

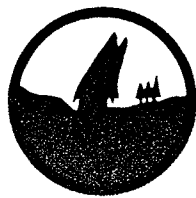
Mississippi Valley Conservation Authority

Resolution

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Chairman

PURDON CONSERVATION AREA MASTER PLAN

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FEBRUARY 1986



Mississippi
Valley
CONSERVATION
AUTHORITY

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1.0 INTRODUCTION

1.1 Background

The Purdon Conservation Area is located 25 km northwest of the town of Perth in the Township of Lavant, Dalhousie and North Sherbrooke (Figure 1). The Conservation Area, which is approximately 25 hectares in size consists of a wetland, large beaver pond (Purdon Lake), a steep rocky cliff and upland forest. The wetland has characteristics of a swamp, fen and a bog.

The conservation area was purchased by the Mississippi Valley Conservation Authority with funding from the Nature Conservancy of Canada and the Board of Industrial Leadership and Development through the Ontario Heritage Foundation. The site was purchased because of a large regionally significant colony of showy lady's slipper orchids (Cypripedium reginae). It is hoped that the fragile beauty of these orchids will inspire a stewardship for wetland areas.

This spectacular colony of orchids thrives because of the efforts of one man, the late Joe Purdon. In a letter written in 1979, he stated that during the mid 1930's there were only "a few dozen orchids and I (he) cared for them all this time and now there are several thousand plants".

Through his dedication to orchid management by repeated thinnings of the competing trees and the prevention of beaver floods, a handful of plants multiplied to number approximately ¹⁷⁹16,000. He converted a common wetland into a regionally significant orchid colony. The Mississippi Valley Conservation Authority will strive to develop a conservation area to showcase the areas natural beauty, while continuing the management work initiated by Joe Purdon.

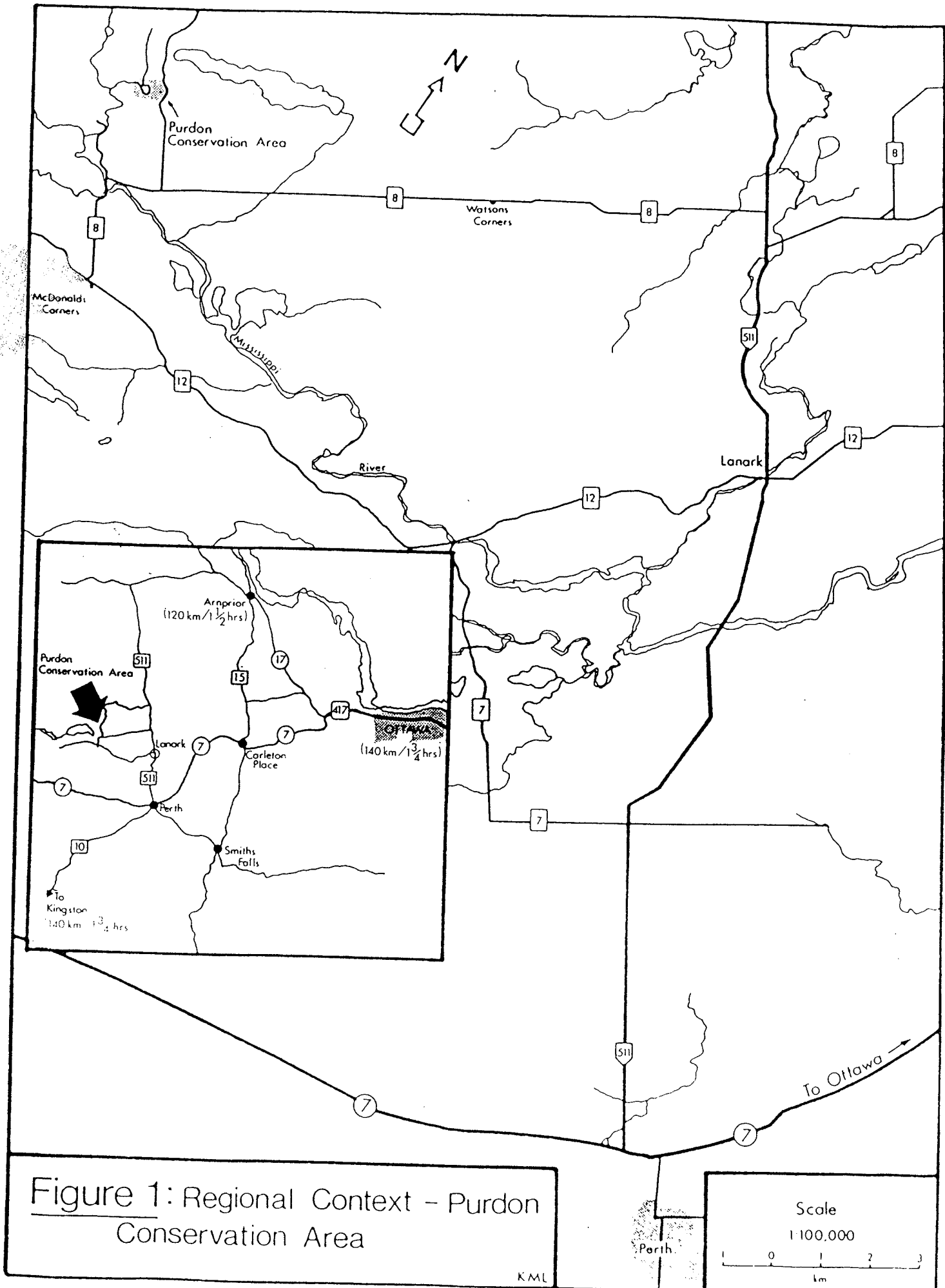
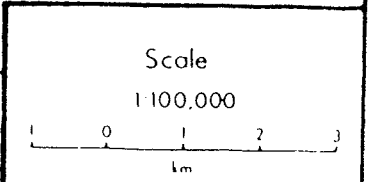


Figure 1: Regional Context - Purdon Conservation Area

KML



1.2 Mandate

The prime objective of the Conservation Authority is water management; however, the preservation and development of lands for recreation and conservation uses is a traditional secondary activity. In the Interim Watershed Plan (MVCA 1982), the following goal was identified:

To continue to enhance public enjoyment of the natural environment by promoting and providing a variety of day-use recreation opportunities in which the public can discover, experience and appreciate the distinctive features and elements of the natural resources of the watershed.

The Interim Watershed Plan (MVCA, 1982) further stated that the goal for unique and sensitive areas, such as the Purdon Conservation Area, is:

To contribute to the conservation and management of significant areas, in particular those located in floodplains, wetlands or headwater areas, and to give consideration to other areas recognized as regionally, provincially or nationally significant areas.

1.3 Purdon Conservation Area Objectives

The objectives for the Purdon Conservation Area are further directed by the overall goals and objectives of the Authority's Conservation and Related Land Management Strategy for development and management. Translating these goals and objectives to meet the requirements at the Purdon Conservation Area, the master plan strives to:

1. Promote a conservation or wise use ethic for our natural resources by encouraging appropriate recreational uses and responsible management at the Purdon Conservation Area.

2. Provide visitors with high quality facilities for appropriate year-round, day use activities which increase their understanding and enjoyment of the natural resources at the Purdon Conservation Area by firsthand experience.
3. Assist landowners with conservation related activities by exhibiting and explaining management techniques, such as vegetation management for wildlife habitat improvements, implemented at the Purdon Conservation Area.
4. Promote in all visitors an awareness and understanding of the policies and objectives of the Mississippi Valley Conservation Authority with particular regard to water and land management at the Purdon Conservation Area.

1.4 Purpose of Master Plan

The purpose of the master plan is to provide specific guidelines and schedules for planning and implementing the development and management of the Purdon Conservation Area. A review of the plan will occur annually as part of an annual work plan and formal monitoring. The evaluation of all activities at the Purdon Conservation Area will be ongoing. Activities can be restricted if, in the view of the Mississippi Valley Conservation Authority, any of the master plan objectives are not being met.

2.0 RESOURCE INVENTORY

The following resource characteristics have been condensed from the study by Mosquin (1985). For further details refer to his report.

2.1 Vegetation and Wildlife

Vegetation analysis is the main focus of the biological inventory for the area. Vegetation in the conservation area and surrounding lands are categorized into ten types; seven types are found in the

conservation area. Vegetation type 7, Early Successional Wetland Forest is the most important as this is where nearly all the showy lady's slipper orchids are located. Vegetation type 10, Marsh and Beaver flood, is significant because much of the area around the pond is being flooded. The present orchid colony is believed to be 25% smaller than the original colony due to flooded habitat. Vegetation type 4, Semi-mature and Mature Upland Forest provides the greatest potential for the development of education and interpretation activities because:

1. This type of forest provides homes and food for a wide variety of animals.
2. It contains a good variety of wild flowers. Many recreational activities (hiking, bird watching, maple syrup) are suitable due to the interesting and special features of semi-mature and mature forest.
3. Wildlife found in the conservation area were those common to Lanark County. Because the site has a wide diversity of habitats, wildlife signs were plentiful. Deer, squirrels, hares, porcupines, beavers, numerous species of birds and herptiles were noted.

2.2 Ecology and Hydrology

Orchid ecology was studied by conducting a census of the showy lady's slipper orchids through a 15m² grid system. The census revealed that there are 15,757 showy lady's slipper orchids; 7,954 flowering and 7,803 non-flowering. From a management perspective, knowing the number of orchids will allow precise monitoring of the colony. The census provides a baseline of scientific information to which all future changes in orchid number and distribution can be compared.

Hydrological studies revealed that the pond level does not significantly affect the orchid colony. However, uncontrolled high water levels will flood suitable orchid habitat, and prolonged flooding will destroy the orchids present. Seepage into the colony from the sloping hills is the most important source of water for orchid growth and survival.

2.3 Significant Species

The Purdon Conservation Area contains nine floral species considered to be regionally rare and a number of "superlative species". These were noted for interpretive and scientific value.

3.0 PHYSICAL AND STRUCTURAL DEVELOPMENT

3.1 Zones

For easier reference, the Purdon Conservation Area has been divided into 3 generalized zones; the area on the ridge (zone 1), the low lying orchid colony (zone 2) and the combination wetland/upland forest areas (zone 3) (figure 2).

The ridge zone (zone 1) is mature upland forest and does not significantly affect the lowland areas around Purdon Lake. This zone will be developed to a greater extent for recreational uses, day use picnicking, because it is less sensitive than the other two zones.

The remaining two zones are for natural history interpretation and low level recreational uses. The orchid colony (zone 2) is the most sensitive. The level of activity for visitors will be restricted to viewing and interpreting the orchid colony from a boardwalk. This area must be monitored and carefully managed.

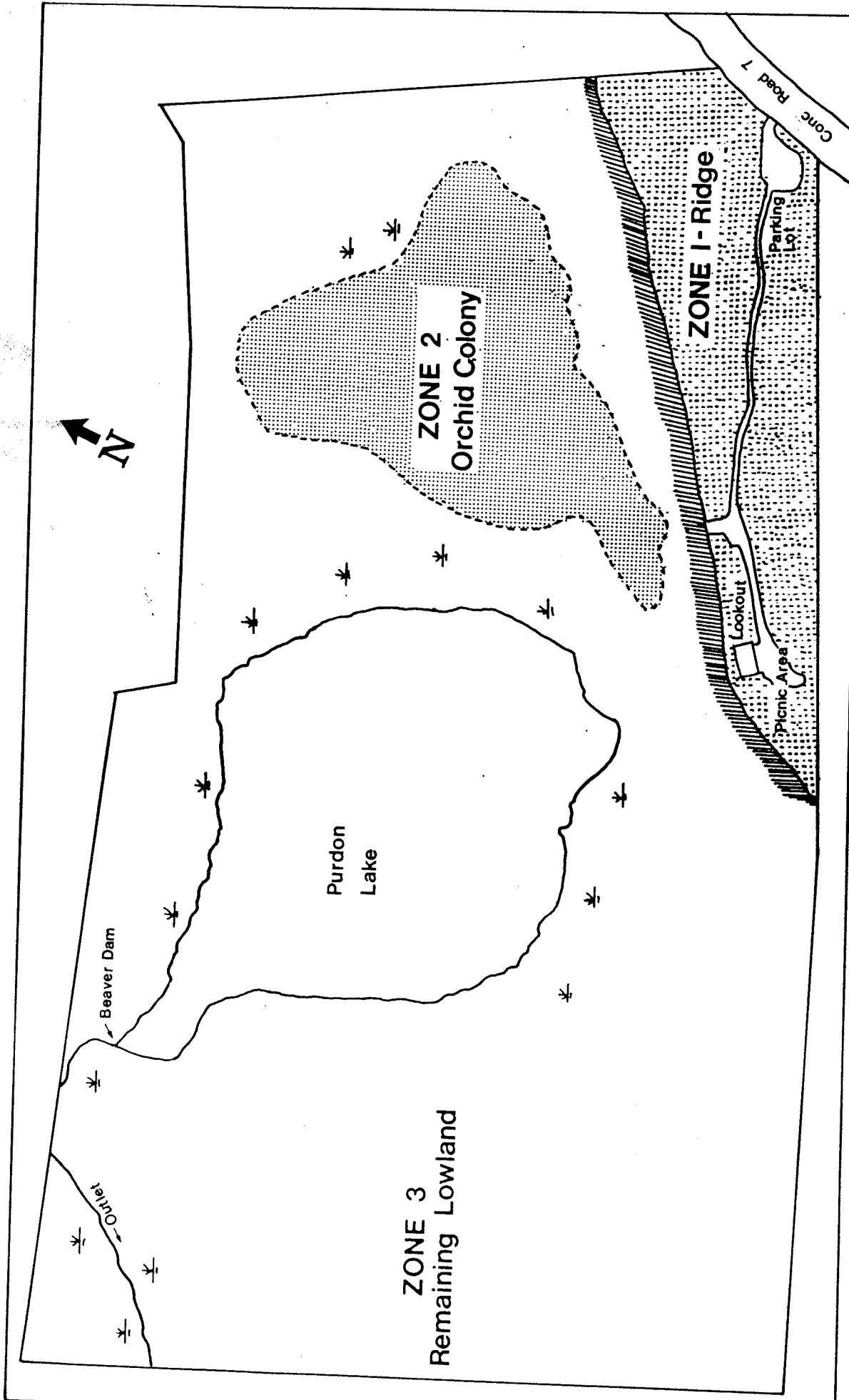


Figure 2: Zoning and Existing Development - Purdon Conservation Area

- Legend**
- ▭ Zone 1
 - ▭ Zone 2
 - ▭ Zone 3
 - - - Zone Boundary
 - Property Line
 - ≡ Walking Trail
 - * Wetland
 - ▨ Ridge

scale 1:3000

The combination wetland/upland areas (zone 3) are suitable for low level recreation, and will be used for hiking in the summer and skiing or snowshoeing in the winter. Care will be taken to maintain both as natural areas.

3.2 Present Development

Purdon Conservation Area will be managed as a nature appreciation/wildlife viewing area. The development and maintenance of the site is geared towards maintaining a natural setting. In zone 1, there is a parking lot, lookout and trail leading to the lookout (figure 2).

3.3 Proposed Development

3.3.1 Walking Trails and Boardwalk

Due to topography, physical features and size of the Purdon Conservation Area, two more trails are necessary to access the area; a boardwalk in zone 2 and, an earth and wood chipped trail in zone 3.

A boardwalk (figure 3) is necessary to protect the orchids and the orchid colony surface, provide a dry path for visitors and act as a deterrent to walking off the trail.

The trail will pass through as many vegetation types as possible for increased visitor interest. The trail will also cross patches of orchids that bloom at different times (figure 4). Orchids in grid sections A4,5,6 and B4,5,6 bloom in late May - early June, while orchids in grid sections A10,11 and B9,10,11 bloom in early July. Orchids bloom for a two week period but by crossing orchid patches that bloom at different times, the viewing season can be extended to six or seven weeks.

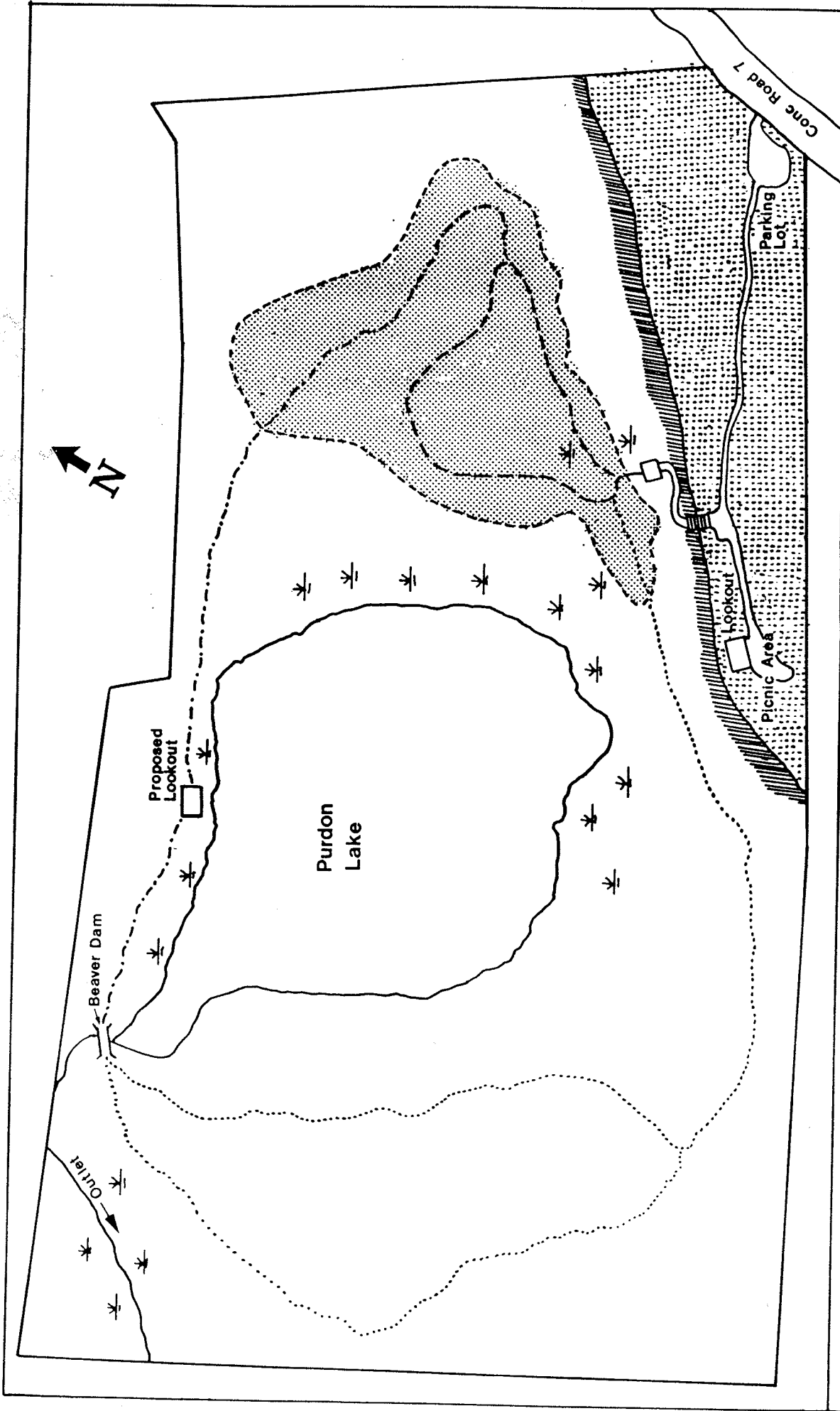


Figure 3: Proposed Development -
Purdon Conservation Area

Legend

	Zone 1		Bridge (Proposed)
	Zone 2		Wetland
	Zone 3		Ridge
	Zone Boundary		Orchid Trail
			Proposed Wildlife Trail
			Proposed Lake Trail

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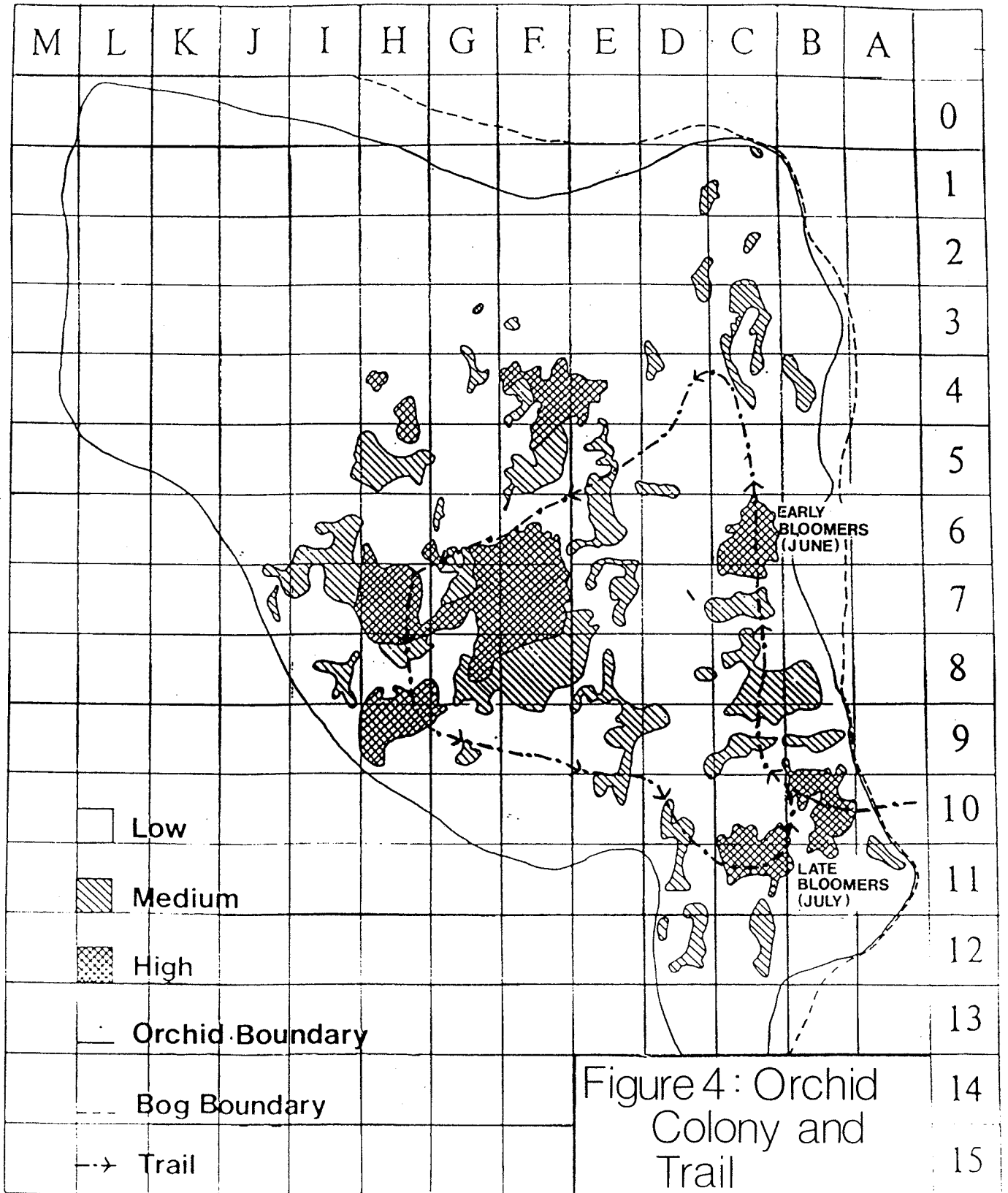
The orchid trail boardwalk will be 300m (975 feet) in length, starting from a platform at the base of the stairs, and circling through the colony (figure 4). The trail will be brushed to a width of 1.83m (6 feet) and the boardwalk will be 1.22m (4 feet) wide. The boardwalk will be constructed in 12 foot sections with the underbraces, runners and top deck built of 2"x8" pressure treated lumber. The boardwalk sections will be placed directly on the ground with the walking surface approximately 10" above the ground. Railings around the walk were not considered necessary at present.

The boardwalk is designed to distribute its weight evenly across the runners and under cross pieces. This design allows the boardwalk to have a snowshoe effect on the surface of the orchid colony. Each section will be connected by a length of 2"x8" joined to the runners with nails, allowing for removal and repair of individual sections. The design and specifications of the boardwalk are presented in Appendix 1.

The platform at the beginning of the orchid trail will be 4.9m x 6.1m (16'x20'), constructed similarly to the boardwalk. It will provide an initial gathering point for interpretive groups, and interpretation signs will be placed for viewing from the platform. One half of the platform will have a handrail, and two bench style seats will be built into the rail. The design and specifications for the platform are presented in Appendix 2.

The trail development concerns outlined by Mosquin (1985) related the time of the trail construction, tree removal (thinning) and orchid transplantation. Two periods are optimal for tree removal, when flowers are dormant in winter or past their bloom.

It will therefore be possible to mark and remove trees and brush the trail in the winter. To brush the trail, a path 1.83 metres (6 feet) wide will be made to the left of the flagging tape when walking the trail loop counter-clockwise (figure 4). Trees to be removed will be marked with yellow paint.



Early spring is strongly recommended for the transplanting of orchids. The stress from uprooting is minimized because active elongation of their stems has not yet occurred. Prior to boardwalk construction, the plants on the trail will be moved away to suitable orchid habitat.

During the early stages of trail work a planner will be present to guide orchid transplanting and tree thinning. As boardwalk construction begins, the crew foreman will oversee work, and a planner will inspect as required.

The building materials will be pre-cut and stockpiled on site by snowmobile in the winter. A six man crew working in teams of two will be most efficient. This size of crew can maximize output and still minimize any disturbance in the area by confining work to the brushed trail.

If future funding is available, an additional boardwalk loop will be added to explore other interesting features within the orchid colony. Features which would be of interest are the very old white cedar tree (Arbor vitea), a massive ant colony and a Potentilla fen.

The second trail will be predominantly an uplands forest trail (figure 3). This trail will be approximately 900m (2,925 feet) long, and surfaced with wood chips (due to its drier location). The trail will be marked with flagging tape and trees to be removed will be spray painted. The brushed trail will be 1.83m (6 feet) wide and wood chipped where needed, for a maximum width of 1.22m (4 feet). The beginning point will be a fork off the boardwalk loop and the destination will be the beaver dam. This trail will be linear (straight) with a loop beginning at the halfway mark. The exact location of the trail will be established as part of the summer habitat research program, and a summer or fall work crew will complete the work.

3.3.2 Picnic Area

Because of the long distances from population centres, facilities must be provided for a full day outing. A picnic area (figure 5) with four tables (Appendix 3), two garbage cans and a single pit-style outhouse (Appendix 4) will be constructed. The area presently brushed around the lookout will be levelled as needed and the facilities installed in the spring.

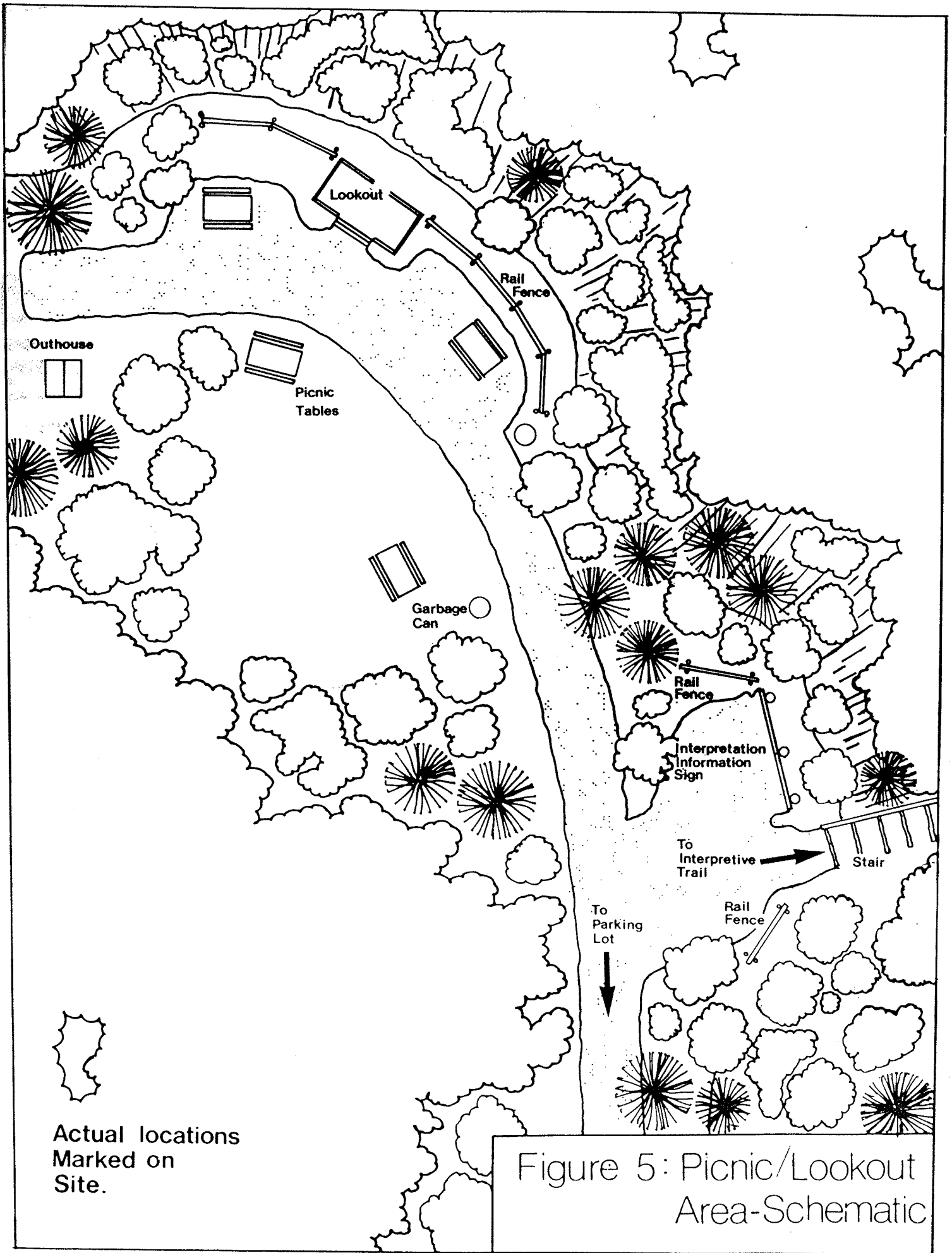
For safety reasons, approximately 10 metres (32.5 feet) of fence (Appendix 5) will be erected along the ridge around the lookout. To provide design consistency, the facilities in the picnic area and parking lot will all be stained to match the lookout (excluding signs).

3.3.3 Ridge Walkway to the Orchid Trail

For access to the orchid colony from the picnic/lookout area, a walkway will be constructed down the ridge (figure 6). The best possible route has been marked with flagging tape and trees to be removed marked with paint. Path width will be 1.22 metres (4 feet) but the trail will be brushed to a wide of at least 1.53 metres (5 feet). For an aesthetically pleasing trail down, the least amount of vegetation will be cut away.

The steps (Appendix 6), where possible, will be constructed using pressure treated cut lumber for the down slope side stringers and step face, with earth backfill and a 2 inch layer of stone dust. On steeper slopes, wooden stairs will be made (Appendix 6). For added safety, handrails will be mounted on the downward side of the walkway.

A platform (Appendix 2) will be made at the bottom of the stairs to link the stairs to the boardwalk.



Actual locations
Marked on
Site.

Figure 5: Picnic/Lookout
Area-Schematic

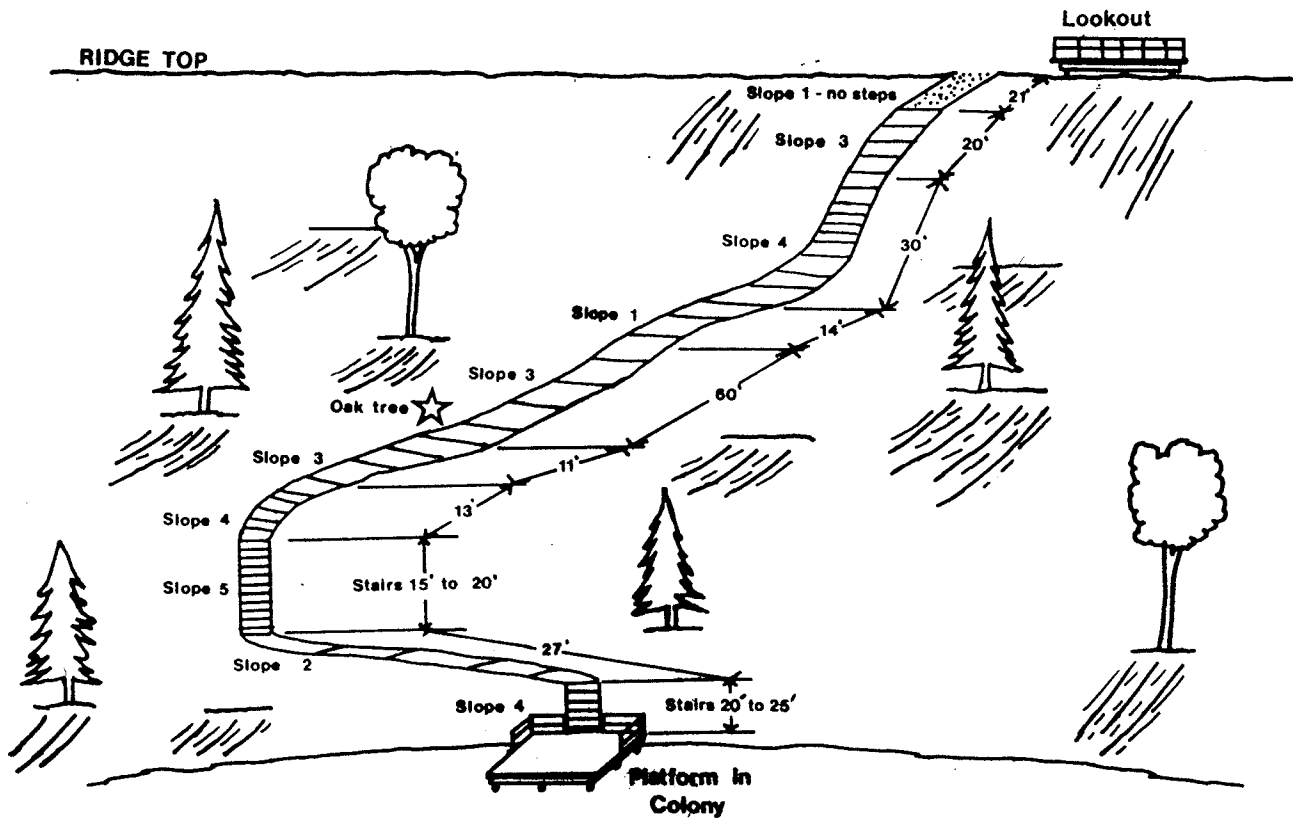


Figure 6: Ridge Walkway

3.3.4 Signage

Signs will be necessary to provide direction to the conservation area and within the conservation area.

Road Signage

Road signs will be located on Highways 7, 511 and Lanark County Road 8 (figure 7). Ministry of Transportation and Communication signs will be located on both sides of Highways 7 at Highway 511 and Highway 511 at Lanark - County Road 8. Conservation area signs will be located at various locations to provide driving directions (Appendix 7). A double sided Mississippi Valley Conservation Authority sign (Appendix 8) will be located at the Patterson Lake turn off on County Road 8.

Conservation Area Signage

Signs are necessary in four areas: the parking lot, entrance to the orientation trail, entrance to the orchid trail at the top of the ridge walkway, and on the orchid trail. The signs will orientate visitors, direct traffic and provide information. The design and construction specifications are provided in Appendices 9 to 16.

a) Parking Lot and Orientation Trail

A large conservation area sign will be constructed for the parking lot which will identify the area and list the contributors to development (Appendix 9). An orientation sign consisting of an area map and general Conservation Authority information, and an information sign with comment sheet, rules and regulations and brochure box will also be built (Appendix 10 and 11). The placement of these signs can be seen in figure 8.

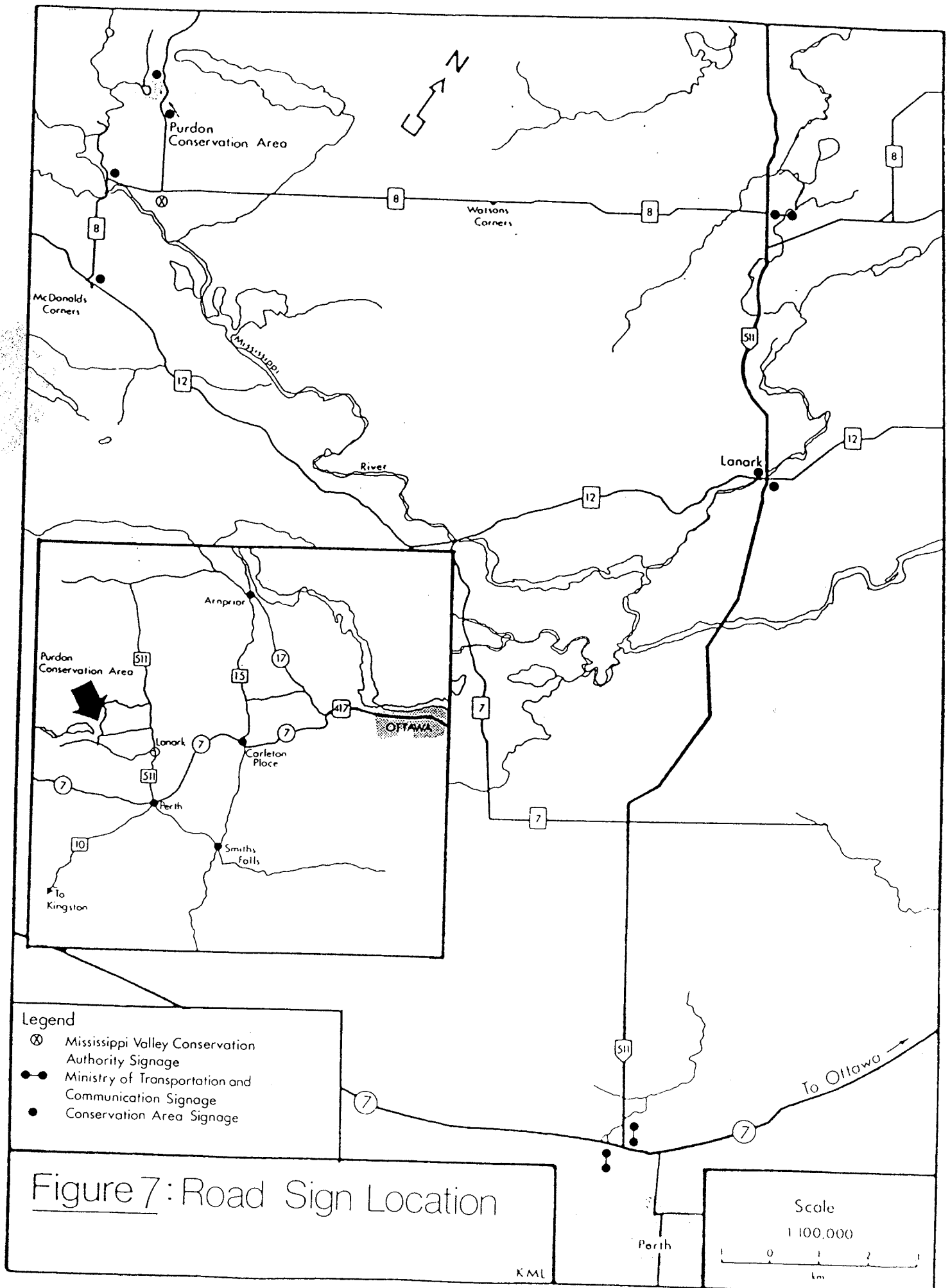
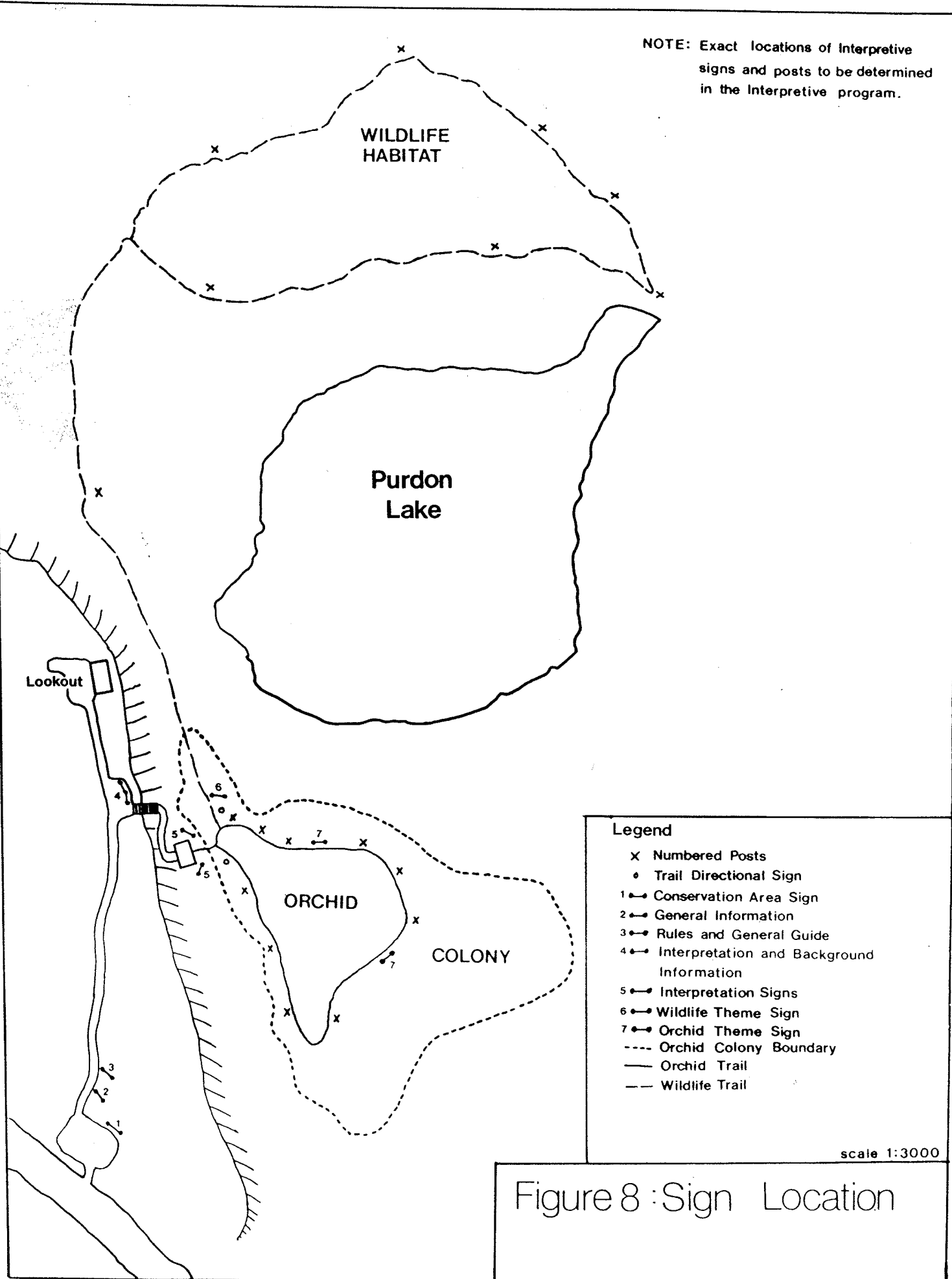


Figure 7: Road Sign Location

NOTE: Exact locations of Interpretive signs and posts to be determined in the Interpretive program.



Legend

- x Numbered Posts
- o Trail Directional Sign
- 1 Conservation Area Sign
- 2 General Information
- 3 Rules and General Guide
- 4 Interpretation and Background Information
- 5 Interpretation Signs
- 6 Wildlife Theme Sign
- 7 Orchid Theme Sign
- Orchid Colony Boundary
- Orchid Trail
- - - Wildlife Trail

scale 1:3000

Figure 8 : Sign Location

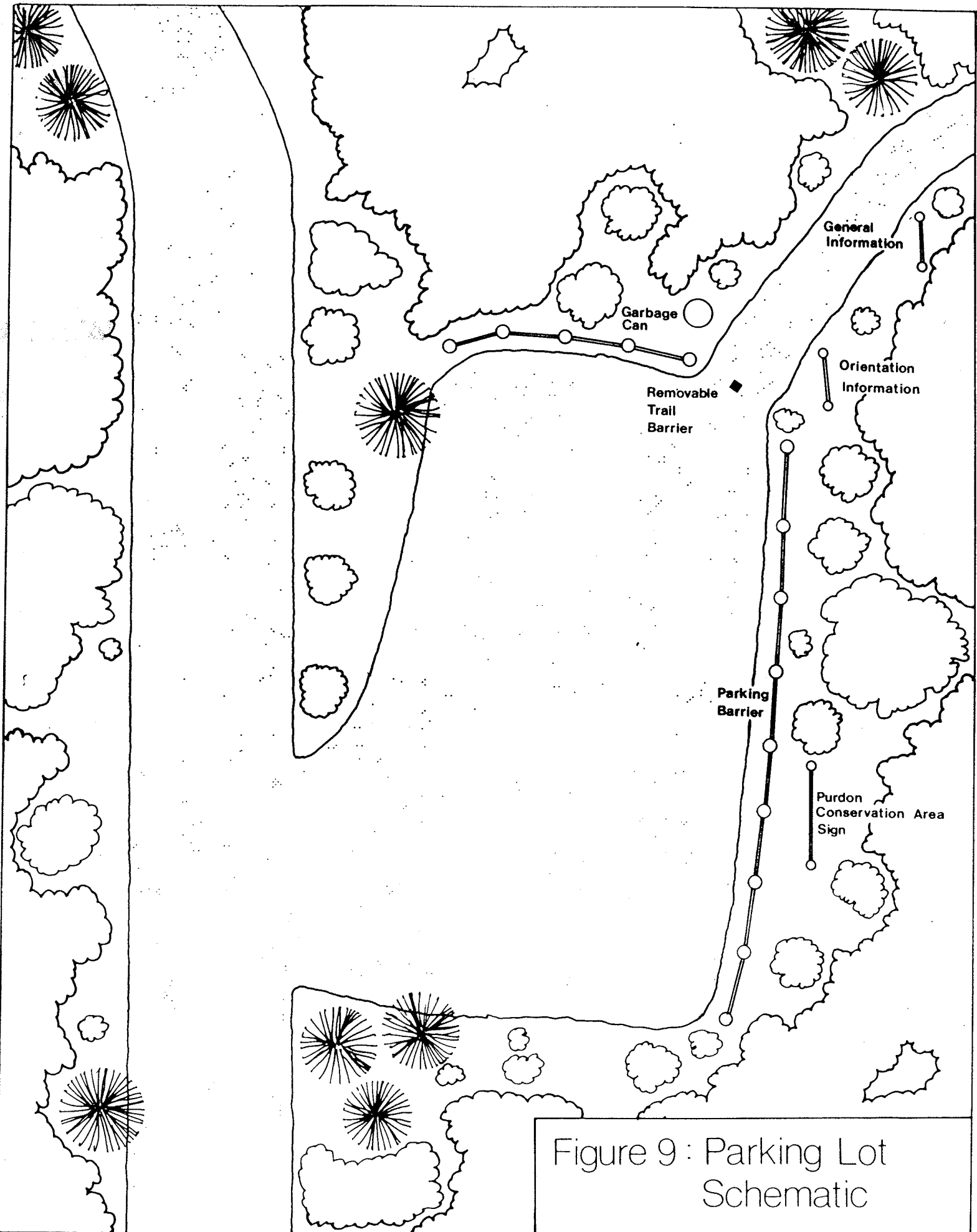


Figure 9 : Parking Lot Schematic

would be designed to match the present one, and is proposed for development following construction of the secondary trails.

3.4.2 Bridge and Lake Trail

As future funding becomes available, a bridge crossing the beaver dam will be constructed to explore the northwest shore of Purdon Lake and an additional trail which would link backup with the orchid colony boardwalk (figure 3). The exact design of this bridge will depend on the type and success of the beaver control device in the dam.

3.4.3 Floating Dock

A floating dock can be located at a number of places in the lake. Near the beaver dam may be the most appropriate because the chances of seeing a beaver is greatest here. The dock will give visitors a chance to experience the pond.

3.4.4 Ski Trail

A ski trail will help to attract visitors in the winter. There are many winter cottagers as well as local residents in close proximity to the site. The trails will have to be modified to suit cross country skiing and a new access down the ridge will be necessary. Washroom facilities will have to be located at the parking lot.

4.0 LAND MANAGEMENT

4.1 Orchid Habitat Management and Expansion

The Mississippi Valley Conservation Authority has adopted a policy to manage and expand the orchid colony. Three methods suggested by Mosquin (1985) to increase orchid numbers will be implemented.

4.3 Future Land Acquisition

The initial parcel of land to be considered for purchase should be the tract of land adjacent to the road, owned by Arthur S. Elmhurst (figure 10). The easiest access to the lowland area is through this property. This acquisition will compliment the conservation area since it is upland forest, borders the road and would provide easier equipment access.

Mosquin (1985) reported that two additional properties have potential value to the Conservation Authority; the adjacent properties of Norah Purdon and the northeast half of the 40 hectares owned by William Brooks. These areas have the greatest diversity of vegetation and habitats; a mix of beaver flood areas, mature upland forest and abandoned farm land. The Purdon Farm also contains a number of buildings in good condition; three barns, a farm house, and a fully equipped maple sugar shack. These lands represent the best potential for interpretation and education development.

There is excellent potential for an overnight conservation education centre on these areas. Much of the Authority's conservation and water management message could be taught to school children if these areas were added to the present conservation area.

5.0 USER LIAISON AND EXTENSION SERVICES

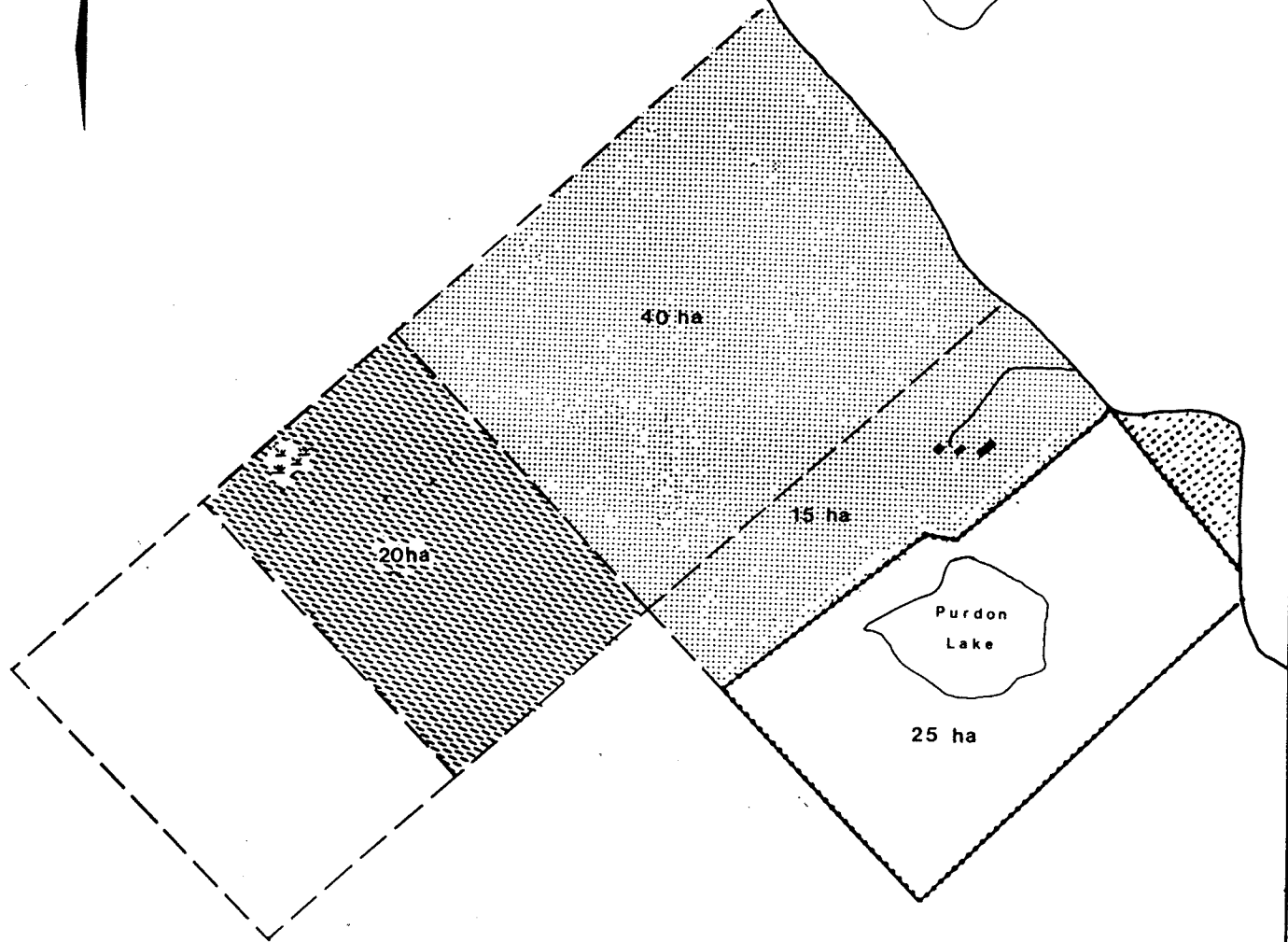
5.1 Interpretation Strategy

5.1.1 Target Group

The potential target groups for the user liaison and extension services components of the Purdon Conservation Area Master Plan fall into two categories; people seeking a rewarding natural history experience and groups wishing to use the resource for education purposes. Potential users looking for a natural



Patterson Lake



LEGEND




- Present Boundary
- Future Acquisitions
- Property Owners
-  Arthur Elmhurst
-  Nora Purdon
-  William Brook

Figure 10: Future Acquisition

history experience include amateur naturalists, photographers, picnickers, hikers and skiers. For educational uses, school and youth groups will have the greatest potential but businesses, organizations and post secondary institutions may be interested in utilizing the site for scientific research on orchids. People will also be educated in how to improve their own woodlots to attract wildlife.

5.1.2 Conservation Authority Message

The Authority has three basic messages for their target groups:

1. Conservation ethic - to instill in the visitor a wise use ethic for the natural resources.
2. The role of the Conservation Authority - what the Authority does in its water and land management programs and how these programs can help the visitor.
3. The overall care and protection for the Purdon Conservation Area.

These messages will be translated to the users by providing a high quality, esthetically pleasing conservation site, an interpretive program to demonstrate the importance of wise management, and a brochure explaining the Conservation Authority and the management techniques utilized.

5.1.3 Promotion

To control and monitor the number of visitors to the site, the initial promotional strategy will include press releases, a special issue Authority Newsletter, ads in naturalists columns and word of mouth.

In subsequent years, promotion will come in the form of conservation area brochures, fact sheets and audio-visual presentation to interested groups. Promotion during the first season of operation will be intensive. The site will be policed by an interpretive staff/warden during the orchid blooming season and invitations sent out to specific organizations within the target group. Groups will be encouraged to book in advance of their arrival in order to control access and provide more information to them.

If feasible, potential private and public researchers will be contacted to carry out scientific experiments on the orchids and in the orchid colony. Research proposals will have to be reviewed by Authority staff and approved by the Authority.

Promotion in subsequent years will be less intensive and become part of the general Mississippi Valley Conservation Authority program promotion.

5.1.4 Official Opening

In the summer of 1986, an official opening (Appendix 19) for the Purdon Conservation Area will occur. Those to be invited will include Authority members, funding agencies, government officials and people with a special interest in the orchid colony. Invitations will be sent well in advance of the date of the event. A guest information package will be prepared with background on the site and the Conservation Authority. An agenda will be drafted for events and activities, to be approved by the Authority Executive.

5.1.5 Interpretive Media

The conservation area will be primarily self-guiding. Visitors will be able to direct themselves by use of trail signs and trail guide brochures. Trail guide brochures will be designed using a numbered post and brochure system (Appendix 13). This design will allow flexibility to adjust them as the seasons change. Some interpretive signs may be placed along the trail to further enhance the information on the brochures. The design and content of the brochure and trail post locations will be planned and implemented in the summer of 1986.

5.1.6 Interpretation on Trails

Interpretation at the Purdon Conservation Area will concentrate on the Authority's messages and on natural history themes. Due to the self-guiding nature of the area, much of the protection message for the orchids and area must be incorporated into the media.

(i) Orientation Trail

The orientation trail is a short self-guided trail leading to the lookout. The orientation trail will:

1. Bring people from the parking lot to the picnic area or to the interpretive zone.
2. Give them a feel for the area.
3. Provide general information on the overall site, and promote the conservation, and protection messages.
4. Provide 2 signs at the entrance to the interpretive zone to give the characteristics of the trail, history of Joe Purdon and seasonal material on the colony.

These and other themes will explore special areas of interest and seasonal natural history. In the summer of 1986, an interpretation strategy will be prepared for Purdon Conservation Area.

5.1.7 Interpretive Staff/Warden

During the orchid blooming season of the first year, (June and July of 1986), an interpretive staff/warden will be on site to direct people, provide information and police the site. Other duties will include maintenance of the area, ongoing interpretive research, orchid management, wildlife habitat improvements, booking and leading guided tours during the orchid flowering season. It will be determined if these activities warrant continuation of a summer employment position in future years.

5.1.8 Conservation Area Brochure

A general brochure will be produced to help promote the conservation area. This brochure will outline basic visitor services, the background of the Authority and area, and help reinforce the conservation message.

5.1.9 Special Events

Every year during the orchid bloom, one week should be designated as orchid week with special events happening on one day. Activities which are appropriate for the days event are guided tours of the orchid colony, picnics, and bird watching walks. The events will be of a scale which will have virtually no effect on the orchid colony.

5.2 Future Interpretive Opportunities

A variety of opportunities have been identified for future interpretive ideas and their implementation will be considered (Appendix 20). The three major opportunities are as follows:

5.2.1 Education Kits

Kits may be prepared for schools in a self-use format to encourage participation while realizing staff constraints.

This kits will deal with orchids, the Conservation Authority and ecology of the area. The kit should contain previsit preparation, orientation activities and follow-up materials.

Preliminary work can be done in 1986 or 1987.

5.2.2 Audio Visual Presentation

As a promotional tool, an audio visual presentation about Purdon Conservation Area should be prepared for speaking engagements. This will be necessary for any future attempts to gain funds and support for future development at Purdon Conservation Area s (Appendix 21).

5.2.3 Reference Library

To help with the extension component, a reference library containing material on orchid biology, ecology and management should be made available. This general use library should be open to the public and have information on water and related land management. Wildlife habitat improvement information should be available as well.

6.0 EFFICIENCY ANALYSIS

6.1 Evaluation

Due to the self-guiding nature of the site, little personal interaction will occur between staff and visitors. How will the Authority know if it's messages are getting across? Evaluation methods must be built into the self-guiding media in order to measure the effectiveness of the site (Appendix 22). Assessment of responses from comment sheets, evaluation forms and sign-in sheets will help the Authority to act on any concerns and to evaluate the effectiveness of the conservation area in fulfilling its goals.

Because the conservation area is self-guiding, the environmental impact of all activities will be carefully monitored and evaluated. Most of the conservation ethic will come from protection messages in the interpretive media. To prevent any negative impact, the key is to combine wise management with built-in controls. Promotion of the area will be directed to those seeking a rewarding natural history experience as opposed to a recreational experience. If it is found that the area is experiencing negative impact, it may be necessary to ensure that the site is supervised during blooming season.

6.2 Maintenance

Maintenance of the conservation area will require site inspection for necessary repairs and removal of trail debris, information and brochure replacement, and garbage removal. Frequency of inspections will depend on the amount of visitation. During the orchid blooming period, inspections will be more frequent. A standard conservation area maintenance inspection form will be used. See Appendix 23 for example.

Maintenance reduction techniques will be used for initial construction, (ie. pressure treated wood, and long lasting stains to reduce repair and repainting costs). Other techniques will be investigated when maintenance issues arise.

7.0 MAINTENANCE SCHEDULE

Weekly (June & July) during summer, 2-3 months other times

- clean washrooms;
- replenish supplies - washroom, brochures, evaluation forms;
- garbage removal - picnic and parking lot;
- site inspection and evaluation;
- clear debris from parking lot, trails and picnic area.

Yearly (before opening each spring)

- spring clean-up of debris - picnic, boardwalk and parking lot;
- clipping picnic areas;
- repair and return picnic tables;
- wood chips in wet areas on trails.

Yearly (summer or fall)

- vegetation management - colony, trails;
- water level structure repair and clearing debris;
- parking lot grading/snow removal;
- selective thinning and trail brushing;
- seasonal interpretive material changes - bulletin board, signs.

Yearly (fall or winter)

- repainting facilities - signs, outhouses, tables;
- repairs as needed - boardwalks, stairs, lookout, signs;
- wood chip trails;
- major thinning;
- fencing repairs at parking lot, lookout and property boundary;
- trapping beaver as necessary

8.0 IMPLEMENTATION SCHEDULE

To compliment the Conservation and Related Land Management strategy, this schedule is based on a 5 year period.

Phase I - 1986

<u>Item</u>	<u>Time</u>	<u>Cost</u>	
		<u>Labour Requirement</u>	<u>Excluding Labour</u>
<u>Physical and Structural Development</u>			
1. <u>Trails</u>			
a) Boardwalk Trail			
i) trail marking	complete		
ii) trail brushing	Feb-Mar	2	
iii) stockpile materials	Feb-Mar	2	
iv) orchid transplant	April	2	
v) construction of platform	May	6	
vi) construction of boardwalk	May-June	6	

\$14,000.00

<u>Item</u>	<u>Time</u>	<u>Labour Requirement</u>	<u>Cost Excluding Labour</u>
b) Upland Trail			
i) trail marking	Aug	2	
ii) trail brushing	Fall	2	
iii) wood chipping	Fall	2	
			\$300.00

2. Signage

I. Construction

a) Signage on Road

i) M.V.C.A.	March	2
-------------	-------	---

b) at Parking Lot

i) Conservation Authority	March	1
ii) orientation	March	1
iii) general information	March	1

c) at Top of Ridge Walkway	March	1
----------------------------	-------	---

d) at Platform	Fall	1
----------------	------	---

e) on Boardwalk

i) interpretation	Fall	1
ii) directional	March	1
iii) numbered posts	June	1

\$1,400.00

<u>Item</u>	<u>Time</u>	<u>Labour Requirement</u>	<u>Cost Excluding Labour</u>
II) Placement of Signs			
i) M.T.C.	June	2	
ii) completed M.V.C.A. signs	June	2	
			\$100.00
3. <u>Ridge Walkway</u>			
i) trail brushing	Feb-Mar	2	
ii) construction	April	6	
			\$2,500.00
4. <u>Picnic Area</u>			
i) outhouse	Complete		
ii) picnic tables (4)	Feb-June	2	
iii) brush and level area	June	4	
iv) fencing	June	2	
			\$1,000.00
5. <u>Parking Lot Barrier</u>			
	June	2	
			\$100.00
6. <u>Boundary Markers</u>			
i) placement of stakes	Feb	1	
			\$50.00

<u>Item</u>	<u>Time</u>	<u>Labour Requirement</u>	<u>Cost Excluding Labour</u>
<u>LAND MANAGEMENT</u>			
7. <u>Orchid Habitat Management and Expansion</u>			
a) Placement of permanent grid system	Feb	2	
b) Control of lake level			
i) removal of part of beaver dam	March	2	
c) Thinning			
i) marking trees	July	1	
ii) cutting trees	Dec	2	
d) Pollination: seed dispersal	June-July	1	
			\$100.00
8. <u>Wildlife Habitat Improvement</u>			
i) wildlife habitat improvement work	Fall	2	
			\$300.00

<u>Item</u>	<u>Time</u>	<u>Labour Requirement</u>	<u>Cost Excluding Labour</u>
<u>USER LIAISON AND EXTENSION SERVICES</u>			
9. <u>Interpretation System</u>			
a) Research and Development			
i) of orchid zone			
a) research	May-July	2	
b) report and recommendations	July	2	
c) trail guide	July	2	
ii) of wildlife trail			
a) research	July-Aug	2	
b) report and recommendations	Aug	2	
c) trail guide (ideas)	Aug	2	
			\$300.00
b) Official Opening			
i) agenda	Feb	1	
ii) invitation list	March	1	
iii) contact of			
a) speakers	March	1	
b) caterer	March	1	
c) guests, by invitation	March	1	

<u>Item</u>	<u>Time</u>	<u>Labour Requirement</u>	<u>Cost Excluding Labour</u>
iv) event site preparation	June	2	
			\$800.00
c) Audio Visual Presentation	Dec	1	
			\$50.00
Total Estimated Cost Excluding Labour			\$21,000.00

Phase II - 1987 to 1990

Physical and Structural Development

	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
1. Trails				
a) Wildlife Trail				
- construction	*			
b) Lake Trail & Bridge				
- plan		*		
- construction			*	
2. Signage				
a) Wildlife Trail				
- interpretive	*			
- posts	*			
- direction	*			
- information	*			

1987

1988

1989

1990

3. Lake Lookout

- construction

*

LAND MANAGEMENT

1. Orchid Habitat

a) Lake control-manually *

- beaver dam structure * OR *

b) Thinning

- marking in July Ongoing

- cutting in December Ongoing

c) Pollution and Seed

Dispersal In June

and July

Ongoing

2. Wildlife Habitat

a) Improvement works

Ongoing or as recommended in report.

3. Land Acquisition

As funding becomes available

USER LIAISON AND EXTENSION

1. Interpretation Media

a) C.A. brochure * OR *

b) Trail guides *

c) Fact sheet *

1987

1988

1989

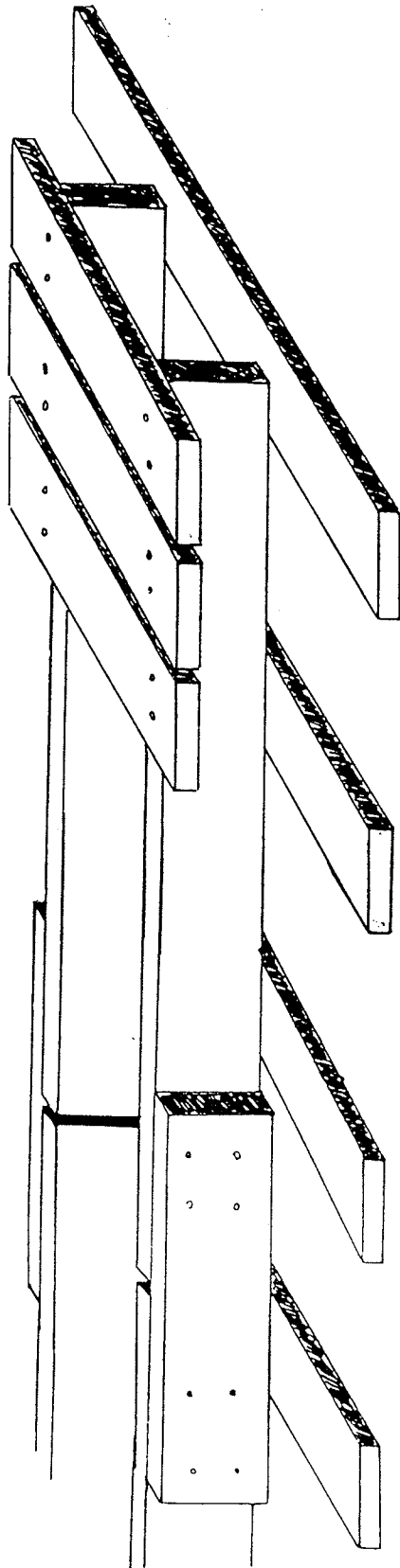
1990

2. Other Proposals

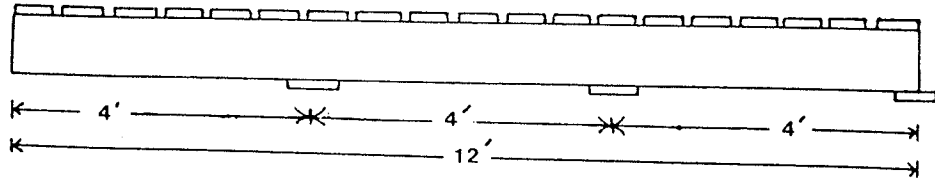
- a) Revenue generation *
- b) Resource library Ongoing
- c) Education kit *
- d) Education center
 - research *
 - develop if feasible * as funds become available

Appendices

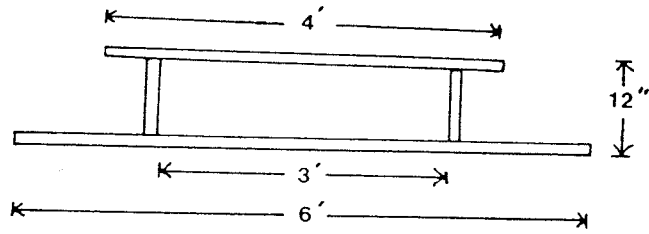
1. Boardwalk.
2. Platform.
3. Picnic Tables.
4. Outhouse.
5. Rail Fence.
6. Ridge Walkway.
7. Conservation Area Road Signs.
8. Patterson Lake Road Signs.
9. Parking Lot Sign.
10. Orientation Information Sign.
11. General Information Sign.
12. Ridge Walkway Sign.
13. Numbered Posts and Pamphlet.
14. Trail Name Signs.
15. Interpretive Signs.
16. Flora Identification Signs.
17. Parking Lot Barrier.
18. Beaver Dam Structure.
19. Official Opening.
20. Future Interpretive Opportunities.
21. Audio Visual Presentation.
22. Evaluation Sheet.
23. Maintenance Inspection Form.



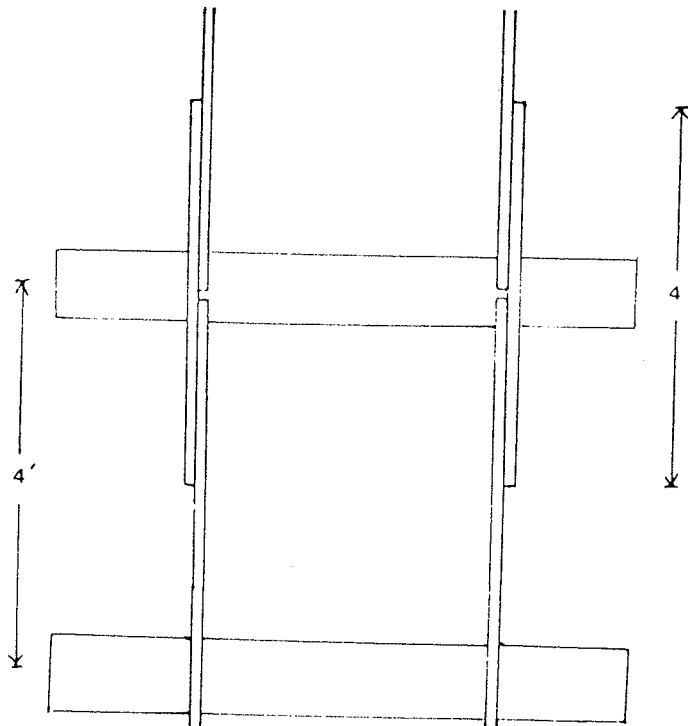
Side View



End View



Top View



APPENDIX 1: Boardwalk

Specifications

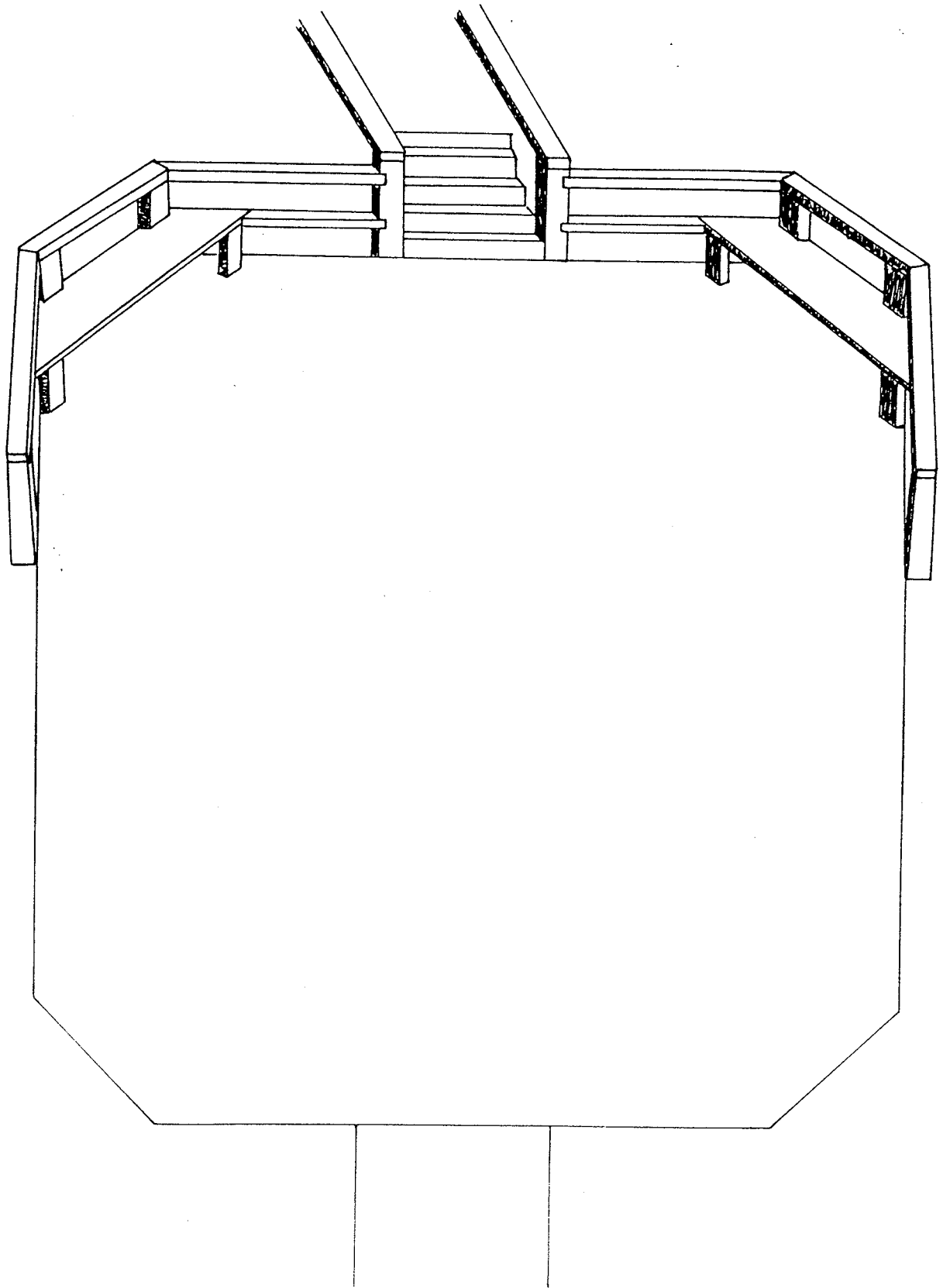
Lumber - 2"x8" Pressure Treated Pine

Hardware - 3½" spiral coated nails

Finish - Natural

Dimensions - Decking	2"x8"x4'
- Runners	2"x8"x12'
- Underbraces	2"x8"x6'
- Section connecting braces	2"x8"x4'

- Built under frame in 12' sections;
- Lay in sequence;
- Connect with 2 side connecting braces nailed on runners;
- nail top decking on once in place.



SELF-GUIDED NATURE TRAIL SURVEY

Survey No. _____
Date _____
Time _____

This survey is being conducted for the Arboretum, as part of my thesis research. We wish to find out what visitors like and dislike about the nature trails here. The information you provide will be very useful in assisting us to improve the trail and the trail guide.

Your assistance is greatly appreciated, and all responses will be treated confidentially. Your name is not required.

This is not a test - please give your HONEST impressions! If you have any questions about the survey, please do not hesitate to ask me.

Thank you. Frances Kennle

1. Why did you come to walk on this trail today? Please give those reasons which are most important to you. _____

2. Did you read the trail guide as you followed the trail?

Yes, all of it Part of it No, none of it

If you read only part or none of it, what were your reasons for skipping parts (all of it) _____

3. For each of the following, please check: i) the degree of interest which you had in that aspect of nature before you arrived here today, and ii) the extent to which you feel your interest was fulfilled by the things you saw, read about, and experienced on your walk

	1	2	3
	Slight	Modest	Great
a) The spring wildflowers (plants):			
i) Interest beforehand			
ii) Fulfillment of that interest			
b) Enjoying nature in general - the outdoors:			
i) Interest beforehand			
ii) Fulfillment of that interest			
c) The birds and animals:			
i) Interest beforehand			
ii) Fulfillment of that interest			
d) Ecology - interactions in nature:			
i) Interest beforehand			
ii) Fulfillment of that interest			
e) Tree identification:			
i) Interest beforehand			
ii) Fulfillment of that interest			
f) The smells and sounds of the woods:			
i) Interest beforehand			
ii) Fulfillment of that interest			

4. What did you like most about the trail and/or trail guide? _____

5. Did you dislike anything about the trail and/or trail guide? Yes No
If yes, what? _____

6. Was there anything along the trail which you felt would be interesting to be explained, but wasn't? Yes No
If so, what? _____

7. Did you stop and look in the woods often? Yes No
If yes, what did you see? _____

8. Please indicate with a check mark your impressions of the following aspects of the trail and trail guide. (Please box blank if no opinion on that part; this aspect _____)

	More	Just	Less
	Interested	Satisfied	Interested
a) Directional signs along trail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Route signs along trail (e.g. benches)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Information in the trail guide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Number of stakes along trail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Number of sensory reference points in trail guide (e.g. bench signs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Detail in sensory reference points	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Length of trail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Width of trail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Clauses in trail guide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Do you have any other suggestions about the way signs and information are presented in the trail guide? _____

10. Did walking this trail and/or reading the trail guide make you feel more interested, the same as before, or less interested in taking part in other outdoor nature activities (and interpretive events)?

More interested Same as before Less interested

11. Please indicate your reaction to each of the following statements by circling the appropriate number. If you would like to comment on your choice, space is provided below each item.

This is the scale for each statement:

1 2 3 4 5
strongly agree undecided disagree strongly disagree
(indifferent)

a) I found walking this trail to be very enjoyable. strongly 1 2 3 4 5 strongly
agree disagree

b) Following this trail has helped me to become more aware of the sounds, smells, and physical impressions of the woods. 1 2 3 4 5

c) I learned a great deal about nature from reading the trail guide. 1 2 3 4 5

d) Reading the trail guide has aroused my curiosity to learn more about nature. 1 2 3 4 5

e) Reading this trail guide has helped me to become more aware of the sounds, smells, sights, and physical impressions of the woods. 1 2 3 4 5

Now a few questions to help us interpret the information which you have given.

12. Have you been on a self-guided trail before?

Yes No Don't know

If yes, how many times approximately have you been on:

This trail? _____

13. Have you taken part in any nature interpretive activities other than self-

guided trails during the past year?

Yes No Don't know

If yes, how many times and how long (in years) approximately?

Please circle the letter of the response which best describes you under the following headings:

14. Age? 15. Sex? 16. Education?
a) 14-19 M F High school
b) 20-24 M F College graduate
c) 25-29 M F Graduate diploma
d) 30-34 M F Graduate diploma
e) 35-39 M F Graduate degree
f) 40-44 M F Graduate degree
g) 45-49 M F Graduate degree
h) 50-54 M F Graduate degree
i) 55-59 M F Graduate degree
j) 60-64 M F Graduate degree
k) 65-69 M F Graduate degree
l) 70-74 M F Graduate degree
m) 75-79 M F Graduate degree
n) 80-84 M F Graduate degree
o) 85-89 M F Graduate degree
p) 90-94 M F Graduate degree
q) 95-99 M F Graduate degree

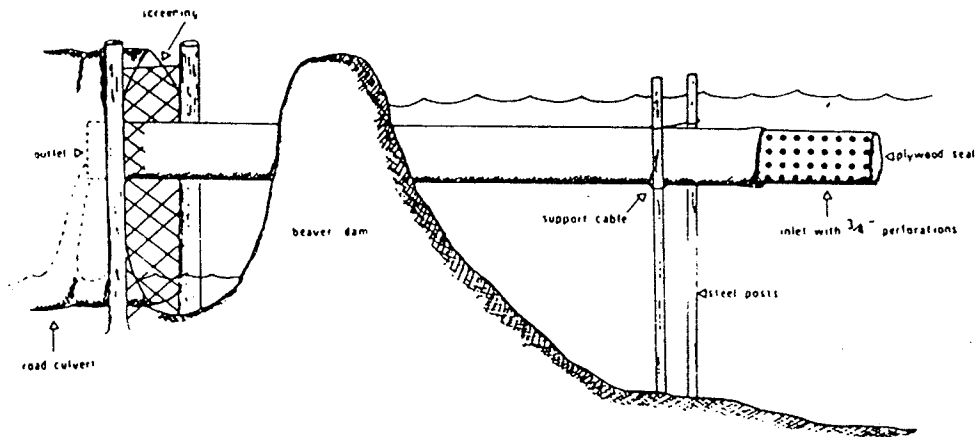
17. What is your present occupation? Please be specific.

18. What type of group are you a member of?
Solitary (by myself) With family With friends With family & friends With family & friends & other group members Other

19. Are you a member of any professional, fraternal, or conservation organizations or clubs? Yes No
If yes, please list them.

THANK YOU VERY MUCH FOR YOUR PARTICIPATION.

PERFORATED CULVERTS

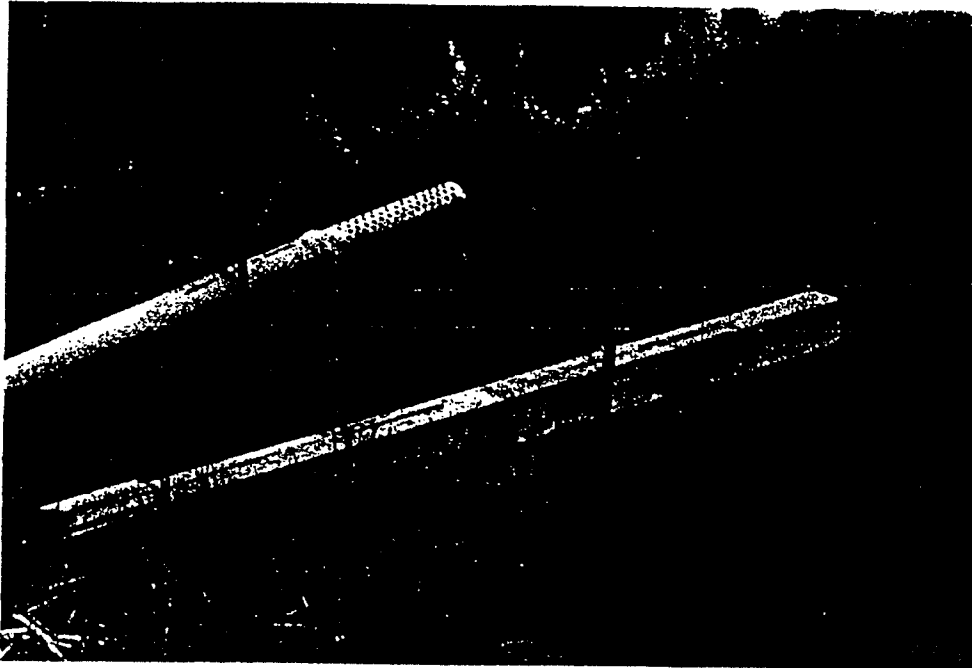


Construction of a perforated culvert

Although wooden, metal and plastic (PVC) pipe have all been used plastic pipe is light and hence, easiest to install. Standard design requires a 25-foot section of pipe length, of 6 to 8 inches in diameter. The culvert consists of a 20-foot section with a flared end, and a five-foot inlet section. The inlet of each culvert must be perforated with $\frac{3}{4}$ -inch-diameter holes. A minimum of about 200 holes is required when using 6-inch pipe, and approximately 300 holes should be drilled when 8-inch pipe is used. The inlet end is then sealed with a treated $\frac{1}{2}$ -inch plywood plug held in place by two wood-screws.

Join the sections by driving the perforated inlet into the flared end of the drain section. THE CULVERT(S) SHOULD THEN BE PLACED SO THAT THE INLET IS OVER THE AREA OF DEEPEST WATER TO DISCOURAGE MUDDING BY BEAVER. It is most important not to place the culverts too close to the pond-bottom, as this will encourage beaver to block the perforations. It may be helpful to blast or dig a pit in the pond-bottom below the inlet. The culvert length may be increased to reach the deepest water by adding additional drain sections. Heavy galvanized wire is then attached to metal posts at the estimated desired depth and the posts are driven vertically into the pond-bottom about 12 feet away from the dam in order

to support and maintain the culverts at a fixed level. Place the culverts between the posts with the outlet resting on the dam. The dam should be notched to the desired depth and the outlet can then be slid into it. A slight downward slope into the pond should be maintained so that the perforated inlet remains submerged following drawdown. A culvert so placed is immediately functional. When two or more culverts are employed, they should be placed separately in a "fan" shape (see illustration).



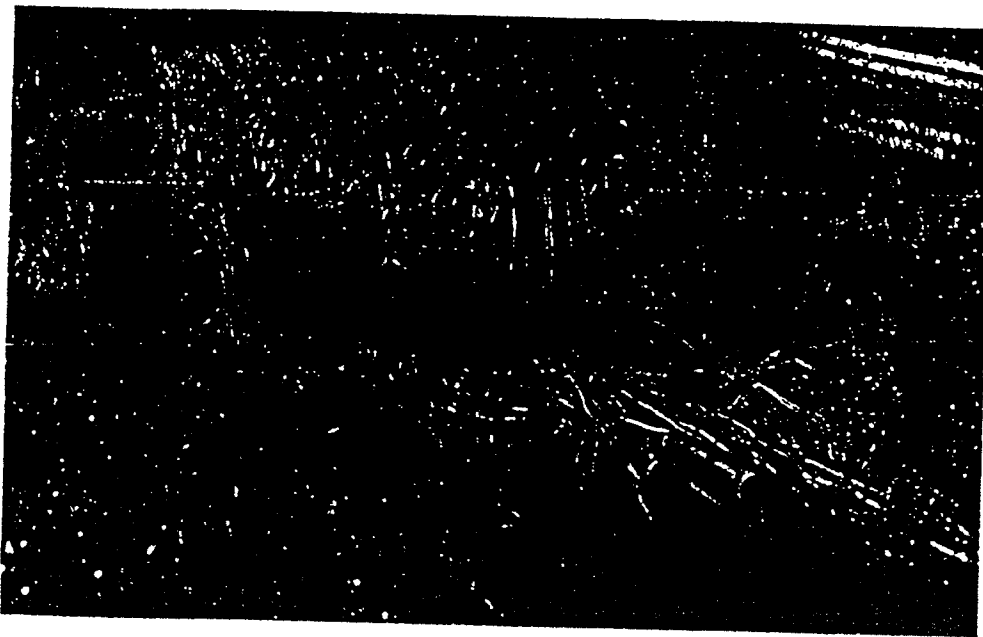
Double perforated culverts "fanned" to prevent mudding by beaver

"Fanning" the culverts impedes effective blocking by the beaver. Where the dam is obstructing a road culvert the outlet should be placed just within the road culvert, and covered by a screen to prevent obstruction by beaver at that end (see diagram).

Periodic checks of the effectiveness of the culvert should be

made. If sufficient drawdown has not occurred, it may be necessary to install an additional culvert. Inlets should be cleared periodically to remove algae and other debris that retard flow through the perforations.

By late summer or fall the culverts may be capped by stretching sections of inner tube over the outlet. The water level in the pond will then increase and allow sufficient depth for the winter survival of the beaver. Removal of the caps in spring will create the desired water drawdown for the summer period. In a pond with a predictable heavy spring run-off, the culvert should be removed in the fall to prevent damage during spring. However, complete removal of the culvert is generally not necessary.



Beneficial result obtained through the use of the perforated culvert

If you are experiencing problems with beaver on your land the Alberta Fish and Wildlife Division urges you to consider the advantages of using the control systems outlined in this booklet, rather than attempting to eliminate beaver ponds totally.