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September 24, 1997

The Honorable Frank H. Murkowski
Chairman, Committee on Energy
and Natural Resources
United States Senate

The Honorable Don Young
Chairman, Committee on Resources
House of Representatives

Subject: Federal Land Management: Estimates of Timber Value and
Economic Effects of Harvesting the Headwaters Forest

The Headwaters Forest in northwestern California includes the nation's largest privately owned stand of old-growth redwood trees. The forest has been the focus of a decade-long struggle between its owner, the Pacific Lumber Company (Pacific Lumber), and environmental groups intent on preserving the forest and one of its inhabitants, the threatened marbled murrelet, a species of bird.

On September 28, 1996, the federal government, the state of California, and Pacific Lumber signed an agreement for the public to acquire approximately 7,500 acres of timbered area in exchange for approximately \$380 million in cash and assets from the United States and California. The 7,500 acres to be acquired includes the Headwaters Forest and two adjoining properties: the Elk Head Forest (also owned by Pacific Lumber), which includes approximately 1,125 acres, and the Elk River Property (owned by the Elk River Timber Company), an additional buffer zone of approximately 1,845 acres.

To respond to your interest in the value of the timber resources in the Headwaters Forest and the effects of harvesting the forest on jobs, payrolls, and taxes if harvesting were to occur, we obtained estimates of these values and effects. We obtained estimates of timber values from (1) a 1996 federally

funded draft report entitled Preliminary Consultation Report on Valuation of Timber for Headwaters Forest, (2) a 1997 Department of the Interior adjustment to that report, and (3) a 1993 Forest Service appraisal. (We summarize these estimates in enc. I.) Also, while the departments of Agriculture and of the Interior were reviewing a draft of this report, MAXXAM, Inc. (Pacific Lumber's parent company) provided us with five additional appraisals prepared by consultants in 1991 and 1993 and a discounted cash flow analysis prepared in 1991 by a financial analyst with Pacific Lumber. (We summarize these estimates in enc. II.) We did not evaluate the reasonableness of the methodology and assumptions that are the basis of any of these estimates.

Estimating the value of timber involves a number of variables, including the amount, type, and species of timber to be harvested, the timber's quality, the length of time required to harvest the timber, and the price of the timber. Timber-value estimates are based on assumptions about these variables, which can vary widely. As a result, the estimated values can also vary widely.

Accordingly, the estimates of timber values that we obtained varied considerably. The low estimate included two scenarios, one valued at \$20 million and the other at \$250 million. Although both scenarios were based on a discounted cash flow methodology, the \$20 million scenario assumed that no standing old-growth timber would be harvested; rather, only down, dead, and dying trees would be removed. In contrast, the \$250 million scenario assumed that 509 million board feet of timber, including standing old-growth timber, would be harvested. The Department of the Interior further adjusted the high end of this estimate by assuming higher timber prices over a 20-year harvest; this assumption resulted in estimated values of \$410 million to \$510 million for the same volume of timber. MAXXAM, Inc., provided estimated timber values ranging from a low of \$375 million to a high of \$706 million. The lowest of these appraisals, prepared in 1991, considered the value of 593 million board feet of timber on 3,158 acres; the price of redwood was assumed to be \$650 per thousand board feet. The highest of the appraisals (\$706 million), prepared in 1993, considered the value of 607 million board feet of timber on 4,488 acres. In this appraisal, the price assumed for redwood (\$1,192 per thousand board feet) was almost twice as high as that assumed in the earlier appraisal; comparable increases in prices were assumed for Douglas fir and whitewood.

The estimates of employment and annual payrolls that would result from a harvest of timber in the Headwaters Forest also varied. The low estimate projected a total of 97 direct and indirect jobs, with a total annual payroll of

\$2.9 million. The high estimate projected a total of 443 direct and indirect jobs, with a total annual payroll of \$18.9 million. We obtained one estimate of annual federal, state, and local tax revenues, which totaled about \$1.9 million.

BACKGROUND

The Headwaters Forest includes about 2,700 acres of old-growth forest, including the largest tract of virgin old-growth redwood timber in private U.S. ownership. The forest also includes other tree species, including Douglas fir and hemlock. The Headwaters Forest, so named because of its location at the headwaters of Salmon Creek and the Little South Fork of the Elk River in northern California, provides habitat for the marbled murrelet, which is listed as threatened under the federal Endangered Species Act.

Pacific Lumber notified the California Department of Forestry and Fire Protection that it planned to begin clearing dead, dying, and diseased timber from the Headwaters Forest in September 1996. Although the forest is privately owned, this "salvage" operation was subject to restrictions under a state law designed to protect forest resource values, including threatened and endangered species. Despite a series of legal challenges by environmental groups concerned about the effect of such an operation on the marbled murrelet's habitat, the company's right to conduct a salvage operation had been upheld by a California district court of appeals.

To prevent logging in the Headwaters Forest, the federal government and the state of California entered into an agreement with Pacific Lumber to transfer the Headwaters Forest and other acreage to the public. According to the agreement, the state and federal governments together will acquire a total of about 7,500 forested acres, including approximately 5,600 acres of virgin and old-growth forest. Of the 7,500 acres, approximately 5,625 will be acquired from Pacific Lumber and approximately 1,845 from the Elk River Timber Company, which owns land adjacent to the Headwaters Forest. Under the terms originally agreed to, the two companies will receive a total of approximately \$380 million in cash and assets—\$250 million from the federal government and \$130 million from California. Who will own and manage the land that will be acquired has not yet been decided, but a federal official predicts that it will be managed jointly by the federal government and by the state of California.

Until the agreement is implemented, Pacific Lumber has agreed not to log or to conduct salvage operations in the areas that will be conveyed to the public. Under the terms of the agreement, the company will also submit for approval

(1) a habitat conservation plan to the federal government and (2) a sustained yield plan to the state of California for its remaining forestland—approximately 190,000 acres. Upon the satisfactory implementation of the agreement, Pacific Lumber has agreed to withdraw two pending lawsuits against the state of California and the federal government. According to an official with MAXXAM, Inc., these lawsuits assert that federal and state regulations have impaired the entire value of the Headwaters property.

The agreement was originally scheduled to expire on July 28, 1997. According to the Department of Justice, the parties are operating under an informal extension of the agreement until February 28, 1998. Although the original agreement provided for an exchange of federal and state properties, including cash, the federal portion of the compensation—\$250 million—is now expected to consist entirely of cash if such an expenditure is approved and authorized by the Congress.

ESTIMATES OF THE VALUE OF TIMBER RESOURCES VARIED WIDELY

The estimates we obtained of the value of the Headwaters Forest's timber resources varied widely. The low estimate included two scenarios, one valuing the resources at \$20 million and the other at \$250 million; the high estimate, for \$706 million, was provided by MAXXAM, Inc. Each of the estimates we obtained relied on the assumption that some timber would be removed from the Headwaters Forest, whether through a salvage operation, which could be allowed for a portion of the year under existing requirements for protecting threatened and endangered species, or through a harvest of live trees, which is currently prohibited. Variations in the estimates we obtained reflect differences in assumptions about the volume of timber that would be logged and about increases in timber prices over time, as well as differences in the methods of computing the estimates. Specific information about the estimates is presented in enclosures I and II.

Federal appraisal standards define fair market value as the amount for which a property would be sold—for cash or its equivalent—by a willing and knowledgeable seller to a willing and knowledgeable buyer.¹ The standards provide for several methods of determining fair market value, including analyses of comparable sales or prior sales of the identical property. In the absence of reliable and comparable market prices, the standards provide for

¹Uniform Appraisal Standards for Federal Land Acquisitions, Interagency Land Acquisition Conference (1992).

estimating the value of a resource on the basis of the present value of the anticipated future income. Simply put, this method values the estimated net future income stream from the development and production of a project and adjusts this income stream to its value today by using a discount rate. Such a discount rate reflects the earning power of the money over time and the risk associated with this earning power. The choice of a discount rate is a key factor in determining the net present value—in effect, the lower the discount rate, the higher the net present value of an asset.

The low-value estimate we obtained included two scenarios—one valued at \$20 million and the other at \$250 million. Both scenarios were based on a discounted cash flow methodology, assuming a 20-year harvest and using a discount rate of 7 percent. However, the \$20 million scenario assumed that no standing old-growth timber would be harvested; rather, only down, dead, and dying trees would be removed. In contrast, the \$250 million scenario assumed that 509 million board feet of timber, including standing old-growth timber, would be harvested. The Department of the Interior further adjusted the high end of this estimate by assuming that the price of timber would increase by more than the 1 percent per year assumed in the consultant's report. Assuming that timber prices would increase by 6 to 8 percent per year over a 20-year harvest resulted in estimated values of \$410 million to \$510 million for the same volume of timber.

The estimated values in the appraisals provided by MAXXAM, Inc., ranged from a low of \$375 million to a high of \$706 million. The lowest of these estimates was prepared in 1991 and considered the value of 593 million board feet of timber on 3,158 acres. This appraisal (\$375 million) assumed prices of \$650 per thousand board feet for redwood, \$600 per thousand board feet for Douglas fir, and \$200 per thousand board feet for whitewood. The highest of the appraisals (\$706 million) was prepared in 1993 and considered the value of 607 million board feet of timber on 4,488 acres. In addition to considering higher timber volumes, this appraisal assumed higher prices—\$1,192 per thousand board feet for redwood, \$1,082 for Douglas fir, and \$485 for whitewood.

ESTIMATES OF THE EFFECT OF HARVESTING TIMBER ON JOBS, PAYROLLS, AND TAXES VARIED

The estimates we obtained of the employment and payrolls that would result from harvesting the timber in the Headwaters Forest varied. The low estimate, provided by an official of the California Forestry Association, was for a total of 97 jobs, with an annual payroll of \$2.9 million for the life of the

harvest. This employment estimate included 79 direct and 18 indirect jobs, with associated annual payrolls of \$2.4 million and \$0.5 million, respectively. Direct jobs result directly from the timber operation and include such positions as loggers and mill workers. Indirect jobs result from the increased economic activity that occurs when timber workers spend their incomes on goods and services; such jobs include positions in restaurants and retail establishments. The high employment estimate, for a total of 443 jobs, would have had an annual payroll of \$18.9 million. This estimate included 314 direct and 129 indirect jobs, with associated annual payrolls of \$10.6 million and \$8.3 million, respectively. This estimate was provided by an economist consulting with Humboldt County, California. Specific information about the employment and payroll estimates is presented in enclosures III and IV.

We obtained one estimate of annual federal, state, and local tax revenues, which totaled about \$1.9 million. This estimate, prepared by the California Forestry Association official, includes approximately \$1.3 million in corporate taxes, \$437,000 in federal personal income taxes, \$58,000 in state income taxes, and \$125,000 in local taxes. We obtained estimates of annual county timber yield taxes, which ranged from \$125,000 to over \$1 million. Estimates of county timber yield taxes over the life of the harvest were about \$6.4 million and \$9.8 million. Specific information about the tax revenue estimates is presented in enclosure V.

AGENCY COMMENTS

We provided the U.S. Department of Agriculture's Forest Service and the Department of the Interior with a draft of this report for review and comment. These agencies provided technical clarifications, which we incorporated into this report as appropriate.

SCOPE AND METHODOLOGY

To obtain estimates of the value of the timber resources and of the effects of the proposed exchange on potential employment and annual payrolls and taxes for the Headwaters Forest in northwestern California, we contacted federal, state, and local government officials; representatives of the timber company and of the timber industry; and environmental groups. Specifically, we sought these estimates from officials in (1) the Forest Service's headquarters in Washington, D.C., and regional office in San Francisco, California; (2) the Office of the Secretary of Agriculture in Portland, Oregon; (3) the Bureau of Land Management's headquarters and state office in California; and (4) the Fish and Wildlife Service's headquarters and Pacific

Region. We also contacted officials at the California Resources Agency, the California Department of Forestry and Fire Protection, the Office of the Governor of California, and the California State Lands Commission; officials of Humboldt County, California; officials at MAXXAM, Inc., and Sierra Pacific Industries; the California Forestry Association's Vice President for Governmental Affairs; the author of a consulting report prepared for the Humboldt County Commissioners; a Humboldt State University economist; and representatives of the Save the Redwoods League, the Citizen's Alternative Group, and the Rose Foundation. We contacted officials at the Department of Justice, the President's Council of Economic Advisors, and the Council on Environmental Quality to ascertain whether they could provide other valuation or economic estimates.

From our contacts with the above sources, we obtained estimates of resource values from (1) a 1996 federally funded draft report entitled Preliminary Consultation Report on Valuation of Timber for Headwaters Forest, (2) a 1997 Department of the Interior adjustment to that report, and (3) a 1993 Forest Service appraisal review. In addition, while a draft of this report was being reviewed by the agencies, MAXXAM, Inc., provided us with five additional appraisals prepared by consultants in 1991 and 1993 and a discounted cash flow analysis prepared in 1991 by a financial analyst with Pacific Lumber. The Department of Justice provided us with the consultant's appraisal report that was the basis for the Forest Service's 1993 appraisal review.

For each of the resource value estimates we obtained, we identified some of the key assumptions and computation methods. However, we did not attempt to ascertain the appropriateness or reasonableness of the assumptions and methodologies. Similarly, we obtained estimates of employment, payrolls, and taxes; we did not verify the assumptions or the methodologies used to compute them. We also limited our review to the specific questions asked; we therefore did not address other potential economic and social effects of the proposed exchange.

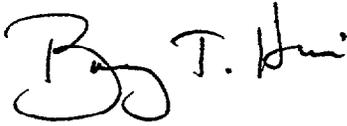
We obtained projections of employment, payrolls, and taxes associated with a timber harvest in the area from an economist at Humboldt State University in Arcata, California; a representative of MAXXAM, Inc.; the California Forestry Association's Vice President for Governmental Affairs; and the author of a consulting report prepared for the Humboldt County Commissioners.

We performed our review from April through August 1997 in accordance with generally accepted government auditing standards.

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As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report for 14 days. At that time we will make copies available to the Secretaries of the Interior and of Agriculture and to other interested parties. We will also make copies available to others on request.

If you or your staff have any questions, please call me at (202) 512-3841. Major contributors to this report were Jennifer Duncan, Diane Lund, Sue Naiberk, and Victor S. Rezendes.



Barry T. Hill
Associate Director, Energy,
Resources, and Science Issues

ESTIMATES OF THE VALUE OF TIMBER IN THE HEADWATERS FOREST
AND ASSUMPTIONS AND METHODOLOGIES USED

Estimate of timber value and assumptions and methodology used	Mason, Bruce, and Girard's draft preliminary estimate, July 8, 1996 ^a	Department of the Interior's adjustments to scenario 1 of Mason, Bruce, and Girard's estimate, August 1, 1997 ^b	Forest Service's appraisal review, September 13, 1993 ^c
Estimated value	Scenario 1: \$250 million ^d Scenario 2: \$20 million ^e	\$410 million and \$510 million	\$496 million ^f
Methodology used	Discounted cash flow analysis	Discounted cash flow analysis	Sales comparison ^g
Assumed price	"Current log prices" with 1-percent price rate adjustment	"Current log prices" with 6- and 8-percent price rate adjustments	Old-growth redwood: \$850/MBF ^h Young-growth redwood: \$595/MBF Old-growth Douglas fir: \$830/MBF Young-growth Douglas fir: \$450/MBF Grand fir and hemlock: \$260/MBF
Discount rate	7 percent	7 percent	Not applicable
Estimated logged volume	509 MMBF ^{i,j}	509 MMBF	592 MMBF
Duration of harvest	20 years	20 years	12 to 16 years

^aMason, Bruce, and Girard, Inc., Draft Preliminary Consultation Report on Valuation of Timber for Headwaters Forest (July 8, 1996). This report was done under contract to the U.S. government.

^bLetter from the Deputy Secretary of the Interior to Senator Frank H. Murkowski (Aug. 1, 1997).

^cThis appraisal review was prepared by the Regional Appraiser, Pacific Southwest Region, Forest Service (Sept. 13, 1993). The appraisal review was based on the J.E. Fleming & Associates appraisal report, The Salmon Creek Property (Jan. 1, 1993).

^dIn scenario 1, the report assumes that 75 percent of the timber would be harvested.

^eIn scenario 2, the report assumes that standing old-growth timber would not be harvested.

ENCLOSURE I

ENCLOSURE I

¹This is the value of the loggable timber only; the land and remaining trees were valued at almost \$3 million. According to the appraisal, the value of the property--which includes timber and land--was approximately \$499 million.

⁹The units of comparison were value per acre and value per thousand board feet (MBF) of timber.

^hThese prices are for sawlogs; the appraisal also included prices for special cull logs and utility logs, which were as follows: \$265/MBF for old-growth redwood, \$115/MBF for young-growth redwood, and \$40/MBF for old-growth Douglas fir.

¹This report relied on a 1992 timber inventory that was not verified.

^lMillion board feet.

APPRAISALS OF TIMBER VALUE IN THE HEADWATERS FOREST AREA PROVIDED BY MAXXAM, INC.

Timber acreage, volume, price, and appraised value	Solinsky, March 1, 1991 ^a	NRM Corp., March 14, 1991 ^b	NRM Corp., March 25, 1991 ^c	Pacific Lumber, March 14, 1991 ^d	Able, March 15, 1991 ^e	NRM Corp., June 10, 1993 ^f
Acreage	3,158	3,158	4,549	3,158	3,158	4,488
Volume in MMBF ^g						
Redwood	450	450	456	450	450	461
Douglas fir	133	133	130	133	133	143
Whitewood	10	10	10	10	10	3
Total volume	593	593	596	593	593	607
Price per MBF ^h						
Redwood	\$650	\$700	\$699		\$643	\$1,192
Douglas fir	600	609	608		498	1,082
Whitewood	200	225	225		236 ⁱ	485
Appraised value						
Redwood	\$292,752,850	\$315,120,380	\$318,308,645		\$289,583,035	\$549,783,870
Douglas fir	80,039,400	81,240,400	79,262,225		66,406,391	154,371,550
Whitewood	1,921,600	2,161,800	2,148,750		2,268,449	1,668,885
Total appraised value	\$374,713,850	\$398,522,580	\$399,719,620	\$535,432,000	\$358,257,875	\$705,824,305

ENCLOSURE II

ENCLOSURE II

^aFrank and Dean Solinsky Consulting Foresters, Appraisal of Certain Lands Owned by the Pacific Lumber Company (Mar. 1, 1991). In addition to timber, this appraisal valued 3,158 acres of land at \$1,579,000 (\$500/acre) and included \$2,620,160 for severance damages, resulting in a total appraised value of \$378,913,010. The appraiser used a comparable sales method.

^bNatural Resources Management Corporation, Appraisal of the Pacific Lumber Company Salmon Creek Block as of March 1, 1991 (Mar. 14, 1991). Besides timber, this appraisal valued 3,158 acres of land at \$1,768,480 (\$560/acre), resulting in a total appraised value of \$400,291,060. The appraiser used a comparable sales method.

^cNatural Resources Management Corporation, untitled appraisal of a portion of the Salmon Creek Block owned by the Pacific Lumber Company as of March 1, 1991 (Mar. 25, 1991). In addition to timber, this appraisal valued 4,549 acres of land at \$2,547,440 (\$560/acre) and included \$150,000 for the value of a rock pit, resulting in a total appraised value of \$402,417,060. The appraiser used a comparable sales method.

^dThe Pacific Lumber Company, Discounted Cash Flow for the Headwaters Forest (Mar. 14, 1991). MAXXAM presented this analysis to us as an appraisal, but the report states that it is a financial planning tool that assesses the cash flow Pacific Lumber can expect to realize over a 7-year period from processing the Headwaters timber and selling the resulting lumber. According to the report, the value is derived from analyzing Pacific Lumber's existing operations, planned improvements to those operations, relevant factors in the marketplace, and various forecasts based on these variables. The analyst assumed a 9.5-percent discount rate and a 100-percent harvest of the net merchantable timber.

^eJames L. Able Forestry Consultants, Inc., Updated (March 15), Appraisal of Headwaters Forest (Mar. 15, 1991). Besides timber, this appraisal valued 3,158 acres of land at \$1,263,200 (\$400/acre) and deducted 12 percent from the gross value (\$41,521,075) for "profit and risk," resulting in a total appraised value of \$318,000,000. The appraisal was prepared for the Nature Conservancy, and the appraiser used a comparable sales method.

^fNatural Resources Management Corporation, Appraisal of the Salmon Creek Corporation Ownership Within the Salmon Creek and Little South Fork of Elk River as of April 30, 1993 (June 10, 1993). In addition to timber, this appraisal valued 4,488 acres of land at \$3,498,880 (\$780/acre), resulting in a total appraised value of \$709,323,185. The appraiser used a comparable sales method.

^gMillion board feet.

^hThousand board feet.

ⁱNot available.

^jPrice calculated by GAO.

ESTIMATES OF DIRECT AND INDIRECT EMPLOYMENT ASSOCIATED WITH HARVESTING TIMBER IN THE HEADWATERS FOREST

Employment	Humboldt County's consulting economist's estimate, July 1997 ^a	Humboldt State University economist's estimate, July 1997 ^b	California Forestry Association official's estimate, 1997 ^c	MAXXAM official's estimate, 1997 ^d
Direct	314	341 ^e	79	200
Indirect	129	1	18	1
Total	443	341	97	200

^aEstimate prepared for the Humboldt County Board of Supervisors by Daniel Ihara, Ph.D., consulting economist (July 7, 1997); additional information obtained during a subsequent discussion. Assumes 44.8 MMBF of old-growth redwood and whitewood timber would be harvested annually over 16 years.

^bEstimate prepared by John Grobey, Ph.D., professor of economics, Humboldt State University (July 8, 1997). Assumes 50 MMBF of old-growth timber would be harvested annually over 15 years, beginning in 2007, and 8.25 MMBF of young-growth timber would be harvested over 25 years.

^cEstimate provided by John Hofmann, California Forestry Association. Assumes 8.669 MMBF would be harvested annually.

^dEstimate provided by Byron Wade, Vice President and Chief Legal Officer, MAXXAM, Inc. Basis of estimate was not provided.

^eAssumes 41 jobs for young-growth harvest and 300 jobs for old-growth harvest.

^fNot addressed.

ESTIMATES OF ANNUAL PAYROLL ASSOCIATED WITH HARVESTING TIMBER IN THE HEADWATERS FOREST

Dollars in millions

Payroll	Humboldt County's consulting economist's estimate, July 1997 ^a	Humboldt State University economist's estimate, July 1997 ^b	California Forestry Association official's estimate, 1997 ^c	MAXXAM official's estimate, 1997 ^d
Direct	\$10.6	\$11.2 ^e	\$2.4 ^f	\$6.0 ^f
Indirect	8.3	2.8 ^g	0.5 ^f	^h
Total	\$18.9	\$14.0	\$2.9	\$6.0

^aEstimate prepared for the Humboldt County Board of Supervisors by Daniel Ihara, Ph.D., consulting economist (July 7, 1997); additional information obtained during a subsequent discussion. Assumes 44.8 MMBF of old-growth redwood and whitewood timber would be harvested annually over 16 years.

^bEstimate prepared by John Grobey, Ph.D., professor of economics, Humboldt State University (July 8, 1997). Assumes 50 MMBF of old-growth timber would be harvested annually over 15 years, beginning in 2007, and 8.25 MMBF of young-growth timber would be harvested over 25 years.

^cEstimate provided by John Hofmann, California Forestry Association. Assumes 8.669 MMBF would be harvested annually.

^dEstimate provided by Byron Wade, Vice President and Chief Legal Officer, MAXXAM, Inc. Estimate is for the 5,600-acre Headwaters area (the Headwaters Forest and the Elk Head Forest) and is based on an allocation of \$2.029 million paid in 1996.

^eAssumes \$1.345 million in lost direct wages for young-growth harvest annually and \$9.840 million in lost direct wages for old-growth harvest annually.

^fAssumes an average annual salary of \$30,000; the MAXXAM official described the \$6.0 million estimate as a maximum.

^gAssumes indirect wages are 25 percent of direct wages. This results in \$336,250 in lost indirect wages for young-growth harvest annually and \$2,460,000 in lost indirect wages for old-growth harvest annually.

^hNot addressed.

ESTIMATES OF TAX REVENUES ASSOCIATED WITH HARVESTING TIMBER IN THE HEADWATERS FOREST

Tax revenue	Annual revenue					Total (over the life of the harvest)	
	Humboldt County consulting economist's estimate ^a	Humboldt State University economist's estimate ^b	California Forestry Association official's estimate ^c	MAXXAM official's estimate ^d	Humboldt County consulting economist's estimate ^a	Humboldt State University economist's estimate ^b	
Federal income	e	e	\$436,500	e	e	e	
Corporate	e	e	1,257,005	e	e	e	
State income	e	e	58,200	e	e	e	
Fuel	e	e	40,744	e	e	e	
Timber harvest fees	e	e	4,855	e	e	e	
County property	\$17,217	e	e	\$13,500	e	e	
County timber yield	923,130	\$1,035,578	125,000	e	\$9,800,000 ^f	\$6,443,000 ^g	
Total	\$940,347	\$1,035,578	\$1,922,304	\$13,500	\$9,800,000	\$6,443,000	

^a Estimate prepared for the Humboldt County Board of Supervisors by Daniel Ihara, Ph.D., consulting economist (July 7, 1997); additional information obtained during a subsequent discussion. Assumes 44.8 MMBF of old-growth redwood and whitewood timber would be harvested annually over 16 years.

^b Estimate prepared by John Grobey, Ph.D., professor of economics, Humboldt State University (July 8, 1997). Assumes 50 MMBF of old-growth timber would be harvested annually over 15 years, beginning in 2007, and 8.25 MMBF of young-growth timber would be harvested over 25 years.

^c Estimate prepared by John Hofmann, California Forestry Association. Assumes 8.669 MMBF would be harvested annually.

ENCLOSURE V

ENCLOSURE V

^dEstimate provided by Byron Wade, Vice President and Chief Legal Officer, MAXXAM, Inc. Based on the allocation of the county property tax paid by the company in 1993 for the Headwaters Forest acreage.

^eNot addressed.

^fAccording to the study, this amount is the net present value of \$923,130 in annual timber yield taxes for harvesting old-growth timber, discounted over 16 years at 6.015 percent.

^gAccording to the study, this amount is the sum of the present values of the estimated annual timber yield taxes for harvesting old-growth and young-growth timber. Young-growth timber is estimated to yield \$112,448 per year over 25 years, discounted at 6 percent, resulting in a net present value of \$1,437,000 in 1997. Old-growth timber is estimated to yield \$923,130 per year over 15 years (beginning in 2007), discounted at 6 percent, resulting in a net present value of \$5,006,000 in 1997.

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