis of all non-market benefits of the Elliott. Due to the limitations of time and effort allowed for the study, we can only partially address the major benefits identified. We will address two categories of non-quantifiable benefits: Ecosystem Services and Social Benefits.

6.3.1.1 Ecosystem Services

The list of ecosystem services provided by forests is extensive. The most important benefits are contributions to air and water quality, provision of fish and wildlife habitat (including threatened and endangered species), and soil stabilization.

Air Quality

Air quality is impacted by two activities on the Elliot: prescribed burning and wildfire. Prescribed burning is managed, controlled burning of areas by managers under specified conditions in order to accomplish planned objectives such as removal of logging slash. Most slash burning occurs in the fall. Prescribed burning activity occurs on less than 100 acres annually. The agency completed 35 acres of slash burning on all CSF timberlands in FY2003.[22] In fiscal year 2004, the ODF Coos District planned 40 acres of slash burning, less than one-tenth of the acres planned for clearcut harvest.[23]

The Oregon Smoke Management Plan regulates prescribed burning on all forest lands in Oregon to ensure that they comply with the Clean Air Act. Some of the objectives of the program are to protect public health, minimize smoke intrusions into designated population areas, reduce emissions from prescribed burning in western Oregon, and protect visibility in Class I areas during high use periods. The ODF carefully plans prescribed burning using site specific data and weather information. They register the unit with the Coos Forest Protection Association, which regulates the burning and issues burning permits. The Association is a

private nonprofit corporation that provides protection from fires to its corporate members and to other private, state and federal lands.

It is likely that prescribed burning activity on the Elliott would increase under Alternative A given the assumed higher level of harvesting for this case. Our model estimates annual clearcut harvests of 900 to 1,200 acres per year depending on the management scenario. The ODF has clearcut an average of 427 acres annually during the last 5 fiscal years. Since slash burning is dependent on final harvests is it likely that prescribed burning would increase by two to three times if the private owner burns a similar percentage of harvest areas. The impact on air quality of this additional activity would continue to be regulated under the Oregon Smoke Management Plan.

Wildfires are a relatively rare occurrence in the wet forests of Western Oregon; however, as the history of the Elliott itself attests, they do occur and can be catastrophic. The Coos Bay Fire of 1868 burned 90 percent of what is now the Elliott State Forest and gave origin to much of the current timber stands. Effects on air quality can be significant in the short term as well. Managed forests in general have a lower incidence of wildfire. This is due to treatment of fuels, maintenance of forest health and thinning of overcrowded stands. Better access for suppression is generally available in managed forests when fires do occur. Under both the Base Case and Alternative A, the Elliott will continue to be managed, albeit under differing strategies. It is unclear that either alternative offers materially better protection from wildfire.

Water Quality

Water quality from forested areas can be affected primarily by past and current timber harvesting activities, roads, and wildfire events. Current Forest Practice regulations address the effects of forestry activities on water quality by requiring riparian buffers to protect stream courses as well as other measures. The current rules were designed to meet the water quality needs of fish and wildlife and also to meet the requirements of the federal Clean Water Act. Water quality rules focus on retaining riparian vegetation and reducing the amount of sediment coming into streams from forestry operations such as road building and logging. Wetlands are also protected by Forest Practices Act rules and other state and federal laws.

The current and proposed Elliott Forest Management Plan riparian protection measures exceed the Forest Practices Act requirements. Three zones of protection are established adjacent to streams. These include a stream bank zone defined as the area within 25 feet on each side of the outer edge of the aquatic zone for all streams. An inner riparian management area (RMA) zone extends from 25 to 100 feet from the stream on each side. Finally, an outer RMA zone extends from the edge

of the inner zone at 100 feet out to 160 feet from the stream. Within each zone, management actions are restricted depending on the stream classification.[24]

Under Alternative A is it reasonable to assume that the private owner will provide the minimum protection required by the State Forest Practices Act but little else. These measures presumably provide adequate protection of water quality as well as protection of fish and aquatic habitat. It is worth noting, however, that there are numerous examples of large private landowners of all types, including TIMOs as well as forest products companies, significantly exceeding these requirements and providing additional benefits such as stream channel and fish passage enhancements. It is reasonable to conclude that there would be some reduction in the clean water benefit provided by the Elliott forest under Alternative A; however, it is not possible to predict whether water quality would be measurably degraded.

Fish and Wildlife Habitat

The Elliott is home to most native species found in the forests of the Oregon Coast Range. Approximately 191 species including 51 mammals, 116 birds, 24 amphibians and reptiles and 30 fish are known or likely to exist on or adjacent to the Elliott. Species of concern include species listed under the federal or state threatened and endangered species lists, species proposed for or candidates for listing, and state sensitive species. The bald eagle, marbled murrelet and northern spotted owl are listed as threatened species on both the federal and state lists. The Coho salmon (Oregon Coast ESU (evolutionarily significant unit)) is listed as a threatened species on the federal list and as a sensitive species on the state list. In addition, the peregrine falcon is listed as endangered on the state list. Steelhead (Oregon Coast ESU) and fisher are candidates for federal listing. In addition to these, there are 33 other species listed as federal species of concern or state sensitive species.

Most of the focus on the Elliott has been on the northern spotted owl and marbled murrelet. The ODF and DSL signed a Habitat Conservation Agreement with the U.S. Fish & Wildlife Service, covering the spotted owl and murrelet in 1994. The owl portion of the agreement is still in effect while the murrelet agreement expired in 2001. A survey in 2003 found 12 pairs and one single owl on the Elliott. As of 2003, approximately 10,000 acres are protected in Marbled Murrelet Management Areas. All potential habitat has not yet been surveyed.[25]

The Elliott serves as an important link of the conservation of the spotted owl in the region. According to the HCP, the Elliott and the Late Successional Reserve (LSR) on federal lands immediately to the north provide a critical link within the Oregon Coastal Range Province,

connecting populations north and south of State Highway 38. USFWS assumes that population clusters within LSRs in the Oregon Coast Range Province may continue to decline for 30-50 years due to habitat conditions and poor reproductive output. Regrowth of forests in Coast Range LSRs, and hence, demographic contribution, will not begin to occur for several decades. In the meantime, contributions to the provincial owl population by the Elliott will be very beneficial. It is especially important to maintain dispersal linkages, such as the Elliott, between LSRs and potential source populations in the Klamath and West Cascades and other areas of the Coast Range Province to allow restocking of reserves.

To the south and west of the Elliott, there are privately owned timber lands. Most private timberlands near the Elliott currently have younger, early successional forests. It is likely that most of these lands will continue to be managed for early successional forests. In 1995, Weyerhaeuser Corporation entered into an HCP with the USFWS to manage its 209,000 acre Millicoma Tree Farm, adjacent to the Elliott, as habitat conducive for dispersal of spotted owls. The Millicoma Tree Farm and the Elliott State Forest form the major linkage between three LSRs that will be critical in facilitating restocking of suitable, potentially vacant, habitat that will be developing in the LSRs. The remaining private forest lands are expected to make limited contributions to the survival and recovery of spotted owl and marbled murrelet populations. The Elliott State Forest will provide a transition over time between these areas by maintaining some quality habitat for nesting and survival, and by providing habitat that allows spotted owls and marbled murrelets to move from lesser quality habitat on private lands to higher quality habitat on federal lands.[26]

The sustainable ecosystem management strategies described in the draft Elliott Forest Plan are intended to result in habitat conditions on the landscape and in aquatic and riparian areas that will provide functional habitat conditions for native species using forested habitats in the central Oregon Coast Range. The following components of the sustainable forest ecosystem management strategies are expected to address the habitat needs of fish and wildlife species on the Elliott State Forest:[27]

1. Maintain a diversity of stand types across the landscape, representing early, intermediate, and advanced structure stages of development and provide these stand types in a functional arrangement through a combination of active management and providing conservation areas as described in the sustainable forest ecosystem management strategies.

2. Maintain riparian habitats and protect streams and other aquatic systems through application of standards to maintain riparian

management areas as described in the sustainable forest ecosystem management strategies.

3. Maintain key structural components in managed stands, by retaining snags, logs, and live green trees as described in the sustainable forest ecosystem management strategies.

4. Protect endangered, threatened, and candidate species by following procedures for complying with the state and federal Endangered Species Acts.

In the broadest sense, forest management neither creates habitat nor destroys it; it only alters the mix of habitats provided. Under the proposed plan, the forest will be managed to develop more late successional forest cover that provides habitat for the spotted owl, murrelet and other species favoring these conditions. A variety of other habitat conditions including early and mid-successional stages are provided as well, forming a mosaic of diverse conditions.

Under Alternative A, it is likely that the operable portion of the forest, which we have estimated as two-third of the total, will be managed on a shorter rotation, intensive even-aged timber management strategy similar to those used by industry and other private landowners in the region. Average rotation length will be in the 45 to 55 year range. This implies a significantly younger age class distribution will be created, as we have modeled in Chapter 5. Different species, those that favor younger forest structures, will be favored under this approach at the expense of species that favor complex, mature structures. The remaining 33 percent of older forest, however, will continue to provide habitat for the species requiring mature forest.

Threatened and endangered species laws would continue to be applicable under Alternative A, of course, and this requires specific protections of occupied owl and murrelet habitat as long as occupation continues. It does not require protection of unoccupied habitat, however. The outcome of transfer of ownership to the private sector in terms of habitat change depends on whether the new owner is willing to accept the current HCP for owls and/or negotiate a new single species or multi-species HCP.

Spotted owl nesting sites on the Elliott are known and tend to be relatively stationary. We have assumed in our analysis that these areas are protected for at least 50 years. However, once the activity center is unoccupied for two years, the habitat becomes available for harvest. At the same time, new owl sites could be created in currently unoccupied potential habitat.

Locations of murrelet sites are less well identified since much of the potential habitat has not been surveyed. Murrelet nesting sites tend to be more transitory over time. Suitable habitat (defined as stands in the 80 year age class and above (age 76+) must be surveyed for presence of birds in advance of a timber harvesting operation. If birds are found, the plans must be altered to protect the site. However, if the habitat is found to be unoccupied it is available for harvest.

Soil Stabilization

Slope movements or landslides are the predominant landform-altering agent in the Coast Range and can contribute to water quality degradation, damage to aquatic habitat and pose a significant threat to public safety. Slope movements in the Elliott's steep terrain often start in or enter the steep V-shaped channels characteristic of the forest and become debris torrents. Forest cover protects against these events. Management activities such as road building and timber harvest can potentially trigger slope movements although these can be minimized with good practices.

Most recent road-related landslides start from older roads built using out-dated methods. ODF has initiated an aggressive road maintenance program to prevent these failures.

Improved management strategies, including the expertise of a geotechnical specialist and staff training have reduced the frequency and size of landslides in harvest units. ODF practices are intent on complying with all Forest Practices Act requirements for soil protection and minimizing management-induced slope movements by obtaining geotechnical assistance when needed.[28]

Under Alternative A, increased harvest levels will result in more activity on the ground and on the road system. This implies an increase risk of landslide events. Compliance with Forest Practices Acts requirements in the areas of operations planning, reforestation, treatment of slash, road construction and maintenance and harvesting provide protection. A written plan is required in areas where public safety risk is intermediate or high. Harvest is prohibited on certain high landslide hazard locations.

6.3.1.2 Social Benefits

There is a broad array of benefits that forests provide to the local, state and regional population. These benefits are provided, to a greater or lesser extent, regardless of who owns the forest. We will address four of these benefits here: Scenic Resources, Cultural Resources, Special Forest Products, Wood Products Sustainability, and Existence Value.

Scenic Resources

Sightseeing and driving for pleasure is the most popular outdoor activity in Oregon according to a 1988 survey by the Oregon Department of Parks and Recreation. Sixty-nine percent of the households surveyed indicated that they participated in that activity.[29]

The Elliott State Forest is on the remote southern Oregon coast. The closest major city to the Elliott is Eugene/Springfield, about 76 miles away. The forest is a major part of the view for seven miles along the Tidewater portion of the Umpqua River on Highway 38 in the Coast Range. State Highway 38 is designated as scenic for the purpose of visual corridor management. The visually sensitive corridor is defined as the area within 150 feet of the outermost right-of-way boundary along both sides of the highway. Special rules apply to timber harvest in this corridor. Loon Lake is a popular fishing area with vistas of the forest.

The immediate visual foreground along Highway 38 is protected by Department of Transportation scenic buffers and scenic statutes and the Forest Practices Act rules. The ODF manages the visual resources of the visible mid-ground of the viewshed on the Elliott according to an administrative classification. This Special Stewardship – Visual designation allows harvesting only to enhance the visual characteristics of the forested landscape. Visual goals also impact the background areas adjacent to these designated lands.

Under Alternative A, it is likely that the private owner would provide less protection of scenic resources than under the Base Case. Clearcutting activity on the forest would increase and some of this would be visible from locations outside the forest boundary. Forest Practices Act and scenic statutes would apply to the private owner, offering some mitigation of effects. Some private owners in Oregon provide additional protection of visual quality beyond the requirements; others do not.

Cultural Resources

Cultural resources are archeological and historical resources, including objects, structures, or sites used by people in the past. The Elliott has not been fully surveyed for cultural resources. A literature search completed in 1998 identified four potential prehistoric sites and 50 historic site locations. Two pioneer cemeteries are currently protected as heritage sites. Other sites, including Native American and early Euro-American are thought to exist on the forest.[30]

The Draft Forest Plan has goals for cultural resources including completion of an inventory and assessment of cultural resource sites, establishment of a cultural resource database, and development of a procedure to integrate site protection into forest activity plans.

Under private ownership (Alternative A) it is likely that little emphasis, beyond that required by archeological object and site laws and any applicable county regulations.

Special Forest Products

Special forest products include plant products, other than timber, that are collected or harvested for personal or commercial purposes. On the Elliott, activity has included collection of fern, salal, huckleberry, and cedar for shakes. Approximately 500 free use woodcutting permits are issued to the public annually for firewood collection.

Under Alternative A, it is uncertain whether these social benefits would continue at their current level, increase or decrease. The private purchaser of the property could offer any range of access for these types of uses, from no access to open access. Firewood cutting could possibly increase since most woodcutting is tied to timber sale logging debris and non-merchantable material.

Wood Products Sustainability

There is no question that as a society we need wood products. Helping meet Oregon's and the nation's growing need for wood has been part of the history of Oregon for over 100 years. However, despite its abundant and highly productive forest resource, Oregon is a now a net importer of wood products, meaning that we consume more wood products each year than we produce from our own forests.

Since 1990, Oregon's harvest levels have steadily declined. This is largely due to reductions in federal harvests but include reductions on other public lands as well, including the Elliott where recent harvest levels are about half of what they were prior to the listing of the northern spotted owl. Across Oregon, harvest levels are only half of the level that is considered sustainable. Thirty to thirty five percent of Oregon's 28 million acres of forestland are in areas reserved for wildlife, wilderness and other values that prohibit or restrict harvest or are not capable of producing commercial timber.[31]

When forests are made unavailable for harvest, even for the best of reasons, this shifts the demand for wood products to other parts of the nation and indeed, the world. Thirty-five percent of U.S. lumber consumption currently comes from Canada. Increasing amounts of wood and paper products are coming from distance places such as Brazil, Chile, Indonesia, and New Zealand. In shifting our wood demand elsewhere, we also shift the environmental impacts of timber harvesting into someone else's "backyard." In some cases, the environmental protections are not in place to protect the resource from long term degradation.

Under Alternative A, the Elliott would incrementally increase the state's sustainability in wood products.

Existence Value

Existence Value is the intrinsic worth of knowing that a resource like the Elliott exists, even though the individual may not even visit it personally. This value, although difficult to quantify, is significant to many Oregonians as the intense public interest in the current and future management of the Elliott attests.

7.0 Analysis of Costs

7.1 Introduction

There are two significant costs to consider in the comparison of the Base Case and Alternative A. The first is the mitigation cost resulting from termination of the current HCP. Second is the real estate transaction cost that would be incurred if the Elliott was to be sold. All other costs, such as the on-going management costs of the forest under continued state ownership, have already been incorporated into the discounted cash flow analysis.

7.2 HCP Mitigation Cost

The Implementation Agreement between the State and Federal Services includes provisions for termination of the agreement by either party. Mitigation in accordance with the requirements of the Endangered Species Act is required for any take that has occurred during the term of the agreement. The notice of termination is to include a statement as to the number and location of listed species taken under the permit until the time of termination as well as a statement as to the extent of mitigation accomplished to offset such take. If the USFWS disagrees with either statement, the parties must negotiate an agreement, which is subject to non-binding mediation in the event an agreement cannot be reached. Alternatively, the USFWS can utilize "any remedy or enforcement procedure available by law or regulation."[32]

It is not possible to estimate the cost of mitigation with any degree of certainty. There is no information on the number of incidental takes (birds harmed or killed) that have occurred under the HCP. It is reasonable to expect, however, that the mitigation will be based on acres of suitable habitat lost and that it will be in the form of an agreement to provide like habitat either within the Elliott or elsewhere for some period of time.

The Coos District annually reports acres of suitable habitat (stands greater than 76 years old) that has been harvested. Through December, 2004, District staff estimate that 3,700 acres has been harvested. The opinion of the staff is that the USFWS would not require more than this number of acres of suitable habitat be protected, and that this may be a temporary rather than permanent protection.[33]

In order to estimate the financial cost of mitigation, we used the DCF model to calculate the NPV of the forest assuming that mitigation requires setting aside 3,700 acres in the 100-year age class for a period of 25 years. The change in NPV versus the 'no mitigation' case depends on the harvest level assumed. Under the Sustainable Harvest strategy, the NPV (at a 7.5 percent discount rate) of holding these stands for 25 years is $85,000. Under the Accelerated Harvest strategy, the cost is $10 million. The difference in cost represents the relative availability of other timber for harvest as a substitute for the volume held under

the mitigation. Under the accelerated strategy, there is less alternative timber available, so the value of the reserved volume is greater.

This mitigation cost will ultimately be borne by the State, whether it is in the form of a reduced value received for the property or the State provides for the mitigation on some other state-owned forest lands.

We also note that the land reserved under the Alternative A scenarios, one-third of the land base, may already include sufficient conservation measures for mitigation; in which case, the added cost of mitigation is $0.

7.3 Transaction Cost

We estimate the cost of the transaction to the state would be 0.5 to 2.0 percent of the sale price, depending on the details of the sale and whether a commission is paid to an outside party to handle the transaction.[34] This corresponds to a cost of $1.3 to $10.0 million based on the range of valuations developed for Alternative A.

8.0 Comparison of Costs and Benefits

8.1 Introduction

In this chapter, we will bring together the costs and benefits estimated in the analysis in order to derive a net benefit. First we will examine the point of view of the financial benefit to the Common School Fund. Following this, we will summarize the net benefits in the wider point of view of state government to consider impacts beyond the CSF.

8.2 Net Incremental Benefit to the Common School Fund

The Net Income from the sale is the sale price less costs of the sale. The minimum net income is the minimum sale price less than maximum cost while the maximum net income is the maximum sale price less minimum costs. The estimated range of Net Income is shown in Table 8.1.

Table 8.1 - Net Income from Sale of Alternative A.

	Million Dollars	
	Min	Max
Net Income from Sale:		
Market Price Range	265	489
- Less Mitigation Cost for Termination of HCP	(10)	-
- Less Transaction Cost	(10)	(1)
Net Income from Sale	245	488

The Net Incremental Benefit is the difference between the net income from the sale and the NPV of future CSF income under continued state ownership. The minimum is the lowest net income less the highest value under continued state ownership. The maximum is the highest net income less the lowest value under continued state ownership. This provides the measure of benefit to the CSF from the land sale alternative. Table 8.2 summarizes the Net Incremental Benefit for the range of values estimated for each alternative:

Table 8.2 - Net Incremental Benefit of Alternative A.

	Million Dollars	
	Min	Max
Net Incremental Benefit from Sale:		
Net Income from Sale	245	488
- Less NPV under State Ownership	381	282
Net Incremental Benefit to CSF from Sale of Forest	(136)	206

The Net Incremental Benefit ranges from $(136) to $206 million depending on the sale price of the land under Alternative A as well as the assumption regarding long term income from continued state ownership. The highest benefit occurs with the comparison of the highest net sale income, $488 million, against the lowest value for continued ownership of $282 million based on current harvest levels. If the forest plan revision results in an increase in harvest to 36 mmbf, the Net Incremental Benefit of a land sale would be $107 million.

In some cases, the private valuation is less than the value of continued state ownership. In these cases the Net Incremental Benefit of a sale would be negative.

8.2.1 Return on Asset Value

Given the questions that were the impetus for this cost-benefit study, it is worthwhile to directly address the fundamental question of whether the Common School Fund is earning an adequate return on the value of the Elliott CSF asset even though this departs from the cost-benefit analysis framework.

Return on Asset Value is the ratio of annual net income to the current value of the asset. We have estimated a value in today's timberland market of up to $489 million for the Elliott CSF lands. Table 8.3 lists the Return on Asset Value for the current level of harvest as well as alternative future harvest levels based on a $489 million asset value.

Table 8.3 – Return on Asset Value under various future annual harvest levels and based on a $489 million current asset value.

Annual Harvest	Est. Annual Income	Return on Asset Value
Million board feet	*Million dollars*	*Percent*
Current Plan:		
27	14.2	2.9
Revised Plan:		
30	16.0	3.3
36	19.6	4.0

The State is earning a real rate of return on the asset's value of approximately three percent under the current plan. If harvest levels increase as anticipated under a revised plan and HCP, the State would earn up to four percent.

Whether this return is "adequate" is a subjective consideration. The CSF currently expects to earn about five percent on its financial investments over time. One might conclude, therefore, that the Land Board should sell the Elliott CSF lands and place the proceeds into its other investments to gain this additional one to two percent return. Other considerations, however, argue against this. Several analysts have shown that timberland investments are less risky (less volatile) than investments in equities such as stocks and bonds and in addition tend to move counter-cyclically with stocks and bonds.[35] These characteristics of timberlands are in fact one reason for the rapid rise in timberland investments by the financial community. Pension funds and other investors have recognized the portfolio diversification value of timberland investments and have included timberlands as part of their diversification strategy.

On the other hand, private timberland investors expect a higher return on timberland investments. TIMOs, as we have discussed previously, typically expect to earn a return of seven to eight percent.

The National Council of Real Estate Investment Fiduciaries (NCREIF) produces a quarterly report of private timberland investment returns which provides a useful benchmark for assessing timberland financial performance. The NCREIF Timberland Index is based on actual results from properties held by institutional investors. The NCREIF average return for Pacific Northwest timberland investments was 8.6 percent in 2003.[36] Over the longer term, PNW timberland investments earned an average return of 7.9 percent, between 1993 and 2002.[37]

Only part of this total return is comparable to the Return on Asset Value calculated for the Elliott, however. The NCREIF return includes two components – Capital Appreciation and EBITDDA. The Capital Appreciation component measures the change in capital value of the forest based on biological growth of the inventory as well as change in land values. This portion of the total NCREIF timberland return is not represented in the return value calculated for the Elliott.

The EBITDDA return, which is based on the operating income of the property, is comparable to the Return on Asset Value for the Elliott. Both are current income-based measures. The NCREIF EBITDDA return for PNW timberlands in 2003 was 6.3 percent and averaged 8.0 percent between 1993 and 2002.[38]

8.3 Other Economic and Non-Market Benefits

Sale of the Elliott CSF timberlands to the private sector will result in an increase level of harvest with impacts on the state economy as described in Chapter 6. Although we will not repeat all the caveats here we emphasize that these impacts, particularly the indirect job and income creation, are subject to considerable uncertainty because of the impact a change in ownership may have in the future patterns of expenditures and employment. Nevertheless, we believe it is still useful to quantify the value of these impacts even given the uncertainty surrounding them.

To calculate the NPV of these annual benefits, we assumed these occur for a period of 50 years and discounted this benefit stream at five percent. The Sustainable Harvest scenario with sustained harvest at 45 mmbf represents the low end of the range of values. The incremental benefits are the result of an additional 12 mmbf of harvest compared to the Base Case harvest of 33 mmbf. For the Accelerated Harvest scenario, which represents the high end of each range of values, we have adjusted the benefits over time to reflect the decline in

Table 8.4 - Economic benefits of Alternative A compared to a Base Case State timber harvest of 33 million board feet.

Economic Effects:	Annual Impact First Decade *Million Dollars or Jobs*	50-Year NPV[1] *Million Dollars*
Timber & related economic activity		
Employment		
Lumber & Wood Products Sector	84 - 200 jobs added	
All Sectors	180 - 428 jobs added	
Personal Income	12.5 to 29.6	227.6 to 376.0
Personal & Corporate State Income Tax Rev.	0.7 to 1.7	13.2 to 21.8
Forest Products Harvest Tax Rev.	0.0 to 0.1	0.6 to 1.1
Recreation related economic activity		
Employment	0 - 19 jobs lost	
Total Income	-0.6 to 0.0	-11.5 to 0.0
Recreational Consumer Surplus	-1.1 to 0.0	-20.1 to 0.0
County Property Tax Receipts		
Coos County	0.2	2.9
Douglas County	0.1	2.2
Net Benefits	$ 12 to 32 million	$ 215 to 404 million

[1]NPV using a 5.0% real discount rate.

harvest projected after the first decade. Table 8.4 summarizes the value of these economic benefits compared to a Base Case state harvest level of 33 mmbf.

The sum of economic benefits ranges from $215 to $404 million. The largest benefit is the increase in personal income projected from the 180 to 428 jobs created as a result of increased timber harvest. This may be offset by a modest decline in jobs in state government and the recreation sector.

The above analysis assumes the State is able to increase the annual harvest level on the CSF portion of the Elliott to 33 mmbf. Economic impacts of a sale to the private sector would be greater if this is not achieved.

Table 8.5 on the following pages summarizes the discussion of non-quantifiable benefits of the Elliott and how the level of benefits provided by the forest may change under a private ownership scenario.

To be sure, the Elliott State Forest Common School Fund land represents a valuable resource to the State of Oregon and its people. Only some of these values can be expressed in dollars. We provide a realistic range of values for the Elliott from the perspective of various types of private investors. We provide estimates of the economic impact of a change in ownership as well as observations on the likely effects of the more important non-market resources. MB&G hopes that this information is useful to the Board as it considers future plans for the Elliott forest.

Table 8.5 - Summary of Non-quantifiable benefits and effects of the Alternatives.

	Description of Benefits	Likely Effects	
		Base Case	Alternative A
Ecosystem Services			
Air Quality	Managed forests protect air quality by reducing risk of wildfire compared to unmanaged forests.	Minimal smoke production from prescribed burning by ODF will continue.	Smoke production from prescribed burning may increase but impact is minimized by Oregon Smoke Management Plan.
Water Quality	Forests produce quality water supplies compared with other land uses; however, quality can be impacted by past and present management practices including roads, harvesting and other activities.	ODF's wide riparian buffers provide water quality protection beyond the requirements of Forest Practices Act standards.	Reasonable to assume less protection of water quality; however, many private landowners provide protection beyond regulatory requirements. Forest Practices Act requirements minimize impacts of forest management activities.
Fish & Wildlife Habitat	Management of the Elliott has been directed at providing more Nesting, Roosting & Foraging (NRF) habitat as well as dispersal habitat for the northern spotted owl (NSO), suitable habitat for marbled murrelet (MM), protection for Coho salmon, as well as habitat for a variety of other species. The Elliott serves as an important link connecting populations of NSO on Late Successional Reserves on nearby federal lands.	The forest will be managed to develop more late successional forest cover that provides habitat for NSO, MM and other species favoring these conditions. The Elliott is expected to act as a population source for NSO into the federal reserves. A variety of other habitat conditions including early and mid-successional stages are provided as well, forming a mosaic of diverse conditions.	The forest will be managed on shorter rotations where harvest is not prohibited by the occupancy by NSO and/or MM. Less NRF habitat and more dispersal habitat will be provided over time. Species that favor early-successional stages, such as deer and elk, will benefit at the expense of those that favor late stages. The Elliott over time may provide less benefit as a source of NSO to repopulate surrounding federal reserves. Existing occupied NSO and MM sites are protected under ESA regulations.
Soil Stabilization	Slope movements or landslides are the predominant landform-altering agent in the Coast Range and can contribute to damage of water quality and aquatic habitat and pose a public safety risk. Forest cover stabilizes slopes and reduces their occurrence.	ODF has an active program of road maintenance and uses expertise and other management practices to reduce the risk of landslides.	Increased activity including harvesting and associated road maintenance and use imply an increase risk of landslide events. Forest Practices Act requirements including harvest prohibitions in certain areas should minimize this risk.

Table 8.4 (continued)

	Description of Benefits	Likely Effects	
		Base Case	Alternative A
Social Benefits			
Scenic Resources	The Elliott is relatively remote; however, portions of the forest are visible from a scenic highway and surrounding populated areas. Management activities, especially clearcutting, have a negative impact on aesthetics for many people.	The ODF has a visual management program in place to minimize the visual impact of harvesting in the most sensitive viewsheds.	It is reasonable to expect that a private owner will place less emphasis on visual quality. However, many private timberland owners take measures to protect visual quality and Forest Practices and scenic highway regulations will protect viewsheds in the most sensitive areas.
Cultural Resources	Cultural resources are archeological and historical features.	The Draft Forest Plan outlines a program to survey and catalogue cultural resource sites and develop protection plans where appropriate.	It is reasonable to expect less emphasis on cultural resource protection by a private owner, although some private forestland owners provide such benefits.
Special Forest Products	Special forest products include the collection of plants and materials for personal and commercial purposes. Examples include firewood cutting and berry picking.	The state provides access for these uses, sometimes requiring a permit.	A private landowner may allow public access or may regulate or eliminate this benefit.
Wood Products Sustainability	Oregon is not self-sufficient in wood products use despite its abundant and productive forest resource.	The decline in harvest from the Elliott has reduced Oregon's wood self-sufficiency. The environmental impacts of harvest to meet our growing needs for wood products has been pushed to other parts of the World; perhaps at greater environmental cost than harvesting under our system of protections.	We expect harvest to increase under this Alternative, increasing Oregon's wood self-sufficiency marginally.
Existence Value	Existence Value is the intrinsic worth of knowing that a resource like the Elliott exists even though the individual may not visit it personally.	People who value public lands and old(er) forests will continue to derive value from knowing the Elliott continues to exist under public ownership.	The forest will continue to exist although its character will be significantly different. People who value working forests under private ownership will benefit.

END NOTES

[1] State Land Board Regular Meeting, December 9, 2003, Agenda Item 2, http://www.oregonstatelands.us/amp_elliott_study_lbitem.htm (Nov. 29, 2004).

[2] Dept. of State Lands, *Asset Management Plan*, http://www.oregonstatelands.us/amp_95.htm (Nov. 29, 2004).

[3] Jim Young, Coos District Forester, personal communication, 11/28/04.

[4] The future direction of management of the Elliott has not been determined since forest planning is on-going and no decision has been made. "Model 9" is a working hypothesis only and has been used in this report to characterize the Base Case because it is the best estimate of future direction available at this time.

[5] John Beuter, *Oregon's Common School Forest Land: Management Status Update.* March 31, 2003. p. 10.

[6] Ibid, p. 9.

[7] Clark Binkley, "Strategic Perspectives on Forest Ownership," *Who Will Own the Forest Conference Proceedings.* World Forestry Center, Portland, OR. January, 2003. p. 3.

[8] John Gilliland, "Strategic Perspectives on Forest Ownership," *Who Will Own the Forest Conference Proceedings*. World Forestry Center, Portland, OR. January, 2003. p. 2.

[9] Ibid, p. 6.

[10] Court Washburn, "The Evolution and Growth of Forestland as an Asset Class," *Who Will Own the Forest Conference Proceedings.* World Forestry Center, Portland, OR. January, 2003. p. 4.

[11] John Beuter, *Oregon Common School Forest Lands,* p. 6.

[12] John Beuter, *Oregon's Common School Forest Lands*, p. 13-16.

[13] Ibid, p. 12.

[14] Since the lump-sum payment from the land sale would be deposited into the CSF and invested in the same portfolio of investments, the expected rate of return from the CSF is the appropriate discount rate for determining the NPV of the Base Case. In forecasting CSF income, the 2005-07 Governor's Recommended Budget includes an expected return of 6.56 percent; however, this is a nominal rate that must be adjusted for inflation. We have estimated the equivalent real rate at 5.0 percent. This is a reasonable rate to use for a long term return on a conservative mix of stocks and bonds.

[15] Steve Wilent, "Investors Increase Timberland Holdings," *The Forestry Source*, Vol. 9, No. 12, December, 2004. p. 1.

[16] Lettman et. al., *Elliott State Forest Management Plan Revision: Connection to State and Local Economies,* Oregon Dept. of Forestry, September, 2001.

[17] Lettman et. al. *Connection to Local and State Economies,* pp. 113-114.

[18] Ibid, p. 126.

[19] Ibid, p. 115.

[20] Ibid, p. 130. The original value of $38.83 per day has been adjusted to 2004 dollars using a PPI adjustment factor.

[21] In Douglas County, the Elliott falls predominantly in the Reedsport School District. There are 3 rural tax codes in this district, 105.00, 105.09 and 105.10. We used the unweighted average tax rate of these districts. In Coos County, we obtained a tax rate by Township and Range and calculated an acre-weighted average tax rate.

[22] Oregon Dept. of Forestry, *Status of Common School Forest Land Management: Fiscal Year 2003*. Table 6.

[23] Oregon Dept. of Forestry. *Coos District 2004 Annual Operating Plan,* Table A-3.

[24] For a full description of the riparian protection measures under the proposed forest plan, see chapter 5 of the Draft Elliott State Forest Management Plan.

[25] Draft Elliott State Forest Management Plan, p. 2-32.

[26] Oregon Dept. of Forestry, *Elliott State Forest Habitat Conservation Plan.* pp. IV-2, 3

[27] Draft Plan, p. 5-57.

[28] Draft Plan, p. 2-47 – 2-48, 5-64.

[29] Draft Plan, p. 2-64.

[30] Draft Plan, p. 2-20.

[31] Oregon Forest Resource Institute, *Toward Sustainable Forestry: A Look at Oregon's Forests at the Millenium*, p. 3.

[32] Implementation Agreement between Oregon Dept. of Forestry and U.S. Fish & Wildlife Service, Section II, Paragraphs M, N, and S.

[33] Jim Young, Coos District Forester, personal communication (12/11/04).

[34] This estimate is based on personal communication with a private sector timberland acquisitions specialist.

[35] Among the many good sources of information on timberland investment characteristics is the Hancock Timber Resource Group website: http://www.htrg.com/htrg/educate/timber_invest/timber.html.

[36] Hancock Timber Resource Group, *Hancock Timberland Investor,* Fourth Quarter 2003. p. 2.

[37] Hancock Timber Resource Group, *Historical Returns for Timberland,* Research Notes 2003. p. 9.

[38] Hancock Timber Resource Group, *Hancock Timberland Investor,* Fourth Quarter 2003. p. 2.