NEEDS

FOREST SVRC

REVIEW

17.2.10

TIMBER APPRAISAL
BOMB POINT PROPERTY
The Eyak Corporation; 2,052 Acres
Cordova, Alaska

Effective Date: May 1, 1994

Total Appraised Value: $3,100,000.00
($1,510.72/acre, $195.95/MBF)

Submitted: October 7, 1994

Prepared by: Timothy R. Manley
Property inspections, data collection and analysis performed by: Timothy R. Manley, Todd Hansen, Dennis Callegari, Brad Bailey, Jeffrey Weise, Mat Stine, Kevin Young, and Thomas Ruff.

MEMORANDUM

DEPARTMENT OF NATURAL RESOURCES

State of Alaska

DIVISION OF LAND
762-2680

FROM: Dennis L. Lattery
Review Appraiser

Hold this in WORK FILE UNTIL REVISED REPORT ARRIVES - PLACE IN REVISED REPORT. 10/12/94

TO: Marty Rutherford
Deputy Commissioner

DATE: October 10, 1994

SUBJECT: Appraisal Review - Timber Appraisal Bomb Point Property
The Eyak Corporation; 2052 Acres - Cordova, Alaska
Timothy R. Manley, Pacific Forest Consultants, Inc., Appraiser

I have been delegated real estate appraisal review authority for the department. In this capacity I have been asked to review an appraisal report determining the current market value of timber located in the Cordova, Alaska vicinity per procedures contained in the **12 STEP PROCESS FOR APPRAISAL/APPRAISAL REVIEW/APPROVAL** . This twelve step process establishes appraisal and appraisal review procedures for large tracts being acquired by the EVOS Trustees.

The subject of the appraisal report under review is **timber value only.** This appraisal does not determine real estate fee value or "surface estate", as described in ANSCA, only the market value of a timber crop, as of May 1, 1994.

It is the appraiser's opinion that the value of the subject timber, as of May 1, 1994, is $3,100,000.00 ($1,510.72/acre, $195.95/MBF).

Legal descriptions of the property on which the subject timber is located are as follows:

Township 14 South, Range 3 West, Copper River Meridian;

Section 29, Lot 1;
Section 30. Lot 2;
All of Section 31.

Containing 1037.07 acres, as shown on plat of survey officially filed October 24, 1991.

Township 14 South, Range 4 West, Copper River Meridian;

Section 25, Lots 1 and 2;
Section 26, Lots 8,9 and 10.
Section 34, Lots 1 and 2;

Section 35, Lots 1 and 2;
All of Section 36.

Containing 1015.33 acres as shown on plat of survey officially filed June 23, 1987.

In completing appraisals or appraisal reviews I am professionally obliged to disclose that I am competent, or not competent, to complete any given appraisal or review assignment. If I am competent I am to state reasons why I feel that is the case. If I do not possess a degree of knowledge sufficient to complete an assignment I am to disclose that fact and either decline the assignment, obtain sufficient appraisal training to complete the work or associate with a person possessing the necessary degree of expertise to complete the project.

I do not possess the necessary expertise to competently review a timber appraisal. As a consequence I have associated with Mr. Sheal Anderson, of Anderson & Associates, Inc., Port Ludlow, Washington, to review this timber report. Mr. Anderson is under contract with the State of Alaska, Office of the Attorney General (AGO), hired in the capacity of a timber expert for purposes of reviewing timber appraisals on behalf of the AGO and DNR. In terms of his years of experience in the logging industry in Alaska, and in particular his knowledge and expertise in the timber export market, I am assuming Mr. Anderson possesses the necessary qualifications to competently review a timber report. I am relying on this expertise entirely in recommending approval of the Bomb Point appraisal.

On September 28 1994 I received a copy of appraisal review comments from Mr. Anderson related to this project. A copy of these comments are attached. In his report Mr. Anderson relayed some concerns with the Pacific Forest Consultants report. Following this Mr. Anderson was instructed by myself to contact the Appraiser and relay the review comments to him for his consideration. Mr. Anderson did this and informed me by letter on October 9, 1994 that the appraisal report, in his opinion, was now approvable, reflecting a value he considered as representing an "...upper end of value that would be placed on this parcel by the marketplace."

Due to pressing time constraints and scheduling, a complete appraisal review report, certified and signed by Mr. Anderson, recommending approval subject to his "upper end of value" opinion, must follow at a later date. I am professionally uneasy recommending approval for the department without a certified report from him in hand but will do so on his verbal assurance that such a report will be provided in the future.

I will recommend that the timber report and the $3,100.000.00 value be approved.

I certify that, to the best of my knowledge and belief:

___ the facts and data reported by the review appraiser and used in the review process are true and correct.
___ the analysis, opinions, and conclusions in this review report are limited only by the assumptions and limiting conditions stated in this review report, and are my personal, unbiased professional analyses, opinions and conclusions.
___ I have no present or prospective interest in the property that is the subject of this report and I have no personal interest or bias with respect to the parties involved.
___ my compensation is not contingent on an action or event resulting from the analyses, opinions or conclusions in, or use of, this review report.
___ my analyses, opinions, and conclusions were developed and this review report was prepared in conformity with the Uniform Standards of Professional Appraisal Practice.
___ I did not personally inspect the subject property of the report under review.
___ Mr. Sheal L. Anderson of Anderson & Associates, Port Ludlow, Washington provided significant professional assistance to the person signing this review report.

Dennis L. Lattery

Dennis L. Lattery
Review Appraiser

October 10, 1994
Dated

Anderson & Associates, Inc.

6780 Oak Bay Road, Port Ludlow, WA 98365
Telephone & Fax: (206) 437-2574

Summary

I have reviewed the Bomb Point timber cruise and appraisal prepared by Pacific Forest Consultants, Inc. (PFC). Based on my knowledge of and experience with export log markets and logging operations in Alaska, I offer the following comments and analyses:

Comments on Appraisal Assumptions

The following examples describe departures by PFC from what are considered typical practices in the Alaska export log market:

1. Appraisal assumes tree-length yarding to the landing. Aside from the fact that this is neither efficient nor practical in old-growth, defective timber, nor feasible when using helicopters, tree-length yarding is simply not practiced in this type of timber in Alaska.

2. On the other hand, cruise parameters require variable log length estimates (in order to maximize recoverable grade) as a theoretical reflection of typical falling and bucking practices. This not only conflicts with the tree-length yarding assumption, it also conflicts with the export market's desire and willingness to pay for longer log lengths.

3. Cruise parameters specify a minimum sample tree with a 12' bole length and 6" inside-bark diameter, in conformance with the stated objective to estimate "total net volume" on the timber tract. In reality, there is no export market for logs of this minimum size, nor does the domestic sawlog and pulplog market value this log sufficiently to justify its removal and handling.

4. Logging cost estimates assume an average eight hour day and 40 hour work week. Typical operations in Alaska are ten hours per day and six days per week, due to the relative shortness of the season and the high fixed cost of doing business in Alaska's remote regions.

5. No allowance has been made for the consumption of high value logs for boomsticks, stiff legs, sort yard skids, bridges, etc. A minimum requirement for these logs would be two percent of the total cruise volume (350 MBF). More importantly, this would constitute nearly three percent of the higher grade volume (sort 10), since boomsticks and stiff legs are typically 67 feet in length with a 16 inch or larger small end diameter, 1 MBF log scale content, and of sound quality. At the conclusion of operations (assumed to be one year), the value of these logs will be reduced to predominantly that of pulpwood material due to usage damage and toredoes, if they have value at all.

Because of these and related issues, numerous and sometimes substantial adjustments have been made to the PFC appraisal. Following is an analysis by category of the specific adjustments and assumptions employed in this review:

Cruise Volume

From a technical and statistical point of view, PFC has done a credible job of cruising the subject timber and estimating the tract's total volume. However, the intensity of the cruise does not necessarily reflect the total commercial or economically operable volume that would result from a typical remote and high cost, export logging operation. Therefore, the following assumptions have been made with regard to PFC cruise results:

1. Gross volume estimate assumed to be accurate.
2. All cull volume estimates are eliminated; this component assumed to be left in the field.
3. In conventional logging types (11,12 and 13), all log volume excluding cull is assumed to be yarded, loaded, hauled and sorted to the raft.
4. In helicopter logging types (1 through 10, 14), only exportable log volume is assumed to be yarded and hauled to the yard; utility (19 and 39) and domestic (17 and 37) sorts are not considered valuable enough for yarding and further handling.
5. Where PFC cruise summaries include #3 or #4 sawlogs in high grade sorts, these grades have been reassigned to more appropriate sorts.
6. Average utility component is increased to 15% and 6% for hemlock and spruce, respectively, compared to the 8.4% and 2.1% indicated by the cruise for conventional logging. This is based on actual experience and is considered a conservative estimate.

Table 1 summarizes PFC's cruise results by sort and type after eliminating cull volume, reducing helicopter volumes by utility and domestic sawlog sorts, and reassigning low grade volume inadvertently included in high grade sorts:

Cruise Volume by Logging Type and Log Sort

Net MBF - Western Hemlock											
Conventional		11/12	10/14	16	17	18	19		A&A Total	Deducts	PFC Totals
Type	11	2,887	1,744	156	429	1,370	439		7,024	239	7,263
	12	2,567	1,362	345	728	699	615		6,315	145	6,460
	13	262	103	20	23	41	28		476	4	480
	subtotal	5,715	3,209	521	1,180	2,109	1,081		13,815	388	14,203
Helicopter-road		11/12	10/14	16	17	18	19		A&A Total	Deducts	PFC Totals
Type	1 x .25	43	32	13		62			149		149
	2		26	7		77			111	27	138
	3	104	73			18			195	2	197
	4	47	86	22		65			220	56	276
	5	156	28	29		85			298	35	333
	7	66	75	8		104			252	22	274
	8	145	174	49		210			579	259	837
	9	72	79	19		94			264	29	293
	14 x .15	7	6	2		35			51		51
	subtotal	639	580	149	0	751	0		2,119	430	2,549
Helicopter-water		11/12	10/14	16	17	18	19		A&A Total	Deducts	PFC Totals
Type	1 x .75	128	97	38		185			448	259	707
	6	54	54	11		97			215	31	245
	10	44	6	5					55	29	84
	14 x .85	42	34	11		201			288	171	458
	subtotal	267	191	64	0	483	0		1,005	489	1,494
	Total-Hemlock	6,621	3,980	734	1,180	3,343	1,081		16,939	1,307	18,246
Net MBF - Sitka Spruce											
Conventional		31/36	32/33	34	35	37	38	39	A&A Total	Deducts	PFC Totals
Type	11	40			11	45	31	4	132		132
	12	56	83		35	45	18	1	238	4	242
	13	41	36	25	8		6	6	121		121
	subtotal	137	119	25	54	90	55	11	491	4	496
Helicopter-road		31/36	32/33	34	35	37	38	39	A&A Total	Deducts	PFC Totals
Type	1 x .25								0		0
	8						14		14	2	16
	14 x .15						1		1		1
	subtotal	0	0	0	0	0	15	0	15	2	17
Helicopter-water		31/36	32/33	34	35	37	38	39	A&A Total	Deducts	PFC Totals
Type	1 x .75								0	3	3
	6						13		13	3	15
	14 x .85						6		6	2	8
	subtotal	0	0	0	0	0	19	0	19	7	26
	Total-Spruce	137	119	25	54	90	89	11	525	14	539
	Total Hem & Spr								17,464	1,321	18,785

PFC total cruise volume estimates are probably overstated for a couple of reasons:

1. Variable log length cruising results in an overstatement of volume compared with cruising in 32' or preferred export log lengths. This "scale effect" captures more volume under log scaling rules than is typically realized in the export market, which prefers and will more highly value longer average log lengths.

2. Minimum sample tree size specified by PFC in its cruise instructions will generate marginal volume that has little to negative value to a potential buyer, particularly given the high cost of removal.

The overestimate of volume resulting from these practices could be substantial; however, in the absence of a complete and thorough on the ground verification, it is assumed that cruise volumes reported by PFC are accurate as reported in the appraisal.

Sort Analysis

Sort and/or grade calls are more critical to a timber appraisal than physical volume. This is especially true in old growth timber destined for the export market, since overseas log buyers are particularly discriminating in their quality requirements.

To verify grade and sort calls made by PFC, a number of plots were checked in the higher value timber types 11 and 12, which also contain the bulk of the volume on the tract (82%). Although the number of plots checked was limited, observations of timber quality throughout the stand confirmed the results of our checks. In addition, adjustments to PFC sort and grade calls are supported by experience with similar timber types in Alaska.

> *Note: No spruce fell within any of the plots examined, and only a couple of merchantable spruce trees were observed during field examination. Since PFC's spruce sample represents only three percent of the total cruised volume (although a disproportionately higher value), and no sort/grade verifications were made, it is assumed that PFC's estimate, with the exception of pulp sort 19, is correct for purposes of this review. The increased pulp volume is assumed to come from domestic sort 37 with no change in total spruce volume.*

The following table compares PFC hemlock sort percentages with our findings:

Sort Code	Description	PFC	A&A
11/12	High Grade 12"+	37.3	18.0
10/14	J/C-Shop 12"+	22.4	24.0
16	J 6"+	4.1	3.0
17	Domestic 6"+	9.0	10.0
18	K 6"+	18.8	30.0
19	Utility	8.4	15.0

Since the majority of plots examined were within the largest volume and timber type area (Type 11), it is our opinion that these adjustments are conservative; i.e., the timber quality in Type 11 appears on average superior to the other areas. Therefore, applying these adjustments across the entire tract probably overstates somewhat the grade and sort recovery that would result from actual operations.

The following table summarizes our estimate of volume by sort compared to PFC:

Table 2 - Adjusted Cruise Volume by Log Sort

Net MBF - Western Hemlock

Sort Code	PFC	A&A
11/12	6,621	3,049
10/14	3,980	4,065
16	734	508
17	1,180	1,694
18	3,343	5,082
19	1,081	2,541
Total	16,939	16,939

Net MBF - Sitka Spruce

Sort Code	PFC	A&A
31/36	137	137
32/33	119	119
34	25	25
35	54	54
37	90	69
38	89	89
39	11	32
Total	525	525

Log Values

Independent verification of FAS export log values at the date of appraisal was obtained from marketers and operators within the region, as well as within Southeast Alaska. As a result of this verification, the values assumed by PFC appear to be reasonable. However, the values attributed to domestic hemlock and spruce (sorts 17 and 37) appear to be somewhat high, given the type of log and distance to market. An average value of $300/MBF has been assumed for this sort, based on discussions with these sources. The following Table 3 reflects the weighted average log sales value of hemlock and spruce based on our adjusted sort percentages.

Note: Sort 10 hemlock volume has been reduced by 350 MBF to account for boomstick and other log consumption requirements.

Table 3: FAS Log Prices

Sort Code	MBF	$/MBF	Total
Western Hemlock			
11/12	3,049	950	2,896,550
10/14	3,715	725	2,693,375
16	508	550	279,400
17	1,694	300	508,200
18	5,082	550	2,795,100
19	2,541	100	254,100
Total	16,589	568.25	9,426,725
Sitka Spruce			
31/36	137	1,100	150,700
32/33	119	815	96,985
34	25	1,050	26,250
35	54	1,000	54,000
37	69	300	20,700
38	89	600	53,400
39	32	100	3,200
Total	525	771.88	405,235
Overall weighted average	17,114	574.50	9,831,960

Selling Value Adjustment

It is the opinion of the reviewer that PFC's 5% upward adjustment in log values, in anticipation of a market increase, is not warranted. Due to the size of the tract, which could be roaded and logged within one operation season, it is more likely that prospective purchasers would value the timber using current market information. In fact, given the volatility of the export log market, it is just as probable that log values could fall by 5% or more during the course of the operation.

Logging Costs

After a detailed review of PFC logging cost estimates it appears that the total FAS production cost estimate of $371.48/MBF is reasonable. This is based on actual logging, road building and sort yard contract experience, rather than the constructed cost approach employed by PFC. Following is a brief evaluation of the major cost categories:

Road Construction - $146,000 per mile estimate assumed by PFC appears consistent with typical road building contracts in the region; field observations of terrain and rock type also indicate that this estimate is within reason.

LTF Construction - PFC cost analysis appears thorough; however the LTF site has not been inspected by the reviewer. The $176,760 estimate is assumed to be reasonable.

Logging - The average logging cost of $197.21/MBF calculated by PFC includes a weighting of shovel, conventional and helicopter yarding cost components. PFC cost estimates for each of these components appears reasonable compared with similar operations in the region. However, field observation indicates that at least 25 percent of the conventional yarding could employ shovels, compared with PFC's 10 percent estimate. This would reduce weighted average logging costs by $5 to $6 per MBF.

Hauling - No trucking analysis was included with the appraisal; however, PFC's estimate of $12.68/MBF appears reasonable given the average haul distance to the yard.

Sort and deliver - PFC's analysis of this cost center excluded a number of items that are typical of export sorting operations:

Rafting gear (swifters, shackles, chains, etc.)
Banding wire and clips
Bundle crane
Yard maintenance

However, PFC's average cost estimate of $64.49/MBF is high enough to account for these additional items when compared to similar sort yard operations in the region.

Personnel - No analysis of this expense was evident in PFC's appraisal; however, the $25.00/MBF estimate appears reasonable.

Administration & engineering - The $150,000 assumed by PFC seems insufficient to cover the following items for a full year:

Accounting
Marketing
Quality control
Legal
General management
Scaling reports
Engineering

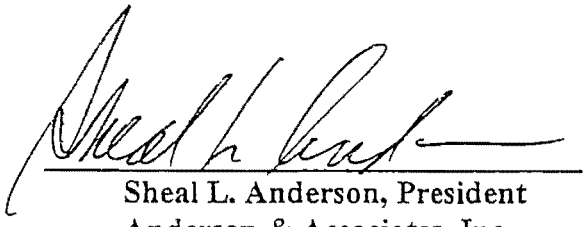
A more reasonable estimate would probably fall in the range of $250,000 - $300,000. Overall, PFC's estimated cost deficiencies are largely offset by potential operating efficiencies. PFC's total production cost estimate provides an adequate basis for determining a conversion return for the subject timber:

Profit and Risk

The reviewer concurs with PFC's assumption that a 20 percent profit and risk factor is appropriate for an investment of this nature

Discount Rate

PFC's assumption that an 8% discount rate appropriately reflects the interest cost for this investment seems reasonable.



9/28/94

Sheal L. Anderson, President
Anderson & Associates, Inc.

Anderson & Associates, Inc.

6780 Oak Bay Road, Port Ludlow, WA 98365
Telephone & Fax: (206) 437-2574

BOMB POINT APPRAISAL REVIEW

CERTIFICATION

I certify that, to the best of my knowledge and belief:

- the statements of fact contained in this report are true and correct;
- the reported analyses, opinions and conclusions are limited only by the reported assumptions and limiting conditions, and are my personal, unbiased professional analyses, opinions and conclusions;
- I have no present or prospective interest in the property that is the subject of this report, and I have no personal interest or bias with respect to the parties involved;
- my compensation is not contingent upon the reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value estimate, the attainment of a stipulated result, or the occurrence of a subsequent event;
- I have earlier made a personal inspection of the property that is the subject of this report;
- Gregory Keylock, President, Keylog, Ltd., provided significant professional assistance in developing my review. I also had conversations with Tim Manley, Pacific Forest Consultants, Inc., pertaining to questions on factual data in his original appraisal.

Respectfully submitted,

Anderson & Associates, Inc.

Sheal L. Anderson
President

Anderson & Associates, Inc.
6780 Oak Bay Road
Port Ludlow, Washington 98365
Phone & Fax: (206) 437-2574

October 9, 1994

Alex Swiderski
Environmental Section
Office of the Attorney General
Alaska Department of Law

Dear Alex:

I have reviewed the Bomb Point timber appraisal submitted by Pacific Forest Consultants (PFC) on October 7, 1994. This appraisal values the Bomb Point property at $3,100,000 on May 1, 1994.

It is my opinion that this appraisal reflects the upper end of value that would be placed on this parcel by the marketplace. However, this value is within reasonable limits given the uncertainties of the export log market, and the limiting assumptions and conditions employed by PFC.

Sincerely,

Sheal L. Anderson
President

October 7, 1994

Mr. Richard Goossens
Regional Appraiser
USDA, Forest Service
P.O. Box 21628
Juneau, AK 99801

RE: Transmittal of Eyak - Bomb Point Timber Appraisal Report.

Dear Rich:

Enclosed please find four copies of our *Bomb Point Timber Appraisal* Report.

This report includes changes to the working documents, in the area of log length calculations, uncertainty in changes in the log market, standing tree defect predictions, FAS volume adjustments for the procurement of boom sticks, and FAS price structure of pulp and domestic logs.

In revising our working documents we went through the whole appraisal analysis anew, revisiting logging, road construction, yard, & administrative costs based upon the prevailing market characteristics as of the Effective date of this appraisal, i.e. May 1, 1994.

Any changes made from the working papers are consistent with the approach that an informed purchaser would take in valuing this property.

Although the review and consultation process has been lengthy, I believe that it has been of great value in helping us produce the best timber appraisal possible.

Sincerely,

Timothy R. Manley
Forester
Oregon Certified General Appraiser
encls.
wp_docs@alaska@goossens.7

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I. SUMMARY OF SALIENT FACTS

Timber Ownership:	Sherstone Corporation, a subsidiary of The Eyak Corporation.	
Property Name:	Bomb Point.	
Location of Property:	Five miles northwest of Cordova, Alaska.	
Property Acreage:	2,052 acres.	
Property Description:	Timberland with a mixture of predominately old growth western hemlock and mountain hemlock containing a minor component of Sitka spruce.	
Interest Being Appraised:	Fee simple timber rights, including rights to harvest and construct harvest related improvements.	
Improvements:	Approximately three-quarters of a mile of road and a partially completed log transfer and sorting facility.	
Effective Date of the Appraisal:	May 1, 1994.	
Estimates of Value:	Cost Approach	Not Applicable.
	Income Approach	$3,100,000.00
	Sales Comp. Approach	Not Applicable.
Final Estimate of Value:	$3,100,000.00	

II. ASSUMPTIONS AND LIMITING CONDITIONS

The following limiting conditions are material to this analysis:

A. Limit Of Liability: The liability of the appraiser and employees is limited to the client and to the fee collected. Further, there is no accountability, obligation, or liability to any third party. If this report is placed in the hands of anyone other than the client, the client shall make such party aware of limiting conditions and assumptions of the appraisal. The Appraiser assumes no responsibility for any costs incurred to discover or correct any deficiencies of any type present in the property; physically, financially and legally.

B. Copies, Publications, Distribution, Use of Report: Possession of this report or any copy thereof does not carry with it the right of publication, nor may it be used for other than its intended use; the physical report remains the property of the appraiser for the use of the client; the fee being for the **analytical services only.**

The Bylaws and Regulations of the American Society of Farm Managers and Rural Appraisers requires that each Member or Candidate control the use and distribution of each appraisal report signed by such Member or Candidate. Except as hereinafter provided, the client may distribute copies of this appraisal report in its entirety to such third parties as he may select, however, selected portions of this appraisal report shall not be given to third parties without the prior written consent of the signatory of this appraisal report. Neither all nor any part of this appraisal report shall be disseminated to the general public by use of advertising media, public relations, news, sales or other media for public communication without the prior written consent of appraiser.

C. Confidentiality: This appraisal is to be used only in its entirety and no part is to be used without the entire report. All conclusions and opinions concerning the analysis set forth in the report were prepared by the Appraiser whose signature appears on the report, unless indicated as "Review Appraiser". No change of any item in the report shall be made by anyone other than the Appraiser. The Appraiser shall have no responsibility if any such unauthorized change is made.

The Appraiser may not divulge the material (evaluation) contents of the report, analytical findings or conclusions, or give a copy of the report to anyone other than the client or his designee as specified in writing except as may be required by the American Society of Farm Managers and Rural Appraisers as they may request in confidence of ethics enforcement, or by court of law or body with the power of subpoena.

D. Trade Secrets: This appraisal was obtained from Timothy R. Manley, of Pacific

Forest Consultants, Inc., Oregon Certified Appraiser and Forester and consists of "trade secrets and commercial or financial information" which is privileged and confidential and exempted from disclosure under 5 U.S C. 552 (b) (4). Notify the appraiser signing the report of any request to reproduce this appraisal in whole or part.

E. Information Used: No responsibility is assumed for accuracy of the information furnished by the work of others, the client, his designee, or public records. The appraiser is not liable for such information. The comparable data relied upon in this report has been confirmed with one or more parties familiar with the transaction or from affidavit or other sources thought reasonable; all are considered appropriate for inclusion to the best of the appraiser's factual judgement and knowledge. An impractical and uneconomic expenditure of time would be required in attempting to furnish unimpeachable verification in all instances, particularly as to timber inventory and market related information. It is suggested that the client consider independent verification as prerequisite to any transaction involving sale, lease, or other significant commitment of funds for the Subject Property.

F. Testimony and Completion of Contract Appraisal Services: The contract for appraisal, consultation or analytical services are fulfilled and the total fee payable upon completion of the report. The appraiser, or those assisting in preparation of the report will not be asked or required to give testimony in court or hearing because of having made the appraisal, in full or part, nor engage in post appraisal consultation with client or third parties except under sperate and special arrangement and at additional fee. If testimony or deposition is required because of subpoena, the client shall be responsible for any additional time, fees, and charges regardless of issuing party.

G. Exhibits: The sketches and maps in this report are included to assist the reader in visualizing the property and are not necessarily to scale. Various photos, if included, are included for the same purpose as of the date of the photos. Site plans are not surveys unless shown from a separate surveyor.

H. Legal, Engineering, Financial, Structural, Mechanical, Hidden Components, Soil: No responsibility is assumed for matters legal in character or nature, nor matters of survey, architectural, structural, mechanical, or engineering nature. No opinion is rendered as to the title which is presumed to be good and merchantable. The property is appraised as if free and clear, unless otherwise stated in particular parts of the report.

The legal description is assumed to be correct as used in this report as furnished by the client, his designee, or as derived by the appraiser.

Please note that no advice is given regarding mechanical equipment or structural integrity or adequacy, nor soils and potential for settlement and drainage (seek assistance from qualified architect and/or engineer); nor matters concerning liens, title status, legal marketability (seek legal assistance). If this appraisal is performed for financing purposes, the lender and owner should inspect the property before disbursement of any funds; further it is likely the lender or owner may wish to require mechanical or structural inspections by a qualified licensed contractor, civil or structural engineer, architect, or other expert.

The appraiser has inspected as far as possible by observation the land, timber, and improvements; however it is not practical or possible to personally observe the whole of the tree farm, conditions beneath the soil or hidden structural components. We have not critically inspected mechanical components in the improvements and no representations are made herein as to these matters unless specifically stated and considered in the report. The value estimate considers there being no such conditions that would cause loss in value. The land or the soil of the area being appraised appears firm, however subsidence in the area could occur. The appraiser does not warrant against condition or occurrence of problems arising from soil conditions.

The appraisal is based on there being no hidden, unapparent, or apparent conditions of the property site, subsoil, or structures or toxic materials which would render it more or less valuable. No responsibility is assumed for any such conditions or for any expertise or engineering to discover them.

I. Legality of Use: The appraisal is based on the premise that there is full compliance with all applicable federal, state and local environment regulations and laws unless otherwise stated in the report; that all applicable zoning, building, and use regulations and restrictions of all types have been compiled with unless otherwise stated in the report. Further, it is assumed that all required licenses, consents, permits or other legislative or administrative authority by local, state, federal and/or private entity or organizations have been or can be obtained or renewed for any use considered in the value estimate.

J. Component Values: The distribution of the total valuation in this report between land and timber apply only under the existing program of utilization. The separate valuations for land and timber must not be used in conjunction with any other appraisal and is invalid if so used.

K. Inclusions: Equipment or personal property or business operations except as specifically indicated and typically considered as a part of real estate, have been disregarded with only the real estate being considered in the value estimate unless otherwise stated.

L. Proposed Improvements, Conditioned Values: Improvements proposed, if any, on or off-site, as well as any repairs required are considered, for purposes of this appraisal, to be completed in good and workmanlike manner according to information submitted and/or considered by the appraisers. This estimate of market value is as the date shown, as proposed, as if completed and operating at levels shown and projected.

M. Value Change & Alteration of Estimate by Appraiser: The estimated market value, which is defined in the report, is subject to change with market movement over time; value is highly related to exposure, time, promotional effort, terms, motivation, and conditions surrounding the offering. The value estimate considered the productivity and related attractiveness of the property physically and economically in the market place as it contributes to an economic or social need.

In cases of appraisals involving capitalization of income benefits, the estimate of market value or investment value or value in use is a reflection of such benefits and the appraisers interpretation of income, yields, and other factors derived from general or specific client and market information. Such estimates are reported as of a specific date; they are thus subject to change since the market and value are naturally dynamic.

N. Management of the Property: It is assumed that the property which is the subject of this report will be under prudent and competent ownership and management; neither inefficient nor superefficient.

O. Changes and Modifications: This appraisal report and value estimates are subject to change if physical, legal entity, or financing different than envisioned at the time of writing this report becomes apparent at a later date. The appraiser reserves the right to alter statements, analysis, conclusion or any value of estimate in the appraisal if there becomes known to the undersigned facts pertinent to the appraisal process which were unknown to the appraiser at the time of report preparation.

P. Timber Inventory. The timber stand acreage and timber inventory information presented in this appraisal is assumed to be accurate. Although there may be instances of inaccurate volume and species composition estimates portrayed in individual timber stands of the inventory, the whole of the timber inventory is deemed to be reliable, however, *THE TIMBER INVENTORY IS AN ESTIMATE* and the appraiser assumes no liability for the true accuracy of the timber inventory.

Q. Threatened, Endangered and Sensitive Species. The effects of measures taken to protect the bald eagle and anadromous or high-value resident fish has been estimated to be

the withdrawal from timber production of a 50 acre area. Nevertheless, the appraiser assumes no responsibility for differences in this estimate and actual management requirements enforced by any state or federal agency.

R. Export Restrictions. All timber values are appraised as being fully private without export restrictions. The potential for the application of export restrictions to the Subject Timber was not considered in this appraisal.

S. Acceptance of and/or use of this appraisal report by the client or any third party constitutes acceptance of the above conditions.

III. OBJECTIVE OF THE APPRAISAL

A. Purpose. The purpose of this appraisal is to estimate the market value of the timber resources of the Bomb Point Property as of May 1, 1994.

B. Function. This report has been requested by Mr. Richard M. Goossens, Regional Appraiser, Alaska Region, USDA Forest Service, (through Ms. Diane Black-Smith, Black-Smith & Richards, Inc.) in order to provide a third party estimate of timber value to be reported to the Exxon Valdez Oil Spill Trustee Council.

C. Definition of Market Value. The most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition is the consummation of a sale as of a specified date, and the passing of title from seller to buyer under conditions whereby:

1. The buyer and seller are typically motivated;

2. Buyer and seller are well informed or well advised, and acting in what they consider their own best interests;

3. A reasonable time is allowed for exposure in the open market;

4. Payment is made in terms of cash in U.S. dollars, or in terms of financial arrangement comparable thereto; and

5. The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.[1]

In addition to this definition, market value for the sale of timber only, includes all rights necessary to harvest the timber such as the rights to work on the property during a normal operating season, rights to construct roads, landings, log transfer facilities, camps, moorage, and other improvements, the right of ingress and egress for harvest purposes, and other related rights.

D. Property Rights Appraised. The property rights appraised in this report are those timber harvest rights and interests held by the property owner in fee simple title.

E. Present Ownership of the Subject Property. The property on which the Subject Timber is located is a portion of the land ownership of The Eyak Corporation. The timber rights are controlled by Sherstone Incorporated which is in turned is controlled by Eyak Timber Incorporated, which is a subsidiary of The Eyak Corporation. Prior to the implementation of the *Alaska Native Claims Settlement Act* of 1971 the subject property was owned by the U.S. Government and administered by the USDA Forest Service, Chugach National Forest.

F. Date of Value Estimate. The date of value estimate is May 1, 1994. Property inspections were performed on May 19, 1994 and during the first week of June, 1994.

G. Legal Description. All in the State of Alaska:

Township 14 South, Range 3 West, Copper River Meridian;

Section 29, Lot 1;
Section 30, Lot 2;
All of Section 31.

Containing 1,037.07 acres, as shown on plat of survey officially filed October 24, 1991.

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[1] *Federal Register,* vol. 55, no. 163, August 22, 1990, pages 34228 and 34229. This is the definition generally used in conjunction with transactions subject to the Financial Institutions Reform, Recovery and Enforcement Act of 1989.

Township 14 South, Range 4 West, Cooper River Meridian;

Section 25, Lots 1 and 2;
Section 26, Lots 8, 9 and 10;
Section 34, Lots 1 and 2;
Section 35, Lots 1 and 2;
All of Section 36.

Containing 1,015.33 acres, as shown on plat of survey officially filed June 23, 1987.

EXHIBIT 1 - General Location of the Subject Timber

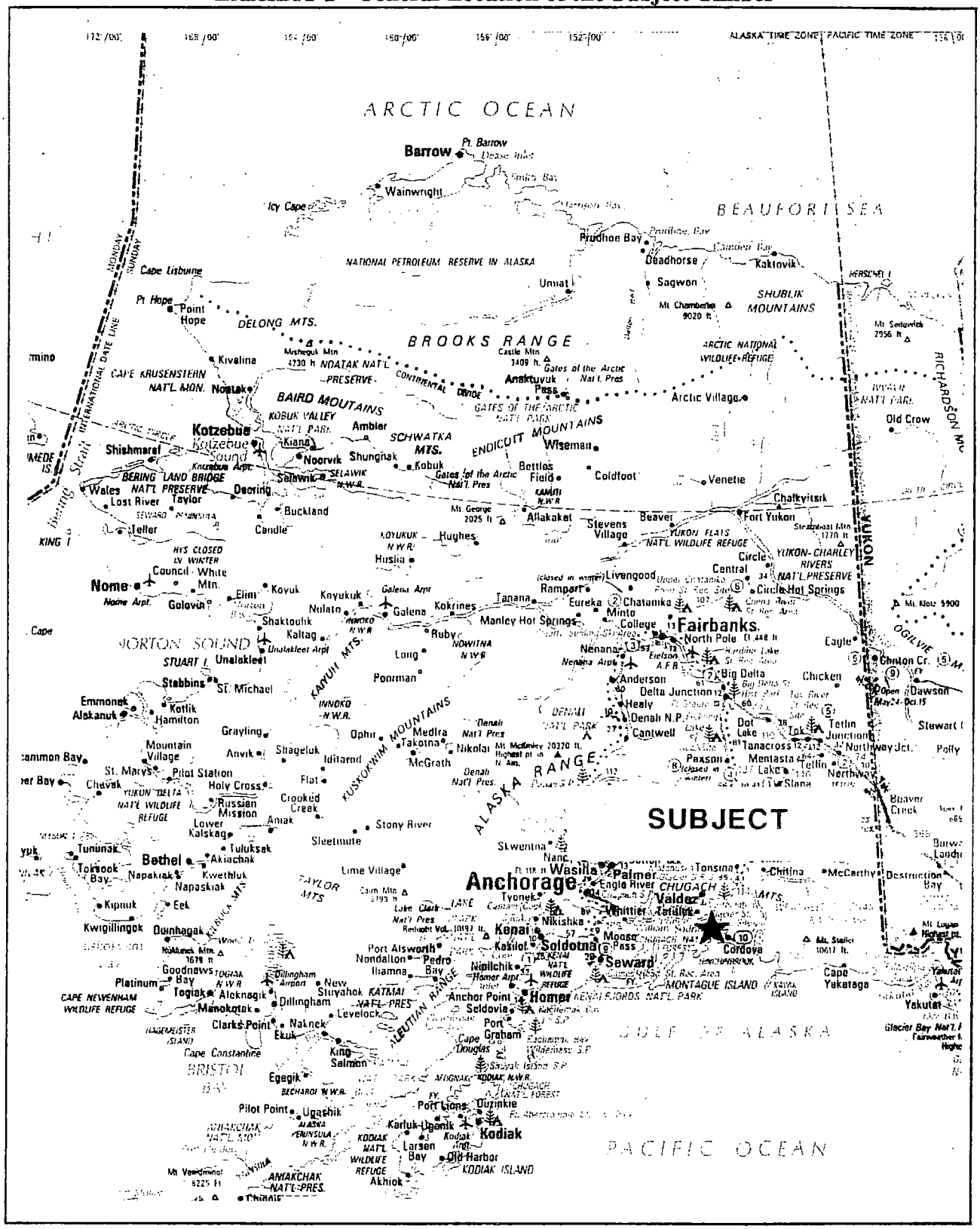


EXHIBIT 2 - Local Area of the Subject Timber

IV. MARKET AND AREA ANALYSIS

The information presented in this section is designed to provide a framework for comparing the Subject Timber with properties of comparable characteristics, and for the analysis of the unit attributes of the Subject Timber with the market values of those units. With these facts in hand, assumptions necessary to the determination of market value can be made in light of overall expectations about the current and future timber market.

A. The Timber Market. The term "timber market" suggests a homogeneous group of buyers and sellers involved in the sale of a homogeneous product (i.e. land and timber or only standing timber). Depending on the subject timber, its location, and the individuals or firms involved, however, the specific "timber market" may vary greatly between regional norms and averages.

The market area that we are concerned with here is that of the Subject Timber. This area extends from Southeast Alaska, to the North generally no further than the northern reaches of Prince William Sound, and to the Southwest to Afognak Island. From time to time there may be minor exceptions to this area delineation.

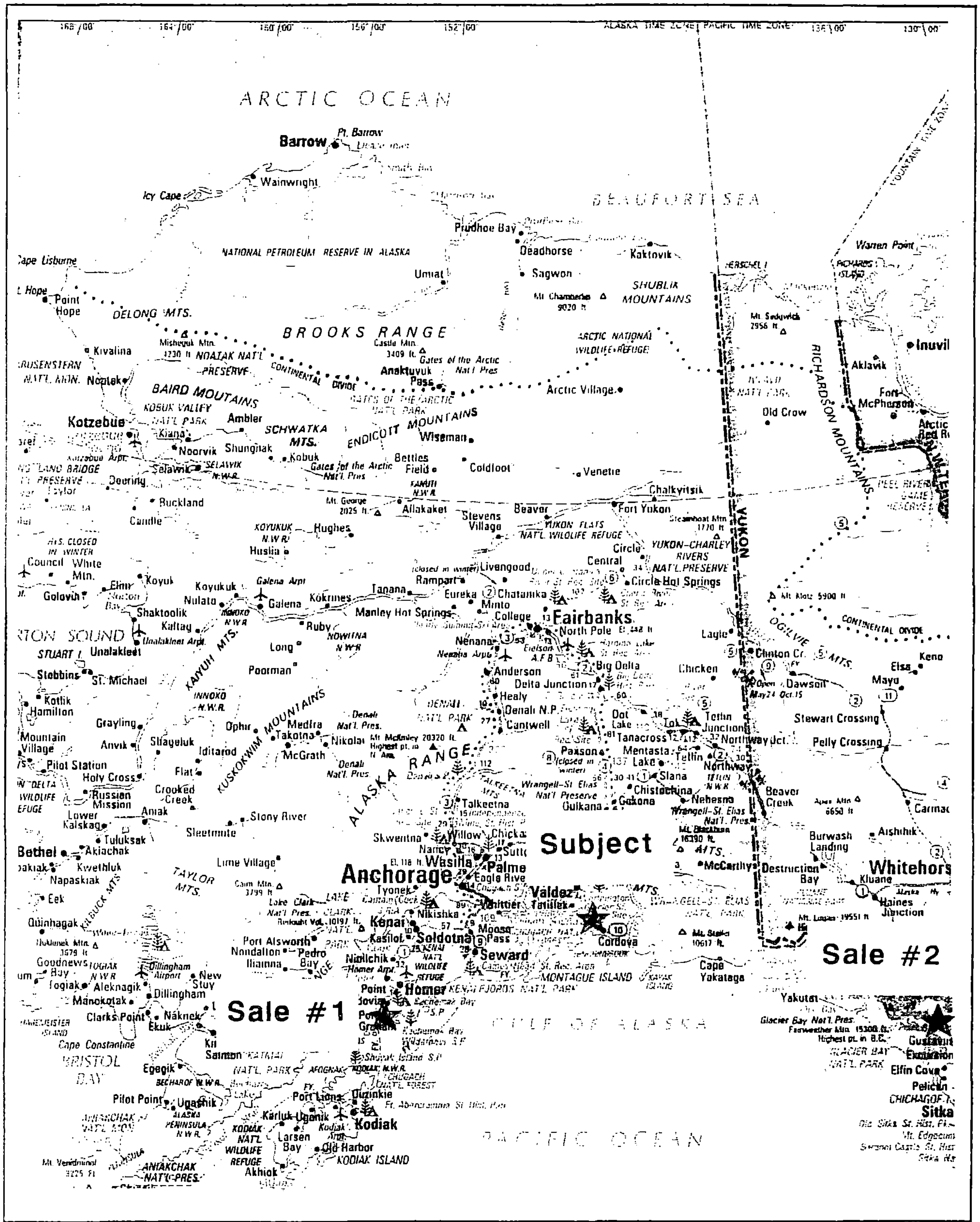
There are no sales of record that are comparable to the Subject Timber. All data reflects sales of considerably less volume, less acreage, sales containing export restrictions, and sales far removed geographically from the Subject.

By means of examples however, Table 1, below presents the results of two timber sales within the overall market area, that are the most comparable to the Subject. For the general location of these sales see Exhibit 3.

TABLE 1
Market Area Timber Sales

Sale #	Sale Name	Sale Date	Volume in 1,000 board feet (MBF)		Volume (MBF)	Price/ MBF	Total Price
			Spruce	Hemlock			
1	Port Graham	12 - 1993	6,015	0	6,015	$101	$607,515
2	Kelsall Relay	5 - 1994	5,293	1,947	7,240	$201	$1,455,200

Most of the timber harvest activity on private lands has been conducted under management agreements, rather than timber sales. Management agreements are typically negotiated between the land/timber owner and the timber manager/purchaser. Various arrangements are made for profit and risk assignments between the owners and managers.


ARCTIC OCEAN
BEAUFORT SEA
Barrow
Pt. Barrow
Wainwright
Icy Cape
Prudhoe Bay
Deadhorse
Kaktovik
Sagwon
Umiat
NATIONAL PETROLEUM RESERVE IN ALASKA
SHUBLIK MOUNTAINS
BROOKS RANGE
DELONG MTS.
Point Hope
Kivalina
Noatak
BAIRD MOUNTAINS
Kotzebue
Ambler
SCHWATKA MTS.
ENDICOTT MOUNTAINS
Wiseman
Anaktuvuk Pass
Arctic Village
Old Crow
RICHARDSON MOUNTAINS
Aklavik
Inuvil
Fort McPherson
Noorvik
Shungnak
Kobuk
Bettles Field
Coldfoot
Venetie
Chalkyitsik
Fort Yukon
Beaver
Stevens Village
Allakaket
Buckland
Candle
Hughes
Huslia
YUKON FLATS NAT'L WILDLIFE REFUGE
Circle
Central
YUKON-CHARLEY RIVERS NAT'L PRESERVE
Circle Hot Springs
Livengood
Rampart
Eureka
Chatanika
Tanana
Manley Hot Springs
Minto
College
Fairbanks
North Pole
Nenana
Galena
Koyukuk
Nulato
Kaltag
Shaktoolik
Koyuk
Elim
Golovin
Council
White Mtn.
Unalakleet
Stebbins
St. Michael
Ruby
Long
Poorman
Anderson
Delta Junction
Big Delta
Healy
Denali N.P.
Cantwell
Chicken
Eagle
Dawson
Mayo
Elsa
Keno
Stewart Crossing
Pelly Crossing
Tetlin Junction
Tok
Northway
Dot Lake
Tanacross
Paxson
Mentasta
Slana
Chistochina
Gakona
Gulkana
Nabesna
Beaver Creek
Carmac
Kotlik
Hamilton
Grayling
Anvik
Shageluk
Iditarod
Ophir
Medfra
Takotna
Nikolai
McGrath
Mt. McKinley 20320 ft.
ALASKA RANGE
KUSKOKWIM MOUNTAINS
Mountain Village
Pilot Station
Holy Cross
Russian Mission
Crooked Creek
Aniak
Lower Kalskag
Stony River
Sleetmute
Talkeetna
Skwentna
Willow
Wasilla
Palmer
Subject
McCarthy
Destruction Bay
Burwash Landing
Aishihik
Whitehorse
Kluane
Haines Junction
Bethel
Akiachak
Tuluksak
Kwethluk
Napaskiak
Eek
Lime Village
Anchorage
Tyonek
Eagle River
Valdez
Whittier
Tatitlek
Cordova
Kenai
Nikiski
Kasilof
Soldotna
Moose Pass
Seward
Port Alsworth
Nondalton
Pedro Bay
Iliamna
Ninilchik
Homer
MONTAGUE ISLAND
Cape Yakataga
Sale #2
Quinhagak
Goodnews Bay
Togiak
Aleknagik
Dillingham
Manokotak
New Stuyahok
Clarks Point
Naknek
Ekuk
Sale #1
King Salmon
Egegik
BRISTOL BAY
Cape Constantine
GULF OF ALASKA
Yakutat
Glacier Bay Nat'l. Pres.
Gustavus
Excursion Inlet
Elfin Cove
Pelican
Sitka
Pilot Point
Ugashik
Port Lions
Ouzinkie
Karluk
Larsen Bay
Kodiak
Old Harbor
Akhiok
KODIAK ISLAND
PACIFIC OCEAN
ANIAKCHAK NAT'L PRES.

1. The Land & Timber Owners. There are several different types of timber sellers, all of which can have an affect on the market value of timber.

a. Alaska Native Corporations. In the market of the Subject this group of sellers makes up the vast majority of privately held timber resources. Sealaska, Klukwan and many others have been active in selling timber in Southeast Alaska for many years. In the Prince William Sound Eyak, Chugach Alaska, Chenega and Tatitlek all have significant timber resources but have generally been active only recently. When timber is sold by Native Corporations it is generally on a freight at ship (FAS) basis. Traditional timber sales represents a very small percentage of the total harvest. (Timber sales are transactions of real property involving standing timber. The buyer of the timber sale is generally responsible for removing all designated timber and the costs associated with it. The value paid for timber sales is referred to as stumpage.)

All of the timber harvest activity conducted by Native Corporations in the Prince William Sound has been marketed on a FAS basis.

b. Other Private Landowners. Generally small woodland owners market directly to timber buyers. Native allotments and other privately held land that fit into this classification, comprise an insignificant amount of the regional timber resources.

Because of the high costs of operations and transportation, must small woodland operations are not commercially feasible. The major excepts are when a small ownership is in the immediate area of an ongoing operation or where a small ownership is in close proximity to a processing or shipping facility.

c. Federal, State and Local Government. The timber supply of the U.S. Forest Service, makes up the largest single source of timber. The Chugach National Forest, which encompases the Prince William Sound, has no plans to harvest timber other than extremely small volumes of predominately salvage material. The current land base of this Forest does include lands comparable to the Subject, but current management direction generally precludes intensive timber harvest.

The Alaska Department of Natural Resources, Division of Forestry controls significant acreage of timber resources, as does the University of Alaska, but these agencies are not a major factor in the supply of forest products. Several boroughs own and manage significant areas of commercial timberlands, but are

generally not a significant factor in influencing the timber market. Most government timber, other than borough, is sold through a process of timber sales or long term contracts..

2. Timber Buyers. There are two types of buyers, direct and indirect. Direct buyers are those firms involved in the manufacture of lumber and fiber products, and or those that sell directly to foreign timber purchasers. In Alaska and the Pacific Northwest direct buyers are the primary purchasers of timber and timber sales. As of the effective date of this analysis, the largest direct timber purchasers include Alaska Pulp, Ketchikan Pulp, Kluckwan, Metlakatla, Rayonier International, Sealaska, Wassal & Winters, and others. Direct buyers are often referred to as users.

The vast majority of timber harvested from private lands in Alaska is intended to be sold in the export market. Nearly all of the direct purchasers in Alaska market logs to primarily Pacific Rim Countries, such as Japan, China, Korea, and Taiwan. Generally this marketing is done on a purchase order basis, with short time frames for delivery. This market is volatile and in its mechanisms similar to most commodity markets.

Indirect buyers are those that purchase timber with the intention of reselling the timber to one or more of the direct users of timber. These buyers include loggers, timber brokers, and other individuals that may purchase standing timber for speculative investment or immediate harvest. These indirect buyers are generally not able to compete in the open market with direct buyers, and would not be considered as potential purchasers of the Subject Timber.

3. Characteristics that Influence Value. The price paid for timber is ultimately determined by the intended use of the final product and the total effort required to obtain, manufacture, and deliver that product. The most important elements in this equation are the supply of timber, the demand for timber and the ultimate product, the physical characteristics of the subject timber, the political constraints to harvesting and processing timber, and the location of the subject timber relative to the users of timber.

a. Supply of Timber. Given a particular level of demand for timber, for domestic processing and export, fluctuations in the availability in supply will affect the price that an informed buyer is willing to pay. In addition to the physical presence of timber in any area, there may also be seasonal fluctuations in availability of timber for harvest. In the winter, snow and heavy rain may bring harvesting to a halt, or may require additional expenditures for road con-

struction and maintenance.

The relative proportion of mature timber in the general area has been steadily decreasing, although the standing volume on private lands in the market area of the Subject is roughly 4 billion board feet.

Since 1989, when timber harvest operations in the Prince William Sound began on a large scale, the volume of logs supplied from the Sound has varied from 20 million board feet to 70 million board feet per year. In the whole of the market area of the Subject, annual production of logs has been in the order of 200 million board feet per year. These production figures make up a small percentage of the total production of western hemlock and Sitka spruce in the Pacific Northwest.

Increasingly, log supply is a world wide issue. Logs from New Zealand, Chile, Australia, and others have made some advances in the market areas of pulp wood and low grade logs. These countires do not, however, supply a significant volume of high quality logs.

In other areas of the world where higher quality logs are found, the supply of harvestable material is generally highly constricted. The political decisions in the United States have nearly elementated public wood supplies from the export market. British Columbia has recently changed mangement emphasis affecting enormous areas of commercial forestland that have resulted in reduced harvest projections for the immediate period, and appears to be entering a trend of implementing further harvest restirctions.

The Russian Far East contains a vast supply of old growth timber, however, it generally yields very small logs. Furthermore, there are significant problems to be overcome before production in the Russian Far East can be a major factor in the world market. The two most important factors are the lack of infrastructure, and the dubious poiltical and business environment. In 1993 Russian Far East timber supplied approximately four percent of Japan's wood consumption. While it is expected that there will be nominal growth in the volume shipped from the Russian Far East, many experts believe that it will be ten to fifteen years before log exports from this area can have a serios effect on market structure.

b. Demand for Timber and Wood Products. The regional demand for timber, and the number of timber users actively purchasing timber will also affect the price an informed buyer is willing to pay. Because of the large distance from the Subject to timber processors and export operations, this

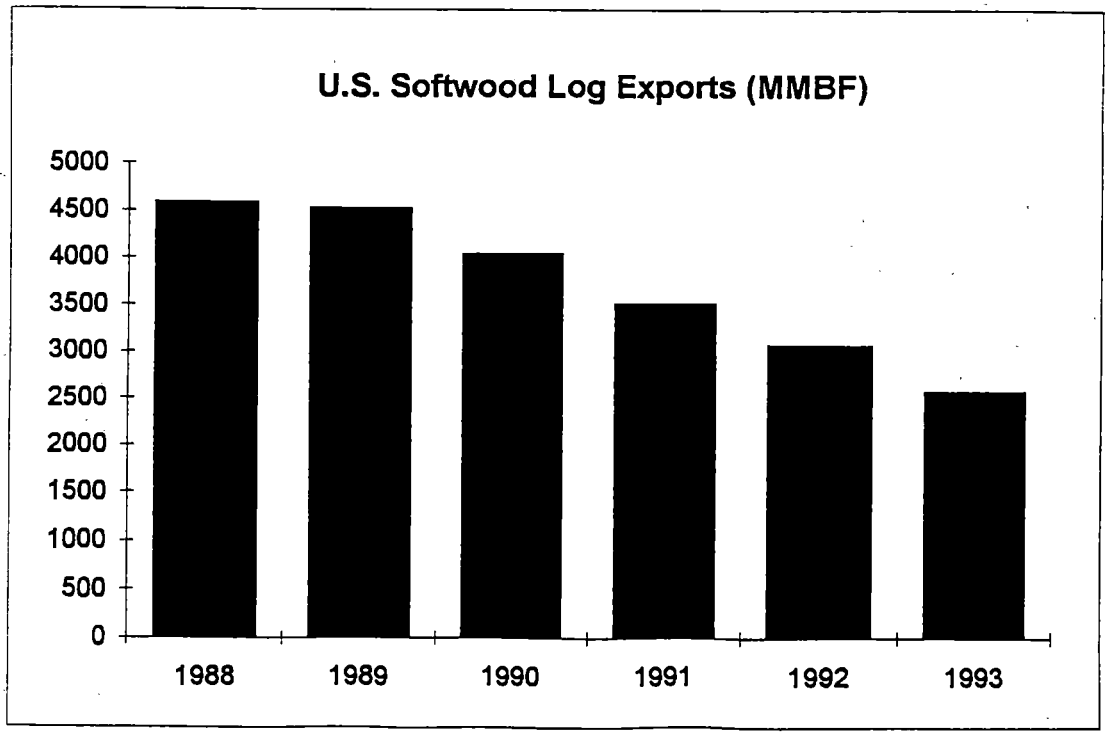
region generally has a soft demand for low quality timber, which is more readily available from closer sources.

The primary advantage that the Subject timber market has over other markets is its predominance in old growth timber. High quality logs are still very much in demand on the export market, and it is expected that a premium will be paid for these logs for many years to come.

Currently, the overall demand for timber products during the short run is expected to remain fairly stable. Earlier in this year demand projections foresaw a moderate increase for the remainder of 1994. A five year high in US Housing starts and an expectation of revitized European and Japanese economies were the major factors driving these projections. So far this moderate increase has not been seen in fact current log prices and projections for the fourth quarter of 1994 are expected to be lower than those at the beginning of 1994. Nevertheless, the demand during the next five years is expected to be moderately increasing, with greater gain in the high quality log sector.

Exhibit 4 Below, demonstrates the major factor for this optimistic view. Through 1993 the general trend in the price level of export logs was up, nevertheless, the supply of logs was unable to adjust to take full advantage. In fact, as seen in the graph below, the total volume of log exports decreased.

EXHIBIT 4 - Log exports from California, Oregon, Washington & Alaska



Source: Random Lengths 1993 Yearbook, Volume XXXIX. Random Lengths Publications, Inc., Eugene, Oregon 1993.

c. Physical Characteristics of Subject Timber. Timber quality is one of the most important factors that influence value since it is an indication of the types of wood products that can be processed from timber. There are two general categories of timber quality measures, "Bureau" and U.S. Forest Service grades, and special use grades. Bureau grades are those standardized by an independent log grading and scaling organization, which in Alaska and the Western portion of the Pacific Northwest is the Northwest Log Rules Advisory Group that has six independent grading bureaus as members. U.S. Forest Service grades are very similar in specifications to Bureau grades.

Special use grades are those that refer to a special product, such as export sorts, posts and pilings, and other differentiation within standardized grades. These special use grades may be implemented by special arrangements with a log scaling bureau or they may be limited to use by a specific buyer or seller. In the market purtenent to the Subject, log sorts are the primary measure of log value. In the highest export sorts, the measure of log value is a combination of log sort and log grade. For example, in a high line Japanese sort of Sitka Spruce the price for a #1 Sawlog would be in the order of $3,300 per thousand board feet (MBF), while the same sort could contain a special mill Sitka spruce log that may sell for $2,100/MBF.

In addition to timber quality grades, physical characteristics such as the ratio of net volume to gross volume, average log diameter and piece size, the straightness of the timber, and many others will affect the price that an informed buyer is willing to pay.

Another important consideration is the distribution of timber on the ground, and the accessibility of the timber. Both of these factors relate directly to harvest costs. A dense stand with a high timber volume per acre will have a substantially lower logging cost per unit of volume than a stand of scattered timber, even of the same timber quality. Likewise, stands of the same quality and volume per acre may differ in value depending upon the difficulty of road construction, logging requirements, permitting processes, etc.

d. Political and Legal Constraints to Harvesting Timber. In general

the formal political constraints enforced by government focus on the protection of the physical environment for the good of the public in the long term. In areas where there is potential for mass soil movement, near protected plant or animal species, areas of significant scenic value, and near significant bodies of water, harvest may be limited or even prohibited altogether.

Of particular concern to this analysis is the federal Threatened and Endangered Species Act (TES), and the Forest Resources and Practices Act of the State of Alaska. While the Forest Resources and Practices Act generally provides specific regulations for forest management activities, the TES only provides policy and programmatic direction. The protection of the bald eagles, and to a lesser extent other Potential, Endangered, Threatened, or Sensitive (PETS) species involves several federal and state agencies that have produced a series of various regulations that directly address forest management issues. Because the practical application of TES is still being developed, the affected agencies' regulations are various and often contradictory.

The effects of protecting bald eagle nesting sites result in the reduction of harvestable area and the potential relocation of roads and other harvest related improvements. In this analysis it is assumed that a 2.5 acre no harvest area for each eagle nest will adequately address the concerns of the U.S. Fish and Wildlife Service.

One of the greatest effects of the Forest Resources and Practices Act is the requirement for essentially no harvest buffer zones along anadromous and other high value fish water bodies. Each such water body must be protected by a 66 foot buffer. Although there are provisions in the Forest Resources and Practices Act for the removal of trees within the buffers, in practice such variations are getting more and more difficult to obtain. The net effect then is that in this analysis all timber within the buffers is removed from the operable timber base.

Generally, civil suits attempting to prohibit timber harvest operations on private lands have been ineffectual. The Subject timber is, however, located in an area that has not been subject to timber harvest. Because of the lands' "wilderness nature" it is reasonable that a significant public outcry could involve legal challenges during the permitting process.

Informal political constraints include pressure from "environmental" organizations and the general public that may influence the harvest operations of a particular landowner based upon his goals of landownership. A public corporation, for instance may find it expedient to leave visual buffers of standing timber, or to create recreation sites on commercial forestland in order to bolster

its public image.

e. Relative Location of Subject Timber to Users. Regardless of any of the above factors, if the subject timber is isolated from users, the timber may have greatly diminished value because of the high costs of development of log transfer facilities, logging camps, and transportation systems. In contrast, if the subject timber is located in the center of a highly competitive timber market, the purchase price may be well above regional norms.

4. Log Market. The log market refers to buying and selling of logs delivered on a freight at ship (FAS) basis, to users or exporters. The prices reflect not only the value of the wood product (i.e. lumber, export logs, paper, poles, etc.) but also the cost of all items involved in timber management, harvest, and transportation of logs, including taxes and profit and risk.

At the end of the Spring of 1993 the timber market applicable to the Subject Property had reached an all-time nominal peak in price level, and the highest real price level peak since 1981. This produced a short term (approximately 6 months) oversupply of timber. This imbalance in turn led to purchasers being able to slide into a downward price adjusting trend.

Since that time the timber and log markets fell twenty to thirty percent in value (depending on the specific product). During the fourth quarter of 1993, prices began to increase and continued through the first quarter of 1994. Since that time prices have fallen and have subsequently stabilized, with price fluctuations more directly related to seasonal fluctuations in production. The overall, long term trend is expected to be moderate price increase, especially in Japanese quality logs and pulp wood.

Table 2, below, presents a composite of current FAS delivered log prices as quoted by mills and exporters for the Prince William Sound area, as of the effective date of May 1, 1994. The purchasers surveyed in the development of this price table include Emachu USA, Rayonier International, Sumitomo Forestry Inc., Citifor, Ketchikan Pulp Company, CanFor, and Nichimen America Inc.

TABLE 2
FAS Log Prices
(Per thousand board feet, Scribner Rule)

Sort	Sitka Spruce	W. Hemlock
10	-	$730
11 & 31	$1,100	$1,000
12 & 35	$1,000	$900
14 & 34	$1,050	$700
16 & 32	$850	$550
17 & 37	$130	$130
18 & 38	$600	$550
19, 39 & Utility	$130	$130
33	$800	-
36	$1,100	-

For an explanation of the sort codes and their specifications, see Appendix A, Rayonier Export Sorts

V. DESCRIPTION OF THE SUBJECT TIMBER

The Subject Timber is located on a 2,052 acre tract of land consisting of timberlands and other lands. It is located approximately 5 miles Northwest of Cordova, Alaska. Exhibit 2 shows the location and Section III.G, above, presents the legal description of the this tract of land.

A. Forest Resource. Approximately 907 acres of this tract is occupied with merchantable timber stands. These stands are defined as being economically feasible to harvest, in full or in part.

The Subject Timber was inventoried by Pacific Forest Consultants, Inc. during the first and second weeks of June, 1994. The purpose of this inventory was to estimate the merchantable timber volume and to determine site specific information regarding logging systems on the Subject Property. In general terms the timberland consists of medium to well

stocked old growth western and mountain hemlock with a minor amount of Sitka spruce, growing on lands with an average site class of V.

In performance of the timber inventory, Pacific Forest Consultants, Inc. and the USDA Forest Service, conducted quality control measures to ensure that the estimated timber volumes (in total and by export sort) were reasonably accurate. Table 3, below presents the breakdown of timber information by timber type of the Subject Timber. Exhibit 5 shows the location of the timber types of the Subject Timber.

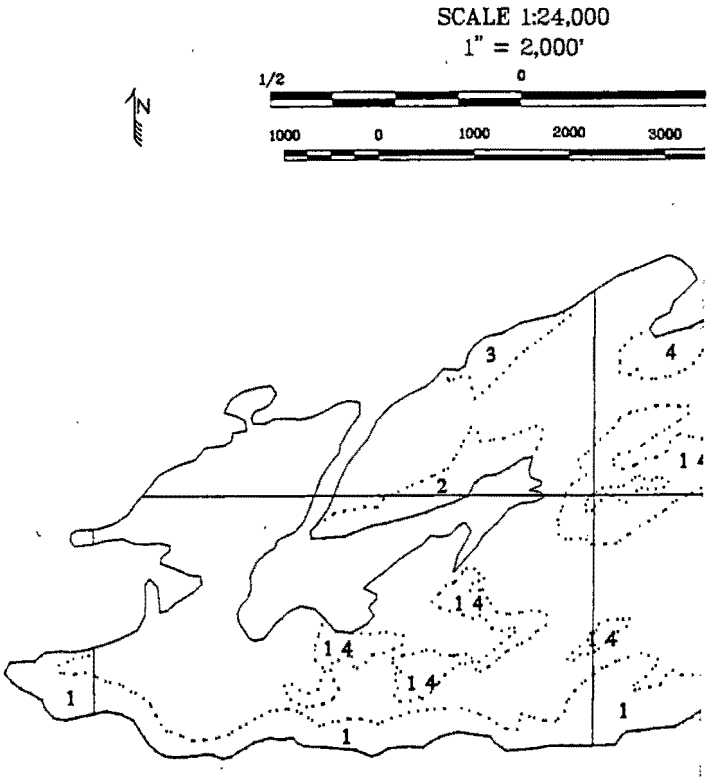
TABLE 3
Bomb Point Timber Type Summary

			Average		Per Acre		All Species Total Volume (BF)		Hemlock Total Volume (BF)		Sitka Spruce Total Volume (BF)	
Type	Acres	Plots	DBH	Merch. Height	Basal Area	# Of Stems	Gross	Adj. Net	Gross	Adj. Net	Gross	Adj. Net
1	63.3	16	19.2	43	223	143	880,390	723,487	877,200	720,562	3,190	2,925
2	17.5	5	17.0	40	148	119	128,220	110,812	128,220	110,812	0	0
3	8.3	2	29.8	83	180	39	235,550	181,272	235,550	181,272	0	0
4	12.0	3	20.1	59	227	134	320,000	272,160	320,000	272,160	0	0
5	9.1	2	21.5	69	320	160	380,020	321,412	380,020	321,412	0	0
6	12.2	3	20.1	56	213	110	248,070	208,863	230,660	192,597	17,410	16,266
7	13.1	3	17.8	54	227	175	273,530	229,163	273,530	229,163	0	0
8	52.2	13	18.8	50	212	159	873,580	703,816	859,770	690,967	13,810	12,849
9	10.2	2	22.9	65	260	107	285,190	211,434	285,190	211,434	0	0
10	7.0	2	20.9	58	140	69	91,840	70,700	91,840	70,700	0	0
11	257.2	64	24.6	75	217	105	8,026,850	6,493,913	7,881,580	6,362,207	145,270	131,706
12	386.9	93	20.2	56	186	117	7,360,410	6,071,917	7,121,450	5,862,408	238,960	209,509
13	16.3	4	23.9	72	260	147	621,680	512,300	514,100	422,487	107,580	89,813
14	41.9	10	16.8	41	202	165	532,320	442,194	525,280	435,716	7,040	6,478
TOTALS	907.2	222	21.2	60	203	121	20,257,650	16,553,443	19,724,390	16,083,897	533,260	469,546

For more detailed information see Appendix B - *Bomb Point Timber Inventory, Field Data Collection Procedures*, Appendix C - *Aerial Photography of the Subject Timber Types*, and Appendix D - *Detailed Timber Cruise Results*. The later appendix presents type summary by sort, statistical results of the net volume per acre estimate, and the inventory reports of the individual timber types.

EXHIBIT 5 - Timber Typ

B O



B. Topography and Logging Systems. The Bomb Point tract is composed of a mixture of flats, moderate slopes, and steep slopes. Of the 907 acres of commercially operable timber stands approximately seven percent of the total area is suitable for tractor or shovel logging, while approximately 73 percent would require cable logging, and the remaining 20 percent can only be feasibly logged by helicopter. Although helicopter logging is the most costly method it saves the substantial costs of road construction, and can effectively cover large areas. See Exhibit 5, below for the geographical location of the logging systems (note that the tractor and shovel ground is dispersed throughout the area marked as conventional logging).

C. Transportation Systems. Most areas of the Subject Property are currently unroaded. The only road present consists of a portion of the new road system required to harvest the Subject Timber. The total road system required to harvest the Subject Timber is projected to include a total of 7.2 miles of primary road and spurs.

Road construction costs are very high for remote areas such as the location of the Subject Timber ($125,000 to $200,000 per mile) yet typical for the region. The primary reasons for this is the cost of transportation of equipment, materials and supplies. The type of road construction required to harvest the Subject Timber, is in the moderate range, because of the relatively moderate slopes and the existing rock sources. See Apendix E - *Detailed Logging Cost Analysis* for the cost units and assumptions used.

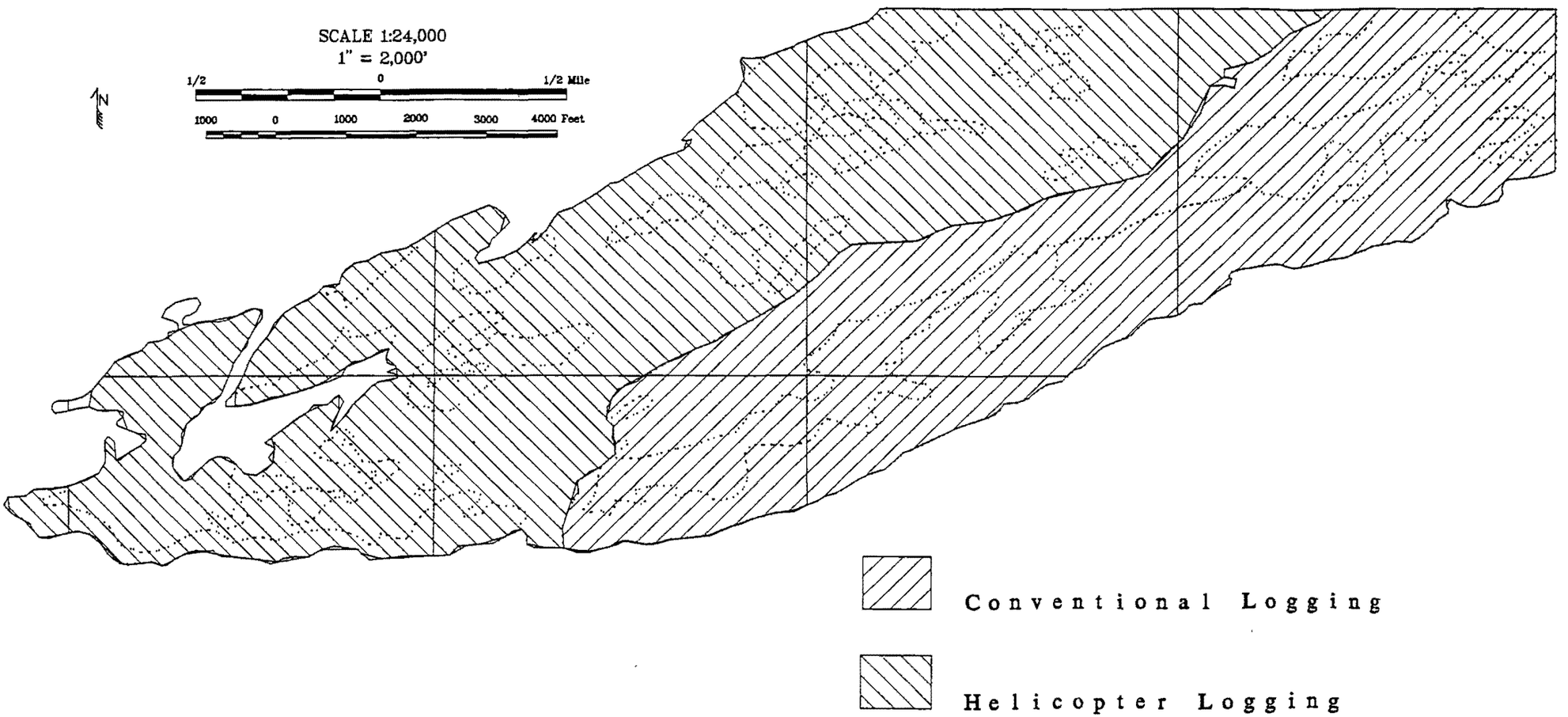
D. Existing Improvements. Located near the Southeast corner of the Subject Property is a partially constructed Log Transfer Facility (LTF). Although no formal survey of the LTF was conducted for this analysis, it is estimated that the LTF is approximately 60% complete.

Road construction that would be necessary to harvest the Subject Timber has been initiated from the LTF site. Approximately 0.8 miles of this road would be used to harvest the Subject Timber.

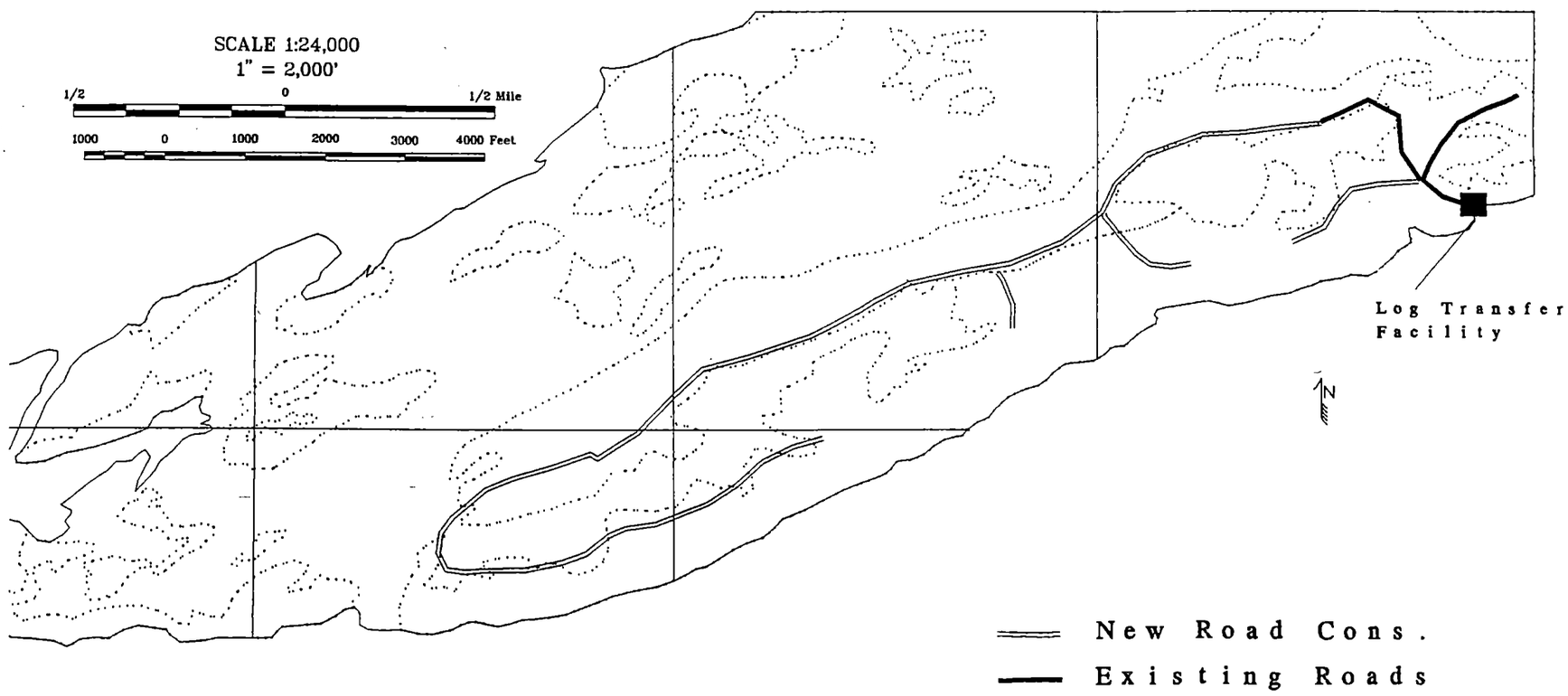
Near the LTF there is a moorage. Although no formal inspection was conducted, it is assumed that the ship morrage is complete and functional for the purposes of loading logs.

BOMB POINT TIMBER PROPERTY

LOGGING SYSTEMS



BOMB POINT TIMBER PROPERTY
APPROXIMATE ROAD LOCATIONS



VII. THE PRICE - VALUATION PROCESS

In order to reach an opinion of fair market value, this appraisal process considers the objectives of the typical buyers and sellers that would be involved in the disposition of the type of property represented by the Subject. These players will generally use one or more of the following accepted methods of estimating value; the cost approach, the income approach, or the sales approach. Each approach may address a special concern for a particular buyer or seller and may indicate a wide range of values.

In this section of the appraisal, the Subject Timber is assessed using all applicable approaches. The appropriateness of the application of the three approaches to valuation is considered in the Reconciliation of Approaches. The final estimate of value is arrived at by balancing the strong and weak points of the specific application of each of the three approaches.

A. Sales Comparison Approach. This approach relies upon open market sales of timber as the basis for appraising the Subject Timber. Each sale of forestland would be compared to the Subject Property. The particular components of the timberland property and their associated values form the basis of its comparison to the Subject Property.

The focus then would be on sales of timberland properties of similar characteristics to the Subject Property. Such sales are referred to as comparable sales, noting that there will always be differences in acreage, location, timber characteristics, and improvements. Adjustments to the comparable sales would be limited to those differences that would be seen as significant to the types of buyers in the specific timberland market. The purpose of the adjustment procedure would be to render the comparable sales interchangeable with the Subject Property in the market place.

The timber sales listed in Table 1, on page 11, above, form the pool of best available information. These sales, however, are not comparable and could not be meaningfully adjusted to be comparable to the Subject Timber. The primary reason for this is in the size of the timber sales. The Subject Timber is over three times greater than that of the two sales listed. Furthermore there is no market evidence that cold provide a basis for a size - price adjustment.

The sales comparison approach is not used in this analysis.

B. Income Approach. Nearly all buyers and sellers use some form of the income approach when deciding on the price for investment or income property. This approach predicts the net returns from operating the property under one or more management scenarios. The flow of revenue and costs may vary greatly from one property to another

depending upon the property's characteristics and the characteristics of the market for the property's products.

The market for the Subject Timber is generally limited to industrial timber operators and timber exporters. An estimate of value can be derived by assuming that the potential purchaser will manage the Subject Timber as a short term investment for timber production. The basic management scenario used in this analysis, then, is to liquidate the merchantable timber as soon as practical. Clearcutting timber stands that fall within the conventional logging system area, and selectively harvesting those stands that require helicopter logging to be efficiently harvested.

The assumptions used in this analysis are:

1. All discount and appreciation rates are real rates.

2. The annual discount rate used for this investment period is 8 percent.

3. Because of the uncertain nature of the log market in the near future, no stumpage appreciation is used for this investment period.

4. The costs of production as included in the tables below will remain constant during the investment period (i.e. these items will not increase in nominal value faster than the rate of inflation).

5. The level of profit and risk assigned to this investment is 20%.

6. Harvest restrictions will remain constant during the investment period.

7. Log export regulations will remain constant during the investment period.

8. The discounting of revenues and expenses is calculated from the end of the month.

9. Permits obtained by Sherstone are assumed to be adequate to begin operations without additional permitting.

10. The construction of a log transfer facility (LTF) would occur at the partially developed, existing site. Such a facility would be temporary and would be designed to handle the Subject Timber.

11. No camp would be construction on site, lodging for all crew other than watchmen is assumed to be available in Cordova.

12. The logging contractor will carry the costs of road construction, LTF development, and support services as a portion of its overall logging cost.

13. Table 4, below, shows the sum of the total net volume and the utility adjusted gross volume that will be harvested by timber type. Note that the reason that the volume harvested in timber types 1 through 10, and 14 is less than the total cruised volume (as shown in Table 3) is that these stands would be selectively harvested. The purpose of selective harvesting would be to ensure that the majority of the wood removed will at least be equal to the compensation for the costs incurred. In this case trees that are comprised of primarily utility and domestic logs would be left standing, since the FAS price for these logs is less than the costs of logging these areas by helicopter.

Since trees rarely consist of only one type of log sort some of the low value material would be inadvertently yarded by helicopter to the landings. It is estimated that 20 per cent of the total volume of low value material in these timber types would be harvested.

TABLE 4
Projected Timber Harvest Volumes by Type

		Total Adjusted Net Volume		
Type	Acres	All Species	Hemlock	Sitka Spruce
1	63.3	507,225	506,640	585
2	17.5	78,345	78,345	0
3	8.3	179,147	179,147	0
4	12.0	231,456	231,456	0
5	9.1	282,974	282,974	0
6	12.2	189,733	175,679	14,054
7	13.1	203,312	203,312	0
8	52.2	503,625	490,776	12,849
9	10.2	197,725	197,725	0
10	7.0	54,572	54,572	0
11	257.2	6,493,913	6,362,207	131,706
12	386.9	6,071,917	5,862,408	209,509
13	16.3	512,300	422,487	89,813
14	41.9	313,536	307,058	6,478
TOTALS	907.2	15,819,780	15,354,786	464,994

14. FAS log payments are considered received at the time of loading.

15. The following total costs and cost per unit of production as shown in Table 5, below, are used in this analysis. All of these costs are presented in Appendix E in detail.

TABLE 5
Costs of Production

Cost Item	Total Cost	Cost/MBF
Road Construction	$932,000	$58.91
LTF Construction	$189,904	$12.00
Logging (stump to truck)	$3,334,856	$210.80
Hauling	$200,598	$12.68
Sort & Deliver (truck to ship)	$1,246,774	$78.81
Personnel (lodging differential)	$395,500	$25.00
Administration & Engineering	$300,000	$18.96
Total Cost FAS	**$6,599,632**	**$417.17**

16. The existing improvements, i.e. the partially completed LTF, 0.8 miles of new road construction, and the existing moorage, are assumed to be usable and contributory to the timber harvest operation. The road construction and LTF construction costs shown above represent the estimated costs that would be incurred to complete the transportation system and the LTF. The value of the existing improvements, therefore, is recognized as a cost reduction over the total cost that would be incurred if a complete transportation system and LTF had to be constructed.

By multiplying the FAS prices (See Table 2, above) by the appropriate estimated harvest volume for that sort (see Appendix D), and then dividing that product by the total estimated harvest volume (15,820 MBF) yields a weighted average FAS price of $687.75/MBF.

To reach an average net price, the FAS price is reduced by the total cost to bring the logs to FAS ($417.17/MBF) and then finally by the profit and risk margin of 20 percent. This process yields an average net price of $216.46/MBF that can be applied to the monthly shipped volume.

Another cost item that must be accounted for is that of boom sticks; the logs that are used to store and move log bundles in the water. Because of the physical property requirements, boom sticks generally come from the higher quality trees. It is estimated that a total of 288 boom sticks (16 rafts of 18 boomsticks) would adequately handle the needs of storing wood and bringing it along side ships. This translates into approximately 158 MBF for which harvest costs must be paid but for which no revenue can be expected. The estimated

FAS price for this material is $900/MBF; which when multiplied by the total volume yields a total value adjustment applied against the projected revenues below.

The Table 6, below, summarizes the monthly projected shipped volume and net revenues. Although the goal of management is to clearcut or selectively harvest the timber types as soon as possible, there would be a significant time period to initially gear up, shut down in Fall, and Start up again in Spring.

The basic rates of production are 110 MBF per day for helicopter logging, and 50 MBF per day for conventional logging. The average work week would be 5.5 days/week to allow for down time. Conventional production would begin during the third week in June, and Helicopter production would begin during the second week of June. Shipments would begin on July 15 and continue until October 15th. Shipments would begin again in April, 1995

TABLE 6
Cash Flow and Present Net Value Discounted to May 1, 1994

Year	Month	Production (Volume in MBF)					Net Value	Present Net Value
		Helicopter	Conventional	Total	Cummulative	Shipped		
1994	May	0	650	650	650	0	$0	$0
1994	June	1,430	1,200	2,630	3,280	0	$0	$0
1994	July	2,229	1,050	3,279	3,559	3,000	$649,380	$638,682
1994	August	0	1,250	1,250	2,809	2,000	$432,920	$422,968
1994	September	0	1,100	1,100	1,909	2,000	$432,920	$420,167
1994	October	0	1,100	1,100	1,009	2,000	$432,920	$417,385
1994	October	Adjustment for consumption of Boomsticks					($142,200)	($137,097)
1995	March	0	750	750	759	1,000	$216,460	$201,873
1995	April	0	1,200	1,200	959	1,000	$216,460	$200,536
1995	May	0	1,200	1,200	1,159	1,000	$216,460	$199,208
1995	June	0	1,200	1,200	1,359	1,000	$216,460	$197,889
1995	July	0	1,200	1,200	1,159	1,400	$303,044	$275,209
1995	August	0	261	261	0	1,420	$307,373	$277,292
Totals		3,659	12,161	15,820		15,820	$3,282,197	$3,114,112

ROUNDED ESTIMATE OF VALUE = $3,100,000

C. The Cost Approach. The cost approach is used to determine the expenditure to construct or modify an existing property so as to render it interchangeable with the Subject. This approach will not be used in this analysis because it does not directly apply to timberland

properties with large acreage of merchantable or near merchantable timber.

D. Reconciliation of Approaches. The Subject Timber was appraised by using only one approach to value. It is the purpose of this section to examine the results of this analysis, assess the level of comfort with which the informed theoretical buyer and seller would have with the approach used, and to form a basis for the final estimate of value.

Two major factors have an overwhelming influence on the valuation results, both of which are critical to reach an accurate reading of current market conditions. The first factor is the reliability and appropriateness of the data used to determine value. The second factor involves the assumptions used in the analysis.

The income approach used here estimated the value of the property from the discounted net revenues produced from the management of the Subject Timber.

The data used in the initial stages of this analysis is very reliable, representing the current log market, actual costs incurred in the management of the Subject Timber, industry norms, and the local area. Furthermore, the data relates directly to specific products, eliminating any need for extrapolation or adjustment. The inherent uncertainty of this approach lies in the fact that log markets are constantly changing and that the most recent trend has shown record highs for many products, immediately followed by a significant downward adjustment.

The most important factors affecting this analysis are the log price appreciation rate and the discount rate used to estimate present values of future revenues and costs. Because of the uncertainties associated with predicting log prices, projecting these flows of income is somewhat limited.

Most purchasers deal with these elements of uncertainty by reducing or discounting the value indicated by this method of appraisal in order to reach a level of comfort with the resulting value. Although actual discounted values used by purchasers are in most cases extremely difficult to determine because of the secrecy with which purchasers guard their information, there is evidence suggesting that this level of discount is in the order of 15 to 20 percent.

E. Final Estimate of Value. Because the methods used in this analysis are the same as those used by nearly all active purchasers in the timber market, the data regarding current inventory cost and revenue values is highly reliable, and because the analysis period is fairly short, the results of the income approach are an excellent estimate of value.

FINAL ESTIMATE OF VALUE = $3,100,000

VIII. CERTIFICATE OF TIMBER APPRAISER

I certify that I have personally visited the Subject Property contained in this report. To the best of my knowledge and belief the statements contained in this appraisal are true and the information upon which my conclusions are drawn are correct.

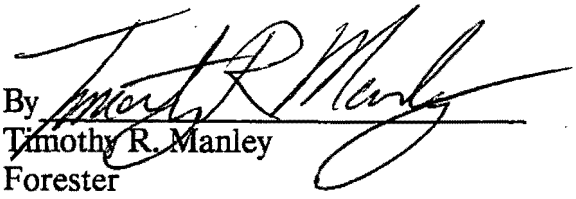
I visited one of the two timber sales discussed in the context of the timber market. Neither of these sales was used to value the Subject Timber.

My compensation and that of my company are in no way contingent upon the values reported in this appraisal.

I will not reveal the results of this appraisal, or other information specific to the Subject Property, to any other parties than the appropriate representatives of Black-Smith & Richards, Inc., or the USDA Forest Service without being duly authorized to do so.

The conclusions set forth in this appraisal are my own, independent of other influences, based upon the information and conditions stated above, as to the opinion of value on May 1, 1994.

The following staff members provided professional assistance to gathering of data and its analysis; Todd Hansen - Forester, Bradford Bailey - Forestry Technician, and Eric Haller -Forest Engineer.

By 
Timothy R. Manley
Forester
Oregon Certified General Appraiser

October 7, 1994

APPENDIX A

Rayonier Export Sorts

RAYONIER

5/20/94

ANNETTE BAY, KAVILCO, KLAWOCK & KETCHIKAN AREAS
(These are guidelines, some exceptionally good logs can be sorted up.)
(Heart checks do not count as defect for sorting purposes)

SORT CODE	LOG MARK	SPECIES:		LENGTH	MIN. DIAM.	MAX. DEFECT	RING COUNT
		HEMLOCK					
		HIGH GRADE					
11	/	13 - 27'	A) Highgrade #2 & better w/round smooth appearance.	20' + 13' on SM #1 & Peelers	12" 20"	15% 25% for prime logs	12 in outer 1/3 of radius
	//	28 - 35'	B) Knot size & # of knots allowed based on location, log size & other factors determining high grade lumber recovery.				
	///	36 - 40'	C) Bark seams allowed 10% of log. D) Freeze breaks, sap rot, rotten knots & butt rot more than 1/3 of face not allowed E) Sweep Max. 1" per 13 ft. F) Max. twist 2" per ft.				
		REGULAR HEMLOCK					
12			A) Japan export quality #2 & better.	20'	12"	25%	8 in
	R1	20 - 27'	B) Log should be reasonable appearing second sort quality.				outer 1/3
	R2	28 - 35'	C) Maximum sap rot 10%				of radius
	R3	36 - 40'	D) Bark seams allowed 25% of log length. E) Sweep max. 2" per 13 ft.				
		J-C HEMLOCK					
10	(N1)	13' - 27'	A) Export quality #2 & better.	20' +	12"	20%	8 in outer
	(N2)	28 - 35'	B) Some scattered 3" knots allowed trimmed flush.				1/3 of radiu
	(N3)	36 - 40'	C) Some oversized knots allowed dependant on spacing. D) No excessively defective butts. E) No tapered tops. F) Bark seams allowed on 1/3 of log length. G) 50% of log clear or well scattered knots. H) Sweep Max. 2" per 13 ft.	13'	20"		
		HEMLOCK					
14		**SHOP**					
	T1	13 - 27'	A) High grade w/excessive defect	13'	18"	50%	12 in
	T2	28 - 35'	B) Logs must yield high grade clear cutting equal to at least 1 quadrant of the log.				outer 1/3 of radius
	T3	36 - 40'	C) No swell nor excessively decective butts. D) Logs under 20' will be above average for sort.				
		J HEMLOCK					
15			A) Clean surface and reasonably straight	26'	8"	10%	8
	JL	26 - 33'	B) Some scattered small knots are allowed				
	JJL	34 - 40'	C) No bark seams, sap rot, nor pistol butts	36'	6"		
			D) 8" to 11" diameters, some 6" - 7" allowed 36' and longer.				
16	Y2	26 - 33'	A) Scattered 1" knots on 1/2 of log.	26'	8"	10%	
	Y3	34 - 40'	B) Gradual Sweep allowed.	36'	6-7"		
			C) No high taper allowed. D) Buck off defective butts. E) No fluted logs.				
18		**K SORT HEMLOCK**					
	W1	13 - 27'	A) #3 sawlogs & better.	13'	17"	25%	N/A
	W2	28 - 35'	B) No excessively rough, sweepy nor twisty logs.	20'	9"		
	W3	36 - 40'	C) Logs less than 20' should gross 150 BF	26' +	8"		
			D) No pistol butts or twisted butts.	32' +	6"		
			E) Extreme swell or fluted butts should be bucked or trimmed off.				
17	△	**DOMESTIC HEM.**					
	1	12 - 27'	A) #4 sawlog or bettter	12'	6"	66%	N/A
	2	28 - 35'	B) No excessively rough, sweepy nor twisty logs				
	3	36 - 40'	C) Extreme swell or fluted butts should be bucked or trimmed off. D) Scale scribner and Utility.				

SORT CODE	LOG MARK	SPECIES:		LENGTH	MIN. DIAM.	MAX. DEFECT	RING COUNT
		SPRUCE					
31		**HIGH GRADE**					
	E1	13 - 27'	A) Highline #2 and better with round, smooth appearance.	13' 20'	24" 20"	15%	12 in outer 1/3 of radiu
	E2	28 - 35'	B) #2 and SM logs less than 20' should be high quality.	26'	18"	25% on #1's & Selects	
	E3	36 - 40'	C) Maximum twist 2" per foot D) Ring count good over 65% of face. E) Heart off center & out of round based on pickers judgement of distortion, consistency and compression F) Extreme swell or fluted butts to be bucked or trimmed off. G) Defect allowance to max. of 25% by piece to be determined by high grade lumber recovery.				
36	(E1)	13 - 27'	A) Downfall from E sort due to heart off center, loose grain or general appearance.	13' 20'	24" 18"	15% 25% on #1's & Selects	8 + in
	(E2)	28 - 35'	B) Allows heart off centers and out of round logs.				outer 1/3
	(E3)	36 - 40'	C) Ring count must be at least 8 rings per inch. D) Extreme swell or fluted butts should be bucked or trimmed off.				of radius.
		SPRUCE					
34		**SHOP**					
	B1	13 - 27'	A) High grade w/excessive defect.	13'	20"	50%	12 in outer 1/3 of radiu
	B2	28 - 35'	B) Should yield high grade clear cutting equal to at least 1 quadrant of the log. C) Buck off excessive butt rot or defects				
	B3	36 - 40'	D) #2 & better log. E) Maximum twist 3" per ft.				
		SPRUCE					
		REGULAR					
35	S1	20 - 27'	A) Regular Japan quality log	13'	20"	33%	8 in outer
	S2	28 - 35'	B) Good appearing #2 & better, allowing some #3's w/4' clear cuttings between knots.	20'	18"		1/3 of radiu
	S3	36 - 40'	C) Max. sap rot 10%				
		J - C SPRUCE					
33	(S1)	13 - 27'	A) Japan quality #3 & better	13'	17"	20%	5 in outer
	(S2)	28 - 35'	B) No knotty tops, excessive sweep nor defect	20'	12" +		1/3 of radiu
	(S3)	36 - 40'	C) Capable of producing standard grade lumber D) Some oversized knots dependant on spacing				
		J - SPRUCE					
32	J1	20 - 27'	A) Clean straight Japan Quality #3 & better allowing some 6 - 7"	20' +	9" +	15%	8 in outer 1/3 of radius
	J2	28 - 35'	B) No bark seams, knotty tops, sap rot.	26' +	8" +		
	J3	36 - 40'	C) Logs with small tight pin knots allowed up to 17" diam. only.	36' +	6" +		
		K - SPRUCE					
38	X1	13 - 27'	A) #3 sawlog & better, K type log.	13'	17"	35%	N/A
			B) No excessively rough tops	32'	6"		
	X2	28 - 35'	C) Must be reasonable sawlog quality				
	X3	36 - 40'	D) Logs must have min. 50 BF	20'	9"		
			E) Logs under 20' must gross 150 BF.	26'	8"		
		DOMESTIC SPRUCE					
37	◇1	12 - 27'	A) #4 sawlog or better	12'	6"	66%	12 in
	◇2	28 - 35'	B) No excessively rough, sweepy or twisty logs				outer 1/3
	◇3	36 - 40'	C) Extreme swell or fluted butts should be bucked or trimmed off. D) Scale Scribner & Utility				

CODE	MARK	SPECIES:		LENGTH	DIAM.	DEFECT	COUNT
		PINE					
50	D	26' - 40'	A) Japan quality, smooth SM type surface. B) No rough tops. C) Minimal twist and defect allowed.	26'	8"	10%	

SORT CODE	LOG MARK	SPECIES:		LENGTH	MIN. DIAM.	MAX. DEFECT	RING COUNT
		UTILITY SORT					
		HEMLOCK					
U - 19	U - 19		A) High defect 20% & better B) Clear lumber outer surface cuttings. C) High grade appearance. D) Max. twist 3". E) Utility scale measurement.	10'	18"	80%	12 in outer 1/3

SORT CODE	LOG MARK	SPECIES:		LENGTH	MIN. DIAM.	MAX. DEFECT	RING COUNT
		UTILITY SORT					
		SPRUCE					
U - 39	U - 39		A) High defect 20% & better B) Clear lumber outer surface cuttings. C) High grade appearance. D) Max. twist 3". E) Utility scale measurement.	10'	20"	80%	12 in outer 1/3

SORT CODE	LOG MARK	SPECIES:		LENGTH	MIN. DIAM.	MAX. DEFECT	RING COUNT
19	~~D~~	HEM. PULP					
39	~~D~~	SPR. PULP	A) Pulp quality Hemlock & Spruce B) Minimum 50% sound chips of gross scale. C) 90% barkable D) Separate by species. E) Utility scale only.	12'	14"		N/A

SORT CODE	LOG MARK	SPECIES:		MIN. LENGTH	MIN. DIAM.	MAX. DEFECT	RING COUNT
X29	X29	RED CEDAR					
X79	X79	YELLOW CEDAR					
			A) Utility & better. B) High defect log with chippable fiber. C) No excessively rough tops. D) No excessive amount of conk nor dry rot. E) No totally shook logs. F) Logs should be able to produce 15% high grade lumber.	12'	14"	85%	N/A

APPENDIX B

BOMB POINT TIMBER INVENTORY

FIELD DATA COLLECTION PROCEDURES

The timber inventory to be performed is a variable plot, variable log length sampling procedure. Since the goal is to estimate total net volume, along with a high level of confidence in the volume breakdowns by species, grade and export sort, each plot will be a "measure" plot.

NOTE: Timber type assignments and approximate plot locations are predetermined for the cruiser. Variations from these assignments can only be made by the inventory supervisor.

I. PLOT LOCATION

Plots are to be established on an approximate 6 chain by 6 chain grid. Check the field map; in some cases the spacing is less than 6 chains.

The plot numbers should be consecutive, and established prior to the field data collection. The type number should always precede the plot number on the flagging in the field and whenever referencing plots.

Always provide a field map showing plot numbers and direction of travel to the first plot and between plots. The purpose of the field map and the inter plot flagging is to facilitate a check cruise.

1. Reference the point of beginning, using a photo-identifiable point. Show the point of origin on the photo and describe on the field data card.

2. Using blue flagging, flag every two chains, minimum, between plots, and to the first plot from point of reference.

3. Locate the plot center with a stake, with flagging. Hang flagging on either side of plot center, perpendicular to direction of travel. Write the plot number on the flagging using waterproof marker.

II. BASAL AREA FACTOR (BAF)

Select a BAF that will yield an average of 5 to 7 trees per plot in the type. Acceptable

BAF's area those that are full bar factors contained in the American Scale Speigel Relaskop. Only one BAF may be used in a type.

III. SAMPLE TREES

Sample trees are determined to be "IN" or "OUT" at diameter at breast height (DBH), i.e. four and one half feet above high ground level. Trees forked above DBH are considered one tree. Trees forked below DBH are considered as two trees. Borderline trees can be measured by utilizing the "limiting distance" procedure. Measure a sufficient number of borderline trees to be confident that your calls are accurate. Thereafter, note all borderline trees on your plot cards!

The minimum sample tree is 12' in bole length (with trim) to a 6" diameter inside bark (DIB) top.

Beginning along the direction of travel record sample trees in "clock-wise" order. For each sample tree record the following:

1. Species by code:

   H Western hemlock
   M Mountain hemlock
   S Sitka spruce
   Y Yellow Cedar

2. DBH to the nearest inch.

3. Measure and record bole length from stump to the top DIB. The top size will be 6 inches or 25% of DBH, whichever is greater.

4. Measure with the Relaskop the diameter outside bark (DOB) of the first log segment to the nearest inch.

5. For each segment record the following:

   a. Log length.

   b. Grade, utilizing the grade of the Northwest Log Rules Advisory Group.

   c. Export sort, utilizing the generalized export sorts develop by Pacific Forest Consultants, Inc. for this inventory. (See Attachment A.)

d. Defect, either, but not both, as a footage deduction from the large end of the log or as a percent of total gross volume of the log segment.

If any plot falls within the influence zone of a type boundary, move the plot forward or backward 1/2 chain to avoid any type boudary or edge influence. Should the plot fall within or adjacent to a major creek or river that would normally not be included within the type, move the plot forward or backward 1/2 chain to avoid its influence. Note all changes to the plot location on your plot cards!

Turn in completed types with the field maps to the inventory supervisor as soon as practical.

IV. CHECK CRUISE

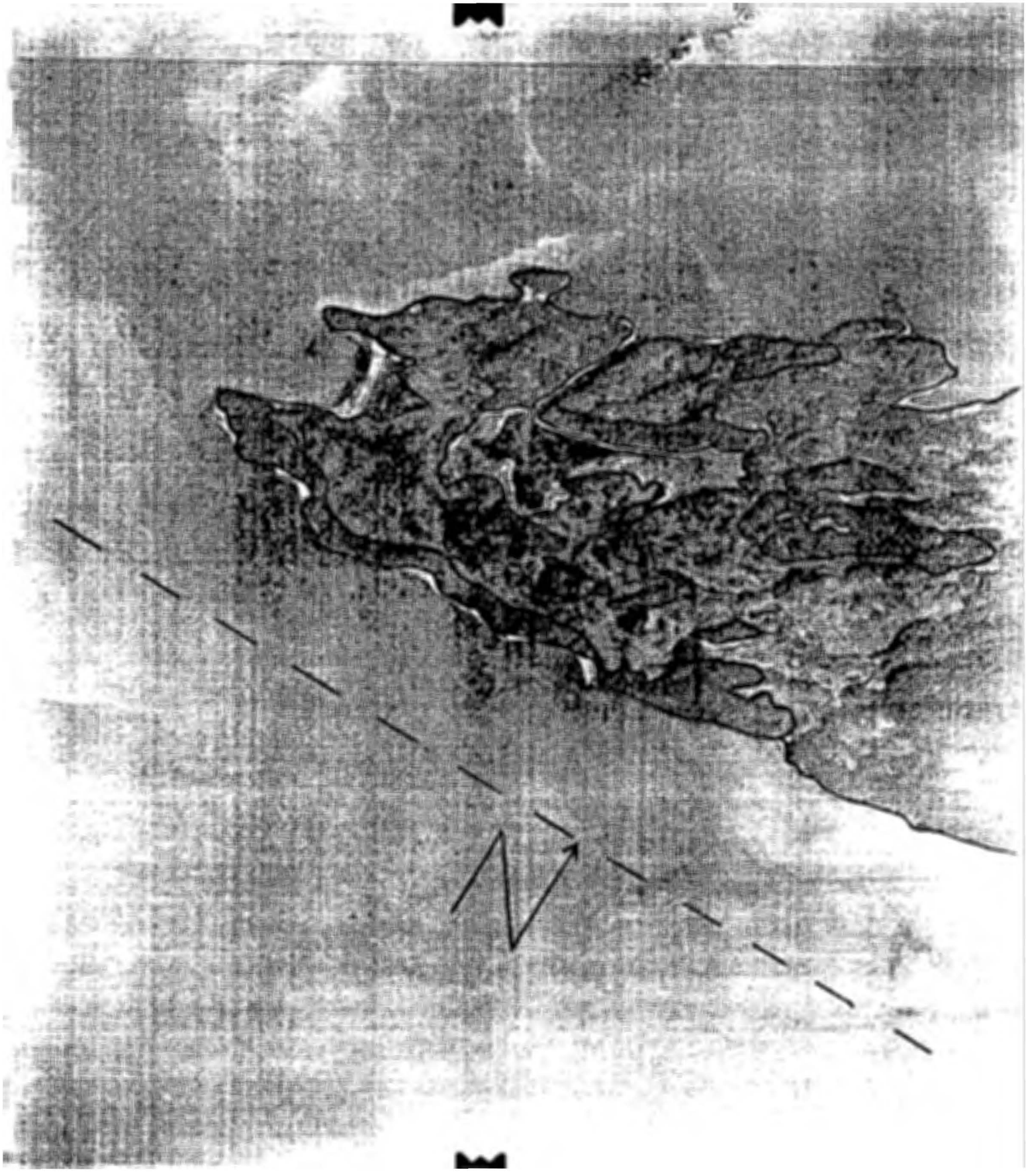
Pacific Forest Consultants, Inc. (PFC) will perform a check cruise of each inventory crew. The purpose of this check cruise will be to determine compliance with the required inventory procedures. All elements of the cruise will be recreated by the check cruisers. Original plots will be cruised, with particular emphasis placed upon grade and export sort. An acceptable cruise will be one where the resultant total net volume falls within 5% of the check cruise results.

This check cruise will form the basis for contract compliance and possible termination of services. In the event that PFC determines that an employee or subcontract is to be terminated from working on this project, no less than ten % of that crew's work will be checked.

APPENDIX C

AERIAL PHOTOGRAPHY OF SUBJECT

TIMBER TYPES



APPENDIX D

DETAILED TIMBER CRUISE RESULTS

BOMB POINT INVENTORY SUMMARY BY TYPE										
			Average		Per Acre				Total Volume (BF)	
				Merch.	Basal	# Of	Gross	Adj. Net		
Type	Acres	Plots	DBH	Height	Area	Stems	Volume	Volume	Gross	Adj. Net
1	63.3	16	19.2	43	223	143	13,908	11,429	880,390	723,487
2	17.5	5	17.0	40	148	119	7,327	6,332	128,220	110,812
3	8.3	2	29.8	83	180	39	28,380	21,840	235,550	181,272
4	12.0	3	20.1	59	227	134	26,667	22,680	320,000	272,160
5	9.1	2	21.5	69	320	160	41,760	35,320	380,020	321,412
6	12.2	3	20.1	56	213	110	20,334	17,120	248,070	208,863
7	13.1	3	17.8	54	227	175	20,880	17,493	273,530	229,163
8	52.2	13	18.8	50	212	159	16,735	13,483	873,580	703,816
9	10.2	2	22.9	65	260	107	27,960	20,729	285,190	211,434
10	7.0	2	20.9	58	140	69	13,120	10,100	91,840	70,700
11	257.2	64	24.6	75	217	105	31,209	25,248	8,026,850	6,493,913
12	386.9	93	20.2	56	186	117	19,024	15,694	7,360,410	6,071,917
13	16.3	4	23.9	72	260	147	38,140	31,429	621,680	512,300
14	41.9	10	16.8	41	202	165	12,705	10,554	532,320	442,194
TOTALS	907.2	222	21.2	60	203	121	22,330	18,247	20,257,650	16,553,443

BOMB POINT INVENTORY SUMMARY BY TYPE & SORT										
	WESTERN HEMLOCK									
	Total Volume (BF)		Total Adjusted Net Volume by Sort (BF)							
Type	Gross	Adj. Net	10	11	12	14	16	17	18	19
1	877,200	720,562	52,789	38,295	67,416	4,255	47,204	130,177	243,201	137,225
2	128,220	110,812	9,646	0	0	0	0	37,290	60,582	3,294
3	235,550	181,272	40,006	38,014	49,302	13,612	0	2,656	37,682	0
4	320,000	272,160	47,680	0	24,320	0	12,000	22,080	137,280	28,800
5	380,020	321,412	0	41,314	112,476	12,012	20,930	38766	86,632	9,282
6	230,660	192,597	30,744	0	45,221	0	0	8,947	95,485	12,200
7	273,530	229,163	33,536	35,981	15,720	0	0	29,519	111,612	2,795
8	859,770	690,967	79,665	52,842	40,636	0	43,045	135,399	224,540	114,840
9	285,190	211,434	53,040	19,380	29,376	0	18,654	2,856	73,848	14,280
10	91,840	70,700	0	15,120	19,460	0	0	5,180	15,960	14,980
11	7,881,580	6,362,207	1,323,624	1,221,015	868,778	140,676	158,178	771,703	1,431,920	446,313
12	7,121,450	5,862,408	776,795	994,957	787,446	182,217	281,064	1,199,140	1,051,370	589,419
13	514,100	422,487	24,450	121,924	74,654	12,551	45,640	52,486	50,693	40,089
14	525,280	435,716	35,066	0	12,534	0	10,703	97,029	216,590	63,794
TOTALS	19,724,390	16,083,897	2,507,041	2,578,842	2,147,339	365,323	637,418	2,533,228	3,837,395	1,477,311

BOMB POINT INVENTORY SUMMARY BY TYPE & SORT											
	SITKA SPRUCE										
	Total Volume (BF)		Total Adjusted Net Volume by Sort (BF)								
Type	Gross	Adj. Net	31	32	33	34	35	36	37	38	39
1	3,190	2,925	0	0	0	0	0	0	2,925	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0
6	17,410	16,266	0	0	0	0	0	0	2,765	13,501	0
7	0	0	0	0	0	0	0	0	0	0	0
8	13,810	12,849	0	0	0	0	0	0	0	12,849	0
9	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0
11	145,270	131,706	27,785	14,877	0	0	0	13,127	45,944	26,035	3,938
12	238,960	209,509	21,467	64,899	9,652	0	35,611	0	49,923	26,459	1,498
13	107,580	89,813	33,904	0	11,573	9,291	0	0	26,569	5,705	2,771
14	7,040	6,478	0	0	0	0	0	0	0	6,478	0
TOTALS	533,260	469,546	83,156	79,776	21,225	9,291	35,611	13,127	128,126	91,027	8,207

OWNERSHIP: Eyak Cruise
UNIT NUMBER: 1
LOCATION:

Top diameter used for this type is 6 inches or 25 percent of DBH.

CRUISE RESULTS OF TYPE #1

Number of Acres: 63.3
Number of Variable Plots: 16

BAF Used: 33.61

	---Average---		--Per Acre--		--BF Per Acre-		------BF Total------	
Species	DBH	Merch. Height	Basal Area	# Of Stems	Gross Volume	Net Volume	Gross Volume	Net Volume
W. Hemlock	19.2	43	221	142	13,860	9,215	877,200	583,338
Spruce	15.0	30	2	2	50	46	3,190	2,925
TOTALS	19.2	43	223	143	13,910	9,261	880,390	586,262

W. Hemlock Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	Net BF Total #2 Saw	#3 Saw	#4 Saw	Sp. Mill	Gross BF Total Util.	Special	Cull	Cull	Total
10 Sort	10-19	16	9,042	0	0	0	0	0	0		9,042
	20-24	21	18,483	0	0	0	0	0	0		18,483
	25-29	26	13,164	0	0	0	0	0	0		13,164
	36-40	36	12,100	0	0	0	0	0	0		12,100
10 Sort Total:		24	52,789	0	0	0	0	0	0		52,789
11 Sort	20-24	21	9,308	0	0	18,217	0	0	0		27,525
	25-29	26	0	0	0	10,771	0	0	0		10,771
11 Sort Total:		22	9,308	0	0	28,987	0	0	0		38,295
12 Sort	20-24	23	8,909	0	0	0	0	0	0		8,909
	25-29	27	20,743	0	0	0	0	0	0		20,743
	30-35	32	18,749	0	0	0	0	0	0		18,749
	36-40	38	19,015	0	0	0	0	0	0		19,015
12 Sort Total:		30	67,416	0	0	0	0	0	0		67,416
14 Sort	10-19	13	0	0	0	4,255	0	0	0		4,255
14 Sort Total:		13	0	0	0	4,255	0	0	0		4,255
17 Sort	10-19	15	3,191	0	18,616	0	0	0	0		21,807
	20-24	21	9,707	4,920	22,339	0	0	0	0		36,966
	25-29	27	0	4,920	5,718	0	0	0	0		10,638
	30-35	30	0	13,563	20,078	0	0	0	0		33,641
	36-40	38	7,712	19,414	0	0	0	0	0		27,126
17 Sort Total:		23	20,610	42,816	66,751	0	0	0	0		130,177
18 Sort	20-24	22	16,089	2,128	0	0	0	0	0		18,217
	25-29	28	0	4,388	0	0	0	0	0		4,388
	30-35	32	0	72,867	0	0	0	0	0		72,867
	36-40	39	0	147,729	0	0	0	0	0		147,729
18 Sort Total:		36	16,089	227,112	0	0	0	0	0		243,201
19 Sort	10-19	14	0	0	0	0	58,507	0	0		58,507
	20-24	22	0	0	0	0	24,466	0	0		24,466
	25-29	26	0	0	0	0	13,031	0	0		13,031
	30-35	32	0	0	0	0	34,572	0	0		34,572
	36-40	38	0	0	0	0	6,648	0	0		6,648
19 Sort Total:		21	0	0	0	0	137,225	0	0		137,225
16 Sort	25-29	26	0	8,643	0	0	0	0	0		8,643
	36-40	39	0	38,561	0	0	0	0	0		38,561
16 Sort Total:		37	0	47,204	0	0	0	0	0		47,204
Domestic	10-19	14	0	0	0	0	0	1,330	14,760		16,089
Domestic Total:		14	0	0	0	0	0	1,330	14,760		16,089
W. Hemlock Total:			166,212	317,132	66,751	33,242	137,225	1,330	14,760		736,651

Spruce Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	Net BF Total #4 Saw	Total
37 Sort	25-29	28	2,925	2,925
37 Sort Total:		28	2,925	2,925
Spruce Total:			2,925	2,925

OWNERSHIP: Eyak Cruise
UNIT NUMBER: 1
LOCATION:

Top diameter used for this type is 6 inches or 25 percent of DBH.

CRUISE RESULTS OF TYPE #2

Number of Acres: 17.5
Number of Variable Plots: 5

BAF Used: 33.61

	---Average---		--Per Acre--		--BF Per Acre-		------BF Total------	
Species	DBH	Merch. Height	Basal Area	# Of Stems	Gross Volume	Net Volume	Gross Volume	Net Volume
W. Hemlock	17.0	40	148	119	7,330	6,144	128,220	107,518
TOTALS	17.0	40	148	119	7,330	6,143	128,220	107,518

W. Hemlock Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	------ Net BF Total ------ #2 Saw	#3 Saw	#4 Saw	---Gross BF Total--- Util.	Cull	Total
10 Sort	20-24	23	9,646	0	0	0	0	9,646
10 Sort Total:		23	9,646	0	0	0	0	9,646
17 Sort	10-19	15	0	0	4,588	0	0	4,588
	20-24	22	0	5,294	1,294	0	2,235	8,823
	25-29	27	0	0	10,587	0	0	10,587
	36-40	38	0	15,528	0	0	0	15,528
17 Sort Total:		26	0	20,821	16,469	0	2,235	39,525
18 Sort	20-24	20	8,587	0	0	0	0	8,587
	25-29	26	0	1,059	0	0	0	1,059
	30-35	32	0	15,175	0	0	0	15,175
	36-40	40	0	35,761	0	0	0	35,761
18 Sort Total:		36	8,587	51,995	0	0	0	60,582
19 Sort	30-35	30	0	0	0	3,294	0	3,294
19 Sort Total:		30	0	0	0	3,294	0	3,294
W. Hemlock Total:			18,233	72,816	16,469	3,294	2,235	113,047

OWNERSHIP: Eyak Cruise
UNIT NUMBER: 1
LOCATION:

Top diameter used for this type is 6 inches or 25 percent of DBH.

CRUISE RESULTS OF TYPE #3

Number of Acres: 8.3
Number of Variable Plots: 2

BAF Used: 40

	---Average---		--Per Acre--		--BF Per Acre-		------BF Total------	
Species	DBH	Merch. Height	Basal Area	# Of Stems	Gross Volume	Net Volume	Gross Volume	Net Volume
W. Hemlock	29.8	83	180	39	28,380	21,840	235,550	181,272
TOTALS	29.8	83	180	39	28,380	21,840	235,550	181,272

W. Hemlock Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	Net BF Total #2 Saw	#3 Saw	#4 Saw	Total
10 Sort	36-40	39	40,006	0	0	40,006
10 Sort Total:		39	40,006	0	0	40,006
11 Sort	30-35	33	38,014	0	0	38,014
11 Sort Total:		33	38,014	0	0	38,014
12 Sort	30-35	32	8,466	0	0	8,466
	36-40	38	40,836	0	0	40,836
12 Sort Total:		37	49,302	0	0	49,302
14 Sort	20-24	20	13,612	0	0	13,612
14 Sort Total:		20	13,612	0	0	13,612
17 Sort	10-19	16	0	0	332	332
	20-24	21	0	0	2,324	2,324
17 Sort Total:		19	0	0	2,656	2,656
18 Sort	30-35	32	0	7,802	0	7,802
	36-40	40	0	29,880	0	29,880
18 Sort Total:		38	0	37,682	0	37,682
W. Hemlock Total:			140,934	37,682	2,656	181,272

OWNERSHIP: Eyak Cruise
UNIT NUMBER: 1
LOCATION:

Top diameter used for this type is 6 inches or 25 percent of DBH.

CRUISE RESULTS OF TYPE #4

Number of Acres: 12
Number of Variable Plots: 3

BAF Used: 40

	---Average---		--Per Acre--		--BF Per Acre-		------BF Total------	
Species	DBH	Merch. Height	Basal Area	# Of Stems	Gross Volume	Net Volume	Gross Volume	Net Volume
W. Hemlock	20.1	59	227	134	26,670	20,840	320,000	250,080
TOTALS	20.1	59	227	134	26,670	20,840	320,000	250,080

W. Hemlock Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	Net BF Total #2 Saw	#3 Saw	#4 Saw	Gross BF Total Util.	Cull	Total
10 Sort	30-35	33	29,440	0	0	0	0	29,440
	36-40	40	18,240	0	0	0	0	18,240
10 Sort Total:		35	47,680	0	0	0	0	47,680
12 Sort	30-35	32	24,320	0	0	0	0	24,320
12 Sort Total:		32	24,320	0	0	0	0	24,320
17 Sort	10-19	15	0	0	3,200	0	1,600	4,800
	20-24	20	0	0	2,080	0	0	2,080
	25-29	26	0	0	7,520	0	0	7,520
	30-35	30	0	9,280	0	0	0	9,280
17 Sort Total:		21	0	9,280	12,800	0	1,600	23,680
18 Sort	10-19	12	0	0	1,120	0	0	1,120
	30-35	32	0	21,600	0	0	0	21,600
	36-40	37	0	114,560	0	0	0	114,560
18 Sort Total:		35	0	136,160	1,120	0	0	137,280
19 Sort	10-19	14	4,800	0	0	24,000	0	28,800
19 Sort Total:		14	4,800	0	0	24,000	0	28,800
16 Sort	30-35	32	0	13,920	0	0	0	13,920
16 Sort Total:		32	0	13,920	0	0	0	13,920
Domestic	25-29	26	0	0	0	0	1,920	1,920
Domestic Total:		26	0	0	0	0	1,920	1,920
W. Hemlock Total:			76,800	159,360	13,920	24,000	3,520	277,600

OWNERSHIP: Eyak Cruise
UNIT NUMBER: 1
LOCATION:

Top diameter used for this type is 6 inches or 25 percent of DBH.

CRUISE RESULTS OF TYPE #5

Number of Acres: 9.1
Number of Variable Plots: 2

BAF Used: 40

	---Average---		--Per Acre--		--BF Per Acre-		------BF Total------	
Species	DBH	Merch. Height	Basal Area	# Of Stems	Gross Volume	Net Volume	Gross Volume	Net Volume
W. Hemlock	21.5	69	320	160	41,760	35,320	380,020	321,412
TOTALS	21.5	69	320	160	41,760	35,320	380,020	321,412

W. Hemlock Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	Net BF Total #2 Saw	#3 Saw	#4 Saw	Total
11 Sort	30-35	32	19,656	0	0	19,656
	36-40	36	21,658	0	0	21,658
11 Sort Total:		34	41,314	0	0	41,314
12 Sort	25-29	26	22,022	0	0	22,022
	30-35	31	30,758	0	0	30,758
	36-40	36	59,696	0	0	59,696
12 Sort Total:		33	112,476	0	0	112,476
14 Sort	25-29	26	12,012	0	0	12,012
14 Sort Total:		26	12,012	0	0	12,012
17 Sort	10-19	14	8,554	0	1,274	9,828
	20-24	20	16,016	0	8,008	24,024
	36-40	40	0	4,914	0	4,914
17 Sort Total:		21	24,570	4,914	9,282	38,766
18 Sort	30-35	32	0	18,200	0	18,200
	36-40	39	0	68,432	0	68,432
18 Sort Total:		37	0	86,632	0	86,632
19 Sort	10-19	16	7,826	0	0	7,826
	36-40	36	0	1,456	0	1,456
19 Sort Total:		21	7,826	1,456	0	9,282
16 Sort	36-40	40	0	20,930	0	20,930
16 Sort Total:		40	0	20,930	0	20,930
W. Hemlock Total:			198,198	113,932	9,282	321,412

OWNERSHIP: Eyak Cruise
UNIT NUMBER: 1
LOCATION:

Top diameter used for this type is 6 inches or 25 percent of DBH.

CRUISE RESULTS OF TYPE #6

Number of Acres: 12.2
Number of Variable Plots: 3

BAF Used: 40

	---Average---		--Per Acre--		--BF Per Acre-		------BF Total------	
Species	DBH	Merch. Height	Basal Area	# Of Stems	Gross Volume	Net Volume	Gross Volume	Net Volume
W. Hemlock	20.3	56	200	102	18,910	15,787	230,660	192,597
Spruce	17.0	60	13	8	1,430	1,333	17,410	16,267
TOTALS	20.1	56	213	110	20,330	17,120	248,070	208,863

W. Hemlock Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	------ Net BF Total ------ #2 Saw	#3 Saw	#4 Saw	Gross BF Cull	Total
10 Sort	36-40	36	30,744	0	0	0	30,744
10 Sort Total:		36	30,744	0	0	0	30,744
12 Sort	36-40	36	45,221	0	0	0	45,221
12 Sort Total:		36	45,221	0	0	0	45,221
17 Sort	10-19	14	0	0	6,181	10,899	17,080
	20-24	20	0	0	2,765	0	2,765
	25-29	26	0	0	0	2,603	2,603
17 Sort Total:		17	0	0	8,947	13,501	22,448
18 Sort	20-24	23	0	18,381	0	0	18,381
	36-40	38	24,075	53,029	0	0	77,104
18 Sort Total:		35	24,075	71,411	0	0	95,485
19 Sort	30-35	30	0	12,200	0	0	12,200
19 Sort Total:		30	0	12,200	0	0	12,200
W. Hemlock Total:			100,040	83,611	8,947	13,501	206,099

Spruce Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	- Net BF Total - #3 Saw	#4 Saw	Total
37 Sort	20-24	22	0	2,765	2,765
37 Sort Total:		22	0	2,765	2,765
38 Sort	36-40	36	13,501	0	13,501
38 Sort Total:		36	13,501	0	13,501
Spruce Total:			13,501	2,765	16,267

OWNERSHIP: Eyak Cruise
UNIT NUMBER: 1
LOCATION:

Top diameter used for this type is 6 inches or 25 percent of DBH.

CRUISE RESULTS OF TYPE #7

Number of Acres: 13.1
Number of Variable Plots: 3

BAF Used: 40

	---Average---		--Per Acre--		--BF Per Acre-		------BF Total------	
Species	DBH	Merch. Height	Basal Area	# Of Stems	Gross Volume	Net Volume	Gross Volume	Net Volume
W. Hemlock	17.8	54	227	175	20,880	17,280	273,530	226,368
TOTALS	17.8	54	227	175	20,880	17,280	273,530	226,368

W. Hemlock Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	Net BF Total #2 Saw	#3 Saw	#4 Saw	Sp. Mill	Gross BF Total Util.	Cull	Total
10 Sort	25-29	26	9,432	0	0	0	0	0	9,432
	36-40	38	24,104	0	0	0	0	0	24,104
10 Sort Total:		33	33,536	0	0	0	0	0	33,536
11 Sort	25-29	26	0	0	0	17,641	0	0	17,641
	30-35	32	18,340	0	0	0	0	0	18,340
11 Sort Total:		29	18,340	0	0	17,641	0	0	35,981
12 Sort	36-40	36	15,720	0	0	0	0	0	15,720
12 Sort Total:		36	15,720	0	0	0	0	0	15,720
17 Sort	10-19	17	0	0	17,467	0	0	0	17,467
	25-29	27	0	7,511	4,541	0	0	0	12,052
17 Sort Total:		19	0	7,511	22,008	0	0	0	29,519
18 Sort	30-35	33	0	20,785	0	0	0	0	20,785
	36-40	39	0	90,827	0	0	0	0	90,827
18 Sort Total:		37	0	111,612	0	0	0	0	111,612
19 Sort	10-19	16	0	0	0	0	2,795	0	2,795
19 Sort Total:		16	0	0	0	0	2,795	0	2,795
Domestic	10-19	15	0	0	0	0	0	4,192	4,192
Domestic Total:		15	0	0	0	0	0	4,192	4,192
W. Hemlock Total:			67,596	119,123	22,008	17,641	2,795	4,192	233,355

OWNERSHIP: Eyak Cruise
UNIT NUMBER: 1
LOCATION:

Top diameter used for this type is 6 inches or 25 percent of DBH.

CRUISE RESULTS OF TYPE #8

Number of Acres: 52.2
Number of Variable Plots: 13

BAF Used: 40

	---Average---		--Per Acre--		--BF Per Acre-		------BF Total------	
Species	DBH	Merch. Height	Basal Area	# Of Stems	Gross Volume	Net Volume	Gross Volume	Net Volume
W. Hemlock	18.9	51	206	155	16,470	11,037	859,770	576,127
Spruce	16.0	38	6	4	260	246	13,810	12,849
TOTALS	18.8	50	212	159	16,740	11,283	873,590	588,976

W. Hemlock Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	Net BF Total #2 Saw	#3 Saw	#4 Saw	Sp. Mill	Gross BF Total Util.	Cull	Total
10 Sort	25-29	28	3,212	0	0	0	0	0	3,212
	30-35	32	30,356	0	0	0	0	0	30,356
	36-40	40	46,097	0	0	0	0	0	46,097
10 Sort Total:		35	79,665	0	0	0	0	0	79,665
11 Sort	10-19	13	0	0	0	11,082	0	0	11,082
	25-29	26	0	0	0	10,922	0	0	10,922
	30-35	32	12,528	0	0	18,310	0	0	30,838
11 Sort Total:		27	12,528	0	0	40,314	0	0	52,842
12 Sort	25-29	26	12,849	0	0	0	0	0	12,849
	30-35	34	15,258	0	0	0	0	0	15,258
	36-40	40	12,528	0	0	0	0	0	12,528
12 Sort Total:		32	40,636	0	0	0	0	0	40,636
17 Sort	10-19	13	6,264	8,031	21,362	0	0	0	35,657
	20-24	22	11,404	6,585	47,221	0	0	0	65,210
	25-29	27	13,652	0	16,865	0	0	0	30,517
	30-35	32	0	0	4,015	0	0	0	4,015
17 Sort Total:		19	31,320	14,616	89,463	0	0	0	135,399
18 Sort	20-24	22	0	0	1,124	0	0	0	1,124
	30-35	33	0	18,471	0	0	0	0	18,471
	36-40	39	0	204,945	0	0	0	0	204,945
18 Sort Total:		37	0	223,416	1,124	0	0	0	224,540
19 Sort	10-19	14	0	0	0	0	82,235	0	82,235
	20-24	22	0	0	0	0	16,865	0	16,865
	30-35	30	0	0	0	0	6,103	0	6,103
	36-40	40	0	0	0	0	9,637	0	9,637
19 Sort Total:		18	0	0	0	0	114,840	0	114,840
16 Sort	36-40	38	0	43,045	0	0	0	0	43,045
16 Sort Total:		38	0	43,045	0	0	0	0	43,045
Domestic	10-19	13	0	0	0	0	0	22,486	22,486
	20-24	20	0	0	0	0	0	14,134	14,134
Domestic Total:		14	0	0	0	0	0	36,620	36,620
W. Hemlock Total:			164,149	281,077	90,587	40,314	114,840	36,620	727,588

Spruce Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	Net BF Total #3 Saw	Total
38 Sort	36-40	36	12,849	12,849
38 Sort Total:		36	12,849	12,849
Spruce Total:			12,849	12,849

OWNERSHIP: Eyak Cruise
UNIT NUMBER: 1
LOCATION:

Top diameter used for this type is 6 inches or 25 percent of DBH.

CRUISE RESULTS OF TYPE #9

Number of Acres: 10.2
Number of Variable Plots: 2

BAF Used: 40

	---Average---		--Per Acre--		--BF Per Acre-		------BF Total------	
Species	DBH	Merch. Height	Basal Area	# Of Stems	Gross Volume	Net Volume	Gross Volume	Net Volume
W. Hemlock	22.9	65	260	107	27,960	18,200	285,190	185,640
TOTALS	22.9	65	260	107	27,960	18,200	285,190	185,639

W. Hemlock Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	Net BF Total #2 Saw	#3 Saw	#4 Saw	Sp. Mill	Gross BF Total Util.	Cull	Total
10 Sort	36-40	39	53,040	0	0	0	0	0	53,040
10 Sort Total:		39	53,040	0	0	0	0	0	53,040
11 Sort	30-35	34	19,380	0	0	0	0	0	19,380
11 Sort Total:		34	19,380	0	0		0	0	
12 Sort	36-40	38	29,376	0	0	0	0	0	29,376
12 Sort Total:		38	29,376	0	0	0	0	0	29,376
17 Sort	20-24	24	0	0	2,856	0	0	0	2,856
17 Sort Total:		24	0	0	2,856	0	0	0	2,856
18 Sort	10-19	10	0	0	2,244	0	0	0	2,244
	20-24	24	0	9,996	0	0	0	0	9,996
	30-35	33	0	11,016	0	0	0	0	11,016
	36-40	39	0	50,592	0	0	0	0	50,592
18 Sort Total:		34	0	71,604	2,244	0	0	0	73,848
19 Sort	10-19	16	0	0	0	0	14,280	0	14,280
19 Sort Total:		16	0	0	0	0	14,280	0	14,280
16 Sort	36-40	40	0	18,564	0	0	0	0	18,564
16 Sort Total:		40	0	18,564	0	0	0	0	18,564
Domestic	10-19	15	0	0	0	0	0	4,488	4,488
Domestic Total:		15	0	0	0	0	0	4,488	4,488
W. Hemlock Total:			101,796	90,168	5,100		14,280	4,488	204,408

OWNERSHIP: Eyak Cruise
UNIT NUMBER: 1
LOCATION:

Top diameter used for this type is 6 inches or 25 percent of DBH.

CRUISE RESULTS OF TYPE #10

Number of Acres: 7
Number of Variable Plots: 2

BAF Used: 40

Species	---Average--- DBH	Merch. Height	--Per Acre-- Basal Area	# Of Stems	--BF Per Acre- Gross Volume	Net Volume	------BF Total------ Gross Volume	Net Volume
W. Hemlock	20.9	58	140	69	13,120	7,960	91,840	55,720
TOTALS	20.9	58	140	69	13,120	7,960	91,840	55,720

W. Hemlock Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	------ Net BF Total ------ #2 Saw	#3 Saw	#4 Saw	Gross BF Util.	Total
11 Sort	36-40	36	15,120	0	0	0	15,120
11 Sort Total:		36	15,120	0	0	0	15,120
12 Sort	36-40	40	19,460	0	0	0	19,460
12 Sort Total:		40	19,460	0	0	0	19,460
17 Sort	10-19	16	0	0	1,260	0	1,260
	25-29	28	0	0	3,920	0	3,920
17 Sort Total:		24	0	0	5,180	0	5,180
18 Sort	25-29	28	0	0	980	0	980
	36-40	40	0	14,980	0	0	14,980
18 Sort Total:		37	0	14,980	980	0	15,960
19 Sort	25-29	28	0	0	0	1,400	1,400
	36-40	40	0	0	0	13,580	13,580
19 Sort Total:		37	0	0	0	14,980	14,980
W. Hemlock Total:			34,580	14,980	6,160	14,980	70,700

OWNERSHIP: Eyak Cruise
UNIT NUMBER: 1
LOCATION:

Top diameter used for this type is 6 inches or 25 percent of DBH.

CRUISE RESULTS OF TYPE #11

Number of Acres: 257.2
Number of Variable Plots: 64

BAF Used: 54.44

	---Average---		--Per Acre--		--BF Per Acre-		------BF Total------	
Species	DBH	Merch. Height	Basal Area	# Of Stems	Gross Volume	Net Volume	Gross Volume	Net Volume
W. Hemlock	24.7	75	213	101	30,640	23,225	7,881,580	5,973,370
Spruce	17.9	57	6	5	560	497	145,270	127,768
TOTALS	24.6	75	219	106	31,210	23,721	8,026,850	6,101,137

W. Hemlock Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	Net BF Total #1 Saw	#2 Saw	#3 Saw	#4 Saw	Sp. Mill	Peeler	Gross BF Total Util.	Cull	Total
10 Sort	20-24	20	0	41,350	0	0	0	0	0	0	41,350
	30-35	31	0	89,700	0	0	0	0	0	0	89,700
	36-40	39	13,783	1,178,791	0	0	0	0	0	0	1,192,574
10 Sort Total:		37	13,783	1,309,840	0	0	0	0	0	0	1,323,624
11 Sort	10-19	15	0	20,128	0	0	17,065	33,911	0	0	71,104
	20-24	20	0	15,752	0	0	81,168	45,069	0	0	141,989
	25-29	26	0	14,221	0	0	38,943	32,380	0	0	85,543
	30-35	30	0	46,819	0	0	53,383	89,263	0	0	189,464
	36-40	39	195,590	435,811	0	0	101,514	0	0	0	732,916
11 Sort Total:		32	195,590	532,731	0	0	292,072	200,622	0	0	1,221,015
12 Sort	10-19	13	0	7,220	0	0	0	0	0	0	7,220
	20-24	23	0	61,040	0	0	0	0	0	0	61,040
	25-29	26	0	29,317	0	0	0	0	0	0	29,317
	30-35	30	0	45,944	0	0	0	0	0	0	45,944
	36-40	39	0	725,258	0	0	0	0	0	0	725,258
12 Sort Total:		36	0	868,778	0	0	0	0	0	0	868,778
14 Sort	10-19	18	0	8,970	0	0	0	0	0	0	8,970
	20-24	23	0	12,689	0	0	0	0	0	0	12,689
	30-35	30	0	32,598	0	0	0	0	0	0	32,598
	36-40	39	0	86,418	0	0	0	0	0	0	86,418
14 Sort Total:		34	0	140,676	0	0	0	0	0	0	140,675
17 Sort	10-19	15	0	24,285	12,689	129,518	0	0	0	57,758	224,250
	20-24	22	0	199,747	34,349	77,230	0	0	0	17,284	328,609
	25-29	27	0	53,383	29,535	29,535	0	0	0	29,535	141,989
	30-35	31	0	35,661	41,350	26,910	0	0	0	0	103,921
	36-40	38	0	0	74,167	6,345	0	0	0	0	80,511
17 Sort Total:		22	0	313,075	192,090	269,538	0	0	0	104,577	879,280
18 Sort	10-19	14	0	0	875	656	0	0	0	0	1,531
	20-24	21	0	14,002	7,001	0	0	0	0	0	21,003
	25-29	27	0	0	14,658	0	0	0	0	0	14,658
	30-35	32	0	45,506	35,661	0	0	0	0	0	81,168
	36-40	41	0	422,028	891,532	0	0	0	0	0	1,313,560
18 Sort Total:		39	0	481,536	949,727	656	0	0	0	0	1,431,920
19 Sort	10-19	14	0	7,657	1,313	8,095	0	0	180,713	0	197,778
	20-24	23	0	0	6,345	2,407	0	0	22,316	0	31,067
	25-29	26	0	0	0	0	0	0	22,316	0	22,316
	30-35	30	15,315	10,720	2,625	0	0	0	93,419	0	122,080
	36-40	39	0	0	0	0	0	0	73,073	0	73,073
19 Sort Total:		20	15,315	18,378	10,283	10,501	0	0	391,836	0	446,313
16 Sort	25-29	26	0	0	7,657	0	0	0	0	0	7,657
	30-35	30	0	0	12,033	0	0	0	0	0	12,033
	36-40	39	0	0	138,488	0	0	0	0	0	138,488
16 Sort Total:		37	0	0	158,178	0	0	0	0	0	158,178
Domestic	10-19	14	0	0	0	0	0	0	0	26,472	26,472
	20-24	21	0	0	0	0	0	0	0	27,348	27,348
	25-29	26	0	0	0	0	0	0	0	44,412	44,412
	30-35	32	0	0	0	0	0	0	0	3,719	3,719
	36-40	39	0	0	0	0	0	0	0	36,755	36,755
Domestic Total:		21	0	0	0	0	0	0	0	138,707	138,707
W. Hemlock Total:			224,688	3,665,015	1,310,278	280,696	292,072	200,622	391,836	243,284	6,608,492

Spruce Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	Net BF Total #2 Saw	#3 Saw	#4 Saw	Sp. Mill	Gross BF Util.	Total
39 Sort	10-19	16	0	0	0	0	3,938	3,938
39 Sort Total:		16	0	0	0	0	3,938	3,938
31 Sort	36-40	40	0	0	0	27,785	0	27,785
31 Sort Total:		40	0	0	0	27,785	0	27,785
32 Sort	36-40	40	0	14,877	0	0	0	14,877
32 Sort Total:		40	0	14,877	0	0	0	14,877
36 Sort	36-40	40	13,127	0	0	0	0	13,127
36 Sort Total:		40	13,127	0	0	0	0	13,127
37 Sort	10-19	16	9,408	0	3,063	0	0	12,471
	20-24	20	0	0	7,220	0	0	7,220
	25-29	26	0	1,750	9,189	0	0	10,939
	30-35	30	0	7,657	0	0	0	7,657
	36-40	36	7,657	0	0	0	0	7,657
37 Sort Total:		23	17,065	9,408	19,471	0	0	45,944
38 Sort	36-40	39	20,565	5,470	0	0	0	26,035
38 Sort Total:		39	20,565	5,470	0	0	0	26,035
Spruce Total:			50,757	29,754	19,471	27,785	3,938	131,706

OWNERSHIP: Eyak Cruise
UNIT NUMBER: 1
LOCATION:

Top diameter used for this type is 6 inches or 25 percent of DBH.

CRUISE RESULTS OF TYPE #12

Number of Acres: 386.9
Number of Variable Plots: 93

BAF Used: 40

	---Average---		--Per Acre--		--BF Per Acre-		------BF Total------	
Species	DBH	Merch. Height	Basal Area	# Of Stems	Gross Volume	Net Volume	Gross Volume	Net Volume
W. Hemlock	20.3	56	178	110	18,410	14,072	7,121,450	5,444,390
Spruce	16.9	48	7	7	620	505	238,960	195,197
TOTALS	20.1	55	186	117	19,020	14,576	7,360,410	5,639,587

W. Hemlock Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	Net BF Total #1 Saw	#2 Saw	#3 Saw	#4 Saw	Sp. Mill	Peeler	Gross BF Total Util.	Special	Cull	Cull	Total
10 Sort	20-24	22	0	2,829	0	0	0	0	0	0	0	0	2,829
	25-29	26	0	7,821	0	0	0	0	0	0	0	0	7,821
	30-35	32	0	303,696	0	0	0	0	0	0	0	0	303,696
	36-40	39	0	462,449	0	0	0	0	0	0	0	0	462,449
10 Sort Total:		35	0	776,795	0	0	0	0	0	0	0	0	776,795
11 Sort	10-19	13	0	6,656	0	0	19,137	0	0	0	0	0	25,793
	20-24	21	0	0	0	0	123,974	0	0	0	0	0	123,974
	25-29	27	0	16,974	0	0	52,419	0	0	0	0	0	69,392
	30-35	32	20,302	144,942	0	0	97,848	3,827	0	0	0	0	266,919
	36-40	39	0	255,604	0	0	253,274	0	0	0	0	0	508,878
11 Sort Total:		33	20,302	424,176	0	0	546,652	3,827	0	0	0	0	994,957
12 Sort	30-35	32	0	343,967	0	0	0	0	0	0	0	0	343,967
	36-40	39	0	443,479	0	0	0	0	0	0	0	0	443,479
12 Sort Total:		35	0	787,446	0	0	0	0	0	0	0	0	787,446
14 Sort	10-19	14	0	6,157	0	1,664	0	0	0	0	0	0	7,821
	20-24	20	0	17,639	0	7,988	0	0	0	0	0	0	25,627
	25-29	26	0	11,316	0	0	0	0	0	0	0	0	11,316
	30-35	32	0	83,371	0	0	0	0	0	0	0	0	83,371
	36-40	39	0	54,083	0	0	0	0	0	0	0	0	54,083
14 Sort Total:		24	0	172,566	0	9,652	0	0	0	0	0	0	182,217
17 Sort	10-19	15	0	57,245	14,145	157,755	0	0	0	1,664	92,523	323,332	
	20-24	22	0	223,986	32,782	90,360	0	0	0	0	16,807	363,936	
	25-29	27	0	50,089	31,618	60,573	0	0	0	0	7,655	149,934	
	30-35	31	0	48,591	138,785	24,628	0	0	0	0	0	212,005	
	36-40	38	0	19,803	95,851	4,826	0	0	0	0	29,454	149,934	
17 Sort Total:		22	0	399,713	313,181	338,142	0	0	0	1,664	146,440	1,199,140	
18 Sort	10-19	14	0	7,821	0	2,496	0	0	0	0	0	10,317	
	20-24	23	0	15,310	2,163	9,319	0	0	0	0	0	26,792	
	25-29	27	0	0	27,457	998	0	0	0	0	0	28,456	
	30-35	32	0	35,279	319,005	0	0	0	0	0	0	354,284	
	36-40	39	0	62,736	563,626	0	0	0	5,159	0	0	631,521	
18 Sort Total:		35	0	121,145	912,252	12,813	0	0	5,159	0	0	1,051,370	
19 Sort	10-19	15	0	23,464	0	44,598	0	0	33,282	0	0	101,343	
	20-24	23	0	46,262	30,286	4,826	0	0	51,587	0	0	132,960	
	25-29	26	0	12,647	21,800	12,980	0	0	17,639	0	0	65,066	
	30-35	32	0	21,966	41,935	8,820	0	0	53,916	0	0	126,637	
	36-40	39	0	0	53,084	1,997	0	0	108,332	0	0	163,413	
19 Sort Total:		24	0	104,338	147,105	73,220	0	0	264,756	0	0	589,419	
16 Sort	10-19	16	0	0	0	1,830	0	0	0	0	0	1,830	
	20-24	20	0	2,330	8,653	0	0	0	0	0	0	10,983	
	30-35	32	0	4,826	177,392	0	0	0	0	0	0	182,217	
	36-40	40	0	0	86,033	0	0	0	0	0	0	86,033	
16 Sort Total:		33	0	7,156	272,078	1,830	0	0	0	0	0	281,064	
W. Hemlock Total:			20,302	2,793,334	1,644,616	435,658	546,652	3,827	269,915	1,664	146,440	5,862,408	

Spruce Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	Net BF Total #2 Saw	#3 Saw	#4 Saw	Sp. Mill	Gross BF Total Util.	Cull	Total
39 Sort	20-24	24	0	0	1,498	0	0	0	1,498
39 Sort Total:		24	0	0	1,498	0	0	0	1,498
31 Sort	20-24	20	0	0	0	21,467	0	0	21,467
31 Sort Total:		20	0	0	0	21,467	0	0	21,467
32 Sort	36-40	38	21,633	31,451	0	0	11,815	0	64,899
32 Sort Total:		38	21,633	31,451	0	0	11,815	0	64,899
33 Sort	36-40	40	9,652	0	0	0	0	0	9,652
33 Sort Total:		40	9,652	0	0	0	0	0	9,652
35 Sort	30-35	32	16,641	0	0	0	0	0	16,641
	36-40	40	18,971	0	0	0	0	0	18,971
35 Sort Total:		36	35,611	0	0	0	0	0	35,611
37 Sort	10-19	16	0	3,495	23,630	0	0	0	27,125
	20-24	20	0	0	7,988	0	0	4,493	12,481
	25-29	27	0	0	2,496	0	2,496	0	4,992
	30-35	32	0	0	5,658	0	0	0	5,658
	36-40	40	0	4,160	0	0	0	0	4,160
37 Sort Total:		19	0	7,655	39,772	0	2,496	4,493	54,416
38 Sort	30-35	32	0	9,985	0	0	0	0	9,985
	36-40	39	0	16,474	0	0	0	0	16,474
38 Sort Total:		34	0	26,459	0	0	0	0	26,459
Spruce Total:			66,896	65,565	41,269	21,467	14,311	4,493	214,001

OWNERSHIP: Eyak Cruise
UNIT NUMBER: 1
LOCATION:

Top diameter used for this type is 6 inches or 25 percent of DBH.

CRUISE RESULTS OF TYPE #13

Number of Acres: 16.3
Number of Variable Plots: 4

BAF Used: 40

	---Average---		--Per Acre--		--BF Per Acre-		------BF Total------	
Species	DBH	Merch. Height	Basal Area	# Of Stems	Gross Volume	Net Volume	Gross Volume	Net Volume
W. Hemlock	20.9	68	230	149	31,540	25,490	514,100	415,487
Spruce	39.0	89	40	6	6,600	5,510	107,580	89,813
TOTALS	23.6	71	270	155	38,140	31,000	621,680	505,299

W. Hemlock Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	Net BF Total #2 Saw	#3 Saw	#4 Saw	Sp. Mill	Peeler	Gross BF Cull	Total
10 Sort	10-19	10	1,141	0	0	0	0	0	1,141
	30-35	33	11,084	0	0	0	0	0	11,084
	36-40	37	12,225	0	0	0	0	0	12,225
10 Sort Total:		21	24,450	0	0	0	0	0	24,450
11 Sort	20-24	23	0	0	0	14,344	37,164	0	51,508
	30-35	32	0	0	0	39,609	0	0	39,609
	36-40	40	30,807	0	0	0	0	0	30,807
11 Sort Total:		30	30,807	0	0	53,953	37,164	0	121,924
12 Sort	36-40	40	74,654	0	0	0	0	0	74,654
12 Sort Total:		40	74,654	0	0	0	0	0	74,654
14 Sort	25-29	26	12,551	0	0	0	0	0	12,551
14 Sort Total:		26	12,551	0	0	0	0	0	12,551
17 Sort	10-19	16	0	0	6,846	0	0	0	6,846
	20-24	24	0	1,793	2,282	0	0	0	4,075
	25-29	26	10,432	0	1,630	0	0	0	12,062
	30-35	34	0	13,040	0	0	0	0	13,040
	36-40	36	0	16,463	0	0	0	0	16,463
17 Sort Total:		25	10,432	31,296	10,758	0	0	0	52,486
18 Sort	30-35	31	0	8,313	0	0	0	0	8,313
	36-40	40	0	42,380	0	0	0	0	42,380
18 Sort Total:		37	0	50,693	0	0	0	0	50,693
19 Sort	10-19	12	7,824	0	978	0	0	0	8,802
	20-24	23	0	0	7,987	0	0	0	7,987
	30-35	32	0	9,291	0	0	0	0	9,291
	36-40	36	0	7,009	0	0	0	0	7,009
19 Sort Total:		25	7,824	16,300	8,965	0	0	0	33,089
16 Sort	30-35	32	0	2,445	0	0	0	0	2,445
	36-40	39	0	43,195	0	0	0	0	43,195
16 Sort Total:		38	0	45,640	0	0	0	0	45,640
Domestic	36-40	40	0	0	0	0	0	4,238	4,238
Domestic Total:		40	0	0	0	0	0	4,238	4,238
W. Hemlock Total:			160,718	143,929	19,723	53,953	37,164	4,238	419,725

Spruce Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	Net BF Total #2 Saw	#3 Saw	Sp. Mill	Total
39 Sort	20-24	20	0	2,771	0	2,771
39 Sort Total:		20	0	2,771	0	2,771
31 Sort	25-29	26	0	0	14,670	14,670
	36-40	40	19,234	0	0	19,234
31 Sort Total:		30	19,234	0	14,670	33,904
33 Sort	25-29	26	11,573	0	0	11,573
33 Sort Total:		26	11,573	0	0	11,573
34 Sort	36-40	36	9,291	0	0	9,291
34 Sort Total:		36	9,291	0	0	9,291
37 Sort	30-35	32	0	12,551	0	12,551
	36-40	38	10,921	3,097	0	14,018
37 Sort Total:		35	10,921	15,648	0	26,569
38 Sort	25-29	26	5,705	0	0	5,705
38 Sort Total:		26	5,705	0	0	5,705
Spruce Total:			56,724	18,419	14,670	89,813

OWNERSHIP: Eyak Cruise
UNIT NUMBER: 1
LOCATION: Bomb Point

Top diameter used for this type is 6 inches or 25 percent of DBH.

CRUISE RESULTS OF TYPE #14

Number of Acres: 41.9
Number of Variable Plots: 10

BAF Used: 33.61

	---Average---		--Per Acre--		--BF Per Acre-		------BF Total------	
Species	DBH	Merch. Height	Basal Area	# Of Stems	Gross Volume	Net Volume	Gross Volume	Net Volume
W. Hemlock	16.8	41	198	163	12,540	8,708	525,280	364,880
Spruce	16.0	42	3	2	170	155	7,040	6,478
TOTALS	16.8	41	202	165	12,700	8,862	532,320	371,357

W. Hemlock Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	Net BF Total #2 Saw	Net BF Total #3 Saw	Net BF Total #4 Saw	Gross BF Total Util.	Gross BF Total Cull	Total
10 Sort	36-40	37	35,066	0	0	0	0	35,066
10 Sort Total:		37	35,066	0	0	0	0	35,066
12 Sort	36-40	40	12,534	0	0	0	0	12,534
12 Sort Total:		40	12,534	0	0	0	0	12,534
17 Sort	10-19	13	0	0	17,744	0	1,267	19,011
	20-24	21	0	6,196	33,376	0	0	39,572
	25-29	26	0	12,674	10,844	0	0	23,518
	30-35	30	0	0	3,943	0	0	3,943
	36-40	37	0	12,252	0	0	0	12,252
17 Sort Total:		20	0	31,123	65,907	0	1,267	98,296
18 Sort	10-19	12	0	0	6,760	7,745	0	14,505
	20-24	21	9,154	0	1,127	0	0	10,280
	25-29	27	13,519	3,943	0	0	0	17,462
	30-35	32	0	30,418	0	0	0	30,418
	36-40	39	7,041	136,883	0	0	0	143,924
18 Sort Total:		35	29,714	171,244	7,886	7,745	0	216,590
19 Sort	10-19	15	0	0	704	49,993	0	50,697
	20-24	20	0	0	0	8,872	0	8,872
	36-40	36	0	0	0	4,225	0	4,225
19 Sort Total:		18	0	0	704	63,090	0	63,794
16 Sort	36-40	40	0	10,703	0	0	0	10,703
16 Sort Total:		40	0	10,703	0	0	0	10,703
Domestic	10-19	18	0	0	0	0	2,957	2,957
	25-29	26	0	0	0	0	2,957	2,957
Domestic Total:		21	0	0	0	0	5,915	5,915
W. Hemlock Total:			77,313	213,070	74,497	70,835	7,182	442,898

Spruce Grade Breakdown by Sort and Log Length

Sort	Length Class	Average Length	Net BF Total #3 Saw	Total
38 Sort	36-40	40	6,478	6,478
38 Sort Total:		40	6,478	6,478
Spruce Total:			6,478	6,478

APPENDIX E

Detailed Logging Cost Analysis

Assumptions:

1. Equipment moved from within 350 mile radius area requiring approx. 26 hours move time each way for tug and barge @ $450/HR.

2. Operating rates for machinery @ 15% above PNW rates.

Exc.	$143.75/HR
Cat	$115.00
Drill	$80.00
DumpTruck	$57.50

3. Expansion Factor of .4 used for rock excavated and used in road bed, .55 for rock used and wasted.

4. Equipment used for road/pit development
   - Excavator
   - 4 Dump Trucks
   - D.8 Cat
   - Drill & Compressor

5. Average typical x.section -- 200 cy/sta = *94360 c.y for 337 sta new const.
   *Includes expansion factor

6. Appraisal #'s based on industry / put operator approach not U.S.F.S.. Add 15-30% for U.S.F.S. costs.

7. Move-in cost for Tower App. covers cost of Tower, 2 Loaders. 6 Log trucks, 2 Cats 2 moves assumed.

8. Loads/day weighted average of all vol. sources, over life of sale area.

9. Yard Appraisal for existing yard and Rd. includes all costs to complete.

10. Yarding will be whole.tree to landing

11 No P&R included costs.

Move-In

Tower Side:	Mad.11 046 † Loader (235) D-8	Covered in Tower App.
Shovel Side:	(1) 235 Shovel (1) D-5 H. Trac w/arch (Use loader from tower side)	Covered in Tower App. .
Trucks:	6	Covered in Tower App.
Road Building Side	235 Shovel D-8 Cat 4 Dump Trucks Drill & Comp. Grader	Covered in Rd. App.
Yard:	2 Shovels 1 988 Loader	

LOGGING COST SUMMARY			
Method	Volume	Total Cost	Cost/MBF
Tower Logging	9,848	$1,908,936	$193.84
Helicopter	3,659	$1,175,929	$321.38
Shovel Logging	1,216	$162,008	$133.23
Road Right of Way Loggi	932	$74,728	$80.18
Sort Yard Right of Way	165	$13,230	$80.18
Totals	15,820	$3,334,831	$210.80

BOMB POINT TIMBER HARVEST SUMMARY BY TYPE										
			Average		Per Acre				Total Volume (BF)	
				Merch.	Basal	# Of	Gross	Adj. Net		
Type	Acres	Plots	DBH	Height	Area	Stems	Volume	Volume	Gross	Adj. Net
1	63.3	16	19.2	43	223	143	13,908	8,013	880,390	507,225
2	17.5	5	17.0	40	148	119	7,327	4,477	128,220	78,345
3	8.3	2	29.8	83	180	39	28,380	21,584	235,550	179,147
4	12.0	3	20.1	59	227	134	26,667	19,288	320,000	231,456
5	9.1	2	21.5	69	320	160	41,760	31,096	380,020	282,974
6	12.2	3	20.1	56	213	110	20,334	15,552	248,070	189,733
7	13.1	3	17.8	54	227	175	20,880	15,520	273,530	203,312
8	52.2	13	18.8	50	212	159	16,735	9,648	873,580	503,625
9	10.2	2	22.9	65	260	107	27,960	19,385	285,190	197,725
10	7.0	2	20.9	58	140	69	13,120	7,796	91,840	54,572
11	257.2	64	24.6	75	217	105	31,209	25,248	8,026,850	6,493,913
12	386.9	93	20.2	56	186	117	19,024	15,694	7,360,410	6,071,917
13	16.3	4	23.9	72	260	147	38,140	31,429	621,680	512,300
14	41.9	10	16.8	41	202	165	12,705	7,483	532,320	313,536
TOTALS	907.2	222	21.2	60	203	121	22,330	17,438	20,257,650	15,819,780
									Gross Value	**$10,880,113**
				Helicopter Piece Size =			**92**		**Gross/MBF**	**$687.75**
				Conventional Piece Size =			**164**	Helicopter Volume =		2,741,650
				Average Piece Size =			**144**	Conventional Volume =		13,078,130

BOMB POINT TIMBER HARVEST SUMMARY BY TYPE & SORT

	WESTERN HEMLOCK									
	Total Volume (BF)		Total Adjusted Net Volume by Sort (BF)							
Type	Gross	Adj. Net	10	11	12	14	16	17	18	19
1	877,200	506,640	52,789	38,295	67,416	4,255	47,204	26,035	243,201	27,445
2	128,220	78,345	9,646	0	0	0	0	7,458	60,582	659
3	235,550	179,147	40,006	38,014	49,302	13,612	0	531	37,682	0
4	320,000	231,456	47,680	0	24,320	0	12,000	4,416	137,280	5,760
5	380,020	282,974	0	41,314	112,476	12,012	20,930	7,753	86,632	1,856
6	230,660	175,679	30,744	0	45,221	0	0	1,789	95,485	2,440
7	273,530	203,312	33,536	35,981	15,720	0	0	5,904	111,612	559
8	859,770	490,776	79,665	52,842	40,636	0	43,045	27,080	224,540	22,968
9	285,190	197,725	53,040	19,380	29,376	0	18,654	571	73,848	2,856
10	91,840	54,572	0	15,120	19,460	0	0	1,036	15,960	2,996
11	7,881,580	6,362,207	1,323,624	1,221,015	868,778	140,676	158,178	771,703	1,431,920	446,313
12	7,121,450	5,862,408	776,795	994,957	787,446	182,217	281,064	1,199,140	1,051,370	589,419
13	514,100	422,487	24,450	121,924	74,654	12,551	45,640	52,486	50,693	40,089
14	525,280	307,058	35,066	0	12,534	0	10,703	19,406	216,590	12,759
TOTALS	19,724,390	15,354,786	2,507,041	2,578,842	2,147,339	365,323	637,418	2,125,309	3,837,395	1,156,119
		$689	$730	$1,000	$900	$700	$550	$130	$550	$130
		$10,572,298	$1,830,140	$2,578,842	$1,932,605	$255,726	$1,378,873	$335,249	$2,110,567	$150,295

BOMB POINT TIMBER HARVEST SUMMARY BY TYPE & SORT											
	SITKA SPRUCE										
	Total Volume (BF)		Total Adjusted Net Volume by Sort (BF)								
Type	Gross	Adj. Net	31	32	33	34	35	36	37	38	39
1	3,190	585	0	0	0	0	0	0	585	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0
6	17,410	14,054	0	0	0	0	0	0	553	13,501	0
7	0	0	0	0	0	0	0	0	0	0	0
8	13,810	12,849	0	0	0	0	0	0	0	12,849	0
9	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0
11	145,270	131,706	27,785	14,877	0	0	0	13,127	45,944	26,035	3,938
12	238,960	209,509	21,467	64,899	9,652	0	35,611	0	49,923	26,459	1,498
13	107,580	89,813	33,904	0	11,573	9,291	0	0	26,569	5,705	2,771
14	7,040	6,478	0	0	0	0	0	0	0	6,478	0
TOTALS	533,260	464,994	83,156	79,776	21,225	9,291	35,611	13,127	123,574	91,027	8,207
		$662	$1,100	$850	$800	$1,050	$1,000	$1,100	$130	$600	$130
		$307,815	$91,472	$67,810	$16,980	$9,756	$35,611	$14,440	$16,065	$54,616	$1,067

TOWER LOGGING COST APPRAISAL

SALE N	BOMB POINT	TOTAL SALE VOL:	9848 MBF	
LOADS/DAY	#PCS/LD	#PCS/DAY	VOL/PC	VOL/LD	VOL/DAY
8.32	27.6	230	152	4.2	34.96

LOGGING COST	COST/DAY	COST/M @ 34.96 M/DAY
YARDING	$2,563.01	$73.31
LOADING	$1,261.24	$36.08
CREW TRANSPORTION and EQUIPMENT	$266.54	$7.62
SUPERVISION and OFFICE O.H.	$285.00	$8.15
FIRE PROTECTION	$14.26	$0.41
MOVE-IN		$5.04
LANDING CONSTRUCTION		$1.94
SPUR CONSTRUCTION		$3.18
ROAD MAINTENANCE		$2.51
CUTTING		$26.00
LANDING CATS		$29.61
	TOTAL COST/MBF *********	$193.84 (ON TRUCK)

YARDING — COST/DAY

(1.) TOWER MADILL 046 (1)

CAPITAL COST: $500,000

A. DEPRECIATION:

7 YR. LIFE 170 (days annual use)
RESIDUAL PRICE @ 0.15 % = $75,000

NET VALUE= $425,000
DEPRECIATION PERIOD(days)= 1190 $357.14

B. INTEREST:

13% ON AVERAGE INVESTMENT(a.i.)
CAPITOL COST = $500,000 $191.18

C. INSURANCE and TAXES: @ 15% a.i. $220.59

D. REPAIRS: 50% OF DEPRECIATION $178.57

E. FUEL,LUBE:							
(FUEL)	45	gal/day	$2.50	cost/gal=	$112.50		
(OIL&LUBE)			$60.00	cost/day=	$60.00		$172.50
F. WIRE ROPE:							
	1.25	SKYLINE (1 per 1.5 yrs.)				$23.53	
		1500 feet		$4.00	cost/ft.		
	1.25	MAINLINE (1 per 1.5 yrs.)				$22.94	
		1800 feet		$3.25	cost/ft.		
	0.875	HAULBACK (1 per 1.5 yrs.)				$11.76	
		1200 feet		$2.50	cost/ft.		
		CHOKERS/DAY		2			
		1		$85.00	cost	$170.00	
		HARDWARE (est./day)				$50.00	
							$278.24
G. LABOR:					per.hr.		
	YARDING ENGINEER				$20.00		
	CHASER				$15.00		
	3	CHOKERMEN	$13.00	per.hr.	$39.00		
	HOOKER				$17.00		
	(hr./day)	8		TOTAL	$91.00		$728.00
H. OVERHEAD:		60% of labor					
(insurance, taxes, social security)							$436.80
				TOTAL YARDING COST/DAY			$2,563.01

LOADING						COST/DAY
LOADER TYPE:	CAT 235					
CAPITAL COST:	$350,000					
A. DEPRECIATION:						
	5 YR. LIFE	170	(days annual use)			
	RESIDUAL PRICE @	0.15	% =	$52,500		
	NET VALUE=		$297,500			
	DEPRECIATION PERIOD(days)=		850			$350.00
B. INTEREST:						
	13% ON AVERAGE INVESTMENT(a.i.)					
	CAPITOL COST =			$350,000		$133.82
C. INSURANCE and TAXES: @		15% a.i.				$154.41
D. REPAIRS:		50% OF DEPRECIATION				$175.00
E. FUEL,LUBE:						
(FUEL)	40 gal/day	$2.50	cost/gal=	$100.00		
(OIL&LUBE)		$60.00	cost/day=	$60.00		$160.00

F. LABOR:

	OPERATOR	$20.00 per/hr.		9 hr./day	
		60% overhead			$288.00
				TOTAL LOADING COST/DAY	$1,261.24

MISC. EQUIPMENT & CREW TRANSPORTATION:					COST/DAY
A. FUEL TRUCK					
1.	DEPRECIATION		$5,000	est. cost	
	(-)		$1,500	salvage value	
			$3,500	/7 yr. life	
			$500.00	depr./yr	
			170	days use/yr	$2.94
2.	INTEREST	13% (a. i.)			$1.91
3.	INSURANCE & TAXES		15%	(a. i.)	$2.21
4.	FUEL,OIL,MAINT.(est)			$700 /yr	$4.12
B. CREW TRANSPORTATION (per day)					
			2	# (2 CRUMMIES + AIR TRANS FROM CORDOVA)	
			25	mi./day	
			$5.00	cost/mi.	$250.00
C. SUPERVISOR TRANSPORTATION (per day)					
			5	mi./day	
			$0.25	cost/mi.	$1.25
D. SAWS (chasing,incl. maint.)					
			1	saws/yr	
			$700.00	cost/saw	$4.12
				TOTAL MICS. COST/DAY	$266.54

SUPERVISION & OFFICE O.H.(per day):					COST/DAY
A. SUPERVISOR,SALARY & BENIFITS					$225.00
B. OFFICE EXPENSE					$60.00
				TOTAL COST/DAY	$285.00

FIRE PROTECTION:					COST/DAY
A. WATER TRUCK					
1.	DEPRECIATION		$6,500	est. cost	
	(-)		$1,500	salvage value	
			$5,000	/7 yr. life	
			$714.29	depr./yr	
			170	days use/yr	$4.20
2.	INTEREST	13% (a. i.)			$2.49
3.	INSURANCE & TAXES		15%	(a. i.)	$2.87
4.	FUEL,OIL,MAINT.(est)			$500 /yr	$2.94
B. PUMP CANS,FIRE HOSE,FIRE BOXMAINT. &OTHERMISC.					
			$300	total cost/yr.	$1.76
				TOTAL COST/DAY	$14.26

MOVE-IN:					COST
TOWER	(breakdown)	6	man crew		
		6	hrs.		
		$15.17	rate/hr./man		$546.12
	TUG AND BARGE	104	hrs.		
		$450	cost/hr.		$46,800.00
	(permits)	$500			$1,000.00
	(set-up)		same as breakdown		$546.12
B. LOADER	(load & unload)	2	man crew		
	+WALK IN FROM LTF	6	hrs.		
		$20.00	rate/hr./man		$240.00
	TUG AND BARGE	0	hrs.	(SEE ABOVE)	
	(permits)	$500			$500.00
			TOTAL COST		$49,632.24
			TOTAL COST/MBF		$5.04

LANDING CONSTRUCTION:	(ADDITIONAL TO RD. CONST.)			COST
	(D-8, @ 9hr./landing)	10	#landings	
		$115	cost/hr.cat	$2,300.00
	(2 move-ins cat)	4	hrs.	
	WALK IN FROM LTF	$115	cost/hr.	$460.00
	(ballast)	10	#landings	
		210	yds./landing	
		$7.67	cost/yd.	$16,107.00
	(spread,compact)	2	hrs.	
		$115	cost/hr.cat	$230.00
			TOTAL COST	$19,097.00
			TOTAL COST/MBF	$1.94

MINOR SPUR CONSTRUCTION:		15	(est. stations)	COST
	(clearing,etc.)	$1,290.00	cost/sta.	$19,350.00
	(move-in) 4 HR WALK IN	$460	total cost	$460.00
	(ballast)	100	yds./sta.	
		$7.67	cost/yd.	$11,505.00
			TOTAL COST	$31,315.00
			TOTAL COST/MBF	$3.18

ROAD MAINTENANCE:			COST
A. HAUL MAINT.	7.2	(miles)	
(2,2-way grading)	$1,000	cost/mi.	$14,400.00
B. FINAL MAINT.			
(1,3-way grading)	$1,000	cost/mi.	$7,200.00
(water bar, cat)	20	hrs.	
	$115	cost/hr.	$2,300.00
(clean CMPs)	60	hrs.	
	$13.00	cost/hr	$780.00
		TOTAL COST/DAY	$24,680.00
		TOTAL COST/MBF	$2.51

CUTTING:			COST
		TOTAL COST	$256,048
		TOTAL COST/MBF	$26.00

LANDING CATS - TOWER SUPPORT ETC .: (1)			COST
	$1,035	cost/day	
	282	days	$291,552.63
		TOTAL COST	$291,552.63
		TOTAL COST/MBF	$29.61

SHOVEL LOGGING COST APPRAISAL

SALE NAME	BOMB POINT	TOTAL SALE VOL:	1216 MBF		
LOADS/DAY	#PCS/LD	#PCS/DAY	VOL/PC	VOL/LD	VOL/DAY
8.32	27.6	230	152	4.2	34.96

LOGGING COST	COST/DAY	COST/M @ 34.96 M/DAY
YARDING	$2,150.97	$61.53
LOADING	$1,261.24	$36.08
CREW TRANSPORTION and EQUIPMENT	$16.54	$0.47
SUPERVISION and OFFICE O.H.	$285.00	$8.15
FIRE PROTECTION	$14.26	$0.41
MOVE-IN		$0.59
CUTTING		$26.00
	TOTAL COST/MBF *********	$133.23 (ON TRUCK)

YARDING — COST/DAY

(1.) SHOVEL CAT 235 (1)
HI-TRAC CAT W/ARCH D-5 W/GRAPPLE (1)
CAPITAL COST: $600,000

A. DEPRECIATION:

7 YR. LIFE 170 (days annual use)
RESIDUAL PRICE @ 0.15 % = $90,000

NET VALUE= $510,000
DEPRECIATION PERIOD(days)= 1190 $428.57

B. INTEREST:

13% ON AVERAGE INVESTMENT(a.i.)
CAPITOL COST = $600,000 $229.41

C. INSURANCE and TAXES: @ 15% a.i. $264.71

D. REPAIRS: 50% OF DEPRECIATION $214.29

E. FUEL,LUBE:

(FUEL)	80 gal/day	$2.50	cost/gal=	$200.00
(OIL&LUBE)		$60.00	cost/day=	$60.00

$260.00

F. WIRE ROPE:

HARDWARE (est./day) $50.00
$50.00

G. LABOR:

			per.hr.
YARDING ENGINEER (2)			$40.00
CHASER			$15.00
0 CHOKERMEN	$0.00	per.hr.	$0.00
HOOKER			$0.00
(hr./day)	8	TOTAL	$55.00

$440.00

H. OVERHEAD: 60% of labor
(insurance, taxes, social security) $264.00

TOTAL YARDING COST/DAY $2,150.97

LOADING						COST/DAY
(2.)	LOADER TYPE: CAT 235					
	CAPITAL COST: $350,000					
	A. DEPRECIATION:					
	5 YR. LIFE		170	(days annual use)		
	RESIDUAL PRICE @		0.15	% =	$52,500	
	NET VALUE=			$297,500		
	DEPRECIATION PERIOD(days)=			850		$350.00
	B. INTEREST:					
	13% ON AVERAGE INVESTMENT(a.i.)					
	CAPITOL COST =				$350,000	$133.82
	C. INSURANCE and TAXES: @		15%	a.i.		$154.41
	D. REPAIRS:	50%	OF DEPRECIATION			$175.00
	E. FUEL,LUBE:					
	(FUEL)	40 gal/day	$2.50	cost/gal=	$100.00	
	(OIL&LUBE)		$60.00	cost/day=	$60.00	$160.00
	F. LABOR:					
	OPERATOR	$20.00 per/hr.		9 hr./day		
		60% overhead				$288.00

TOTAL LOADING COST/DAY $1,261.24

MISC. EQUIPMENT & CREW TRANSPORTATION:					COST/DAY
(3.)	A. FUEL TRUCK				
	1. DEPRECIATION	$5,000	est. cost		
	(-)	$1,500	salvage value		
		$3,500	/7 yr. life		
		$500.00	depr./yr		
		170	days use/yr		$2.94
	2. INTEREST	13% (a. i.)			$1.91
	3. INSURANCE & TAXES	15%	(a. i.)		$2.21
	4. FUEL,OIL,MAINT.(est)		$700 /yr		$4.12
	B. CREW TRANSPORTATION (per day)				
		0	TRANSPORTATION COVERED IN TOWER APP.		
	C. SUPERVISOR TRANSPORTATION (per day)				
		5	mi./day		
		$0.25	cost/mi.		$1.25
	D. SAWS (chasing,incl. maint.)				
		1	saws/yr		
		$700.00	cost/saw		$4.12

TOTAL MICS. COST/DAY $16.54

SUPERVISION & OFFICE O.H.(per day):		COST/DAY
	A. SUPERVISOR,SALARY & BENIFITS	$225.00

B. OFFICE EXPENSE					$60.00
				TOTAL COST/DAY	$285.00
FIRE PROTECTION:					COST/DAY
A. WATER TRUCK					
1.	DEPRECIATION		$6,500	est. cost	
	(-)		$1,500	salvage value	
			$5,000	/7 yr. life	
			$714.29	depr./yr	
			170	days use/yr	$4.20
2.	INTEREST	13% (a. i.)			$2.49
3.	INSURANCE & TAXES		15%	(a. i.)	$2.87
4.	FUEL,OIL,MAINT.(est)			$500 /yr	$2.94
B. PUMP CANS,FIRE HOSE,FIRE BOXMAINT. &OTHERMISC.					
			$300	total cost/yr.	$1.76
				TOTAL COST/DAY	$14.26

MOVE-IN:						COST
(6.)	SHOVEL	AND GRAPPLE CAT	2	man crew		
			6	hrs.		
			$20.00	rate/hr./man		$240.00
		TUG AND BARGE	0	hrs.		
		COVERED IN TOWER APP.	$0	cost/hr.		$0.00
		(set-up)		same as breakdown		$240.00
	B. LOADE	(load & unload)	2	man crew		
		+WALK IN FROM LTF	6	hrs.		
			$20.00	rate/hr./man		$240.00
		TUG AND BARGE	0	hrs.	(SEE ABOVE)	
				TOTAL COST		$720.00
				TOTAL COST/MBF		$0.59

LANDING CONSTRUCTIO	COVERED IN ROAD CONSTRUCTION			COST
			TOTAL COST/MBF	$0.00

CUTTING:			COST
		TOTAL COST	$31,616
(10.)		TOTAL COST/MBF	$26.00

ROAD CONSTRUCTION COST APPRAISAL

ROAD NAME: BOMB POINT ROADS (NEW)
LOCATION:
SEC. 25, 28, 29, 30, 31, & 36
TWP. T14S
RNG. R3 & 4W

NO. STATIONS: 337
PROJECT NO.: 94-006
DATE: REV. 8-24-94

LOCATED BY: E. HALLER
DESIGNED BY: Xxxxxxxxxx
APPRAISED BY: E. HALLER

SCHEDULE 1.
COST APPRAISAL PARAMETERS

A. MOVE-IN/OUT($)		25000
B. CLEAR AND GRUB($/ACRE)		1290
C. EXCAVATION($/CUBIC YARD)		
COMMON		1.75
UNCLASSIFIED		1.95
ROCK		4.1
END-DRILLED ROCK		6
PER STATION BASIS ($/STATION)		
EXISTING GRADE IMPROVEM		350
NEW CONSTRUCTION		1694
D. ENDHAUL($/CUBIC YARD/MILE)		2.73
E. LANDING CONSTRUCTION($/LANDI		1500
F. SUBGRADE COMPACTION($/STATIO		50
G. CULVERT INSTALLATION($/FOOT)		
15	16	15
18	16	23
24	16	31
30	16	45
36	14	45
48	14	67
60	12	96
72	12	138
84	12	164
96	12	200
DNSPT		
18	16	20
24	16	20

H. SUBGRADE REINFORCING FABRIC($/ROLL)	400	
I. PIT DEVELOPEMENT & BALLAST		
a. HAUL COST		
1 MILE HAUL($/CUBIC YARD)	7.67	(4 TRUCKS
ADDITIONAL MILES($/CUBIC YARD/MILE)	0.6	
b. YARDAGE NEEDED		
SURFACING(CUBIC YARDS/STATION)	140	
LANDINGS(CUBIC YARDS/LANDING)	210	
TURNOUTS(CUBIC YARDS/TURNOUT)	49	
J. RIP RAP PLACEMENT		
a. HAUL COST		
1 MILE HAUL($/CUBIC YARD)	9.29	
ADDITIONAL MILES($/CUBIC YARD/MILE)	0.6	
K. IMPORTED FILL (ROCK)		
a. HAUL COST		
1 MILE HAUL($/CUBIC YARD)	7.67	
ADDITIONAL MILES($/CUBIC YARD/MILE)	0.6	
L. GRIDROLL BALLAST($/STATION)	100	
M. FINISH DITCHING AND GRADING($/STATION)	50	
N. RIGHT-OF-WAY LOGGING($/MBF ON-BOARD TRUCK)		
a. CONIFER	80.18	
b. HARDWOOD	0	
N. STATE SALES TAX RATE(%)	0	

SCHEDULE 2.
CONSTRUCTION APPRAISAL

ITEM	AMOUNT	COST($)
MOVE-IN/OUT(1 EACH)	1	25000
CLEAR AND GRUB(ACRES)	44.0	56760
EXCAVATION(CUBIC YARDS)		
COMMON	0	0
UNCLASSIFIED	31453	61333.35
ROCK	62907	257918.7
END DRILLED ROCK	0	0
GRADE IMPROVEMENT (#STATION	0	0
NEW CONSTRUCTION (#STATIONS)	0	0
ENDHAUL(CUBIC YARD-MILES)	0.0	0
LANDING CONSTRUCTION(# TO BUIL	17	25500
SUBGRADE COMPACTION(STATIONS)	0.00	0
CULVERT INSTALLATION(FEET)		44200
CMP 15	0	
18	1400	
30	0	
24	0	
36	0	
48	0	
60	0	
72	0	
84	0	
96	60	
DOWNSPOUTS		
18	0	
24	0	
SUBGRADE REINFORCING FABRIC	3.0	1200
PIT DEVELOPEMENT & BALLAST		409547.3
AVERAGE HAUL(MILES)	1.0	
STATIONS TO BALLAST	337.00	
# LANDINGS	17	
# TURNOUTS	54	
RIP RAP PLACEMENT		0
AVERAGE HAUL(MILES)	0.0	
RIP RAP NEEDED(CUBIC YARDS)	0	
IMPORTED FILL (ROCK)		0
AVERAGE HAUL (MILES)	0.0	
FILL NEEDED (CUBIC YARDS)	0	
GRIDROLL BALLAST(STATIONS)	337.00	33700
FINISH DITCHING & GRADING(STATIO	337.00	16850

SUBTOTAL	932009.37
STATE TAX	0.00
TOTAL CONSTRUCTION COST	932009.37

SCHEDULE 3.
RIGHT-OF-WAY LOGGING COST

SPECIES TYPE	VOLUME MBF	COST
CONIFER	932	74727.76
HARDWOOD	0	0
TOTALS		74727.76

SORT YARD COST APPRAISAL

SALE NAM	BOMB POINT	TOTAL SALE VOL:	15820 MBF		
LOADS/DAY	#PCS/LD	#PCS/DAY	VOL/PC	VOL/LD	VOL/DAY
12.29	28.5	350	144	4.1	50.4

YARD OPERATING COST	COST/DAY	COST/M @ 50.4 M/DAY
EQUIPMENT OPERATIONS	$3,089.43	$61.30
CREW TRANSPORTION and EQUIPMENT	$15.29	$0.30
YARD MGR., ACCOUNTING AND OFFICE O.H.	$475.00	$9.42
FIRE PROTECTION	$14.26	$0.28
MOVE-IN COVERED IN TOWER APP.		$0.00
DUMP AND RAFT, TOWING TO SHIPSIDE		$7.50
	TOTAL COST/MBF *********	$78.81 (TO SHIP)

YARD OPERATIONS-UNLOAD AND SORT — COST/DAY

SHOVEL CAT 225 (2)
LOADER/STACKER 988 CAT LOADER
CAPITAL COST: $550,000

A. DEPRECIATION:

7 YR. LIFE 170 (days annual use)
RESIDUAL PRICE @ 0.15 % = $82,500

NET VALUE= $467,500
DEPRECIATION PERIOD(days)= 1190 $392.86

B. INTEREST:

13% ON AVERAGE INVESTMENT(a.i.)
CAPITOL COST = $550,000 - $210.29

C. INSURANCE and TAXES: @ 15% a.i. $242.65

D. REPAIRS: 50% OF DEPRECIATION $196.43

E. FUEL,LUBE:

(FUEL)	120 gal/day	$2.50 cost/gal=	$300.00	
(OIL&LUBE)		$60.00 cost/day=	$60.00	$360.00

F. WIRE ROPE:

HARDWARE (est./day) $100.00
$100.00

G. LABOR:

			per.hr.	
LOADER OPERATORS (3)			$60.00	
CHASER			$15.00	
2 SCALERS		$18.00 per.hr.	$36.00	
LABORER			$13.00	
(hr./day)	8	TOTAL	$124.00	$992.00

H. OVERHEAD:		60% of labor			
(insurance, taxes, social security)					$595.20
				TOTAL EQUIPMENT COST/DAY	$3,089.43

MISC. EQUIPMENT & CREW TRANSPORTATION:					COST/DAY
A. FUEL TRUCK					
1.	DEPRECIATION		$5,000	est. cost	
	(-)		$1,500	salvage value	
			$3,500	/7 yr. life	
			$500.00	depr./yr	
			170	days use/yr	$2.94
2.	INTEREST	13% (a. i.)			$1.91
3.	INSURANCE & TAXES		15%	(a. i.)	$2.21
4.	FUEL,OIL,MAINT.(est)			$700 /yr	$4.12
B. SAWS (chasing,incl. maint.)					
			1	saws/yr	
			$700.00	cost/saw	$4.12
				TOTAL MICS. COST/DAY	$15.29

SUPERVISION & OFFICE O.H.(per day):					COST/DAY
A. SUPERVISOR,SALARY & BENIFITS					$225.00
B. OFFICE EXPENSE					$250.00
				TOTAL COST/DAY	$475.00

FIRE PROTECTION:					COST/DAY
A. WATER TRUCK					
1.	DEPRECIATION		$6,500	est. cost	
	(-)		$1,500	salvage value	
			$5,000	/7 yr. life	
			$714.29	depr./yr	
			170	days use/yr	$4.20
2.	INTEREST	13% (a. i.)			$2.49
3.	INSURANCE & TAXES		15%	(a. i.)	$2.87
4.	FUEL,OIL,MAINT.(est)			$500 /yr	$2.94
B. PUMP CANS,FIRE HOSE,FIRE BOXMAINT. &OTHERMISC.					
			$300	total cost/yr.	$1.76
				TOTAL COST/DAY	$14.26

DUMP AND RAFT, TOWING TO SHIPSIDE					COST
				TOTAL COST	$118,650
				TOTAL COST/MBF	$7.50

SORT YARD CONSTRUCTION COST APPRAISAL

ROAD NAME: BOMB POINT SORT YARD AND SPUR ROAD(EXISTING)
LOCATION:
SEC. 29 NO. STATIONS: 10.8 ACRES
TWP. T14S PROJECT NO.: 94-006
RNG. R3W DATE: REV. 8-24-94

LOCATED BY: E. HALLER
DESIGNED BY: Xxxxxxxxxx
APPRAISED BY: E. HALLER

SCHEDULE 1.
COST APPRAISAL PARAMETERS

A. MOVE-IN/OUT($)	25000		
B. CLEAR AND GRUB($/ACRE)	1290		
C. EXCAVATION($/CUBIC YARD)			
COMMON	1.75		
UNCLASSIFIED	1.95		
ROCK	4.1		
END-DRILLED ROCK	6		
PER STATION BASIS ($/STATION)			
EXISTING GRADE IMPROVEMENT	350		
NEW CONSTRUCTION	1694		
D. ENDHAUL($/CUBIC YARD/MILE)	2.73		
E. LANDING CONSTRUCTION($/LANDING)	1500		
F. SUBGRADE COMPACTION($/STATION)	50		
G. CULVERT INSTALLATION($/FOOT)			
15 16	15		
18 16	23		
24 16	31		
30 16	45		
36 14	45		
48 14	67		
60 12	96		
72 12	138		
84 12	164		
96 12	200		
DNSPT			
18 16	20		
24 16	20		
H. SUBGRADE REINFORCING FABRIC($/ROLL)	400		
I. PIT DEVELOPEMENT & BALLAST			
a. HAUL COST			
1 MILE HAUL($/CUBIC YARD)	7.67	(4 TRUCKS	
ADDITIONAL MILES($/CUBIC YARD/MILE)	0.6		
b. YARDAGE NEEDED			
SURFACING(CUBIC YARDS/STATION)	140		
LANDINGS(CUBIC YARDS/LANDING)	210		
TURNOUTS(CUBIC YARDS/TURNOUT)	49		
J. RIP RAP PLACEMENT			
a. HAUL COST			
1 MILE HAUL($/CUBIC YARD)	7.67		
ADDITIONAL MILES($/CUBIC YARD/MILE)	0.6		
K. IMPORTED FILL (ROCK)			
a. HAUL COST			
1 MILE HAUL($/CUBIC YARD)	7.67		
ADDITIONAL MILES($/CUBIC YARD/MILE)	0.6		
L. GRIDROLL BALLAST($/STATION)	100		
M. FINISH DITCHING AND GRADING($/STATION	50		
N. RIGHT-OF-WAY LOGGING($/MBF ON-BOARD TRUCK)			
a. CONIFER	80.18		
b. HARDWOOD	0		
N. STATE SALES TAX RATE(%)	0		

SCHEDULE 2.
CONSTRUCTION APPRAISAL

ITEM		AMOUNT	COST($)
MOVE-IN/OUT(1 EACH)		1	25000
CLEAR AND GRUB(ACRES)		9.5	12255
EXCAVATION(CUBIC YARDS)			
COMMON		0	0
UNCLASSIFIED		0	0
ROCK		72000	295200
END DRILLED ROCK		0	0
GRADE IMPROVEMENT (#STATIONS)		0	0
NEW CONSTRUCTION (#STATIONS)		42	71148
ENDHAUL(CUBIC YARD-MILES)		0.0	0
LANDING CONSTRUCTION(# TO BUILD)		6	9000
SUBGRADE COMPACTION(STATIONS)		0.00	0
CULVERT INSTALLATION(FEET)			5060
CMP	15	0	
	18	220	
	30	0	
	24	0	
	36	0	
	48	0	
	60	0	
	72	0	
	84	0	
	96	0	
DOWNSPOUTS			
	18	0	
	24	0	
SUBGRADE REINFORCING FABRIC		2.0	800
PIT DEVELOPEMENT & BALLAST			50197.77
AVERAGE HAUL(MILES)		0.4	
STATIONS TO BALLAST		39.00	
# LANDINGS		6	
# TURNOUTS		3	
RIP RAP PLACEMENT			0
AVERAGE HAUL(MILES)		0.0	
RIP RAP NEEDED(CUBIC YARDS)		0	
IMPORTED FILL (ROCK)			0
AVERAGE HAUL (MILES)		0.0	
FILL NEEDED (CUBIC YARDS)		0	
GRIDROLL BALLAST(STATIONS)		39.00	3900
FINISH DITCHING & GRADING(STATIONS)		39.00	1950
	SUBTOTAL		474510.77
	STATE TAX		0.00
	TOTAL CONSTRUCTION COST		474510.77
ALLOWANCE FOR COMPLETED PORTION (60%)			-284706.462
ESTIMATED COST TO COMPLETE			189804.308

SCHEDULE 3.
RIGHT-OF-WAY LOGGING COST

SPECIES TYPE	VOLUME MBF	COST
CONIFER	165	13229.7
HARDWOOD	0	0
TOTALS		13229.7