

**DEVELOPMENT PLAN FOR  
"THE PINAWA CHANNEL  
DEMONSTRATION WOODLOT (PCDW)"**

**95-5-06**

**Prepared For:  
The Manitoba Model Forest (MBMF)  
PCDW Steering Committee**

**Submitted by:  
Terrestrial & Aquatic Environmental Managers (TAEM) Inc.  
and the Manitoba Forestry Association (MFA)  
September, 1996**

## TABLE OF CONTENTS

1.0 BACKGROUND .....	1
2.0 INTRODUCTION.....	2
3.0 METHODS .....	3
3.1 Synthesis of Existing Information .....	3
3.2 GIS Database.....	3
3.3 Steering Committee Meetings and Workshops .....	3
3.4 Field Visits .....	3
3.5 Draft Action Plan & Associated Costs .....	3
3.6 Potential Cooperators.....	4
3.7 Trail Cutting .....	4
4.0 DEVELOPMENT PLAN.....	5
4.1 Trail Design .....	5
4.2 Demonstration Plots .....	5
5.0 APPROXIMATE COSTS AND TIMELINE .....	12
6.0 RECOMMENDATIONS .....	13
6.1 PROJECT MANAGEMENT .....	13
6.2 ENHANCEMENT AND EXPANSION OPTIONS.....	14
6.2.1 Parking Lot.....	14
6.2.2 Signs.....	14
6.2.3 Picnic/Rest Area.....	14
6.2.4 Self Guiding Brochure.....	14
6.2.5 Year Round Activities.....	15
6.2.6 Boardwalk Construction .....	15
6.2.7 Cooperating Agencies/Organizations.....	16
6.2.8 Coordination/Supervision of Activities.....	16

### List of Figures

Figure 1 Trail System .....	6
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### List of Tables

Table 1 Approximate Time Frame for Plot Establishment.....	12
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## **1.0 BACKGROUND**

The Pinawa Channel Demonstration Woodlot (PCDW) is a quarter section of Crown land located along PTH 520 approximately 8km northwest of Pinawa (Figure 1). Under the leadership of the Manitoba Model Forest (MBMF), this land has been secured through a Crown land lease for the purposes of demonstrating sustainable forest management. The main objective of this project is to demonstrate various forest management techniques that could result in economic, social, and environmental benefits. This project represents a cooperative partnership between the MBMF, the Woodlot Association of Manitoba (WAM), the LGD of Pinawa, various provincial and federal departments, stakeholder groups, and local interests.

A number of agencies and organizations have conducted studies in the PCDW including; the MBMF, Deep River Science Academy (DRSA), Atomic Energy of Canada Limited (AECL), and Universities of Manitoba and Winnipeg. Available reports include; "A Preliminary List Of Observed And Inferred Animal Species", (Duerkson, 1995), "An Ecological Census", (Duerkson, 1995), "Insect Variation In Four Plant Communities Of The Boreal Forest", (Duerkson, 1995), "Comparison Of The Understory Plant Community In Stands of *Fraxinus nigra*, & *Abies balsamea*" (Epp, 1996) and, a forest resource inventory of the PCDW (Silvitech, 1995).

In December of 1995 the MBMF contracted Terrestrial & Aquatic Environmental Managers (TAEM) to assist the PCDW Steering Committee in completing a development plan for the PCDW. The following report represents the results of committee collaboration in the establishment of a self guiding trail and demonstration plots in the PCDW.

## **2.0 INTRODUCTION**

The PCDW has been influenced by both human activities and natural disturbances. Low intensity fire, forest pests and disease have impacted the vegetative and successional composition of forest flora in the area. Historical land use such as commercial logging, unauthorized and permitted fuelwood cutting and Christmas tree harvesting have likely had the greatest influence on the areas landscape and forest structure. The area is characterized by a predominantly hardwood/mixedwood forest with uneven aged and immature forest stands. The area has also been used for general recreational activities such as snowmobiling, ATV use, cross country skiing, and recreational hunting. Commercial resource use in the area does occur and includes trapping and some limited outfitting.

The inherent biophysical values of the PCDW in combination with its proximity to the community of Pinawa provides numerous opportunities for education and extension of proper forest management techniques. Interpretation of ecological processes, and ongoing research opportunities also exist, and are a key element of the PCDW.

The following development plan is the result of several Steering Committee workshops, meetings, and field trips. Proposed demonstration sites are aimed at attaining achievable objectives within the framework of a feasible and cost effective development plan within the capabilities of project participants.

## **3.0 METHODS**

### **3.1 Synthesis of Existing Information**

Several reports, datasets, maps, and biophysical data were assembled and reviewed prior to establishing priorities and objectives with the Steering Committee. Information from existing sources were of value to the Steering Committee and project team in developing the plan and assisted with field visits for the collection of site specific data. Information sources are listed in Appendix A.

### **3.2 GIS Database**

A geographic information system (GIS) was used for analysis of biophysical capabilities, thematic analysis and mapping. Mapping of vegetation communities, wildlife habitat suitability, natural attributes and trail infrastructure assisted in prioritizing sites where demonstration activities would be best located.

### **3.3 Steering Committee Meetings and Workshops**

An initial meeting with the Steering Committee provided the basis for a finalized work plan. Objectives towards achieving a feasible development plan within a realistic budget were also set. Additional workshops and meetings with the Steering Committee profiled known resources within the PCDW, identified constraints and opportunities, discussed ideas and options for consideration, and determined areas where site specific field investigation was required.

### **3.4 Field Visits**

The results of the initial workshop provided direction as to where potential development activities could occur. Field work was conducted in order to locate a trail system, various demonstration plots and to gather site specific data. Members of the Steering Committee, local residents and other interested parties were invited on field visits and assisted with plot selection and location. Local residents familiar with the history of the area provided valuable information on previous land use. A photograph and slide library of all field inspections was kept and was made available to the Steering Committee.

### **3.5 Draft Action Plan & Associated Costs**

A draft action plan was developed based on the results of field visits and workshops. This plan was presented to the Steering Committee and a number of options were defined along with approximate costs and timelines.

### **3.6 Potential Cooperators**

Due to the nature of this project, volunteer support and cooperator participation are key elements to the success of the PCDW. Several opportunities exist to involve volunteer organizations in some of the developmental stages of the plan. A listing of these potential organizations as well as potential funding sources can be found in Appendix B.

### **3.7 Trail Cutting**

After review of the draft action plan and trail configuration, the Steering Committee decided to proceed with trail cutting. Trail specifications were drawn up and a tender for services was advertised in local papers in early June (Appendix C). Interested contractors were required to attend a viewing of the site to obtain further details on trail cutting requirements i.e. avoidance of environmentally sensitive areas, excessive slopes, mature stands etc..

The contract for the trail cutting was awarded to White Spruce Tree Services. Work began on July 18 and was completed July 22. Project team staff were on site to oversee activities and clearly flag trail routing.

## **4.0 DEVELOPMENT PLAN**

Environmental benefits derived from private woodlands include watershed protection, wildlife habitat and increased biodiversity. Potential economic opportunities including commercial harvesting of timber, value added products and special forest products. The development of a demonstration woodlot provides a unique opportunity to demonstrate various management options and practices designed to enhance the economic, social, and environmental benefits of private woodlands. It will also stimulate educational opportunities for school environmental programs, as well as provide an ideal forum for conducting ongoing research into sustainable woodlot management. The PCDW will provide management options and ideas for landowners to better enable them to manage their woodlots for recreational, economic, environmental and wildlife enhancement purposes.

As a result of field inspections and Steering Committee meetings and workshops, it was decided that the most appropriate way to promote the area and take advantage of existing opportunities was to develop a self guiding trail featuring demonstration plots. The following plan provides a framework for the development of a demonstration site which profiles various management techniques and product development opportunities for the PCDW.

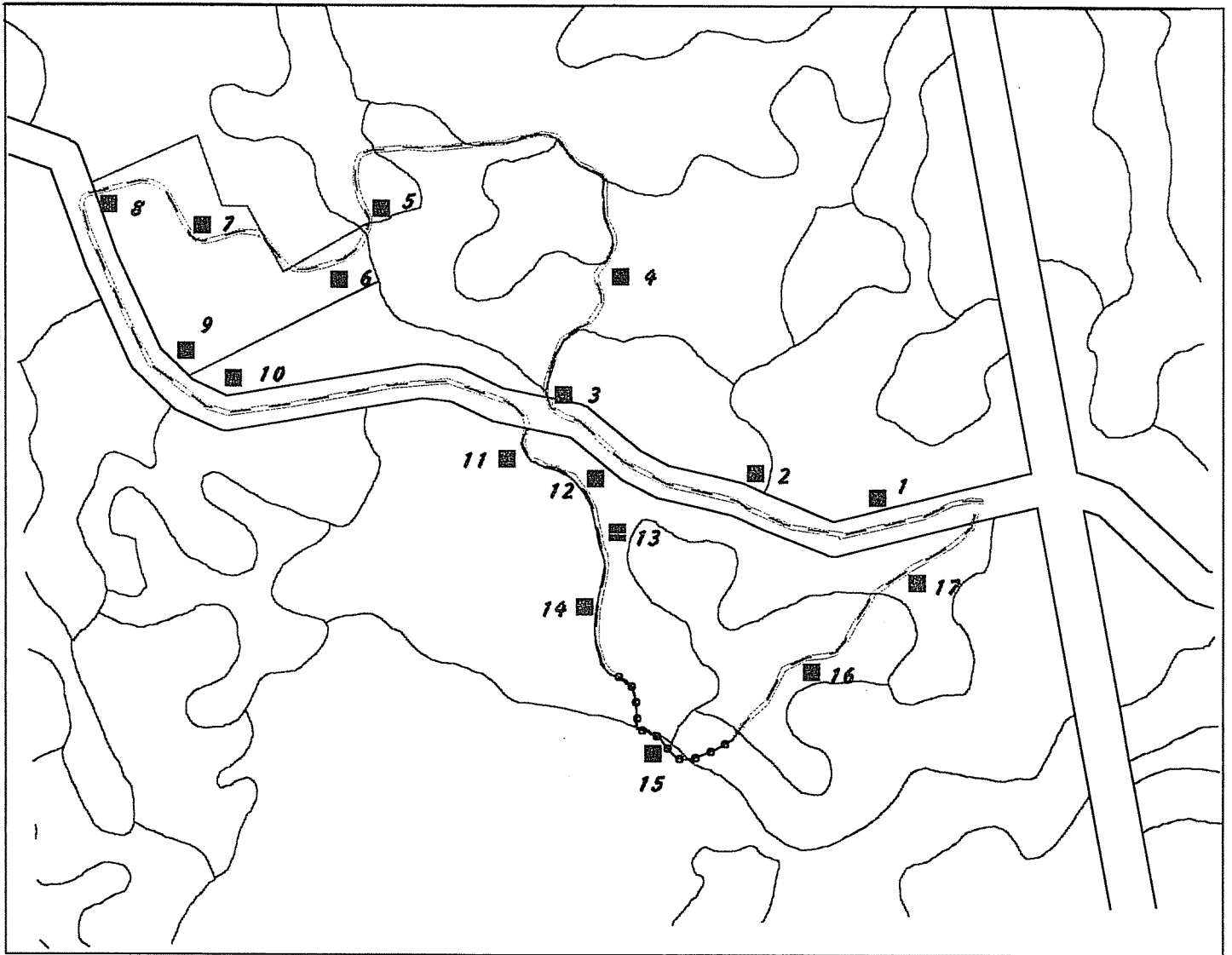
### **4.1 Trail Design**

Numerous field inspections were conducted to explore various routing options for trail placement and construction. Where possible, an existing trail was incorporated to reduce trail cutting and labour requirements. The trail is designed in a figure eight with visitors having the option of two routes. The long route is approximately 2km and encompasses 17 potential demonstration sites. The short route; or first loop, is approximately 1km in length and encompasses 9 potential sites (Figure 1). In addition to trail establishment, a 100-200 ft. long boardwalk is being considered by the Steering Committee for construction adjacent to the wetlands/aquatic plot and is discussed in greater detail in section 6.2.6. After the completion of trail cutting, the need for surface materials (i.e. mulch, boardwalk material) will be determined depending on anticipated visitor usage, site conditions (i.e. wet), aesthetics and cost.

### **4.2 Demonstration Plots**

Demonstration plots will be featured along the trail to illustrate various forest management and enhancement techniques. Where feasible, demonstration plots will have an adjacent control plot in order to contrast the results of woodlot management activities to non managed options. Signage explaining management activities at each plot is critical and is discussed in greater detail in section 6.2.2.

Figure 1: Pinawa Channel Demonstration Woodlot Trail System



————— Trail System

■ Demonstration Plot

..... Boardwalk

*GIS Output by:  
T.A.E.M. Manitoba Inc.*

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**Demonstration Plot 1 - Christmas Tree Plantation**

Christmas tree farming is a growing industry in Manitoba. Selecting and bringing home a Christmas tree is a traditional source of entertainment for many families. "U cut" and "we cut" operations have great potential to create a valuable source of income to woodlot owners. Species selection, planting techniques, and proper shearing will be the focus of demonstration activities at this plot. Site preparation will include fall of 1996 single furrow shallow plowing to eliminate competing vegetation, and removal of debris. Seedlings should be ordered during the fall of 1996 with planting taking place during the spring of 1997. Three species will be planted including white spruce, balsam fir and scots pine. Seedlings should be planted at a spacing of 6 feet x 6 feet. Six hundred seedlings will be planted initially and approximately 100 seedlings planted annually thereafter to ensure a sustainable long term crop rotation. Ongoing maintenance to control weeds and monitor for insects will also be required. Annual shearing should take place after three to four years. Timing of shearing will depend on species.

**Demonstration Plot 2 - Hybrid Poplar Plantation**

Fast growing hybrid poplars are a favored species for conservation plantations, fuelwood and various wood products. They are tolerant of many insects and diseases and are winter hardy. An area has been selected and site preparation should begin in the fall of 1996. Site preparation will include shallow plowing 2 inches below surface (to reduce costs site prep should coincide with plot 1 Christmas trees). Poplar cuttings should be ordered from PFRA Indian Head during July of 1996 to ensure availability and selection. Cuttings should be planted at a spacing of 8 feet x 8 feet. Cutting should be planted in the spring of 1997. Weed control will be required for the first 3 to 5 years. Both chemical and mechanical operations should be employed.

**Demonstration Plot 3 - Growth and Yield Plot**

The Manitoba Natural Resources Forestry Branch strategically locates growth and yield plots throughout the province to monitor tree species growth rates and forest succession. Information gathered from growth and yield plots is incorporated in the Manitoba Forest Resource Inventory and is used to determine calculations such as Annual Allowable Cut (AAC). Manitoba Forestry Branch have tagged approximately 150 trees which will be part of a long term research project. No site preparation or planting will be done to this site.

**Demonstration Plot 4 - Hardwood Management Plot**

Each tree species has a preference to the type of environment they grow best in. For example, some species do best in full sunlight. These species are referred to as shade intolerant. This plot will demonstrate proper silvicultural techniques to regenerate shade intolerant white birch. Techniques which could be demonstrated include:

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**SEED TREE** - Stands comprised of mostly shade intolerant species should use the "seed tree" regeneration method. This technique will require significant clearing. Select mature birch trees should be left as seed trees.

**SHELTER WOOD** - The "shelter wood" method is the most visually pleasing activity for an uneven aged hardwood stand as it does not produce large open noticeable areas. The "shelter wood" method involves harvesting individual trees or small groups of trees to allow sunlight to regenerate the area.

Experienced personnel will be required in selecting suitable areas for these particular management options as well as to supervise activities.

### ***Demonstration Plot 5 - Natural Regeneration***

Forests have the ability to regenerate themselves naturally under appropriate environmental conditions. In some cases, disturbances such as wildfire and resource extraction can be beneficial to forest regeneration. This particular site was an old borrow pit used for gravel extraction many years ago. This activity exposed mineral soil and has provided an ideal seed bed for germination and growth. The surrounding mature spruce trees have seeded and initiated natural regeneration. This plot will illustrate nature's ability to replenish itself given specific environmental conditions.

### ***Demonstration Plot 6 - Thinning for Spruce***

Trees require sunlight, nutrients, moisture and space in-order to grow. When trees are growing in a natural setting they often grow too close together and the competition for required elements can cause suppressed or deformed growth, poor health and in some cases death. Proper spacing of trees will result in an increased growth rate, higher quality products and overall better health of the stand. Presently, this plot is a dense spruce stand therefore demonstration activities will illustrate the benefits of thinning. A control plot adjacent to the thinned site will be marked out and used to compare growth rates and stand condition. Trees will be thinned using brush saws leaving crop trees at a variety of spacings.

### ***Demonstration Plot 7 - Wildlife Viewing Plot***

All woodlots have features that attract and provide food and shelter to a variety of wildlife species. The PCDW has a diversity of habitat types and supports numerous wildlife species. A GIS system was utilized to assess the wildlife capability in the area. Habitat suitability index (HSI) models were run for three wildlife species (black & white warbler, ruffed grouse and moose) and are provided in Appendix D. Techniques to improve wildlife habitat do not have to be intensive or expensive. Often, the best approach is simply to leave natural cover untouched. Simple techniques such as the installation of bird houses, creating brush piles or placing grouse drumming logs can significantly increase wildlife usage of an area. As habitat changes so will the species using the habitat. The greater the variety of habitat the greater the variety of species. This plot will demonstrate some wildlife enhancement techniques for a variety of

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conditions and wildlife species. More techniques can be applied as funding and or volunteer effort becomes available.

***Demonstration Plot 8 - Conifer Release***

Young spruce trees will grow well under an aspen canopy until they increase in size and begin to compete directly with the overstory. This area will be flagged to demonstrate the proper timing and benefits of conifer release. Large overstory trembling aspen will be marked for removal to allow spruce trees to fully develop. Removed trees will be used for wildlife brush piles or chipped for trail surface material. Removal of aspen overstory will increase light penetration, reduce competition for nutrients and light while allowing the spruce understory to grow in a non-competitive environment.

***Demonstration Plot 9 - Seedling Establishment and Protection Devices***

When seedlings are first planted they may require extra care to help establish themselves. They are susceptible to damage from people, animals and competing vegetation. In a high use area such as a trail system, people will wander off the trail and inadvertently damage newly planted seedlings. Browsing from animals such as deer and rabbits can also damage or kill young trees. Competition from weeds and grasses for sunlight and moisture can considerably reduce the growth of young trees. The use and benefits of seedling protection devices such as tubex tree protectors, cone protectors and mulch blankets will be demonstrated on this plot.

***Demonstration Plot 10 - Underplanting White Spruce***

White spruce is a shade tolerant species and grows extremely well in a partially shaded environment. Many woodlot owners may wish to underplant white spruce throughout their woodlot to add diversity, to provide thermal cover for wildlife, and to gain economic benefits through future timber harvest. In this plot, white spruce seedlings will be planted in natural openings throughout this aspen stand. No site preparation is necessary.

***Demonstration Plot 11 - Aspen Rejuvenation***

Trembling aspen is a shade intolerant species with a wide spreading shallow root system. Aspen commonly produces root suckers following disturbance which is the main natural method of propagation of this species. Patchcutting an aspen stand will open up the area to full sunlight and allow vigorous growth from suckers. When stands reach a mature merchantable size they should be harvested for quality timber while providing wildlife enhancement through "edge" effects. If trees are allowed to become over mature they are susceptible to many diseases and insects and will lose their quality. This particular area has been clear cut in the past and aspen have already begun to rejuvenate. This plot will require minimal work to prepare except for flagging both the demonstration and control site. Some thinning or removal of obstructing or hazardous trees may be required for aesthetic and safety purposes.

**Development Plan for the Pinawa Channel Demonstration Woodlot**

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**Demonstration Plot 12 - White Spruce Plantation**

White spruce (Manitoba's provincial tree) is a desired species for its commercial, aesthetic, and environmental value. This area will demonstrate proper plantation layout and design. No site preparation is necessary for this area, however, removal of some existing trees will be necessary to establish the plantation. White spruce seedlings should be ordered in the fall of 1996 and planted in the spring of 1997. Seedlings will be planted at a 6 foot spacing.

**Demonstration Plot 13 - Hardwood Plantation**

High value hardwoods such as Black walnut and American basswood have been successfully grown on some fertile sites in south central Manitoba. The wood from these species is of high value for furniture, interior finishing, veneer, carving, etc. A few chosen species will be selected and planted in this demonstration plot. Seedlings will be planted at approximately 10 ft. spacing and maintained on an annual basis. Tubex tree shelters and mulch blankets may also be utilized to encourage seedling establishment and development.

**Demonstration Plot 14 - Specialty Forest Products**

Timber is not the only product that a woodlot can produce. Many non traditional forest products can also provide the woodlot owner with other sources of income. Specialty mushrooms, ginseng and syrup are just a few examples of products that can be marketed. Potential product demonstrations could include signage on mushroom production, berry trees/shrubs for jams and jellies, syrup producing trees etc. The collection and storage of cones, conks, bark and nuts for various value added products can also be illustrated.

**Demonstration Plot 15 - Wetlands/Aquatics Plot**

This area encompasses a low lying wetland marsh. This plot will demonstrate the ecological importance of wetlands. A focus on wildlife viewing could include species such as waterfowl, beavers, muskrats and other wildlife associated with wetlands. A viewing blind located near the trail could provide excellent opportunities for wildlife interpretation. Other optional wildlife attractants could include wood duck nest boxes, nesting tunnels and platforms. The importance of maintaining a riparian zone should also be emphasized.

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**Demonstration Plot 16 - Stand improvement techniques for Black Ash**

The black ash, grows in moist lowland areas and is becoming a highly valued commercial species in Manitoba. Furniture and flooring are some of the high value products now produced from black ash. The demonstration area consists of young black ash that will be thinned to promote increased growth and enhanced vigor. Trees designated for removal will be flagged and removed at ground level. Remaining crop trees will be spaced at 8 feet. Crop trees will also be pruned to produce high quality knot free lumber. A control site adjacent to the demonstration plot will also be flagged.

**Demonstration Plot 17 - Biodiversity Plot**

This plot has previously been established by the Deep River Science Academy (DRSA). Ongoing research regarding understory plant species (shade tolerant vs. shade intolerant species) will be carried out by DRSA and AECL staff.

## 5.0 APPROXIMATE COSTS AND TIMELINE

All costs associated with trail development and demonstration plot establishment have been estimated to assist the Committee and the MBMF in acquiring the necessary funding and organizational support. The various tasks and activities required to complete each plot have also been described. For each plot, various lead agencies or volunteer groups have been identified to either assist in or take a lead role in the completion of tasks. Appendix E provides a complete description of proposed tasks and associated costs for all aspects of a self guiding trail.

Based on the proposed actions outlined above, Table 1 provides an estimation of approximate time frame for plot establishment.

**Table 1 Approximate Time Frame for Plot Establishment**

Plot	July 96	Aug. 96	Sept. 96	Oct. 96	Nov. 96	Dec. 96	Mar. 97	Apr. 97
1			XXXX	XXXX				XXXX
2	XXXX		XXXX	XXXX				XXXX
3	XXXX	XXXX						
4			XXXX	XXXX				
5			XXXX	XXXX				
6			XXXX	XXXX				
7			XXXX	XXXX	XXXX			XXXX
8			XXXX	XXXX				
9		XXXX						XXXX
10		XXXX						XXXX
11			XXXX	XXXX				
12	XXXX							XXXX
13	XXXX	XXXX						XXXX
14	XXXX	XXXX	XXXX	XXXX				XXXX
15	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
16			XXXX	XXXX				
17	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX

## **6.0 RECOMMENDATIONS**

It is recognized that the PCDW self guiding trail is the main component of the overall program, however, there are a number of other elements which may require attention. The following section outlines additional recommendations and actions for future consideration by the PCDW Steering Committee and the MBMF.

### **6.1 PROJECT MANAGEMENT**

Critical to the success of this initiative is the need to identify a lead proponent which has the capability to coordinate and manage the trail development and ongoing maintenance of the site. The current steering committee is comprised of various private organizations, individuals and representatives of government departments. Unfortunately the committee does not have an active chairperson, nor is there a lead agency other than the MBMF. There is a general consensus that the Woodlot Association of Manitoba (WAM), would be the best suited organization to champion this project.

At the time of this report, no lead organization has indicated that it will embrace the responsibility for ongoing implementation and management. The WAM has indicated an interest, however, funding and administrative support issues have been identified and require clarification. It is expected that ongoing negotiations between the MBMF and WAM will be required to clarify these issues.

## **6.2 ENHANCEMENT AND EXPANSION OPTIONS**

### **6.2.1 Parking Lot**

The existing parking facilities created by the LGD of Pinawa should be expanded to handle increased visitor usage including school groups. The parking facilities should accommodate school buses including a "turn around" area. With the assistance of the LGD of Pinawa the approximate costs for labour, equipment and materials (gravel) to complete this area is \$1,500.00.

### **6.2.2 Signs**

Signs are a very important component of any demonstration or interpretive area. The demonstration area and trail should provide the user with as much information about what they are viewing without the need for a guide or interpreter. They also warn people of potential dangers, identify significant features or objects and provide direction. Signs can use symbols, graphics and text to get a message across. The materials chosen should consider maintenance and vandalism, budget and graphic needs. Construction efforts and durability are also factors to consider when selecting signs. Each demonstration plot should be equipped with a descriptive sign explaining demonstration activities. Additional signage could be placed along the trail system explaining various features and points of interest (i.e. nesting/feeding sites, tree/shrub species etc.). Large signs should also be placed along the highway to provide direction to the PCDW. A large sign at the parking lot entrance should welcome visitors and identify cooperating agencies/organizations.

### **6.2.3 Picnic/Rest Area**

A picnic area near the entrance of the trail could provide additional opportunities for visitor use. Providing visitors with these facilities is encouraged however, vandalism and misuse is a consideration. Restrooms are essential and should be located near this area. Low maintenance washrooms are recommended. Approximate costs for washroom facilities is \$1,000.00.

### **6.2.4 Self Guiding Brochure**

A self guiding brochure will provide the user with essential information as they tour the area. The brochure should illustrate trail location and configuration, indicate distance options for long (2km) vs. short (1km) hikes, provide the location of all demonstration plots as well as pertinent information on woodlot management activities. Additional information such as past history, present usage and unique and interesting features can be elaborated. The brochure will also be used to give credit to all cooperating agencies. This will also give the user something to take home from the site for later reference or to show others.

## **6.2.5 Year Round Activities**

This demonstration area and interpretive trail should be promoted for year round activities. A trail of this nature can provide numerous additional opportunities including recreation or fitness. For example cross country ski trails can be groomed and snow shoe trails created for winter usage.

## **6.2.6 Boardwalk Construction**

The trail system and demonstration area are designed to accommodate additional features, tributary trails and other expansion options. One feature considered by the steering committee was the inclusion of a boardwalk. Cost, timing of construction, location, building specifications, materials, and construction options were briefly discussed. Several construction methods were considered including:

### **OPTION #1**

Tender Method: Placing an ad in local papers to acquire bids for labour and materials.

### **OPTION #2**

Woodmiser Method: This would involve setting up a portable saw on site and logs from the area used for construction.

### **OPTION #3**

Volunteer Method: Using local volunteers to provide in-kind labour for construction.

Although no final decisions were made regarding the boardwalk at the time of this report, the general opinion of the committee was to direct efforts and funding towards other areas of importance such as trail finishing, parking lot improvement, washrooms, signs, etc. The boardwalk would be treated as a separate project item upon completion of the above noted items.

***APPENDIX A***

**EXISTING INFORMATION PERTAINING TO THE PCDW**

## **Existing Information and Resources Pertaining to the Pinawa Channel Demonstration Woodlot (PCDW)**

1. **Woodlot Management Guide for the Prairie Provinces**, The Farm Woodlot Association of Saskatchewan, 1993.
2. **North Eastern Sustainable Development Association (NESDA) Pine Creek Demonstration Site**. Nature Trail at Pine Falls, Manitoba, 1992.
3. **Income Opportunities in Special Forest Products**, United States Forest Service, 1993.
4. **Managing Your Woodland: A Non-Forester's Guide to Small-Scale Forestry in British Columbia**. Canadian Forest Service, 1992.
5. **Special Forest Products Market Analysis for Saskatchewan Timberlands Division Weyerhaeuser Canada, Ltd., Mater Engineering, Ltd.**, December 1993.
6. **Frank Skinner Arboretum Trail** (Various Literature).
7. **Agroforestry Management Plans For Three Demonstration Sites Located Near Meadow Lake Prince Albert And Nipawin Saskatchewan**. Prepared for the Farm Woodlot Association of Saskatchewan. By Panco Enterprise Limited. Livelong, Sask.
8. **The First Conference on Agroforestry and Woodlot Management in Saskatchewan; Conference Proceedings**. February 26-28, 1992 Marlboro Inn, Prince Albert, Sask. Presented by: The Farm Woodlot Association of Saskatchewan.
9. **Agroforestry and Sustainable Systems: Symposium Proceedings** United States Department of Agriculture, Forest Service. August 7-10, 1994. Fort Collins, Colorado
10. **Biodiversity in the Pinawa Channel Demonstration Woodlot**. Bethany Van Guelpen, Peter Rohmer., August 1, 1995 Deep River Science Academy Whiteshell Campus
11. **A preliminary list of observed and inferred animal species in the Pinawa Channel Demonstration Woodlot**. Duerksen, Ron., August 1995.
12. **An ecological census for the Pinawa Channel Demonstration Woodlot**. Duerksen, Ron., August 1995.
13. **Insect variation in four plant communities of the boreal forest**. Duerksen, Ron., August 1995.

14. Comparison of the understory plant communities in stands of *Fraxinus nigra* & *Abies balsamea* in the Manitoba Model Forest. Epp, Susan., 1996.

15. Pinawa Channel Demonstration Forest Resource Inventory Reports Project 94-5-06. Silvitech Consulting., 1995.

***APPENDIX B***

**POTENTIAL COOPERATORS**

## ***Potential Cooperators***

The following list includes groups and organizations that may provide services, equipment, labour, expertise or funding to assist with the PCDW. These may be in the form of cash or in kind.

- Atomic Energy of Canada Limited (AECL)
- Deep River Science Academy (DRSA)
- Ducks Unlimited
- Local Government District of Pinawa
- Manitoba Agriculture
- Manitoba Christmas Tree Growers Association (MCTGA)
- Manitoba Conservation Districts
- Manitoba Forestry Association (MFA)
- Manitoba Hydro (Forest Enhancement & Environmental Partnership Programs)
- Manitoba Natural Resources
- Manitoba Wildlife Federation
- Pineland Provincial Nursery
- Prairie Farm Rehabilitation Administration (PFRA)
- Scouts Canada
- Sustainable Development Innovations Fund
- Tree Canada Foundation
- University of Manitoba
- University of Winnipeg
- Woodlot Association of Manitoba (WAM)

***APPENDIX C***

**MANITOBA MODEL FOREST  
REQUEST FOR PROPOSALS**

**"PINAWA WOODLOT TRAIL CLEARING"**



MANITOBA MODEL FOREST INC.



**REQUEST FOR PROPOSALS**

**TRAIL ENHANCEMENT PROJECT #96-6-24  
NORTH COMMUNITY TRAILS PROJECT #96-6-27  
PINAWA WOODLOT TRAIL CLEARING #96-5-06**

Manitoba Model Forest Inc. is accepting proposals from communities, organizations and groups within the Model Forest area interested in *developing or enhancing trail experiences in the area.*

**Project # 96-6-24**

A financial grant of up to \$9,500.00 is available for this project which is open to the entire Model Forest area.

**Project # 96-6-27**

A financial grant of up to \$14,500.00 is available for this project which is limited to the area in and around Little Black River, Manigotogan, Symburville, Agaming, Hollow Water and Bissett.

**Project # 96-5-06**

The Model Forest requires the services of a contractor to cut approximately one kilometre of trail (section 18 twp 14 Rge 12E) according to specific specifications. A mandatory viewing of the site will be conducted June 24, 1996 at 1:00 P.M. Work must be completed by July 30, 1996

Deadline for submission for any or all proposals is 1:00 p.m. July 5, 1996.

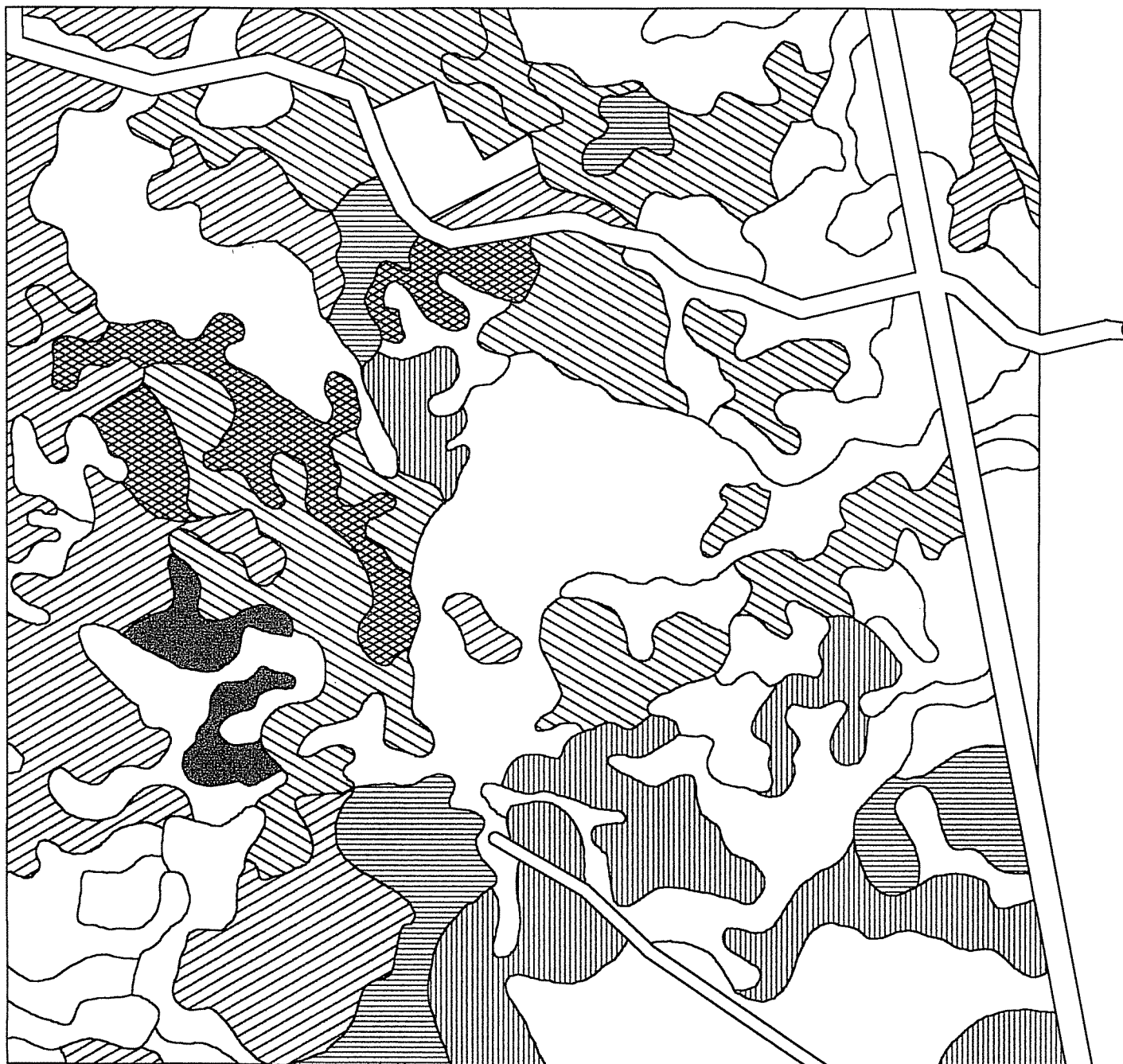
Detailed submission guidelines and background material are available at the;

Manitoba Model Forest Office  
Box 10  
Pine Falls, Mb  
R0E 1M0

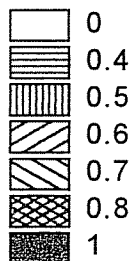
Phone: (204)367-5232

Fax: (204)367-8897

# Pinawa Channel Demonstration Woodlot Black and White Warbler Habitat Suitability

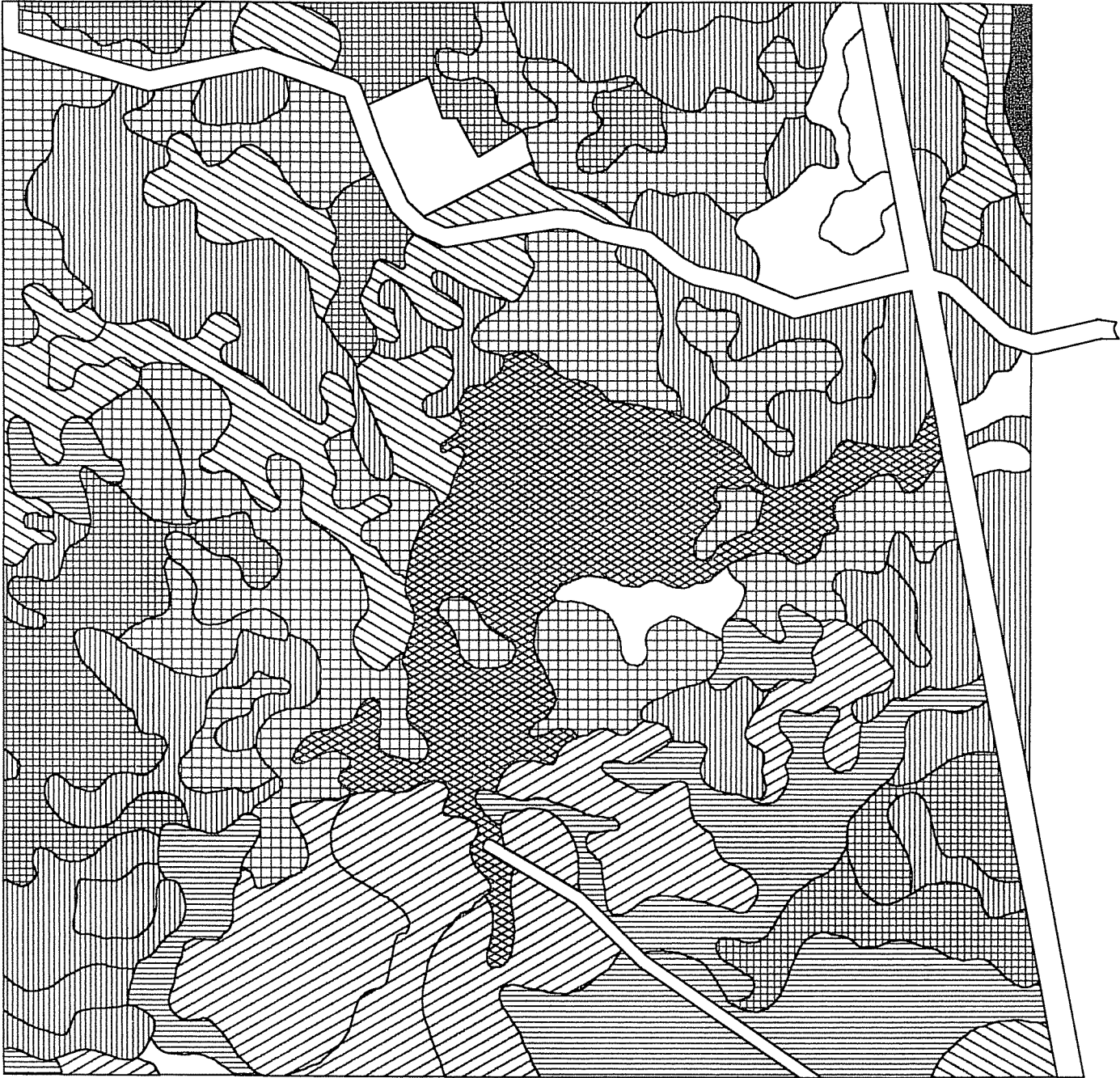


Black and White Warbler HSI

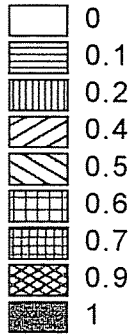


*GIS Output by:  
TAEM Manitoba Inc.*

# Pinawa Channel Demonstration Woodlot Moose Habitat Suitability



Moose HSI

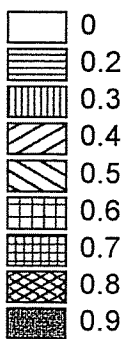


GIS Output by:  
TAEM Manitoba Inc.

# Pinawa Channel Demonstration Woodlot Ruffed Grouse Habitat Suitability



Ruffed Grouse HSI



*GIS Output by:  
TAEM Manitoba Inc.*

***APPENDIX D***

**HABITAT SUITABILITY INDICES  
IN THE PINAWA CHANNEL DEMONSTRATION WOODLOT**

**"BLACK AND WHITE WARBLER, MOOSE  
AND RUFFED GROUSE"**

***APPENDIX E***

**PROPOSED TASKS AND ASSOCIATED COSTS**

## **Task 1 Trail Establishment**

Approximately 1km of new trail will be flagged and cut. An existing trail will require minor modifications to accommodate trail design. Trail specifications should be followed i.e. low stumps, creating brush piles with debris, snag removal to reduce dangerous conditions for public. It is also important that the trail not interfere with important landmarks, environmentally sensitive areas, excessive slopes or mature trees. In addition to trail establishment a boardwalk will be constructed adjacent to the wetlands/aquatic plot (plot 15).

### **Timing**

Fall 1996 - Spring 97

### **Equipment required:**

- chain saws
- brush saws
- portable chipper (optional)
- fuel
- lumber materials

### **Personnel required:**

TRAIL ESTABLISHMENT:  
2 person crew approximately \$2,000.00

BOARDWALK CONSTRUCTION:  
Labour and materials approximately \$10/ft or approximately \$1,500.00

### **Potential contributors:**

Lac du Bonnet fire tac  
LGD of Pinawa  
MMF staff  
PFPC staff  
Milner Ridge  
Contract local residents

## **Demonstration Plot 1 - Christmas Tree Plantation**

The area will be flagged and the area delineated prior to site preparation. This site should be single furrow shallow plowed to eliminate competing vegetation. During fall of 1996 seedlings should be acquired from Pineland Nursery Hadashville, Manitoba with planting taking place in the spring of 1997. Seedlings should be planted at spacing of 6 feet x 6 feet which requires 1200 seedlings per acre. Once seedlings are planted ongoing maintenance to control weeds and monitor for insects is required. Annual shearing should take place after three to four years. Timing of shearing will depend on species. Three species layout will be pre determined and design specifications forwarded to planting crew.

### **Timing:**

Site preparation fall 1996  
Seedling order summer/fall 1996  
Planting spring 1997

### **Equipment required:**

Tractor, fire breaking plow  
Spades

### **Plant material:**

Pineland Nursery  
600 seedlings 2-0 or greater (white spruce, scots pine, balsam fir)  
\$0.30/seedling = \$180.00

### **Personnel required:**

SITE PREP:  
1 person 1 day - \$200 (labour and equipment)

PLANTING:  
1 person 1 day @ 8hrs/day @ \$10/hr = \$80.00

### **Potential contributors:**

Manitoba Christmas Tree Growers Association (MCTGA)  
Boy Scouts, planting  
School groups, planting  
LGD of Pinawa, tractor, tiller, vegetation control  
Woodlot Association of Manitoba (WAM), seedlings  
Pineland Nursery, seedlings  
Deep River Science Academy (AECL), monitoring  
Contract local residents

## ***Demonstration Plot 2 - Hybrid Poplar Plantation***

During fall of 1996 site preparation should begin by shallow plowing 2 inches below surface (to reduce costs site prep should coincide with plot 1 Xmas trees). Cuttings should be ordered from PFRA Indian Head during the summer of 1996 to ensure availability and selection. Cuttings should be planted at a spacing of 8 feet x 8 feet which requires 700 cuttings per acre. Cutting should be planted in the spring of 1997. Weed control will be required for the first 3 to 5 years. Both chemical and mechanical operations should be employed.

### **Timing:**

Site preparation fall 1996  
Seedling order summer/fall of 1996  
Planting spring 1997

### **Equipment required:**

Tractor, plow  
Spades

### **Plant material:**

150-200 cuttings (Manitou, can am, walker, assiniboine, prairie sky etc.)

### **Personnel required:**

SITE PREP:  
1 person 1 day \$200 (labour and equipment)

PLANTING:  
1 person 1 day @ 8hrs/day @ \$10/hr = \$80.00

### **Potential contributors:**

PFRA, cuttings  
Boy Scouts, planting  
School groups, planting  
LGD of Pinawa, tractor, plow, vegetation control  
Deep River Science Academy (AECL)  
Contract local residents  
WAM (expertise)  
MFA (expertise)

### ***Demonstration Plot 3 - Growth and Yield Plot***

An area will be selected, flagged and boundaries established. This site will not require site preparation or planting. The trees present on the site will be monitored for growth. There is 150 tagged trees. This will be an ongoing research plot.

#### **Potential contributors:**

Manitoba Natural Resources, Forestry Branch will provide staff for ongoing monitoring.

### ***Demonstration Plot 4 - Hardwood Management Plot***

The area must be flagged and instructions will be given as to the technique to apply. Trees for removal will be individually marked.

This plot will demonstrate proper silvicultural techniques to regenerate a shade intolerant hardwood birch stand. Seed tree and shelterwood techniques will be demonstrated.

#### **Timing:**

Flagging and cutting fall 1996

#### **Personnel required:**

2 person crew  
2 days @ 8hrs/day @ \$10/hr = \$640.00

#### **Potential contributors:**

Lac du Bonnet fire tac  
LGD of Pinawa  
Contract local residents

### ***Demonstration Plot 5 - Natural Regeneration***

This area should be flagged and a boundary line established. This area will require minimal activity as this is an area that demonstrates natural regeneration of white spruce under specific environmental conditions that occurred previously i.e. soil disturbance.

#### **Timing:**

n/a

**Equipment:**

n/a

**Potential contributors:**

to be determined if required

***Demonstration Plot 6 - Thinning for Spruce***

During fall of 1996 a one acre area will be flagged. Individual trees will be marked for removal. These will include deformed suppressed, unhealthy trees. Trees will be thinned for a variety of spacings for remaining crop trees. A control area will be flagged adjacent to this plot.

**Timing:**

Flagging - fall 1996  
Thinning - winter 1996

**Equipment:**

Chain saws  
Brush saws

**Personnel required:**

2 person crew  
1 day @ 8hrs/day @ \$10/hr = \$160.00

**Potential contributors:**

DRSA and AECL  
Contract local residents  
WAM (expertise)  
MFA (expertise)

***Demonstration Plot 7 - Wildlife Viewing Plot***

This plot will be enhanced to provide viewing opportunities for a variety of wildlife species. Habitat enhancement techniques will include but are not limited to bird house construction and installation, brush pile establishment, cavity trees, watering areas, drumming logs, forage plots, etc..

**Timing:**

Fall 1996

**Equipment:**

Chain saws  
Brush saws  
Bird houses  
Hammers, ladders various hand tools.

**Personnel required:**

Number of hours will vary depending on enhancement techniques chosen.

**FORAGE PLOT:**

1 person 1 day \$300 (labour and equipment, including seeding)

**Potential contributors:**

Deep River Science Academy (AECL)  
Contract local residents  
WAM (expertise)  
MFA (expertise)  
PFRA  
Manitoba Natural Resources

***Demonstration Plot 8 - Conifer Release***

This area will be flagged to demonstrate the benefits of conifer release. Large overstory trembling aspen will be marked for removal. Removed trees will be used for wildlife brush piles or chipped for trail surface material. Removal of aspen overstory will increase light penetration, reduce competition for nutrients and light while allowing the young spruce understory to grow in a non-competitive environment.

**Timing:**

Flagging fall 1996  
Aspen removal fall 1996/spring 1997

**Equipment:**

Chain saws  
Brush saws

**Personnel required:**

2 person crew  
2 days @ 8hrs/day @ \$20/hr = \$640.00 (including equipment and labour)

**Potential contributors:**

Deep River Science Academy (AECL)  
Contract local residents  
WAM (expertise)

***Demonstration Plot 9 - Seedling establishment and vegetation control***

A variety of seedling protection devices will be demonstrated on this plot. Both naturally growing seedling as well as newly planted seedlings will be protected. Mulch blankets, tubex tree protectors, cone protectors and stucco wire will be demonstrated.

**Timing:**

Fall 1996

**Equipment:**

Various tree protection devices approximately \$200.00

**Personnel required:**

1 person  
1 day @ 8hrs/day @ \$10/hr = \$80.00

**Potential contributors:**

MFA - protection devices (expertise)

***Demonstration Plot 10 - Underplant White Spruce***

Young naturally growing balsam will be shaped and sheared for future Christmas tree production. This demonstration site and a control area will be identified by signs and flagging. Shearing activities will be seasonal and ongoing.

**Timing:**

Fall 1996

**Equipment:**

Various shearing knives  
Hand saw  
Brush saw  
Chain saw  
Secateurs

**Personnel required:**

1 person  
1 day @ 8hrs/day @ \$10/hr = \$80.00

**Potential contributors:**

MCTGA - (expertise)  
WAM - (expertise)  
MFA - (expertise)

***Demonstration Plot 11 - Aspen Rejuvenation***

This area has been clear cut in the past and aspen have begun to rejuvenate. Minimal work is required except for flagging both this and the control site adjacent to the demo site. Some thinning or removal of obstructing or hazardous trees maybe required for aesthetics and safety purposes.

**Timing:**

Fall 1996

**Equipment:**

Brush saw  
Chain saw

**Personnel required:**

1 person  
1 day @ 8hrs/day @ \$10/hr = \$80.00

**Potential contributors:**

WAM - (expertise)  
MFA - (expertise)  
PFRA - (expertise)  
Contract local residents

***Demonstration Plot 12 - White Spruce Plantation***

This area will be flagged and will demonstrate the long term wood supply of establishing a white spruce plantation. No site preparation is necessary for this area. However, removal of some existing trees will be necessary to establish the plantation. The majority of the area is presently open. White spruce seedlings will be planted at a 6 foot spacing in this one acre area. This will require 1000 seedlings.

**Timing:**

Site remediation fall 1996  
Order seedlings Pineland summer 1996  
Planting spring 1997

**Equipment:**

Brush saw  
Chain saw

**Personnel required:**

TREE REMOVAL:  
1 person  
2 day @ 8hrs/day @ \$20/hr = \$320.00

**Potential contributors:**

WAM - (expertise)  
MFA - (expertise)  
PFRA - (expertise)  
Contract local residents

***Demonstration Plot 13 - Hardwood Plantation***

This area will be flagged and high value hardwood seedlings will be planted into this area. Site prep will be minimum. Seedlings will be planted at approximately 10 ft. spacing. High value species to be planted will be American Basswood, Black walnut, Butternut, and others as chosen.

**Timing:**

Order trees winter 1996  
Planting spring 1997

**Equipment:**

Spades  
Shovels

**Plant material:**

Beausejour Nursery  
24 inch or greater whips

**Personnel required:**

1 person  
1 day @ 8hrs/day @ \$10/hr = \$80.00

**Potential contributors:**

WAM - (expertise)  
MFA - (expertise)  
Beausejour nursery - (consultation)

***Demonstration Plot 14 - Specialty Forest Products***

This area will be flagged and will demonstrate a wide variety of specialty forest products that can be managed on a woodlot. Some examples would be specialty mushrooms (oyster and shiitake on aspen and bur oak logs), establishment of a ginseng seedbed, plantation of berry producing shrubs for jams and jellies, establishment of Manitoba maple grove for maple syrup production, taping of existing white birch trees for specialty syrup, cones, conks, bark and nuts for various value added products.

**Timing:**

Fall 1996

**Equipment:**

Aspen and oak logs;  
Mushroom spawn;  
Ginseng seed;  
Berry producing shrubs;  
Tapping equipment (drills, taps, pails, etc)

**Plant material:**

PFRA  
Berry producing shrubs

**Personnel required:**

To be determined

**Potential contributors:**

PFRA (berry shrubs)  
WAM - (expertise)  
MFA - (expertise)

***Demonstration Plot 15 - Wetlands/Aquatics Plot***

This area will encompass a low lying wetland marsh. This plot will demonstrate the importance of wetland areas to wildlife. Species such as waterfowl, beavers, muskrats etc. will be viewed from a board walk and trail leading to this site. Viewing blinds, wood duck nest boxes, nesting tunnels and platforms will be erected. Also, the importance of maintaining a riparian zone will be emphasized at this plot.

**Timing:**

Winter 96

**Equipment:**

Nesting boxes/tunnels/platforms  
Various material for viewing blind

**Personnel required:**

2 people  
1 day @ 8hrs/day @ \$10/hr = \$160.00

**Potential contributors:**

WAM - (expertise)  
MFA - (expertise)  
Ducks unlimited - (nesting structures)

## ***Demonstration Plot 16 - Stand improvement techniques for Black Ash***

This area of young ash will be thinned to promote increased growth and enhanced vigor. Trees designated for removal will be flagged and removed or cut at ground level. Remaining crop trees will be spaced at 8 ft. spacing. Crop trees will also be pruned to produce high quality lumber. A control site adjacent to demo plot will also be flagged.

### **Timing:**

Fall 1996

### **Equipment:**

Chain saw;  
Spacing saw;  
Pruning tools, and  
Flagging tape

### **Personnel required:**

2 people  
2 days @ 8hrs/day @ \$10/hr = \$320.00

### **Potential contributors:**

WAM - (expertise)  
MFA - (expertise)  
Local contractor

## ***Demonstration Plot 17 - Biodiversity Plot***

This plot has previously been established by the Deep River Science Academy (DRSA). Ongoing research regarding understory plant species (shade tolerant vs. shade intolerant species) will be carried out by DRSA and AECL staff.

### **Timing:**

Ongoing

### **Equipment:**

Sampling equipment

**Personnel required:**

Staff from DRSA and AECL

**Potential contributors:**

DRSA and AECL  
U of W and U of M

***SUMMARY***

Costs for labour, equipment and various supplies for the establishment of the above demonstration plots and trail placement is approximately \$7,500. Timing for site preparation and plot establishment are also approximate and may change according to available personnel and weather conditions.

## REFERENCES

- Duerksen, Ron. A preliminary list of observed and inferred animal species in the Pinawa Channel Demonstration Woodlot. August 1995.
- Duerksen, Ron. An ecological census for the Pinawa Channel Demonstration Woodlot. August 1995.
- Duerksen, Ron. Insect variation in four plant communities of the boreal forest. August 1995.
- Epp, Susan. Comparison of the understory plant communities in stands of *Fraxinus nigra* & *Abies balsamea* in the Manitoba Model Forest. 1996.
- Silvitech Consulting. Pinawa Channel Demonstration Forest Resource Inventory Reports Project 94-5-06. 1995.
- Rohmer, Peter. Biodiversity in the Pinawa Channel Demonstration Woodlot. August 1995.
- Van Guelpen, Bethany. Biodiversity in the Pinawa Demonstration Woodlot. August 1995.