

**ENVIRONMENTAL PROTECTION GUIDELINES
FOR
ECOLOGICALLY BASED FOREST
RESOURCE MANAGEMENT
(STAND LEVEL OPERATIONS)
November 1998**

ENVIRONMENTAL PROTECTION GUIDELINES

►Forests are interconnected webs which focus on sustaining the whole, not the production of any one part or commodity. Trees, the most obvious part of a forest are critical structural members of a forest framework. However, trees are only a small portion of the structure needed for a fully functioning forest.► (Hammond, 1991).

This ecologically based approach to forest resource management requires that resource managers shift their focus from managing components of the ecosystem to managing the three-dimensional landscape ecosystems that produce them. Primary concern becomes the maintenance of landscapes and waterways as complete ecosystems because the only way to assure the sustained benefit of forest values, now and in the future, is to keep them and all their parts in a healthy state. This is the foundation for an ecologically based approach to forest management. It means that everyone attends to the conservation and sustainability of ecosystems instead of sharply focussing on the productivity of individual or competing resources which has been our traditional mode of operation.

The Newfoundland Forest Service is committed to the concept of forest ecosystem management which is captured in the twenty-year Forestry Development Plan (1996-2016) vision statement:

►To conserve and manage the ecosystems of the Province which sustain forests and wildlife populations and to provide for the utilization of these resources by the people of the Province under the principles of sustainable development, an ecologically-based management philosophy, and sound environmental practices►.

There are five strategic goals in the twenty-year Forestry Development Plan (1996-2016) which provide the foundation upon which ecologically based resource management will be developed.

1. Manage forest ecosystems so that their integrity, productive capacity, resiliency, and biodiversity are maintained.
2. Refine and develop management practices in an environmentally sound manner to reflect all resource values.
3. Develop public partnerships or networks to facilitate meaningful public involvement in resource management.
4. Promote adaptive ecosystem management and conduct research that focuses on ecosystem processes, functions, and ecosystem management principles.

5. Establish and enforce conservation and public safety laws with respect to managing ecosystems.

The environmental protection guidelines provide specific ►on the ground► tasks for loggers and gives management direction to planners. Individually, the guidelines appear as specific rules; however, when implemented collectively they will facilitate ecologically-based forest resource management.

1.0 GENERAL GUIDELINES

These guidelines are generated from impacts described in the literature and from discussions with resource managers. As new information and management techniques become available the guidelines will be changed to reflect this improved information base. Consequently, the guidelines will be reviewed on an annual basis to incorporate any necessary changes. The ►General Guidelines► apply to all forestry activities (i.e., silviculture, harvesting, road construction). These guidelines form Schedule IV of the Certificate of Managed Land. They are conditions of Crown commercial permits and they form the basis for the voluntary compliance program.

1.1 Planning

1. The location and type of all waterbody crossings must be submitted to the Department of Environment and Labour and the Department of Fisheries and Oceans. Certificates of Approval are required from both departments for waterbody crossings. A waterbody is defined as any water identified on the latest 1:50,000 topographic map. Appropriate protection is still required for streams greater than 1.0 m in width (at its narrowest point from the high water mark) not found on the 1:50,000 topographic map.
2. All waste disposal sites require a Certificate of Approval from the Minister of Government Services.
3. Excessive bulldozing is not permitted and no more than 10% of the total forest within an operating area can be disturbed. In situations where specific operating areas require more than 10% disturbance to capture available timber, the operator is required to rehabilitate the area to reduce the total net disturbance to the 10% maximum. Where disturbance has been excessive, a rehabilitation plan will be developed with the Forest Service District Manager. Disturbance is defined as per the Ground Disturbance Survey Guidelines developed by the Newfoundland Forest Service.
4. When an archaeological site or artifact is found, the *Historical Resources Act* requires that all development temporarily cease in the area and the discovery be reported to the Historical Resources Division (709-729-2462).

The Historic Resources Division will respond immediately and will have mitigation measures in place within seven days as agreed to by the Historical Resources Division and the operator. Forestry activity can then continue.

The Historic Resources Division will be contacted during the preparation of five-year operating plans to determine the location of historic resources and appropriate mitigation measures will be designed. These measures will include such things as buffer zones and modified operations or surveys.

5. Should an oil or gas spill in excess of 70 litres occur, the operator must make every effort to first, contain, and second, clean up the spill after reporting the spill to the appropriate authorities:

**Government Services Centre
Spill Report Line
(709) 772-2083 or 1-800-563-2444**

6. The Parks and Natural Areas Division will be contacted during the preparation of five-year operating plans. Where operations are within one kilometre of provisional and ecological reserves, wilderness reserves or provincial parks, modified operations maybe necessary.
7. In areas where caribou utilize arboreal lichens during the summer and/or winter, and terrestrial lichens during the summer, a minimum amount of lichen forest must be maintained for the caribou. Forestry activity will be designed in consultation with the Wildlife Division where this situation has been identified.
8. Areas identified as containing rare and/or unique flora (through literature review) are to be protected from forestry activity by avoiding these areas.
9. Where mature stands of timber for moose shelter and moose yards are required, they will be identified in consultation with Wildlife Division.
10. The impacts of forest operations on pine marten have been an ongoing issue. Until appropriate guidelines are developed for pine marten habitat, forestry activities within high density pine marten areas and dispersion areas required for pine marten recovery will require consultation with the Wildlife Division.
11. During the preparation of five-year operating plans, areas identified as ►Sensitive Wildlife Areas► in the Land Use Atlas require consultation with the Wildlife Division prior to any forestry activity.

1.2 Operations

1. A 20-metre, treed buffer zone shall be established around all water bodies that are identified on the latest 1:50,000 topographic maps and around water bodies greater than 1.0 metre in width that do not appear on the maps. Where the slope is greater than 30% there shall be a no-harvest buffer of $20\text{ m} + (1.5 \times \% \text{ slope})$. All equipment or machinery is prohibited from entering waterbodies; thus, structures must be created to cross over such waterbodies. Every reasonable effort will be made to identify intermittent streams and they will be subject to this buffer requirement. The District Manager of Forest Ecosystems is permitted to adjust the specified buffer requirements in the following circumstances:
 - the no-cut, treed buffer can exceed the 20 meters for fish and wildlife habitat requirements.
 - a 50-metre, no-cut, treed buffer will be maintained around known black bear denning sites (winter) or those encountered during harvesting. These den sites must be reported to the Wildlife Division.
 - no forestry activity is to occur within 800 metres of a bald eagle or osprey nest during the nesting season (March 15 to July 31) and 200 metres during the remainder of the year. The location of any raptor nest site must be reported to the Wildlife Division.
 - all hardwoods within 30 metres of a waterbody occupied by beaver are to be left standing.
 - a minimum 30-metre, no-cut, treed buffer will be maintained from the high water mark in waterfowl breeding, moulting and staging areas. These sites will be identified by the Canadian Wildlife Service and/or the Wildlife Division.
2. Heavy equipment and machinery are not permitted in any waterbody, on a wetland or a bog (unless frozen) without a Certificate of Approval from the Department of Environment and Labour and without contacting the DFO area habitat coordinator.
3. No heavy equipment or machinery is to be refuelled, serviced, or washed within 30 metres of a waterbody. Gasoline or lubricant depots must be placed 100 metres from the nearest waterbody. All fuel-storage tanks (including JEEP tanks) must be registered with the Department of Government Services and Lands and installed in accordance with the *Storage and Handling of Gasoline and Associated Products Regulations*. Fuel storage within Protected Water Supplies are more stringent. Please refer to ►Guidelines for Forest Operations within Protected Water Supplies► for more information.
4. Used or waste oil shall be collected either in a tank or a closed container.

5. Above ground storage tanks shall be surrounded by a dyke. The dyked area will contain not less than 110% of the capacity of the tank. The base and walls of the dyke shall have a impermeable lining of clay, concrete, solid masonry or other material, designed, constructed and maintained to be liquid tight to a permeability of 25L/m²/d. There shall be a method to eliminate water accumulations inside the dyke.
6. Wherever possible, place slash on forwarded trails while forwarders are operating in an area. Skidding timber through any waterbody (as defined in Section 1.2.1) is prohibited.
7. Any forestry operation that directly or indirectly results in silt entering a waterbody must be dealt with immediately (A government official must be notified within 24 hours). Failure to comply will result in the operation being stopped.
8. Woody material of any kind (trees, slash, sawdust, slabs, etc.) is not permitted to enter a waterbody. Woody material on ice within the high water floodplain of any waterbody is prohibited.
9. To minimize erosion and sedimentation, waterbody crossings shall:
 - i) have stable approaches;
 - ii) be at right angles to the waterbody;
 - iii) be located where channels are well defined, unobstructed, and straight;
 - iv) be at a narrow point along the waterbody;
 - v) allow room for direct gentle approaches;
 - vi) have all mineral soil exposed during bridge construction and culvert installation seeded with grass.
10. Garbage is to be disposed of at an approved garbage disposal site. Prior to disposal it must be contained in a manner not to attract wildlife. All equipment is to be removed from the operating area where operations are completed.
11. Where safety is not an issue, a minimum average of 10 trees or snags per hectare (average on a cut block) or a clump of trees is to be left on all sites (harvesting and silviculture). Preference will be given to trees over 50 cm dbh.

2.0 TIMBER HARVESTING GUIDELINES

2.1 Planning

1. There will be corridors to connect areas of forest that will not be harvested (isolated stands within cutovers are not considered forested areas). These corridors connect wildlife habitat,

watersheds and minimize fragmentation. Acceptable corridor vegetation includes productive forest areas (all age classes) and softwood/hardwood scrub. These corridors do not have to be continuous (i.e., breaks in vegetation are permitted) and will be determined in the five-year operating plan and identified in the annual work schedule.

2. Complete utilization of harvested trees is required. (Complete utilization is harvesting trees to a top diameter of 8 cm and stumps to a height of 30 cm). The District Manager can modify the stump height requirement to accommodate snow conditions. Where markets exist, non-commercial tree species that are harvested should be brought to roadside. This will be determined in consultation with the District Manager.
3. Preplanning is required on all forest operations (Industry/Crown) at the request of the District Manager (for Industry) and the Section Head i/c Management Planning (for Crown). Preplanning will include:
 - boundaries of protected water supplies (if applicable);
 - existing and proposed access roads;
 - skid trails and landing locations;
 - areas sensitive to erosion;
 - buffer zones around water bodies;
 - approved stream crossings;
 - fuel storage locations;
 - wildlife corridors.
4. Harvesting is not permitted within caribou calving areas from May 15 - June 15 (calving period). Harvesting is not permitted within post-calving areas from June 15 to July 31. These areas will be identified by the Wildlife Division.
5. Harvest scheduling should be modified during the migration of wildlife (e.g., caribou) and during temporary wildlife concentrations (e.g., waterfowl staging). Wildlife biologists will identify the areas of concern, and in conjunction with district or company foresters, aid in the modification of forestry operations.

2.2 Operations

1. When skid trails and winter roads are to be constructed, soil disturbance and impacts on waterbodies are to be minimized. The operator will use culverts and/or log bridges depending on the conditions. The objective is to minimize erosion and sedimentation, to avoid restricting streamflow, and to ensure fish passage in fish-bearing streams. Erosion control measures (e.g., laying down brush mats and the construction of diversion ditches for water run-off) are to be maintained while the skid trail is in use. All temporary crossings are to be removed at the end of the operating season unless the District Manager agrees to extend the life of the crossing for more than one season.

2. A minimum 50-metre, no-cut buffer is to be left between operations within approved cabin development areas.

3.0 FOREST ACCESS ROADS GUIDELINES

3.1 Planning

Forest access roads, borrow pits and quarries shall avoid:

- i) wetlands, deltas, and floodplain or fluvial wetlands;
 - ii) terrain with high erodibility potential;
 - iii) known sensitive wildlife areas such as:
 - calving grounds, post calving areas, caribou migration routes, caribou rutting areas, and winter areas,
 - waterfowl breeding areas and colonial nesting sites,
 - established moose yards by one kilometre,
 - eagle and osprey nest sites,
 - where site conditions and engineering permits, main haul roads should be one kilometre from permanent water bodies and all other roads by not more than 100 metres,
 - endangered or endemic species or sub-species of flora or fauna and other areas to be determined by qualified authorities;
 - iv) known sensitive fish areas such as:
 - spawning and rearing grounds;
 - v) historically significant areas such as:
 - archaeological sites;
 - vi) existing reserves such as:
 - parks (municipal, provincial, national);
 - wilderness areas and ecological reserves;
 - rare and endangered plant sites and habitats.
2. With respect to borrow pits and quarries, the operator shall:
- i) minimize the number of new borrow areas opened for construction and/or maintenance;
 - ii) use existing borrow areas whenever practical;
 - iii) be in possession of a valid quarry permit from the Department of Mines and Energy prior to aggregate extraction activities;
 - iv) not locate pits and quarries in sensitive areas as identified by planning processes.

3. Forest access roads will not obstruct wildlife migration routes. The following guidelines will be followed to ensure the road is as unobstructing as possible:
 - i) roads should be of low profile (less than 1 m above the surrounding terrain);
 - ii) slash and other debris shall be removed;
 - iii) the slope of ditches and road banks should not exceed 1 > horizontal to vertical.
4. Culverts and bridges are to be installed in accordance with the manufacturer's specifications and the specifications attached to the Certificates of Approval received from the Department of Environment and Labour and from the Department of Fisheries and Oceans. Culvert ends will be properly rippaped.
5. Where road construction is to occur around identified waterfowl breeding, moulting and staging areas, the Canadian Wildlife Service is to be consulted.
6. Road construction is not permitted within any buffer zone except with the permission of the District Manager.
7. When a skid trail is on steep ground and is no longer in use, cut-off ditches and push lanes must be created. The frequency will be determined by the District Manager.
8. When disturbance is over 10%, the conditions in 1.1.3 will apply.
9. There shall be no bulldozing of standing merchantable timber or poor utilization of merchantable softwoods and hardwoods during cutting of the right-of-way.
10. Excavations required for the construction of piers, abutments or multi-plate culverts shall be completed in the dry. (Where exceptions occur, consultation with District manager is required).
11. On a site specific basis, roads can be decommissioned and/or rehabilitated as directed by the District Manager. Decommissioning is defined as barring access; rehabilitation means to re-vegetate the road.

3.2 **Operations**

1. A "no-grub" zone of 30 metres of undisturbed ground vegetation must be maintained around any water body crossing to minimize the damage to the lower vegetation and organic cover, thus reducing erosion potential. Manual clearing at waterbody crossing sites should be used to remove or control vegetation. Right-of-way widths at waterbody crossings should be kept to a minimum.
2. Fill materials for road building must not be obtained from any waterbody or from within the floodplain of any waterbody.
3. Trees are to be felled away from all waterbodies, and slash and debris should be piled

above the high water mark so that it cannot enter waterbodies during periods of peak flow.

4. Equipment activity in water crossing areas is to be kept to a minimum. Whenever possible, any work is to be carried out from dry stable areas.
5. Unnecessary side casting or backfilling in the vicinity of waterbodies is not permitted. Where topographical constraints dictate that the roadbed must be constructed adjacent to a waterbody, road slope stabilization is to be undertaken at the toe of the fill where it enters the water (an area where active erosion is likely). The placement of large riprap or armour stone is recommended in such areas.
6. Side casting must be carried out in such a manner that sediment does not enter any waterbody.
7. Where borrow pit or quarry activity is likely to cause sediment-laden run-off to contaminate a waterbody, sediment control measures such as filter fabric berms or sedimentation ponds are to be installed. Contact is to be made with the District Manager prior to construction where such conditions exist.
8. Stabilize cut banks and fill slopes in the vicinity of waterbodies.
9. When using ditches, especially on long slopes, baffles and culverts are to be used at frequent intervals.
10. When constructing ditches near streams, the ditch itself is not to lead directly into the stream.
11. Keep ditches at the same gradient as the road.
12. In side hill and similar areas, install ditches on the uphill sides of roads to intercept seepage and run-off.
13. Borrow pits are to be located 50 metres from the nearest waterbody.

4.0 SILVICULTURAL PRACTICES AND FOREST REGENERATION GUIDELINES

4.1 Scarification

1. Select scarification methods best suited for preparing the area for planting and for minimizing ground disturbance.
2. Where slash is piled into windrows, ensure the windrows are placed where slash cannot be washed into streams at peak flooding conditions.
3. To minimize erosion, do not direct scarification equipment straight down slope.

4. Where safety is not an issue, a minimum average of 10 cavity trees or snags per hectare, or a clump of trees, will be left on all sites.
5. Whenever possible, white pine regeneration will not be disturbed.

4.2 Planting

1. Landings will be stabilized through seeding (grass) or planting at time of plantation establishment.

4.3 Pre-commercial Thinning

1. Where possible, do not carry out pre-commercial thinning in important wildlife areas during the periods of birth and/or hatching. These areas and times will be identified by the Wildlife Division.
2. Where white pine regeneration is present, the District Manager will determine how the pine will be thinned.
3. Trees cut will not be felled into waterbodies.

5.0 FOREST PROTECTION GUIDELINES

1. A pesticide application licence must be obtained from the Department of Environment. This licence will determine planning and operational requirements.

6.0 GUIDELINES FOR FORESTRY OPERATIONS WITHIN PROTECTED WATER SUPPLY AREAS

The primary function of a protected water supply area is to provide the public with an adequate quantity of safe and good quality water on a permanent basis, to meet its present and future demands. Any other activity within water supply areas is considered secondary, and if permitted, must be strictly regulated and monitored to ensure that the water supply integrity is not threatened and the quality of the water is not impaired.

In Newfoundland, forestry operations are permitted in protected water supply areas on a limited and controlled basis provided the proposed operations have no, or minimal, water quality impairment potential.

The following permits and approvals are required prior to the beginning of forestry operations within a protected water supply area:

- 1) Approval of the forest operating plan by the Newfoundland Forest Service.
- 2) Approval of the forest operating plan by the provincial Department of Environment and Labour and issuance of a Certificate of Approval under *Section 10* of the *Department of Environment Act*.
- 3) Quarry permits from the provincial Department of Mines and Energy for all borrow areas and ballast pits on unalienated Crown lands and alienated Crown land (i.e., leased and licenced land).
- 4) Stream crossing permits under *Section 11* of the *Department of Environment Act* and from the federal Department of Fisheries and Oceans.
- 5) Other permits or approvals as required by natural resource management and regulatory agencies.

6.1 **Planning**

1. Prior to beginning any work, a forest operating plan must be prepared and approved by the Newfoundland Forest Service and the Department of Environment and Labour, and a Certificate of Approval must be obtained under *Section 10* of the *Department of Environment Act* for site specific activities such as road construction, commercial harvesting, silvicultural operations, and other activities associated with forestry operations.
2. In addition to the information normally contained in a forest operating plan, the plan must include maps to show:
 - < the boundary of the protected water supply area;
 - < existing and proposed access roads;
 - < proposed harvesting areas;
 - < areas sensitive to erosion;
 - < buffer zones around water bodies;
 - < approved stream crossings;
 - < proposed landing and skid trail locations;
 - < proposed fuel storage locations;
 - < peatland and other wetlands;
 - < nearby communities;
 - < other relevant information.

The plan must also contain a written section describing the harvesting techniques to be used, the equipment required for the operation, and the schedule of the operation.

3. Locate roads to avoid all waterbodies and areas of sensitive terrain.
4. The forest operating plan must identify an Operations Manager who shall have the responsibility for ensuring that the special protection measures are followed. The Operations Manager is responsible for co-ordinating clean-up efforts in the event of a fuel or oil spill.

6.2 Forest Access Road Construction

1. A "no-grub" zone of 30 metres of undisturbed ground vegetation must be maintained around any waterbody crossing to minimize the damage to the lower vegetation and organic cover, thus reducing the erosion potential. Manual clearing at waterbody crossing sites should be used to remove or control vegetation. Right-of-way widths at waterbody crossings should be kept to a minimum.
2. Clear-cutting up to the perimeter of any waterbody is not permitted. In all areas where road construction approaches a waterbody, a buffer zone of undisturbed vegetation must be maintained on both sides of the right-of-way using the buffer zone criteria outlined in section 6.6.
3. Fill materials for road building must not be obtained from any waterbody or from within the floodplain of any waterbody.
4. Provide adequately designed and constructed drainage ditches along forest roads to allow for good road drainage.
5. Take-off ditching can be used on both sides of the road, or in conjunction with culverts, to divert the ditch flow into the woods or into stable vegetated areas above the no-grub zones. Where take-off ditches are unstable or cannot be constructed, the use of check dams and settling basins in the ditches is required until the ditches become stabilized.
6. Trees are to be felled away from all waterbodies, and slash and debris should be piled above the high water mark so that it cannot enter waterbodies during periods of peak flow.
7. Equipment activity in water crossing areas shall be kept to a minimum. Any work will be carried out in dry, stable areas.
8. When working near sensitive areas such as streams or lakes, road building operations causing erosion or siltation are to be followed as per section 1.2.7.

9. Unnecessary side casting or backfilling in the vicinity of water bodies is not permitted. Where topographical constraints dictate that the roadbed must be constructed adjacent to a water body, road slope stabilization is to be undertaken at the toe of the fill where it enters water, an area where active erosion is likely. The placement of large riprap or armour stone is recommended in such areas. Contact is to be made with the District Manager prior to construction when such conditions occur.
10. Side casting must be carried out in such a manner that sediment does not enter any waterbody.
11. Maintenance support sites must be located outside the protected water supply area.

6.3 **Forest Access Road Stream Crossings**

1. Stream fording is prohibited in protected water supply areas.
2. All stream crossings, whether culverts or bridges, require written approval under *Section 11* of the *Department of Environment Act*.
3. The operator must comply with all terms and conditions of a Certificate of Approval for stream crossings.

6.4 **Harvesting**

1. Harvesting or other heavy equipment will not be used on wetlands or bogs.
2. Steep areas with high potential for erosion should not be harvested.
3. Wherever possible, skid trails should run along contours and never cross wetlands and waterbodies.
4. Landings will be few in number with a maximum size of less than 0.25 ha. All landings should be located at least 100 metres from a waterbody.
5. In sensitive areas prone to erosion, equipment must have wide tires, or harvesting must occur during the winter when the ground is frozen.
6. Harvesting equipment shall not enter a buffer zone or any waterbody without permission of the District Manager.

7. The operator must implement erosion control and rehabilitation measures in areas where soils have been unduly disturbed by harvesting activity. In addition to general erosion control measures presented in other sections of these guidelines, the following should also be considered in protected water supply areas:

- < undertake contour furrowing;
- < construct diversion ditches to lessen the possibility of forming new drainage channels;
- < seed or plant areas that are difficult to stabilize by other means;
- < plough or rip prior to seeding any surfaces which have been compacted.

6.5 Buffer Zones

The Newfoundland Forest Service on unalienated Crown land and the appropriate company on leased, licenced, private or charter land will provide the operator with a map indicating the harvesting area and no-cut treed buffer zones, and will ensure that the operator is familiar with the boundaries.

No forestry activities are permitted within the following buffer zones.

Water Body	Width of Buffer Zone
1. Intake pond/lake/reservoir	A minimum of 150 m
2. River intake	A minimum of 150 m for 1 km upstream and 100 m downstream
3. Main river channel	A minimum of 75 m
4. Major tributaries/lakes/ponds	A minimum of 50 m
5. Other water bodies	A minimum of 30 m

6.6 Fuel/Oil Handling and Storage

Fuel storage and the operation of fuel storage equipment is regulated by the *Storage and Handling of Gasoline and Associated Products Regulations (1982)* under the Department of Environment and Lands Act. According to the regulations, the owner or operator of a fuel storage system must submit

a Schedule "A" Storage Tank System Application to the Department of Environment. The applicant must be in receipt of a Certificate of Approval for the system before the system is used for fuel storage. Section 9 of the above Act states: "*No owner or operator shall directly or indirectly cause pollution of the soil or water by causing, suffering or permitting leakage or spillage of gasoline or associated products from a storage tank system or vehicle.*"

In addition to the above regulatory requirements, the following guidelines are to be followed:

1. Bulk fuel is to be stored outside the protected water supply area. If fuel must be stored in the protected area, it must be in the least sensitive area and be approved by the Water Resources Management Division of the Department of Environment and Labour.
2. Fuel must be stored in self-dyked, above-ground Jeep Tanks which have been approved by the Department of Environment and Labour.
3. A maximum of seven days fuel supply can be stored within a water supply area.
4. Refuelling must not take place within 100 metres of a waterbody.
5. Daily dipping of tanks and weekly reconciliations are mandatory. Visual inspection of the dykes and the surrounding area must be carried out daily and inspection records must be maintained.
6. Each unit must be fitted with a locking valve system for the elimination of water inside the outer tank. The valve must be closed and locked except to drain precipitation.
7. Each person involved with fuel handling must be cautioned that any spillage is to be cleaned up immediately.
8. Each person involved with fuel storage must exercise extreme caution when refuelling equipment.
9. All waste materials and waste oil on the site must be collected in enclosed containers and removed to an approved site at least weekly.
10. Contaminated soil or snow must be disposed of at an approved waste disposal site.
11. Any spill in excess of 70 litres must be reported immediately through the 24-hour Spill Report Number (709-772-2083) or the Government Services Centre (1-800-563-2444).
12. All self-dyked Jeep Tanks must be located at a minimum distance of 500 metres from any major waterbody.

13. A fuel or oil spill clean-up kit must be kept on site within the protected area to facilitate any clean-up in the event of a spill. This kit must include absorbent pads, loose absorbent materials such as dried peat, speedy-dry or sawdust, and a container such as an empty drum for recovering the fuel or oil. If there is a bulk fuel storage facility within the protected area, the clean-up kit must include the following list of fuel or oil spill clean-up equipment:

- < Fire pump and 100 metres of hose
- < Two hand operated fuel pumps
- < Six recovery containers such as empty drums
- < Four long handled shovels
- < Two pick axes
- < Ten metres of containment boom
- < Twenty-five absorbent pads
- < One hundred litres of loose absorbent material.

When any fuel spill occurs, stop the fuel flow immediately. This may entail repairing a leak, pumping out a tank, or shutting off a valve. If fuel or oil is spilled onto soil, dyking may be necessary. If fuel or oil enters water, absorbent booms or barriers such as fencing or netting with loose absorbent or straw must be used to contain the spill. If necessary, culverts may be blocked off by earth or wooden barriers to contain the fuel or oil provided the threat of flooding is addressed.

All recovered fuel or oil must be stored in containers. Contaminated soil must be removed and placed in containers for transport and disposal. Extensive soil removal may cause problems such as erosion and the subsequent siltation of waterbodies; therefore, the affected area must be backfilled and sloped and revegetated as required by the Department of Environment and Labour.

Recovered fuel or oil should be reused or collected by a waste oil company for recycling. Oily debris and contaminated soils must be disposed of at an approved waste disposal site with the approval of the disposal site owner or operator. Contact must be made with the appropriate regional office of the Department of Environment and Labour before disposal.

6.7 Support Service and Structures

1. Storage of any type of pesticide, chemical or other hazardous material is prohibited within a protected water supply area.
2. Dormitory camps, garages or any other structures are prohibited within a protected water supply area.
3. The establishment of new sawmills is not permitted in protected water supply areas.

4. Wherever possible, toilet facilities must be provided in all work areas.
5. Garbage cans must be located in all work areas and garbage is to be collected regularly and disposed of at an approved waste disposal site outside the protected area.

6.8 **Silviculture**

1. Chemicals are to be used within a protected water supply area only under the approval of the Division of Water Resources.
2. Scarification must be minimized and restricted to the trench or spot types.
3. If scarification leads to erosion or sedimentation of small streams or water bodies, scarification operations must be suspended and remedial measures must be taken.

6.9 **Abandonment**

When forestry operations in a protected water supply area have been completed, an abandonment plan for the area should be developed. This will involve input from the Newfoundland Forest Service, the Community involved, and the Water Resources Management Division of the Department of Environment and Labour. In general, the purpose of the plan is: (i) to ensure that the post-harvest conditions do not lead to water quality impairment, and (ii) to discourage activities or use of the area that could lead to water quality impairment.

An important question will be whether access roads will remain open. This will be decided on a case-by-case basis in consultation with the municipality, Water Resources Management Division and the operator. Issues such as the rehabilitation of cutover areas, landing sites, skid trails, and the abandonment of roads are to be discussed during the consultation process to control post-harvesting environmental impacts and activities.

The following are recommended precautionary measures if roads are to be closed to control post-harvesting access to the area:

< Use water bars (trenches 8-10" deep dug across the road) to intercept and deflect surface roadside ditches rather than have it flow into a waterbody. Water bars can be placed 500 metres apart in gentle to moderate terrain (up to 10% slope), but should be no more than 150 metres apart in terrain greater than 10%. In most cases, it is sufficient to limit water bars to one kilometer on each side of a stream crossing.

< Road-side ditches should flow into the woods or into stable, vegetation covered

areas.

- < Stable bridge abutments and erosion protection works at crossings need not be removed.
- < Bridge decking, culverts and other easily removable structures should be transported out of the watershed area.
- < All disturbed areas of river banks will be stabilized and seeded.

6.10 Monitoring and Inspection

1. Forestry operations approved under Section 10 of the Department of Environment Act will be inspected from time to time by the staff of the Water Resources Management Division to ensure the operator's compliance with the environmental protection guidelines and the terms and conditions of the approvals.
2. In case of an oil spill, the sedimentation of a water body, or any other water quality impairment related issue, the operator might be required by the Department of Environment and Labour to undertake water quality monitoring to assess the extent of the damage and to select appropriate mitigative measures to correct the harmful conditions.
3. Any water quality impairment problem should be reported to the Water Resources Management Division.

7.0 PROCESSING FACILITIES AND SUPPORT SERVICES GUIDELINES

1. If possible, use previously disturbed sites (e.g., borrow pit).
2. Minimize the size of the area cleared for the establishment of any camp, processing or support structures. Wherever possible, these facilities should not be established within 100 metres of a waterbody.
3. All sumps containing effluent from a kitchen or washroom facility must be properly treated on a daily basis in compliance with Department of Health regulations.
4. Sewage disposal must be carried out in compliance with the Public Health Act.
5. A permit to occupy is required for Crown Land developments.
6. Facilities will not be located within known sensitive wildlife areas. These areas will be identified by the Wildlife Division.

7. A permit is required for a firearm.

8.0 PLANNING AND MUNICIPAL AREA GUIDELINES

1. Timber harvesting, resource road construction, silviculture, processing facilities, and support services are developments under the Urban and Rural Planning Act. Where these activities occur within a planning area boundary or within 400 metres of a protected road, a development permit is required before any activity takes place.
2. Consultation with the planning agency (usually municipality, but also the Development Control Unit of the Department of Municipal and Provincial Affairs) is to be made at the planning stage so that regulatory requirements can be made known and taken into account. This should occur three months before the desired commencement of the development and the permit obtained about one month before the development is to start.