

**"RESPECTING FISH HABITAT AND
OTHER ENVIRONMENTAL VALUES WHILE
CONDUCTING LOGGING OPERATIONS ON
SENSITIVE SITES IN WESTERN
NEWFOUNDLAND."**

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INTRODUCTORY REMARKS

Steep slopes, sensitive soil conditions, abundant occurrence of watercourses, damp climatic conditions, heavy snow depths, and increasing public access and utilization of the forest and stream resources, describes much of the logging operating conditions found in Western Newfoundland.

Because of the sensitive nature of these sites, it is definitely challenging for logging operations and road construction activities to be conducted in a manner such that adverse impacts to stream and terrain conditions are minimal.

This project was adopted under the direction of the Western Newfoundland Model Forest program to study ways and means of conducting logging operations within these sensitive conditions in a manner which will (a) preserve the productive capacity of streams (b) respect water quality (c) minimize terrain disturbance, while remaining cost effective and respecting fiber requirements and future fiber supplies.

While it was originally intended that the field activities of this project would commence June 12/94, they were postponed by one (1) month as the full-tree logging operation which began in mid-May was forced to relocate to more favourable terrain conditions for a five (5) week period as a result of unacceptable operating conditions in the Pikes Bk. area. The operations returned to Pikes Bk. during the first week of July only to realize that the ground conditions within the operating area continued to be excessively wet and that the logging activities were causing excessive site disturbance resulting in an unacceptable level of siltation occurring in the many watercourses. These wet conditions also resulted in unacceptably low skidder productivity.

Once again it was decided to relocate the operation to more favourable operating conditions to provide the Company with adequate time to reassess their strategy for

operating the sensitive sites and challenging conditions which exist in Pikes Bk. and other similarly difficult areas.

SCOPE OF THE PROJECT

Originally it was intended that the project would serve to develop improved operating techniques and practices such that site disturbance would be minimized and the integrity of water quality in the numerous watercourses found within the area, would be respected.

Because of the severity of the damage occurring and the low levels of productivity being experienced by the skidding operations, it was deemed inappropriate to proceed as originally planned and the scope of the project was adjusted to include an assessment of how CBP&P Ltd. should plan for, and eventually log Pikes Bk. and other areas with similar operating conditions, during the next 10-15 years.

The following questions need to be addressed:

1. Should the Company ever consider logging the stands in these difficult areas?
2. Is the proper logging system being applied? (shortwood (vs) full-tree (vs) tree-length).
3. Given that an acceptable system is being applied, in this case "full-tree", are there machines available which are of a better design to cope with the sensitive site conditions with productive capacities to respect the necessary resultant operating costs?
4. Is there adequate planning including the use of pre-operational field checks prior to the construction of capital & operational roads?
5. Is there sufficient long-range planning for the operating district to ensure the preservation of second growth timber, a key ingredient to the calculation of the currently accepted A.A.C.?

6. Given that the Company has concluded that it should be logging these sensitive areas containing mature and over-mature timber, and is utilizing the most appropriate equipment at the most appropriate time of year, what changes can be incorporated into the logging practices and road construction activities such that site disturbance is minimized and fish habitat is preserved?

CBP&P WOOD SUPPLY

CBP&P harvests and delivers some 900,000 m³ of spruce and fir from its two (2) operating divisions to its pulp and newsprint mills in Corner Brook. When compared with the southern division, the northern division which delivers some 500,000 m³ has the advantage of better average ground conditions and larger contiguous blocks of mature timber. The southern division, delivering some 400,000 m³ annually, has larger average tree sizes and much shorter hauling distances to the mill. Both divisions experience extreme snow depths.

In respecting its long-term wood supplies and the need for lower wood costs (f.o.b. mill), it is essential that the Company harvest the mature stands (class IV & V) located in its southern operating division. The majority of this mature timber lies within the areas described as Pikes Bk., Copper Lake and Kennedy Lake. All three (3) areas contain the sensitive sites previously described (steep, wet, sensitive soils). The predominance of stands of over-mature balsam fir, many already showing signs of breaking-up, should be harvested within the next 10-15 years.

General Observations - Full-tree system - Pikes Bk. - July 94

1. Feller-buncher not causing too much site disturbance - experiencing difficulty finding night shift operating areas due to small patches of wood located on steep slopes and surrounded by frequent bogs - being on a tracked undercarriage, its mobility is limited which compounds this problem.
2. Grapple skidders (J.D. 748) causing excessive site disturbance - muddy conditions result in low productivity - sensitive soils and steep slopes limit area to pile "full-trees" at roadside - mud flows within deep skidder ruts and follow skidders to

roadside into heavily rutted ditches and eventually into the many watercourses found within the area. Siltation of these watercourses is excessive.

3. An aerial observation of the operating areas showed that the bulk of the wood is located in scattered patches and narrow strips which will require frequent shifting of equipment between operating areas.

SUGGESTED OPTIMUM LOGGING SYSTEM

Given the sensitive nature of the sites described as containing bogs, steep slopes, 3'-5' topsoil, frequent occurrence of watercourses, patchy concentrations of mature timber, and many rocks, it would be foolish to believe that any logging system could operate these areas without great difficulty. If one was to select the optimum system, short of the infamous "sky-hook", one would probably select a shortwood harvesting system using the Rottne or Valmet processor and a 6 or 8 wheeled forwarder equipped with appropriate tracks to advance pulpwood to roadside and load directly onto awaiting trailers.

This system provides the much needed mobility of equipment, the forwarder operates on a brushmat which results from processing at the stump therefore minimizing site disturbance. Proper selection of entry points from the cutover onto the road would reduce the amount of damage occurring to roads and ditches which is currently a significant source of mud and silt which is generated on the full-tree operation. The ability to load processed pulpwood directly onto trailers relieves the problem of limited space to pile full-trees at roadside. Snow depths of 5-7 feet could present serious problems for this equipment however, the ability to operate on a fresh brushmat of tops and branches should somewhat improve the operating performance of machines working in such adverse snow depths.

Damage to natural regeneration using this shortwood system during summer operations should be minimal and should greatly reduce the need to plant the harvested

areas as compared to the results of those same areas being logged by the full-tree or tree-length systems.

RECOMMENDATIONS

Having a fair understanding of such matters as (a) wood supply distribution and requirements, (b) constraining terms of existing labour agreements, (c) recent investments made for equipment to conduct full-tree operations, (d) corporate concerns for cash flow and wood costs and (e) the sensitivity of the operating sites, the following recommendations should be seriously considered before returning to log Pikes Bk. or other similarly sensitive sites:

1. Future Wood Supplies:

Unless the Company is willing to accept a significant reduction in its A.A.C., it is important that logging operations be directed into the mature forest types with the intent of exhausting these sites within the next 10-15 years at which time second growth stands which continue to provide incremental volume will be scheduled for harvesting.

2. Wood Cost:

In order to continue progress in a program to become more cost competitive, the Company must be successful in maintaining or increasing its percentage of fully mechanized harvesting operations.

3. Public Opinion and the Environment:

Preserving future access to timber located in sensitive areas is dependent on the Company demonstrating concern for environmental factors such as site disturbance and the preservation of water quality and fish habitat.

Demonstrating this concern and communicating actions which are being conducted to help preserve the integrity of environmental factors is essential during future operations.

4. Government Relations:

Key personnel with the local departments of "Forestry and Agriculture" and "Fisheries and Oceans" are appreciative of the difficulties involved in logging these sensitive sites and have demonstrated a co-operative attitude towards assisting the Company with its operations. This is a healthy relationship which should be nurtured by good lines of communication relative to the current activities and the plans for future activities.

5. Contractor and Employee Training:

Future training efforts should be initiated during April or early May (prior to the start of operations). These training sessions should be in a conference room setting and the incumbents should include a healthy mix of management, supervision, and equipment operators. It is suggested that a "workshop" format be used such that all participants can contribute to the design of altered operating practices. A recommended training format accompanies this report.

6. Planning the Operations:

- (a) Current forest inventory data indicates that all existing mature and over-mature stands in the southern division should be harvested in the next 10-15 years if the criteria of harvesting the oldest first is respected and adhered to. A general operating plan depicting site specific operating areas in three (3) year increments with the first three (3) years of the plan being more detailed and showing individual harvest blocks and road networks would be of great assistance.
- (b) Operations being conducted in sensitive areas require a special degree of planning if the Company is to be successful in minimizing the amount of damage which is incurred to the environmental factors while respecting its commitment to achieving respectable wood costs.
- (c) Personnel employed within the Company's planning and operating departments need to develop a close working relationship such that each better appreciates the objectives and constraints which exist within their respective departments. This better understanding should help the planning department to provide an improved service to the operating personnel.
- (d) Prior to plans being finalized, they should be reviewed in detail with those members of the operating department who will be responsible for their implementation. Representatives from each department should jointly fly the proposed areas to mutually discuss areas of concern; there should also

be consensus as to the final location of capital roads since their location influence the location of operating roads and ultimately harvest block layout.

- (e) Having completed the above, the plans are turned over to the operating personnel who must determine how, when, and if each of the stands or harvest blocks should be harvested. Undoubtedly respecting the estimated cost of operations and their environmental impact will rule some stands or portions of harvest blocks as being inoperable.
- (f) Understanding that the planning department have limited manpower, a knowledgeable individual should be assigned to the operating department to assist in these critical decisions. That individual should walk each of the operating areas, layout the harvest blocks and provide detailed information concerning each area prior to the commencement of operations. These assessments must be made during the snow free period to accurately appreciate the sensitivity of site conditions. Obviously these recommendations need to be reviewed with and accepted by the contractor who will be responsible for operating the area.

7. Harvesting Operations and Road Construction:

- (a) Proper determination of summer (vs) winter operating areas and mechanical (vs) conventional operating methods could enable the continued use of the full-tree mechanical system.
- (b) Given that future planning and pre-operational assessment activity will be intensified and also considering the significant expenditures which have recently occurred to equip the full-tree system, it is recommended that the Company continue to attempt to successfully implement that system on sensitive sites such as exist in the Pikes Bk. area. Undoubtedly an eight(8) wheeled clam-bunk skidder equipped with the appropriate tracks would reduce the degree of site disturbance and improve the productivity of the skidding function as compared to the current operation using wheeled grapple skidders. The writer admits to a lack of knowledge of that machine's capabilities and is unable to properly assess whether the improved performance would justify the added expenditure. The writer does however recognize that the eight(8) wheeled machine can be easily converted to a shortwood forwarder should the Company decide to convert the full-tree system to a shortwood system in the future.
- (c) Despite all of the precautionary measures mentioned above, it is recognized that site disturbance during summer operations on these sensitive sites will continue to be a problem. In order to minimize the detrimental impact of

this disturbance on fish habitat in the neighbouring watercourses, the following practices are recommended:

1. Skid trails should make use of "turn-ups" to allow water to be diverted periodically out of the skid trail and into filtering vegetation.
2. Skid trails should be blocked off prior to reaching the road by using "block-logs" or by bulldozing an embankment after use.
3. Providing necessary tractor work to assist skidding equipment will minimize site disturbance especially in providing strategically located "go-back" trails.
4. Hot logging the delimeter at roadside will significantly reduce the need for area to pile full-trees. The delimeter can pile delimbed tree-lengths quite high and the skidders can take piles of brush back to be placed in problem areas of their skid trail.
5. Since the feller-buncher determines how the full-trees will be skidded to roadside, greater emphasis should be directed at planning the buncher's work pattern.
6. While it is obvious that much emphasis has been placed on improving bridge and culvert installations on both capital and operating roads, it remains apparent that the embankment slope at culvert ends remains too steep and efforts to achieve 2:1 slopes should be made.
7. Increase use of diversion ditches, cross drainage culverts, hay bails, no grub zones, and seeding of steep embankments will greatly reduce the amount of siltation occurring in affected watercourses.

Actions Taken

1. Responding to preliminary recommendations of this project, the management of Corner Brook Pulp & Paper Ltd introduced a new position within their woodlands team. This new responsibility serves to integrate the operation planning function and the actual harvesting activity through extensive field assessment and harvest block layout by a trained technician prior to the commencement of harvesting activity. The writer assisted with the introduction of this new responsibility in September 1994.

2. The two J.D. 748 grapple skidders which experienced operating difficulties on these sensitive sites were replaced by an eight-wheeled (tracked) clam-bunk skidder (T.-I. 933) in December 1994. This machine causes less rutting and can access remote patches of timber thus reducing road construction activity.
3. During July 1995, the writer returned to address the original intent of the project. Many constructive discussions were conducted with the contractor along with his foreman and equipment operators.

These discussions have served to better sensitize the operating group to the importance of conducting their operations in a manner that will minimize site disturbance. It was also recognized that the block layout effects the felling pattern produced by the feller-buncher which inturn effects the skidding activity.

Discussions also focused around the problems resulting from excessively large ditches and how alternate road construction practices could serve to reduce ditch size, improve roadside aesthetics and increase the area required for piling full-trees at roadside.

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- Newfoundland Dept. of Forestry & Agriculture (Unit #15)
- Western Newfoundland Model Forest

"Full-tree" Logging System



T.-J.933 clam-bunk Skidder building its load



Clam-bunk fully loaded and skidding "full-trees" to roadside

"Full-tree" Logging System (continued)



Stroke-delimber delimiting & topping "full-trees" at roadside



Tanguay slasher cutting "delimbed" trees into 8' pulpwood

"Shortwood" Logging System (8' pulpwood)



8' pulpwood is produced and piled at the stump location



8' pulpwood is forwarded to roadside and loaded on trucks