

FOOTHILLS MODEL FOREST

ANNUAL WORK PLAN 2006-2007

Volume II Detailed Work Plan



Volume II Foothills Model Forest Detailed Work Plans

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Detailed Proposal Geographic Information Systems

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2. Introduction

The role of the GIS team is foremost one of support for the on-going projects undertaken by the FMF. The sub-heading in this section entitled *Other Relevant Information* will discuss how the GIS resources are allocated by project and will identify potential shortcomings.

In year five of Phase III the GIS team will be focused on support and data management of research projects.

The only GIS initiative that will continue through year three is the FtMF GIS Working Group. This group was struck in 2003 and is facilitated by the Foothills Model Forest. The key mandate of the group is to facilitate education on emerging GIS technologies in the Forestry sector and to do so in a collaborative manner with industry professionals. To date this group has held three meetings and one workshop.

3. Background Information

As stated above the role of the GIS team is foremost one of support for the on-going projects undertaken by the FMF. This will remain its focus in the final year of the FtMF.

4. Objectives

The core focus of the GIS team this year will be GIS and data management support. The section will only discuss the objectives of the GIS working group

1. Knowledge Creation

The FMF will organize and facilitate at least one workshop towards development of data model templates for vegetation and access.

The data model development process and outcomes will be available on the FtMF website.

1a. Beneficiaries and Impacts

The outcome of the facilitated sessions will at the very least provide members with a starting point in building geodatabases. *A data model template will provide a framework for all participants to store forest inventory data and facilitate more efficient and accurate integration of datasets across multiple jurisdictions and scales.*

- 2. **Demonstration**
 - 2a. **Beneficiaries and Impacts**

 - 3. **Knowledge / Technology Transfer**
 - 3a. **Beneficiaries and Impacts**
N/A

 - 4. **Communications and Outreach**
 - 4a. **Beneficiaries and Impacts**

 - 5. **Policy Support**
N/A
 - 5a. **Beneficiaries and Impacts**

 - 5. **Abstract of Methodology**
N/A

 - 6. **Deliverables**
 - 1. **Knowledge Creation**
One, potentially three workshops facilitated by the FMF. This is considered knowledge creation (and not knowledge / technology transfer only) as it will raise knowledge amongst all attendees including the FMF. One of the outcomes of these workshops are draft Geodatabase model templates.
 - 2. **Demonstration**
 - 3. **Knowledge / Technology Transfer**
 - 4. **Communications and Outreach**
At least one, potentially six GIS Day events to teach grade eight students about GIS and GPS.
 - 5. **Policy Support**

 - 7. **Timelines**
- | Task | 2006 | | | | | | | | | 2007 | | |
|---|------|---|---|---|---|---|---|---|---|------|---|---|
| | A | M | J | J | A | S | O | N | D | J | F | M |
| Support and administration | X | X | X | X | X | X | X | X | X | X | X | X |
| Working with GIS Workgroup and associated workshops | | | | X | | | | | | | | |
| GIS Day events | | | | | | | X | X | | | | X |
- 8. **Site Information**

 - 9. **References**

10. Scientific Review

11. Improvements to Management in Forest Ecosystems

12. Amount of Money Requested From the Foothills Model Forest
\$160,000

Item Description	Project Budget
Total	<i>\$160,649.06</i>
Salaries and benefits	\$121,099
Software	\$15,950
Hardware	\$9,600
Training and travel	\$9,200
Office and Administration	\$1,700
Utilities	\$900
Insurance	\$700
Contingency	\$1,500

13. Partner Contributions

Partner/Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
The Forestry Corp				\$5000	\$5000	

14. Proposed Payment Schedule

15. Subcontracted Work

Due to the forecasted shortcoming in GIS support allocation it is likely that some work will have to be contracted out or completed by temporary staff. The GIS Working Group will hire a Geodatabase consultant for development workshops. These costs will be covered by the workshop fees.

16. Project Management

Christian Weik

17. Additional Organisations requesting FRIAA Administered Monies

18. Other Relevant Information

18.1 Predicted GIS Time Allocation

The table below describes the forecasted GIS support time requirements by project.

In an effort to equitably allocate GIS support and to forewarn projects of the potential necessity to budget additional funds the table below describes approximate historical requirements and notes projects that have indicated the need for additional support. This method has been put in place to encourage (or force) projects that have significant increases in support needs to budget a percentage of funds to cover increased GIS requirements. As there is a projected GIS staff time deficit for the coming year the GIS will complete work on a first come and priority basis by quarter. In the event GIS resources are still not available, GIS staff will work with project leaders to outsource where suitable.

Task	Q1	Q2	Q3	Q4	Total	Notes
Grizzly bear	40	30	35	40	145	
Natural disturbance	4	4	4	4	16	
Fish and watershed	15	15	15	5	50	
Communications	2	2	2	2	8	
Jasper National Park	4	2	2	2	10	
Traditional Cultural Study	10	10	10	10	40	
Foothills growth and yield	2	2	2	2	8	
Overhead (management)	35	35	35	35	140	
CLMA	7	7	7	7	28	
Crossing Association	5	5	5	5	20	
GIS Working Group	2	1	2	1	6	

Total	126	113	119	113	471
Man Days Available	115	115	115	115	460

18.2 Spatial Data Requirements

The GIS data requirements provided in the table below represent spatial and attribute data that will have to be acquired from project partners, FMF partners or from outside agencies in order to complete GIS related project tasks. These data are identified to ensure that the partners are aware of data they are expected to provide as part of signing the Annual Work Plan. In the event data are to be provided by outside agencies the project leader and, if necessary FMF GIS staff, will work together to ensure acquiring those data is achievable.

All spatial data provided to the FMF are considered confidential and will be strictly managed by the FMF GIS staff. In the event data must be provided to off-

site project partners the FMF will require the signing of a data sharing agreement between the FMF and the off-site partner to ensure data security.

The data required for the coming year has not changed from the previous year, although it is likely more recent versions of the themes will be requested.

Data set (theme)	Source (Data required for one or more projects listed at right)	Project(s)
Alberta Vegetation Inventory (AVI)	Weldwood of Canada Weyerhaeuser Canada Sundance Forest Industries Sunpine Forest Products Alberta Government Vanderwell Contractors	Grizzly bear Fish and watershed Chisholm/Dogrib
Digital orthophotos	Weldwood of Canada Weyerhaeuser Canada Sundance Forest Industries	Grizzly bear Fish and watershed
Ecological Land Classification (ELC)	Weldwood of Canada Jasper National Park Alberta Energy**	Grizzly bear Fish and watershed Chisholm/Dogrib
Existing roads	Weldwood of Canada Weyerhaeuser Canada Sundance Forest Industries Sunpine Forest Products Alberta Government Vanderwell Contractors	Grizzly bear Fish and watershed Chisholm/Dogrib
Linear disturbance utilisation (road, seismic, other use)	Weldwood of Canada** Weyerhaeuser Canada** Sundance Forest Industries**	Grizzly bear
Compartment boundaries	Weldwood of Canada	Grizzly bear Fish and watershed
Existing pipelines, powerlines, seismic, wellsites	Alberta Energy** Alberta Government	Grizzly bear
Planned areas of exploration	Alberta Energy**	Grizzly bear
Existing and planned, active and inactive minesite boundaries	Alberta Energy**	Grizzly bear
Existing and planned minesite haul roads	Alberta Energy**	Grizzly bear
Hydrography	Alberta Government	Grizzly bear Fish and watershed Chisholm/Dogrib
Digital elevation models	Alberta Government Jasper National Park	Grizzly bear Fish and watershed Chisholm/Dogrib
Roads, trails, human use activities	Jasper National Park	Grizzly bear
IRS Satellite imagery	Alberta Government	Grizzly bear

Five year development plan	Weyerhaeuser Canada Sundance Forest Industries	Grizzly bear
Annual operating plan	Weyerhaeuser Canada Sundance Forest Industries	Grizzly bear
Planned roads	Weyerhaeuser Canada Sundance Forest Industries	Grizzly bear
Soils	Alberta Government** Weldwood of Canada**	Fish and watershed
Road-stream crossing inventory for monitoring watersheds	Weldwood of Canada	Fish and watershed
Rosgen stream classification output	Weldwood of Canada	Fish and watershed
Historical forest harvest	Weldwood of Canada	Grizzly bear Fish and watershed
Base features access	Alberta Government	Grizzly bear Fish and watershed Chisholm/Dogrib
Riparian classification	Weldwood of Canada	Fish and watershed
Administrative or jurisdictional boundaries (parks, natural areas, FLUZ, Special Places, etc.)	Alberta Government	Fish and watershed Chisholm/Dogrib
Campsites	Weldwood of Canada Alberta Government	Fish and watershed
Surficial geology**	Alberta Government	Fish and watershed
Permanent sample plot (PSP) (current state not growth)	Weldwood of Canada Weyerhaeuser Canada** Sundance Forest Industries**	Grizzly bear
Land use dispositions	Weldwood of Canada	Fish and Watershed
Silviculture treatments	Weldwood of Canada	Grizzly Bear

** If data are available.

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Detailed Proposal Natural Disturbance Program

1. Prepared by

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2. Introduction

The Foothills Model Forest and its' partner organisations initiated a program in 1995 to study and describe natural and cultural disturbance across over two million hectares in the Rocky Mountains and Foothills natural regions. The program, and its' inclusive projects, are designed to deliver research, communication, and implementation initiatives, support and demonstrate sustainable practices and policies within and beyond the FMF boundaries, consistent with the objectives of the 2002 Phase III proposal. This is a collaborative program involving industry and government. The work plan outlines projects to be included in the program during 2006/2007.

3. Background Information

A natural disturbance research program for the Foothills Model Forest was first designed in 1996, and has been updated nine times (Andison 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, and 2004). It was intended to span several years, and includes a detailed list of approximately 40 individual research projects from empirical data collection, to communication, to simulation modelling. Together, the projects represent a package of potential knowledge on how natural disturbance-related processes created the historical patterns observed on the Model Forest. The projects are connected to each other mainly through scalar segregation, and are thus inter-dependent. Recognising that it is not possible to understand observed patterns through a single study, the program differentiates the study of processes into observable spatial and temporal scales, ranging from the stand to the landscape. Individual projects rely on others for either context or detail. It is the overall package of project results that provides the greatest level of knowledge.

Consistent with the NDP workplan, and the requirements of FMF Phase III, there are two classes of projects under the auspices of the natural disturbance program: Class A. Projects in varying stages of completion, from significant analysis, to completing reports. Five ND projects being proposed fall into this category in 2006/07.

Class B. Projects that spawned from existing or past ND projects that were the result of an expanded effort last year to communicate and solicit other partners

and funds. There are five such projects in 06/07, although two require external funding that we hope will be in place during the year, but as of this date has not been confirmed.

No new projects were initiated this year.

4. Objectives

1. Knowledge Creation

The objective of the Natural Disturbance Program is to describe and understand the range of patterns created by historical disturbance (primarily fire, but also other agents such as insects, disease, flooding, wind, and herbivory). The program also aims to understand and describe the underlying processes responsible for the patterns identified.

1a. Beneficiaries and Impacts

The general application of these results is to assist in the conservation of biological diversity in the Rocky Mountains and Foothills of Alberta through an improved understanding of natural disturbance processes at a range of spatial scales. With such understanding it will be possible to assess planned management activities such as forest harvesting and fire management in relation to natural ranges of variability. This information is necessary to assist managers within and outside of protected areas, as both types of jurisdictions are influenced by past and current management practices that are outside the range of natural variability.

2. Demonstration

To continue integrating and testing the efficacy of natural pattern management strategies and tactics across a wide variety of scales and situations.

2a. Beneficiaries and Impacts

See project details.

3. Knowledge / Technology Transfer

To provide the opportunity to apply new knowledge of natural patterns to solving practical, tractable forest management problems.

3a. Beneficiaries and Impacts

See project details

4. Communications and Outreach

Make research results available in a variety of forms and mechanisms to maximize audience and exposure.

4a. Beneficiaries and Impacts

See project details.

5. Policy Support

Maximize / take advantage of opportunities to affect local, regional, and provincial guidelines and policies as they affect forest management practices.

5a. Beneficiaries and Impacts

See project details.

5. **Abstract of Methodology**
See attached project proposals for individual project details.
6. **Deliverables for 2006/07**
GIS data overlays and databases, technical reports, journal manuscripts, information pamphlets, presentations, and guides. See individual project work plans for details.
Delivery of the entire package of natural disturbance projects. This includes both time and travel costs for tasks that cover all listed projects: Compiling and tracking annual workplans and budgets, co-ordinating field activities and sub-contractors, pursuing other research / co-operative activities, exploring and reporting on research extension possibilities, and attending natural disturbance team, FMF project steering committee, and other meetings as they arise. (not described as an individual project).
Communication of results. Includes leading field tours, attending and presenting research results at professional and public meetings and symposia, creating and supporting posters, creation and distribution of four FMF NDP Quicknotes per year, at least one interpretation note, and compiling other educational material using various media. Also includes working with other research groups and practitioners towards integrative experiments and decision-support tool development.
Develop broader support base through presentations, meetings, and proposals. Development, submission, and if necessary, initiation of more mature project proposals for several FMF ND projects currently un-initiated, but considered a priority by one or more partners.
7. **Site Information**
This work will potentially take place in all forested areas of Alberta.
8. **References**
Andison, D.W. 2004. Foothills Model Forest Disturbance Dynamics Long-Term Research plan. Version 9.0. FMF Technical Report.
Foothills Model Forest Phase III
9. **Scientific Review**
All projects either/or have had reviews of methods, or the results will be published in peer-reviewed journals.
10. **Improvements to Management in Forest Ecosystems**
This project contributes to the development of management strategies that are in concert with the concept of ecological management, which is “an evolving approach that focuses on ecological processes and ecosystem structures and functions, while sustaining the types of benefits that people derive from the forest” (Alberta Forest Conservation Strategy, draft, July 8, 1996).
“The unmanaged forest, even without human influence, is subject to a variety of natural processes and disturbances such as succession, nutrient cycling, fire,

flood, blowdown, insect attack and disease. These processes vary in duration, frequency of occurrences, size of affected area, and severity. For each type of process, there will be a particular range of variability. The result is a mosaic of natural communities representing the range of natural variability in forest ecosystems. Each of these communities plays an integral role in maintaining the diversity and function of the forest ecosystem. An understanding of “natural variability” is fundamental to the implementation of ecological management. To varying degrees, natural disturbances have been reduced in intensity, scale, and frequency through a variety of means such as fire and insect/disease suppression and abatement programs and flood control measures.”..... “Ecological management proposes that we use human activities to maintain that range of natural variability.” (from Alberta Forest Conservation Strategy, draft, July 8, 1996).

11. Amount of Money Requested From the Foothills Model Forest

\$245,660 (from the Natural Disturbance Program)

\$198,330 Hinton Wood Products

\$26,330 Alberta SRD

\$21,000 Jasper National Park

12. Financial Summary

The following outlines only the requested funds from FMF-related sources for projects under the auspices of the ND program. “Additions” funding sources are identified where beyond the base budget. Those numbers with single asterisks are sources of funding either not yet obtained, or will be provided pending other sources of seed monies are found.

Please note that the ND Short course project, parts of the Hwy40 project, and some ND Communication and Extension project items are collaborative with the FMF Communications and Extension Program.

Funds in bold, double asterisks denote funding contributions for both Hinton Wood Products (HWP) and Alberta Newsprint Company (ANC) above and beyond that identified funds in the original 05/06 budget, but the funds were invoiced in 05/06. Most of these projects overlap into the 06/07 fiscal year, but these funds have not been accounted for in previous FMF ND budgets. ***As these funds are already part of the ND funds, they do not represent new monies for 06.07.***

Finally, the \$146,000 from additional sources for the Hwy40 Demo Project was provided by the Alberta SRD two years ago as dedicated implementation funds, none of which has yet been spent. ***As these funds are already part of the ND funds, they do not represent new monies for 06.07.***

Project Name	Funding Source / Status					
	FMF (SRD)	FMF (JNP)	FMF (HWP)	ANC	Add'ns	Total
Program co-ordination & project development	23,000	19,000	10,000			52,000
Meso-scale Landscape Patterns and Processes			20,000			20,000
Fire Effects Research Study		2,000				2,000
Communications and Extension			55,000			55,000
ND Short Course Development			7,500		22,500	30,000
NRV / CRV GIS Tool Development			20,000**	20,000**	20,000	60,000
Upland CWD Study			12,500*	12,500*	25,000*	(50,000)
LWD Chronosequence Study			17,500*	17,500*	35,000*	(70,000)
Hwy40 Demonstration Project				25,000	146,000	171,000
Hwy40 Adaptive Monitoring Extension			52,500**	53,000**	180,000* + 180,000	105,500 (465,500)
Expanded LANDMINE simulations			30,000			30,000
TOTAL BASE (total potential)	23,000	21,000	195,000	98,000	188,500	525,500
	0	0	(225,000)	(126,000)	(608,500)	(1,005,500)

13. Proposed Payment Schedule

Details to follow in individual project proposals.

14. Subcontracted Work

Details to follow in individual project proposals.

15. Project Management

The ND program will be overseen by Dr. David Andison of Bandaloop Landscape-Ecosystem Services. Administrative support will be provided by the Foothills Model Forest. Individual ND projects may be managed by other personnel as described in the project details.

16. Additional Organisations requesting FRIAA Administered Monies at this time.

Hinton Wood Products of West Fraser Mills Ltd.
Alberta Newsprint Co. Ltd.

17. Other Relevant Information

None.

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Detailed Proposal

Meso-Scale Landscape Disturbance Patterns and Processes

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2. Introduction

The Foothills Model Forest Natural Disturbance Program aims to investigate patterns and processes of disturbance across spatial and temporal scales. Although both landscape-level and stand-level scales are widely recognised, there is no reason to believe that these are the only relevant scales of observation. For instance, within landscapes, disturbance patterns vary enough to suspect that behaviour is being influenced by other factors at intermediate scales, such as riparian corridors, non-forested areas, and even soil features (influencing stand composition and structure). Landscape pattern descriptions at the simplest level do not necessarily account for these permanent landscape features. Yet these associations are vital regarding the application of this knowledge on a given landbase. This project looks at patterns at a higher level of resolution than landscape-level analysis demands, but less than more specific, directed stand-level studies require. This is the final year of a multi-year project.

3. Background Information

The data and analysis for the meso-scale and island remnants projects have already yielded five research reports, with one more to come. The analysis was far beyond what was originally envisioned. This project was to be completed during 05/06, but was not completed due to other (both new and existing) projects taking priority.

As of March 31, 2007, this project will be completed.

4. Objectives

1. Knowledge Creation

To understand how fire regime characteristics are influenced by biotic and abiotic landscape features at scales below the landscape-level.

1a. Beneficiaries and Impacts

Greater understanding is the first step towards more defensible and consistent decision-making, and moves science forward to new and better questions.

2. Demonstration

N/a

2a. Beneficiaries and Impacts

N/a

3. Knowledge / Technology Transfer

N/a

3a. Beneficiaries and Impacts

N/a

4. Communications and Outreach

Make research results available in a variety of forms and mechanisms to maximize audience and exposure.

4a. Beneficiaries and Impacts

Everyone is targeted in order to “raise the bar” concerning the creation of a common knowledge foundation of natural pattern residual material in foothills and mountain landscapes.

5. Policy Support

N/a

5a. Beneficiaries and Impacts

N/a

5. Abstract of Methodology

Data layers were compiled at 50m resolution ARC/INFO compatible for selected areas. We compared edge and island locations with various topographic and vegetation information through multivariate and correlation methods.

Comparisons were also made of the spatial associations of older forest remnants and patch sizes with the distribution of non-commercial forested patches. Eight areas in the foothills east, as well as one large area of JNP. Final analysis and reporting are the only remaining tasks.

6. Deliverables for 2006/07

1. Knowledge Creation

Complete.

2. Demonstration

N/a

3. Knowledge / Technology Transfer

N/a

4. Communications and Outreach

By Dec. 31, 2007; final report completed.

5. Policy Support

N/a

7. Timelines

Task	2006									2007		
	A	M	J	J	A	S	O	N	D	J	F	M
First draft manuscripts	x	x	x	x	x	x	x	x	x	x		

8. Site Information

This work will take place in the Rocky Mountain and Foothills Natural Regions of Alberta.

9. References

Andison, D.W. 2004. Foothills Model Forest Disturbance Dynamics Long-Term Research plan. FMF Technical Report.

10. Scientific Review

Independent reviews have been obtained for the methods by Dr. W.L. Baker, U. of Wyoming. All manuscripts will be submitted to refereed journals.

11. Improvements to Management in Forest Ecosystems

We have an intuitive sense of “natural patterns” at very large and very small scales. Virtually nothing is known of such patterns and process at intermediate scales. Yet, without such information, application of large and small-scale patterns under the auspices of ecosystem management may not be effective. This project fills a vital gap in our ecological knowledge base and understanding of natural patterns and how they apply to our disturbance management activities.

This project contributes to the development of management strategies that are in concert with the concept of ecological management, which is “an evolving approach that focuses on ecological processes and ecosystem structures and functions, while sustaining the types of benefits that people derive from the forest” (Alberta Forest Conservation Strategy, draft, July 8, 1996).

12. Amount of Money Requested From the Foothills Model Forest

\$20,000 Foothills Model Forest from the base budget.

13. Partner Contributions

Partner/Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
Foothills Model Forest	20,000					
TOTAL	20,000					

14. Proposed Payment Schedule

\$20,000 - June 1, 2006

15. Subcontracted Work

Bandaloop Landscape-Ecosystem Services will be carrying out the work.

16. Project Management

The project will be overseen by Dr. David Andison of Bandaloop Landscape-Ecosystem Services. Administrative support will be provided by the Foothills Model Forest.

17. Additional Organisations requesting FRIAA Administered Monies

Hinton Wood Products.

18. Other Relevant Information

None.

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Detailed Proposal Fire Effects Research Study

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Name: Alan Westhaver, Dave Smith
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2. Introduction

This is the eighth year of a multi-year project to monitor the effects of fire on montane landscapes and forest stands in Jasper National park. This project is being conducted as a component of the Foothills Model Forest - Natural Disturbance Program and is being implemented jointly by the Canadian Forest Service and Parks Canada. The principle researchers are Peter Bothwell, Dr. Brian Amiro, Dr. Bill deGroot, Dr. Jen Beverly, and Dr. Vern Peters of CFS and Alan Westhaver and Dave Smith of Jasper National Park. Phase I of the project is focussed on studies in grassland/pine communities where grasslands are being heavily encroached by lodgepole pine and being substantially reduced in area. Prescribed fire is being used to restore historic processes and vegetation structure/composition. This project is monitoring resultant vegetation patterns, vegetation response and mortality, and related wildlife interactions. The project entered Phase II during the 2001/02 fiscal year with an emphasis on Douglas-fir montane communities.

3. Background Information

Phase I

Complex interactions exist among ungulates, predators, humans and vegetation in Jasper National Park, Alberta. Fire and herbivory are key parts of the interactions among these ecosystem components. Significant increases in human use, exclusion of fire, and thriving populations of elk (*Cervus elaphus*) within the montane region are impacting the ecological integrity of this vital area. Prescribed fire is being used to help restore ecosystem structure and natural processes with the goal of maintaining a landscape of open-canopy lodgepole pine (*Pinus contorta*) forest and grassland. As part of this management activity, the impact of prescribed burning, elk herbivory, and elk-fire interactions on the montane vegetation are being measured.

Permanent vegetation plots were established in 1998, some of which involved fenced exclosures to exclude elk herbivory. Plots were placed in unburned control areas and in an 80-hectare area burned in the spring of 1999, representing both closed-forest canopy and open-forest/grassland sites. The prescribed fire was lit as lines using hand torches, and the fire behavior measured in the plots. Pre- and post-burn vegetation sampling was done, which included measurements of: tree height, condition and dbh; shrub height and crown diameter; and ground vegetation percent cover by species. About 2/3 of the pine trees were killed, and mortality estimates are in the range of model predictions. Almost all of the shrubs were burned, but Canada buffaloberry (*Shepherdia canadensis*) is now regenerating. Regenerating (*Populus tremuloides*) aspen is evident within the exclosures, but these are heavily browsed by elk in non-fenced areas. There is little impact on ground vegetation cover and phytodiversity to date, but this may change as the tree canopy opens up and the solar radiation environment changes. Vegetation recovery is being monitored annually, and it is expected that a few more years will be needed to see the full impact of fire and elk interactions. A more recent higher-intensity fire in 2001 is providing the opportunity to study the impact of fire intensity in a similar community, but it is too early to assess these effects.

A small aspen area was burned in the spring of 2003. Two fenced exclosures and two unfenced plots were established in the aspen burn. Preburn data and postburn data measured immediately after the fire have been collected so far. This fire was ignited using hand torches, and the fire behavior was measured and documented. Understanding the effect of fire on aspen ecosystem dynamics, especially diversity and elk herbivory, is valuable to the overall project because it introduces another forest cover type to compare to the well established treatments in the pine/grassland communities.

Phase II

Phase II of the study was initiated in spring of 2001 within formerly open stands of montane Douglas fir (*Pseudotsuga menziesii*). Under the influence of fire exclusion policies of the 1930s to present, montane Douglas fir stands have been altered to contain tree densities and fuel loads that significantly exceed historical ranges of variability. The study location is a series of south and west facing slopes opposite the Jackladder burns on the opposite side of the Athabasca River. The objective of Phase II is to determine if prescribed fire can be used to successfully restore historic density and structure to forest landscapes and stands that have been deprived of fire for several decades. Initial prescribed burns in this area will attempt to replicate historic stand structure by selectively reducing the density of in-grown (immature) Douglas fir and current regeneration from the understory of these stands.

Once structural integrity of the stands is restored, the historic fire regime of more frequent, stand maintaining, low intensity fires could be re-established. Some relationships between the Douglas fir beetle (*Dendroctonus pseudotsuga*) and fire

will also be investigated as part of Phase II - since both forms of natural disturbance are important factors in this ecosystem. It is a question as to how the beetle will respond to fire restoration actions. The area was sampled in 2001 to provide data on stand density, size classes, surface fuels, height-to-live-crown, and beetle activity. These pre-fire data are being used to determine prescriptions for the planned fire. This fire was originally planned for the spring 2002, however, the weather has not cooperated over the past two years, and we will attempt the burns again in spring 2004. Post-fire sampling will yield data on the effectiveness of the burn, and provide information for adaptive planning in future fires.

4. Objectives

1. Knowledge Creation

To develop, test and refine fire prescriptions that will allow restoration of natural disturbance (fire) into montane Douglas fir stands of Jasper, Banff, Yoho and Kootenay National Parks.

To determine the results of fire restoration (prescribed fire) activities in meeting explicit ecological objectives for stand structure and composition in montane grasslands and savannah pine stands within the Foothills Model Forest.

1a. Beneficiaries and Impacts

Jasper National Park benefits by meeting a Park Management Plan (2001) commitment to focus on “promoting and co-operating in scientific studies that add to our knowledge of ecological integrity in the park and surrounding landscape”

Alberta Sustainable Resource Development and other agencies that use fire for resource objectives will benefit from results of this study as applied to their local prescribed fire initiatives.

The FMF will benefit by demonstrating the relevance of the model forest concept to protected areas.

Protected areas (mountain national parks, Willmore Wilderness, other non-commercial forest in Alberta and B.C.) will benefit by applying research finding to their jurisdictions.

2. Demonstration

To provide tangible (operational) demonstrations of applied FMF research that are accessible to other fire practitioners and the general public.

2a. Beneficiaries and Impacts

Parks Canada will benefit through opportunities for other fire practitioners to observe, learn and participate in these experiments, view the results and apply them to their local ecosystems.

Residents and visitors of the FMF will be able to observe and understand tangible applications of FMF research as they view these research prescribed burns in Jasper National Park.

Current and future prescribed burn programs of Alberta Sustainable Resource Development will benefit from the demonstration value and positive public response resulting from these research prescribed burns and documented benefits to local wildlife populations.

3. Knowledge / Technology Transfer

To develop innovative prescribed burn methods for achieving specific ecological objectives that can be used by FMF partners (and non-partner agencies or industry).

3a. Beneficiaries and Impacts

Prescribed fire practitioners within the FMF (JNP, SRD) and those in other agencies beyond FMF boundaries will benefit from the techniques, burn prescriptions and fire behavior models used and refined during this project.

The forest industry (e.g. Hinton Wood Products, other industry) may benefit from the potential for expanded fire use and applications as a result of this research.

4. Communications and Outreach

This project provides exceptional opportunities for increased public awareness and understanding of natural disturbance process (and the importance of research) in the Foothills Model Forest.

4a. Beneficiaries and Impacts

The FMF will benefit since increased public awareness and understanding translate to increased support for FMF programs and those of its partners. To date, this includes signs along the Yellowhead Highway describing prescribed burns and the purpose of the experiment, with FMF as a major sponsor of the work.

5. Policy Support

To develop new, more effective approaches for restoring fire to ecosystems in protected areas through carefully monitored operational experimentation.

5a. Beneficiaries and Impacts

Jasper National Park benefits from this project as a major Parks Canada initiative to fulfill its policy requirements (section 3.2 of Guiding Principles and Operational Policies 1994) towards scientifically based decision-making, management based on scientific research, and careful monitoring of ecological interventions.

The ways in which prescribed burns are implemented in protected areas (Wilmore Wilderness, national parks, other areas of Alberta and B.C.) are very likely to change as a result of this project.

5. **Abstract of Methodology**

Phase I

Aspen burn plots will be re-sampled. This includes measurements of trees, shrubs, regeneration, and ground vegetation in permanent sampling plots. Elk pellet counts will be done in the 2001 burn, the 1999 burn and control plots to track changes in ungulate use. Clip plots in all Jackladder plots will also be completed in order to compare biomass accumulation and the effect of herbivory.

Phase II

The prescribed burn is planned in the spring of 2006. If weather is unsuitable, we will try an alternative window in the fall of 2006. Fire behaviour measurements, such as rate-of-spread and flame length will be measured during the fires. Following the fire, transects measured in 2001 will be resampled to determine scorch height and mortality of younger trees. It may take several years to fully determine mortality on large trees. Surface fuels will be resampled to determine fuel consumption.

6. **Deliverables**

1. **Knowledge Creation**

CFS and Parks Canada personnel involved in the program will continue to feature this research during future FMF science forums, national and international fire Science conferences (at least 1 in 2006).

Dataset on relative ungulate population density in savannah-pine montane ecosystems (following the 1999 and 2001 burns). 2004 data collection and analyses complete March 31, 2007.

Dataset on post-fire effects on Douglas Fir-montane ecosystem following planned burn for 2006. 2004 data collection and analyses complete March 31, 2007.

2. **Demonstration/ Communications and Outreach**

Three prescribed burns (60 and 110, and 1 hectares respectively) have already resulted from this project, are observed and or visited by millions of park visitors each year and are, arguably, the most publicly noted deliverable of the FMF program.

A permanent self-guiding interpretive trail has been built within the study area. It features the FMF research program. The fenced research plots are visible to the public, attract attention and are fitted with professionally produced signs that explain the project and it's importance to local ecosystems. We will upgrade and add to the existing signs this year (aspen plots and Douglas fir plots).

The 2006 (weather permitting) prescribed burns in the Douglas fir forests of Hawk Mountain in JNP will also be highly visible to motorists using

Highway #16 as they traverse the FMF, as well as hikers using the Overlander trail system. Demonstration of ignition techniques and fire behaviour in this ecosystem to fire personnel.

This site is frequently used as a tour site to display benefits of the FMF program to visiting scientists, foresters, educators and bureaucrats from around the world. Several local eco-tourism companies also stop regularly to view the experiments with clients. We will also provide technical tours to professional visitors as the opportunity arises.

3. Knowledge / Technology Transfer

2004 burns conducted in Douglas fir stands, 2003 burn in the aspen stand, and 1999 and 2001 burns in pine/grassland will provide managers with unique experiences and knowledge that will result in modifications to future planned prescribed burns.

This information will be conveyed formally and informally through the fire community during annual forums, conference attendance and presentations and preparation of year-end reports.

By inviting fire practitioners from Alberta SRD and other parks to participate in the 2004 burn, others will benefit from first hand knowledge/technology transfer opportunities.

4. Communications and Outreach

(See Demonstration section 2 above)

5. Policy Support

As part of an adaptive management approach that integrates research into operational programs, this project provides a continual flow of results and information that influences how prescribed burns are planned and implemented within Jasper National Park and other protected areas with similar forest types.

7. Timelines

Task	2006									2007		
	A	M	J	J	A	S	O	N	D	J	F	M
Pellet Counts		X										

8. Site Information

The sites are within Jasper National Park, and their use is approved through Park management, including having an approved environmental assessment.

9. References

Amiro, B., B. deGroot, P. Bothwell, A. Westhaver, and P. Achuff. 2002. Impacts of fire and elk browsing in the montane region of Jasper National Park. *In*: R.T. Engstrom and W.J. deGroot, (eds.) Proceedings of the 22nd Tall Timbers Fire Ecology Conference: Fire in Temperate, Boreal, and Montane Ecosystems. Tall Timbers Research Station, Tallahassee, FL, U.S.A. (in press).

10. Scientific Review

No new scientific review. Original project reviewed by scientists within the Canadian Forest Service and Parks Canada. The Tall Timbers paper was reviewed by anonymous reviewers.

11. Improvements to Management in Forest Ecosystems

The montane prescribed burns are part of the scientific information required for effective ecosystem management of national parks. The goal of the fires is to study ecosystem effects of fire, and the use of fire to achieve changes to plant and animal communities. Documentation of these successful fires will lead the way for further use of fire in forest ecosystem management.

12. Amount of Money Requested From the Foothills Model Forest

\$2,000

13. Partner Contributions

Partner estimates include a cost of approximately \$40,000 by Parks Canada to achieve the Hawk Mountain burn and to help with follow-up sampling. This includes the fire team for ignition and suppression, helicopter support, and warden (Alan Westhaver and Dave Smith) and summer student salaries. The Canadian Forest Service is contributing scientific salaries for Pete Bothwell (R.P.F.), Dr. Bill deGroot, Dr. Jen Beverly and Dr. Vern Peters (about 60-person-days) with salaries estimated at about \$13,000 and operating costs for supplies and at least one additional field trip at a maximum of \$1,000. In addition, the Canadian Forest Service will support field cost over-runs, mostly when additional field trips are required.

Partner/ Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
Foothills Model Forest			2,000			
Canadian Forest Service		1,000.			13,000.	
Parks Canada					40,000.	

14. Proposed Payment Schedule

April, 2006 - \$2,000.

15. Subcontracted Work

None.

16. Project Management

Project Manager: Pete Bothwell R.P.F., Canadian Forest Service
Jasper National Park Manager: Alan Westhaver/Dave Smith

17. Additional Organisations requesting FRIAA Administered Monies

None.

18. Other Relevant Information

None.

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal

Natural Disturbance Program Communications and Extension

1. Prepared by

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2. Introduction

The FMF ND program has amassed a considerable amount of natural pattern knowledge over the past several years. Although much research remains, there is an increasing need to pass this knowledge on to broader audiences. This is not a distinct “project” in the same way that other elements of the ND program are, but it has not reached the point at which C&E efforts should be recognized as unique contributions.

3. Background Information

The FMF ND program has been doing communication and extension for many years already (Andison 2003). It initiated the Quicknote program almost six years ago, and boasts a library of 34 notes and counting. The exclusive distribution list for these notes numbers in the hundreds, and the audience is international. In addition, the ND program has been invited to speak at no less than ten workshops (above and beyond group FMF presentations), presented at two international scientific conferences, hosted two workshops, and published six full reports. Part of the ND workplan for 03/04 was dedicated to developing a Communications and Extension (C&E) Plan for the ND Program. This has now been completed (Jones 2003), and provides much needed formal context for past and future C&E activities of the ND Program. This “project” includes elements directly from that plan. Although all of the material used for C&E efforts originates from existing and past ND Program projects, it was felt that recognizing C&E efforts as unique and important components of the overall program, with distinct deliverables, was important at this point. We will likely continue to recognize C&E efforts as “projects” in this way from now on in workplans.

4. Objectives

1. Knowledge Creation

None.

1a. Beneficiaries and Impacts

n/a.

At least two Model Forest presentations / tours

5. Policy Support

At least one presentation to senior SRD staff.

7. Timelines

Task	2006									2007		
	A	M	J	J	A	S	O	N	D	J	F	M
Communication and Extension Activities as Above	x	x	x	x	x	x	x	x	x	x	X	x

8. Site Information

Most of this work will take place in Alberta, but some of it beyond.

9. References

Andison, D.W. 2004. Foothills Model Forest Disturbance Dynamics Long-Term Research plan, Version 9.0. FMF Technical Report.
 Jones, L. 2003. Communications and Extension Plan for the Foothills Model Forest Natural Disturbance Program. Technical Report, Foothills Model Forest, Hinton, Alberta.

10. Scientific Review

The project is not science-based. However, with respect to the methodological approach taken for communications and extension, the C&E plan for the ND program was developed from a communications and extension professional as a result of an external, objective Request For Proposals (RFP).

11. Improvements to Management in Forest Ecosystems

Any increase in the understanding of new scientific knowledge by as wide as possible an audience can only lead to improvements in how forest ecosystems are managed.

12. Amount of Money Requested From the Foothills Model Forest

\$55,000 Foothills Model Forest.

13. Partner Contributions

Partner/Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
Foothills Model Forest	55,000					
TOTAL	55,000					

14. Proposed Payment Schedule

N/a

15. Subcontracted Work

Bandaloop will be carrying out some of the work.

16. Project Management

The project will be overseen by Dr. David Andison of Bandaloop Landscape-Ecosystem Services. Administrative support will be provided by the Foothills Model Forest.

17. Additional Organisations requesting FRIAA Administered Monies

Hinton Wood Products

18. Other Relevant Information

None.

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal Natural Disturbance Short Course Development

1. Prepared by

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2. Introduction

Interest in natural disturbance patterns has grown at a rapid pace over the last ten years within Alberta and beyond. New research results on natural disturbance patterns and processes are quickly absorbed by an ever-broadening audience of managers, planners, regulators, scientists, and the public. And although the work is far from complete, a substantial collection of natural disturbance knowledge has been generated.

The interest in, and attraction to natural disturbance emulation strategies is understandable. Such knowledge can potentially be used as ecologically-defendable “coarse filters” to help guide forest management decision-making. Coarse filters offer considerable benefits. Consider the prospect of choosing and managing towards a landscape design that is not only described in familiar and direct terms of vegetation structure and composition, but is (at least theoretically) based on a form of ecological integrity.

We have also observed some remarkable convergences between natural patterns and other sustainable forest management (SFM) objectives. For example, natural patterns demonstrate a logical and positive link to fire threat mitigation, large mammal habitat, avian habitat, aesthetics, access planning, old growth management, and even harvesting costs. This list alone represents a tremendous opportunity. Furthermore, natural patterns are by their very nature variable, thus allowing for the flexibility to accommodate, as opposed to compete with, other management objectives.

However, despite its potential, using natural disturbance patterns to help forest management is still a fragile proposal. There is broad agreement by forest and land managers that the concept of using natural patterns to guide management decisions is a good idea. However, there is an obvious and significant gap on how, where, when, and even if natural patterns should be applied in forest management decision-making. This disparity is potentially affecting the quality of forest management activities as they relate to the ultimate goal of SFM. For example, small differences in levels of understanding, perception, or the meaning of natural disturbance terms can lead to disagreements, prolonged approval process, and the rejection of what might be progressive plans. These in turn lead to the erosion of trust, decreased likelihood of achieving adaptive forest

management, and the adoption of more conventional rules. Ultimately, this may lead to the rejection of all natural disturbance (ND) strategies or tactics, which may represent a significant lost opportunity for Alberta, and potentially a diminished progression of sustainable forest management ideals.

Such are the growing pains of any new idea. Everyone in Canada is struggling with practical ND integration issues today. The thirst for understanding of natural disturbance concepts was demonstrated by the feedback at our own natural disturbance symposium in 2001, as well as from the size and composition of the mailing list of, and positive feedback on, the FMF Natural Disturbance Program “Quicknote” series. The solution for many other jurisdictions has been to develop prescriptive “guidelines” that mandate the details of how, what, and where to harvest. However, this solution does not always allow for exploration and experimentation, or necessarily a true understanding of the value of coarse-filter knowledge. It removes the need to seek creative viable solutions, which means that natural patterns become yet another set of variables thrown into the planning melting pot. The BC biodiversity guidelines are an excellent example of this predicament.

The Foothills Model Forest Natural Disturbance Program strongly supports the more flexible Alberta approach to moving forward with ND integration. However, we suggest at this point that the answers lay less in science than they do education and communication - based on sound science. By exposing Alberta’s foresters, in both industry and government, to the same basic general level of knowledge about NRV as we know it today, we are better able to build a universal foundation of understanding and language. Education is one of the critical first steps towards the successful integration of any new ideas. A structured and strategic approach best ensures the full potential of natural disturbance decision-making systems (whatever that may be) are realized. This approach better ensures that ND does not become an untested “fad” because years of accrued knowledge are not effectively transferred to those making forest management decisions.

Towards this, in 04/05 we developed an intensive 2-3 day short course “primer” on natural disturbance in collaboration with the Saskatchewan Institute of Applied Science and Technology (SIAST). As the first in a series of such short courses, this one will cover the basics, including nomenclature, the theoretical underpinnings, examples of comparisons with current practices, different models of integration, an overview of research challenges, and research output interpretation.

In 2006/07 we will begin rolling out course number 1, and start work on the second in the series that focuses on specific NRV topics / scales.

3. Background Information

There is no shortage of material on which to draw for such a course. The Natural Disturbance Program of the Foothills Model Forest has been involved in natural pattern and process research for seven years. This program was from the beginning an extensive program driven by practical questions, and designed to address pattern and process questions from a range of spatial and temporal scales

(Andison 2003). The long-term research plan now has over 50 different projects listed, of which almost half have at least been initiated. We have also entered into an important implementation phase of the work, concentrating on opportunities for integrating ND knowledge into planning and monitoring programs. In addition, there is a growing emphasis on natural pattern research at other institutions such as the Sustainable Forest Management Network which we can, and will, draw upon.

Based on research, a **professional development** course of this nature does not currently exist. Research included internet searches and interviewing individuals across North America involved in the field of forest management extension. Based on secondary research, interviews with both industry and government representatives, and the overwhelming response from potential supporters of this idea during the drafting of the proposal, there is a need for this short course, in and beyond Alberta.

4. Objectives

1. Knowledge Creation

None.

1a. Beneficiaries and Impacts

n/a.

2. Demonstration

None.

2a. Beneficiaries and Impacts

n/a.

3. Knowledge / Technology Transfer

To help develop a common understanding of the concepts, terms used, potential value, techniques, issues and opportunities of a coarse-filter approach to sustainable forest management.

3a. Beneficiaries and Impacts

Planners, managers, regulators.

4. Communications and Outreach

To help develop a common understanding of the concepts, terms used, potential value, techniques, issues and opportunities of a coarse-filter approach to sustainable forest management.

4a. Beneficiaries and Impacts

Planner, manager, regulators, scientists, the public, special-interest groups.

5. Policy Support

To help develop a common understanding of the concepts, terms used, potential value, techniques, issues and opportunities of a coarse-filter approach to sustainable forest management.

5a. Beneficiaries and Impacts

Industry, regulators.

5. **Abstract of Methodology**

Develop Course Plan. The course director and course leader have worked with the Saskatchewan Institute of Applied Science and Technology to develop a course plan. Such a plan details the following:

Course goal

Course objective

Identify audiences

Identify learning outcomes

Set indicators of success

Develop course outline and content

Course development, including materials. After a course plan has been developed and approved by the program partners and course sponsors, a curriculum developer will be used to develop the curriculum, and help design materials for this two-day short course. At this stage, the interaction between the course director (Andison) and the curriculum developer will be crucial. The complex and contentious nature of ND strategies is such that a curriculum developer will require considerable familiarity with the material. Furthermore, much of the materials used in the course will come from the Interpretative Reports of the FMF Natural Disturbance Program. While this is occurring, the Foothills Model Forest Communications and Extension Program will begin to promote the short course through existing and new channels.

Interpretive Course Material. The Natural Disturbance Program will develop a new tool called “Interpretive Reports”. This tool will bridge a gap between the existing brief “Quicknotes” and the much more detailed research reports. The objective of an interpretive report is to present knowledge that can be integrated into forest management practices. Each Interpretive Report will be limited to ten to twenty pages, be very visual and will use everyday language. Material from these reports will be used to develop associated course material.

Course Marketing and Delivery. The Foothills Model Forest by collaborating with its partners and course sponsors will promote the course. Course delivery will be done on a cost-recovery basis, and if possible, a portion of course development dollars will be recovered. If course development dollars are recovered they will be reinvested into future Natural Disturbance short course development.

Focus Groups to Direct Future Short Courses and Knowledge Transfer Activities. The *Introduction to Natural Disturbance* course gives industry and government the foundation to begin integrating natural disturbance concepts into forest management plans and practices. However, additional extension and knowledge transfer activities will be required. Therefore it is proposed that focus groups are conducted immediately after the delivery *Introduction to Natural Disturbance* short course. The focus groups will help identify information and knowledge gaps in the existing course, and guide direction and content of future short courses and extension activities.

6. Deliverables for 2006/07

1. Knowledge Creation

N/a

2. Demonstration

N/a.

3. Knowledge / Technology Transfer

Delivery of short course to sustainable forest management professionals in Alberta and Saskatchewan.

4. Communications and Outreach

Delivery of short course to sustainable forest management professionals in Alberta and Saskatchewan.

5. Policy Support

Delivery of short course to sustainable forest management professionals in Alberta and Saskatchewan.

7. Timelines

Task	2006									2007		
	A	M	J	J	A	S	O	N	D	J	F	M
Offer course #1 to partners and beyond	x	x	X	x	x	x	x	x	x	x	x	x
Course Development for #2						x	x	x	x	x	x	x
Develop Course Goals & LO's for #2							x	X	x	x	x	x
Focus group feedback							x	x	x			
Begin developing course material								x	x	x		

8. Site Information

Course development & coverage - Alberta and Saskatchewan (as a minimum).

9. References

Andison, D.W. 2004. Foothills Model Forest Disturbance Dynamics Long-Term Research plan, Version 9.0. FMF Technical Report.

Jones, L. 2003. Communications and Extension Plan for the Foothills Model Forest Natural Disturbance Program. Technical Report, Foothills Model Forest, Hinton, Alberta.

10. Scientific Review

The course will be developed using a variety of educational professional consultants both internal and external to the project team. The natural disturbance pattern material used for the course will come from a variety of sources, and most of it will either be already published in refereed journals, or will be at some point in the future. Most of the lecture content will be gathered, if not directly provided, by Dr. Andison who is a recognized expert in this field, and has an

extensive network of contacts across Canada. In any case, the content and structure of each lecture will be peer-reviewed by the appropriate expert(s).

11. Improvements to Management in Forest Ecosystems

Any increase in the understanding of new scientific knowledge by as wide as possible an audience can only lead to improvements in how forest ecosystems are managed.

12. Amount of Money Requested From the Foothills Model Forest

\$7,500 Foothills Model Forest.

13. Partner Contributions

Partner/Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
Foothills Model Forest ND program	7,500					
SIAST	N/a					
FMF C&E program	N/a					
Cost Recovery fund from course #1	22,500					
TOTAL	30,000					

14. Proposed Payment Schedule

April 1, 2006, - \$7,500

15. Subcontracted Work

Bandaloop landscape-ecosystem services
SIAST

16. Project Management

The project will be coordinated jointly by Dr. David Andison of Bandaloop Landscape-Ecosystem Services and Lisa Jones of the Foothills Model Forest. Administrative support will be provided by the Foothills Model Forest.

17. Additional Organisations requesting FRIAA Administered Monies

Hinton Wood Products

18. Other Relevant Information

None.

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal Hwy40 Demo Project

1. Prepared by

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2. Introduction

The volume of natural disturbance pattern results from the FMF Natural Disturbance Program and beyond has been tremendous over the last several years. The challenge now has shifted to more practical considerations of implementation guidelines, operational realities, ecological impacts, and social and economic limitations. While small, isolated integration efforts have become fairly commonplace, no where has anyone tried to integrate a wide range of many different NRV patterns, and develop a plan based on NRV patterns from step 1 across a very large area. The Hwy40 Natural Disturbance Demonstration project (from the FMF ND 2003/04 workplan) was designed to borrow heavily from the natural disturbance toolkit to install a large experiment on or near the FMF landbase to test various ecological, social, and economic aspects of adopting some or all parts of the natural disturbance model.

The outcome from the original Hwy40 Demo project is a 10-year “disturbance plan” that identifies locations, sizes, and types of planned disturbance activities for a 70,000 ha area including parts of the Hinton Wood Products, ANC, and Foothills Forest Products management areas, and the Willmore Wilderness Area. This is the first such plan of its type, in no small part because it considered the entire land area for disturbance activities, and thus logging will be combined with prescribed fire and other (non-merchantable) mechanical treatments, as well as oil and gas activities where possible, to achieve our disturbance design.

The proposed budget will cover the completion of the plan, and the completion of a detailed FMF report on the planning process.

Funds were acquired in 2004/05 (\$146,000) from Alberta SRD to fund disturbance activities above and beyond those considered “normal”. These monies are still part of the ND budget for 06/07 as no disturbance activities occurred during 04/05.

The Hwy40 Project has progressed as anticipated during the 05/06 fiscal year, but there will remain some planning details, and the majority of the report writing for 06/07.

3. **Background Information**

The three main objectives of the original Hwy 40 Demo project were:
Evaluate the robustness of the NRV *strategy* as a package, as opposed to judging the individual pieces.

Identify and explore potential convergences and conflicts with existing policies, practices, objectives, and other economic, social, and ecological values.

Build a common understanding of the concept and practice of adopting a natural disturbance based plan.

The site chosen for this demonstration project is an area approximately 70,000 hectares in size spanning approximately equal parts of the Hinton Wood Products and ANC FMA's, and the quota area being held by Foothills Forest Products, as well as a portion of the Willmore Wilderness Area. The area is bisected by Highway 40, and runs from approximately the Berland River in the south to Pierre Greys Lakes in the north and roughly corresponds to the main foothills winter range of the A la Peche caribou herd. This location and size were chosen deliberately for several reasons:

It is highly visible and accessible. Part of the reason for doing this is to raise awareness about NRV and forest management issues. The Hwy 40 corridor offers excellent access for the public, scientists, and professionals.

There are unique and high values and risks in the area already. Caribou, old growth, and bull trout are of particular concern, and it is also the most likely entry point for Mountain Pine Beetle (currently present in the Willmore Wilderness Area). The proximity to, and vegetation of, the Willmore also poses a significant forest fire risk.

Despite these unique biological values and risks, the management of the area falls under many jurisdictions, including three FMA's, a protected area under the auspices of Alberta Community Development, oil and gas companies, trappers, and many different types of public. We intend to test whether we can define a more efficient, cross-jurisdictional "one window" planning approach to dealing with these and other values.

The three FMA's currently have plans and approvals for harvesting in the vicinity within the next 5-10 years.

Its proximity to protected areas offers the potential for some alternative management solutions perhaps not as readily available elsewhere – prescribed burning in particular.

4. **Objectives**

1. **Knowledge Creation**

N/a

1a. **Beneficiaries and Impacts**

N/a

2. Demonstration

To demonstrate how holistic disturbance planning across administrative boundaries using an NRV foundation can be implemented efficiently and effectively to meet the goals of most other SFM values.

2a. Beneficiaries and Impacts

Essentially everyone benefits from an NRV demonstration project. Regulators, practitioners, environmentalists, scientists, and the public all benefit from gaining better insight into exactly what a comprehensive NRV strategy might look like on the ground, in real time, integrating real values and issues.

3. Knowledge / Technology Transfer

To demonstrate how holistic disturbance planning across administrative boundaries using an NRV foundation can be implemented efficiently and effectively to meet the goals of most other SFM values.

3a. Beneficiaries and Impacts

See above

4. Communications and Outreach

(see 2006/07 workplan for the FMF communications and extension program).

4a. Beneficiaries and Impacts

(see above).

5. Policy Support

N/a

5a. Beneficiaries and Impacts

N/a

5. Abstract of Methodology

The Hwy40 planning team was struck early in 2004 and has progressed on schedule towards the development of a disturbance plan. The work will conclude in early 06/07 culminating in a final plan for partner submission. The FMF ND program will draft a report of the process for distribution.

6. Deliverables for 2006/07

1. Knowledge Creation

None.

2. Demonstration

Completed disturbance plan.

3. Knowledge / Technology Transfer

Final disturbance plan report.

4. Communications and Outreach

At least four Hwy40 updates.

At least two presentations.

(please see FtMF C&E workplan for other communication products from this project)

5. Policy Support

N/a

7. Timelines

Task	2006											2007		
	A	M	J	J	A	S	O	N	D	J	F	M		
Develop disturbance plan	x	x												
Report and presentations	x	x	x	x	x									

8. Site Information

This work will take place in the 70,000 ha area on the north side of the FMF as described above.

9. References

Andison, D.W. 2004. Foothills Model Forest Disturbance Dynamics Long-Term Research plan. FMF Technical Report.

10. Scientific Review

N/A at this time.

11. Improvements to Management in Forest Ecosystems

This project contributes to the development of management strategies that are in concert with the concept of ecological management, which is “an evolving approach that focuses on ecological processes and ecosystem structures and functions, while sustaining the types of benefits that people derive from the forest” (Alberta Forest Conservation Strategy, draft, July 8, 1996).

12. Amount of Money Requested From the Foothills Model Forest

\$25,000 FtMF.

13. Partner Contributions

Partner/Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
Alberta SRD	25,000	146,000				
TOTAL	25,000	146,000				

14. Proposed Payment Schedule

FMF July 1, 2006 - \$25,000

15. Subcontracted Work

Bandaloop Landscape Ecosystem Services

16. Project Management

The project will be overseen by Dr. David Andison of Bandaloo Landscape-Ecosystem Services. Administrative support will be provided by the Foothills Model Forest.

17. Additional Organisations requesting FRIAA Administered Monies

Alberta Newsprint Co. Ltd.

Hinton Wood Products

18. Other Relevant Information

The Hwy40 project represents a tremendous, and unique learning opportunity from a variety of perspectives. The FMF Communications and Extension program is partnering with the ND program towards a considerable communication and education component of the Hwy40 project, starting in 2006/07.

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal

NRV / CRV Meso-Scale GIS Tool Development

1. Prepared by

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2. Introduction

The FMF ND program has arguably compiled the most comprehensive knowledgebase of intermediate and fine scale natural pattern knowledge in all of Canada. This knowledge can now be captured within a GIS-based tool that allows existing and future disturbance scenarios to be compared to the Natural Range of Variation (NRV) for a variety of critical patterns. This is one of the first steps in fully integrating natural pattern knowledge into management planning decision making – in this case, at operational scales.

3. Background Information

Natural, historical, disturbance “event” patterns have been described in some detail by the FMF ND research in west-central Alberta,, and by an identical procedure in the province of Saskatchewan. The nature of these critical patterns has been captured within a GIS-based tool that allows comparison of existing or projected spatial patterns to the NRV in each case.

This project was initiated by Hinton Wood Products and Alberta Newsprint Co as an expanded component of the 05/06 FMF ND work plan. Since then, Mistik Management Ltd. has expressed interest in expanding the tool for use in Saskatchewan. The resources and output in this project proposal represent the cumulative effects of the overall effort to create this GIS tool. Note that this work was NOT an integral part of the 05/06 FMF ND workplan, but rather a successful output from the collaboration efforts made within it.

4. Objectives

1. Knowledge Creation

Explore in what ways, and to what degree various event designs align with natural historic patterns of disturbance.

1a. Beneficiaries and Impacts

Planners and managers and regulators are better able to explore how, in what way, and to what degree natural patterns at event scales may be emulated.

2. Demonstration

N/a

2a. Beneficiaries and Impacts

N/a

3. Knowledge / Technology Transfer

Develop a GIS-based spatial tool for comparing past, current, and future disturbance patterns with historic natural patterns.

3a. Beneficiaries and Impacts

Everyone will benefit by finally having the ability to directly compare natural range of patterns with the cultural range of patterns.

4. Communications and Outreach

Develop a GIS-based spatial tool for comparing past, current, and future disturbance patterns with historic natural patterns.

4a. Beneficiaries and Impacts

Education of professionals

5. Policy Support

Develop a GIS-based spatial tool for comparing past, current, and future disturbance patterns with historic natural patterns.

5a. Beneficiaries and Impacts

Industry and regulators will share the new understanding towards building new, more sustainable, and more attainable event-level expectations.

5. Abstract of Methodology

The spatial part of the model will be developed in ARC TOOLS platform to parallel models and tools that have already been developed at the FMF. The rules for creating and measuring each spatial component come from the ND research reports. ARC then creates the necessary spatial components in a shapefile, and the database is then imported into Excel, which does the calculations and generates the graphs. The menu system and interface are limited at this time. In this next phase of the model development, the user will have a choice of comparing NRV in west-central Alberta, or in Saskatchewan.

6. Deliverables for 2006/07

1. Knowledge Creation

Phase III of the GIS model

2. Demonstration

N/a.

3. Knowledge / Technology Transfer

Phase III of the GIS model

4. Communications and Outreach

Phase III of the GIS model

Presentations / demonstrations / workshops to staff as required

5. Policy Support
Phase III of the GIS model

7. Timelines

Task	2006									2007		
	A	M	J	J	A	S	O	N	D	J	F	M
Continued model improvement / additions	x	x	x	x	x	x	x					
Training & presentations	x	x	x	x	x	x	x	x				

8. Site Information

This work will take place in Alberta and Saskatchewan.

9. References

None.

10. Scientific Review

In terms of the research as model input, the methods and some of the results have been published and/or reviewed by experts in their field.

11. Improvements to Management in Forest Ecosystems

This project contributes to the development of management strategies that are in concert with the concept of ecological management, which is “an evolving approach that focuses on ecological processes and ecosystem structures and functions, while sustaining the types of benefits that people derive from the forest” (Alberta Forest Conservation Strategy, draft, July 8, 1996).

12. Amount of Money Requested From the Foothills Model Forest

\$40,000 Foothills Model Forest

13. Partner Contributions

Partner/Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
Foothills Model Forest	40,000					
TOTAL	40,000					

14. Proposed Payment Schedule

April 1, 2005 - \$0 (these monies have already been spent in the latter half of 2005/06).

15. Subcontracted Work

The Forestry Corp is responsible for building the tool.
Bandaloop will oversee the project and provide interpretations of the NRV figures and calculations on behalf of the FMF.

16. Project Management

The project will be overseen by Dr. David Andison of Bandaloo Landscape-Ecosystem Services. Administrative support will be provided by the Foothills Model Forest.

17. Additional Organisations requesting FRIAA Administered Monies

Hinton Wood Products

18. Other Relevant Information

None.

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal Hwy40 Demo Project Adaptive Monitoring

1. Prepared by

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2. Introduction

Recall that the three main objectives of the original Hwy 40 Demo project are to: Evaluate the robustness of the NRV *strategy* as a package, as opposed to judging the individual pieces.

Identify and explore potential convergences and conflicts with existing policies, practices, objectives, and other economic, social, and ecological values.

Build a common understanding of the concept and practice of adopting a natural disturbance based plan.

It would be difficult to achieve these goals without developing a comprehensive monitoring program for the Hwy40 project linking a coarse filter-based plan to specific fine filter predictions and outcomes. For example, does using an NRV foundation truly provide for viable biological solutions for specific ecological values (such as woodland caribou and grizzly bear)? Also, keep in mind that the Hwy40 project will produce a series of disturbance plans involving both harvesting and prescribed fire that are unique in both scope and size. The effect of the outcome on social and economic values, as well as biological ones, is of great interest to everyone. Even without the presence of the Hwy40 project plan, the geographic location of the Hwy40 demo site (a large piece of fairly contiguous old foothills forest) represents significant ecological value(s) that are well worth monitoring.

The other compelling reason to monitor in the Hwy40 area is as a vehicle for demonstrating how the many other research activities at the FMF may be integrated into a real world situation to form a coherent integrated whole.

This “project” is only one of facilitation to ensure the agencies and individuals that wish to conduct adaptive research activities in the Hwy40 area are given full access to available resources, and - potentially - seed money for external funding.

3. Background Information

So far, at least ten potential research partners / issues for Hwy40 monitoring have been explored and developed to varying degrees:

Woodland caribou. A small portion of the A la Pêche caribou herd reside in the vicinity of parts of the proposed disturbance activity. Predictions of herd size will be made using available population models. Animals will be collared and monitored by FMF staff or contractors.

Grizzly bear. The FMF Grizzly bear program has produced a number of tools that have been / will be applied to the Hwy40 area. A number of animals in the vicinity are already being monitored through the FMF program.

Large / Coarse woody debris. Through the Fish and Watershed program at the FMF, we will track LWD recruitment in riparian zones over time.

Social / Institutional values. The CFS social researchers that have been working with the FMF for several years now are interested in conducting a study on the views / opinions of both the public and professionals in response to the Hwy40 plan.

Soils. University of Saskatchewan is interested in examining the impact of various disturbance treatments in riparian vs upland vs non-forested areas.

Vegetation. Alberta Research Council is interested in looking at how higher and lower vegetation communities compare post –treatment in both forested and non-forested areas.

Avian. Researchers at the CFS are interested in the response of bird communities to the various combinations of treatments in riparian zones and non-forested areas.

Fish. A combination of FMF Fish and Watershed program, and the ACA are being sought to develop reasonable fish monitoring systems.

4. Objectives

1. Knowledge Creation

N/a

1a. Beneficiaries and Impacts

N/a

2. Demonstration

N/a

2a. Beneficiaries and Impacts

N/a

3. Knowledge / Technology Transfer

N/a

3a. Beneficiaries and Impacts

N/a

4. Communications and Outreach

Promote and encourage the Hwy40 site as a gathering place for innovative adaptive monitoring and high quality research.

4a. Beneficiaries and Impacts

Researchers will benefit from a unique opportunity to study this site, and to have input into the plans. Everyone will benefit from the answers to their questions.

5. Policy Support

N/a

5a. Beneficiaries and Impacts

N/a

5. Abstract of Methodology

The Hwy40 project team complies and prioritizes a list of priority issues for the Hwy40 area. The Hwy40 project lead (Andison) is responsible for identifying and proposing to the appropriate qualified individuals / organizations the opportunities for collaboration. When such agencies are unavailable, then it is necessary to both develop and attract the required resources (people, funds, or other support) to allow the monitoring to take place. For example, in the absence of a project “lead”, Andison has been active in pursuing funding support for woodland caribou monitoring, with the intent on passing the scientific and technical aspects of this project on to a more qualified individual or team. The highest priority projects are largely reflected in the list above.

Those efforts so far reveal at three distinct classes of monitoring projects, each requiring its own strategy.

In-house FMF monitoring involving existing FMF programs with funding and support largely in place (e.g., the grizzly bear program). The strategy in such cases will be to explore all possible collaboration opportunities with the respective program leads, provide researchers with relevant maps and information, and facilitate their individual needs as much as possible.

In-house FMF monitoring for programs that do not exist (e.g. woodland caribou). This will be the most time-consuming and challenging aspects of Hwy40 monitoring since the work will largely be created from the ground up. Caribou monitoring is perhaps the highest priority for the study area, but the capacity for taking on the monitoring of caribou here does not yet exist within any known partner organizations. This will require a combination of borrowing existing expertise and experience (from the Grizzly bear program, SRD Fish and Wildlife, U. of A, etc) and developing our own capacity using a combination of contract work and “piggy-backing” with other large mammal studies in Alberta.

External monitoring and research projects (such as the soils and avian studies).

These projects will all require significant external funding. Identifying At the same time, a Hwy40 “prospectus” will be developed that will act as an introduction to the future Hwy40 disturbance activities, and an invitation for proposals to any other researchers interested in being involved. The Hwy40 project team will develop and rank research and monitoring priorities consistent with FMF program areas. The criteria for developing project rankings will be developed cooperatively between the Hwy40 project team and the FMF. The ND team, the Hwy40 project team, and the FMF overall will also be agreeing on a standard system of initial support for such efforts, which may include, but not be limited to financial “seed money”, administrative support, GIS services, and access to motivated industrial partners (which are necessary for most national and provincial funding agencies).

Establish a Hwy40 monitoring fund to function both as potential seed money for partners, but also to fund the activities of persons facilitating collaborative research (see next point for example).

Assuming these efforts are successful, it may be necessary to engage a full time project manager dedicated to collaborating with, and facilitate between, the scientists, field staff, industrial partners, technical and administrative needs, and communications. Ideally, this person will have specific expertise in working with woodland caribou to allow them to take on monitoring duties as well. The decision of who, how and when to initiate this step will be determined by the Hwy40 project team and the FMF.

This project requires a long-term commitment (3-5 years). This first year will be spent building internal capacity (to allow the other components of the ND program to continue), building partnerships, applying for, and helping others to apply for funds, and establishing some pre-treatment benchmarks.

6. Deliverables for 2006/07

1. Knowledge Creation

Establish partnerships with research agencies and individuals to conduct sound science-based adaptive monitoring projects on various aspects of the Hwy40 disturbance plan.

2. Demonstration

None

3. Knowledge / Technology Transfer

Summary of adaptive monitoring and planning activities and partners.

4. Communications and Outreach

Apply, or provide the necessary assistance to apply for a large number of external grants and funds.

5. Policy Support

N/A

7. Timelines

Task	2006									2007		
	A	M	J	J	A	S	O	N	D	J	F	M
Seek partnerships and funding	x	x	x	x	x	x	x	x	x	x	x	x
Facilitate research and monitoring activities	x	x	x	x	x	x	x	x	x	x	x	x

8. Site Information

This work will take place in the 70,000 ha area on the north side of the FMF as described above.

- 9. References**
Andison, D.W. 2004. Foothills Model Forest Disturbance Dynamics Long-Term Research plan. FMF Technical Report.
- 10. Scientific Review**
N/A to this project, but to be provided by each individual monitoring element.
- 11. Improvements to Management in Forest Ecosystems**
This project contributes to the development of management strategies that are in concert with the concept of ecological management, which is “an evolving approach that focuses on ecological processes and ecosystem structures and functions, while sustaining the types of benefits that people derive from the forest” (Alberta Forest Conservation Strategy, draft, July 8, 1996).
- 12. Amount of Money Requested From the Foothills Model Forest**
\$105,500 FMF.
- 13. Partner Contributions**
This represents the total partner funding commitment to date to establish a Hwy40 monitoring fund. To date, the project has been awarded \$180,000 over three years from OPEN FRIAA. Application has been made for an additional \$180,000.

Partner/Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
Alberta SRD	105,500	180,000 (3 yrs)	180,000			
TOTAL	105,500	180,000 (3 yrs)	180,000			

- 14. Proposed Payment Schedule**
FMF July 1, 2006 - \$105,500
- 15. Subcontracted Work**
Bandaloo Landscape Ecosystem Services
- 16. Project Management**
At this point, the project will be overseen, until other expertise is obtained, by Dr. David Andison of Bandaloo Landscape-Ecosystem Services. Administrative support will be provided by the Foothills Model Forest.
- 17. Additional Organisations requesting FRIAA Administered Monies**
Alberta Newsprint Co. Ltd.
Hinton Wood Products
- 18. Other Relevant Information**
None.

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal Upland CWD Dynamics

1. Prepared by

Name: Dr. David Andison
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2. Introduction

Post disturbance patterns are at least as important as those of the disturbance itself. This is particularly true of fire vs. logging where the differences in the disturbance process itself means the ultimate impacts or outcomes may be more relevant. Two of the more relevant post-disturbance issues are 1) the fall down rates of dead trees, and 2) the decay rates of post-fire woody debris (relative to that of post-logging for example).

Over the last three years, the ND program supported a similar project looking at woody debris in riparian zones using dendro-ecological (ie, tree ring) methods. That project produced a starting point for developing decay rate models for riparian woody debris. However, the only way to expand this work to landscape scales is to include upland sites in a similar study. This study is thus a site-specific extension of the ND program riparian LWD study.

Note that this project will only proceed if matching funds are successfully acquired by the lead researcher at UBC. Also note that considerable efficiencies will be gained by combining this project with the one to follow on LWD chronosequence.

3. Background Information

Although LWD studies are common across Canada, the results can rarely be extrapolated to other landscapes. Each region tends to have a unique combination of species, disturbance regime, and climate. No one has studied decay rates of dead wood in the foothills of Alberta.

4. Objectives

1. Knowledge Creation

Ultimately, to understand the patterns and processes of LWD creation in upland sites in the foothills of Alberta.

1a. Beneficiaries and Impacts

Greater understanding is the first step towards more defensible and consistent decision-making, and moves science forward to new and better questions.

2. Demonstration

None

2a. Beneficiaries and Impacts

None

3. Knowledge / Technology Transfer

N/a

3a. Beneficiaries and Impacts

N/a

4. Communications and Outreach

Make research results available in a variety of forms and mechanisms to maximize audience and exposure.

4a. Beneficiaries and Impacts

Everyone.

5. Policy Support

Potentially, define new types of management options to allow for natural levels of LWD.

5a. Beneficiaries and Impacts

Industry and regulators will share the new understanding towards building new, more sustainable management tactics.

5. Abstract of Methodology

The methodology of the riparian LWD study is as follows: Subjective field selections for 12 sample sites were taken across all natural sub-regions along large river systems (targeting those areas that we know have been impacted by other, small scale disturbance activity). River reaches were walked to locate downed and live and dead adjacent trees. In addition, the terrestrial zone adjacent to the rivers were walked to look for any physical evidence of disturbance (stumps, scars, damage, etc). Live trees were randomly selected for evidence of “release” (indicating adjacent tree death). Selected trees within or adjacent to the rivers were cored and/or a complete cookie taken (depending on within-stream “function” and location of the tree or bole at the time). Finally, approximately 20 other live trees per site were sampled to generate a local chronology. Tree samples are being sanded, and tree-ring widths and/or scar-dates recorded using standard tree-ring methodologies. A master chronology will be developed (if possible) for the area, and the distribution and dates of small-scale disturbances noted.

These same study sites will be used to collect samples from associated upland areas in much the same way.

6. Deliverables for 2006/07

1. Knowledge Creation

Full proposal and first year of field sampling

- 2. **Demonstration**
N/A
- 3. **Knowledge / Technology Transfer**
N/A
- 4. **Communications and Outreach**
N/A
- 5. **Policy Support**
N/A

7. Timelines

Task	2006									2007		
	A	M	J	J	A	S	O	N	D	J	F	M
Fieldwork		X	X	X	X	X						
Lab prep and analysis of samples				X	X	X	X	X	X			

- 8. **Site Information**
This work will take place in the Rocky Mountain and Foothills Natural Regions of Alberta.
- 9. **References**
Daniels, L.D. and S.R.E. Powell. 2003. Dendroecological Analysis of Large Woody Debris in Riparian Zones of Foothills Landscapes of Alberta. Pilot Study Report. Department of Geography, UBC, Vancouver, BC.
- 10. **Scientific Review**
Standard dendrochronological methods will be applied consistent with the literature. If successful, this project will become a graduate thesis for one graduate student (meaning that at least four well-qualified academics will be overseeing the project), and result in at least one publication in a refereed journal.
- 11. **Improvements to Management in Forest Ecosystems**
This project contributes to the development of management strategies that are in concert with the concept of ecological management, which is “an evolving approach that focuses on ecological processes and ecosystem structures and functions, while sustaining the types of benefits that people derive from the forest” (Alberta Forest Conservation Strategy, draft, July 8, 1996).
- 12. **Amount of Money Requested From the Foothills Model Forest**
\$25,000 Foothills Model Forest (pending external funding)

13. Partner Contributions

Partner/Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
Foothills Model Forest	25,000		25,000	10,000		
TOTAL	25,000		25,000	10,000		

14. Proposed Payment Schedule

April 1, 2006 - \$25,000.

15. Subcontracted Work

University of BC, Department of Geography will be carrying out the work. Bandalooop will oversee the pilot study on behalf of the FMF.

16. Project Management

The project will be overseen by Dr. David Andison of Bandalooop Landscape-Ecosystem Services. Administrative support will be provided by the Foothills Model Forest.

17. Additional Organisations requesting FRIAA Administered Monies

Hinton Wood Products
Alberta Newsprint Co.

18. Other Relevant Information

None

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal LWD Chronosequence Study

1. Prepared by

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2. Introduction

Post disturbance patterns are at least as important as those of the disturbance itself. This is particularly true of fire vs. logging where the differences in the disturbance process itself means the ultimate impacts or outcomes may be more relevant. Two of the more relevant post-disturbance issues are 1) the fall down rates of dead trees, and 2) the decay rates of post-fire woody debris (relative to that of post-logging for example).

Over the last three years, the ND program supported a project looking at woody debris in riparian zones using dendro-ecological (ie, tree ring) methods. That project produced a starting point for developing decay rate models for riparian woody debris. However, the study was limited to sites with old forest, thus providing only one point in time for woody debris patterns. This study will expand on the previous work to similar riparian zones in younger forests.

Note that this project will only proceed if matching funds are successfully acquired by the lead researcher at UBC. Also, there will be considerable efficiencies gained by combining this project with the previous one on upland LWD dynamics.

3. Background Information

Although LWD studies are common across Canada, the results can rarely be extrapolated to other landscapes. Each region tends to have a unique combination of species, disturbance regime, and climate. No one has studied decay rates of dead wood in the foothills of Alberta.

The methods and sampling design for working on woody debris in and near streams has already been developed by the UBC tree ring lab. In other words, technical or methodological details will not be an issue with this study as they were in the first.

4. Objectives

1. Knowledge Creation

Ultimately, to understand the patterns and processes of LWD creation in all riparian areas of the Alberta foothills.

1a. Beneficiaries and Impacts

Greater understanding is the first step towards more defensible and consistent decision-making, and moves science forward to new and better questions.

2. Demonstration

None

2a. Beneficiaries and Impacts

None

3. Knowledge / Technology Transfer

N/a

3a. Beneficiaries and Impacts

N/a

4. Communications and Outreach

Make research results available in a variety of forms and mechanisms to maximize audience and exposure.

4a. Beneficiaries and Impacts

Everyone.

5. Policy Support

Potentially, define new types of management options to allow for natural levels of LWD.

5a. Beneficiaries and Impacts

Industry and regulators will share the new understanding towards building new, more sustainable management tactics.

5. Abstract of Methodology

Subjective field selections for at least 20 additional sample sites will be taken across all natural sub-regions along large river systems (targeting those areas that we know have been impacted by other, small scale disturbance activity). Ten samples will be taken in stands aged 60-100, and ten more in stands aged 30-60. More samples will be taken as time and resources permit, and also as sites of appropriate stand age are available. River reaches will be walked to locate downed and live and dead adjacent trees. In addition, the terrestrial zone adjacent to the rivers will be walked to look for any physical evidence of disturbance (stumps, scars, damage, etc). Live trees will be randomly selected for evidence of “release” (indicating adjacent tree death). Selected trees within or adjacent to the rivers will be cored and/or a complete cookie taken (depending on within-stream “function” and location of the tree or bole at the time). Finally, approximately 20 other live trees per site will be sampled to generate a local chronology. Tree samples will be sanded, and tree-ring widths and/or scar-dates recorded using

standard tree-ring methodologies. The existing master chronology will be verified and updated for the area, and the distribution and dates of small-scale disturbances noted.

6. Deliverables for 2006/07

1. Knowledge Creation

Full proposal and first year of field sampling

2. Demonstration

N/a.

3. Knowledge / Technology Transfer

N/a

4. Communications and Outreach

N/a

5. Policy Support

N/a

7. Timelines

Task	2006									2007		
	A	M	J	J	A	S	O	N	D	J	F	M
Fieldwork		x	x	x	x	x						
Lab prep and analysis of samples				x	x	x	x	x	x			

8. Site Information

This work will take place in the Rocky Mountain and Foothills Natural Regions of Alberta.

9. References

Daniels, L.D. and S.R.E. Powell. 2003. Dendroecological Analysis of Large Woody Debris in Riparian Zones of Foothills Landscapes of Alberta. Pilot Study Report. Department of Geography, UBC, Vancouver, BC.

10. Scientific Review

Standard dendrochronological methods will be applied consistent with the literature. If successful, this project will become a graduate thesis for one graduate student (meaning that at least four well-qualified academics will be overseeing the project), and result in at least one publication in a refereed journal.

11. Improvements to Management in Forest Ecosystems

This project contributes to the development of management strategies that are in concert with the concept of ecological management, which is “an evolving approach that focuses on ecological processes and ecosystem structures and

functions, while sustaining the types of benefits that people derive from the forest” (Alberta Forest Conservation Strategy, draft, July 8, 1996).

12. Amount of Money Requested From the Foothills Model Forest

\$35,000 Foothills Model Forest (pending external funding)

13. Partner Contributions

Partner/Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
Foothills Model Forest	35,000		35,000	10,000		
TOTAL	35,000		35,000	10,000		

14. Proposed Payment Schedule

April 1, 2006 - \$35,000.

15. Subcontracted Work

University of BC, Department of Geography will be carrying out the work. Bandaloop will oversee the pilot study on behalf of the FMF.

16. Project Management

The project will be overseen by Dr. David Andison of Bandaloop Landscape-Ecosystem Services. Administrative support will be provided by the Foothills Model Forest.

17. Additional Organisations requesting FRIAA Administered Monies

Hinton Wood Products
Alberta Newsprint Co.

18. Other Relevant Information

None.

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal Expanded LANDMINE Landscape Simulation Exercise

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2. Introduction

The natural dynamics of very large areas are the most difficult to quantify. Fire control and cultural disturbance activities have created an unnatural landscape pattern, and no historical information in the form of maps or non-spatial data are available prior to industrial activity.

The only way to capture landscape-scale dynamics is spatial simulation modeling. In its simplest form, spatial landscape modeling generates disturbance sizes and shapes in a digital environment using vegetation type, age, and landform data as the base. The model also approximates the historical variation in disturbance rates. Essentially, the model creates multiple possible landscape scenes based on historical information on disturbance sizes and frequencies.

The output is a combination of visual scenes, non-spatial summaries, and spatial summaries for each timestep or landscape snapshot. The specific form of the output depends on the objectives. In this case, two series of simulations have already been completed on the West Fraser FMA, and one on the ANC FMA. These simulations were at the very coarsest scales and involved very general non-spatial output only. This work will repeat the modeling work done earlier, but at slightly smaller scales of resolution, as well as capture some basic spatial summaries.

3. Background Information

The LANDMINE model has already been calibrated to the FMF landscape, and has been run twice in various modes on the West Fraser FMA.

4. Objectives

1. Knowledge Creation

To understand and quantify how known fire regime variation manifests itself over large areas and long timeframes (decades to centuries).

1a. Beneficiaries and Impacts

Greater understanding is the first step towards more defensible and consistent decision-making, and moves science forward to new and better questions.

2. Demonstration

None

2a. Beneficiaries and Impacts

None

3. Knowledge / Technology Transfer

N/a

3a. Beneficiaries and Impacts

N/a

4. Communications and Outreach

Make research results available in a variety of forms and mechanisms to maximize audience and exposure.

4a. Beneficiaries and Impacts

Everyone.

5. Policy Support

To demonstrate to what degree, and in what way landscape patterns are naturally, historically variable.

5a. Beneficiaries and Impacts

Industry and regulators will share the new understanding towards building new, more sustainable management tactics.

5. Abstract of Methodology

The details of the last series of simulation runs will be reviewed. A list of new requirements will be generated for a) the raw data, b) the classifications of either age or vegetation, 3) the spatial units used, and 4) the nature of the output. If the model requires new code or links to accommodate any new outputs, those will be written, or obtained as necessary. The raw data will be re-generated by the companies involved using any new or updated classification rules or additional data layers. The model will be run 100 times, and the non-spatial and spatial results summarized and presented to the team for input. This process may need to be repeated more than once to fine tune the input and output parameters to meet the needs of the partners. The final output will be summarized and a final report drafted detailing the methods and interpreting the results.

6. Deliverables for 2006/07

1. Knowledge Creation

Simulation output and report on an expanded landscape disturbance dynamics exercise

2. Demonstration

N/A

3. Knowledge / Technology Transfer

N/A

4. Communications and Outreach

N/A

5. Policy Support

N/A

7. Timelines

Task	2006										2007		
	A	M	J	J	A	S	O	N	D	J	F	M	
Scoping new model parameters / data	x	x	x	x	x	x							
Simulations				x	x	x	x	x					
Report Writing									x	x	x	x	

8. Site Information

This work will take place in the Rocky Mountain and Foothills Natural Regions of Alberta.

9. References

Andison, D.W. 1998. Temporal patterns of age class distribution in the Alberta foothills. The Forestry Chronicle.

10. Scientific Review

The model and results have already been published (see Andison 1998).

11. Improvements to Management in Forest Ecosystems

This project contributes to the development of management strategies that are in concert with the concept of ecological management, which is “an evolving approach that focuses on ecological processes and ecosystem structures and functions, while sustaining the types of benefits that people derive from the forest” (Alberta Forest Conservation Strategy, draft, July 8, 1996).

12. Amount of Money Requested From the Foothills Model Forest

\$30,000 Foothills Model Forest

13. Partner Contributions

Partner/Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
Foothills Model Forest	30,000					
TOTAL	30,000					

14. Proposed Payment Schedule

July 1, 2006 - \$30,000.

15. Subcontracted Work

Bandaloo will undertake the modeling and report writing.

16. Project Management

The project will be overseen by Dr. David Andison of Bandaloo Landscape-Ecosystem Services. Administrative support will be provided by the Foothills Model Forest.

17. Additional Organisations requesting FRIAA Administered Monies

Hinton Wood Products

18. Other Relevant Information

None

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal

Aboriginal Involvement Program

1. Prepared by

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2. Introduction

The Aboriginal Involvement Program (AIP) has been operating since 2002. Since then, three main program areas have been initiated under this umbrella: (1) a multi-community traditional cultural study (TCS), (2) an industry – community referral process, and (3) board inclusion of three Aboriginal community representatives. Out of the estimated seventeen Aboriginal/Indigenous communities with historical ties to the FtMF land base, five are formally partnered with the FtMF. They are all active in one or more of the three program areas mentioned previously. Future work with the AIP will involve implementing each of the three main program areas identified here.

3. Background Information

Currently the TCS program is engaged in active documentation of the traditional ecological and cultural knowledge (TEK) of three communities (Asinewuche Winewak, Nakcowinewak, Foothills Ojibway) with two more communities ready to sign agreements when funding is available. Over 350 significant community cultural sites have been documented. Concurrently, the industry referral process is ready in a pilot format with the TCS database being primed for utilization by West Fraser, for their up-coming annual harvest plan. Board representation of the Aboriginal community will change this year, with the communities rotating on an agreed upon cycle to give each type of community (Status First Nation, Non-status First Nation, Metis) opportunities therein.

4. Objectives

1. Knowledge Creation

TEK documentation and utilization in sustainable forest management has been a project in the making since the 1970's with the Berger Commission in the NWT. Since this time, a proliferation of TEK studies have been initiated by governments, communities, and industry. The FtMF is now entering into this arena with an innovative approach that is addressing pressing concerns with past studies, namely quality of data, its subsequent utility in resource management processes, and issues of overlapping interests on the land base. Specifically, TEK is being documented with the latest technology in a standardized format across five different communities over the FtMF land base. Coupled with this process is

an industry referral process whereby, due to the standardized format of data documentation, the TEK from each community will be able to ‘work’ together to aid in land use decisions. Thus, the above issues of surrounding TEK documentation are being worked through proactively.

1a. Beneficiaries and Impacts

The immediate audience for the AIP are the program partners: Foothills Ojibway Society (FOS), Aseniwuche Winewak (AWN), Nakcowinewak (NN), Alexis Nakota Sioux First Nation (ANSN), Sunchild First Nation (SUN), Alberta Sustainable Resource Development, Alberta Aboriginal And Northern Affairs, Canadian Forest Service, West Fraser Mills Ltd., Jasper National Park, PetroCanada, Talisman, and the Canadian Association of Petroleum Producers. Beyond this government(s), both provincial and federal, industry, and the larger Aboriginal/Indigenous community have much to learn and possibly adopt in their own specific initiatives that may be related to the work being accomplished here. These may deal with consultation, TEK research methodologies, community liaisons processes, and relationship building between Aboriginal communities, industry, and government. The measurable benefits of the AIP will be documentation of each communities’ TEK, a working referral process, and continued board representation of the Aboriginal community. These are the most pertinent benefits that have been identified:

Benefit	Timeline
Completed TCS, documentation and storage of communities’ TEK	FOS (Fall 2006) AWN (Fall 2006) NN (Spring 2007) ANSN (Spring 2007) SUN (Spring 2007)
Functional referral process	Pilot run (Dec. 2005) Semi-loaded with FOS and AWN TEK (Fall 2006) Fully loaded and functional (Summer 2007)
Continued Board representation	Non-status board member change (Spring 2006) Status board member change (Spring 2006) Securing Metis board member (Spring 2006)

Broadly speaking, by executing confidently in these program areas, the partners involved in the AIP will each receive positive benefits. For communities, protection and respect for their TEK and connections to the land base will be more recognized and identifiable. For industry, efficient and legitimized operations on the land base, respectful of the Aboriginal/Indigenous community will be attainable. For government, proactive and responsive policy development will be assisted by demonstrable program implementation.

2. Demonstration

As stated above many issues with documentation of TEK have been raised. The three main issues addressed by demonstration in the AIP deal with data quality, utility of the data, and overlapping interests on the land base. In designing the TCS to be standardized and implemented with the full benefit of the FtMF expertise in GIS/GPS technologies across different communities sharing a common land base, data quality and overlapping interests are dealt with. In terms of utilizing the data, by concurrently designing and testing the referral process, the TEK documented in the TCS will ‘work’ efficiently broadening the role for the Aboriginal/Indigenous community in land use decision making processes. Importantly, this will now be based on known information in a modern format.

2a. Beneficiaries and Impacts

Beneficiary	Impact	Justification
Aboriginal/Indigenous Community	TEK documentation Research training Relationship building	Positive, capable involvement in land use decision making and opportunities
Industry	Expanded knowledge of land use interests Efficient means to contact and liase with Aboriginal/Indigenous communities Increased stability of land use operations	Respectful, efficient, and recognized process for land use operations
Government	Proactive policy development Innovative program development	Alternative approach to land use consultation

3. Knowledge / Technology Transfer

In recent weeks, after the last few years in development, the AIP has begun its knowledge transfer process. Namely, government and Aboriginal communities have requested and received presentations on the AIP. As pilot processes, the TCS and referral mechanism hold much promise for influencing TEK research and government policy. Importantly, while knowledge transfer must be accounted for as having a high priority, completing the TCS with the current partners and establishing the referral process are the main foci of the AIP. Restated, numerous other Aboriginal/Indigenous communities and land use managers have directly made requests for the ‘process’ to be transferred to jurisdictions outside the FtMF as soon as possible. In order to do this, the AIP must fulfill its program implementation as it stands now.

3a. Beneficiaries and Impacts

Beneficiary	Impact	Timeline	Justification
Other Aboriginal/Indigenous Communities	Adoption of standardized TEK documentation methodologies Acquisition and training in GIS/GPS technologies 'Roadmap' for engaging in positive relationship building	and 2. FOS on-going, AWN on-going, NN on-going, ANSN and SUN Dec. '05 – Spring '06 whenever funding comes available 3. Will occur as referral process proceeds beginning in Dec. '05 thru Fall 2007	Identification of innovative new approaches within the FtMF land base for possible adoption regionally, nationally, internationally
Industry	Identification and involvement in a pilot land use decision making process Building positive relationships with Aboriginal/indigenous communities	Dec. '05 pilot run of referral process Will occur as referral process proceeds beginning in Dec. '05 thru Fall 2007	Positive, working example of land use operations respectful to Aboriginal/indigenous communities
Government	Proactive policy development Innovative program development	Has been on-going Funding commitment to begin Dec. '05 thru Fall 2007	Alternative, 'working' approach to land use consultation and program development

4. Communications and Outreach

Increasingly organizations struggle to reach their target audiences and constituencies. The AIP is addressing this issue for the FtMF with respect to Aboriginal issues and constituencies. By increasing AIP exposure in community, governmental and industrial spheres through solid research and program development in the arena of land use decision making, a unique profile for the AIP is forming. In terms of broadening its reach, the AIP must redevelop its communications portfolio: website, brochures, and presentations.

4a. Beneficiaries and Impacts

Beneficiary	Impact	Justification
Aboriginal/Indigenous Communities	Up to date information and exposure for internal community decision making dealing with AIP participation Broadening appeal of program to incumbent community partners in gov't and industry	The current partnered communities must have the proper tools to communicate their activities to their leadership, constituencies, and

	Boosting morale and presence of AIP partnered staff	potential supporters of the AIP
Industry	Up to date information and exposure for internal decision making dealing with AIP participation Broadening appeal of program to partners in gov't and industry Providing a real world item pertaining to social responsibility programs	Further legitimizing current industry partner involvement and providing opportunity for other partners to support the AIP
Government	Up to date information and exposure for internal decision making dealing with AIP participation Broadening appeal of program to partners in gov't and industry Innovative policy development	Further legitimizing current involvement and providing opportunity for other partners to support the AIP

5. Policy Support

The government of Alberta announced its First Nations consultation strategy in the spring 2005. It identified utilizing TEK studies as essential building blocks of an overall consultation strategy. The AIP is positioned powerfully here, having developed its innovative approach to TEK documentation for the past several years in partnership with communities, government, and industry. Within any overall policy development, the mechanics of consultation will have to take into account TEK studies. By standardizing, computerizing, and centralizing an alternative TEK research system, with buy-in from communities, government, and industry, policy development in this area is being proactively engaged with. Importantly, the two main units of the provincial government developing policy in this area (Alberta Sustainable Resource Development and Alberta Aboriginal And Northern Affairs) and a leader in the federal side of the policy equation, the Parks system, vis-à-vis Jasper National Park, are partners in the AIP. Also by continuing to partner with the Aboriginal/Indigenous community, the FtMF is assisting communities with being geared to proactive policy develop with government and industry.

5a. Beneficiaries and Impacts

Beneficiary	Impact	Justification
Aboriginal/ Indigenous Communities	Involvement in land use policy and decision making mechanisms Increasing capacity for policy development and responsibility	The current partnered communities must have the proper tools to communicate their activities to their leadership, constituencies, and potential supporters of the AIP
Industry	Co-developing substantive policy pertaining to land use operations as they affect the Aboriginal/Indigenous community Good opportunity for social responsibility programming	Innovative leadership in the area of Aboriginal/ industry partnerships
Government	Innovative policy development Working examples of policy adherence Playing a lead role in Aboriginal – industry – government relations	Meeting legal and ethical obligations in concert with affected parties minimizing conflicts and implementation problems
Public	Example of good relations between Aboriginal – industry – government Mitigation of potential conflict on the land base Opportunity for education and reconciliation between non-Aboriginal and Aboriginal peoples	Peaceful co- existence and mutual benefit of the land base

5. Abstract of Methodology

The methodology used for the TCS, referral process, and relationship building are all different. The TCS combines documentation of TEK with digital equipment, translation and transcription techniques, and multi-layer GIS database construction. The referral process harnesses the knowledge created by this techniques, but harnesses it for land use decision making processes. Throughout this whole process political respect and room for each of the partners must and has been honoured. The central motive of respect permeates all interactions.

6. Deliverables

1. Knowledge Creation

Deliverables	Timeline	Notes
FOS TCS complete and data stored	November 2006	Half of their elders have been interviewed; 350 sites documented as loaded; 2 nd yr work plan is being set and 2 nd yr. work beginning
AWN TCS complete and data stored	Fall 200	TCS coordinator hired and trained; migration of data is commencing
NN TCS complete and data stored	Spring 2007	TCS coordinator hired and trained; elder interviews to begin Dec. 2005; will load data as it is generated
ANSN TCS complete and data stored	Spring 2007	TCS staff is hired; ready to begin data migration and fill in FtMF TCS data; Need to secure funding for agreement approval
SUN TCS complete and data stored	Spring 2007	TCS staff is hired; ready to begin data migration and fill in FtMF TCS data; Need to secure funding for agreement

		approval
6. Functional referral process	Pilot run (Dec. 2005) Semi-loaded with FOS and AWN TEK (Fall 2006) Fully loaded and functional (Summer 2007)	Specific buffer zones need to be agreed upon for sites; Preliminary database functions have been prepared; will tweak functionality with testing of the West Fraser Annual Harvest plan
7. Continued Board representation	Non-status board member change (Spring 2006) Status board member change (Spring 2006) Securing Metis board member (Spring 2006)	Proposed changes: the FOS will be the non-status board representative, Sunchild will be the status board representative, and a local Metis representative will be brought on board

2. Demonstration

Deliverables	Timeline
Aboriginal/Indigenous Community TEK documentation Research training Relationship building	As per deliverables One spring GIS/GPS training session with the communities will be set-up; one spring GIS database training will be set up Continued involvement with the advisory committee (1 st meeting Jan. 18, '06); there are 4 meeting per year
Industry Expanded knowledge of land use interests Efficient means to contact and liase with Aboriginal/Indig. Communities Increased stability of land use operations	1 st example of this occurring will be Dec. '05 with West Fraser testing of database and 3. will occur on an on-going basis as the advisory committee meets and the referral process functions
Government Proactive policy	The AIP has been featured as an 'alternative consultation model' by AAND (Oct. '05)

development Innovative program development	AAND is working closely to fund the AIP with a proposal to be submitted by Dec. 9, 2005 for a multi-year commitment
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3. Knowledge / Technology Transfer

See table 3a above.

4. Communications and Outreach

Deliverables	Timeline	Notes
Website redevelopment	Planning Dec. – Jan.; Adoption Feb. 2006	Working with the communications department for these items
Brochure package	Planning Dec. – Jan.; Adoption Feb. 2006	
Presentation	Oct. 1 st Redesign completed; Dec. '05 - inclusion of referral process pilot	First redesign completed; additional versions to be added as TCS and referral process proceeds

5. Policy Support

Policy deliverables cannot be estimated as each partner (community, government, and industry) sets their own timeline and agenda here. However, by executing solidly on the deliverable outlined here it is intended that policy will be affected.

7. Timelines

Task	2006									2007		
	A	M	J	J	A	S	O	N	D	J	F	M
AAND proposal (Dec. '05)												
Referral process review (Dec. '05)												
Run referral process pilot (Dec.'05)												
Sign ANSN (Dec. '05 -)												
Sign SUN (Dec. '05 -)												
Spring TCS training (Feb.'06)												
Spring GIS training (Feb.'06)												
Schedule Advisory committee mtg's (Jan. 18, '06)												
Finalize board changes (Jan. 18, '06)												
Website preparation (by Feb. '06)												
Brochure preparation (by Feb. '06)												
AIP presentations (as needed)	x	x	x	x	x	x	x	x	x	x	x	x
Partnership/MOU with Peace												

Keeping Commission (Treaty 6 group) (by Feb. '06)												
Community specific TCS progress (detailed work plans are monitored for each community)	x	x	x	x	x	x	x	x	x	x	x	x

8. Site Information
N/a

9. References
N/a

10. Scientific Review
N/a

11. Improvements to Management in Forest Ecosystems
 With the TEK of the partnered Aboriginal communities documented once the TCS process is complete and a working referral process functioning, management of the FtMF land base will be able to take into account and work with Aboriginal values on the landscape. Initially, this will entail cultural site disturbance mitigation. However, by leveraging the relationships fostered throughout the AIP, cross fertilization into other management areas is foreseen. For example, natural disturbance regimes such as human pyrotechnology are well documented as being critical factors in the historical North American landscape. Also understandings animal biology and ecological processes are also thoroughly infused within the TEK of the Aboriginal community. Progressively, by engaging the Aboriginal partners in respectful research regimes it is hoped that their knowledge can guide and assist other projects examining sustainable forest management.

12. Amount of Money Requested From the Foothills Model Forest & Partner Contributions

From 2002-2006 a total of \$508,800 has been raised to develop this project. Currently, three communities are signed and conducting their studies. As a result, the 2005-6 budget has been allocated in full.

The estimated costs of a TCS per community are indicated below. By starting with the AWN, Foothills Ojibway, and Nakcowinewak we will be able to complete three communities. However more resources are needed to complete the other two communities at the table and to finish development of the referral process. The resources secured and requested to complete this project are outlined below:

<u>Revenues</u>	2002-3	2003-4	2004-5	2005-6	Sub-totals
Foothills Model Forest	100000	100000	9000	0	209000
Sustainable Resource Development				150000	150000
Aboriginal Affairs and Northern Dev.		40000			40000
West Fraser		75000 (FRIAA)	10000		85000
Canadian Forest Service	1700	3100			4800
Jasper National Park				20000	20000
				Total	508800
<u>Expenses</u>	2002-3	2003-4	2004-5	2005-6	
AIP	45000	155000	110000	79000	389000
				Balance	119800
Forecasted Expenditures				2005-6	2006-7
Communities/Program Item					
<i>Asinewuche Winewak Nation</i>				46000	
<i>Foothills Ojibway</i>				46000	
<i>Nakcowinewak</i>				46000	
<i>Sunchild</i>				46000	46000
<i>Alexis</i>				46000	46000
<i>Program Lead (Salary and Expenses)</i>				<i>Included in below</i>	90000
<i>Steering Committee/Consultants</i>				48000	60000
Total				278000	242000
less '05-6 expenses to date				199000	0
Less balance to date				79200	242000
Shortfall				79200	242000
FRIAA Funding Request				79200	242000
<u>TOTALS Funding Requests</u>	<u>06-07</u>		<u>07-08</u>		<u>Totals</u>
	Requested	Promised	Requested	Promised	
FRIAA	321,200		TBA		
AAND		70,000		150,000	
FtMF	TBA		TBA		
	321,200	70,000		150,000	
Communities In-Kind		50,000		30,000	
TOTALS	441,200		~180,000		621,200

Therefore the AIP is requesting support from the Forest Resource Improvement Association of Alberta to cover project costs associated with years '05-'06 and

'06-'07 indicated above. **This amount totals \$321,200.** If this request is not fulfilled West Fraser has indicated that they will back fill from this amount at a yet to be disclosed date to keep the AIP going until additional sponsors can be secured. Also, AAND has indicated that a proposal in the range of **\$70,000** to assist the AIP in completing the 2005-6 year can be fast tracked with the additional promise of a multiyear commitment in the range of **\$150,000** for 2007-8. Positively, Luscar Mines has indicated that they will be supporting the program with a smaller amount immediately to be followed up with something more substantively in the future (no amounts have been confirmed). *In the event of shortfalls from these projected funding sources, a funding request from the FtMF and other program partners may be needed.* Regrettably at the time of this submission, an indication from FRIAA as to the amount they might contribute has not been received.

The FtMF has actively fundraised for the project costs to date but needs requested amount to complete the project. In the future, depending on additional community requests (there are 17 Aboriginal communities historical connected to the FtMF), additional funds from the timber and oil and gas industries will be requested to cover 'new' community entries, although there are none planned at the moment. Restated, if other communities outside of the five communities we are currently working with wish to participate, additional funding outside of the request here will have to be secured to proceed. This is foreseeable as there is tremendous interest in this project by other communities, industry players, and government departments.

13. Proposed Payment Schedule

FRIAA- \$321,000 TBA

AAND – \$70,000 Dec. 2005-Jan. 2006 (before the end of fiscal new year)

West Fraser Backfill – Dependant upon FRIAA notification

14. Subcontracted Work

N/a

15. Project Management

The program lead is Bradley Young. Terry Garvin assists in training and the advisory committee. The general manager supervises and assists as needed.

16. Additional Organisations requesting FRIAA Administered Monies

N/a

17. Other Relevant Information

Upon request

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal Fish and Watershed

1. Prepared by

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2. Introduction

The goals are to develop knowledge, inform policy, and transfer technology on key aspects of forest management that influence aquatic ecosystems. The four key topics are community group partnerships, riparian management, stream crossings and local level indicators.

We have built community partnerships with Town of Hinton and West Athabasca Watershed Bioregional Society for the Hardisty Creek Watershed Restoration Project. The FtMF focus is to complete the Kinsmen Park watershed restoration demonstration site during Phase 3. FtMF work will include completion of fish passage remediation in Year 4 and interpretive trails in Year 5. The main Fish and Watershed Program investment in the project is contribution of technical expertise to assist restoration. Communications will lead trail development.

In Year 4 we implemented a plan to meet our Phase III goals for riparian management. This included initiated a new riparian research project under the supervision of Prof. Marwan Hassan, UBC Geography. Our strategy is to calibrate existing riparian management and assessment tools currently used by BC Forest Service and USFS for use in Foothills of Alberta. These tools include a stream channel assessment procedure, and landscape simulation model. We secured the majority of funds for the project by the end of Year 4. Work completed in Year 4 included study watershed selection, permitting, instrument development and pilot field studies. A communications plan will be completed early in Year 5.

Stream crossings were an key part of the program throughout Years 1-4. In Year 4, West Fraser and 10 energy companies formed the new FtMF Stream Crossing Program. The purpose of the program is to improve condition of stream crossings. In Year 4, the member companies signed a MoA, developed a draft protocol and committed funds towards an inspection program for 2006. FtMF roles includes contributing scientific knowledge, database development, data management and technical support.

In Year 4, the Fish and Watershed Program was assigned the lead for the development of two indicators: stream crossings and water yield. In Year 5, the Stream Crossing Program will work with the member organizations to develop the crossing indicator. The water yield indicator will be developed in cooperation with the West Fraser, JNP and ASRD.

We are also undertaking communication and extension activities in each of these four key areas. Our strategy is to liaise with organizations with a professional training mandate include the Training Section of ASRD, the Woodland Operations Learning Foundation (WOLF) and UBC Department of Geography. In Year 5, FtMF will continue to participate on the WOLF Program Advisory Group and provide input on curriculum pertaining to water quality and stream crossings. Our extension plan also includes ongoing communications and regular project updates with resource practitioners through the activity team and project steering groups.

3. Background Information (Year 4 Update)

Highlights of Year 4 included working with partners to restore fish passage at two additional crossings in Hardisty Creek. The Stream Crossing Program was established with broad partner support. Additional funding was obtained for the riparian research. Field projects included the West Fraser Operational Inventory and the riparian research pilot project. Although long periods of rain delayed fieldwork at times, field projects were once again completed safely and within budget.

4. Objectives

1. Knowledge Creation

Our knowledge creation efforts will continue to focus on riparian management and local level indicators.

1a. Beneficiaries and Impacts

Beneficiaries of riparian management project are forest managers within the Foothills of Alberta. This includes the people responsible for planning and regulating harvest activities.

The beneficiaries of the proposed LLI work include resource managers, resource stakeholders and other groups interested in the LLI process.

2. Demonstration

Demonstration site development efforts include Hardisty Creek within Kinsmen Park. These efforts will be done collaboratively with other stakeholders.

2a. Beneficiaries and Impacts

The beneficiaries will include resource managers, stakeholders, the general public and other groups interested in fish passage, stream bank and fish habitat restoration.

3. Knowledge / Technology Transfer

This objective will be achieved through initiatives within each of the four project areas. In Year 5 technology transfer emphasis will be on riparian management.

3a. Beneficiaries and Impacts

The intended audience includes both the scientific and management communities.

4. Communications and Outreach

Outreach programs will be produced for technical, management and public audiences. The Communications Program will develop public programs with our assistance.

4a. Beneficiaries and Impacts

Public programs are intended for local residents and visitors to the area. The information may also be used to educate stakeholder groups such as the Forest Resources Advisory Group (FRAG).

5. Policy Support

Our efforts are intended to influence policy such as the Provincial Forest Operations Ground Rules. In addition, our work with Local Level Indicators may influence the policy established by other government initiatives.

5a. Beneficiaries and Impacts

Our proposed work should influence a range of resource stakeholders and participants in other adaptive management efforts.

5. Abstract of Methodology

The overall methodology for the Fish and Watershed Program is as follows. First, we identify key challenges for achieving sustainable forest management that relate to aquatic resources. Second, we develop partnerships and detailed plans to address these challenges. Third, we seek funding to implement projects. Finally, we undertake the project and ensure that extension activities are completed in a timely fashion as knowledge and tools are developed.

6. Deliverables

1. Knowledge Creation

Handbook for managing sediment sources and large woody debris in foothills riparian areas.

Alberta Foothills channel assessment procedure.

Draft Watershed wood budget / sediment budget model.

Water yield indicator.

Fish population status for Upper Athabasca and Upper McLeod watersheds.

2. Demonstration

Kinsmen Park Demonstration Site.

3. **Knowledge / Technology Transfer**
Riparian management extension workshop.
Integration of findings into WOLF and other training programs.
4. **Communications and Outreach**
Communications plan for riparian management outreach / extension.
Presentations, interpretive programs with Fish and Watershed content.
5. **Policy Support**
Contribute to riparian management guidelines within forest planning documents.

7. Timelines

Task	2006									2007		
	A	M	J	J	A	S	O	N	D	J	F	M
1. Phase 4 Proposal	X	X	X	X	X	X						
2. Hardisty Creek Project												
2.1 Performance evaluation of previous restoration projects.	X	X	X	X	X	X						
2.2 Bioengineering workshop.	X	X	X									
3. Riparian management												
3.1 Communications plan	X	X	X									
3.2 Handbook for managing sediment sources and LWD in Foothills riparian areas.	X	X	X	X	X	X	X	X	X	X	X	X
3.3 Foothills channel assessment procedure.	X	X	X	X	X	X	X	X	X	X	X	X
3.4 DRAFT Watershed wood budget / sediment budget model.	X	X	X	X	X	X	X	X	X	X	X	X
3.5 Riparian management extension workshop.							X					
4. Stream Crossings												
4.1 Incorporation of concepts into Woodland Operations Learning Foundation (WOLF) curriculum	X	X	X	X	X	X	X	X	X	X	X	X
4.2 Operational Inventory: 50 – 70 sites	X	X	X	X	X	X	X	X				
5. Local Level Indicators												
5.1 Water yield indicator	X	X	X	X	X	X						
5.2 Fish population status	X	X	X	X	X	X						

8. Site Information

Work will be conducted within the FtMF. Riparian research projects may occur in other parts of the province if addition partnerships are developed.

9. References
 Provided on request.

10. Scientific Review
 For all technical papers, scientific review will be requested from a number of individuals considered to have a background or expertise in the area of study involved. The review will not be limited to members of the activity team and may include academics and private sector professionals who are knowledgeable in the area of study. The project leader will ensure that reviewers have at least three weeks to provide their comments.

Prof. Marwan Hassan will review papers related to riparian management, UBC Department of Geography.

11. Improvements to Management in Forest Ecosystems
 This program helps land managers to address two challenges including using science-based approaches and completing these tasks with limited resources.

The mandate to shift towards a more science-based approach means that land managers can consider the structure and function of forest ecosystems into their planning activities. The FtMF riparian management projects are intended to provide practical tools to assist managers and field technicians consider the structure and function of these systems when developing harvest plans.

Forest managers also have limited resources. They have indicated that they need maps and management frameworks that organize complex scenarios. The products that we are in the process of developing are intended to be practical in their application.

12. Amount of Money Requested From the Foothills Model Forest
 This workplan was based on a contribution of \$147,000 from the Foothills Model Forest.

13. Partner Contributions
 The forecast project budget is \$350,500 with \$288,000 cash and \$62,500 in-kind contributions.

Partner/Organization	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
Foothills Model Forest	\$147,000					
Kinsmen Park / Hardisty Creek Restoration						
Streambank workshop			\$5,000			
Riparian Project						
FRIAA Open Funds	\$10,000					

FRIAA Company Funds			\$90,000			
UBC				\$62,500		
NSERC Industrial			\$18,000			
ACA			\$12,000			
NRCan Internship			\$6,000			
Total		\$157,000		\$131,000	\$62,500	

14. Proposed Payment Schedule

Payments from each of the above partners are established in contracts as either twice per year or quarterly.

15. Subcontracted Work

The riparian project will be completed under the supervision of Prof. Marwan Hassan of UBC Department of Geography. A contribution agreement has been established between the FtMF and UBC.

16. Project Management

Prof. Marwan Hassan will oversee the Wood Budget / Sediment Budget project. Richard McCleary is responsible for all field aspects that project. Richard will also supervise all other projects. The Operational Inventory Project will largely be delegated to a senior technician.

17. Additional Organizations requesting FRIAA Administered Monies

FRIAA funds will be used for riparian research. UBC is also involved with the project. We have developed a contribution agreement between the FtMF and UBC to enable them to undertake their responsibilities within the riparian research project.

18. Other Relevant Information

Fish collection permits will be obtained for the operation inventory. The FtMF will ensure that permits and authorizations from Fisheries and Oceans Canada, Alberta Sustainable Resource Development and Alberta Environment are in place for any aspects of the Hardisty Creek Project where we are actively involved. Hardisty Creek has been designated as non-navigable and therefore our project will not trigger the Canadian Environmental Assessment Act. Permits for the riparian research project will be obtained from Community Development for work within Switzer Park. Permission will also be obtained from the aboriginal communities for work planned around a cultural site within Switzer Park. DFO and AENV have indicated that permits are not required to conduct riparian research.

Total forecast income for 2005/2006 is \$248,500 and total forecast expenditures are also \$248,500. I allocated all available resources, however as shown in the Table on the following page, a number of the Year 4 deliverables will remain outstanding. The outstanding deliverables include completion of several manuscripts from previous research projects and one component of the riparian research project.

I experienced delays and a funding shortfall for the start-up year of the new riparian management research project (sediment budget / wood budget). The delays occurred during the establishment of the FRIAA contract, which was finalized in May rather than in January. In addition, the watershed selection and permitting process took several months longer than expected. A funding shortfall occurred because the ACA did not support our proposal. As a result, I delayed one component of the project (deliverable #14: watershed data collection / pilot model), to the Year 5 field season.

To address these delays and funding shortfalls, I have developed a funding strategy and I am also requesting an extension of the Foothills Model Forest support for the project to the end of 2008, rather than the end of 2007. At a Dec. 1 meeting, Fish and Watershed Activity Team members indicated their support for the new funding strategy. I also anticipate continued support for water research projects throughout Phase 4.

As shown in the Table on the next page, I am forecasting a deficit of \$12,700 to complete the deliverables from previous work plan. These outstanding deliverables will be completed within the Year 5 budget.

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal Foothills Stream Crossing Program

1. Prepared by

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2. Introduction

Stream crossings can have significant impacts on aquatic ecosystems. Concerns include sedimentation, barriers to fish movement, fish habitat loss or damage and crossing failures. Other values associated with stream crossings include safety, cost, navigation and recreation. Private companies and government agencies own stream crossings in Alberta. A program that would bring the owners and regulators together and that would address the performance of all stream crossings in a defined area is an attractive solution to the issue of monitoring and maintaining these crossings.

3. Background Information

Most crossings are inspected for safety and structural integrity with less emphasis on environmental issues (such as sedimentation and fish passage). In any given watershed, crossings may have a variety of owners. There is no overall approach to coordinate inspections and maintenance or repairs to crossings with all of the owners. This leads to an ad hoc approach with no plan to address watercourse issues on a priority basis. Many older crossings do not meet the standards required by the regulators.

The Foothills Stream Crossing Program was officially formed in June of 2005. Hinton Forest Products, West Fraser provided \$10,000 in seed money; all other voting members agreed to provide \$3,000 each in order to get the program started. The Foothills Model Forest provided \$15,000 plus in-kind support. The first few months have been spent on finalizing a Memorandum of Agreement (the by-laws) and developing the initial protocols for crossing inspections. The Steering Committee is currently working on a budget and priorities for 2006 with the main focus on completing the initial crossing inspections.

4. Objectives

The objectives for the Stream Crossing Program include:
Develop an industry driven program to manage stream crossings
Establish a standard process and protocols for inspecting crossings (both initial and maintenance)
Establish a process to identify priorities for stream crossing maintenance and repair

Improve the performance of stream crossings (safety, sedimentation, fish passage) and meet regulatory requirements

1. Knowledge Creation

Knowledge creation will be advanced by:

Creating a simple but effective way to inspect crossings for safety and performance including sedimentation and fish passage.

Summarizing inspection data into reports that will provide the owners with the knowledge to maintain and repair crossings on a priority basis.

1a. Beneficiaries and Impacts

The audience for 2006 will be the participants in the Stream Crossing Program (voting members) plus the regulators (SRD, Environment, DFO)

The benefits will be:

Standard inspection protocols

Standard data summary and reports

GIS data layer for stream crossings for the defined area (providing basic information about location, type of crossing, ownership, etc)

Cooperative approach (owners and regulators)

A process to identify problems with crossings and to schedule repairs/maintenance/replacement on a priority basis

The justification of this approach is based on the fact that many crossings (especially the older ones) do not meet current environmental or regulatory standards and there is no current process in place to identify and address these problems (either individually or on a watershed basis). By being proactive, this process will allow the owners to address problems with watercourse crossings in an orderly and business like way while addressing the needs of the regulators.

2. Demonstration

The performance of stream crossings is one of the local area indicators for sustainable forest management. By monitoring stream crossings the program will be able to report on this indicator and progress in meeting targets. This program also demonstrates a multi-stakeholder approach to improving the performance of stream crossings.

2a. Beneficiaries and Impacts

Stream crossing owners and the public who value improved water quality and fish habitat will be the beneficiaries of this program. The overall impact will be the improved performance of stream crossings in a designated area.

3. Knowledge / Technology Transfer

Once the program is up and running and the inspection protocols have been proven in the field, the process developed by the Stream Crossing Program will be made available to others. This is not expected until late in 2006 or possibly not until 2007.

3a. Beneficiaries and Impacts

Other beneficiaries of this program would be any crossing owner in any part of the province including energy companies, forest industry and government

(counties, municipalities, province). The potential impact could be one inspection protocol being used by all crossing owners in Alberta

4. Communications and Outreach

The output of the Stream Crossing Program will include a training manual for stream crossing inspections, the inspection protocols and data reports and summaries. The work of the Stream Crossing Program will be made available to others through Quicknotes and any forums or workshops organized by the Foothills Model Forest.

4a. Beneficiaries and Impacts

Beneficiaries of this program would include industry (both the energy and forest sectors) and government agencies (as both owners and as regulators). The potential impact is one process and one system for monitoring all stream crossings in Alberta.

5. Policy Support

Crossing owners are required to inspect and maintain crossings (mostly related to crossings on LOC roads and/or crossings on permanent streams). The process for inspecting and reporting is not consistent across the province or for the various crossing owners (energy sector, forestry sector, government). Many older crossings do not meet current regulatory standards.

5a. Beneficiaries and Impacts

The initial beneficiary of this program will be the voting members of the Steering Committee (those that own crossings in the FMA) and the regulators. The impact will be a consistent inspecting and monitoring process (with accompanying data summaries and reports) and a work plan to maintain, repair and/or replace crossings on a priority basis and with a coordinated approach from the crossing owners in a specific watershed or watersheds. The long-term beneficiary will be Albertans who will benefit from the improved performance of stream crossings and the associated values (safety, water quality, fish habitat). If successful, this program has the potential to be used in all parts of Alberta.

5. Abstract of Methodology

The following steps are in place to develop the inspection protocols:

Review of existing protocols being used in North America (done)

Development of initial inspection protocols for the Stream Crossing Program (done)

Field test including a small pilot program (done)

Revisions to protocols

Updating GIS map layer for crossing information

Development of data summaries and reports

Development of a training manual

Development of local level indicator

2006 Inspection program

Review results

6. Deliverables

1. Knowledge Creation

- Development of the initial inspection protocols (by April, 2006)
- GIS map layer for crossing information (by April, 2006)
- Development of a training manual (by April of 2006)
- Development of process for summarizing and reporting the inspection data (by April, 2006)
- Development of local area indicator (by April, 2006)

2. Demonstration

- Development of stream crossings (their performance) as a local area indicator for sustainable forest management

3. Knowledge / Technology Transfer

- Quicknote in the spring of 2006 on the Stream Crossing Program
- Quicknote in the fall of 2006 to summarize summer field work
- Participation in workshops or forums organized by the Foothills Model Forest.
- Publication of inspection protocols (when they have been approved by the Steering Committee) in the fall of 2006 or possibly in 2007

4. Communications and Outreach

- (same as the deliverables in No. 3)

5. Policy Support

- The Stream Crossing Program will provide a consistent and standard approach for inspecting and monitoring all stream crossings in a defined area. This will make it easier for the regulators to monitor the performance of stream crossing owners.

7. Timelines

Task	2006									2007		
	A	M	J	J	A	S	O	N	D	J	F	M
Finalize inspection protocols	*											
Finalize training manual	*											
Finalize GIS map layer	*											
Finalize data summaries, reports (process)	*											
Complete plans for summer field work												
Spring Quicknote		*										
Summer field inspections		*	*	*	*	*						
Data summaries and reports							*					
Fall Quicknotes								*				
Work plan and budget for 2007								*				
Administrative work (steering committee meetings, recruiting new members, etc)	*	*	*	*	*	*	*	*	*	*	*	*

8. Site Information

Work will be conducted within the FMA of Hinton Forest Products.

9. References

“Stream Crossing Protocol Assessment”, a report commissioned by the Foothills Stream Crossing Program and completed by Millennium EMS Solutions Ltd. This report reviewed and summarized the existing stream crossing protocols used in the Foothills Model Forest land base, Alberta, western Canada and the Pacific Northwest states.

10. Scientific Review

11. Improvements to Management in Forest Ecosystems

A consistent and relatively easy process for inspecting stream crossings will provide the owners of stream crossings with the opportunity to improve the performance of crossings as it relates to safety, sedimentation and fish passage. This will also provide the means to review cumulative effects on streams and watersheds and to schedule maintenance and repairs on a priority basis. The overall outcomes will be improved aquatic ecosystems.

12. Amount of Money Requested From the Foothills Model Forest

No direct dollars being requested.

13. Partner Contributions

Partner/Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
Foothills Model Forest					31,000	
Industrial partners		138,505				

In kind contribution for 2006-07 includes 30 days from Rich McCleary, 20 days of GIS support and 12 days of accounting support plus administrative support (office space, meeting rooms, communications, etc.)

14. Proposed Payment Schedule:

Funding from industrial partners is due by March 30, 2006.

15. Subcontracted Work

16. Project Management:

Jerry Bauer

17. Additional Organisations requesting FRIAA Administered Monies

18. Other Relevant Information

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal Caribou Landscape Management Association (CLMA)

1. Prepared by

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2. Introduction

The CLMA is a non-profit partnership operating under the umbrella of the Foothills Model Forest to facilitate implementation of proposals for integrated landscape management and conservation actions for the Little Smoky and A La Peche caribou herds in west central Alberta. The CLMA will develop and promote industrial activities that mitigate the impact on caribou habitat focusing on integrated landscape management and opportunities to cooperate and enter into partnerships with the Alberta government regarding population management. The Association will operate on behalf of Members within the existing resource planning and approval processes. Plans and programs developed by the Association must receive approval from the appropriate government authorities prior to implementation. It is anticipated that the Association will be able to rapidly develop plans, implement necessary actions, and coordinate industrial and commercial activities related to caribou conservation in the identified caribou ranges.

As first priority the CLMA will promote and support practices consistent with concurrent caribou conservation and industrial development. Working together to develop and apply innovative solutions is considered the best alternative to simultaneously achieve the Association mandate.

The Caribou Landscape Management Association mandate is to facilitate implementation of integrated landscape management and conservation actions for the Little Smoky and A la Peche caribou herds in the Alberta Foothills. This work plan outlines the projects and budget requirements that will contribute to the mandate

3. Background Information

Woodland Caribou are listed as a threatened species both provincially and nationally. In general, caribou populations have been in decline for several decades. In contrast, human activity within caribou ranges has been steadily increasing. In particular, industrial activity and associated development is correlated with declining caribou populations. Although the cause and effect mechanism of the correlation is not well understood it is recognized that mitigation efforts are necessary to continue to have both.

The Caribou Landscape Management Association (CLMA) mandate is to facilitate implementation of proposals for integrated landscape management and conservation actions for the Little Smoky and A la Peche caribou herds in west central Alberta.

Vision

“In North America The CLMA will be viewed as an exemplary industrial leader in regional Integrated Landscape Management.”

“ The Caribou Landscape Management Association (CLMA) will conserve caribou habitat in west-central Alberta while continuing responsible development.“

4. Objectives

Strategic objectives:

The primary objective of the CLMA is: To proactively develop and foster government relations, research, good corporate stewardship, and contribute to Integrated Land Management (ILM) initiatives.

1. Government relations

Get ahead of government regulation by being proactive and proposing and implementing solutions that work from both business and biological perspectives. Cooperate with the Alberta Government to recover caribou populations. An example of this is the Foothills Model Forest and the CLMA support for the Little Smoky Caribou Calf Survival Enhancement Project currently in the final planning stage for implementation in February 2006.

Expedite approvals of industrial plans within the existing government framework. Provide support and recommendations to the Alberta Caribou committee through the West Central Landscape Recovery Team as a participant once it is formed.

2. Research

Promote science-based solutions.

Direct, support, and use research, and identify research gaps. However, the CLMA will not coordinate or conduct research.

Improve/increase funding for caribou monitoring and research.

3. Corporate stewardship

Be responsible corporate stewards participating in land management solutions.

4. Integrated Land management (ILM)

Provide a coordinated multi-sectoral industrial voice with a common approach working towards preferred solutions.

Mitigate the future industrial footprint on the home ranges of the Little Smoky and A La Peche caribou herds. Implement the Long Term Access Plan (LTAP) submitted on Nov 30, 2005.

Improve management techniques with an aim to reduce the existing footprint to improve caribou habitat. A reclamation plan will be developed for the Little Smoky and A La Peche caribou herds by September 30, 2006.

Be the support mechanism for Integrated Land Management in the target area.

1. Knowledge Creation

Objective: “The CLMA objective is to reduce the industrial footprint on the A La Peche and little Smoky caribou ranges starting in 2006 through integrated access planning”

The objective of reducing the industrial footprint on Caribou habitat will be monitored within the CLMA LTAP implementation and reported on by September 30 of each year. The monitoring program will demonstrate the effectiveness of the LTAP in reducing the footprint as opposed to “plan as you go”.

1a. Beneficiaries and Impacts

This knowledge will be transferable to all of Alberta resource managers in government and industry with specific utility for the forestry and energy sectors.

The members of the CLMA are the immediate beneficiaries as follows:

Forest Management Agreement (FMA) holders

Alberta Newsprint Company (ANC),

West Fraser Mills Ltd., Hinton Wood Products (HWP), and

Canfor Corporation (Canadian Forest Products) and

Quota holder

Foothills Forest Products Inc. (FFP).

The energy companies involved are:

Encana Corporation,

ConocoPhillips Canada Resources Ltd.,

Suncor Energy Inc.,

Transcanada Pipelines Limited.

Talisman Energy Inc.

Devon Canada Corporation, and

Burlington Resources Canada Ltd.

Aboriginal

Aseniwuche Winewak Nation of Canada (Grande Cache).

This objective provides the ability to share in knowledge, innovation, avoid duplication, communications and in responsibility for developing solutions.

2. Demonstration

The integration and cooperation of the energy and forest industries at the planning stage of resource development is a first step in achieving full integration.

Objective: “The CLMA will demonstrate that integration has benefits to all resource values on the landscape. The LTAP submitted on Nov 30, 2005 will be used for all future plans in the area by spring 2006.”

2a. Beneficiaries and Impacts

The benefit of companies supporting the CLMA and its initiatives are:

Save money:

Compared to dealing with the issue on they're own the cost can be shared. Share in funding of access, research, management, and implementation of solutions.

Certainty of access

The primary objective of the association is to find economic solutions to prove that industry and Caribou can in fact co-exist. National certification for access to markets will insist on proactive ILM solutions. Provide a cooperative strategic consultation mechanism.

Compliance

The government will be insisting on Integrated Land Management (ILM) and for dealing with cumulative effects for the future, the CLMA will provide that mechanism for approvals.

Move forward

The CLMA will be moving forward on development of workable affordable solutions and will be putting substantial collective pressure on government to approve and develop policies to provide certainty for business.

Government relations

This will provide a mechanism to gain access to senior government policy makers at Deputy Minister, Cabinet, Standing Policy Committees and Minister levels. The government has continued to insist upon cooperation and integration and may not listen to only one voice.

Influence other industrial operators

This association will give the partners the opportunity to meet and develop relationships with the other industrial operators on the landscape to influence their impacts on your operation.

This association will be able to deal with the "bad actors" and raise the bar through peer pressure and collaborative pressure.

3. Knowledge / Technology Transfer

Objective: "Starting in 2006, the CLMA will ensure that knowledge gained in its activities is shared with its members and other operators on the target landscape and beyond."

The CLMA through its members is involved in many initiatives such as Foothills Model Forest, Highway 40, research projects and membership on the provincial caribou committee.

The linkages to these projects provides an excellent mechanism to transfer knowledge and technology

3a. Beneficiaries and Impacts

The audience is all CLMA members, public, communities and government. Once the CLMA achieves its immediate goal of reducing the footprint and tracking its effectiveness this model can be used in other areas.

4. Communications and Outreach

Objective: “All CLMA initiatives and projects are intended to be transparent and will utilize the expertise and existing communication programs at the Foothills Model Forest”.

The following mechanisms and tools will be used:

Website:

A website for the Caribou Landscape Management Association will be developed through the Foothills Model Forest. A portal to the site would be on the Foothills Model Forest homepage. From the portal, a website for the Association can be developed. The Highway 40 North Demonstration Project (www.fmf.ca) took this approach and it has been effective thus far. Foothills Model Forest will write the website text and work with a contractor to develop the website.

Once the website is developed, it should be promoted in trade publications of the forest and energy industries and to the public. A marketing plan will be developed once the website is nearing completion.

Quicknotes

The Director of the Caribou Landscape Management Association will write and distribute four Quicknotes each fiscal year. Quicknotes are one to two page documents that summarize initiatives or research findings that are distributed key parties and are posted on the Foothills Model Forest web site.

The Director will consult with stakeholders on the development and implementation of the Long Term Access Plan over the year once government endorses it.

4a. Beneficiaries and Impacts

Audiences

Partners or potential partners.

Stakeholders.

Public.

At a minimum, the audiences need to be aware of the intent and activities of the Association. Ideally, audiences will support the Association, its vision and its activities. The Communications Plan for the CLMA will be tailored to each

audience group. Communications will take a phased-approach. Initial attention and priority was focused on partners and potential partners. The second phase involves communicating with stakeholders and the public.

5. Policy Support

Objective: “Once the LTAP endorsed by government the CLMA will immediately work with government to address the necessary policy issues to ensure it is followed”.

There is a need to address the current road application process. Once the LTAP is approved by the government guidelines for road development similar to the Chungo Creek “information letter” will be necessary.

The purpose of this is to ensure early dialogue and integration between sectors. Member and non-member energy companies should first contact the FMA holder or quota holder before submitting surface rights applications to government. This will initiate the coordination and integration process internally between forestry and energy needs before the government reviews the application. The government will use this plan to guide its regulatory decision-making with respect to applications for linear corridor development such as roads and pipelines. If any applications are received without this referral, the government should make it a condition in the application process.

This process also needs to apply to companies who currently are not part of the CLMA LTAP to ensure both sectors are aware of the application and activity. All resource users developing roads within the Little Smoky and A la Peche caribou ranges will be required to incorporate the intent of the LTAP in their planning process. Any companies that are not currently part of the CLMA will be encouraged to contact the CLMA should they propose any access development in the area

5a. Beneficiaries and Impacts

Business, it is said functions only by the consent of the communities, which they chose to locate. As a result, a company needs to address the people who live, work, and raise their families in the geographic area surrounding their facilities. Building a good reputation starts in the boardroom, not with a news release. A company’s good name is based on the development of good policies, not reactive damage control of bad ones.

A company needs a solid reputation. It is no longer enough for a company to do well. They must also be seen as doing well in the public arena.

5. Abstract of Methodology

The CLMA will initiate a cooperative planning approach to resource development for the energy and forest industries operating in the Little Smoky and A La Peche caribou ranges. The first step is to develop an open and transparent process of communication and through specific projects will build on cooperation to achieve full integration. The CLMA will encourage all parties including non-members

through the Alberta Caribou Committees Landscape recovery team to implement proactive strategies to reduce impacts on other resource values with emphasis on caribou.

6. Deliverables

Objective: “The CLMA objective is to reduce the industrial footprint on the A la Peche and little Smoky caribou ranges starting in 2006 through integrated access planning”

Deliverables a) Annual reporting and monitoring

Annual reporting and monitoring process to measure the plan’s effectiveness for reducing the industrial footprint will be reported on. The results of effectiveness monitoring will be considered as part of the annual review of LTAP and the plan will be amended as and if appropriate. The monitoring program will be reported on annually with emphasis on measuring the effectiveness of reducing the footprint compared to “Plan as you go” and unencumbered access development. The report will also maintain a chronicle of how well it was followed by industry. The monitoring report will be submitted to government by September 30 of each year.

The CLMA recognizes that a comprehensive reclamation strategy for habitat is necessary for caribou as new development occurs. There is acknowledgement by members that when temporary roads are no longer needed they should be reclaimed and returned to the “productive land base”.

The initial baseline report is as shown below:

Table 1. – Existing Disturbance

Disturbance	Linear Km or number of sites	Density Total area = 4954km ²
Roads	1445	0.29 km/square km
Pipelines		Unknown right now (Gov’t data sets inconsistent)
Wellsites	520	0.10 wells/square km
Railways	57	0.01 km/square km
Highways	45	0.01 km/square km
Powerlines	31	0.01 km/square km

Table 2. - Tracking Effectiveness

Measurement	No LTAP ANC (hypothetical) Twps. 58-26,27 & 59-26,27	59 – 26 only	Fully developed Twp. 59-24	LTAP
Total # Linear kilometres	338			
Density (Km/km ²)	1.06	1.1	0.9	

Note: Due to problems with various data sets (and inconsistencies) some of the statistics may require refinement.

Table 3.

	Caribou Habitat	Hectares within 250m of linear feature, no LTAP (Hypothetical)	* Hectares within 250m of linear features with LTAP
Summer 2004	High (8-10)	9156	2301
	Medium (4-7)	5730	1275
	Low (1-3)	2630	2601
Winter 2005	High	8288	1869
	Medium	2771	2588
	Low	6457	1721

*This will be monitored and reported on annually as it currently is not a valid comparison.

The Energy sector hypothetical access completed by ANC for its FMA will be used to compare unconstrained access development to that of the CLMA LTAP area. This unconstrained access will be compared to the LTAP area with the above criteria.

The following townships were selected 58 - 26& 27 and 59 - 26&27 for the hypothetical benchmark and another township was selected to show an area that has been fully developed 59-24. This will demonstrate how the LTAP process compares to these two samples. The lineal disturbance within the LTAP area will then be tracked and reported on annually and compared to these areas.

The other measurement to be tracked and reported on is: “how consistently did the LTAP get applied by government approvals and industry development”. There are many factors that effect caribou population. Therefore the LTAP is not intended to be an end point or a “be all end all”. That is one of the reasons that the LTAP will be a dynamic (living) document. The CLMA and its members will also support the government on population management and predator control when it is necessary.

Reclamation Plan

The lack of a comprehensive reclamation strategy while proposing new development is recognised as a weakness in this LTAP. However, given the time constraints for completion of the LTAP this component of road access management is not included in this submission. This is discussed later in more detail with plan and timeline for completion.

The CLMA plans to include this in the next submission in the fall of 2006. A monitoring program will be implemented to track the effectiveness o the LTAP and an annual report prepared for reporting achievement of objectives. The

primary concern to the timber industry is the energy sectors impact on annual allowable cuts (AAC) through land base withdrawals.

One approach will be to encourage timber companies and government to direct their Timber Damage Assessment (TDA) funds collected from the energy sector to reclamation. There is also a need to protect reclamation investments by limiting public access to re-vegetated sites. This allows the site to recover without damage from All Terrain Vehicles (ATV). There is need to “share the pain” to accomplish goals. There is also a need to re-vegetate these sites with natural vegetation such as trees and shrubs rather than grasses.

Objective: “The CLMA will demonstrate that integration has benefits to all resource values on the landscape. The LTAP submitted on Nov 30, 2005 will be used for all future plans in the area by spring 2006.”

Deliverables:

a) Map Products

The FtMF GIS group will provide GIS data to CLMA members via the internet using Internet Mapping technology. This will provide access in a true mapping framework to not only existing and planned roads data but also supplementary data such as Caribou RSFs and terrain datasets. These data will be updated on a continual basis to provide members with the most current versions of all planning related spatial data. These data will be provided from an Internet server located and maintained at the Foothills Model Forest in Hinton.

b) Membership on the Provincial Landscape Recovery Team

The CLMA will have a member on the provincial recovery team to ensure that integration benefits are well known.

Long Term Access Plan (LTAP)

The LTAP will be implemented, monitored and updated as needed as it is intended to be a dynamic document.

Objective: “Starting in 2006, the CLMA will ensure that knowledge gained in its activities is shared with its members and other operators on the target landscape and beyond.”

Objective: “All CLMA initiatives and projects are intended to be transparent and will utilize the expertise and existing programs at the Foothills Model Forest”.

Deliverables: There will be web site maintained at the FMF and four “quick notes” produced each year. In addition, the CLMA will participate and make presentations to support the FMF outreach and communications objectives.

Objective “Once the LTAP endorsed by government the CLMA will immediately work with government to address the necessary policy issues to ensure it is followed”.

Deliverables:

a) Information letter.

Once the LTAP is approved by the government guidelines for road development similar to the Chungo Creek “information letter” will be necessary.

b) Guiding tool:

The LTAP submission of November 2005 is a guiding tool for the development of primary permanent access and is considered to be stage 1 in meeting the objective of reducing the “industrial Footprint”.

Over the next year, the CLMA will support any of the governments plans for predator control, cow calf capture, public access controls if necessary, and caribou research.

The CLMA also intends to support the Alberta Caribou Recovery Plan through its participation in the landscape teams once they are established. The work that has been completed to prepare the LTAP will be provided to the Landscape Recovery Teams.

Review of Best practises

The CLMA plans to conduct a best practises review for its members in 2005. The recommendation in this document will be followed up by the CLMA at the policy level.

7. Timelines

Discussed in deliverables and shown in the budget table 2 (attached)

8. Scientific Review

At this stage there is no plans for a comprehensive scientific review of CLMA activities. However, any research projects supported by CLMA and its members will have a full scientific review.

9. Improvements to Management in Forest Ecosystems

The integration and cooperation of four forest companies and eight energy companies is a crucial step towards improvement of management of forest ecosystems.

The Caribou Landscape Management Association and its actions are another example of how Foothills Model Forest and its partners are advancing how Alberta’s forests are managed.

10. Amount of Money Requested From the Foothills Model Forest

There is no funding requested from the Foothills Model Forest as the CLMA is managed to be self sufficient through membership dues. There will however be some administrative support required of the FMF to a level of under 5%. If the administrative requirement exceeds the 5 % then it will be budgeted for and the FMF will be reimbursed by the CLMA.

CLMA Member Contributions

TABLE 1 STATUS of Revenues for CLMA		November 30 2005 to March 31, 2006					
Company	Payment required voting member	paid		amount rec'd \$	committed	undecided	total \$
		yes	no				
ANC	yes	XXX		\$ 20,000.00			
West Fraser	yes	XXX		\$ 20,000.00			
Canfor	yes	XXX		\$ 20,000.00			
Foothill	yes	XXX		\$ 20,000.00			
Suncor	yes	XXX		\$ 20,000.00			
ConocoPhillips	yes	XXX		\$ 20,000.00			
Burlington	yes	XXX		\$ 20,000.00			
Talisman	yes		xxx		\$20,000.00		
Devon	yes	XXX		\$ 20,000.00			
CNRL	yes		xxx		\$ 20,000.00		
AWN	yes (no pay reqid)	XXX		N/a			
Encana	yes	XXX		\$ 20,000.00			
TransCanada	yes	XXX		\$20,000.00			
Husky						xxx	
Grande cache coal						xxx	
Total		11	2	\$ 200,000.00	\$ 40,000.00		\$240,000.00

Please note: there was significant “in kind” support provided particularly by the FMA holders for Alberta Vegetation Inventory (AVI) data

11. Proposed Payment Schedule and budget

The CLMA has operated on a year of April 1 to March 31 2006. In February of 2006 the CLMA will send out invoices for the 2006 work plan for April 2006 to March 31, 2007.

The existing budget is shown on Table 1 (attached) and the 2006/07 budget is shown on Table 2 (Attached) to support meeting objectives.

12. Subcontracted Work

As below:

13. Project Management

Communications:

Lisa Jones Foothills Model Forest

Geographic Information and data management: Christian Weik Foothills Model Forest

CLMA administration and project management: Contract with Wayne Thorp consultant.

Additional projects: There may be the need to subcontract out additional work as needed and approved by the CLMA members.

14. Additional Organisations requesting FRIAA Administered Monies
None

15. Other Relevant Information

This work plan has not been endorsed by the CLMA steering committee at the time of writing this document.

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal Grizzly Bear Research Program

1. Prepared by

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2. Introduction

Although we have completed the first phase of this program, there remains a need to extend the model and tools we have developed to the other areas of the province that have grizzly bear habitat with no planning tools or models to assist in grizzly bear conservation and management. We plan on producing a landcover habitat map for the entire grizzly bear range in Alberta, an area of approximately 228,000 km² which is 1/3 of the provincial land area. In addition we believe it is both necessary and advantageous to attempt to further our understanding of grizzly bear health parameters to environmental/landscape conditions as an aid to monitor the overall health of grizzly bear populations in Alberta over the long-term.

To move forward with this vision, this document outlines the primary areas of research, which our research team is proposing for 2006-2007. This work builds from our current accomplishments and continues investigation of new discoveries that have been made over the past five years.

3. Background Information

In 1999 the Foothills Model Forest Grizzly Bear Research Program (FMFGBRP) was initiated with a goal of providing new knowledge, tools and models to aid in the long-term conservation of this species in Alberta. Over the course of the past 7 years this program has fulfilled its mandate and has developed a number of new tools and models (Franklin et. al, 2001, Nielsen et. al. 2002, 2003, Schwab et. al. 2002, and Stenhouse et. al. 2000, 2001, 2002) that are now being used in land management planning in portions of the eastern slopes of Alberta, where we have completed this work. This work provided new insights into many aspects of grizzly bear ecology related to sustainable resource development and land management planning.

Our research team has also made some important new findings, related to grizzly bear health that have potentially serious implications for the long-term survival of grizzly bears in portions of their range.

The program's achievements to date are in large part a result of the partnerships we have formed within this research undertaking. These partnerships start with our numerous sponsors who believe in the principles of adaptive management and sustainable development in conjunction with conservation of this important species. Our sponsors have continued to provide ongoing support for our program during the past 7 years. Our partnerships also include the teams of scientific specialists (biologist, GIS analysts, geneticists, statisticians, veterinarians, remote sensing experts, reproductive endocrinologists, and population modellers) who have worked co-operatively to aid in understanding the complexity of grizzly bear ecology and response to human activities. Without the teamwork and support of all these partnerships this program would not have achieved the major successes we have to date.

The success I refer to is not limited to ongoing support and data collection but rather is reflected in the numerous scientific publications that have been generated, the list of graduate students that have received degrees and training within this program, but most importantly the research results being applied by resource companies and land managers with an aim of integrating the needs of grizzly bears into planning efforts. Applied research has been and continues to be a primary focus of our program and the most important goal.

Building on the work currently underway (FRIAA supported in 2003-2004, and 2004-2005), the research team would like to continue the development of a seamless grizzly bear habitat map and RSF/Graph theory models for an area north of Grande Prairie (see figure 1). The program vision is to have a seamless grizzly bear map and models for all grizzly bear habitat in Alberta. These products would provide land and resource managers with new mapping products and tools to use for making forest resource planning and management decisions which support conservation of grizzly bears in Alberta. This will allow habitat and movement requirements of grizzly bears to be taken into account during the development of forest resources and assist in providing for sustainable forest management.

The main research components proposed for 2006 can be broken down in the following categories.

Remote Sensing Habitat Mapping Work

GPS Collaring – for development and testing of RSF models

Construct and Test New RSF Grizzly Bear Occurrence Maps

Development of New Approaches to Link RSF Maps to Carrying Capacity

Graph Theory Movement Corridor modeling – from RSF models

Animal Health Component

Food Modeling and Diet Analysis

Camera collars

Partner Training

GIS Analysis Questions and development of Applications/Tools

Travel and Partner Liaison/Development

Administration
Staff Training and development

4. Objectives

1. Knowledge Creation

new location information from grizzly bears in the 2006 study area.

diet and vegetation use of grizzly bears from this area.

new RSF maps for this area

Develop a more thorough understanding of the relationships between current landscape conditions and grizzly bear health parameters. This understanding will be crucial as an indicator of ecosystem health when sustainable forest management practices are reviewed. Undertake a thorough and extensive analysis of existing FMF grizzly bear health data along with all available GIS based landscape and environmental data sets

peer reviewed published papers

1a. Beneficiaries and Impacts

RSF maps will be distributed to industry and government resource managers.

2. Demonstration

workshops will be provided to industry and government resource managers on how to use our maps, models and new GIS applications

2a. Beneficiaries and Impacts

industry and government resource managers will obtain the knowledge on how to use our maps and models and also gain a better understanding on bear biology

3. Knowledge / Technology Transfer

Delivery of new RSF map products for resource management

Development of a training course to assist end users with standardized materials for the use of research products (funding dependent)

Continue research on new laboratory techniques to assess grizzly bear health

Workshops for SRD, CAPP and AFPA members

3a. Beneficiaries and Impacts

Resource managers in industry and government will learn to use our maps and models on a daily basis and will result in grizzly bear conservation being incorporated in land use management decisions.

Biologists and resource managers will gain a better understanding of how land use activities impact grizzly bear health.

4. Communications and Outreach

See workshops above

Continue with numerous and varied research presentations throughout Alberta and Internationally – ongoing

Participate on numerous graduate student committees (U of C and U of A, U of S, Wilfred Laurier) - ongoing

Continue to work with media as time permits – ongoing

4a. Beneficiaries and Impacts

Resource managers in industry and government will learn to use our maps and models on a daily basis and will result in grizzly bear conservation being incorporated in land use management decisions.

Interest groups will gain a better understanding of grizzly bear biology and issues pertaining to the conservation of grizzly bears in Alberta.

Multidiscipline approach to grizzly bear conservation by including Industry, Academia and Government as project partners

5. Policy Support

Complete annual reports and demonstration projects, along with peer reviewed scientific papers – April 2006

Assist ASRD with implementation and action items identified within the AB Provincial Grizzly Bear Recovery Plan

Provide assistance with ASRD in coordinating grizzly bear research activities in Alberta - ongoing

5a. Beneficiaries and Impacts

ASRD with implementation and action items identified within the AB Provincial Grizzly Bear Recovery Plan and in coordinating grizzly bear research activities in Alberta - ongoing

5. Abstract of Methodology

Remote Sensing Habitat Mapping Work

We will produce a landcover habitat map for the entire grizzly bear range in Alberta, an area of approximately 228,000 km² which is 1/3 of the provincial land area. We will do this using existing Landsat images, however it is also necessary to incorporate new sensors and approaches to increase the detail and utility of these images for landscape change monitoring, and to provide more detailed maps in key areas. Therefore a series of studies are necessary to understand the habitat information content of the next generation of remotely-sensed data (radar, hyperspectral, and high spatial resolution imagery).

We propose to acquire existing satellite imagery, or use airborne missions where appropriate, to simulate satellite sensor data, from systems such as IRS-P6 (known as ResourceSAT), Ikonos, Quickbird, and SPOT-5, Radarsat, the ERS radar satellites, and the environmental monitoring Envisat, EOS Terra (New Millennium Program). An immediate goal will be to identify and develop practical protocols to use the next-generation remote sensing data. Utilizing the best available approach our remote sensing team will then prepare and deliver new map products which show landcover classes and key grizzly bear habitats. Monitoring landscape change is a multiscale and multidimensional task made all the more complex when completed over large areas of mountainous terrain. The list of changes of interest is extensive (although the return interval has not been specified as to the number of years between updates): new cutblocks; new pipelines; new seismic lines (non-low impact); new roads; new wellsites; gas plants and production facilities, agricultural land conversion expansions from/into forests; increasing human settlement (new subdivisions, acreage lots, spreading,

towns, etc.); new gravel pits; new recreation sites (of a minimum size); and new recreation trails (quads, etc.). Our team will prepare an approach to allow the documentation and tracking of landscape change in grizzly bear habitat in Alberta. Working with SRD and other government departments the return interval to measure this change will be determined.

GPS Collaring – for development and testing of RSF models

We plan to capture and GPS collar up to 20 adult grizzly bears to collect a data set of grizzly bear habitat use and movement in the identified geographic area for testing RSF and graph theory model performance. Validation of these models on new landscapes is considered an important component of this work. Hence we feel it is important to collect test data from this new area, the proposed testing will provide models which are both science based and empirically tested. This data will be collected for this purpose for 2 year (2006 and 2007) and will only require one capture event. It is important to point out that some of these collars do not have to be purchased (8 x \$5K = \$40K), but are now in hand as assets of the FMF grizzly bear research program. We do need to purchase 12 new GPS remote download collars for this new work. The new collars that we wish to purchase are able to collect more data than ever before, provide two-way communication for data transmission and have a life expectancy that will allow two years of data collection. Global Positioning System (GPS) collars will be deployed on all captured bears, and programmed to record locations every 1 h from April to October, and every 4 h in November and March, for 2 years. Data will be uploaded from fixed wing aircraft on a monthly schedule. Sequential locations will be used to estimate movement rates (e.g., m/hr, m/day) as an index of activity for individual bears. GPS locations will also be used to determine home ranges for bears. Collars will be programmed to release and fall off after 2 years of wear.

Construct and Test New RSF Grizzly Bear Occurrence Maps

Utilizing map products from Objective 1 and existing RSF models and established coefficients, we will create probability of grizzly bear occurrence maps for three different seasons (spring, summer and fall) for the 2006 study area. We will then use the GPS grizzly bear telemetry data collected during the summer of 2006 and 2007, to test, validate and modify where necessary the RSF models. We will distribute the first draft of probability of grizzly bear occurrence maps, however, new RSF models may need to be developed once two years of field data have been collected. We will also prepare new grizzly bear mortality risk models for the new area using the newest RSF surface and the most current human use GIS data sets.

Development of New Approaches to Link RSF Maps to Carrying Capacity

New data that we have collected in 2004 and 2005 suggests that the RSF maps that have been created have strong correlations with where grizzly bears actually occur on the landscape. Forest managers would benefit greatly from a greater understanding of population size within their FMA's, especially as this relates to regional management units. We plan on using previously collected DNA datasets

and validated RSF maps to determine if linkages are possible between grizzly bear probability of occurrence maps and current population estimation data. In addition we will utilize provincial grizzly bear mortality datasets to establish a predicted K (carrying capacity) on the current landscape. If successful we will submit a journal paper on this topic to a recognized scientific journal.

Graph Theory Movement Corridor modeling – from RSF models

Barb Schwab is conducting her PhD work at Wilfred Laurier University with a focus on continuing work on grizzly bear movements and movement corridors. Her work is focused in three principle areas:

grizzly bear movements and detailed GPS data sets

graph theory and least-cost path representation of movement

reduced connectivity or increased fragmentation of grizzly bear habitat

In 2006 this program element will continue to develop, test and build new graph theory movement corridor models for the study area. In addition we will place significant effort on trying to operationalize these products for on the ground application of research findings. The goal will be to provide movement corridor maps at an appropriate scale for land use management and planning. In addition Ms. Schwab will continue to investigate issues surrounding changing landscape conditions and attempt to determine how these changes in structure may affect grizzly bear movement patterns.

Animal Health Component

One component of animal health is physiological stress. To detect long-term physiological stress in grizzly bears, we propose to develop a technique based on analysis of expression profiles of multiple stress-activated proteins found in many body tissues. Functional genomics at the protein level (proteomics) is a rapidly expanding area of investigation largely focused on identifying new protein targets for pharmaceuticals and to a lesser extent protein markers for the diagnosis of disease (e.g., cancer) in human medicine; however, application of this emerging technology to wild species is in its infancy. We will develop a sensitive proteomics technique to reliably determine the extent of long-term physiological stress in grizzly bears. Muscle samples (~100 mg) from individual grizzly bears will be collected in the field using biopsy darts and immediately frozen. Samples will be collected from bears inhabiting a variety of habitats representing a range of anthropogenic influence. These samples will be used to develop an antibody-based protein microarray to quantify the expression of a suite of stress-activated proteins.

The research team will determine if long-term stressors associated with landscape change can initiate a prolonged physiological stress response in grizzly bears that eventually impairs their ability to perform necessary functions such as growth and reproduction, effects that ultimately manifest at the population level as reduced rates of survival and reproduction. The physiological stress response has been clearly identified as a primary mechanism affecting health and disease in a variety

of organisms. Our team will also develop Animal Health profiles for individual bears to understand population health status in different regions of the province.

Twenty-five to forty grizzly bears have been captured each year since 1999 for the FMFGBRP and similar numbers will be captured annually from 2006 to 2009 across all grizzly bear range in Alberta. At present, detailed health information is available for approximately 120 grizzly bears, some of which have been captured and sampled multiple times over the past 7 years. Bears will be captured either by remote drug delivery from helicopter, leg-hold snare, or culvert trap depending on the openness of the terrain and road access. The physical attributes and health of captured bears will be assessed as follows:

Stress profile – by serum-based indicators and by muscle biopsy and protein microarray.

Sex – by examination of external genitalia.

Age – by extraction of premolar tooth and counting of cementum annuli.

Body condition – by determination of body mass and calculation of the body-condition index

Body size – by measurement of straight-line body length (an index of skeletal growth).

Reproduction – by blood collection and laboratory evaluation of reproductive hormone levels; by examination of external genitalia and mammary development; and by observation of accompanying bears, e.g., family groups, breeding pairs.

Immunity – by blood collection and laboratory evaluation of innate and acquired immunity.

The development of long-term stress biomarkers will occur along two different paths. Dr. Matt Vijayan (Dept. of Biology, University of Waterloo) and his MSc student, Jason Hamilton, will develop blood serum-based indicators of long-term stress. Recently, cortisol binding globulin (CBG) was isolated and purified from grizzly bear and polar bear sera, and is now being used to develop antibodies for the detection of bear-specific CBG. In addition, commercial kits for the detection of heat shock proteins (hsps) will be used to measure levels of hsps 60 and 70 in grizzly bear sera which have been collected since 1999. Although these serum-based indicators hold promise as reliable biomarkers of long-term stress, their application is limited primarily to live-captured bears. The other path, the development of a sensitive protein microarray for detecting long-term physiological stress, offers several important advantages over serum-based indicators. First, because the microarray will yield expression profiles for multiple stress-activated proteins, it will provide insight into the nature of the long-term stressors (e.g., contaminants? reduced food availability?) and their likely health effects (e.g., reduced immunity? stunted growth?), insight that cannot be gleaned from any single measure of stress. Second, because the microarray will include evolutionarily conserved proteins, its application has potential for a wide range of species including other species at risk such as woodland caribou (*Rangifer tarandus caribou*) and the wolverine (*Gulo gulo*).

Food Modeling and Diet Analysis

The maps and models that our program has completed to date have been based upon ecological areas in a portion of the grizzly bear range within Alberta. As our research program moves northward we will be working on different landscapes with different ecological properties. It is therefore important that to continue to test, validate and improve our new modeling effort, we have the necessary field data to compliment the GPS grizzly bear movement data from radio-collared bears. This requires that a sub sample of collared bears be followed and activity, diet and vegetation use information be gathered. We propose to have 2 dedicated field crews (2 teams of 2 people) to gather this information according to standards and protocols established previously within our program. In 2006 these teams will collect diet and vegetation use for at least 10 of our collared bear sample within areas where this data does not exist. In addition to data from collared bears a series of random vegetation plots will also be identified within the study area and vegetation sampling will also be conducted at these random sites.

Following the field data collection (May-October) period, data entry will be completed and fecal samples collected from site visits will be analyzed for food and RSF selection models.

Camera collars

The long-term goal of this program element is to develop techniques for the examination of grizzly bear movement within a temporal reference frame. Over the last three years, we have been developing a camera and navigation system using a digital camera, pedometer and magnetic compass to address the limitation of some of our current understanding of grizzly bear movement patterns and habitat selection. We have 5 new camera systems that are currently undergoing testing and evaluation in both laboratory and field settings (domestic livestock). We expect that this testing will be completed in February 2006 and final modifications (if needed) will be made in order to have these 5 camera systems ready for deployment on grizzly bears in April 2006. If successful the data from these camera systems will be used to develop spatio-temporal analysis techniques for detailed study of grizzly bear movements. We see tremendous value in acquiring these images in relation to improving our RSF models, understanding food and habitat selection, and in detailed study of grizzly bear movements in high human use landscapes.

In 2006 our goal is to complete all laboratory and field testing of the newest version of these camera systems, put 5 camera systems out on grizzly bears to collect field data sets, work with programmers to develop new software systems to process the wealth of new data that will be available to us from digital images and other data files.

Should we be successful in meeting all these objectives in 2006 we will work towards the integration of wireless communication systems with these new camera units.

Note: The research team has submitted this proposal to NSERC/CRD and we are now attempting to find an industry partner to support this work. The application to NSERC was for a 3-year period with an annual budget of \$150K. The FMF industry partner(s) is being requested to support this work in the amount of \$35K/year for this study term. Decisions on how this program element will proceed, and at what scale, is dependent on decisions on this NSERC application.

Partner Training

The products developed from this initiative will be delivered to all program partners and interested government departments and agencies once they have been tested and validated. We will hold department specific workshops and training sessions to instruct end users on the use and application of these products and provide new GIS based applications to allow the evaluation of different management scenarios. These workshops will require on-site visits to partner offices as well as follow up sessions to encourage use and integration of these products into land management decisions. It is our intention to also provide these products and training sessions to local municipal governments who have expressed a desire to acquire them. In 2006 the SRD training branch in Hinton will be working with our program to continue the development of an FMF training program that focuses on the tools, models and applications that we have developed with the grizzly bear project. Our goal is to have a better version of this training program ready for use in 2006.

GIS Analysis Questions and development of Applications/Tools

The GIS component of the FMF Grizzly Bear Research Project started out as a technical support effort however with the scope and scale of our current program it is clear that the GIS needs of our research effort have evolved significantly. Currently we are proposing that the GIS component be viewed as another key program element and therefore Jerome Cranston (GIS analyst) will take on a project collaborator role in addition to providing ongoing GIS support. Our GIS analyst team will continue the creation and development of new GIS tools that will allow users to automatically calculate measures such as: the effect of planned harvest activities on current RSF values; a comparison of road placement options relative to grizzly bear RSF values; RSF scores over time as forest regeneration occurs; and how grizzly bear mortality risk may change as a function of access construction on the landscape.

Some of the GIS tasks currently envisioned include:

Analysis on a watershed basis which looks at RSF ranking, security (safe harbour) status, levels of risk, and relate these to DNA results, DNA by grid cell and then as % of population unit total.

We need to delineate 2 general Conservation Areas (based on population units 2004 and 2005) and document and quantify how these are selected (use RSF, road densities, risk, safe harbour. This work will help to direct the RS team with SPOT imagery analysis).

Working with Scott Nielsen we need to start reviewing RSF values at a population level and then compare these provincially.

An analysis of existing Hobo temp and bear collar temperature data: denning, links to habitat selection, and camera collar data (2006).

Graph Theory output – operationalize. What are the characteristics of the landscape where these key travel routes occur? This will require significant work with Barb Schwab during her time in Hinton.

Working with the health research group we need to review and possibly expand the environmental factors that relate to bear health. The GIS analyst will need to play a key role in creating and maintaining environmental condition datasets.

Analysis of grizzly bear use of second pass blocks: Comparative analysis of grizzly bear use of second-pass cutblocks with first-pass blocks to determine selection rates relate to stand age and forest structure.

Spatial modeling of grizzly bear movements: Integration of known bear paths (from interpolated GPS points) with Graph Theory network. Correlation of travel routes (derived from path density, speed, and sinuosity) with landscape variables to create predictive model of primary movement corridors.

Python script extension: modification of existing script to regenerate RSF habitat model in multiple 10-year increments, allowing the user to factor in long-term development plans (e.g. second-pass blocks).

Environmental Change Analysis: Analysis of the effects of changing landscape conditions on grizzly bear health indices. (Primarily carried out at U of S, but this will have a significant GIS component).

Travel and Partner Liaison/Development

This research project now has over 60 program partners who have contributed \$5.6 million over the past 7 years of research effort. This is a major funding investment and the ongoing support clearly indicates that this research program is valued and important to our partners. In order to maintain this support and participation we must continue to communicate on a regular and frequent basis about our program accomplishments and direction. In addition we must continue to strive to involve new partners and stakeholders groups to reach the widest possible audience thus allowing the maximum exposure to our program and the FMF. This requires regular site visits and a series of presentations throughout Alberta. This outreach and communication effort will continue in 2006 with a goal of involving 10 new research partners.

Administrative costs

This research project requires operating costs for: insurance, phone, fax, computers, photocopies, etc. These costs are shared between the FMF programs on a pro-rated basis.

Staff Training and development

There is an ongoing need and benefit of professional development for staff working within the Foothills Model Forest Grizzly Bear Research Project. Our staff is highly specialized and must stay current with the newest techniques and

applications specific to their area of expertise. To achieve this ongoing professional training and development we propose to have each staff member enroll in 1 training course each calendar year and attend 2 professional scientific meetings per year. It is expected that research presentations/posters will be delivered at these venues to enhance and expand our program's profile. This program component is a key undertaking to ensure staff retention and ongoing professional development at the FMF.

6. Deliverables

1. Knowledge Creation

Complete and published Grizzly Bear Food Models – 2006

Peer reviewed and published papers on the effects of capture and handling – 1st quarter 2006

Complete and publish the first paper on grizzly bear health and environmental conditions. 2006

2. Demonstration

Ongoing development of new GIS applications for automated use of new products and tools for land managers/planners to allow research findings to be used in an applied manner. Python geoprocessing scripts, and associated GIS input layers, will allow the user to predict changes to grizzly bear habitat caused by industrial development. Planned development features (roads, cutblocks, wellsites, pipelines) are incorporated into the landscape variables, and the RSF and mortality risk models are then regenerated for Phase 3 study area. These scripts require ESRI ArcGIS 9x with Spatial Analyst extension. GIS layers include:
terrain grids:

DEM

Compound Topographic Index

Terrain Ruggedness Index

Topographic class

solar radiation

vegetation grids:

forest age

greenness

Once the Provincial Grizzly Bear Recover Plan is endorsed, and if requested, assist in the delineation of grizzly bear conservation areas in the province using our data, maps and models.

3. Knowledge / Technology Transfer

Development of a training course to assist end users with standardized materials for the use of research products (2006)

Continue research on new laboratory techniques to assess grizzly bear health

Workshops completed and site visits ongoing for SRD, CAPP and AFPA members

Delivery of new RSF map products for resource management decisions to all funding partners who have contributed > \$15,000 and to any new partners who agree to pay \$15,000/yr. Our current program deliverables for January 2006 include:

i) For the Phase 3 study area (right):

Grizzly bear Resource Selection Function (RSF) map (version 2.0), showing the probability of grizzly bear occurrence; validated and tested with 6 years of GPS data

Graph Theory-based movement corridor map (version 1.0), showing the primary travel routes used by grizzly bears.

ii) For the Phase 4 study area (Highway 1 south to Montana border):

Grizzly bear Resource Selection Function (RSF) map (version 1.0), validated and tested with 2 years of GPS data.

iii) For the combined Phase 3/Phase 4 study area:

Remote-sensing based Landcover map and associated vegetation maps (crown closure, leaf area index, percent conifer);

Grizzly bear mortality risk map, showing the probability of human-caused grizzly bear mortality;

Map of watershed units summarized by mean RSF score

Anticipated Deliverables for January 2007:

For the Phase 5 Study area

Remote-sensing based Landcover map and associated vegetation maps (crown closure, leaf area index, percent conifer);

Grizzly bear Resource Selection Function (RSF) map (version 1.0), validated and tested with 2 years of GPS data

Grizzly bear mortality risk map

Graph Theory-based movement corridor map

GIS applications, as above, that allow long-term landscape modeling of grizzly bear habitat.

Long-term habitat mapping plan:

By 2008, we plan to have completed habitat mapping for the entire range of grizzly bears in Alberta, an area of over 350,000 sq. km.

4. Communications and Outreach

See workshops above

Continue with numerous and varied research presentations throughout Alberta and Internationally – ongoing

Participate on numerous graduate student committees (U of C and U of A, U of S, Wilfred Laurier) - ongoing

Continue to work with media as time permits – ongoing

Continue to publish peer reviewed scientific articles with a goal of 1 publication for each research program element each year - ongoing
 Final products and reports will be available to the general public through the Foothills Model Forest

5. Policy Support

Complete annual reports and demonstration projects, along with peer reviewed scientific papers – ongoing
 Assist ASRD with implementation and action items identified within the AB Provincial Grizzly Bear Recovery Plan
 Provide assistance with ASRD in coordinating grizzly bear research activities in Alberta – ongoing
 Work with ASRD on three pilot projects which will focus on the implementation of the new tools and models developed within the FMF GBP.

7. Timelines

The capture and collaring of bears for this program will take place in May-June of 2006. Data collection would occur every month outside the denning period through remote data uploads and collars would be recovered in the fall of 2007, prior to denning. RSF model work requires finished habitat map layers so we cannot begin this work until the map layers are completed. Therefore this work will start in December 2006 and a draft completed by April 2007 for the area. Testing of this product will also occur in 2007 with the second year of GPS grizzly bear movement data and a final model and map product will be produced. The Graph Theory work is also linked to the creation of a habitat layer and also the RSF model output runs. Therefore we will also be starting this work in December 2006 and will have a draft completed and distributed by April 2007 for the area. Testing of this product will also occur in 2007 with the second year of GPS grizzly bear movement data.

All products and reports will be completed and distributed by April 2007 for the Grande Prairie to Manning area to both industry partners and government land and resource management staff. Workshops and technology transfer will be ongoing as new products are completed and delivered. We will continue the creation and development of new GIS tools that will allow users to automatically calculate measures such as: the effect of planned harvest activities on current RSF values; a comparison of road placement options relative to grizzly bear RSF values; RSF scores over time as forest regeneration occurs; and how grizzly bear mortality risk may change as a function of access construction on the landscape.

Task	2006									2007		
	A	M	J	J	A	S	O	N	D	J	F	M
Capture and collaring		x	x									
GPS data collection		x	x	x	x	x	x	x	x			x
Land Cover Mapping field work				x	x							
Land Cover maps completed for GP to						x	x	x	x			

Manning													
RSF and mortality risk models	X	X	X	X	X	X	X	X	X	X	X	X	X
Corridor Modeling (Graph Theory)	X	X	X	X	X	X	X	X	X	X	X	X	X
Vegetation Sampling		X	X	X	X	X	X						
Food Modeling and Diet analysis								X	X	X	X	X	X
Animal health field and lab	X	X	X	X	X	X	X	X	X	X	X	X	X
Link RSF with carrying capacity	X	X	X	X	X	X							
GPS Camera System	X	X	X	X	X								
GIS tool development	X	X	X	X	X	X	X	X	X	X	X	X	X
Reports and publications					X	X	X	X	X	X	X	X	X
Travel and Partner Liaison/Development	X	X	X	X	X	X	X	X	X	X	X	X	X
Staff Training and Development							X	X	X	X	X	X	X
Partner Training and Workshops	X	X	X	X	X	X	X	X	X	X	X	X	X

8. Site Information

The primary study area for field activities in 2006 is shown in Figure 1 and includes an area north from Grande Prairie up to Manning.

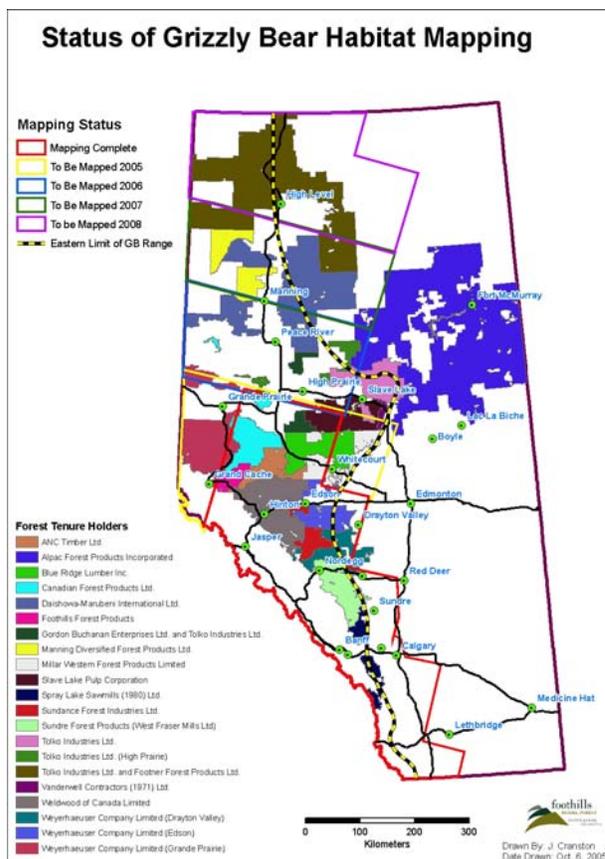


Figure 1. The proposed schedule for creating Land Cover maps developed from satellite imagery by the FMFGBRP.

9. References (for 2005 only)

Franklin, S. E., P. K. Montgomery, and G. B. Stenhouse. Interpretation of land cover using aerial photography and satellite imagery in the Foothills Model Forest. *Canadian Journal of Remote Sensing*. Submitted January 2005.

Mowat, G., D.C. Heard, D.R. Seip, K.G. Poole, G. Stenhouse, D.W. Paetkau. 2005. Grizzly *Ursus arctos* and black bear *U. americanus* densities in the interior mountains of North America. *Wildlife Biology* 11: 31-48.

Julia Linke, Steven E. Franklin, Falk Huettmann and Gordon B. Stenhouse. 2005. Seismic cutlines, changing landscape metrics and grizzly bear landscape use in Alberta. *Landscape Ecology* 20:811-826.

McDermid, G. J., S. E. Franklin and E. F. LeDrew. 2005. Remote sensing for large-area ecological habitat mapping, *Progress in Physical Geography*, in press.

Stenhouse, G.B., J. Boulanger, J. Lee, K. Graham, J. Duval, J. Cranston. 2005. Grizzly bear associations along the eastern slopes of Alberta. *Ursus* 16:31-40.

Couroux, D., S. E. Franklin, and G. J. McDermid. Estimating canopy and understory LAI using Landsat ETM+ data in the Foothills Model Forest. *Canadian Journal of Remote Sensing*. Submitted August 2004.

10. Scientific Review

This project focuses on producing peer-reviewed papers in scientific journals for all program elements. Through this approach we feel that we maximize the distribution of research findings and this allows managers to have further confidence in the research results and recommendations. All program collaborators are expected to produce at least one publication each year. Annual program reports are a collaborative effort and are seen as a way to provide summary information to partners but are not viewed as the principle medium to disseminate research findings.

11. Improvements to Management in Forest Ecosystems

Both senior resource managers and local resource managers see the tools and models that we are developing as fundamental in ensuring that forest management is able to understand the needs of grizzly bears and adapt practices as required to ensure their long-term survival in this ecosystem.

12. Amount of Money Requested From the Foothills Model Forest

\$50,000

13. Partner Contributions

Partner/Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
Foothills Model Forest	50,000	50,000				
FRIAA	300,000		280,000			
AB Innovation		500,000				
ASRD	50,000	200,000				
WWF			25,000			
HSP	60,000		100,000			
Rocky Mountain Elk Foundation			10,000			
Canfor	15,000	25,000				
ANC	15,000	15,000				
TransCanada Pipeline	15,000	15,000				
DMI		25,000				
Petro-Canada	25,000	25,000				
Sundance Forest Products	15,000	5,000				
Burlington Resources	10,000	10,000				
Talisman Energy	15,000	15,000				
Shell Canada	5,000	5,000				
Husky Energy	15,000	15,000				
Ainsworth Lumber	10,000	10,000				
Conoco-Phillips	10,000	10,000				
Encana	15,000	15,000				
Anadarko	15,000	15,000				
Suncor	15,000	15,000				
Devon Canada	15,000	15,000				
West Fraser	120,000		100,000			
Manning Trust Fund	10,000	20,000				

We have received a \$1 million grant (2 years) from Alberta Innovation and Science and it appears that we now have in place matching funding from government and Industry Partners. The remainder of our funding needs will be realized through the addition of new partners over the next year and through research grant applications.

14. Proposed Payment Schedule

FMF monies will be requested April 1, 2006

15. Subcontracted Work

Co-operation agreement in place with WCVI in Saskatoon – animal health
 Co-operation agreement in place with U of C Geomatics – camera collar system
 Co-operation agreement in place with U of C and U of S – Remote sensing

Note:

The FMF Grizzly Bear Research Project may be asked to take on the following additional projects for our research partners:

DNA Population Inventory for BMA 5 (Highway 1- Highway 3) to be conducted and paid for by the Alberta Department of Sustainable Resource Development. A detailed proposal and budget estimate will be prepared upon request. This work will require a contract and will be carried out by seasonal staff employed by the FMF.

Elk Valley Coal has been provided with a work plan to conduct monitoring around the area of the Cheviot coal mine. This plan has two components: radio-collaring 7 bears to study movements, and a DNA based monitoring program to evaluate habitat use. If this work plan is accepted a formal contract will be required to proceed.

16. Project Management

Project Manager – Gordon Stenhouse

17. Additional Organisations requesting FRIAA Administered Monies

Other FMA holders as listed in funding sources for 2005.

18. Other Relevant Information

A complete list of publications and technical reports is available on our web site.

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal Local Level Indicators

1. Prepared by

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2. Introduction

The major focus of Canada's Model Forest Program in Phase II (1997-2001) was the development and reporting of Local Level Indicators of Sustainable Forest Management. This initiative was undertaken in Phase II in support of the Canadian Council of Forest Minister's (CCFM) commitment to reporting on Criteria and Indicators of Sustainable Forest Management in Canada. At the outset of Phase III the Canadian Model Forest Network took on reporting Local Levels Indicators of Sustainable Forest Management as a network strategic initiative. At the national level, the Canadian Council of Forest Ministers identified six national criteria of sustainable forest management. These criteria are conditions, which Canada believes must exist for sustainable forest management to become reality. For the criteria to be effective, they must be adopted by land/resource managers and adapted to local conditions.

3. Background Information

Foothills Model Forest (FtMF) accepted the task of assessing these national criteria at a local level, and began by identifying local goals and indicators that would support the intent of Canada's broad commitment to sustainable development. Partners with major forest resource management responsibilities in the FtMF worked with stakeholders, including members of the public, to develop their own individual goals for sustainable forest management. They then collaborated with each other to identify shared goals for sustainable forest management. The Board of Directors of the FtMF reviewed the resulting set of shared goals, and ultimately endorsed them as reflective of Board members' values and priorities.

The next requirement was to develop a set of indicators that would measure performance against these goals. An initial set of indicators was developed with input from many of the partner agencies, and was reviewed by technical specialists representing the agencies with primary responsibility for forest management within the FtMF. This "reality check" allowed those involved to develop categories for those indicators that can be reported upon now, and those that will be reported on later.

After the release of the Initial Status Report in 2003 the activity team sought the confirmation of the shared goals for sustainable forest management (SFM) of the Board of Directors. The shared goals were ratified in December 2003. At this time the team recognized the need and opportunity to review and enhance the initial suite of indicators, based on inputs by managers and experts involved in monitoring achievement of SFM against such goals. In January 2004 the team held a workshop in Jasper and a report of the results was completed in June of 2004. The FtMF Executive Committee accepted the report's recommendations in November of 2004. The report recommended the activity team proceed with reporting approximately 50 indicators to demonstrate progress against all 23 of the shared goals of the partnership in the Follow-up State of the Forest Report. It also outlined key steps in accomplishing this task by March of 2007; these are described in more detail in the section titled *Abstract of Methodology*.

FtMF has assembled and presented some of the scientific data to provide the element of measurement for most of the chosen indicators. The intent of the Local-Level Indicator Project is to repeat the monitoring and measuring over time, so that updated reports will show any changes and trends as they occur. It will also seek to refine and enhance indicators through collaboration with FtMF partner agencies.

4. Objectives

The FtMF will continue its work on Local Level Indicators in Phase III. Reporting on LLI brings together, in a common document, highlights of much of the research and activities undertaken at the FMF. It brings focus to the fact that many SFM issues cross jurisdictional boundaries and allow the land / resource management partners a neutral forum for reporting on continuous improvement and progress towards SFM. With this in mind, the following objectives were approved for the FMF LLI Program in Phase III:

Maintain and as new research and information becomes available, improve upon and or enhance the indicator set.
Provide yearly progress /annual reports on maintaining and improving LLI set.
Produce a full, Follow-up State of the Forest Report at the end of Year 5 of Phase III (2007)

1. Knowledge Creation

Maintain, and as new research and information becomes available, improve upon and /or enhance the indicator set.

1a. Beneficiaries and Impacts

The Follow-up State of the Forest report will be beneficial to land and resource managers, FtMF partners and the general public. The report will provide follow-up indicator measures as well as provide new measures or action plan where gaps in data exist. This information, both current and since the Initial Status Report, can be used by resource managers and the general public to assess Sustainable Forest Management within the FtMF Landbase.

It is important to note that the Model Forest does not have the mandate to provide much of the data reported on in the report and the creation and provision of data for a large number of these indicators does, and will continue to, fall on land and resource management partners with FtMF.

2. Demonstration

In its Phase III Proposal, the FtMF indicated that it will endeavour to create opportunities for projects focused on demonstration of sustainable forest management activities and techniques. The FtMF will seek opportunities to include demonstration of indicators as part of these demonstration projects. FtMF State of the Forest reporting will demonstrate progress and or issues related to measuring progress towards sustainable forest management. Use of indicators developed at the FtMF and used by its land and resource management partners (Jasper, Weldwood, Alberta Government) will also allow them to measure and demonstrate progress towards sustainable management objectives of their respective organizations. It is the intention of the FtMF to include indicators as a component of Demonstration Projects that will be undertaken during Phase III.

2a. Beneficiaries and Impacts

Demonstration of indicators will allow land and resource management agencies to show how indicators are relevant and crucial at the local level as well as in management planning. It should also be able to demonstrate how indicators are measured and possible management implications of this reporting.

3. Knowledge / Technology Transfer

Provide knowledge exchange and support to partner agencies including Weldwood, Jasper National Park of Canada, Alberta Sustainable Resource Development and Alberta Environment. This may facilitate working with land managers to help in their understanding of challenges, methodology and opportunities for LLI through sharing knowledge of an LLI implementation process.

3a. Beneficiaries and Impacts

Working with land and resource managers, partner organizations and other groups to increase knowledge and provide assistance in developing and reporting on Local Level Indicators, supports the CCFM's commitment to managing forest lands in Canada sustainably.

4. Communications and Outreach

The communications and outreach objectives of the FtMF LLI program are as follows

To increase the general public's understanding of local level indicators and their link to SFM not only within the FtMF, but also at regional, provincial, national and, potentially, international scales.

To educate the general public about the indicators that are monitored on the FtMF land base and how they link to sustainable forest management.

To seek opportunities to increase awareness and understanding of, and with a planned approach, capacity to report on local level indicators by other forestry

and sustainable development research organizations through such tools as progress reports, indicator templates and protocols for indicator selection, development and data collection and reporting.

4a. Beneficiaries and Impacts

Beneficiaries could include FtMF staff, program leaders, collaborators, contractors, partners, stakeholders, Canadian Model Forest Network, International Model Forest Network, and other Forestry/sustainable development research organizations (University of Alberta Sustainable Development Network; Alberta Science Council, ASRA, International Development Research Centre) and Albertans with an interest in learning about sustainable forest management. This could include students, lay persons, and professionals from all backgrounds and disciplines, and Alberta Government MLAs whose constituencies have major industry alongside the boreal forests of Alberta.

A desired impact would be a common understanding of, and acceptance that LLI reporting was a desirable methodology for neutral reporting on SFM in Alberta, Canada and the world. This could include support for reporting on progress towards SFM in such initiatives as the National Forest Strategy.

5. Policy Support

To have land and resource management organizations, both inside and outside the FtMF partnership, accept that LLI reporting is a viable and cost effective method of measuring progress towards sustainable forest management and to have these organizations commit to LLI reporting as part of their management planning frameworks.

5a. Beneficiaries and Impacts

Beneficiaries include land and resource managers and the people of Alberta and Canada

5. Abstract of Methodology

The FtMF obtained commitment via ratification from the board of directors to support the “State of the Forest Report” to be completed by March 2007. This was accomplished through a series of discussions, presentations and follow-up letters with FtMF Board members. These activities centered around clarification from the Board on the following items:

Confirmation of shared goals

Confirmation of shared priorities of the FtMF land management partners

Commitment to allocation of resources to support the LLI program pending direction/mandate of the program by the FtMF Board.

The results of these discussions have been used as the basis for the direction of the program for the remainder of Phase III. At this point the team chose to review and enhance the initial suite of indicators, based on inputs from managers and scientific experts involved in monitoring achievement of SFM against such goals. In January 2004 the team held a workshop in Jasper that resulted in a report

summarizing input on the indicator suite and clearly stating the recommendations of the LLI activity team on how to proceed towards the 2007 Follow-up State of the Forest report.

Key recommendations to proceed are highlighted below.

The team recommended the FtMF target approximately 50 indicators for inclusion in the 2007 *State of the Forest Report*. Most indicators can be developed with minimal effort by virtue of already being developed by partners or previous work conducted by the FtMF. The team also believes that the following 10 areas require and justify special cooperative effort among the partners:

- Genetic diversity (1.2.3)
- Rare, unique or special ecological sites and landscape features (1.3.1)
- Natural diversity of forest ecosystems (1.4.2, 1.4.5, 2.2.1)
- Productive capacity of ecosystems (2.1.1, 2.1.2)
- Water quality - stream crossing standards (3.1.2.a)
- Water yields (3.2.1)
- Carbon fixation (4.1.2)
- Recreational opportunities (5.2.1)
- Integration of lineal infrastructure (5.5.2)
- Threats from large-scale disturbances (5.6.1, 5.6.2)

The team recommended the hiring of a full time Project Coordinator from January 2005 until March 2007. For indicators where a collaborative effort is required to develop indicator protocols, the key role of the Project Coordinator will be to build and facilitate teams to accomplish this task. The Project Coordinator will also be responsible for work plan development, data collation and project management towards the Follow-up State of the Forest report in 2007.

6. Deliverables

1. Knowledge Creation

Establishment of task teams for the development of the 10 indicators identified for collaborative development.

Collation of all indicator data for reporting requirements. (December 2005).

Quarterly progress reports

2. Demonstration

TBA – Pending development of FtMF Demonstration Projects.

3. Knowledge / Technology Transfer

N/A

4. Communications and Outreach

Quarterly progress reports

5. Policy Support
N/A

7. Timelines

Timelines for completion of the LLI report remain the same from the previous years' workplan with the exception of the data acquisition and indicator development components that will continue after December 2005.

Timelines for fiscal 2006-2007 are described in the table below.

Task	2006										2007		
	A	M	J	J	A	S	O	N	D	J	F	M	
Progress Reports			X			X			X			X	
Data acquisition and indicator development*	X	X	X	X									
Data compilation, analysis, and draft report writing	X	X	X	X	X	X	X	X	X	X	X	X	

Timelines to completion of project and Phase III.

Task	2006				2007
	Q1	Q2	Q3	Q4	Q1
Progress Reports	X	X	X	X	
Data compilation, analysis, and draft report writing	X	X	X	X	
Report finalization				X	X
Approval of report by Executive Committee and Board					X
Release of final report					X

8. Site Information
FtMF Landbase

9. References
N/A

10. Scientific Review

The Follow-up State of the Forest Report will be developed within the framework of the LLI Activity Team and will include an internal review by that team. Also, the task teams developed for collaborative indicator development will be made up of technical experts from sponsoring agencies.

11. Improvements to Management in Forest Ecosystems

LLI reporting is fundamental in measuring progress toward SFM in Alberta and Canada.

12. Amount of Money Requested From the FtMF

The program has submitted a FRIAA proposal for \$55,000 to cover the Project Coordinator position. Funding for the final year of the project will be one of two scenarios.

Scenario 1-No FRIAA Funding (15k+30k deferred funds from the FtMF)

The program request that deferred/restricted funds (totaling 45k) be released to cover wages.

The program would cut printing costs by delivering detailed indicator information via the Internet.

Scenario 2-FRIAA Funding of \$55,000 (15k only from the FtMF)

The program would use FRIAA funds to cover GIS backfill wage costs

The program will only request \$15k of the allotted \$45k in deferred funds to complete the project.

The FtMF board has agreed to provide funds to pay for the Project Coordinator position until January of 2006. It is expected that funds for the second year of the position will be provided by sources outside the Model Forest.

The Coordinator position will be taken over by Christian Weik, currently the GIS Coordinator at the FtMF. The funds allocated to the Project Coordinator position will be used to backfill GIS support as necessary.

Funding for fiscal 2006-2007 are hoped to come from a FRIAA application submitted in October of 2005. Status of this submission will be known before the end of calendar 2005.

13. Partner Contributions

Scenario 1- No FRIAA funding

Partner/Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
FtMF	\$4300 Est. Carryover 2005/2006	\$45,000 restricted funds			2 Staff members and 1 consultant for committee - \$ to be determined	
West Fraser Mills Ltd.					1Staff member for committee - \$ to be determined	
Jasper National Park of Canada					1 Staff members for committee - \$ to be determined	
Alberta Sustainable Resource Development					3 Staff members for committee - \$ to be determined	
Alberta Community					1 Staff members	

Development					for committee - \$ to be determined	
Canadian Forest Service					1 Staff members for committee - \$ to be determined	
Canadian Association of Petroleum Producers					1 Staff members for committee - \$ to be determined	
Alberta Environment					1 Staff members for committee - \$ to be determined	
Total	\$4300	\$45,000			\$ to be determined	

Scenario 2- FRIAA funding

Partner/Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
FtMF	\$4300 Est. Carryover 2005/2006	\$15,000 restricted funds			2 Staff members and 1 consultant for committee - \$ to be determined	\$55,000
Weldwood of Canada Limited					1Staff member for committee - \$ to be determined	
Jasper National Park of Canada					1 Staff members for committee - \$ to be determined	
Alberta Sustainable Resource Development					3 Staff members for committee - \$ to be determined	
Alberta Community Development					1 Staff members for committee - \$ to be determined	
Canadian Forest Service					1 Staff members for committee - \$ to be determined	
Canadian Association of Petroleum Producers					1 Staff members for committee - \$ to be	

					determined	
Alberta Environment					1 Staff members for committee - \$ to be determined	
Total	\$4300	\$45,000			\$ to be determined	\$55,000

14. Proposed Payment Schedule

N/A

15. Subcontracted Work

N/A

16. Project Management

The Project Coordinator will undertake project management. A project charter or terms of reference will be developed to better clarify the roles and expectations of the members of the LLI Activity Team.

17. Additional Organisations requesting FRIAA Administered Monies

N/A

18. Other Relevant Information

N/A

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal

Assessing the quality and effectiveness of public participation processes in the Foothills Model Forest

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2. Introduction

The fairness and effectiveness of public participation processes has become a key component of forest management practices in Canada, and this is reflected in the Local Level Indicators that have been identified for the Foothills Model Forest. In preparation for an updated LLI report in 2006, this study involves the collection of data that can be used to report on criteria 6.1. and indicators 6.1.1. and 6.1.2. (Dempster, 2004). Data will be gathered from public processes within the major sectors of the FMF economy, including oil and gas activity, mining, forestry, recreation, and the national park.

3. Background Information

The Foothills Model Forest Local Level Indicators (LLI) Activity Team, in collaboration with other individuals, has developed a comprehensive suite of sustainability indicators. These indicators were revised in 2004 and work is now underway, under the leadership of Christian Weik, to compile an indicator report in late 2006. This report will provide data on all indicators of sustainability, including those identified under Criterion 6.1: “Activities that allow interested parties to participate in the decision making process” (6.1.1.) and “Perceived quality and effectiveness of involvement processes” (6.1.2.).

To provide meaningful data for this report, this study will involve a review of all public processes related to resource management in the FMF region. In addition to documenting activities in various jurisdictions and economic sectors, the project will also involve an evaluation framework that is designed to assess the fairness and effectiveness of such processes.

Fairness and effectiveness in public processes is inherently difficult to determine, but the study will work from existing research protocols that were developed recently from a national survey of advisory committees in the forest sector (Parkins et al., 2005). This standardized evaluation framework will allow for some comparative research between the various public processes that are currently underway in the FMF region. Research will involve information gathering from those currently involved in public processes as well as those who

may have withdrawn from such processes with the intention of creating a database of baseline data on public processes.

4. Objectives

Using face-to-face interviews and survey research methods, along with document analysis, the study will:

- Identify a comprehensive list of activities that allow interested parties to participate in the decision making process. All public processes associated with natural resource management in the region will be included.
- Determine the quality and effectiveness of public processes by way of standardized assessment techniques.

1. Knowledge Creation

The study will develop baseline information on public processes in the Foothills Model Forest. An assessment of public processes was completed approximately 10 years ago for the Model Forest (Beckley 1996), and this study will build on methods developed in the previous study as well as provide a systematic reporting framework that is more consistent with LLI activities.

1a. Beneficiaries and Impacts

The FMF and the LLI Activity Team are the primary beneficiaries of this report, but results may be useful to sponsors of public processes as they work toward more effective ways of integrating public values and public knowledge into decision making processes.

2. Demonstration

Primary demonstration opportunities will coincide with updates and revisions to the FMF Local Level Indicators “State of the Forest” report.

A QuickNote will also be developed to highlight dominant trends and implications for community sustainability.

2a. Beneficiaries and Impacts

Beneficiaries may include members of public processes in resource management as well as sponsors of these processes.

3. Knowledge / Technology Transfer

Knowledge transfer will take place through report distribution, QuickNote publication, and integration with FMF LLI activities.

3a. Beneficiaries and Impacts

Those who benefit from the project will include resource managers, residents, and local stakeholders who are interested in making a contribution to resource management in the region.

4. Communications and Outreach

Communication will be undertaken primarily through report distribution and QuickNote publication. Efforts will focus on clearly defining the relevant indicators associated with quality and effectiveness, important trends in public participation, and implications for management and policy development.

4a. Beneficiaries and Impacts

Beneficiaries include FMF staff, partners and interested organizations within the region who maintain an interest in public participation processes.

5. Policy Support

Policy support will be undertaken through regular communication with the Local Level Indicators working group, regarding results and implications for sustainable forest management in the region.

5a. Beneficiaries and Impacts

Beneficiaries include FMF staff, partners and interested organizations within the region who maintain an interest in public participation processes.

5. Abstract of Methodology

Methods will include unstructured face-to-face interviews with sponsors of public processes in key FMF jurisdictions and economic sectors. Interviews will also be conducted with laypeople who are involved in public processes as well as those who have dropped out of such processes for various reasons. In addition to these interviews, the study will include a standardized survey component which will address issues of quality and effectiveness in each public process.

6. Deliverables

1. A report of all activities that allow interested parties to participate in the decision making process
2. Baseline data on the quality and effectiveness of public process in resource management throughout the FMF region.
3. A QuickNote that highlights major findings from deliverable 1 and 2.

1. Knowledge Creation

- a. Baseline data on quality and effectiveness

2. Demonstration

- a. Inclusion of data from this study directly into the next FMF LLI Status Report

3. Knowledge / Technology Transfer

- a. The production of at least one QuickNote

4. Communications and Outreach

- a. Presentation of results to all interested public processes such as the West Fraser FRAG.

5. Policy Support

- a. Inclusion of data from this study directly into the next FMF LLI Status Report

7. Timelines

Task	2006										2007		
	A	M	J	J	A	S	O	N	D	J	F	M	
<i>2006/07 Work Plan</i>													
Interviews with key informants				X	X								
Survey of process participants						X							
Report of baseline data							X						

8. Site Information

Interviews with key informants
 Random sample mail survey
 Other secondary sources

9. References

Dempster, W.R. 2004. Report on the Local Level Indicators (LLI) Workshop (January 15-16, 2004, Jasper). Hinton, Foothills Model Forest.

Beckley, T.M. 1996. Public involvement in natural resource management in the Foothills Model Forest. Hinton: Unpublished Report.

Parkins, J.R., L. Hunt, S. Nadeau, J. Sinclair, M. Reed, S. Wallace. 2005. Public participation in forest management: Results from a national survey of advisory committees. Draft Document.

10. Scientific Review

Published paper will be subject to a peer review process.

11. Improvements to Management in Forest Ecosystems

The extent to which public participation is considered to be a component of ecosystem-based management, this study will contribute to our understanding of current public processes in the region and point areas of strength and weakness.

12. Amount of Money Requested From the Foothills Model Forest

2006/2007 funds required for staffing, data acquisition, and report production
 Total amount requested from FMF = \$25,000.00

13. Partner Contributions

Partner/Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
Foothills Model Forest			25,000			
Canadian Forest Service		5,000			10,000	

14. Proposed Payment Schedule

N/A

15. Subcontracted Work

Work will be completed by term staff with the Social Science Research Group, Canadian Forest Service, Edmonton.

16. Project Management

Project will be managed by John Parkins, Canadian Forest Service (see section 1)

17. Additional Organisations requesting FRIAA Administered Monies

N/A

18. Other Relevant Information

N/A

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Detailed Proposal

A Social Science Analysis of Wildfire Risk Reduction in Jasper National Park

1. Prepared by

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2. Introduction

In recent years, the frequency and severity of forest wildfires have increased in Canada affecting timber supply and putting many human communities at risk. Due to increasing wildfire suppression costs, fire management agencies are seeking alternative solutions to prevent fire and lessen the impact of fire on human communities. Recognition of the role of fire as an important function in ecosystem processes has also prompted many agencies to review their fire suppression policies.

In September 2005 the Canadian Council of Forest Ministers agreed to several principles for a Canadian Wildland Fire Strategy. Risk management directed at reducing the threat to communities and human life is an integral component of the strategy. The success of this approach depends largely on public and private landowners support and engagement in fire mitigation and preparedness measures. Public education programs (such as FireSmart¹) have been initiated in several provinces with a goal of improving participation in wildfire threat mitigation.

The Foothills Model Forest has initiated the FireSmart-ForestWise Community Protection and Forest Restoration Project to manage forest fuels to reduce wildfire risk and to improve ecological conditions, wildlife habitat, and aesthetics. As part of this initiative, Jasper National Park has undertaken a project aimed at reducing the risk of wildfire to the town of Jasper and adjacent developments and to improve ecosystem health by restoring more natural variation in the forest structure (Parks Canada 2003). Fuel modifications such as selective thinning,

¹ FireSmart refers to activities that individuals and communities can undertake to reduce the risk of fire losses and enhance safety (Partners in Protection 2003).

pruning, and burning are taking place in developed areas of the park. The Jasper project appears to be a success with local residents supporting and helping with the project. Other communities in Canada are also initiating FireSmart projects but with varying degrees of success. This project aims to use Jasper as a case study of a success story in fire risk reduction.

How park residents perceive the risks from wildfire, their acceptance of fuel modifications within national parks, their preferences for mitigation measures have not been examined empirically. The role of park managers and municipal governments and other relevant agencies in influencing responses at the individual and community levels is also not well understood. Determining the factors that contributed to the success of the Jasper project will help develop a model for other communities to emulate.

Other social science research on wildfire that the applicant is involved in includes a collaborative project with the University of Alberta (T. McGee, Dept. of Earth and Atmospheric Sciences, Human Geography). That project is addressing social science aspects of fire risk reduction in communities outside of protected areas. The Foothills Model Forest (FtMF) contributed \$10,000 to that study in 2004-05 to assist with identification of study sites, initial survey design, and development of an interview guide. The contribution from the FtMF assisted in the initial design phase of the project and ensured that the town of Hinton would be included as one of the study sites. To date, 4 case studies (communities affected by the Lost Creek Fire in AB and the McClure Fire in BC, and Whitecourt and Peace River) have been examined. Residents of Hinton will be surveyed in 2007.

This new initiative is aimed at communities in or near national parks. Because national parks have different land management objectives (i.e., have a mandate to ensure ecological integrity) than multiple-use lands, residents in or near these parks may have different perspectives on the risk associated with wildfire and what is acceptable for fuel modifications. Thus, this project is aimed at understanding park residents and comparing these results with those from communities outside national parks.

The intent is to include other national park communities (such as Waskesui in Prince Albert National Park) to provide a comparison with Jasper. Funds to examine other communities will be sought from Parks Canada. I am requesting \$20,000 from the FtMF for the Jasper component of the study.

3. Background Information

Previous studies of the human dimensions of wildfire have examined public attitudes toward fire, policy and fuel reduction preferences, and information needs, in communities outside of protected areas with contradictory results. For example, residents in southern California had a low awareness of fire severity, preferred public (rather than private) risk management strategies, and were not receptive to programs aimed at diminishing fire hazard (Gardner *et al* 1987). In

contrast, Fried *et al* (1999) found residents in Michigan participated in some form of risk reduction activity and many were willing to invest time or money to reduce fire risk. In subsequent focus groups, Winter and Fried (2000) found that Michigan residents viewed wildfire as uncontrollable and the resulting damage as random and preferred solutions that reduced the number of ignitions rather than mitigation and control measures. McGee *et al.* (2005) found that experiencing catastrophic wildfire in Alberta and British Columbia resulted in greater awareness of wildfire risk but did not motivate residents to reduce the risk on their own properties. These contradictory results suggest that it is invalid to extrapolate results across geographical areas with differing ecological, social, cultural, and political systems. Thus, there is a need to develop an understanding of risk perception, attitudes, knowledge of fire and fire management, and support for risk reduction measures on lands with differing management objectives.

Although these studies have provided insight into residents' attitudes and preferences little is known about public perceptions and preferences related to fire management in protected areas. The few studies that have included protected areas have examined support for prescribed burn programs in US national parks (e.g., Manfredo *et al.* 1990; Bright *et al.* 1993) or the impact of fire on the visitor experience (e.g., Englin *et al.* 1996). To my knowledge, no studies have been done that examine perceptions of wildfire risk to humans and ecological integrity in protected areas. Thus, for fire management programs and ecosystem restoration efforts to be successful there is a need to develop an understanding of risk perception, attitudes, knowledge of fire and fire management, and support for risk reduction activities in protected areas in Canada.

4. Objectives:

The objectives are to:

Examine park residents' attitudes toward fire, perception of risk associated with residing in or near a national park, acceptability of risk, knowledge of fire and mitigation measures, familiarity with ecological integrity principles, and preferences for fire management.

Examine the influence of park managers and municipalities and other relevant agencies on risk reduction.

Develop recommendations to assist Parks Canada, municipalities, and fire management agencies in developing communication strategies, engaging the public in mitigation activities, and improving community preparedness.

1. Knowledge Creation (2006-07)

N/A

1a. Beneficiaries and Impacts

The long-term results will be of interest to Parks Canada, communities in or near national parks such as the towns of Jasper and Hinton, the provincial government (ASRD), and fire management agencies.

2. Demonstration (2006-07)

N/A

2a. Beneficiaries and Impacts

N/A

3. Knowledge / Technology Transfer (2006-07)

N/A

3a. Beneficiaries and Impacts

The long-term results will be of interest to Parks Canada, communities in or near national parks such as the towns of Jasper and Hinton, the provincial government (ASRD), fire management agencies, and Partners in Protection. It will assist in identifying factors that contribute to the adoption of risk reduction activities and that contribute to successful community preparedness.

4. Communications and Outreach (2006-07)

N/A

4a. Beneficiaries and Impacts

The results of this study will be communicated to academic audiences, Parks Canada, provincial and municipal agencies involved in fire management, Partners in Protection, fire researchers at the Canadian Forest Service, the forest industry, and the public.

5. Policy Support (2006-07)

N/A

5a. Beneficiaries and Impacts

The long-term results will help inform policy makers (especially those involved in protected areas management) on what policies might be needed to encourage public support of risk reduction activities, and to enhance cooperation among various communities and fire management agencies. Parks Canada, the towns of Jasper, Hinton and others, and ASRD will be direct beneficiaries.

5. Abstract of Methodology

This project will use personal interviews for data collection. Participants will include a sample of park residents, representatives from Parks Canada and the municipality of Jasper and other relevant organizations. The goal will be to interview a minimum of 20 residents with differing views on fire and its management in national parks. Although the number of representatives of Parks Canada and other agencies that will be interviewed is not known, the interviews will include key people involved in fire management. The use of interviews will facilitate gathering of more detailed information than is possible with a survey and will assist in formulating hypotheses for further testing in other national parks. Interviews will be tape recorded, transcribed, and analyzed using Nvivo® qualitative software.

6. Deliverables

1. Knowledge Creation

Final report – Dec. 2006

2. Demonstration

No deliverables

3. Knowledge / Technology Transfer

The research tools developed as part of this study can also be used in other protected areas and provinces, in order to assist wildfire management agencies and communities elsewhere in Canada, thereby reducing the cost of future study design.

4. Communications and Outreach

In 2006-07 results will be presented at model forest annual general meetings or other public fora including professional conferences such as the Canadian Association of Geographers or a conference on fire management. The results from the Jasper case study may be combined with other case studies to produce manuscripts that will be submitted to peer reviewed journals such as Society and Natural Resources, Environmental Hazards, Canadian Journal of Forestry, Journal of Forestry, and Environmental Management.

A QuickNote will be prepared on project completion (Dec. 31, 2006).

5. Policy Support

This project will provide wildfire management agencies with information that can be used to develop effective communication strategies. This may lead to communities and national parks being better prepared for wildfires, and potentially suffering fewer losses as a result. This research also supports Parks Canada ecological integrity mandate.

7. Timelines

Task	2006									2007		
	A	M	J	J	A	S	O	N	D	J	F	M
Develop interview guide		X										
Conduct interviews & transcribe tapes			X	X								
Data analysis					X	X	X					
Report writing								X	X			

The project will be conducted between May and Dec. 2006.

Major project milestones are:

May –Aug 2006 Hire research assistant, develop the interview guide,
conduct and transcribe interviews

Aug –Oct 2006 Data analysis of interview data.

Nov – Dec 2006 Report writing

Dec 31, 2006 Submit final report to FtMF

8. Site Information

The research will be conducted at the Northern Forestry Centre in Edmonton with trips to the Foothills Model Foothills for data collection.

9. References

Bright, A.D.; Manfredo, M.J.; Fishbein, M.; Bath, A. 1993. Application of the Theory of Reasoned Action to the national park service's controlled burn policy. *Journal of Leisure Research* 25(3), 263–280.

Englin, J.; Boxall, P.C.; Chakraborty, K.; Watson, D.O. 1996. Valuing the impacts of forest fires on backcountry forest recreation. *Forest Science* 42(4), 450–455.

Fried, J. S.; Winter, G.; Gilliss, K. 1999. Assessing the benefits of reducing fire risk in the wildland-urban interface: a contingent valuation approach. *International Journal of Wildland Fire* 9(1):9-21.

Gardner, P. D.; Cortner, H. J.; Widaman, K. 1987. The risk perceptions and policy response toward wildland fire hazards by urban home-owners. *Landscape and Urban Planning* 14:163-172.

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Parks Canada. 2003. FireSmart-ForestWise Community Protection and Forest Restoration Project. Park Reg. File J03-004. Jasper National Park.

Partners in Protection. 2003. *FireSmart. Protecting Your Community from Wildfire*. 2nd edition. Edmonton, AB: Partners in Protection.

Winter, G.; Fried, J. 2000. Homeowner perspectives on fire hazard, responsibility, and management strategies at the wildland urban interface. *Society and Natural Resources* 13:33-49.

10. Scientific Review

Journal articles will be subject to the peer review process established by the journal.

11. Improvements to Management in Forest Ecosystems

The project will contribute to sustainable forest management efforts in Canada and ecological integrity efforts in national parks by providing information on public acceptance of fire management practices and policies.

12. Amount of Money Requested From the Foothills Model Forest

Project total: \$20,000

2006-07: \$20,000

13. Partner Contributions (2006-07)

Partner/Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
Foothills Model Forest			20,000			
CFS					8,000	
¹ Parks Canada			50,000			
University of Alberta (T. McGee)					5,000	

¹ A proposal will developed for submission to Parks Canada to extend the project to other national parks.

14. Proposed Payment Schedule

Full amount (\$20,000) payable by April 30, 2006.

15. Subcontracted Work

No subcontracting will occur.

16. Project Management

Same as #1.

17. Additional Organisations requesting FRIAA Administered Monies

N/A

18. Other Relevant Information

N/A

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal Foothills Growth and Yield Association

1. Prepared by

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2. Introduction

Companies holding Forest Management Agreements on the Eastern Slopes have recognized for some time the potential value of a co-operative lodgepole pine growth and yield program. In response to interest by industry and government, the Foothills Model Forest (FtMF) facilitated collaboration among these companies to create a Foothills Growth and Yield Association (FGYA) for co-operative forecasting and monitoring of managed stand growth and yield. This is the seventh annual work plan of the Association.

3. Background Information

In 2000, 9 companies holding forest management agreements, the Alberta Government, and the FtMF entered into an agreement to develop and manage the Association. The 9 companies sponsor the program and act as voting members of the Association. The Alberta Land and Forest Division and the FtMF participate as non-voting members, with the Model Forest acting as the coordinating agency.

The FtMF, acting as applicant on behalf of the 9 sponsoring members, submitted a proposal to the Forest Resource Improvement Association of Alberta (FRIAA) in July 2000. A contract was issued (FOOMOD-01-01 – Foothills Growth and Yield Association) on July 25, 2000, facilitating use of FRIP (Forest Resource Improvement Program) funds to cover membership costs and project activities. The original proposal and contract had an initial term of 2 years, and were amended in September 2001, extending the term to 5 years (April 1, 2000 to March 31, 2005). In 2003, FRIAA approved 2 additional projects:

Measurement and maintenance of historic research trials (FOOMOD-01-02);
Enhanced management of lodgepole pine (OF-02-16).

In 2004 the Association's Steering Committee approved an update to the Association's 5-year business plan, originally approved in 2002. In 2005 FRIAA approved a second 5-year program plan and budget for the period April 1, 2005 to March 31, 2010 (FOOMOD-01-03).

To date the Association has:

Completed installation of a major lodgepole pine regeneration trial, developed an associated database and procedural manual, and undertaken scheduled measurements and treatments;

Completed a study of site-index change between pre- and post-harvest stands, including preparation, acceptance and presentation of a scientific paper on results at a major international conference;

Undertaken scheduled re-measurements and maintenance of historic research trials, under a formal agreement with the Canadian Forest Service and Alberta Sustainable Resource Development;

Commenced collaborative work with the Land and Forest Division of ASRD (Alberta Sustainable Resource Development) for the pilot development of improved regional yield estimation techniques;

Completed the design and commenced undertaking of a project on enhanced management of lodgepole pine, including investigations of fertilization response in fire-origin and managed stands, and growth in pine-aspen mixtures.

Held at least one technical conference and / or field tour per year.

4. Objectives

The overall goal of the Association is to continually improve the assessment of lodgepole pine growth and yield in managed stands. This will be achieved by forecasting and monitoring responses to silvicultural treatments, facilitating the scientific development and validation of yield forecasts used by members in managing their tenures, and promoting knowledge, shared responsibility and cost-effective cooperation.

Desired outcomes of the program are listed below.

Stand-level timber yield forecasts are defensible and accepted by scientists and regulators.

Recognized scientific, regulatory and certification standards for validation and monitoring of sustainable forest management practices are met.

Managers' knowledge, and their abilities to predict responses to management practices, are improved, facilitating management by objectives rather than by arbitrary prescription.

Stakeholders influencing forest management decisions understand the probable effects of management interventions on stand development.

Investments in growth and yield assessment are cost effective, and there is no unnecessary duplication of effort.

Participants remain committed to the program, and share costs equitably.

Work is user-driven, results-focused, and directly applicable to management and crop planning.

Specific program objectives, beneficiaries and impacts are described below, relative to each of the strategic objectives of the FtMF.

1. Knowledge Creation

The following projects and objectives pertain to knowledge creation.

Regenerated Lodgepole Pine Trial. Objective: forecast and monitor the growth and yield of lodgepole pine, regenerated after harvesting, in relation to site, initial spacing of planted stock, natural ingress and mortality, competing vegetation (brush), and density regulation (pre-commercial thinning).

Comparison of Pre-harvest and Post-harvest Stand Productivity. Objective: provide credible and reliable forecasts of post-harvest stand productivity and development, relative to pre-harvest values.

Cooperative Management of Historic Research Trials. Objective: provide forest managers the full and continued benefit of relevant established long-term field trials assessing responses of fire-origin lodgepole pine to nutrition and density management.

Regional Yield Estimators. Objective: develop stratum-based stock and stand table generators for lodgepole pine ecosystems, with compatible forward and retrospective projection capability, providing an improved basis for productivity estimation, yield planning, and evaluation of crop performance standards.

Enhanced Management of Lodgepole Pine. Objectives: predict response of lodgepole pine stands to thinning and fertilization across a range of site and stand types, develop managed stand yield tables, and develop diagnostic criteria (guidelines) for prescribing silvicultural treatments.

In spite of considerable interest in, and an established need for, enhanced forest management (EFM), Alberta has no accepted system for predicting managed stand development (e.g. “managed stand yield tables”), verification of yields resulting from enhanced practices, or for linking silvicultural practice to EFM objectives (e.g. silvicultural assessment guidelines and interpretative criteria). The above projects will address these knowledge gaps in regards to lodgepole pine. Lodgepole pine forests are particularly subject to intensifying land-use pressures, threats, and uncertainty.

The targeted audiences for created knowledge are the voting members of the Association, the Alberta government, forest scientists, and members of the public who influence forest management decisions. The primary and direct beneficiaries will be the 9 sponsoring members of the Association and the Alberta Department of Sustainable Resource Development. However, informed and enhanced management of lodgepole pine is essential to overall enhancement of the forest resources of Alberta, providing benefits to a broad portion of Albertans.

2. Demonstration

Field demonstrations of how lodgepole pine responds to different management treatments will be provided by the Regenerated Lodgepole Pine Trial, approximately 12 historic trials being measured and maintained by the program, and the Enhanced Management of Lodgepole Pine Project experimental sites. Interpretative signage will be targeted at forestry practitioners and public groups interested (and influential) in sustainable forest management. Beneficiaries will be these groups, members of the Association, and forest research agencies.

3. Knowledge and Technology Transfer

Knowledge and technology transfer will be achieved through:

Technical conferences and field tours (anticipated audiences: Association members, scientists, forestry practitioners, and educators);

Technical and information reports (anticipated audiences: Association member organizations, collaborating agencies, forestry practitioners);

Published scientific papers and presentations (anticipated audiences: members, scientists, other forestry professionals);

Predictive computer models (anticipated audiences: Association member organizations and collaborating agencies).

4. Communications and Outreach

Outreach to broader audiences, in addition to those listed above, will be facilitated by:

Advertising reports and publications, and making them available for downloading from the FtMF website;

Publication of news, events and findings on the FtMF website, and through FtMF Quick Notes;

Interpretative signage of experimental sites.

5. Policy Support

Senior policy makers in Alberta Sustainable Resource Development have repeatedly stated that the biggest question mark, and highest priority, regarding sustainable forest management (SFM) is the growth and yield of post-harvest regenerated stands, and that a cooperative approach to collecting growth and yield information to support SFM strategies is essential.

Information, models, and techniques provided by this program will support the development and use of policy tools including:

Regeneration and performance standards linked to management objectives;

Assessment criteria for enhanced forest management treatments (e.g. brushing, thinning and fertilization);

Silvicultural prescriptions, manuals, and crop plans;

SFM monitoring protocols;

Forest management planning guidelines;

Forest productivity estimators;

Managed stand yield tables.

It must be stressed that the FGYA, as an impartial scientific provider of information, does not itself participate in policy development or advocacy.

5. Abstract of Methodology

The following is a brief description of the 6 projects currently defined within the program.

Project 1. Development and Management of the Association

The roles, responsibilities, and activities for developing and managing the Association are described in the Memorandum of Agreement. The primary activities are project management, field co-ordination, organization of meetings, and distribution of information. A part-time Director and full-time Research and Development Associate undertake these activities, with administrative support from the FtMF.

Project 2. Regenerated Lodgepole Pine Trial

The Project consists of a long-term field trial, established in 2001, and interim forecasting of effects using available models and data. The trial is a three-level split-plot design. The basic balanced design consists of 90 field installations (5 ecosites x 6 spacings x 3 replications), with each installation split 2 ways into 4 treatment plots (brushing / no brushing and thinning / no thinning). Twelve additional installations (6 spacings x 2 replications) have been added in the modal ecosite category, to produce a total of 102 installations. Main activities in 2006-07 will be scheduled measurements and treatments, analysis of data, and regeneration model development.

Project 3. Comparison of Pre-harvest and Post-harvest Stand Development

No further activities have been scheduled for 2006-07, pending results and recommendations from the Post-harvest Stand Development Conference being held by the FtMF January 31 - February 1, 2006.

Project 4. Cooperative Management of Historic Research Trials

The Project involves 3 main tasks: maintenance and protection of the field installations, synthesis of results to date, and ongoing measurement and analysis. This is a cooperative effort shared between the Association, Canadian Forest Service (CFS) and ASRD (Alberta Department of Sustainable Resource Management). The main activities of the FGYA in 2006-07 will be scheduled re-measurement and maintenance of trials, and development and placement of interpretive signage.

Project 5. Regional Yield Estimators

Currently, no further work is scheduled for this Project during 2006-07, pending presentation of analytical results by ASRD from data provided by FGYA member companies.

Project 6. Enhanced Management of Lodgepole Pine

Scheduled and funded activities for 2006-07 include:

Experimental fertilization treatments;

Foliar nutrient analysis;

Field sampling (destructive and permanent) in selected pine-aspen sites;

Analysis and reporting.

6. Deliverables

The following products and services are scheduled for delivery by March 31, 2007.

1. Knowledge Creation

Field measurements, data entry, and verification (Projects 2, 4, 6);
Data analyses (Projects 2, 4, 6).

2. Demonstration

Sites maintained (Projects 2 and 4) and identified (Project 6).

3. Knowledge and Technology Transfer

Technical and information reports (Projects 2 and 4);
Computerized database update and dissemination (Project 2).

4. Communication and Outreach

Program information and reports available on the FtMF website;
2 Quick-Notes distributed;
Interpretative signage of experimental sites.

5. Policy Support

Contributions to development of Alberta government framework for
implementation of stratum specific reforestation standards (Project 2).

7. Timelines

Task	2006									2007		
	A	M	J	J	A	S	O	N	D	J	F	M
1. Association development and management												
Director (100 person days)	10		10	10	10	10		10	10	10	10	10
Field support services (50 person days)	5	5	5	5	5	5	5	5	5	5		
R&D Associate (full time)	20	10	20	10	20	10	20	20	20	20	20	20
Data management services (person days)	2	2	2	2	2	2	2	2	2	2	2	2
Progress reports (annual and mid-year)	X							X				X
Steering committee meeting											X	
Technical committee meeting			X							X		
2. Regenerated lodgepole pine												
Planning		X	X							X		
Fieldwork			X	X	X	X						
Compilation and analysis	X	X						X	X	X	X	X
Reporting		X	X							X	X	
3. Comparison of pre-harvest and post-harvest stand development												
(no activities scheduled pending January 2006 conference outcome)												
4. Cooperative management of historic research trials												
Analysis and publication - schedule pending	-	-	-	-	-	-	-	-	-	-	-	-
Fieldwork planning		X	X									
Field re-measurements				X	X	X	X					
Compilation and database update								-	-	-	-	-
5. Regional yield estimators												
Schedule pending	-	-	-	-	-	-	-	-	-	-	-	-
6. Enhanced management of lodgepole pine												
Sub-project 1 – fertilization and measurements		X										
Sub-project 1 - foliage sampling and analysis									X	X		
Sub-project 2 – field sampling					X	X						
Analysis and reporting	X	X						X	X	X	X	X

X = task undertaken primarily by FGYA , or cooperatively with FGYA in leadership role

- = task undertaken or led by collaborating agency, with FGYA in secondary or support role

8. Site Information

The program will be based out of the FtMF headquarters in Hinton. Research and monitoring sites are not limited to the Foothills Model Forest and will be distributed along the Eastern Slopes, in the tenures of the 9 sponsoring members. Research trials are located in the Lower and Upper Foothills and the Subalpine Natural Sub-regions.

9. References

Memorandum of Agreement among Members of the Foothills Growth and Yield Association (December 1999).
Letter of Agreement between Canadian Forest Service, Alberta Sustainable Resource Development, and Foothills Growth and Yield Association for Cooperative Management of Historic Lodgepole Pine Research Trials, July 2002.
Measurement and Maintenance of Historic Research Trials, proposal submitted to FRIAA by FtMF, April 2003.
Enhanced Management of Lodgepole Pine, proposal submitted to FRIAA Open Funds Panel by Foothills Growth and Yield Association, October 2003.
Foothills Growth and Yield Association Business Plan, updated April 2005.
Foothills Growth and Yield Association Second Five-Year Program: proposal submitted to the Forest Resource Improvement Association of Alberta (FRIAA) by the FtMF, April 2005.
Collaborative Research Agreement between the Foothills Growth and Yield Association and the University of Alberta, May 2005.

10. Scientific Review

Recognized scientific experts in growth and yield, biometrics, and forest ecology have reviewed or will review project plans and results. Drs. P. Blenis, S. Titus, V. Lieffers and P. Comeau of the University of Alberta reviewed the experimental design and procedures for Project 2 (lodgepole pine regeneration). Dr. S. Huang of ASRD assisted in the initial design of Project 3 (site index comparison), and has co-authored publication of project results. Dr. James Stewart of the CFS assisted in the design, and is leading analysis of Project 4 (historic research trials). Drs V. Lieffers and P. Comeau of the University of the University of Alberta assisted in the detailed design of Project 6 (enhanced management of lodgepole pine).

11. 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 natural ecosystem processes and contributions to global ecological cycles.

12. Amount of Money Requested from the Foothills Model Forest

No money is requested from the FtMF for 2006-07. In-kind services are requested as noted below.

13. Partner Contributions

Contributions and costs estimates are subject to refinement by the FGYA Technical Committee, and approval by the Steering Committee. The following table of cash and in-kind contribution amounts is therefore provisional, and will not be finalized until the FGYA Steering Committee annual meeting (scheduled for February 23, 2006).

Partner / Project	Cash (\$)			In-kind (\$)	
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions
Members – fees – Project 1	0	198,000			0
Members – Project 2	0	0			170,700
Members – Project 4	0	49,000			0
FRIAA – Project 6	0	133,300			0
FtMF GIS services	0	0			12,000
Other / various	54,572 ²	0			0
Total	54,572	380,300			182,700

The table does not include contributions the following contributions from the FtMF
 Website update and maintenance.
 Administrative and financial services provided.

The table also does not include costs of the following contributions by FGYA members that will be essential for proper and successful functioning of the Association:
 Participation on Technical and Steering Committees;
 Attendance of meetings;
 Review of minutes, reports, and scientific papers;
 Contribution of existing information and data;
 Provision and support of models;
 Protection of trials, and restoration in event of damage or loss;
 Direct participation in analysis and interpretation of data;
 FtMF administration costs.

The following in-kind contributions from the LFD and CFS also are also not reflected:
 Project 4 management, analysis and interpretation (CFS and LFD);
 Project 5 data analysis (LFD).

14. Proposed Payment Schedule

Payments to the FtMF will be scheduled as follows:
 Membership fees through FRIAA: Members will be requested to provide letters of authorization to FRIAA by May 1, 2006. FRIAA will release payments to the FtMF on receipt of letters and a consolidated annual report for 2005-06.

² Forecast balance forward from 2005-06.

Membership fees paid directly to FtMF: members will be invoiced by May 1, 2006 for payment by June 1, 2006.

Funds promised for Projects 4 and 6 will be requested for payment upon approval of annual work plans and reports, with a 10% holdback pending completion of work.

Payments to the contract Director and Field Coordinator will be based on approval of monthly invoices by the FtMF General Manager.

Other contract services and meeting costs will be paid on receipt of invoices approved by the Association Director.

15. Contracted Work

The following tasks will be completed under direct contract to the FtMF:

Project 1: program direction, field audits, provision of meeting facilities etc.

Project 4: fieldwork.

Project 6: field and laboratory work, data analysis.

16. Project Management

Project management and management responsibilities are described in the Memorandum of Agreement among members of the Association. The Director will act as the project manager for all 6 projects. The Research and Development Associate will supervise fieldwork and sub-contracted components of Projects 2, 4, and 6.

17. Organizations Requesting FRIAA Administered Monies

Funding of contributions to the Association, and the identification of sources for such funding, are generally the responsibilities of the individual members. Seven members have elected to authorize FRIAA to transfer funds for membership fees directly to the FtMF. One member has utilized FRIP funds, but directed the fee payment itself. One member has not utilized FRIP funds for its contributions to the Association. The FGYA is directly funded for Project 6 by FRIAA under the FRIAA Open Funds Program.

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal³ Communications and Extension

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2. Introduction

The Communications and Extension Program plays a critical role in supporting the achievement of the following three of the four Phase III Foothills Model Forest Goals.

Foothills Model Forest Goal Two:

Develop and implement mechanisms that result in a wider understanding and application of accrued knowledge and technology of sustainable forest management research.

Foothills Model Forest Goal Three:

Deliver communications and outreach programs that improve understanding of, and support for, sustainable forest management.

Foothills Model Forest Goal Four:

Support and influence policy that improves the practice of sustainable forest management.

As the organization enters its fifth and final year of Phase III (beginning April 1, 2006 and ending March 31, 2007) the Communications and Extension Program will focus on projects that are underway to ensure they are completed by the end of Phase III. The Program will also deliver its staple products such as newsletters, annual report, interpretive programs. A goal of Phase III was an increased emphasis on knowledge transfer. Inroads have been made in this area however there are opportunities for improvement. The Foothills Model Forest Program has developed some excellent education programs, specifically *GIS Day*. Efforts will be made to expand this program geographically and to develop additional curriculum.

New projects for 2006/2007 include the redevelopment of the Foothills Model Forest website and, if Open FRIAA funding is secured, the initiation of the

³ The 2006/2007 Communications and Extension Plan is attached as an appendix to the Work-Plan. This Plan is consistent with the information included in the Work-Plan. It is a more detailed and complete document.

Executive Series. The Foothills Model Forest website receives many hits however its technology is antiquated as is its utility as a communications tool. Twenty thousand dollars have been committed to begin the redevelopment of the website in 2006/2007. The Communications Steering Committee has also agreed to commit \$30,000 to this project in 2007/2008. Foothills Model Forest partners, researchers and audiences will be engaged and consulted during the development of the new website to ensure the site best meets the needs of the users. The second project new to 2006/2007 is the *Executive Series*. The Executive Series includes quarterly meetings between Foothills Model Forest researchers and policy makers from industry and government, as well as stakeholders that influence policy decisions. The goal of this initiative is to address resource management policy in a proactive, solutions oriented manner. Foothills Model Forest researchers will have the opportunity to present their knowledge and tools and identify how knowledge and tools may used to advance land management. This initiative would span two years. The Communications and Extension Program has committed \$11,000 to this initiative and has applied for \$46,300 in Open FRIAA funding to support the remaining costs.

Finally, in 2006/2007 two surveys will be conducted. One survey will focus on Foothills Model Forest partners to gauge the effectiveness of Foothills Model Forest communications and knowledge transfer efforts. The second survey, in partnership with Hinton Wood Products, West Fraser Mills Ltd. will target the local public. The local public have been surveyed on two separate occasions so this survey once again will evaluate how effectively Foothills Model Forest communicates with the local public. Results of both surveys will guide the Communications and Extension Program's strategy for the next five-year phase (2007 – 2012).

3. Background Information

4. Objectives

1. Knowledge Creation

Not applicable

1a. Beneficiaries and Impacts

Not applicable

2. Demonstration

Not applicable.

2a. Beneficiaries and Impacts

Not applicable

3. Knowledge / Technology Transfer

2006/2007 Communications and Extension Goal: To build and maintain credibility and support for Foothills Model Forest research.

Objective: By December 31, 2006 update and distribute the Collection of Quicknotes.

Strategy: Since 2004/2005 the Communications and Extension Program has collated existing Quicknotes into a single collection. This product is well-received by Foothills Model Forest partners and will be updated again in 2006/2007.

Objective: Support to the Canadian Model Forest Network's website by ensuring all Foothills Model Forest publications and events are posted to it in a timely manner.

Objective: In 2006/2007 distribute two newsletters to keep Foothills Model Forest R&D and events at the forefront of the target audience's minds.

Strategy: In 2004/2005 the Foothills Model Forest newsletter moved from a "newsy" tool targeted at a general audience to a knowledge transfer tool. The newsletter is the first step in the knowledge transfer process. It creates and maintains awareness about the organization, its programs and research. The newsletter focuses on a single program area. In 2006/2007 two newsletters will be produced and distributed.

Objective: Submit three articles to the *Forestry Chronicle* for inclusion in the Canadian Model Forest Network section of the journal.

Strategy: The *Forestry Chronicle* dedicates space to the Canadian Model Forest Network. Foothills Model Forest will submit three articles per year to the publication. Where possible, existing text, for example a newsletter article, will be submitted to the *Forestry Chronicle*.

Objective: In 2006/2007 deliver tours to groups who will use Foothills Model Forest knowledge and tools in sustainable forest management practice and policy.

Strategy: Foothills Model Forest receives many requests to conduct tours. Where appropriate, the Foothills Model Forest will accommodate all tours however **will not** cover costs associated with tours such as meeting rooms, meals and transportation.

2006/2007 Communications & Extension Goal: The Foothills Model Forest website will act as an effective communications, knowledge transfer and data management tool.

Objective: By September 30, 2006 survey Foothills Model Forest partners, program leads and the public to guide the development of a new Foothills Model Forest website.

Objective: By March 31, 2007 launch a new Foothills Model Forest website.

Objective: On a quarterly basis, report the amount and nature of knowledge being transferred from the Foothills Model Forest web site outwards.

Objective: Support the Canadian Model Forest Network's website by ensuring all Foothills Model Forest publications and events are posted to it in a timely manner.

Strategy: The Foothills Model Forest needs a new website that incorporates new features and functions. The website needs to be a communications tool, a knowledge transfer tool and support data management and transfer. In 2006/2007 the Communications and Extension Program will lead the development of a new website. Users will be consulted before the site is developed to ensure user needs are met. A new site will be launched in 2006/2007 however it is anticipated that additional features and functions will be added to the site in 2007/2008. The GIS Program is fully supportive of this initiative and will work closely with the Communications and Extension Program to ensure the website meets the GIS needs of Foothills Model Forest partners.

2006/2007 Communications and Extension Goal: Conduct knowledge and technology transfer sessions that lead to the integration of Foothills Model Forest knowledge and tools into forest management practice and policy.

Objective: In 2006/2007 provide support to workshops that introduce Foothills Model Forest knowledge and tools to partners and potential users.

Strategy: In 2006/2007 the Communications and Extension Program will support the delivery of knowledge transfer sessions. As per the approved Phase III Communications and Extension Strategy, knowledge transfer sessions will be delivered on a cost-recovery, cost-sharing or sponsorship basis.

Objective: Develop a demonstration site at the Anderson Creek and Fish Creek stream crossings.

2006/2007 Communications and Extension Goal: To develop a common understanding of the natural disturbance approach to forest management among Foothills Model Forest sponsoring partners and Natural Disturbance program partners.

Objective: By June 30, 2006 deliver a pilot of the *Introduction to Natural Disturbance* short-course.

Objective: By March 31, 2007 develop a plan for future and additional Natural Disturbance Short-Courses or knowledge transfer.

Strategy: In order for Foothills Model Forest research to be integrated into policy and practice, training is required. In 2004/2005 development began on the *Introduction to Natural Disturbance* short-course. The short-course is

approximately 50% complete. Short-course development has been delayed because members of the Course Advisory Group have not provided course material to the Saskatchewan Institute of Applied Science and Technology. The short-course is funded with carry over dollars from the 2005/2006 budget.

Objective: By June 30, 2006 conduct a partner survey to evaluate Foothills Model Forest communications and knowledge transfer activities.

Objective: By September 30, 2006 produce a report that summarizes findings from the partner survey.

3a. Beneficiaries and Impacts

Each Phase III Foothills Model Forest and Communications and Extension Goal relates to a specific audience. This section identifies lists the target audience for knowledge transfer. The 2006/2007 Communications and Extension Plan identifies audiences for each tactic. Furthermore, when new projects and activities are undertaken, effort will be invested to ensure the primary and secondary audiences are targeted. The list below is not exhaustive or prioritized.

Sustainable forest management professionals. The Foothills Model Forest Communications and Extension Program defines sustainable forest management professionals are those individuals involved in forest and land management planning and include foresters, biologists, GIS specialists, etc.

Foothills Model Forest sponsoring partners including Alberta Sustainable Resource Development, Canadian Forest Service, Jasper National Park and West Fraser Mills Ltd. of Canada Limited, Hinton Division.

Foothills Model Forest forestry partners.

Foothills Model Forest oil and gas partners.

Forest management agreement holders in Alberta.

Oil and gas companies and consultants exploring or developing along Alberta's northeast slopes.

Provincial government ministries involved in land and resource planning and management along Alberta's northeast slopes including Alberta Environment; Alberta Community and Development, Parks and Protected Areas; Energy; Aboriginal Affairs and Northern Development.

Federal government ministries involved in land and resource planning and management along Alberta's northeast slopes including Department of Fisheries and Oceans and Parks Canada.

Canadian Model Forest Network and their partners.

Industry associations including Alberta Forest Products Association; Forest Engineering Research Institute of Canada (FERIC; Forintek; Forest Products Association of Canada (FPAC); Council of Forest Industries; Forest Alliance of British Columbia; Canadian Institute of Forestry; Canadian Association of Petroleum Producers.

Leading researchers and academia.

Environmental groups.

Expected Benefits:

The benefit of the Foothills Model Forest conducting and increasing its knowledge transfer is the integration of research in resource management planning and practice. Ultimately, the integration of Foothills Model Forest knowledge and tools will contribute to improved resource management and the long-term sustainability of the forest, its ecology, its wildlife as well as long-term economic and community health.

4. Communications and Outreach

Communications and outreach is important in the advancement of SFM (informed public are a criterion of the Canadian Council of Forest Ministers' Criteria & Indicators), and is, therefore, an important element of the Foothills Model Forest. As outlined in the Phase III Strategy, communications and outreach will be done in a collaborative manner with other organizations, such as the Provincial Museum of Alberta, Inside Education and our sponsoring partners.

Communications and outreach will target audiences that are interested in sustainable forest management issues, as opposed to undertaking large campaigns in an effort to change public opinion on a broad basis. As a result, communications and outreach activities will communicate messages that are consistent with the desired outcomes of knowledge and technology transfer activities taking place at the Foothills Model Forest.

2006/2007 Communications and Extension Goal: Foothills Model Forest research findings will be used in classrooms of Alberta.

Objective: To provide twenty teachers with a bias balanced view of sustainable forest management issues, encouraging them to integrate FMF research findings into their lesson plans.

Objective: Develop new GIS Day curriculum that link directly to Alberta Learning's science curriculum.

Objective: Develop a plan that outlines how GIS Day can be expanded geographically outside the Foothills Model Forest landbase.

2006/2007 Communications and Extension Goal: Increase awareness and support among interested general public within the Foothills Model Forest land base for sustainable forest management generally and the application of Foothills Model Forest research specifically.

Objective: Support and participate community events in Hinton and Jasper.

Objective: Work with local media to produce stories about the Foothills Model Forest quarterly in the Hinton Parklander and Jasper Booster.

Objective: Conduct a survey of the local public to evaluate how effectively Foothills Model Forest communicates with the local public.

Objective: Revise and Implement Communications Plan for Highway 40 North Demonstration Project

Objective: Develop interpretive signs and Kinsmen Park.

2006/2007 Communications and Extension Goal: Increase awareness and support among interested general public beyond Foothills Model Forest land base of Foothills Model Forest research and support for sustainable forest management.

Objective: Respond to inquiries from provincial and national media in a timely manner.

Objective: In 2006/07 promote and exhibit *Within Growing Distance Museum Exhibit* at the Exhibits Musée Héritage Museum in St. Albert, Alberta.

2006/2007 Communications and Extension Goal: To increase awareness of the Foothills Model Forest and build support for sustainable forest management research and application among visitors to Jasper National Park and William A. Switzer Provincial Park.

Objective: In the summer of 2006 deliver summer interpretive programs to 4,000 visitors of Jasper National Park and William A. Switzer Provincial Park.

Objective: Deliver the Foothills Model Forest interpretive programs and guided hikes within the Grande Yellowhead region.

4a. Beneficiaries and Impacts

Audiences:

Alberta school teachers (elementary, junior and senior high)

Alberta school students (elementary, junior and senior high)

Interested general public (visitors to Jasper National Park and William A. Switzer Provincial Park, membership holders and drop-in visitors to Science Centers and Museums)

Local and Provincial Media (readership/viewers/listeners)

Agency Staff (science centers, museums, non-profit groups)

Expected Benefits:

The Communications and Extension Program at the Foothills Model Forest has adopted a multi-pronged approach toward communication and outreach. Its first prong aims to assist Alberta school teachers to understand and integrate Foothills Model Forest research findings into their lesson plans. If successful, Foothills Model Forest research findings will reach public school students in a systemic way, forming a foundational awareness and understanding of sustainable forest management. Ultimately, this approach will set the framework for understanding

and support for sustainable forest management among the general public in the long-term.

Considerable effort has been made to communicate Foothills Model Forest research findings to the interested general public. These efforts have focused on capturing and informing audience members through interpretive programs, presentations and public forms, and setting up display booths at community events. These activities have proven effective, and will continue in the future. However, greater emphasis is being placed on communications and outreach activities targeting visitors to science centers and museums. These facilities present unique opportunities to bring Model Forest messages to the public, rather than attempting to bring the public to us. This approach will be supplemented by a regular presence in local, regional and provincial media. By bringing the Model Forest to the public, it is anticipated that the key messages of the Foothills Model Forest will take-on a more immediate place in the minds of Albertans and Canadians.

The final prong in our communications and outreach approach is to target agency staff from organizations like Inside Education and the Provincial Museum of Alberta. It is anticipated that by bringing agency staff up-to-date on Foothills Model Forest research findings and key messages these agencies will communicate our key messages to their audiences more regularly and with a higher degree of accuracy.

5. Policy Support

A Phase III goal is to inform and support policy. The Foothills Model Forest Communications and Extension Program can provide support to the Board of Directors, General Manager and program leaders in their efforts to achieve this objective. The two initiatives that the Communications and Extension Program will lead are the development of the annual report and a regular series of talks targeted at policy makers from industry and government.

2006/2007 Communications and Extension Goal: To encourage the use of Foothills Model Forest R&D in the policy of resource industries, federal and provincial governments.

Objective: By September 30, 2006 produce and distribute the 2005/2006 Annual and Phase III Report.

Strategy: The Foothills Model Forest Annual Report continues to be the tool used to communicate with senior managers from industry and government. The Foothills Model Forest 2005/2006 Annual Report will take a similar approach to past reports but will also report on milestones and accomplishments from Phase III.

Objective: On a quarterly basis a Foothills Model Forest program leader will present and meet with senior management from industry (forestry and oil and gas) and government.

Strategy: Face-to-face meetings are the most effective form of communication. For Foothills Model Forest R&D to inform and support policy, those who make policy must be made aware on a regular basis about the organization and its work. The Executive Series meetings will provide structure and organization to face-to-face communication with policy makers. The Communications and Extension Program will facilitate and support these meetings. The manager will consult with key board members and program leaders on a meeting-by-meeting basis. This project is dependent on receiving Open FRIAA Funds.

5a. Beneficiaries

This list is not exhaustive or prioritized.

Provincial Minister, Deputy Minister, Assistant Deputy Minister and directors from Community Development, Energy, Environment, Sustainable Resource Development, Aboriginal Affairs and Northern Development, Innovation and Science.

Standing Policy Committee on Sustainable Resource Development and Energy
Senior executives from forestry and oil and gas sector.

Federal Minister, Deputy Minister, Assistant Deputy Minister and senior bureaucrats from Environment, Natural Resources Canada, Parks Canada, Department of Fisheries and Ocean and Industry Canada.

Special task forces such as the Canadian Council of Forest Ministers, Climate Change Central, Roundtable on the Economy and the Environment.

Science and technology groups such as Alberta Forest Research Institute, Sustainable Forest Management Network.

Environmental groups.

Impacts

Communicating with policy makers should achieve the following:

Build support for the integration of Foothills Model Forest knowledge and tools in resource management policy and practice.

Maintain support for the Foothills Model Forest, its goals, objectives and programs.

5. Abstract of Methodology

Not applicable

6. Deliverables

1. Knowledge Creation

Not applicable

2. Demonstration

Not applicable

3. Knowledge / Technology Transfer

Hard copy and pdf file of Collection of Natural Disturbance Quicknotes – December 31, 2006
 Hard copy and pdf file of Collection of Foothills Model Forest Quicknotes – December 31, 2006
 Hard copy, pdf and html files of two newsletters by September 30, 2006 and February 1, 2007.
 Three articles in the Canadian Model Forest Network section of the Forestry Chronicle
 Report that summarizes website statistics on a quarterly basis.
 Foothills Model Forest publications on Canadian Model Forest Network website – Ongoing
 Summary of Evaluation Forms of Workshops Held in 2006/2007 – March 31, 2007
 Introduction to Natural Disturbance Short-Course by June 30, 2006
 Plan for Future Natural Disturbance Knowledge Transfer by March 31, 2007
 New website – March 31, 2007.
 Partner Survey and Reporting of Findings – September 30, 2006
 Demonstration sites at Anderson and Fish Creek Stream Crossings – March 31, 2007⁴

4. Communications and Outreach

Inside Education EcoTour – October 31, 2006
 GIS Day Curriculum – March 31, 2007
 Develop and Implement a Plan that Addresses how GIS Day will be expanded beyond the Foothills Model Forest landbase – March 31, 2007
 Stories in the Hinton Parklander and Jasper Booster – March 31, 2007
 Local Public Survey and Reporting of Findings – March 31, 2007
 Revise and Implement Communications Plan for Highway 40 North Demonstration Project – March 31, 2007
 Develop and deliver new interpretive program – September 1, 2006
 Interpretive Signs at Kinsmen Park – March 31, 2007⁵

5. Policy Support

Annual and Phase III Report by September 30, 2006.

7. Timelines

Task	2005									2006		
	A	M	J	J	A	S	O	N	D	J	F	M
Develop new website	X	X	X	X	X	X	X	X	X	X	X	X
Compile and Distribute Collection of Quicknotes								X	X			
Two Newsletters				X	X	X			X	X	X	
Three articles to Forestry Chronicle	X					X					X	

⁴ This project is dependent upon securing external funds.

⁵ This project is dependent upon securing external funds.

Tours	X	X	X	X	X	X						
Report on website statistics			X			X			X			X
Support Canadian Model Forest Network website	X	X	X	X	X	X	X	X	X	X	X	X
Support workshops	X	X	X	X	X	X	X	X	X	X	X	X
Deliver Introduction to Natural Disturbance Short-Course				X			X	X	X		X	X
Revise Plan for Natural Disturbance Knowledge Transfer								X	X			
Partner Survey	X	X	X	X	X	X						
Demonstration Site at Anderson Creek and Fish Creek Stream Crossings							X	X	X	X	X	X
Inside Education Eco-tour							X					
GIS Day – New Curriculum												X
Develop and implement plan to expand GIS Day beyond Foothills Model Forest landbase							X	X	X	X	X	X
Local Public Survey	X	X	X	X	X	X						
Revise and Implement Plan for Highway 40 North Demonstration Project	X	X	X	X	X	X	X	X	X	X		X
Press Releases in Local Media	X		X		X		X		X		X	
Interpretive signs at Kinsmen Park						X	X	X	X	X	X	X
Develop and Deliver New Interpretive Programs	X	X	X	X	X							
Annual and Phase III Report	X	X	X	X	X	X						

8. Site Information

Not applicable

9. References

Not applicable

10. Scientific Review

Not applicable

11. Improvements to Management in Forest Ecosystems

Through the activities of the Communications and Extension Program, forest ecosystems will be managed using current knowledge and tools. Furthermore, the public will be better informed about the forest ecosystem and how Foothills Model Forest tools and knowledge are being incorporated into land and resource management.

12. Amount of Money Requested From the Foothills Model Forest

13. Partner Contributions

Partner/Organisation	Cash			In-kind		
	Current Funding	Promised Contributions	Funding Pending	Current Funding	Promised Contributions	Funding Pending
Foothills Model Forest	\$245 000					
Foothills Model Forest – Administration’s Portion of Fran Hanington’s salary	11 500					
Carry-Over: Natural Disturbance Short-Course	18 000					
Open FRIAA Funding: Executive Series	29 800					
Knowledge Transfer Workshops and Forum			10 000			
Project Coordinator: Hardisty Creek Restoration Project			20 000			

14. Proposed Payment Schedule

The Communications and Extension Program spends its fund equally over the course of the year.

15. Subcontracted Work

The Communications and Extension Program will subcontract the following services:

- Design, layout and printing of communications products
- Writing
- Website development

16. Project Management

Lisa Jones, Communications and Extension Manager
 Foothills Model Forest
 Box 6330, Hinton, Alberta T7V 1X6
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17. Additional Organisations requesting FRIAA Administered Monies

18. Other Relevant Information

Volume II Foothills Model Forest 2006-2007 Annual Work Plan

Detailed Proposal

Forest History Project:

“A Case Study of Policies and Practices Leading to Adaptive Forest Management”

1. Prepared by

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2. Introduction

In 1996, Weldwood initiated a history and case study of its sustainable forest management program at Hinton. This initial study was expanded at the suggestion of Model Forest board member Dennis Quintilio to encompass the model forest landbase and, in 1997 the model forest accepted the revised program as a model forest project.

By March 31, 2002, final draft reports had received for all five volumes in the history series and these were submitted to FRIAA, which also supplied considerable funding for the project.

Two of the final reports – “A Hard Road to Travel”, and “Learnings from the Forest” were proposed for publication in book form in 2003/04. “Learnings” was published by Fifth House in July 2003 and has been well received. “Hard Road” is not yet published. The remaining reports are posted on the model forest website.

2006 marks the 10th anniversary of the Adaptive Forest Management/ History Program at Foothills Model Forest.

3. Background Information

Five reports have been completed for the history series, and two more are pending.

Completed Reports

Volume 1. *A Hard Road to Travel: Land, Forests and People in the Upper Athabasca Region to 1955.*

By: PJ Murphy with Tom Peterson, Bob Stevenson and Bob Udell

This volume describes the history of the largely unmanaged forest prior to 1955, including the larger landbase which is Foothills Model Forest. It traces early

explorations, the historic role of fires and aboriginal peoples in the area, early days in forestry including the establishment of dominion forestry reserves and the transfer of resources to the Province in 1930. Generally, it examines the history and ecology of the largely unmanaged state of nature that existed before 1955.

“Hard Road” was sent for external review in 2003, and then reworked to expand on certain elements of early forest history, and reduce overlap with “Learning from the Forest”. Hinton historian Tom Peterson joined the writing team at that time. In 2004/05 the Forest History Society agreed to collaborate with Foothills Model Forest in the production of this book.

Volume 2. *The Hinton Forest : A Case Study in Sustainable Forest Management*

By: PJ Murphy, Bob Udell, Bob Stevenson and Bob Bott

This volume examines the evolution of forest practices on the Hinton FMA from early days to 2001. Individual chapters examine the range of forestry practices from inventory, silviculture, multiple values and uses, protection, research, harvesting and the planning and management cycle for sustainable forest management. One of the major contributions of the Company was its demonstrated commitment to forest renewal and silviculture. It was both a precedent-setting and significant achievement.

Volume 3. *Evolution of the Forest Management Agreements -- A Policy Review and analysis*

By: PJ Murphy, M. Luckert

Originally proposed as a component of Volume 2, this stand-alone document describes, from a policy perspective, how the Forest Management Agreement evolved from its concept in the 1949 Forests Act to the first Agreement with North Western Pulp & Power Ltd. signed by Robert Ruben in 1951, then through successive re-negotiations to 1998. As well, discussions are included about the major events -- both successes and disappointments -- that took place along the way. The story ends with the start of re-negotiations for a new FMA started during the fall of 2000.

Volume 4. *Development of Adaptive Forest Management in Protected Areas of the Foothills Model Forest*

By: M den Otter

This provides a history and evaluation of the progression of policy and adaptive management practice in three protected areas within the Foothills Model Forest landbase -- Jasper National Park, Willmore Wilderness and Switzer Provincial Park -- and makes comparisons among them. This volume was prepared by Michael den Otter, a graduate student in the Department of Rural Economy, studying under direction of Marty Luckert at the time this work began.

The project was initially structured to serve as a Masters-level thesis study. He conducted literature reviews and interviews during 2000, wrote his thesis, and successfully defended it late fall 1999. The thesis formed the basis for this report, completed at the end of 2000, comprising 122 pages.

Volume 5. *Learning from the Forest: A Fifty-Year Journey towards Sustainable Forest Management*

By: R. Bott, PJ Murphy, R. Udell

This book is an illustrated, user-friendly synopsis of the practice of forest management at Hinton, based on material written specifically for it. The goals of this work were (a) to tell the story in an engaging fashion and (b) to illustrate the principles and practices of adaptive management as applied to a specific land base. Work on this report started late fall 1999.

A foreword by Dr. Gordon Baskerville provides an overview of the significance of the book and its importance to forestry practitioners and others (see attached).

Fifth House/ Fitzhenry and Whiteside published the book in July 2003.

4. Objectives

1. Knowledge Creation

The series of reports in the history series provide insights into all aspects of sustainable forest management, drawing on the history of the model forest landbase. Volumes 2, 3, 4 and 5 are complete, volume 1 will be complete up to and including design phase in 2005/06. Work in 2006-07 – pending external funding - will complete the first seven volumes of the project.

Volume one – Hard Road to Travel – provides little-known detail – some never published - on the history and evolution of forestry in the area in early days. This is of particular interest to students of history, especially forestry history in Alberta. There has been no other such comprehensive examination of this fascinating history.

Volume six – Mountain Trails – is a republication, with additional material including text, photos and maps of the journals of an early Alberta government forest ranger whose experiences working out of Entrance, Alberta, spanned the transition between the federal and provincial government s in the ownership and management of the forest resources in Alberta.

Volume seven – STOP Revisited – is an in-depth look at a vitriolic environmental campaign from the early 70s that targeted forest practices at the time on the model forest landbase of today. 30 years later, photographic evidence along with ecological assessments of the controversial areas show a landscape once again supporting healthy, thriving forests whose roots were already established at the time of the campaign.

1a. Beneficiaries and Impacts

These reports will provide adequate information for general readers and for students and practitioners of forestry, resource management, ecology and related disciplines. They will also be of high value to students of the early history of Alberta and western Canada. They will be essential reference for practitioners, educators and regulators considering where we have come from, and how that has shaped where we are today.

2. Demonstration

Some of the information presented in these reports is still discernable in the landbase of the Foothills Model Forest, and could be the basis for field demonstration and historical tours in the model forest landscape.

2a. Beneficiaries and Impacts

N/A – there will be no field elements of this project, although the information provided is also reflected in components of some of the FMF demonstration projects – e.g. Firesmart, Integrated Land Management, Landscape Disturbance.

3. Knowledge / Technology Transfer

See preceding discussion.

3a. Beneficiaries and Impacts

Educators, historians, practitioners, regulators and interested members of the public.

4. Communications and Outreach

These reports provide a fascinating insight into the evolution of forest policy and forest practice in both protected areas as well as the working landscape in the foothills of Alberta. Furthermore, they highlight the pivotal role played by this area as the pre-eminent trading route for western Canada in the 19th century, bringing together in one book the stories of many pioneers of that era.

4a. Beneficiaries and Impacts

Preliminary reviews of drafts of these reports by forest historians as well as informed members of the public and forestry community indicate that these books are making a significant contribution to improved knowledge and forest practice.

5. Policy Support

The books will provide insights for policy makers by providing a comprehensive overview of how forest policies and practices have evolved in this area from the earliest times.

5a. Beneficiaries and Impacts

A must read for provincial regulators and forestry practitioners in Alberta.

5. Abstract of Methodology

Of the major reports, one is published, and three are on the model forest website. “A Hard Road to Travel” is currently in final design. “Mountain Trails” is in the edit stage, considerable work remains before it is ready to publish. “STOP

Revisited” has a preliminary text, but further information – particularly the ecological assessment – must be added before design and production can begin.

6. Deliverables

Proposed Reports 2006/07

Volume 1: A Hard Road to Travel: Land, Forests and People in the Upper Athabasca Region to 1955.

By: PJ Murphy with Tom Peterson, Bob Stevenson and Bob Udell

An earlier and less comprehensive version of this book is posted on the Model Forest website and will be removed upon completion of the final report. The expanded and as yet unpublished book examines the history of the upper Athabasca region from prehistoric times to the arrival of large scale industrial forest management in 1955. With over 150 photographs – many not previously published – and 27 maps it is an in-depth look at the remarkable human and ecological history of west central Alberta. Historian Tom Peterson joined the team to provide advice on the broad and colourful history of exploration and development from aboriginal times to the present in the area. The authors combed a number of archives and museums to come up with a remarkable and - in many cases – never published collection of over 150 photos to illustrate the book. Through examination of a number of historical records a series of 27 maps, many original for this book, supplement the text.

The Forest History Society of Durham N.C. agreed to participate in the project and provide a distribution and awareness capability unavailable to Foothills Model Forest. They are also overseeing the design work for the book.

The project has been submitted to the FRIP Open Funds call for proposals, with requested funding of \$69,000 to publish 2000 hardcover, 500 hardcover copies of this book. Pending FRIAA funding, this book will be published and distributed in Canada and the United States in late 2005//06 or early 2006/07 fiscal year.

Volume 6: Mountain Trails: The Story of an Early Alberta Forest Ranger

Adapted and expanded by Rob Mueller, Bob Udell, Pete Murphy, Bob Stevenson

The model forest has received permission to publish “**Mountain Trails**” - the memoirs of Jack Glen who was a ranger at Entrance from 1920 to 1945 and saw much of the early development in the forests around Hinton, particularly in the Athabasca Forest. His memoir was originally published in a series of articles in the Western Producer in 1969. Mrs. McCreedy was Forest Service librarian at the time, and kept the articles, which Pete Murphy arranged to have reproduced in 1997.

They are a fascinating read of the life and times of a DFB/AFS ranger who saw the transition from Dominion to Provincial resource ownership. In 2003, his

family was contacted for permission to publish this memoir and not only gave permission but provided the original manuscript upon which it was based, as well as Glen's photo collection from the time. Work is underway to produce this expanded memoir, illustrated by Glen's photos as well as others from the Forest Protection Historic Photo Collection. FMF will also produce a map with place names and trails to accompany the text.

This project has been submitted to FRIAA Open Funds Provincial program at \$82,800 to complete design, indexing and printing of 2300 copies.

Volume 7. STOP Revisited – a 30 Year Progress Report

By Bob Stevenson and Steve Ferdinand with Bob Udell and Pete Murphy

In 1971, the environmental organization Save Tomorrow – Oppose Pollution commissioned one of its members, Arnim Zimmer, to visit North Western Pulp and Power's Hinton forestry operations and examine environmental and forestry practices there. His 1972 report, the pictures it contained and his presentation to the Minister of Forestry, Lands and Wildlife caused a flurry of activity and negative publicity in the media at the time. Consternation over this report provoked the AFS to dispatch Silviculture Program Manager Dr. Kare Hellum to locate every site identified in Zimmer's damning report and investigate his assertions of environmental degradation, deforestation and wasteful practices. This report effectively refuted most if not all of Zimmer's assertions but good news is never as popular as bad and the negative seeds planted in the public's mind lingered.

In 1997, Weldwood supported a re-photography project by Steve Ferdinand and Bob Stevenson who found all of the blocks and sites reported by Zimmer and took new pictures of them as close as possible to the original photopoints. This presented some problems, as young reforested stands up to 10 metres in height blocked the view from many of the original points and the authors had to use helicopters to capture the perspective. Subsequently, the Company conducted an ecological assessment of the sites to examine the soil conditions, reforestation status and growth performance of the stands.

An initial draft of the combined Zimmer/ Hellum/ Ferdinand/Stevenson examinations is done, but some work remains to incorporate the current ecological status.

This project has been submitted to the FRIAA Open Funds Provincial Program at \$13,400 to complete writing, editing, photo assembly, maps, design and printing of 500 copies.

The publication of two books and one report on forest history - one book from the view of a ranger on the ground, the other a more comprehensive review of lands, people and forests in west central Alberta for the period before 1955.

Elements of the two books and the report cover all aspects of the 5 broad goals of Foothills Model Forest listed below.

Future Years – 2007/08

Volume 9. The Evolution of Silviculture Practice at Hinton – a 40 Year Journey 1955-1995.

By Lorne Brace, adapted by Pete Murphy and Bob Udell

Des Crossley, who originated the forest management program at Hinton was a distinguished CFS researcher, frustrated at his inability to see his research knowledge adapted into practice. When given the opportunity and challenge to do so at Hinton he leaped at the chance and set in motion a remarkable and innovative silviculture program never before seen in Alberta. As background to “**The Hinton Forest**” a comprehensive history of this silviculture program at Hinton was developed to a draft stage. Completion of this project, including a photographic record not yet initiated, will provide insight into the science, philosophy and practice of silviculture as it has emerged under an adaptive forest management framework.

Produce a DVD: The Roots of the Present are Buried Deep in the Past – CIF/SAF History Forum – Plenary Session 2 October 4, 2004

This historical forum, organized by Bob Udell and Pete Murphy of the Foothills Model Forest Adaptive Forest Management/ History Program, was a great success at the conference in Edmonton, several people from the SAF stating that it was the best plenary they had attended in years. It provides a fascinating look into the past as a prologue for the present and the future. A DVD of this forum is on hand, and is suitable for production and distribution.

Ecotour of Highway 16: Foothills Model Forest

Over two million people a year drive through the Foothills Model Forest, yet interpretive media for the human, ecological, and geological history are largely unavailable. In 1997, Susan de Caen was working on her Masters thesis at University of Calgary, which included recommendations for a Cultural Interpretive Program for Jasper National Park. This was never implemented, yet the information contained could provide the foundation for a fascinating ecotour within and outside the park in the model forest landbase.

Tom Peterson, who was one of her advisors on the project, has provided the background materials and reports of de Caen. We propose to use these and expand them using knowledge gained from the model forest program and other sources to produce an Ecotour of the corridor. This Ecotour will be patterned after a model developed by the CFS, first used on the Calgary-Banff corridor and more recently adapted by Fred Pollett (retired Director General, CFS) and used elsewhere in Canada.

7. Timelines

Timelines are dependent on the acquisition of external funding for the projects listed.

Task	2006										2007		
	A	M	J	J	A	S	O	N	D	J	F	M	
Publish 2500 copies of “A Hard Road to Travel”		X											
Complete edits to “Mountain Trails”	X												
Design work “Mountain Trails”				X									
Publish 2300 copies of “Mountain Trails”								X					
Complete edits to “STOP Revisited”	X												
Design and Publish				X									

8. Site Information

The books cover the complete landbase of Foothills Model Forest and relevant activities/events beyond the model forest area.

9. References

10. Scientific Review

These books are not scientific studies per se, merely reports of history, activities and learnings over time.

11. Improvements to Management in Forest Ecosystems

These books will make a significant contribution to the literature.

12. Amount of Money Requested From the Foothills Model Forest

External funding is being sought for the publication of three reports in the Adaptive Forest Management/ History Program at Foothills Model Forest.

In 2005//06, Bob Udell, Peter Murphy and Bob Stevenson have been donating their time to this program. Travel and associated out of pocket expenses are becoming a factor in continuing this important program.

We propose that the proceeds from book sales of “Hard Road to Travel” and “Mountain Trails” be returned to the Adaptive Forest Management/ History program to support the time, work and expenses of the principal members of the team.

We request a budget of **\$5000** be set aside to cover travel and expenses in support of the history program, to be considered an advance against book sales.

13. Partner Contributions

To date, over \$300,000 has been spent on bringing five of the seven volume history series to the final report stage and West Fraser has been supporting the project through direct and indirect funding.

Bob Udell, Peter Murphy, Tom Peterson and Bob Stevenson have contributed considerable personal time and some personal expense to support the projects in the program.

14. Proposed Payment Schedule

As per the FRIAA proposal.

15. Subcontracted Work

Design and printing.

16. Project Management

Bob Udell will remain as project manager.

17. Additional Organisations requesting FRIAA Administered Monies

18. Other Relevant Information