A FRAMEWORK FOR INTEGRATED FOREST RESOURCE MANAGEMENT

- MAPLE MOUNTAIN BLOCK -

THE CORPORATION OF THE DISTRICT OF NORTH COWICHAN

Prepared by the Forest Advisory Committee

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Corporation of the District of North Cowichan retained a forestry consulting firm, T.M. Thomson & Associates, to assist in the preparation of a draft Integrated Resource Management Plan for the Maple Mountain Block in 1991. Concerned groups, clubs, organizations, and members of the public viewed the draft plan at public information meetings held at the B.C. Forest Museum, Crofton Community Hall, and Maple Bay Fire Hall. Comments and/or suggestions were received and incorporated into the final plan.

In preparation of the Integrated Resource Management Plan, a questionnaire was forwarded to government agencies responsible for resource management, forest companies operating adjacent to the Municipality, resource groups using the area, water licensees, and individuals expressing an interest in the process.

Forty-three questionnaire responses were received identifying 32 different resource uses and 27 organizations using the forest resources in Maple Mountain. It was estimated that 6 to 7 persons per day use the resources at Maple Mountain.

The questionnaire responses identified the highest resource values as aesthetics, hiking, and other recreational activities. Respondents indicated the Forest Reserve must be viewed as providing many resource values besides those associated with timber harvesting.

The questionnaire responses, field inspections, public comments from the three open houses, and written submission on the draft plan were used in the preparation of the Maple Mountain Integrated Resource Management Plan. Major recommendations of the report include the establishing of a Municipal ecological reserve in the Garry oak and Douglas-fir types; the development of three zones for silviculture systems, which include preservation, partial retention, and modification; incorporation of aesthetic concerns in timber harvest planning and cut block design; implementation of alternative silvicultural systems in the partial retention zone; the identification of additional trails and other recreation sites and their development, when funding permits.

Resource strategies for key resource values have been identified in addition to the report recommendations.

Following public input at the open house, the final plan was prepared for Council's consideration.

ACKNOWLEDGEMENTS

The Municipality wishes to pass on its appreciation to the Ministry of Municipal Affairs, Recreation and Culture for the 1990 Plant Planning Grant Program, received by the Municipality and for their direction and guidance in establishing the terms of reference; to the public, groups, clubs, and associations who have taken the time to complete questionnaires, submit written responses, attend public information meetings on the past and future management of this unique area; and finally to T.M. Thomson and Associates and staff for their assistance in the preparation of the plan.

1.0 INTRODUCTION

In 1946 the Corporation of the District of North Cowichan created the Municipal Forest Reserve to provide stability and revenue from the forest resource. North Cowichan is one of the few municipalities in Canada with a forest management program on its own private land. Following the formation of the reserve, minor additions were made resulting in the current total area of 4,786 hectares located in six major blocks.

A consulting forester completed a study of the reserve in 1960 producing a Forest Management Plan that resulted in the formation of ten woodlot agreements. Timber harvesting under this plan was carried out on the woodlots by local contractors using a system of diameter limit cutting and relying on natural regeneration to reforest the site.

Concerns over reforestation and harvesting practices resulted in the creation of a Forest Advisory Committee in 1981. This Committee reviewed previous harvesting methods, prepared a silviculture program, and compiled a timber inventory. The result of this effort was a report entitled "Management of the Forest Reserve - An Investment in the Future". The report was ratified by Council in the fall of 1981.

The Municipal Council implemented the 1981 report recommendations with the stipulation that the Forest Management Program be entirely financed through the cumulative revenues generated from the Forest Reserve. A Registered Professional Forester was hired to implement an aggressive forest management program. In addition, a full time Forest Advisory Committee composed of elected officials, municipal staff, and appointed Professional Foresters, who reside in the Municipality, was formed to provide direction for the Forestry Program.

The Forest Advisory Committee, while conducting its annual audits in 1989 and 1990, felt there was a need to incorporate Integrated Resource Management Planning in the future development plans for the entire Municipal Forest Reserve. To start this process, it was decided to prepare a pilot study and, as a result, chose the Maple Mountain Block in the late fall of 1990. Funding for this Integrated Resource Management Plan was provided by the Ministry of Municipal Affairs, Recreation and Culture, and the Municipality. This plan is a first for both the Municipality and Municipal Affairs.

The Municipality of North Cowichan requested proposals from a several Forestry Consultants for an Integrated Resource Management Plan of the Municipal Forest Reserve - Maple Mountain Block. T.M. Thomson and Associates was successful and was engaged to complete the Study in 1991. This report is the result of their Study on Maple Mountain and provides a basis for future integrated resource planning in the Forest Reserve.

The Maple Mountain block of the Municipal Forest Reserve consists of some 980 hectares, representing 20.5% of the Municipal Forest Reserve. The history of the area includes the creation of the "Centennial Park" area on Maple Mountain. In 1957, By-law 632 removed portions of the Maple Mountain area from the Forest Reserve into Centennial Park. In 1963 and again in 1972, By-laws 925 and 1464 reinstated the Centennial Park area into the Forest Reserve. The inclusion of these lands in the Forest Reserve ensures protection of these lands under the Municipal Act, Section 645, Division (3), Forest Reserves 4a and 4b; Lands may only be withdrawn from the Forest Reserve provided:

- any withdrawals are advertised for four (4) consecutive weeks in the local papers;
- if 5% of the electors petition against the withdrawal of any or all the lands from the Forest Reserve, the Council shall not withdraw that land from the Forest Reserve unless the By-law, before its adoption, has received the assent of the electors.

2.0 METHODOLOGY OF INTEGRATED RESOURCE STUDY

In preparing a plan of integrated resource values with harvesting and silviculture programs there are two key elements required.

What resource information is available?

How to integrate resource values into existing and proposed programs.

To acquire this information a questionnaire was prepared and sent to governmental agencies responsible for resource management, forest companies operating adjacent to the Municipality, resource groups using the area, water licensees, and individuals expressing an interest in the planning phase.

Information concerning the preparation of the study was published in local newspapers. Additional questionnaires were available at the Municipal Hall and the Maple Bay Fire Hall. Written briefs were also accepted.

A key component in the development of this plan for resource management was the holding of three open houses held at the B.C. Forest Museum, Crofton, and Maple Bay, and follow up written submission letters and briefs from the public, groups, clubs, and associations.

2.1 INTEGRATED RESOURCE MANAGEMENT QUESTIONNAIRE AND WRITTEN SUBMISSIONS

The response from individuals and organizations to the questionnaire was much better than anticipated. A copy of the questionnaire, a list of individuals or groups contacted, and an example of the covering letter soliciting assistance are included in Appendix I.

A total of 43 responses was received from individuals and organizations. This represents a very good return considering the limited time available. It is also evidence of the interest people have in how their Municipal Forest is managed.

Questionnaire comments are summarized in Appendix II. The comments reflect a variety of suggestions and opinions on forest resource management. Individual questionnaire responses and submitted briefs are included in Appendix III. Individual comments are very valuable and the reader is advised to review Appendix III.

The questionnaire was designed to allow respondents to identify a wide selection of resource uses. Scientific analysis of the sample data is not possible given the sample size and questionnaire structure. The resources identified from this questionnaire have been grouped in such a manner that they provide a data base for use in future surveys to provide statistical information.

A total of 32 resource uses was identified, with 52% of respondents indicating their resource use by individuals and groups would not change in the next five years. As well, a total of 27 user groups was identified. Estimates on user days range from 6 to 7 persons per day or 2 350 per year. Resource use by season is estimated at 34% in the spring, 26% in the fall, 22% in the summer, and 17% in the winter.

The questionnaire responses ranked aesthetics, hiking, and recreation as the top resources for use and value.

Listed below are the questionnaire responses ranking resource use by their importance as summarized from the questionnaire:

TABLE I

RESOURCE NAMED BY RESPONDENTS	PERCENTAGE OF RESPONSES RANKING RESOURCE USE BY THEIR IMPORTANCE:
Wildlife	13.3
Hiking	11.5
Education	9.0
Recreation	8.7
Aesthetics	7.4
Picnicking	4.8
Water	4.8
Bird watching	4.8
Horse riding	4.6
Park	4.5
Orienteering	2.4
Mountain biking	2.3
Forest Management	21.9%*

*NOTE: The Forest Management Category includes grouping of 13 resource uses (i.e., timber, jobs, etc.) with no single value being greater than 6 to 7 percent.

2.2 RESPONDENTS MESSAGE

In providing a summary of the responses in both ranking of resources and comments provided, the following key points are noted;

*The Forest Reserve must be viewed as providing many resources besides those of forest harvesting practices. The implication is that resource use other than timber needs to be considered in any forest management programs.

* The public does not want revenue to drive a forest management program.

* Wildlife, recreation, hiking, education, and aesthetics are the top ranked resource groups from the survey.

* Forest resources other than timber appear to be under-utilized.

* Confusion was expressed over the status of block as forest reserve or park.

* Water use from adjacent water licences for domestic use is important.

* Motorized equipment within the reserve is generally not appreciated by other resource users.

* Timber revenue and jobs were given a low resource value by respondents.

3.0 RESOURCE USE STRATEGIES

3.1 ACCESS

Open access to the forest resource by the public has always been a mandate of the Municipal Forest. The exception to this is during periods when a high fire hazard requires closures to protect the forest resources and adjacent property values from possible wildfire. Currently, the Municipality informs the public when fire closures are in effect and why they are required.

The majority of respondents appreciated the use of roads which have been developed for timber harvesting operations. A minority of the respondents felt access to motorized vehicles should be limited or even eliminated. While automobile access can be restricted with gates or ditches, it is almost impossible to prevent access by all-terrain vehicles as these barriers can be broached or destroyed.

The current policy of allowing open access is the best procedure to ensure public access to the forest resource; the risk of such a policy is that some

users will abuse the system. Signs at the gate of Maple Mountain notify the public about the present access policy and possible fines for infractions. Unless abuses become intolerable the current access policy should be maintained.

User groups and residents adjacent to the forest reserve could be encouraged to identify or discourage abusers of the open access policy. It is recommended that the gate signs be modified to include an appeal for the public to report vehicles or persons who violate firewood cutting or garbage dumping regulations.

One method to reduce conflicts between the larger user groups is through a coordinated access plan. Such a plan limits access to certain user groups during a specified time period. Coordinated access plans require the involvement and commitment of user groups. A formal access plan for the Maple Mountain block is not possible due to the small size and limited use by motorized vehicles. However, it is possible to schedule specific groups to a time period and avoid potential conflicts. For example, one of the horseback riding clubs or the orienteering club could be assigned a specific weekend for scheduling an organized event.

3.2 ARCHAEOLOGICAL

The Ministry Of Municipal Affairs, Recreation and Culture has jurisdiction over the identification and protection of archaeological sites. At present, eight archaeological sites have been identified in the Maple Mountain block, along the east coastline of Maple Mountain, by the Archaeological Branch (Appendix IV). The eight archaeological sites consist of shell middens. The sites are protected under the Heritage Conservation Act, 1979, Sections 4 and 6. The Municipality will work closely with Municipal Affairs to protect these sites.

Additional archaeological sites within this block may exist but have not been identified. The Archaeology Branch believes there is a low potential for additional sites in the area. The Forestry Department should monitor for any indication of new sites and note them on the Pre-harvesting Silviculture Prescription form for subsequent transfer to the Development Plan Map. Follow up inspections of any possible findings should be done by government archaeological experts.

The Archaeological Branch should be contacted annually by the Municipal Forester to determine if new archaeological sites have been identified. Any

additional information on existing sites will be requested annually for the municipal records.

3.3 AESTHETICS

The response from the resource questionnaire indicated that aesthetics must be incorporated into harvesting practices. The practice of clear cut harvesting followed by reforestation is not acceptable unless aesthetics are considered in the planning process. For some areas in the Maple Mountain Block this will not be allowed, while in other areas partial cutting or some patch cutting can be accommodated.

A system of zoning for different aesthetic concerns has been recommended and is presented in the section titled "3.10 SILVICULTURE SYSTEMS".

The Municipal Forestry staff will evaluate potential harvesting areas for aesthetic concerns. This can be achieved by using topographic mapping and selecting viewpoints for analyzing future harvesting areas. Silviculture systems for high visual impact areas can then be selected to minimize or complement aesthetics.

In the future expansion of the Municipal Engineering Department, a Geographic Information System may be introduced. At that point, consideration should be given to incorporating the Municipal Forestry maps and Forestry Landscape Computer Programs into this system to assist in the design of harvesting boundaries.

3.4 BIRD WATCHING

The use of the Forest Reserve for bird watching was given a high overall rating from questionnaire respondents. The abundance of both residential and wintering birds was obvious during field inspections in January of 1991.

Harvesting practices which have been done to improve or maintain bird habitat are to be continued. The use of small patch cuts, leaving wildlife trees, use of alternative silviculture systems, and avoiding identified nesting sites can be implemented in harvest planning. Heron, eagle, and turkey vulture nesting sites identified during the survey have been located on Municipal maps.

The location of the Maple Mountain Block and the moderate winter climate provide an opportunity for local residents and ornithologists to participate in an annual bird count. Such a project could be instrumental in identifying rare bird species or nesting sites.

3.5 ECOSYSTEMS

The concern of maintaining a healthy, balanced ecosystem under a system of sustainable development has always been the goal of the Municipality.

The Municipality has always been active in establishing ecosystem reserves for unique or rare species. The maintenance of this policy is strongly endorsed and will be coordinated with agencies such as the Ministry of Forests and Ministry of Environment. It is recommended that naturalist groups be invited to participate in this process.

Identification of unique ecosystems will be accomplished by joint field tours with recognized experts from government agencies and naturalist groups. The maintenance and protection of these ecosystems can then be incorporated in the resource use planning process. A key goal in this process will be establishing a network of trails and signs to assist in public education on forestry.

During the 1991 January field reconnaissance and, following discussions with staff from the Ministry of Forests, a unique ecosystem was identified in the Garry oak - Douglas-fir forest type at the end of Arbutus Road. This sensitive site warrants protection and, if access from Arbutus Road could be guaranteed, the area would make an excellent site for the demonstration of a unique ecosystem.

The Municipal goal for managing ecosystems is the maintenance of the current ecosystem diversity. Preservation of ecosystems will not maintain this diversity as ecosystems are constantly changing.

3.6 EDUCATION

Public education is one of the most important mandates of the Municipal Forestry program. The Municipality has been actively involved with School District #65, the British Columbia Forest Museum, the Cowichan/Chemainus Valleys Ecomuseum Society, Ministry of Forests, and

others to use the Forest Reserve as an outdoor classroom. This emphasis on education can be further strengthened by Municipal staff acting as facilitators for the learning process and involving agency specialists when possible.

Long term research projects involving groups and organizations such as universities, colleges, environmental agencies, Forestry Canada, Ministry of Forests, industry, and other resource groups will be promoted. The Municipality's land ownership and forestry staff give North Cowichan the opportunity to assist in the installation and monitoring of research projects.

The current program of providing educational extension opportunities for schools and other post secondary institutions is very good and will be further encouraged.

Establishment of self-guided tour routes through managed forests, unique ecosystems, and old growth trees can be established jointly with other resource agencies and specific interest groups. The use of existing trails or building new trails will be done with the objective of providing a base for self guided tours.

Funding for education extension should be sought from outside agencies including provincial, federal, corporate, and user groups. This contribution could take the form of either monetary, material, or labour donations.

Specific demonstrations of silviculture systems are required. The public must be able to compare the different harvesting regimes, including patch cutting and selection systems. Some examples are: selection - group, selection - individual tree, horse logging versus mechanical, seed tree, shelterwood, and patch cutting.

3.7 HORSEBACK RIDING

Several horseback riding clubs use the Maple Mountain block for organized and unorganized events. One of these clubs is presently attempting to develop a recreation corridor along southern Vancouver Island. While plans are only just being developed, the Municipality supports the idea of such a trail system, if it can be used by other recreation groups. The Municipality will monitor this proposal as it may involve portions of the Forest Reserve.

Some respondents did not feel use of existing trails and roads by horses was acceptable, while this was a minority, it does indicate an area of potential resource conflict. In general, the riding clubs use trails through standing timber or harvested areas. The present forest management program impacts on their resource use when trails have been altered following harvesting. To rectify these changes the trails will either be maintained or cleared following harvesting operations to prevent damage to reforested areas when riders attempt to find or create new trails.

3.8 ORIENTEERING

The Maple Mountain area has been heavily used for orienteering training and local events. This sport is gaining in popularity following the trend in Europe where it originated. The local club has developed detailed contour maps for use in competition. A copy is provided in Appendix III. Past forest management has had an impact on the use of portions of the area for orienteering. Consideration of the Orienteering Club needs will be addressed in future forest management activities.

The use of different harvesting systems and practices may alleviate some of the Orienteering Club's concerns. Since this club has already expended some energy into the creation of maps and trail maintenance, the Municipal Forester will meet with their group to identify their future needs. Perhaps the club could assist in creating and maintaining trails for other interest groups.

3.9 RECREATION

The recreation group includes some resources that are not separately listed in this report. Hiking was given a high rating and several suggestions were made to improve this resource. The following trails are recommended for construction and their maintenance as funding and labour becomes available;

* Arbutus Point to Crofton loop along the shoreline

* Arbutus Point to Maple Bay Pub loop

* Arbutus to Maple Bay to Maple Mountain loop

* Arbutus Point to Crofton loop

Where trails are located under or next to the B.C. Hydro power transmission lines the location should be approved by a Hydro representative.

Construction and location of future trails will be done with the assistance of residents and clubs. Following creation of a new trail network, a map showing distances and hints on safety would be useful. Existing and new trails are to be included in the trail network with the understanding that during forest management activities access may be limited or trails altered. In addition, a series of self guided tour trails off the main roads on Maple Mountain, to promote proper forest management, will be constructed.

Mountain biking and horseback riding sometimes occur on the same trail systems but presently do not appear to cause problems. Since these trails are a shared resource, it is absolutely necessary that users respect the interests of other people. When the sign at the road entrance is upgraded, it is recommended that a notice be placed asking people to respect other individuals. The new trails recommended above may not be suited for either horses or bikes because of the broken terrain.

There is a need for additional picnicking areas along the access roads and trails. This will be addressed following further trail development if funding is available.

3.10 SILVICULTURE SYSTEMS

The questionnaire responses indicate the forest management practices should include all resource values in the planning process. It was emphasized that timber harvesting should not be considered the dominant resource at the expense of other resource values.

The Forests Act has made it mandatory that a pre-harvest silviculture prescription be completed on all public lands in the Province. This policy was established in 1987 to guarantee public forests are properly managed. A similar policy has been in place on Municipal lands since late 1990.

The Municipality will adopt a system of forest resource zoning for Maple Mountain. The zones are not permanent classifications, but open to modification following input from the public and interested groups.

Three zones for silviculture systems to be used on Maple Mountain are:

Zone A - Preservation.

Zone B - Partial Retention.

Zone C - Modification.

The zone names have been taken from the Ministry of Forests - Forest Landscape Handbook and are defined as follows:

PRESERVATION - No alterations to the natural landscape. This includes no logging, no road building, or building of structures which would be visible from nearby view points.

PARTIAL RETENTION - Alterations are visible but not conspicuous. Change may affect up to 15% of the landscape. This 15% includes any previously logged areas which do not yet appear green.

MODIFICATION - Alterations are easily seen but do not overwhelm. Change may affect up to 25% of the landscape. This 25% includes any previously logged areas which do not yet appear green.

High resource values in Zone A reflect the opinion of respondents concerning management of the area for timber. This area has been designated for managing of resources other than timber revenue.

The eastern and southeastern slopes of Maple Mountain contain sensitive sites for harvesting due to slope, broken terrain, and tree species. This fragile ecosystem requires protection and it is recommended the area be classified as Zone A. The timber volume associated with Zone A should be deleted from the allowable annual cut.

The area with high visual impact on the western upper slopes of Maple Mountain is identified as Zone B and can be managed using alternative silviculture systems, such as shelterwood, seed tree, and group selection.

Individual tree selection harvesting system is not suitable for most stands in the Maple Mountain Block due to stand structure, species content, disease, and the presence of brush species. A patch cutting regime with multiple entries for partial cutting, considering aesthetics, can be implemented. These types of alternative harvesting systems would allow for either natural or artificial reforestation and would encourage diversity of the forest reserve while meeting aesthetic concerns.

Future harvesting practices can be modified or adjusted to accommodate resource values, but should not be manipulated in such a manner that a poor quality forest stand is produced. The diameter limit harvesting system used in the past resulted in establishment of low quality forest stands during the period of 1960 - 1981. A return to this logging system is not recommended. The integrity of the forest resource has to be maintained by using the most suitable harvesting systems. The current harvesting systems used on the Municipal Forest Reserve include patch cutting, commercial thinning, and partial cuttings.

Harvesting in Zone C can be practised using current patch cutting (0.5 to 6.0 hectares in size) and reforestation programs. Visual impact for this zone is lower than in Zone B. However, blocks should be located to take advantage of natural features and topography thereby minimizing visual impact. A good example of this practice is located on Mount Sicker setting number P521 (see Appendix V). No adjacent areas will be harvested until the areas are free growing (i.e., minimum height of 2.5 metres).

Harvesting levels in Zones B and C must follow the principle of sustainable development in the calculation of an Annual Allowable Cut (AAC). The 1981 report by the Forest Advisory Committee recommended a policy of harvesting at maximum Mean Annual Increment (MAI). This policy emphasises production of merchantable volume, but may not maximize product value such as log quality.

The policy of maximizing MAI be re-evaluated in the future to consider an AAC based on product goals. Such an AAC would be more compatible with resources and sustainable development. Higher value forest products evaluated on an economic basis may result in a lower AAC but could generate more revenue. A re-inventory will be required to produce the necessary information for a new AAC.

The Municipality will solicit user groups to provide an inventory of their resource use for the entire Forest Reserve including location, frequency, and pattern. A key point in this resources inventory will be the development of a list of contacts which is updated as user groups are identified or submit correspondence. This resource use directory would assist in developing Integrated Resource Plans for other blocks in the Forest Reserve.

The current harvesting program is based on maximizing revenues when market conditions are favourable. It is sound economical practice to reduce harvesting levels when market conditions are poor.

To calculate an accurate AAC based on using different harvesting system requires use of growth models using data for similar forest stands. Growth models for micro computers are now available which can assist in quantitative analysis and in calculating AAC. The availability of this data for stands in British Columbia is limited since the forest industry is just starting to harvest second growth stands. The Municipal Forester will work with government agencies and licensees to derive data for the Municipal Forest Reserve. One cost effective method is to localize growth and yield models where the emphasis is on extrapolation of data from similar site and silviculture systems.

In late 1990 the Municipality initiated a Pre-Harvest Silviculture Prescription (PHSP) Program based on the Ministry of Forests format. The Vancouver Forest Region has recently revised this procedure and the Forest Advisory Committee will review this with the Municipal Forester to determine if the modifications are necessary to the existing PHSP procedure. The Committee also will address the current Ministry standards for Free Growing to decide their suitability for use on the Forest Reserve.

Garry oak is a rare deciduous species and should be protected wherever possible, within the Maple Mountain Block. Arbutus trees scattered in some forest types should be evaluated individually for cutting. Where the arbutus does not represent a hazard to regenerating stands they will be retained to provide bio-diversity.

3.11 WATER

Survey results indicate that water as a resource has a very high value. At present there is a total of 14 registered water leases adjacent to the Maple Mountain Block. The Municipality maintains a map showing the locations of registered water leases; this is updated annually.

The Ministry of Forests is currently evaluating a proposal to implement a preventive program for water which would be similar to forest fire prevention. Such a program would require identifying critical water hazard zones and structuring a maintenance program, including patrolling areas during peak water flows. The need for such a program will be evaluated by the Forest Advisory Committee.

3.12 WILDLIFE

Inventories of wildlife species and numbers were not available for the Maple Mountain Block. Some eagle and heron sites were identified for nesting areas and the abundance of bird species has already been discussed.

A potential heron rookery site has been identified on the north side of Maple Mountain. Contact will be made with Fish & Wildlife to establish the importance of this site and its management.

Deer are abundant throughout the Maple Mountain Block and use the Garry oak / arbutus ecosystem for winter use. The abundant deer are a concern as the deer will browse on the Municipality's conifer plantations. The browsing impacts on the conifers by reducing height growth and occasionally seedling mortality. Plantations usually survive repeated browsing until the seedlings are above the preferred height for browsing, then the trees show excellent release and may achieve free-growing status.

The impact of deer browsing on plantations will increase with the different silviculture systems proposed. The use of alternative silviculture systems will create conditions to favour deer browsing species and provides good protective and thermal cover for the deer.

There is one registered active trap line within the Maple Mountain Block. The Municipal Forester maintains contact with the trapper and endeavors to inform him of upcoming activities and to consider the impact forest management practices may have on his trap line.

Inventory procedures for wildlife are not readily available for a large variety of species in a relatively small area. The best source of this inventory is through the registered owner of the trap line and the Ministry of Environment. The Municipality will request an inventory of all wildlife on Maple Mountain.

4.0 RECOMMENDATIONS

The following recommendations were developed considering input from the consultant, questionnaire responses, three open houses, and written briefs and letters on the draft plan.

1. The management goal of Maple Mountain is Integrated Resource Management (i.e., recreation, wildlife, water, timber, etc.).

2. Establish a goal to maintain the bio-diversity within the Forest Reserve.

3. The forest be viewed as a dynamic resource that is a constantly changing ecosystem. The management goal for managing ecosystems is the maintenance of the current ecosystem diversity.

4. Establishment of a Municipal ecological reserve in the Garry oak and Douglas-fir site at the end of Arbutus Road.

5. A potential heron rookery site has been identified on the north side of Maple Mountain. Contact will be made with Fish & Wildlife to establish the importance of this site and its management.

6. Three zones for silviculture systems are recommended: Zone A - Preservation Area, Zone B - Partial Retention, and Zone C - Modification.

7. Aesthetic concerns for potential harvesting plans be incorporated into cut block design.

8. Implement alternative silviculture systems to enhance the forest resource that ensures the integrity of the forest resource.

9. The annual allowable cut will be reduced to reflect the integration of all resources on Maple Mountain. The recalculation of the annual allowable cut will require a new inventory of all resources. The last inventory of the Forest Reserve was carried out in 1981.

10. Maintain the current system where by the harvest levels are linked to log market values (i.e., reduce harvesting during economic down turns).

11. The Municipality will enhance the school education program on forest resource management by providing self guided tours of different forest practices, techniques, and unique ecosystems. The tours will demonstrate such things as tree pruning, juvenile spacing, alternative silviculture systems, such as seed tree and shelterwood. Development of these sites will be coordinated with recognized experts from outside agencies.

12. The present open door policy on information will be continued. A system will be established which encourages input from the public while providing communication with resource user groups. A resource

directory will be compiled, updated annually, and contact established with each resource user group.

13. Continue to make the annual report available. This report will review the performance of the past year and state goals for the following year. Develop a five year strategic plan.

14. Maintain current open public access policy to the Municipal Forest Reserve.

15. Involve interest groups to complete special projects on their resource use such as trail construction and maintenance.

16. Invite local residents and ornithologists to participate in a bird count to assist identifying rare bin species and/or nesting sites.

17. Establish a formal extension service with user groups and the public to be educational and provide resource information.

18. Enhance the current education program by providing an extension service for groups using recognized experts from outside agencies. Provide self guided tours of different forestry practices and unique ecosystems (i.e. tree pruning, juvenile spacing, alternative silviculture systems such as seedtree and shelterwood).

19. Identify additional trails and other recreation sites and develop when funding permits. Maintenance of these facilities will be coordinated with user groups.

20. Where harvesting practices impact on existing trails, provide an alternative route to maintain the integrity of the trail system.

21. Areas proposed for harvesting be inspected for possible archaeological sites and contact with the Ministry be made annually to determine if additional sites or information updates are available. The Municipality will work with the Ministry of Municipal Affairs to protect archaeological sites.

22. Where ever possible examine the need, through user groups, for a Water Protection Program similar to the Fire Prevention Program.

23. Implementation and refinement of the following processes: Resource Use Inspection (PHSP), Free Growing Standards, and further development of the Forestry Extension Program to include all resource values.

5.0 GLOSSARY

The following definitions were taken from Forestry Canada 3 - Glossary of Forestry Terms, Managing Your Woodland; Ministry of Forests - Forest Landscape Handbook, Coastal Fisheries Forestry Guidelines 1988; Oregon State University Extension Service - Regenerating Oregon's Forests; and definitions by D. Frank, R.P.F., in consultation with R. Muller, R.P.F.

ALLOWABLE ANNUAL CUT (AAC): The average volume of wood which may be harvested annually under sustained yield management. Roughly equal to the amount of new growth produced by the forest each year including a proportion of the mature volume less deductions for losses due to fire, insects and disease.

ALTERNATIVE SILVICULTURE SYSTEMS: Silviculture systems that promote alternatives to clear cutting, such as shelterwood, selection cutting, group selection, patch selection, commercial thinning, and seedtree cutting.

ARTIFICIAL REGENERATION: Establishing a new forest by planting seedlings or by direct seeding (as opposed to natural regeneration).

BASIC SILVICULTURE: A term used by the Ministry of Forests to refer to the silviculture treatments that are carried out to ensure the establishing of a free-growing tree crop. May include: surveying, site preparation, planting, direct seeding, or brushing. See also intensive silviculture.

BIODIVERSITY: The diversity of living things. Three levels of biological diversity are genetic diversity, species diversity, and ecosystem diversity.

COMMERCIAL THINNING: A silviculture treatment that "thins" out an overstocked stand by removing trees that are large enough to be sold as products such as poles or fence posts. It is carried out to improve the health and growth rate of the remaining crop trees, compared to juvenile spacing.

ECOSYSTEM: Any complex of living organisms together with all other biotic and abiotic (non-living) factor which affect them. For example, a forest ecosystem is that part of a forest area which is uniform in climate, parent materials, physiography, vegetation, soils, animals, and micro-organisms.

EVEN-AGED: A forest stand or forest type in which relatively small (10-20 year) age differences exist between individual trees. Even-aged stands are often the result of a single regeneration event, such as clearcutting or a seed cutting in the shelterwood method.

EXTENSION SERVICES: Assistance provided to woodland operators. May include help with the preparation of forest management plans, cutting permits, marking trees for selective cutting and guidance in carrying out slash disposal, site preparation, planting, etc.

FERTILIZATION: The addition of fertilizer to promote tree growth on sites deficient in one or more soil nutrient elements. Also used to improve the vigour of crop trees following juvenile spacing or commercial thinning.

FOREST: A plant community predominately of trees and other woody vegetation, growing more or less closely together.

FOREST INVENTORY: A survey of a forest area to collect such data as area condition, timber volume and species, for specific purposes such as planning, purchases, evaluation, management, or harvesting.

FOREST MANAGEMENT PLAN: A general plan for the management of a forest area, usually for a full rotation cycle, including the objectives, prescribed management activities and standards to be employed to achieve specified goals. Commonly supported with more detailed Development Plans.

FOREST RENEWAL: The renewal of a tree crop by either natural or artificial means.

FOREST RESOURCE MANAGEMENT: Management for all forest values to provide optimal use, and insure economic and environmental sustainability. It relates the stewardship of the forests at the management level, to the objectives of the land use plan.

FOREST TYPE: A group of forested areas or stands of similar composition (species, age, height, and stocking) which differentiates it from other such groups.

FREE-GROWING: Young trees that are as high or higher than competing brush vegetation with one metre of free-growing space surrounding their leaders.

HARVESTING: The cutting and removal of trees from a forested area.

HARVESTING AREA (Cutblock): A specific area with defined boundaries, authorized for logging.

HARVEST CUT: The felling of the mature crop of trees, either as a single clearcutting or a series of regeneration cuttings.

HIGH-GRADING: The removal of only the best trees from the stand, often resulting in poor quality residual stand.

HIGHLEAD SYSTEM: Logging system that uses cables rigged to a spar high above the ground so one end of the logs can be lifted during yarding.

INTEGRATED RESOURCE MANAGEMENT: The management of two or more resources in the same general area, commonly includes water, soil, timber, range, fish, wildlife, and recreation.

INTENSIVE SILVICULTURE: A Ministry of Forests term that refers to the treatments carried out to maintain or increase the yield and value of forest stands. Includes treatments such as site rehabilitation, conifer release, spacing, pruning, and fertilization, also known as incremental silviculture. See also basic silviculture.

JUVENILE SPACING: A silvicultural treatment to reduce the number of trees in young stands, often carried out before the stems removed are large enough to be used or sold as a forest product. Prevents stagnation and improves growing conditions for the remaining crop trees so at final harvest the end product quality and value is increased.

MAI (mean annual increment): The average annual increase in volume of individual trees or stands up to the specified point in time. The MAI changes with different growth phases in a tree's life, being highest in the middle years and then slowly decreasing with age. The point at which the MAI peaks is commonly used to identify the biological maturity of the tree and its readiness for harvesting.

NATURAL REGENERATION: The renewal of a tree crop by natural as opposed to human means, e.g. seed on-site from adjacent stands, or brought in by wind, birds, or animals.

OLD GROWTH: A forest of mature or over mature timber that is beyond its peak growing period.

PLANTATION: A forest stand raised as a crop, either by seeding or planting.

PRE-HARVEST SILVICULTURE ASSESSMENT (PHSP) (or survey): The survey carried out on a stand before logging to collect specific information on the silvicultural conditions such as planting survival, free growing status, stocking, etc.

PRE-HARVEST SILVICULTURE PRESCRIPTION: A planning system that collects site specific field data and develops forest management prescriptions for cut blocks before logging.

PRUNING: The manual removal of the lower branches of crop trees to a predetermined height to produce clear, knot-free wood.

REFORESTATION: The natural or artificial restocking (i.e., planting, seeding) of an area with forest trees. Also called forest regeneration.

SECOND GROWTH: A second forest that develops after harvest of the original mature old growth forest.

SELECTION CUTTING: An uneven aged silviculture system in which trees are harvested individually or in small groups continuously at relatively short intervals.

SHELTERWOOD: Any harvest cutting of a more or less regular and mature crop designed to establish a new crop under the protection of the old.

SILVICULTURE: The art and scient of growing and tending a forest.

SILVICULTURE SYSTEM: A process following accepted silviculture conditions whereby forests are tended, harvested, and replaced.

SITE PREPARATION: Disturbance of an area's topsoil and ground vegetation to create conditions suitable for regeneration.

SPACING: The act of removing trees form a stand to decrease the stand density, distribute the crop trees more evenly over the growing site, and create more growing room.

STAND: A community of trees sufficiently uniform in species, age, arrangement or condition to be distinguishable as a group from the forest or other growth on the area.

THINNING: The process of removing excess and poorer quality trees from a stand for improving the growth and value of the remaining crop trees.

TIMBER CRUISING: The collection of filed data on forests commonly by the measurement and recording of information in sample plots. Includes the measurement estimation of volumes of standing trees.

UNEVEN-AGED: Stands with a wide range of ages and sizes.

WATERSHED: An area of land that collects and discharges water into a main stream through a series of smaller tributaries.

WILDLIFE TREE: Snags and/or residual trees of great importance to cavity nesting birds, bats, predator birds as perch trees.