foothills
model *forest*
a growing understanding

Second Steering Committee Meeting

of the

Foothills Growth and Yield Association

March 15, 2001

Chateau Louis Conference Centre
Edmonton

CONTENTS

Annual Meeting Notice and Agendas

FOOTHILLS GROWTH AND YIELD ASSOCIATION

ANNUAL MEETING

March 14 - 15, 2001

Chateau Louis Conference Centre
11727 Kingsway Avenue
Edmonton, Alberta

The Foothills Growth and Yield Association was established in April 2000. Membership includes nine corporations (all holding major forest tenures on Alberta's Eastern Slopes), the Alberta Land and Forest Service, and the Foothills Model Forest. The primary mandate of the Association is forecasting and monitoring managed-stand growth and yield of lodgepole pine. A Technical Committee has been active in developing the program over the last year. The Association has committed to holding, at least once a year, an educational meeting disseminating relevant information to members about lodgepole pine management, and a meeting of the governing Steering Committee.

Timetable

This year's annual meeting will consist of a dinner, technical session, and meetings of the steering and technical committees as follows.

- Technical committee meeting, March 14, 2.00 p.m. - 5.00 p.m., Alexandra Room, committee members only (see page 4 for agenda).

- Icebreaker and dinner, March 14 (cash bar 6.30 p.m., dinner 7.30 p.m.), Executive Room, open to members and invited guests. Guest speaker: Robert Monserud, USDA Forest Service (see page 2).

- Technical session, March 15, 8.15 a.m. – 12 noon, Rosslyn Room, open to members and guests. Theme: *Lodgepole Pine Management – Opportunities and Threats* (see pages 2 and 3).

- Steering committee meeting, March 15, noon – 4.30 p.m., Roseberry Room, committee members only (see page 4 for agenda).

Dinner

March 14, 7.30 p.m.
Executive Room

Speaker: Robert A. Monserud

Robert Monserud is Chief Biometrician for the US Forest Service, in Portland, Oregon. He joined the USFS in 1975 after finishing a Ph.D. in forest biometrics at the University of Wisconsin. He also has degrees in forest management and mathematics. His research has covered a broad range of topics and disciplines: forest stand dynamics, site productivity, time series analysis, dendrochronology, optimal stand management, and vegetation and climate change modeling.

Dr. Monserud will speak on *"Possible effects of climate change: a view from the other side of the Pole"*. Dramatic shifts in the spatial distribution of vegetation, due to expected climate change, are predicted across Siberia. The nature and possible ecological consequences of such vast changes will be discussed.

Technical Session

Lodgepole Pine Management – Opportunities and Threats

March 15, 8.15 a.m. – 12 noon
Rosslyn Room

8:15 – 8.30	Introduction
8.30 – 9.15	*Growth and yield of natural and regenerated lodgepole pine stands*, Shongming Huang, Alberta Land and Forest Service
9:15 – 10.00	*Factors influencing the wood quality of lodgepole pine*, Gerry Middleton, Forintek Canada Corp.
10.00 – 10.30	Coffee
10.30 – 11.15	*Mountain pine beetle ecology: implications for management*, Les Safranyik, Pacific Forestry Centre (retired)
11.15 – 12.00	*Integrating fire into sustainable forest management*, Kelvin Hirsch, Northern Forestry Centre

Technical Session (continued)

Abstracts and Speakers

Growth and yield of natural and regenerated lodgepole pine stands, Shongming Huang

As more natural stands are harvested and replaced, the performance of regenerated stands is becoming increasingly important to the sustainability of Alberta's forests. The growth and yield differences between natural and regenerated lodgepole pine stands will be examined. The causes of the differences will be discussed, along with the potential implications to future determinations of allowable cut.

Dr. Shongming Huang is a research scientist and the senior biometrician of the Alberta Land and Forest Service. He is also an adjunct professor in the Faculty of Agriculture, Forestry, and Home Economics, University of Alberta.

Factors influencing the wood quality of lodgepole pine, Gerry Middleton

Studies of lodgepole pine wood quality at the stand level have demonstrated and quantified the influence of site, age and stand density on the wood quality and product value of lodgepole pine. The results have significant implications for stand management and log allocation practices.

Gerry Middleton is a research scientist with Forintek Canada Corp's Western Laboratory, where he leads a resource assessment group responsible for determining the effects of silvicultural practices on wood quality and for identifying product opportunities in the current forest resource.

Mountain pine beetle ecology: implications for management, Les Safranyik

The mountain pine beetle is the most destructive insect of mature pine forests in Western North America. Although historically there have been only occasional outbreaks in Alberta, current infestations in Banff National Park and beetle activity in the Willmore area are of concern. Mountain pine beetle ecology will be discussed in relation to implications for lodgepole pine management, including the design of forest practices to increase resistance and stand hygiene.

Dr. Les Safranyik recently retired from the Canadian Forest Service and is an emeritus scientist at the Pacific Forestry Centre. He is an adjunct professor on the Faculty of Forestry at the University of British Columbia and has held several other distinguished positions in forestry and entomology, including serving for 10 years as leader of the IUFRO working party on the integrated control of scolytid bark beetles.

Integrating fire into sustainable forest management, Kelvin Hirsch

Minimizing the negative impacts of fire while maximizing its ecological benefits requires a thorough understanding of the ecological role of fire and how forest management activities can influence the fire regime. This presentation will discuss some key concepts, describe tools that are available for evaluating the fire environment, and suggest some practical approaches that can be used to reduce losses and risks.

Kelvin Hirsch is a fire researcher and co-team leader with the Canadian Forest Service at the Northern Forestry Centre in Edmonton. He has worked in the fields of fire behavior, fire suppression effectiveness, wildland-urban interface, and fire management planning, and most recently in the integration of fire management and forest management.

Committee Meeting Agendas

Technical Committee

March 14, 2.00 p.m. - 5.00 p.m., Alexandra Room (Technical Committee members only)

1. Field coordination arrangements
2. Regeneration Project
   - field manual and measurement procedures
   - vegetation control treatments
   - interim forecasting and site index estimation
   - establishment status
3. Fire-origin Lodgepole Pine Project proposal
4. Other business

Steering Committee

March 15, 12 noon – 4.30 p.m. (lunch included), Roseberry Room (Steering Committee members only)

1. Director's report
2. Project plans
3. Annual work plan and operating budget
4. Annual membership fee and program contribution level
5. Assignments (director, field coordinator)
6. Policies and strategic direction
7. Other business

Minutes of Steering Committee Meeting # 1

Foothills Growth and Yield Association
Minutes of Steering Committee Meeting # 1

Date

March 23, 2000

Location

Weldwood Room, 812 General Services Building, University of Alberta, Edmonton

Attendance

Alberta Newsprint Company	Jim McCammon, Greg Branton
Blue Ridge Lumber	Murray Summers, Daryl D'Amico
Canadian Forest Products	Dwight Weeks
Millar Western Forest Products	Trevor Wakelin
Spray Lake Sawmills	Gordon Lehn
Sundance Forest Industries	John Huey, Kent MacDonald
Sunpine Forest Products	Keith Branter
Weldwood of Canada	Bob Udell
Weyerhaeuser Canada (Grande Prairie)	Pat Wearmouth
Alberta Land and Forest Service	Doug Sklar
Foothills Model Forest	Mark Storie, Glen Hurley, Dick Dempster

Minutes

The meeting commenced at 11:00 a.m. The Director tabled, and provided copies, of a document containing a proposed agenda, the Director's report, the Memorandum of Agreement among members, a project plan for regenerated lodgepole pine, and a work plan. The members accepted the agenda.

1. *Election of Chairperson*

Trevor Wakelin and Bob Udell were nominated but declined.

Bob Udell nominated Hugh Lougheed, who will replace Bob as Weldwood's representative on the Committee. (Bob will sit on the Committee as representative for the Foothills Model Forest Board of Directors.) Hugh accepted nomination by telephone. He was elected by unanimous vote. Dick Dempster volunteered, and was directed by the Committee, to chair the present meeting in the absence of Hugh.

2. *Director's Report*

Dick Dempster reported on income, expenditures, activities, and achievements for the period April 1, 1999 to date. Contributions by Drs. Victor Lieffers, Peter Blenis, and Steve Titus of the University of Alberta, Stan Navratil of Silfor, and Shongming Huang of the LFS, were acknowledged in addition to those of the designated representatives. No questions or concerns were raised.

3. Memorandum of Agreement

No amendments were proposed at the present time.

It was suggested that a signatory page be added, by scanning signatures from the individually signed copies. Glen Hurley will format and circulate. Members also requested a contact list (steering and technical committee representatives and alternates).

Pat Wearmouth volunteered to obtain legal advice on whether re-signing is necessary if a corporation changes its name or ownership.

4. Project Plans

Dick Dempster explained there were three projects at different stages of development:

1. Development of the cooperative growth and yield program;
2. Forecasting and monitoring regenerated stand growth and yield (Regenerated Lodgepole Pine Project);
3. Evaluation of potential for yield increases in mature stands.

The first is as reported in the Director's report, and the feasibility of the third will be evaluated and reported to the Committee for possible initiation next year. The second is at the planning and budgeting stage, and a draft Project Plan was presented for review by the Committee.

Extensive discussion followed on technical aspects of the Plan. The Director was asked to review and investigate the following aspects:

- Applicability of alternative designs being used elsewhere (e.g. Nelder, JD Irving).
- Upper spacing level (some members concerned 1.5 metres was too high because it exceeded practical planting spacing, others concerned it was too low because of evidence linking better yields to higher initial densities).
- Clarification and treatment of control plots.
- Risks of the results being compromised by interacting and confounding effects.

Representatives expressed a keen interest in interim forecasting of the effects being studied, using available data sources and models, in addition to installation of the trial.

5. Work Plan and Operating Budget

Dick Dempster presented the work plan and budget as originally submitted to the Foothills Model Forest, December 14, 1999. He noted that the budget included as income a membership fee of $10,000 per voting member for the period April 1, 2000 to March 31, 2001. The only major change recommended by him and the Technical Committee was that the contracting of software development should be deferred. He requested guidance from the Committee on priorities for budget re-allocation, and was advised:

- The budget should be retained as a necessary contingency, pending more detailed disbursement planning and work scheduling.
- The Technical Committee should develop a realistic installation schedule for the Regenerated Lodgepole Pine Project, considering the possibility of additional replication.
- Some members questioned whether the use of existing budget should be considered for supplementing experimental replication, since this would complicate and possibly contradict the equitable allocation of effort among members.

- Since financial budget was not the limiting factor for work planning for the next field season, the Committee would reconsider budget allocation at a meeting in late fall (November, 2000).

6. *Annual Membership Fee and Program Contribution Level*

Trevor Wakelin moved that the annual membership fee for the period April 1, 2000 to March 31, 2001, should be $10,000 per voting member. Seconded by Pat Wearmouth; carried unanimously. The Foothills Model Forest was advised to proceed with invoicing members for this amount.

The Director was requested, with the assistance of the Technical Committee, to prepare a three-year cost projection, as a basis for future financial planning.

A formula for allocating trial installation effort among members, proposed by the Technical Committee, was reviewed. The total effort is prorated according to the net operable pine-leading land area in the members' tenures. Where the member shares the AAC for a management unit, the contributing land base for that unit is calculated as the total multiplied by the member's proportion of the AAC. Jim McCallum moved that the work should be allocated as per the proposed formula. Seconded by John Huey; carried unanimously.

Members will provide the Director with a confirmed estimate of net operable pine-leading area by April 15, 2000.

If members wish to apply for FRIP funding, it was thought preferable that they should do so individually, but using a common format. The Foothills Model Forest and the Director were requested to consult with FRIAA, and develop a standard application.

7. *Assignments, Purchases and Business Arrangements*

Glen Hurley was introduced to members as the Field Coordinator. He will be responsible for coordination and quality control of fieldwork to be conducted this summer.

The Director was encouraged to develop the necessary arrangements to obtain models and data for interim forecasting (see 4 above). The Director should develop a more detailed disbursement plan of the costs and purchases involved. However, members indicated that the Association should not pay for data that is already the property of the members, or in the public domain. (It was pointed out that the identified Alberta genetics trials fell into one or both of these categories. The Director and Doug Sklar undertook to follow up on this point.).

8. Other Business

No other business was identified for discussion. The meeting was adjourned at 2:55 p.m.

Director's Report

Foothills Growth and Yield Association

Second Steering Committee Meeting – March 15, 2001

Director's Report

1. Income and Expenditures

This report is for the period from April 1, 2000 to date, with projections to March 31, 2001.

Table 1 itemizes income and expenditures of the Fiscal Year (April 1, 2000 – March 31, 2001). The expenditures for the first three quarters are actual, while those for the fourth quarter are a combination of actual and forecast.

The budgeted amounts shown in Table 1 are based on the *Foothills Growth and Yield Association* project proposal submitted by the Foothills Model Forest to FRIAA in July, 2000. The proposal was approved by all voting members of the Association, and subsequently by FRIAA. Some variances from the budget are commented on below.

- The carry-forward of provincial environmental funds from the previous year was larger than expected, following reconciliation of accounts by the Foothills Model Forest.
- The time inputs by the Director are expected to be 785 hours for the year, slightly less than the budgeted 800 hours. No additional contract services were utilized. (Inputs were donated at no charge by the University of Alberta, the Land and Forest Service, the Foothills Model Forest, and members of the Technical Committee.)
- Travel expenses were less than budgeted because (a) the Field Coordinator did not travel to the extent planned and (b) the Director's costs were reduced by discounted air travel and combining trips with other business.
- Total GST is shown under actual expenditures, and is higher than budgeted. The budget is based on non-recoverable GST (i.e. discounted 50%).

Note that the ending balance for the year will be similar to the carry-forward from the previous year. The costs of the Association are essentially in balance with the membership fees paid.

Table 1
Income and Expenditures for the Fiscal Year (April 1, 2000 – March 31, 2001)

Income / Expense	Budgeted for Year[1]	Quarter 1 (actual)	Quarter 2 (actual)	Quarter 3 (actual)	Quarter 4 (forecast)	Total for Year	Variance
Payment							
Foothills Model Forest (PEF carry-forward)	135,000.00					146,105.75	11,105.75
Membership fees - FRIAA	90,000.00					70,000.00	
Membership fees - non-FRIAA						20,000.00	
Total income	225,000.00					236,105.75	11,105.75
Expenses[2]							
Director - fees	64,800.00	11,623.50	12,879.00	15,268.50	23,814.00	63,585.00	(1,215.00)
Miscellaneous contract services	10,000.00						(10,000.00)
Vehicle (lease)	6,000.00		1,357.62	2,036.43	2,605.95	6,000.00	
Computing equipment (capital)	10,000.00	6,720.99				6,720.99	(3,279.01)
Travel expenses (director & FMF staff)	19,000.00	905.47	1,961.28	2,940.09	2,409.97	8,216.81	(10,783.19)
Meeting & miscellaneous expenses	7,000.00		179.07	268.61	5,233.19	5,680.87	(1,319.13)
GST	3,178.00	1,284.14	996.57	1,257.54	1,666.98	5,205.23	2,027.23
Total expenses	119,978.00	20,534.10	17,373.54	21,771.17	35,730.09	95,408.90	(24,569.10)
Ending Balance	105,022.00					140,696.85	35,674.85

[1] Based on proposal submitted to FRIAA, July 2000
[2] Excludes costs for services provided directly by Foothills Model Forest:
- Field Coordinator – salary + fringe (budgeted at $29,000 for year)
- Administration (budgeted at $7,290 for year)

2. Activities

Activities of the Director are itemized in the appended quarterly activity reports. Completed reports are included for the first three quarters, plus time activity details for the last quarter to date. The most important and / or time-consuming activities throughout the year were:

- preparation for, and participation in, meetings with technical committee members;
- development of the Regeneration Project design and procedures;
- proposal development (FRIAA, fire-origin lodgepole pine project, annual work plan);
- supervision, support, and assessment of the Field Coordinator's work in implementation of the Regeneration Project;
- assessment of knowledge, models and techniques available to support the Associations' program;
- preparations for the annual meeting, March 14-15, 2001.

3. Achievements, Shortfalls, Problems and Opportunities

3.1. Regenerated Lodgepole Pine Project

Following the inaugural Steering Committee meeting, the experimental design for the Project was reviewed and enhanced. Several points raised by the Committee (see minutes) were reviewed by the Director and the Technical Committee as follows:

- Experts were consulted over the possible use of alternative designs, and the risks of results being compromised by interacting and confounding effects. It was concluded that, given the objective to investigate vegetation management, site, and spacing effects, and the limited area of homogenous ecosites, the replicated block design should be retained, but improved to limit confounding effects of uncontrolled variables. This was done by blocking installations into groups having similar climatic, soil, and site treatment characteristics.
- Simulations using GYPSY and TIPSY indicated that, even though close spacing may be operationally unrealistic, not including it in the experimental design would result in a failure to assess the full range of volume production options. The upper spacing level of 1.5 m was retained.
- "Control" (unplanted) installations were confirmed as essential to provide a baseline for assessing and monitoring planting densities. The unplanted installation will be split into two vegetation control treatments: with and without weeding.
- Models and data for interim forecasting were further investigated, and the following confirmed as most promising: GYPSY (LFS), TASS / TIPSY (BC Min. For.), Gregg Burn PCT trial results and simulations, site index paired-plot data. All but the last item have been confirmed as available to the Association.

A field manual has been prepared describing installation and measurement procedures. Procedures were developed with the pilot establishment of 6 installations.

Installation status is summarized in Table 2. The allocation of installations has been distributed among members according to the formula agreed at the inaugural meeting (see Table 3), with some modifications to facilitate grouping, as indicated in Table 2.

Table 2
Preliminary Establishment Report for Regeneration Trial (February, 2001)

Ecosite	Group	Member	Number of Installations*		
			Identified	Confirmed	Installed
1	1	SLS	6		
1	2	WEY	6	6	partial
1	3	SPI	6	6	
2	1	WWC	6	6	complete
2	2	ANC	6	6	
2	3	WEY	6	6	partial
3	1	WEY	6	6	partial
3	2	SPI	6	3	
3	3	SDA	6	6	partial
4	1	WWC	6	6	
4	2	WWC	6	6	
4	3	CFP	6	6	
5	1	MWF	6	6	
5	2	BRL	1		
5	3	?			
Total			79	69	

Member	Number of Installations	
	Committed	Identified
ANC	5	6
BRL	8	1
CFP	5	6
MWF	5	6
SLS	5	6
SDA	6	6
SPI	14	12
WWC	21	18
WEY	21	18
Total	90	79

ANC=Alberta Newsprint, BRL=Blue Ridge Lumber
CFP=Canfor, MWF=Millar Western
SLS=Spray Lakes, SDA=Sundance
SPI=Sunpine, WWC=Weldwood
WEY=Weyerhaeuser

* 6 installations are required in each ecosite / group combination; total number of installations required = 90

Table 3. Allocation of Installations by Company

Company	*Net area (ha)*	*% of total*	*# of installations*
ANC	106,870	5.5	5
BRL	180,323	9.3	8
Canfor	106,271	5.5	5
MWFP	112,406	5.8	5
Spray Lakes	114,988	5.9	5
Sundance	121,848	6.3	6
Sunpine	293,655	15.1	14
Weldwood	451,713	23.2	21
Weyerhaeuser	457,433	23.5	21
Total	1,945,507	100.0	90

The "net area" indicated in Table 3 is the confirmed estimate of net pine landbase contributing to the member's allowable cut, including quotas.

The following shortfalls / problems / opportunities that have been encountered during the year are brought to the Steering Committee's attention:

- Members have experienced difficulties in identifying suitable Category 5 (Labrador tea – hygric – poor) sites.
- Blue Ridge Lumber so far has been unable to identify the committed number of sites because the company's operations are scheduled predominantly into burned areas.
- Members anticipate cost overruns relative to the establishment costs quoted in the FRIAA proposal of July, 2000.
- The FRIAA proposal and umbrella agreement currently covers only establishment costs for the first two years of the Project. It requires updating to include measurement, treatment and maintenance costs for the first five years.
- Establishment verification reporting has not been initiated.
- Protection of the installations from industrial disturbance is a serious concern. A special new reservation / notation purpose ISP code has been requested through the Reservations Unit of Alberta Agriculture, Food and Rural Development, Public Land Division. An information note was drafted for LFS field staff.
- LFS fuel abatement requirements have created some difficulties because of the potential confounding of growth effects resulting from burning debris within the installations.
- Vegetation control options (manual, herbicide, other) require resolution.
- Opportunities have been identified for extending replication of the trial. Inclusion of the Weyerhaeuser Edson and Drayton Valley operations could result in Weyerhaeuser contributing an additional 6 – 12 installations.
- The main limitation on interim forecasting is uncertainty over site-index changes from fire-origin to regenerated stands. The LFS Senior Biometrician has suggested the Association consider a short-term paired-plot project, with peer-reviewed publication of results, to provide a credible interim solution.

3.2. *Fire-origin Lodgepole Pine Project Proposal*

The Work Plan for the 2000-2001 fiscal year, and the approved *Foothills Growth and Yield Association* FRIAA project, called for the development of a project proposal to determine the potential for increasing yields of semi-mature and mature lodgepole pine. The Alberta government encouraged the Foothills Model Forest to include this project under an umbrella proposal for the Foothills Model Forest to undertake research funded by the proposed Alberta Forest Research Institute. The umbrella proposal was submitted January 6, 2001.

Meanwhile, the Association Director and members of the Technical Committee investigated the feasibility, options, and priorities for such a project. The result is a conceptual plan for a cooperative project addressing management of density and nutrition in fire-origin stands of lodgepole pine (see attached PowerPoint presentation). Further development of the concept requires the input and direction of the Steering Committee. Specifically, the following questions are brought to the Committee's attention:

- Does the Committee accept or reject the concept, or require its modification?
- Do members wish to participate, and conditional on what criteria?
- Should the Association proceed in the 2001-2002 fiscal year? If so, to what extent (see schedule, elements, and costs in the conceptual plan)?
- Is the decision to proceed (or continue after scope assessment) conditional on successful procurement of external funding?

3.3. *Personnel Assignments*

The Foothills Model Forest has retained the services of a Director since June 21, 1999. The Director's contract expires June 21, 2001.

The Foothills Model Forest agreed to retain the services of a Field Coordinator, including covering the costs of salary and fringe costs, on a half-time equivalent basis, from April 1, 2000 to March 31, 2002. He resigned in December 2000, following repeated unsatisfactory performance reviews, and unsuccessful attempts by the General Manager of the Foothills Model Forest and the Director of the Association to encourage and support improved performance. The Foothills Model Forest issued a request for proposal for the required services in January 2001 (see attached document). Selection and retention of the successful candidate are expected to be completed by March 31, 2001.

Other support services provided by the Foothills Model Forest, including financial accounting, have been exemplary.

3.4. *Dissemination of Information and Education of Members*

The Foothills Model Forest, as Coordinating Agency for the Association, is responsible for dissemination of information to, and continuing education of, members in matters relevant to the Association.

Members have been provided the following products, services and opportunities:

- field manual for Regeneration Trial installation and measurement procedures;
- field tour of pilot installations and related Weldwood trial;
- site index assessment procedures and related background materials;
- information and expert opinions on opportunities and threats to lodgepole pine management related to climate change, regenerated stand growth and yield, wood quality, mountain pine beetle, and fire (see Annual Meeting notice).

A shortfall in information distribution is that no Internet web site has been developed for the Association.

3.5. Work Planning and Budgeting

The Foothills Growth and Yield Association proposal dated July, 2000, was accepted by FRIAA July 20, 2000. A request to amend the proposal (to reflect 7 out of 9 members directing FRIP payments to the Foothills Model Forest) was approved September 20, 2000. The proposal contained budget and payment schedules for (a) development and management of the Association and (b) Regeneration Trial establishment by the members. The Regeneration Trial schedules were subject to confirmation and amendment by supplementary applications from individual members. The proposal included payment of membership fees for 2 fiscal years (2000/01 and 2001/02) at the rate of $10,000 per member.

An Annual Work Plan for development and management of the Association from April 1, 2001 to March 31, 2002 was submitted as required to the Foothills Model Forest on November 11, 2000 (see attached executive summary and detailed proposal). The Plan will require revision depending on options selected by the Steering Committee. A number of options are identified for consideration in Table 4.

Table 4. Budget Options for the Fiscal Year April 1, 2001 – March 31, 2002

Income / Expense	Plan (11/11/00)	Baseline (3/8/01)	Option A	Option B	Option C	Option D
Income						
Carry-forward	143,706	140,697	140,697	140,697	140,697	140,697
Membership fees - FRIAA	80,000	70,000	70,000	70,000	-	70,000
Membership fees - non-FRIAA	10,000	20,000	20,000	20,000	-	20,000
Total income	233,706	230,697	230,697	230,697	140,697	230,697
Expenses						
Director - fees	64,800	64,800	64,800	64,800	64,800	64,800
Director - expenses	9,720	9,720	9,720	9,720	9,720	9,720
Other contract services	20,000	-	21,000	50,000	50,000	95,000
4WD vehicle (rental)	4,358	4,358	4,358	4,358	4,358	4,358
Travel expenses (field coord.)	5,250	5,250	5,250	5,250	5,250	5,250
Meetings	7,321	7,321	7,321	7,321	7,321	7,321
Equipment & misc.	12,809	12,809	12,809	12,809	12,809	12,809
GST	3,569	6,250	7,720	9,750	9,750	12,900
Total expenses	127,827	110,508	132,978	164,008	164,008	212,158
Ending Balance	105,879	120,189	97,719	66,689	(23,311)	18,539

The baseline budget estimate has been updated from the Work Plan (as submitted 11/11/00) to reflect the latest carry-forward estimate. It assumes that the Foothills Model Forest incurs all field coordinator payroll or fee costs, but that no other contract services are retained (except the Director).

Option A assumes contracting of a field coordinator at a fee cost of $50,000 (100 days at $500 per day), with the Foothills Model Forest contributing $29,000 (equivalent to previous financial commitment).

Option B assumes no financial contribution from the Foothills Model Forest.

Option C assumes no financial contribution from the Foothills Model Forest, and no membership fee charged for the year.

Option D is as B, plus commencement of the Fire-origin Lodgepole Pine Project at the Association's cost.

The Association currently lacks a business plan. Consolidation of a business plan will require, among other things:

- finalization of a five-year technical and financial plan for the Lodgepole Pine Regeneration Project;
- a decision on whether and how to proceed with, and fund, the conceptual Fire-origin Lodgepole Pine Project;
- guidance from the Steering Committee on policies or other strategic directions to be followed.

Development of Lodgepole Pine Growth and Yield Association

Quarterly Activity Report – Dick Dempster Consulting Ltd.

Reporting Period	April 1 – June 30, 2000	
Total reimbursable hours	143.50	(details on invoices # 27 and 31)
Major expenses incurred	$905	(primarily travel and accommodation for technical meetings at Foothills Model Forest in Hinton, plus communications, see invoices # 27 and 31)

Activities

- Steering Committee Meeting minutes and follow-up
- Development of design for Project 2 (Regeneration Trial)
- Analysis and selection of candidate cut-blocks for Regeneration Trial
- Proposal to FRIAA for FRIP funding of Association activities
- Miscellaneous correspondence with technical representatives

Achievements

- Experimental design for Regeneration Trial completed
- Net pine areas and candidate cut block lists (required for Regeneration Trial) received from technical representatives
- Initial selection of candidate cut blocks completed
- Draft project proposal submitted to FRIAA; funding application templates prepared; eligibility and mechanism for FRIP funding confirmed

Shortfalls

- Preliminary cut block selections not verified
- FRIAA proposal not formally submitted and approved

Tasks for next quarter

- Obtain formal approval for FRIP funding by FRIAA; assist members in applications
- Assist technical representatives in verification and location of Regeneration Trial installations
- Finalize field procedures for Regeneration Trial (including testing and Field Manual)
- Technical Committee Meeting and field trip (September)

Development of Lodgepole Pine Growth and Yield Association

Quarterly Activity Report – Dick Dempster Consulting Ltd.

Reporting Period	July 1 – September 30, 2000	
Total reimbursable hours	159	(Details in invoices # 36 and 39)
Expenses incurred	$1961	Travel and accommodation for meetings with technical representatives at Grande Prairie and Whitecourt, technical committee meeting at Hinton, attendance WESBOGY meeting at Edson, plus communications, (see invoices # 27 and 31for details)

Activities

- Consultations FRIAA re: Association project proposal
- Field manual input, review and edit
- Regeneration Project planning with technical representatives
- Presentation to WESBOGY meeting
- Technical committee meeting and field tour, Hinton (September 19-20)

Achievements

- Association proposal approved by FRIAA and endorsed by all members, contract between FRIAA and FMF signed
- Draft field manual prepared for installation of Regeneration Trial
- Regeneration Trial installation: draft field manual prepared, 79 installation locations identified, 38 confirmed, 6 completely installed, methodology tested by pilot installations and technical committee field visit
- Information exchanges with WESBOGY and University of Alberta

Shortfalls

- Location and verification of Regeneration Trial installations incomplete
- Field measurement procedures not developed

Tasks for next quarter

- Complete location and verification of Regeneration Trial installations
- Amend installation procedures (based on September technical committee meeting) and develop measurement and data capture procedures for Regeneration Trial
- Technical committee meeting (November 29)
- FMF Detailed Activity Work Plan for April 1 2000 – March 31 2001
- Preparation for annual meeting in March 2001
- Review membership activities and research in late stage thinning and fertilization
- Information exchanges: BCMinFor, CFS, USDA, U of A, other
- Develop web site

Development of Lodgepole Pine Growth and Yield Association

Quarterly Activity Report – Dick Dempster Consulting Ltd.

Reporting Period	October 1 – December 31, 2000	
Total reimbursable hours	188.5	(Details in invoices # 42 and 46)
Expenses incurred	$2055	Travel and accommodation for meetings with technical representatives, LFS, CFS, BC Min. For., and FMF

Activities

- Direction, work review, and performance assessment of Field Coordinator
- Coordination of location and verification of Regeneration Trial installations
- Research and development of field procedures for Regeneration Trial
- Meetings BC Ministry of Forests and Alberta Land and Forest Service
- Visits to technical representatives of MWFP, BRL, ANC, Weldwood
- Technical committee meeting (November 29)
- Meeting FMF Project Steering Committee and Communications Manager
- Preparation of annual work plan

Achievements

- Regeneration Trial installation procedures amended and improved
- FMF Detailed Activity Work Plan submitted for period April 1, 2000 – March 31, 2001
- Initial arrangements completed for annual meeting
- Awareness improved of relevant work being undertaken by LFS, CFS, BC Min. For., USA
- Membership activities in late-stage thinning and fertilization reviewed

Shortfalls

- Location, verification and audit of Regeneration Trial installations incomplete
- Field manual incomplete
- Web site not developed

Tasks for next quarter

- Replace Field Coordinator
- Finalize schedules and procedures for Regeneration Trial; re-write field manual
- Prepare project proposal for nutrition and density management in fire-origin stands
- Prepare for and hold annual meeting (technical committee meeting, steering committee meeting, and technical session)

03/09/01

Dick Dempster Consulting Ltd.
Time Activity Detail
January 1 through March 9, 2001

Date	Duration	Notes
FMF:Co-op		
1/2/01	5.00	Correspondence re: Hurley resignation; planning for annual meeting
1/3/01	8.00	Planning for annual meeting
1/4/01	8.00	Planning for annual meeting
1/5/01	3.00	Planning for annual meeting
1/8/01	5.00	Annual meeting notification to members
1/9/01	1.00	Meetings C. Weik, R. Udell, M. Storie (Hinton)
1/10/01	4.00	Meeting S.Navratil, T.Braun, H.Lougheed re:late stage project proposal (Hinton)
1/11/01	8.00	Meeting T.Braun, R.Held re: development of late stage project (Hinton)
1/12/01	3.00	Travel (Hinton - Edmonton)
1/15/01	7.00	Miscellaneous field work coordination and correspondence; meeting invitations
1/16/01	8.00	Site index methodology review; annual meeting preparation
1/18/01	8.00	Prepare RFP for Field Coordinator
1/19/01	3.00	Complete and circulate RFP
1/22/01	5.00	Consultation and arrangements with guest speakers to annual meeting
1/23/01	8.00	Re-write field manual
1/24/01	8.00	Re-write field manual
1/25/01	8.00	Re-write field manual
1/26/01	6.00	Develop SI measurement specs and distribute to technical committee
2/20/01	5.00	Miscellaneous correspondence; annual meeting arrangements
2/21/01	8.00	Annual meeting notices and arrangements
2/22/01	6.00	Annual meeting notices and arrangements
2/26/01	3.00	Meeting arrangments; review job applications
2/27/01	8.00	Review job applications; annual report; Project 3 proposal
2/28/01	8.00	Meeting Shongming Huang, D. Morgan re: SI estimation (Edmonton)
3/1/01	8.00	Fertilization and Economics Conference (Edmonton)
3/2/01	8.00	Fertilization and Economics Conference (Edmonton)
3/5/01	8.00	Post-conference meeting and field tour (Hinton)
3/6/01	6.00	Project 3 conceptual design
3/7/01	9.00	Project 3 conceptual design
3/8/01	8.00	Update work plan and budget; prepare annual report
3/9/01	8.00	Update work plan and budget; prepare annual report
Total...	199.00	
TOTAL	**199.00**	

Conceptual Project Plan
Fire-origin Lodgepole Pine

Conceptual Project Plan

Fire-origin Lodgepole Pine

Management of Density and Nutrition in Fire-origin Stands of Lodgepole Pine

Context

- Members' interest and involvement in fire-origin stand research and monitoring less consistent than that in regenerated stands
- All share heavy and continuing dependence on fire-origin stands, with similar age class distribution issues
- Associated high levels of uncertainty and risk
- Poor understanding of realizable gain from density and nutrition management
- Much information and experience available; need knowledge of responses when interventions are applied under local operating conditions
- Multiple management objectives: volume, value, ecological, social
- Increased emphasis on validation, monitoring, and environmental impact
- Potential for external funding through AFRI

Objectives

- **Primary**
  - Quantify unrealized growth and value potential of sites, stand types and age classes most important to members' timber supply
  - Forecast and monitor response to stand-level interventions with potential for realizing gains in timber volume, availability and value
  - Assess impacts of interventions on, and risks to, timber volume, timber value, stand health, non-timber values, and the environment
- **Secondary**
  - Provide improved basis for developing and / or interpreting operational trials in thinning and fertilization
  - Provide improved basis for management of regenerated stands

Key Elements

- **Scope assessment**
  - Situational review
  - Literature and expert review
  - Preliminary site selection
- **Site and stand assessment**
  - Foliar analysis
  - Stand and ecosite assessment
  - Soil nutrient investigation
- **Fixed-area research trial**
  - Prescription and design
  - Installation
  - Response measurement
  - Environmental impact assessment

Response forecast
Economic analysis

Scope Assessment

- **Situational review**
  - Conducted for / by each member
  - Review age class distribution and projected wood flow
  - Assess and weight AAC, value, protection, ecological, and social objectives
  - Establish indicators
- **Literature and expert review**
  - Substantial published and unpublished information available
  - Alberta, BC, other Canada, southern US, PNW, Sweden, Finland, UK
- **Preliminary site selection**
  - Develop stand selection criteria (species, age, density, site, crown condition, health, access, area etc.)
  - Identify candidate stands in inventory

Basic Prioritization Framework

Stage	Intervention	Objective					Av.	Rank
		AAC	Value	Prot.	Ecol.	Social		
	Weight							
Early	F							
	PCT							
	PCT+F							
Mid	CT							
	F							
	CT+F							
Late	CT							
	F							
	CT+F							

Site and Stand Assessment

- Foliar analysis
  - Well-developed and economical screening method for diagnosing nutrient deficiencies, identifying candidate stands for fertilization, prescribing formulations, and assessing post-fertilization uptake
  - Will assess baseline foliar concentrations, first year response to individual tree applications, and post-fertilization uptake
- Stand and ecosite assessment
  - Check stand selection criteria
  - Ecosite, edatope (soil and moisture regime)
  - Density management criteria: SI, age, LCR, SDI, SF etc.
- Soil nutrient investigation
  - Quantify N cycling and soil nutrient supply

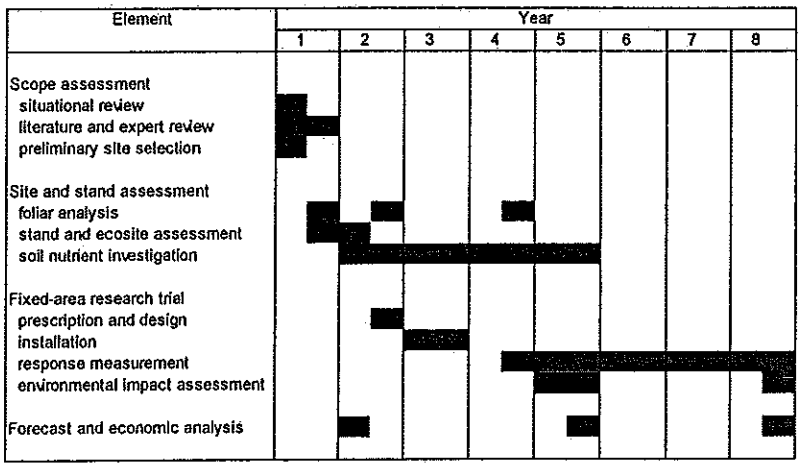
Fixed-area Research Trial

- Prescription and design
  - Depends on scope assessment and site / stand / foliar assessments
  - Assuming replicated, split-plot, factorial (e.g. 3T x 3F x 3S x 3R)
- Installation
  - Layout
  - Baseline measurement of indicator variables
  - Thinning and / or fertilization treatments
- Response measurement
  - Initial assessments 1-2 years after treatment (foliar and micro-cellular response, increment)
  - Fertilization response - minimum 5 years monitoring
  - Thinning response - minimum 10 years monitoring
- Environmental impact assessment
  - Movement, fate and effects of fertilizer-applied nutrients

Response Forecasting and Economic Analysis

- Undertake at years 2 and 5, and thereafter on ongoing basis
- Initially rely on relating stand and site assessments to literature, models, and expert opinion
- Reliability will improve over time
- Techniques for economic analysis are available and well-developed
- Quantitative predictive models and supporting information are available for thinning response (e.g. TASS / TIPSY, SDMD, GYPSY)
- Only generalized information is available for quantitative volumetric fertilization response

Schedule



Costs

Element	Year					Total
	1	2	3	4	5	
Scope assessment						
situational review	-					
literature and expert review	45,000					45,000
preliminary site selection	-					
Site and stand assessment						
foliar analysis	45,000	45,000		45,000		135,000
stand and ecosite assessment	-	30,000				30,000
soil nutrient investigation		25,000	25,000	25,000	25,000	100,000
Fixed-area research trial						
prescription and design		-				
installation			270,000			270,000
response measurement				40,000	40,000	80,000
environmental impact assessment					100,000	100,000
Forecast and economic analysis		-			15,000	15,000
Total	90,000	100,000	295,000	110,000	180,000	775,000

Costs for technical director, field coordinator and technical representatives not included

Required Decisions

- Accept, modify or reject concept?
- Participate?
- Proceed?
- Proceed conditional on external funding?

Annual Work Plan

FOOTHILLS GROWTH AND YIELD ASSOCIATION – WORK PLAN[1]

EXECUTIVE SUMMARY

1. Project Title

Development of a Lodgepole Pine Growth and Yield Cooperative Program

2. Project Location

Foothills Model Forest, with participants and research installations throughout the Eastern Slopes

3. Name of Organisation

Foothills Growth and Yield Association

4. Other Organisations Involved

• Foothills Model Forest	Coordinating Agency and Member
• Alberta Newsprint Company	Voting Member
• Blue Ridge Lumber	Voting Member
• Canadian Forest Products	Voting Member
• Millar Western Forest Products	Voting Member
• Spray Lakes Sawmills	Voting Member
• Sundance Forest Industries	Voting Member
• Sunpine Forest Products	Voting Member
• Weldwood of Canada	Voting Member
• Weyerhaeuser Canada	Voting Member
• Alberta Land and Forest Service	Member

Liaison and information exchanges have been established with the Canadian Forest Service, the University of Alberta, the Western Boreal Growth and Yield Association (WESBOGY), and the B.C. Ministry of Forests. An agreement has been entered into with the Forest Resource Improvement Association of Alberta (FRIAA).

5. Cost of the Project Being Proposed

Costs for the period April 1, 2001, to March 31, 2002, are forecast to be $127,827. This does not include the costs incurred by members in the installation and measurement of research plots, the salary and fringe costs associated with technical services provided by staff of the Foothills Model Forest (estimated to be approximately $29,000), and administrative costs incurred by the Foothills Model Forest (estimated to be approximately $6,200).

6. Consent of Other Organisations Involved

The Members listed in 4 above have confirmed consent to the program[2], subject to finalization and approval of the 2001 / 2002 Annual Work Plan at the Association Steering Committee to be held 15 March 2001.

7. Contact Persons for this Proposal

Dick Dempster, Dick Dempster Consulting Ltd. (telephone 604 886 0461)

---

[1] As submitted to the Foothills Model Forest, November 11, 2000.

[2] See Foothills Growth and Yield Association: proposal submitted to the Forest Resource Improvement Association of Alberta by the Foothills Model Forest, July 2000 (endorsed by all voting members).

DETAILED PROPOSAL

1. Proposal Prepared By

W.R. (Dick) Dempster, Ph.D., R.P.F.
Dick Dempster Consulting Ltd.
RR8, 304 Georgia Drive
Gibsons, British Columbia
Tel: 604 886 0461
Fax: 604 886 0462
Cell: 604 454 7090
E-mail: dick_dempster@dccnet.com

2. Introduction

In response to interest by industry and government, the Foothills Model Forest has facilitated collaboration among a number of softwood producers to create a Foothills Growth and Yield Association for co-operative forecasting and monitoring of managed stand growth and yield, particularly of lodgepole pine. Nine companies participate in the Association as voting members. The Alberta Land and Forest Service and the Foothills Model Forest participate as non-voting members, with the Model Forest acting as the coordinating agency.

3. Background Information

The potential value of a co-operative lodgepole pine growth and yield research program was recognized in 1997 by a number of companies holding Forest Management Agreements and Timber Quotas on the Eastern Slopes.

The Foothills Model Forest appointed a part-time Director on June 21, 1999, with the mandate to develop a Growth and Yield Co-operative. A memorandum of agreement and preliminary work schedule was developed and endorsed by nine companies, the Land and Forest Service, and the Foothills Model Forest, in December 1999. The inaugural steering committee meeting was held March 23, 2000. At this time a chairman was elected, and resolutions were passed establishing the initial annual membership fee and a formula for sharing the cost of fieldwork. Fieldwork commenced in June 2000. The Project was approved by FRIAA on July 20, 2000.

4. Objective

The goal of the program is the quantification of yields associated with forest management practices, especially of lodgepole pine.

5. Potential Application of Results

The results will be directly applicable to the development of forest management plans and enhanced forest management programs in the Foothills Model Forest area and throughout the geographic range of lodgepole pine in Alberta. They will influence the selection of forest management practices, and the estimation and sustention of the allowable cut of lodgepole pine within the tenures of the participants, currently estimated at approximately 4.5 million cubic metres per year.

6. Deliverables

Projects of the Association will be designed to deliver yield forecasts and a validation program.

Yield forecasts will be quantitative estimates of future stand timber yields, agreed by the scientific and regulatory community as the most probable outcome of the treatment regime being applied to the range of stand and site conditions specified. *Validation programs* may involve existing trials or new trials. They will include a valid replicated experimental design, an installation schedule (if applicable), and a measurement schedule.

The nature of tree growth and the project deliverables requires the program to be long term and ongoing. Although forecasts and improved confidence in estimation of growth and yield will accrue from initial measurements made in 2000 and 2001, the full benefits of the program will be derived from growth re-measurements taken on a long-term and ongoing basis. Interim deliverables will include project establishment reports, which will include the best available scientific forecasts of the effects being investigated.

7. Methods

Methods will be specified in project plans, experimental designs, and field manuals. The technical committee and Director will develop project plans for approval by the steering committee. Project plans will include replicated experimental designs, estimates of implementation costs, and will specify input and output variables to be included in each yield forecast.

A plan and experimental design, have been prepared and approved for the "*Regeneration Project*" (see Section 8 below), and a field manual is in preparation.

Input variables will include (a) stand and site parameters prior to treatment, and treatment parameters, and / or (b) stand and site parameters at benchmark stand development stages (e.g. performance surveys). Input variables will include, or be stratified by, a common ecological site classification system. Output variables will include timber yields from intermediate (if applicable) and final harvests, at utilization standards agreed by the members.

Members of the Association on their tenured lands will carry out installation and measurement of growth and yield trials, and provide data, in a format defined by a technical committee and the Director. The Model Forest has engaged a field coordinator responsible for the control and compilation of data consistent with approved project plans. Stand-level growth and yield models, best representing the experimental sites, practices and data, will be developed or validated.

8. Schedule

Activities and milestones scheduled to March 31, 2002, are shown in Table 1. Note that three projects are scheduled:

- Development of the Lodgepole Pine Growth and Yield Cooperative Program (ongoing project as initiated in 1999).
- Forecasting and Monitoring of Growth and Yield in Regenerated Lodgepole Pine Stands ("*Regeneration Project*"): installation initiated in the summer of 2000 and scheduled to be completed in September 2001.
- Determination of Potential for Increasing Yields of Semi-mature and Mature Lodgepole Pine ("*Late-stage Project*"): project proposal to be developed by March 15, 2001, for possible commencement of implementation in 2001).

9. Site Information

The program will be based out of the Foothills Model Forest, Hinton. Research and monitoring sites will be distributed along the Eastern Slopes from Grande Prairie in the north to Cochrane in the south. Research trials will primarily be located in the Lower and Upper Foothills and the Subalpine Natural Sub-regions.

10. Financial Information

Income and expenses for Fiscal Year 2001 are forecast in Table 2.

11. References

- Memorandum of Agreement made June 21, 1999, between the Foothills Model Forest and Dick Dempster Consulting Ltd. pertaining to the development of a lodgepole pine growth and yield cooperative program.
- Memorandum of Agreement among Members of the Foothills Growth and Yield Association (December 1999).
- Minutes of the Inaugural Steering Committee Meeting of the Foothills Growth and Yield Association; March 23, 2000.
- Foothills Growth and Yield Association: proposal submitted to the Forest Resource Improvement Association of Alberta by the Foothills Model Forest, July 2000.
- Forest Resource Improvement Association of Alberta; Project FOOMOD-01-01 – Foothills Growth and Yield Association; Amendment # 1, September 12, 2000.

12. Scientific Review

Recognized scientific experts in growth and yield, biometrics, and forest ecology will review project plans and results. Drs P. Blenis, S. Titus, and V. Lieffers of the University of Alberta reviewed the experimental design for the Regeneration Project. Meetings will be held at least once a year, to which experts will be invited to attend and review projects. Formal peer review will be encouraged through the publication of project results.

13. Improvements to Management in Forest Ecosystems

The program will improve the management of forest ecosystems through:

- improved assessment of ecosystem productive capacity;
- improved assessment of the sustainable use levels of a biological resource;
- promotion of cooperation, partnership, and shared responsibility among forest managers and researchers;
- increased levels of knowledge and awareness of sustainable forest management;
- continual improvement of sustainable forest management practices;
- stand-level data providing the basis for assessing impacts of enhanced forest management practices on biological diversity, natural ecosystem processes, and contributions to global ecological cycles.

14. Amount of Money and Services Requested

As a party to the Memorandum of Agreement among members of the Association, the Model Forest has committed to contributing:

- $200,000 towards initial establishment of the Association, contracting of a Director, and associated fringe, overhead, and meeting costs, commencing June 21, 1999.
- Salary and fringe costs of a field coordinator, on a half-time equivalent basis, from April 1, 2000 to March 31, 2002 (estimated annual cost $29,000).
- Administrative overhead services (cost of $6,200 for period April 1, 2001 to March 31, 2002, estimated at 5% of forecast expenses before GST).
- A member of the Foothills Model Forest Board of Directors to participate on the steering committee in a non-voting advisory capacity.

Voting members will cover their own costs incurred in the installation and measurement of growth and yield trials. They also contribute to the costs of the Association through a membership fee. The membership fee for the period April 1, 2001 to March 31, 2002, has provisionally been set at $10,000, and approved for FRIP

funding. The steering committee is scheduled to meet March 15, 2001, to confirm the membership fees necessary to finance the ongoing operation of the Association.

15. Proposed Payment Schedule

Membership fees will become due April 1, 2001.
The Director's fees and expenses are payable monthly.
The income and expense forecast, and associated ending balances, shown in Table 2 assume a carry over of existing funding from the current financial year of $143,706.

16. Subcontracted Work

Dick Dempster Consulting Ltd. is contracted to provide the services of the Director until June 21, 2001. None of the work may be subcontracted without the written consent of the Foothills Model Forest.

17. Project Management

Project management and management responsibilities are described in the Memorandum of Agreement among members of the Association.

18. Organisations Requesting FRIP Monies

Funding of contributions to the Association, and the identification of sources for such funding, are the responsibilities of the individual members. Seven members have authorized FRIAA to transfer funds for membership fees directly to the Foothills Model Forest. One member is utilizing FRIP funds, but directing the fee payment itself. One member is not utilizing FRIP funds for its contributions to the Association.

19. Publication of Results for General Consumption

The members view publication of results as being in their interest. The steering committee will direct and approve the publication and dissemination of information resulting from Association projects.

20. Other Relevant Information

See Section 11 *References*.

Table 1. Growth and Yield Association Program Work Plan - Activities and Milestones

Activity / Milestone	Apr - Sep 2000	Oct - Dec 2000	Jan - Mar 2001	Total 2000 / 01	Apr - Jun 2001	July - Sep 2001	Oct - Dec 2001	Jan - Mar 2002	Total 2001 / 02	Total 2000 / 02
Project 1[1]										
program direction[2]	38	30	30	98	20	30	25	25	100	198
administrative & technical support[2]	58	25	10	93	25	50	25	10	110	203
annual report			31-Mar					31-Mar		
steering committee meeting			15-Mar					Mar		
information exchange meeting			15-Mar				Oct			
annual fees due					1-Apr					
Project 2[1]										
complete field establishment						15-Sep				
establishment verification report						30-Sep				
final establishment report								31-Mar		
maintenance plan								Mar		
Project 3[1]										
submit proposal			15-Mar							
begin implementation					15-Jun					

[1] Project 1 Development of a Lodgepole Pine Growth and Yield Cooperative Program
Project 2 Forecasting and Monitoring of Growth and Yield in Regenerated Lodgepole Pine Stands
Project 3 Determining Potential for Increasing Yields of Semi-mature and Mature Lodgepole Pine

[2] Person days

actual

planned

Table 2. Growth and Yield Association Program Work Plan - Income and Expenses

Income / Expense	Apr - Sep 2000	Oct - Dec 2000	Jan - Mar 2001	Total 2000 / 01	Apr - Jun 2001	July - Sep 2001	Oct - Dec 2001	Jan - Mar 2002	Total 2001 / 02	Total 2000 / 02
Income										
PEF funding carry-forward	146,000			146,000						146,000
Membership fees - FRIP[1]	80,000			80,000	80,000				80,000	160,000
Membership fees - non-FRIP[1]	10,000			10,000	10,000				10,000	20,000
Total income	236,000			236,000	90,000				90,000	326,000
Expenses[2]										
Director - fees	26,218	19,440	19,440	65,098	12,960	19,440	16,200	16,200	64,800	129,898
Director - expenses	2,867	2,332.80	2,332.80	7,532	1,944	2,916	2,430	2,430	9,720	17,252
Other contract services[3]				-	5,000	5,000	5,000	5,000	20,000	20,000
4WD vehicle (rental)	2,178	1,089	1,089	4,357	1,089	1,089	1,089	1,089	4,358	8,715
Travel expenses (field coord.)				-	1,750	3,500			5,250	5,250
Meeting & misc.expenses	179	500	6,000	6,679			1,000	6,321	7,321	14,000
Computer & misc. equipment	7,191			7,191	12,809				12,809	20,000
Non-recoverable GST		719	719	1,437	1,115	894	780	780	3,569	5,006
Total expenses	38,632	24,081	29,581	92,294	36,668	32,839	26,500	31,821	127,827	220,121
Ending Balance	197,368	173,287	143,706	143,706	197,038	164,199	137,700	105,879	105,879	105,879

actual

projected

[1] $10,000 per voting member

[2] GST included in actual costs
non-recoverable GST computed as 3.5% of projected fees, contract services, vehicle and equipment costs

[3] allowance for data compilation and communications assistance

Field Coordinator
Request for Proposals

Foothills Model Forest - Request for Proposal

Field Coordinator - Foothills Growth and Yield Association

1. Background

The Foothills Growth and Yield Association was established in April, 2000, for co-operative forecasting and monitoring of managed stand growth and yield, particularly of lodgepole pine. Nine companies located from Grande Prairie in the north to Cochrane in the south participate in the Association as voting members. The Alberta Land and Forest Service and the Foothills Model Forest are non-voting members, with the Foothills Model Forest based in Hinton acting as the coordinating agency.

The Association's mandate requires the installation and maintenance of long-term research trials and permanent sample plots over a wide range of locations throughout the foothills natural sub-regions of Alberta. Initial activities are focused on the establishment of a regeneration trial to investigate and monitor the relationships between site, early stand conditions (stocking, height growth, density, competition), density management, and subsequent growth and yield. It involves the establishment, maintenance and measurement of 360 permanent treatment and sample plots. The Association expects to expand this trial, and to install other trials for monitoring the effects of management practices like thinning and fertilization in older stands.

The Association members are directly responsible for the installation and measurement of trials. The Foothills Model Forest has been retained for design, coordination, training, quality control, and data analysis. A part-time Field Coordinator is required to assist the Association director and members in fulfilling these responsibilities.

2. Required Services

The Foothills Model Forest is seeking a qualified contractor to perform the following services as Field Coordinator for the Foothills Growth and Yield Association:

- development of technical procedures;
- work scheduling, organization and control;
- training, orientation and support;
- quality control;
- data management;
- planning assistance.

The initial contract term will be for one year, commencing April 1, 2001. During this period the contractor will be expected to work for the Association on a part-time basis up to a maximum of 100 person-days. The contract agreement will be renewable subject to mutual approval of the contractor, the Foothills Model Forest, and the Association. The contractor will report to the director of the Association, and will work closely with the technical representatives of each member, who collectively constitute the Association's technical committee.

The assignment may be split between more than one individual if a single suitable candidate is not identified to undertake all the services.

The required services are described below.

2.1. Development of technical procedures

The Coordinator will elaborate and document the technical specifications for installation and measurement of field trials, based on a project plan and experimental design for each trial provided by the technical committee and director. He will develop field manuals in consultation with the director. The Coordinator may be required to assist members in establishing contract terms of references for execution of the fieldwork.

2.2. Work scheduling, organization, and control

The Coordinator will work closely with the technical representatives to organize and schedule execution of fieldwork. He will communicate on a regular basis with the representatives and their contractors to ensure that the work is completed in a timely manner. He will provide monthly progress reports of project completion status to the director; and will report to him weekly on contacts, visits and any problems encountered.

2.3. Training, orientation and support

The Coordinator will orientate and / or train technical representatives and qualified contractors on installation and measurement procedures, as necessary to ensure adherence to project specifications. He will provide answers, advice, technical information, and solutions, with field visits if required, in response to reasonable questions, requests, and concerns identified by members pertaining to the installation, measurement and maintenance of field trials. He may be required to provide liaison between the members, the Alberta government, affiliated researchers and others in matters pertaining to the maintenance, protection and use of research installations.

2.4. Quality control

The Coordinator will inspect installation and measurement operations to ensure appropriate quality and safety standards are being met. He will conduct formal audits of completed work, and be responsible for all aspects of data verification. He will communicate promptly with the technical representative and the director in the event of any failure to meet project specifications. He will prepare work verification reports in a timely manner and format as required by the Foothills Model Forest and the Forest Resource Improvement Association of Alberta.

2.5. Data management

The Coordinator will work closely with the Model Forest information systems manager regarding the development of data models and the entry, verification, storage, back up, and compilation of data. He will coordinate with the technical representatives and their contractors to ensure timely delivery of specified measurement data, consistent with a project plan and schedule agreed to by the members.

2.6. Planning assistance

The Coordinator will participate with the director and the technical committee in the development of annual work plans and budgets, project plans and experimental designs, project proposals and cost estimates.

3. Eligibility

The candidate should:

- Hold either a degree or a technologist diploma in forestry from a recognized forestry training institution.
- Hold a valid driver's license.

- Have current basic First Aid certification with CPR designation 'C'.
- Belong to, or be eligible to join, the Alberta Registered Professional Foresters Association or the Alberta Forest Technologists Association.
- Have substantial experience and excellent skills in the installation and measurement of forest research trials or permanent sample plots.
- Be trained in ecological classification and familiar with the ecosites of West Cental and Southwestern Alberta.
- Have a good working knowledge of computing, word processing, spreadsheets, data compilation, and (preferably) automated data capture techniques.
- Have excellent communication and organizational skills.

The Coordinator will be expected to require and provide:
- 4-wheel drive vehicle;
- basic office services (including desktop or laptop computer, e-mail, telephone, fax, cellular phone);
- basic field equipment (cruising, safety etc.).

The assignment is not open to any contractor undertaking, or intending to undertake during the same period, other fieldwork for the Foothills Growth and Yield Association.

4. Requested Information

You are requested to provide the following information, using the application form provided.

4.1. Services offered

Indicate (Yes or No) which services you are offering to provide.

4.2. Qualifications, skills and experience

Identify academic degrees or diplomas held, including the year acquired, and the institution. Indicate membership in professional associations. For those services you are offering to provide, list specifically relevant qualifications, experience, or demonstrated skills.

4.3. Availability

Indicate your earliest availability. Specify the maximum, minimum and preferred number of days that you are prepared to work for the Association between April 1 2001 and March 31 2002. Indicate any intervals (exceeding two contiguous weeks) that you would not be available during this period.

4.4. Fees and expenses

Indicate your per diem fee ($ per day), applicable to the preferred number of days offered. If the fee rate differs depending on the number of days worked, specify the different rates. List any overhead services that are included in your per diem rate (e.g. office, computer etc.). Itemize and provide unit costs for overheads and expenses that are not included in your per diem fee rate, and which would be charged to the Foothills Model Forest. There is no need to specify rates for meals or mileage where you accept the Foothills Model Forest rates (attached), or for meals and accommodations if you intend to charge receipted amounts. Note that meals, transportation and accommodation are chargeable only for approved travel outside of your base community.

The Foothills Model Forest will not necessarily select the proposal with the lowest costs.

4.5. References

Identify three references, at least two of which should know you in your professional or technical capacity (e.g. employers or clients). Include names, organizations, and telephone numbers. The Foothills Model Forest may contact any person you name, without further notice.

5. Instructions to Respondents

Carefully review this request. If you have any questions, contact Fran Hanington, Administrative Assistant, Foothills Model Forest at (780) 865-8330. If unable to answer your question, she will put you in touch with the Director of the Association or the Foothills Model Forest General Manager.

Complete the attached Application Form. If you are in receipt of an electronic copy of the form, you may complete it in MS-Word. If not, please type or clearly print your responses, and append additional sheets if required.

Return the completed Application Form, together with your resume and a signed covering letter, to:

The General Manager
Attn: Fran Hanington
Foothills Model Forest
Box 6330
Hinton, Alberta, T7V 1X6

The application must be received by Friday February 16, 2001.

You may send your application electronically as an e-mail attachment addressed to: fran.hanington@gov.ab.ca. If you elect to do so, please send a follow-up printed copy by mail.

6. Attachments

1. Application Form
2. Foothills Model Forest Expense Sheet

Memorandum of Agreement

MEMORANDUM OF AGREEMENT AMONG MEMBERS OF THE FOOTHILLS GROWTH AND YIELD ASSOCIATION

WHEREAS:

The companies that are signatories of this Agreement wish to participate in a cooperative program, known as the *Foothills Growth and Yield Association*, for the forecasting and validation of managed stand growth and yield, particularly of lodgepole pine;

The Foothills Model Forest wishes to promote cooperation and shared responsibility in the improvement of sustainable forest management practices, and has agreed to be the Coordinating Agency for the Association;

The Alberta Land and Forest Service wishes to promote the scientific development and validation of yield forecasts used by tenure holders in the development of forest management plans, and is willing to provide advice and information to the Association;

IT IS AGREED:

DEFINITIONS

"Association" means the Foothills Growth and Yield Association.

"Voting Members" means industrial forest tenure holders that are signatories to this Agreement, and that pay an annual membership fee and otherwise contribute to the Association at a level specified by the Steering Committee.

"Members" includes Voting Members, the Foothills Model Forest, and the Alberta Land and Forest Service.

"Foothills Model Forest" is a non-profit company established under part 9 of the Companies Act R.S.A. 1980, Ch. C-20.

"Land and Forest Service" refers to the Land and Forest Service of the Alberta Department of Environment.

"Steering Committee" means the governing body of the Association as represented by one person from each of the Voting Members.

"Technical Committee" means the body, consisting of technical representatives from each member and chaired by the Director, which develops project plans, experimental designs and standards for approval by the Steering Committee, and coordinates installation and measurement of field trials.

"Coordinating Agency" is the Foothills Model Forest or other agency assigned by the Steering Committee to administer the Association.

"Director" is the person recruited by the Coordinating Agency and approved by the Steering Committee to manage the Association.

1. VOTING MEMBERS

Voting Members are responsible for:

1. Installation and measurement of growth and yield trials on their tenured lands;

2. Provision of error-free data, in a format defined by the Coordinating Agency and the Technical Committee, from these trials to the Coordinating Agency;
3. Participation in the affairs of the Association at their own cost;
4. Application, as the Members deem appropriate, of results from Association projects to their own tenures, including local calibration of models; incorporation of results in financial models, timber supply analyses, and other corporate decision-support systems; and seeking approval of yield forecasts used in forest management plans.

Each Voting Member shall:

5. Appoint a representative to the Steering Committee with authority to represent the Member's strategic and financial interests;
6. Assign a representative to the Technical Committee with authority to represent the Member's technical views and interests;
7. Install and periodically measure growth and yield trials as specified in the work plan approved by the Steering Committee;
8. On or before April 1 each year, and commencing on or before April 1, 2000, pay a membership fee approved by the Steering Committee to support the direct costs incurred by the Coordinating Agency in the management of the Association.

2. STEERING COMMITTEE

The Steering Committee shall:

1. Meet at least once each year;
2. Elect from among the Voting Members' representatives a chairperson who shall call and chair meetings;
3. Define, periodically review, and revise as necessary, a minimum program contribution level for Voting Members;
4. Set, annually review, and revise as necessary, annual membership fees;
5. Review and approve project plans, data standards, annual work plans, annual operating budgets, reports, and priorities for supporting research;
6. Approve the purchase and disposition of assets (such as vehicles, computers, and software);
7. Review and approve contracts for outside services, data sharing agreements, and other business arrangements proposed by the Director;
8. Approve assignment to the Association of personnel hired or contracted by the Coordinating Agency;
9. Approve the publication and dissemination of information resulting from Association projects;
10. Set and annually review policies and strategic directions for the Association;
11. Resolve any disputes arising among members regarding the design and implementation of the Association's program.

At any meeting of the Steering Committee:

12. Each Voting Member may be represented by the Member's appointed representative, or an alternate designated by the Member;
13. A Voting Member representative shall have one vote;
14. A quorum shall be at least 75% of the Voting Members.

3. TECHNICAL COMMITTEE

The Technical Committee shall:

1. Develop project plans, experimental designs and standards for approval by the Steering Committee;
2. Assist the Director in the development of work plans and budgets;

3. Coordinate the installation and measurement of field trials;
4. Monitor program implementation, quality control, and data delivery;
5. Evaluate project results.

4. COORDINATING AGENCY

The Coordinating Agency is responsible for:

1. Administration of the Association;
2. Ensuring that project plans, experimental designs, and data standards are developed in a timely manner;
3. Data compilation;
4. Control of data quality consistent with plans and standards approved by the Steering Committee;
5. Selection or development (as appropriate), testing, and validation of stand-level growth and yield models which best represent the experimental sites, practices and data evaluated;
6. Dissemination of information to, and continuing education of, Members in matters relevant to the Association.

The Coordinating Agency, with the direction and approval of the Steering Committee, shall:

7. Retain the services of a Director to manage the Association and fulfill duties as specified in Section 6 of this Agreement;
8. Retain or assign other staff and contract services as required and approved in the annual work plan;
9. Administer the annual operating budget of that portion of the Association's program for which it is responsible;
10. Control expenditures in accordance with the approved annual work plan and operating budget, and generally accepted Canadian accounting practices;
11. Maintain books of account of all funds contributed and dispersed on behalf of the Association's program, in accordance with generally accepted Canadian accounting practices, and subject to annual independent audit;
12. Provide financial reports to the Director and Steering Committee on request;
13. Procure, own, maintain and dispose of equipment;
14. Maintain a secure repository of all Association data;
15. Encourage, and seek resources to undertake, research supporting and related to the Association's program.

The Foothills Model Forest, as Coordinating Agency, shall additionally contribute the following to the establishment and operation of the Association, at no cost to the Voting Members:

16. $200,000 towards initial establishment of the Association, contracting of a Director, and associated fringe, overhead, and meeting costs, incurred between June 21, 1999 and June 21, 2001;
17. Salary and fringe costs of a field coordinator, on a half-time equivalent basis, from April 1, 2000 to March 31, 2002;
18. Administrative overhead services, at a level of effort equivalent to approximately 5% of the non-capital operating budget managed on behalf of the Association;
19. A member of the Foothills Model Forest Board of Directors to participate on the Steering Committee in a non-voting advisory capacity.

5. LAND AND FOREST SERVICE

The Land and Forest Service shall:

1. Assign the Director of the Land and Forest Service Forest Management Division, or an equivalent senior official, to participate on the Steering Committee in a non-voting advisory capacity;

2. Assign a technical expert, or experts, knowledgeable in forest planning and yield forecasting, to the Technical Committee to provide advice on matters pertaining to project planning, experimental design, quality control, data acquisition, model development and validation, project evaluation, and regulatory requirements for yield forecasting and validation.

6. DIRECTOR

The Director shall, subject to the approval and supervision of the Steering Committee:

1. Prepare an annual work plan and budget;
2. Act as chairperson to the Technical Committee;
3. Ensure that project plans, experimental designs, and data standards are developed in a timely manner;
4. Supervise a field coordinator or other staff approved by the Steering Committee;
5. Consult with the Technical Committee regarding the selection, establishment and measurement of field trials;
6. Ensure the timely compilation of Association data consistent with approved project plans and quality standards;
7. Undertake, or direct the undertaking of, analysis of data and the selection, development, testing, or validation of appropriate stand-level models;
8. Report the results of Association projects to Members;
9. Arrange dissemination to Members of information on matters relevant to the Association, including a minimum of one educational meeting or field trip per year;
10. Provide quarterly and annual progress reports to the Steering Committee and the Coordinating Agency;
11. Act as Secretary to the Steering Committee if requested to do so by the chairperson;
12. Collaborate, cooperate and confer with other agencies as appropriate and necessary to further the interests of the Association;
13. Arrange the dissemination or publication of data and results when so directed by the Steering Committee.

7. PROJECTS

1. All Association projects shall have as deliverables *yield forecasts* and a *validation program.*
2. Following project design by the Technical Committee, and approval of a project plan by the Steering Committee, all members shall support project implementation.
3. *Yield forecasts* shall be quantitative estimates of future stand timber yields, agreed by the scientific and regulatory community as the most probable outcome of the treatment regime being applied to the range of stand and site conditions specified. They may be based on new models developed by the Association, models calibrated by the Association, or existing models validated by the Association.
4. Project plans shall specify input and output variables to be included in each yield forecast.
5. Input variables shall include (a) stand and site parameters prior to treatment, and treatment parameters, and / or (b) stand and site parameters at benchmark stand development stages (e.g. performance surveys). Input variables shall include, or be stratified by, a common ecological site classification system.
6. Output variables shall include timber yields from intermediate (if applicable) and final harvests, at utilization standards agreed by the members.
7. A *validation program* may involve existing trials or new trials. It shall include a valid replicated experimental design, an installation schedule (if applicable), and a measurement schedule. The project plan shall specify variables to be measured and models or assumptions to be tested in the validation program.
8. Project plans shall include estimates of implementation costs.

8. PROTECTION OF RIGHTS AND PRIVILEGES

1. No Member shall use for its own purpose or disclose information of or relating to any other Member, which it knows or ought to know is confidential or proprietary information of such other Member, except as may be expressly authorized by such Member in writing.
2. No Member shall disseminate to non-members information produced by the Association, without the approval of the Steering Committee, except to parties authorized and legally entitled to receive such information.
3. Each Member indemnifies and holds harmless all of the other Members from and against all claims, actions, damages and expenses arising out of, or resulting from, a negligent act or omission of the indemnifying Member with respect to the Association.
4. Nothing in this Agreement shall be interpreted to create a partnership between the Members, or to authorize one Member to act as an agent for any other Member.
5. The Steering Committee may set charges for data or other services provided by the Association to non-members.
6. At the discretion of the Steering Committee, and after April 1, 2000, new Voting Members may be admitted and charged an entrance fee.
7. Data and analyses produced from Association field trials shall be made equally available to all Members.
8. Notwithstanding 8(2) and 8(7) above, data contributed by a Member to an Association field trial are the property of that Member, and may be used and distributed to other parties as the Member sees fit.
9. Data which are not produced from Association field trials, but which are provided by an individual Member to support Association analyses, remain the confidential property of that Member.

9. ESTABLISHMENT, TERMINATION AND AMENDMENT

1. The Association shall be established effective April 1, 2000.
2. Any Member may terminate its participation upon delivery to the Foothills Model Forest of at least 12 month's notice in writing.
3. Voting Members whose participation lapses may, at the discretion of the Steering Committee, be charged a re-entrance fee computed as a proportionate share of the costs incurred by the Members in operating the Association during the lapsed period.
4. Voting Members who terminate their participation shall have no right to Association information developed after the effective date of termination except information afforded to non-members under Sections 2.9 and 8.5 of this Agreement.
5. This Memorandum of Agreement may be amended, or a Member barred from further participation, or the Association wound up, by approval of at least 75% of the Voting Members.
6. This Memorandum of Agreement shall remain in effect until amended or terminated by approval of at least 75% of the Voting Members.
7. The interests of a Member herein are transferable with the approval of at least 75% of the Voting Members.

IN WITNESS WHEREOF the undersigned party has executed this Agreement.

Member _____

Signature of authorized representative

Per: _____

Print name: _____

Date _____