YUKON TERRITORY GOVERNMENT
DEPARTMENT OF ECONOMIC DEVELOPMENT:
MINES AND SMALL BUSINESS

FEASIBILITY STUDY
YUKON TREE SEEDLING NURSERY

DECEMBER, 1988

Prepared by:

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ReidCollins

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1.0 INTRODUCTION

In response to a Request for Proposals from the Department of Economic Development, Government of Yukon, Reid, Collins submitted the winning proposal on September 9, 1988. Contract No. GN-88-07-3021-02275 (Appendix I) was signed by both parties in early October.

Reid, Collins and Associates Limited were to prepare a Report entitled "Yukon Tree Seedling Nursery Feasibility Study" for a total cost of $29,500.00, in accordance with the contract specifications by December 16, 1988.

Ten copies of this Report are herewith submitted.

2.0 SYNOPSIS

The type of nursery recommended is a low-technology container nursery growing 2+0 spruce and pine seedlings in 313B styroblocks. The preferred location is Watson Lake.

Selling price of 18.5¢/seedling is based on British Columbia competitive prices for identical stock delivered to Watson Lake.

The potential market is in the 3 to 5 million seedlings/year range. Capital costs are estimated as follows:

1 MM/year production	- $ 0.4 million dollars
3 MM/year production	- $ 0.8 million dollars
5 MM/year production	- $ 1.2 million dollars

Six options were investigated; i.e., the above three production levels each with and without a non-repayable grant equal to 40% of capital cost. Only the 5 MM/year production level with a non-repayable grant is viable; the rest are not.

The analysis is extremely sensitive to seedling pricing. With the grant, the 3 MM/year level is viable at 20¢/seedling, and the 1 MM/year level at 29¢/seedling.

3.0 METHODOLOGY

The methodology employed was: to set down a series of key sequential questions or issues; to utilize various team members to investigate and provide information about these issues; to make decisions based on this information; and to prepare pro-forma capital and operating statements relevant to various market (revenue) scenarios.

. **"What type of seedling will have optimum survival rates in Yukon conditions, and still be cost effective?"**

The investigative procedures included a literature search of local libraries; telephone contact with northern foresters and nursery managers; collection of the last 10 to 30 year climatic data; and discussions with forestry staff at Whitehorse and Watson Lake.

The conclusion arrived at was that the most cost-effective seedling would be 2+0 stock grown in a relatively large 313B styroblock container.

The Consultant points out that resolution of this question is fundamental to nursery design. Proper field testing of various seedling sizes and types should be undertaken in the immediate future on representative sites throughout the southern Yukon.

. **"What type of nursery is recommended".**

The Consultant considered four basic approaches; i.e., bare-root, plug + 1 year transplant, container (low technology), and container (hi-technology).

The bare-root and plug plus transplant options were discarded, primarily based on assessment of the risk factor involved in protection over winter. Most bare-root nurseries rely on snow and/or shelters for winter protection. The combination of low annual snowfall, extreme cold spells with high wind potential, and occasional unexpected winter high temperatures make any overwinter outside protection program too risky, especially for an enterpreneur venturing his own capital.

The hi-technology container nursery was discarded because of capital cost related to volume of production.

The low-technology container nursery was chosen because of its relative efficiency at low volume, and also because it is believed that the higher component of labour utilization will fit better with Yukon Governments' goals and objectives.

. **"What location within the Yukon is best?"**

Three locations were considered: Mayo, Whitehorse and Watson Lake. The Consultant visited the latter two.

Mayo was least attractive in terms of distance from plantable areas, infrastructure, labour pool, and climatic conditions.

Whitehorse offered several advantages in terms of infrastructure, labour supply, accessibility and living conditions. A possibility also exists for combining a forest seedling nursery with current (or proposed) greenhouse operations producing lettuce, tomatoes, cucumbers, etc.

The consultant considered that Watson Lake was the most attractive in terms of:

- distance to planting sites
- enthusiasm and cooperation of city elected and administrative officials
- cheap land costs
- potential savings in heat and power costs
- access to northern B.C. market and to N.W.T.

. **What is the market potential?"**

The Consultant obtained recent forest inventory data in the Yukon and made initial order-of-magnitude calculations regarding back-log reforestation requirements. In addition, contacts were made in Alaska, British Columbia, N.W.T., and Alaska.

The market potential is, in the Consultant's opinion, far greater than the one million/year called for in the contract specifications. The volume, of course, drastically affects feasibility.

For purposes of illustration, the Consultant chose to present three options: one, three and five million seedlings/year.

4.0 NURSERY/SEEDLING STOCK TYPE SELECTION

4.1 General

There has been little, if any, reforestation planting in Yukon outside of very recent trials undertaken by the Yukon Forest Service in the Tahkini area near Whitehorse and in the Hyland River area near Watson Lake. Therefore, there is little background data or experience on which to base appropriate stock type selection. The consensus of resident Yukon foresters was that a "sturdy" stock type was preferable, with emphasis on stem caliper.

4.2 Bareroot/Transplant Nursery

Consideration was given to either a 2+0 bareroot or a plug + 1 transplant seedling nursery. A critical factor in northern nursery practice is the overwintering of crops, particularly in open beds, as would be the case with the above two stock types. To overwinter such crops successfully it is essential to have a reasonably heavy snow cover accumulating early in the season and remaining well into spring.

A review of climatological records (see Appendix III) for the Yukon indicates minimal snow cover in the Southern Yukon throughout the winter, particularly in the Whitehorse area. In addition, the very low winter temperatures and frequent high winds suggest that overwintering seedling crops in outdoor conditions is extremely risky. Some consideration was given to the use of snow-making equipment but initial investigation indicated that the potential for malfunction of this equipment presented too great an element of risk.

Finally, review of soil type maps for the southern Yukon revealed very few areas with soil conditions necessary for bareroot/transplant nurseries. In addition, access to nursery beds is limited during spring break-up periods.

4.3 Greenhouse/Container Nursery

There is little question that container seedling production under greenhouse conditions is best suited to Yukon conditions. Generally accepted nursery practice in both northern and southern regions of Western Canada is to produce 1+0 plug seedlings, packaged after one growing season and held dormant in cold storage units until outplanting the following spring. Scandinavian

nurseries generally follow a similar practice, producing 1+0 plug seedlings which overwinter outside in the containers under snow cover. The Scandinavian practice is not applicable in Yukon as previously discussed. Further, cold storage should be avoided if possible, as it is a costly procedure undesirable from the point of view of future seedling survival and growth.

The production regime most suited to Yukon conditions would be 1+0 styroplug seedlings sown in early spring and planted in late July/early August of the same year. Northern B.C. and Alberta nursery practices is to sow in late March, when the risk of extremely low temperature conditions is greatly reduced. However, sowing this late it is not possible to produce 1+0 seedlings suitable for planting in late July/early August. Sowing six weeks earlier, in early February could produce a plantable seedling by July but, only with significantly increased risk. Extreme temperature conditions are almost assured during February and any malfunction in heating equipment, however brief, would result in crop loss. Further, heating costs would be much higher during that six-week period. In addition, the lower light intensities at that time of year could result in problems of unknown magnitude. It is likely that grow-lights would be required with attendant increased costs.

In view of the foregoing, the recommended nursery production system for Yukon conditions is sowing in early May, utilizing 313B styroblocks for Spruce and Pine. Winter weather risk conditions are substantially reduced, heating costs are significantly lower and two to three months growth can be achieved before plants set bud in late July. Seedlings are retained in the greenhouse through the following winter where low heat can be introduced during periods of extreme cold and wind-chill. This crop can be moved to outside compounds in late April, before flushing, so that a new crop can be sown in the greenhouses in early May. Irrigation system in outside compounds would be used to control frost conditions. Crop #1 would achieve a full season's growth in year 2 with field outplanting occurring in late July/early August. The product would essentially be a 2+0 seedling fulfilling the requirement for a "larger" seedling. To produce an even larger seedling for the wetter, high site areas a 415B styroblock could be used under the same growing regime.

4.4 Location

Three areas were assessed as potential locations for a seedling nursery or nurseries, Mayo in central Yukon, Whitehorse in southwest Yukon and Watson Lake in southeast Yukon. Community profiles were reviewed for each in terms of population, skilled and unskilled

employment potential (see Appendix IV), service facilities, etc. together with accessibility to potential markets and greatest forest activity.

Mayo was eliminated from further consideration on all counts, at least for the foreseeable future. Either Whitehorse or Watson Lake would be suitable.

The population base of the City of Whitehorse is more than half the total population of Yukon presenting some definite advantages in considering a new enterprise. There should be greater potential for drawing both the skilled and unskilled workforce necessary to a seedling nursery. Similarly, there should be a greater potential entrepreneurial base interested in developing a seedling nursery and/or combining it with other greenhouse/nursery operations such as lettuce, tomatoes, trees and shrubs and bedding plants. Further, this population has resulted in a developed service sector capable of providing a wide range of supply items as well as the necessary trades skills.

Whitehorse city limits are widespread and siting a seedling nursery within reasonable distance of the City would almost certainly be within those limits. Land does not appear to be readily available and those parcels that are available are costly. In addition, utilities are expensive in the Whitehorse area.

One further disadvantage to a Whitehorse location is the distance from both present markets and those with greatest future potential.

The town of Watson Lake has a much smaller population base than Whitehorse but also fewer employment opportunities. There is little doubt that the seasonal workforce required by a seedling nursery would be available.

Land and utility costs are lower in Watson Lake and it is highly probable that the township would be prepared to offer significant incentives toward establishing a seedling nursery in the area.

While there would appear to be limited opportunity to combine seedling production with other nursery production operations there could be a beneficial link with the sawmill and logging activity already located in and around Watson Lake. The possibility of utilizing low-cost power and hot water heating from the sawmill warrants further investigation.

Perhaps the greatest advantage to locating in Watson Lake is the proximity to not only the present market area but also direct road access to potential B.C. and N.W.T. markets.

5.0 MARKETING POTENTIAL

5.1 General

There are a number of markets potentially available to a seedling nursery located in the Yukon and each of these has been reviewed in terms of potential volume, pricing and competition. Most important, however, is the market potential within Yukon itself as this will ultimately determine the feasibility of establishing a seedling nursery in the Territory.

5.2 Yukon

The most immediate market is for seedlings to replant the areas denuded through annual harvesting operations. The area logged annually by Hyland Forest Products is estimated at 250 to 300 hectares. Thus the number of seedlings required annually to replant current cut areas is between 250,000 and 300,000. Backlog NSR cutovers of some 500 hectares will add to this requirement.

The main Yukon market for seedlings lies in an appropriate backlog program required for reforestation of fire-killed stands. The Yukon reconnaissance inventory of 1985 suggests there are approximately 2.2 million ha. of NSR productive forest land. Of this, 1.6 million ha. is said to be unproven NSR and 600 thousand ha. definite NSR. Assuming that 50 percent of the unproven NSR proves to be stocked; that only "good" and "very good" site classes (9 percent of total NSR) will be planted; that only 50 percent of these "good" and "very good" sites are reasonably accessible; and that backlog NSR planting will be spread over 20 years, some 3.2 million seedlings would be required annually for a minimal backlog reforestation program.

Further, it is the Consultant's opinion that, within the foreseeable future, there will be demand for significant development of Yukon forest resources and thus an ongoing need for forest seedlings. This is evidenced by the Makin interest in a Yukon pulp chip supply, and by the advent of greenfield pulpmills in both northern B.C. and Alberta.

The pricing for seedlings produced in Yukon would logically be at a level competitive with similar seedlings delivered from northern British Columbia nurseries, calculated to be 18.5 cents per seedlings for 2+0 Spruce and Pine.

5.3 N.W.T

The most likely market, outside Yukon, for Yukon seedlings is the North West Territories. The N.W.T. Department of Renewable Resources estimates an annual requirement for at least 1.0 million seedlings. This does not include any backlog reforestation.

While this market could be best served from Watson Lake, there would be competition from northeastern B.C. nurseries as well as from Alberta nurseries.

5.4 Northern British Columbia

There is a potential market for Yukon seedlings in the northern area of B.C. These areas, for example, Fort Nelson, can be serviced just as readily from Watson Lake as from Prince George or Fort St. John. However, price competition is already severe among British Columbia nurseries and will only become more severe. It is reasonable to expect that a Yukon nursery could capture a market of around 0.5 million seedlings annually.

5.5 Northwestern Alberta

Capturing any significant market volume in Alberta is considered unlikely. Experience with Alberta suggests limited market potential and only at unacceptable price levels. In addition, the Alberta market is geared to seedlings produced in Spencer-Lemaire containers, which create problems for a small nursery utilizing styroblocks or other containers.

5.6 Alaska

The Consultant retained Cal Kerr, a consulting forester in Anchorage, Alaska, to give a memo-report on the status of reforestation in Interior Alaska (see Appendix VI).

His report indicates that seedling demand is approaching one million/year; current nursery production is about 0.4 million/year; current prices for 1+0 spruce in 4 cubic inch Ray-Leach tubes is C$0.40 to 0.50 each, and that there may be a limited market potential for a Yukon-based nursery.

5.7 Summary

In summary, it is obvious that the forest resources of Yukon will soon be required to support industrial pulp mills, whether they are located in Yukon or adjacent provinces. It is also obvious that treatment of Yukon's backlog NSR situation is required now, so that a supply of wood fibre for northern mills will in fact, be there 50 and 70 years from now.

The treatment of 3 000 hectares/year, as suggested in this report, is minimal - less than 1%/year of the backlog.

It is the Consultant's strong belief that the Government of Canada, in the last decade, has come to realize that neglect and depletion of Canadian forests can no longer be tolerated. The forests of the Yukon are just as Canadian as any other and will serve as sources of recreation, raw material and jobs for many future generations if adequate attention to reforestation requirements is given now.

6.0 ECONOMIC ANALYSIS

6.1 General

The establishment of the nursery is to be undertaken by the private sector. It is the Consultant's opinion that an entrepreneur risking capital in a venture of this nature would require a minimal ROI of 15% in real terms (excluding inflation).

Greenhouses are to be free standing standard steel construction covered with a double layer of inflated polyethylene. Benching is to be inexpensive treated wood construction designed to be a static system or concrete block supports. A static irrigation system is envisaged rather than a moving boom system. Heating is to be propane fired forced air under bench heaters. An outdoor growing compound complete with benching and static irrigation system which will also serve as a spring "frost-control" system. Basic hand mixing, block filling and vacuum seeding equipment is specified. Fully automated systems are not justified at envisaged present or foreseeable levels of production.

Capital costs are estimated based on southern B.C. costs with a "Yukon factor" of 20 percent added. A contingency factor 10 percent is added annually to operating costs allowing for unanticipated costs and/or a major production falldown every four to five years.

Revenues are based on average B.C. pricing to date increased by "Yukon" transportation differential. Further, in order to ensure a viable enterprise a five year contract is assumed with a progress payment schedule as presently used in B.C. viz; 35 percent of contract price on completion of sowing; 20 percent on first inventory in September of first year; 15 percent on second inventory in May of second year; and balance (30 percent) on shipping in July/August of second year.

A 5 percent inflation factor is included in both revenues and costs each year.

6.2 Funding

A large number of assistance programs are available for the entreprenieur developing a new labour-intensive business in the Yukon. The usefulness of these programs is enhanced by the "one stop shop" approach of the Yukon Business Development Office.

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Programs providing financial and employment incentives include:

- . Industrial and Regional Development Program - DRIE
- . Federal Business Development Bank - DRIE
- . Yukon Business Loans Program - ECDEV
- . Economic Development Program - INAC
- . Canada-Yukon Job Development - EDUC
- . Job Entry - CEIC
- . Yukon Employment Incentive Program - EDUC
- . Youth Employment and Training Program - EDUC
- . Skill shortages - CEIC
- . Outreach - CEIC
- . Yukon Energy Alternative Program - ECDEV
- . Saving Energy Action Loan - ECDEV
- . Canada/Yukon Renewable Resources Subagreement - RRES/INAC
- . Farm Credit Loans - AGR
- . Canada/Yukon Small Business Incentives Sub-Agreement - ECDEV

Several of these programs would be of great assistance in initial training, employment and getting the nursery started. The major program affecting long-term viability of a Yukon-based nursery is the Canada/Yukon Small Business Incentives Sub-Agreement. Under this program, the enterprenieur can receive a repayable or non-repayable contribution up to 50% of eligible capital costs not exceeding $2 million.

For illustrative purposes, two funding scenarios have been analyzed at all three production levels. i.e.,

1. . Equity - 20% of capital required.
   . 10-year Mortgage Loan @ 11%-80% of capital required.
   . Line-of-Credit Working Capital @ prime + 1½%.

2. . Equity - 20% of capital required.
   . Non-repayable Contribution - 40% of capital required.
   . 10-Year Mortgage Loan @ 11%-40% of capital required.
   . Line-of-Credit Working Capital @ prime + 1½%.

6.3 Operating Statements

The analyses which follow show the capital costs, revenues, operating costs and profit/loss figures for each of three production levels - 1.0 million, 3.0 million and 5.0 million seedlings per year. Table I summarizes operating figures based on 20 percent equity financing and 80 percent conventional financing. Table II summarizes operating figures based on 20 percent equity financing, 40 percent conventional financing and 40 percent forgivable grant from the Yukon Territorial Government. A sample of the 5 million seedling/year statement is found in Appendix IV.

TABLE I

OPERATING STATEMENT SUMMARY
(Without Grant - in Thousand Dollars)

Production Level	Item	Year 1	2	3	4	5
1 MM/year	Revenue	102	189	199	210	219
	Cost of Sales	57	85	93	98	101
	Overhead and Administration	76	88	92	97	102
	Depreciation	24	46	40	34	30
	Financing - Working Capital	6	22	32	44	60
	Financing - Long Term Debt	31	32	30	27	25
	Profit (Loss)	(92)	(84)	(88)	(90)	(99)
3 MM/year	Revenue	305	568	598	631	657
	Cost of Sales	191	290	317	332	360
	Overhead and Administration	99	128	135	142	148
	Depreciation	49	94	84	74	68
	Financing - Working Capital	13	37	38	40	49
	Financing - Long Term Debt	59	60	56	51	46
	Profit (Loss)	(106)	(41)	(32)	(8)	(14)
5 MM/year	Revenue	509	946	997	1 052	1 095
	Cost of Sales	295	447	489	513	559
	Overhead and Administration	122	168	178	186	195
	Depreciation	82	156	140	124	113
	Financing - Working Capital	19	49	36	23	18
	Financing - Long Term Debt	91	94	87	80	71
	Profit (Loss)	(100)	32	67	126	139

TABLE II

OPERATING STATEMENT SUMMARY
(With Grant - in Thousand Dollars)

Production Level	Item	Year 1	2	3	4	5
1 MM/year	Revenue	102	189	199	210	219
	Cost of Sales	57	83	92	98	100
	Overhead and Administration	76	89	93	98	103
	Depreciation	24	46	40	34	30
	Financing - Working Capital	12	18	23	30	40
	Financing - Long Term Debt	16	16	15	12	12
	Profit (Loss)	(83)	(63)	(64)	(62)	(66)
3 MM/year	Revenue	305	568	598	631	657
	Cost of Sales	191	290	317	332	360
	Overhead and Administration	99	128	135	141	148
	Depreciation	49	94	84	74	65
	Financing - Working Capital	24	29	23	16	14
	Financing - Long Term Debt	29	30	28	26	23
	Profit (Loss)	(87)	(3)	11	42	47
5 MM/year	Revenue	509	946	996	1 052	1 096
	Cost of Sales	295	447	489	513	559
	Overhead and Administration	121	168	177	186	194
	Depreciation	82	156	140	124	113
	Financing - Working Capital	36	37	19	5	2
	Financing - Long Term Debt	46	47	44	40	36
	Profit (Loss)	(71)	91	127	184	191

6.4 ROI Analysis

Ten-year cash flow analyses were prepared based on the operating statements from 6.3 above. A terminal value in the 11th year was calculated based on disposal of the nursery at a price equal to the 11th year cash flow capitalized at 15%. The analyses solved for the internal rate of return (IRR) on invested capital i.e., on equity capital and long-term debt.

The non-repayable grant and Line-of-Credit working capital were not included in invested capital.

TABLE III

INTERNAL RATE OF RETURN (%)
(in real terms, excluding inflation)

	Production Level		
	1 MM/yr.	3 MM/yr.	5 MM/yr.
With Grant	Neg.	4.5%	16.5%
Without Grant	Neg.	Neg.	2.7%

A further analysis was made to determine pricing of seedlings required to give a 15% real rate of return on invested capital.

TABLE IV

SEEDLING PRICES REQUIRES FOR 15% REAL I.R.R.

	Production Level		
	1 MM/yr.	3 MM/yr.	5 MM/yr.
With Grant	29¢	20¢	18¢
Without Grant	36¢	25¢	22¢

7.0 STRATEGIC PLAN

7.1 Government Policies and Objectives

The establishment of a forest seedling nursery in Yukon is consistent with government objectives in a number of areas. Up to the present time neither trees harvested by commerical timber operations nor those lost to forest fires have been replaced under any type of management plan.

Yukon's forest resource goals, broadly stated, are "to manage the forest for the long-term social, economic and environmental benefit of Yukoners"[1].

If this goal is to be achieved, planning must begin immediately. Furthermore, in the Consultant's opinion, large-scale pulpwood utilization of Yukon's forest resource is both inevitable and imminent. This development is not only natural and desirable for Yukon's economic future, but also is compatible with Yukons forest resource goals.

Planning toward self-sufficiency in production of seedlings for reforestation, is required for the government's objective of building a Conversion Strategy for the Yukon. Further, Sub-Agreement 14 of the Yukon Land Claim Framework Agreement provides for the management of all Yukon forests.

Finally, wherever established, there is little doubt that a seedling nursery can provide opportunities for Yukon Indians as well as community-level socio-economic benefits.

7.2 Critical Factors

The feasibility of establishing a seedling nursery in Yukon and producing 1.0 to 5.0 million seedlings annually is not a justifiable objective in itself. It is part of a total planning and implementation process for maintaining Yukon's forest resource.

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[1] A Forest Tenure System for the Yukon - Colin Heartwell - 1988 (unpublished).

A good quality seed is essential. It is estimated that to produce 3.0 million seedlings (60 percent white spruce and 40 percent lodgepole pine) approximately 8 kg. of white spruce seed and 6 kg. of lodgepole pine seed are required annually. This translates into approximately 12 hl. and 28 hl. of cones respectively.

The export demand for seed of these species, particularly lodgepole pine, is declining but, even at present levels the combined export demand and projected domestic demand does not justify a seed extraction plant for the Yukon. White spruce seed crops are cyclical while lodgepole pine crops are annual. It is recommended that commercial tree seed firms be contracted to collect cones, extract and store seed in good crop years sufficient to support ten years requirements on a continuing basis. The total cost of a 10-year seed supply for 3 million seedlings/year is estimated at some $100,000, of which approximately 60% will be expended on employment of Yukon citizens.

A second factor affecting seedling nursery production is the actual program for planting the trees produced.

The nursery and stock type recommended in this study has been selected in part for its suitability to summer planting, which is considered to be the preferable time for the Yukon. Cold storage of seedlings, which is both costly and undesirable, has been avoided, planting contractors are more widely available during the summer months; access to many planting sites is as good as it can be at times when tree planting is possible at all, and summer planting of wetter spruce sites generally show higher survival rates than in other seasons.

Assuming a production level of 3.0 million seedlings annually, a planting rate of 1,000 seedlings per man-day and a planting season of 30 days, a planting crew of 100 people would have to be mobilized. The logistical problems arising from the time and access constraints, while not insurmountable, must be considered and worked out prior to seedling production coming on stream.

A third factor is, of course, site preparation. Whether burning or mechanical treatment is required, the sites must be properly prepared or planting can be a futile effort both from resolution of logistical problems and from plantation survival results.

The most critical factor is planning and implementation. The backlog areas must be identified, and site preparation and seedling prescriptions developed. Financial and political committment is required. A reforestation - silvicultural section, probably within the Yukon Forest Service, must be organized and funded.

7.3 Implementation

Implementation of a viable private-sector forest nursery should not pose a problem, once the critical factors discussed in 7.2 above have been resolved. At that time, the Yukon Territorial Government could offer a 5-year renewable contract for purchase of specified number and type of forest seedlings grown in the Yukon. The private sector would respond with pricing proposals. The successful entrepreneur would enter into a contract with the Yukon government, and would construct nursery facilities in accordance with both this contract and his vision of future and adjacent market potential.

8.0 SUMMARY AND RECOMMENDATIONS

The foregoing study indicates that a private sector forest nursery located in Watson Lake could be viable at a 5 million/year seedling production level, assuming competitive seedling prices.

However, in the Consultants opinion, this study, although useful from the viewpoint of developing relative capital and operating costs for various production levels, may be a "cart-before-the-horse" situation, in that tree seedling nurseries should be designed for production of a specific number and type of seedlings. These questions must be resolved first; then a nursery can be developed.

The Consultant suggests that the Yukon Territorial Government consider appointing a two-man team, probably from the Yukon Forest Service and the Canadian Forestry Service, to develop a preliminary 10-year reforestation plan for the Yukon. This should be carried out based on current levels of knowledge and information, and should be prepared within six months of initiation.

This plan would set out a basis for funding, supervision and subsequent action. The plan would be amended periodically on basis of new developments, information and studies. If accepted in principle by the Federal Government, a significant action will have been taken to ensure that the importance of Yukon's forest resource in Canada's economic and environmental future has been recognized.

The Consultant also suggests that the Yukon Government immediately place sowing requests with commercial nurseries for, say, 100,000 2+0 313B spruce - pine seedlings for delivery in July, 1990. Operational field trials of selected stock types are needed to confirm nursery design characteristics.

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APPENDICES

APPENDIX I

CONTRACT

Yukon Government Services

NOV 2 0 1988

GOVERNMENT CONTRACT

GN ~~88073XXX~~ GN-88073021-
THIS CONTRACT IS INVALID UNLESS NUMBERED AND CERTIFIED BY SUPPLY SERVICES
GN-88-07-3021-0[redacted]0227
SUPPLY SERVICES

IN CONTRACT WITH:

CONTRACTOR'S NAME & ADDRESS

Reid, Collins & Associates Ltd.
Suite 1550 - 401 West Georgia Street
Vancouver, B.C.
V6B 5A1

FOR:

GENERAL DESCRIPTION

Yukon Tree Seedling Nursery Feasibil.
Study

LOCATION: YUKON

DETAILS OF TERMS AND CONDITIONS OF CONTRACT	UNIT PRICE	EXTENDED TOTAL
Examine the feasibility of growing white spruce and lodgepole pine tree seedlings in Yukon, identify all funding sources and critical policy issues, develop a strategic plan and provide cost comparisons as outlined in Appendix "A" (statement of work), as proposed by the contractor in Appendix "B" and as agreed between the contractor and the Government of Yukon.		
Fees for 44 days (average price).....	$597.73	$26,300.
Expenses.....		$ 3,200.
THIS CONTRACT TO COMMENCE October 3, 1988 AND TERMINATE December 16, 1988	TOTAL ➧	$29,500.

CONTRACTOR NOTE: THIS CONTRACT IS SUBJECT TO THE TERMS & CONDITIONS ON BOTH SIDES HEREOF.

I/WE, THE CONTRACTOR, AGREE TO SUPPLY THE EQUIPMENT AND/OR PERFORM THE WORK OR SERVICES AS STIPULATED HEREIN AND AGREE TO THE PROVISIONS DETAILED ON THE REVERSE SIDE HEREOF.

BUSINESS LICENCE NUMBER ☐ CITY 882465
☐ YTG

Oct. 7/88
SIGNATURE OF CONTRACTOR — DATE

Reid, Collins & Associates Limited
CONTRACTOR (FIRM NAME)

I CERTIFY THAT THE TENDERING PROCEDURES OF THE YUKON GOVERNMENT HAVE BEEN FOLLOWED.

CERTIFIED PURSUANT TO SECTION 24 (COMMITMENT AUTHORITY) OF THE FI[illegible] ADMINISTRATION ACT.

Mgr. 88/10/3
RECOMMENDED, AUTHORIZED OFFICER / TITLE — DATE

APPROVED, AUTHORIZED OFFICER/TITLE

OCT 11/88
DATE

COST DISTRIBUTION

VOTE	PROGRAM	OBJECT	DEPARTMENTAL USE		ALLOTTED AMOUNT
~~0 7 1 3 0 4 0 0 1~~ 672	~~0 2 0 7~~ 404182 1	~~0 2 0 7~~ 0301	99		$29,500.00

THE MAXIMUM AMOUNT PAYABLE HEREIN SHALL NOT EXCEED – TOTAL ➧ $29,500.00

CONTRACTOR INVOICING –

SUBMIT ORIGINAL INVOICE AND TWO COPIES TO:
Economic Development:
Mines & Small Busines
Y.T.G.
Box 2703
Whitehorse, Yukon
Y1A 2C6

YG (357) SN8 REV. 2/86

APPENDIX II

CAPITAL COST SUMMARY

APPENDIX II

CAPITAL COST SUMMARY
(in thousand dollars)

Item	Production Level 1 MM/yr.	3 MM/yr.	5 MM/yr.
Land	$ 20	$ 20	$ 20
Site Preparation, Roads, Design	15	45	75
Well (200 gal./min.)	25	25	25
Header House (including office, lunch room, washroom, storage)	80	100	120
Polyhouses - 25,000 sq.ft./MM seedling	50	150	250
Polyhouse - Irrigation	12	36	60
Field Irrigation	13	39	65
Polyhouse Benching	13	39	65
Heating (two 250,000 BTU/house)	55	165	275
Electrical (transformers, breakers, etc.)	20	40	80
Thumper Table	3	3	3
Vacuum Seeder	5	10	15
Fertilizer Injector	4	4	4
Tamper	4	4	4
Tractor	8	8	16
Trailors	4	8	12
Truck	15	15	15
Sprayer	3	3	3
Packing Conveyor	5	10	10
Block Washer, Small Tools, Misc.	5	5	5
TOTAL	**$ 372**	**$ 768**	**$1,187**

APPENDIX III

CLIMATE AND WEATHER

YUKON TERRITORY/YUKON

TUCHITUA
60° 56'N 129° 15'W 724 m

	JAN JAN	FEB FÉV	MAR MAR	APR AVR	MAY MAI	JUN JUIN	JUL JUIL	AUG AOÛT	SEP SEPT	OCT OCT	NOV NOV	DEC DÉC	YEAR ANNÉE	CODE CODE	
Daily Maximum Temperature	-21.3	-11.0	-2.6	6.1	12.8	18.6	20.8	18.9	12.4	3.4	-9.4	-18.4	2.5	8	Température Maximale Quotidienne
Daily Minimum Temperature	-32.1	-26.5	-21.4	-8.7	-1.3	4.2	6.2	4.0	-0.8	-7.3	-19.3	-28.6	-11.0	8	Température Minimale Quotidienne
Daily Temperature	-26.7	-18.7	-12.0	-1.3	5.8	11.4	13.6	11.5	5.8	-2.0	-14.4	-23.5	-4.2	8	**Température Quotidienne**
Standard Deviation, Daily Temperature	5.4	4.8	3.2	1.9	0.8	1.1	1.0	1.4	1.3	1.6	4.1	4.5	0.9	5	Écart Type de la Température Quotidienne
Extreme Maximum Temperature	2.5	9.4	11.0	21.7	24.4	32.8	30.6	31.7	26.7	20.6	8.9	3.3	32.8		Température Maximale Extrême
Years of Record	13	14	14	13	13	14	13	12	12	13	13	11			Années de Relèves
Extreme Minimum Temperature	-54.4	-55.6	-45.6	-33.3	-13.9	-5.6	-2.2	-6.1	-16.7	-28.1	-45.6	-53.9	-55.6		Température Minimale Extrême
Years of Record	13	13	14	14	13	13	13	12	13	13	13	13			Années de Relèves
Rainfall	0.0	0.0	0.5	7.0	25.8	49.4	60.1	41.6	40.9	15.5	2.7	0.3	243.8	8	Chutes de Pluie
Snowfall	48.4	49.1	46.5	24.5	11.1	0.1	0.0	0.0	2.2	36.5	54.0	65.0	337.4	8	Chutes de Neige
Total Precipitation	59.1	50.7	44.5	34.6	33.3	49.4	60.1	41.6	45.0	51.8	56.0	64.5	590.6	8	**Précipitations Totales**
Standard Deviation, Total Precipitation	22.0	17.4	16.5	19.7	26.0	22.8	28.9	20.0	22.6	23.0	22.7	18.5	99.7	5	Écart Type des Précipitations Totales
Greatest Rainfall in 24 hours	0.0	0.0	0.0	19.1	32.5	27.2	29.7	24.1	20.1	10.2	9.0	0.0	32.5		Chute de Pluie Record en 24 heures
Years of Record	13	14	14	13	14	14	14	10	11	14	14	14			Années de Relèves
Greatest Snowfall in 24 hours	22.4	12.7	20.3	16.3	28.7	0.0	0.0	0.0	14.7	21.8	15.7	16.3	28.7		Chute de Neige Record en 24 heures
Years of Record	13	13	14	13	14	14	14	13	14	14	13	13			Années de Relèves
Greatest Precipitation in 24 hours	22.4	12.7	20.3	19.1	32.5	27.2	29.7	24.1	22.9	21.8	15.7	16.3	32.5		Précipitation Record en 24 heures
Years of Record	13	13	14	13	14	14	14	10	11	14	13	13			Années de Relèves
Days with Rain	0	0	0	2	8	10	13	12	12	4	0	0	61	8	Jours de Pluie
Days with Snow	12	11	11	5	1	0	0	0	1	8	14	14	77	8	Jours de Neige
Days with Precipitation	12	12	12	8	9	10	14	12	13	14	14	14	144	8	Jours de Précipitation

WATSON LAKE A
60° 7'N 128° 49'W 689 m

	JAN JAN	FEB FÉV	MAR MAR	APR AVR	MAY MAI	JUN JUIN	JUL JUIL	AUG AOÛT	SEP SEPT	OCT OCT	NOV NOV	DEC DÉC	YEAR ANNÉE	CODE CODE	
Daily Maximum Temperature	-21.3	-12.0	-3.3	6.0	13.3	18.9	21.0	19.3	12.9	4.4	-9.1	-18.5	2.6	1	Température Maximale Quotidienne
Daily Minimum Temperature	-32.0	-25.3	-19.2	-7.1	0.5	6.4	8.8	7.0	2.3	-4.6	-18.5	-28.3	-9.2	1	Température Minimale Quotidienne
Daily Temperature	-26.7	-18.7	-11.3	-0.6	6.9	12.7	14.9	13.1	7.6	-0.1	-13.8	-23.5	-3.3	1	**Température Quotidienne**
Standard Deviation, Daily Temperature	5.1	4.3	2.6	2.0	1.1	1.4	1.2	1.5	1.2	2.1	4.8	4.5	1.0	1	Écart Type de la Température Quotidienne
Extreme Maximum Temperature	8.9	9.4	11.7	20.0	30.6	33.9	33.3	32.8	27.8	21.7	12.2	7.8	33.9		Température Maximale Extrême
Years of Record	42	42	41	42	42	42	42	42	42	43	43	43			Années de Relèves
Extreme Minimum Temperature	-58.9	-56.1	-46.7	-32.8	-10.6	-3.3	0.6	-6.7	-13.3	-36.6	-46.7	-52.8	-58.9		Température Minimale Extrême
Years of Record	42	42	41	42	42	42	42	42	42	43	43	43			Années de Relèves
Rainfall	0.3	0.1	0.6	2.9	24.1	51.6	58.2	42.0	40.3	16.3	2.2	0.3	238.9	1	Chutes de Pluie
Snowfall	40.4	32.2	28.0	13.8	5.5	T	0.0	0.0	3.4	21.6	37.3	46.6	228.8	1	Chutes de Neige
Total Precipitation	33.1	25.3	23.2	15.1	29.4	51.6	58.2	42.0	43.7	35.0	31.8	36.8	425.2	1	**Précipitations Totales**
Standard Deviation, Total Precipitation	20.3	12.6	13.7	11.9	20.7	24.6	31.9	23.3	19.1	16.4	14.9	16.9	74.4	1	Écart Type des Précipitations Totales
Greatest Rainfall in 24 hours	4.3	1.0	13.5	10.2	26.2	46.4	41.4	30.2	20.6	14.2	13.7	3.6	46.4		Chute de Pluie Record en 24 heures
Years of Record	42	42	41	42	42	42	42	42	42	43	42	43			Années de Relèves
Greatest Snowfall in 24 hours	26.4	27.7	18.8	19.3	16.0	T	0.0	1.8	21.1	17.0	25.1	26.7	27.7		Chute de Neige Record en 24 heures
Years of Record	42	42	41	42	42	42	42	42	42	42	42	43			Années de Relèves
Greatest Precipitation in 24 hours	26.4	20.6	15.5	32.5	26.2	46.4	41.4	30.2	21.1	16.3	17.8	26.7	46.4		Précipitation Record en 24 heures
Years of Record	42	42	41	42	42	42	42	42	42	43	42	43			Années de Relèves
Days with Rain	•	•	•	2	9	13	13	13	13	6	•	•	69	1	Jours de Pluie
Days with Snow	16	13	12	6	2	0	0	0	1	9	15	17	91	1	Jours de Neige
Days with Precipitation	15	12	12	7	10	13	13	13	13	14	15	16	153	1	Jours de Précipitation

YUKON TERRITORY/YUKON

	JAN JAN	FEB FÉV	MAR MAR	APR AVR	MAY MAI	JUN JUIN	JUL JUIL	AUG AOÛT	SEP SEPT	OCT OCT	NOV NOV	DEC DÉC	YEAR ANNÉE	CODE CODE	
WHITEHORSE A															
60° 43'N 135° 4'W 703 m															
Daily Maximum Temperature	-16.4	-8.3	-2.3	5.6	12.7	18.4	20.3	18.4	12.4	4.4	-5.3	-12.5	4.0	1	Température Maximale Quotidienne
Daily Minimum Temperature	-25.0	-18.1	-14.0	-5.1	0.6	5.5	7.9	6.5	2.6	-3.1	-12.3	-20.7	-6.3	1	Température Minimale Quotidienne
Daily Temperature	**-20.7**	**-13.2**	**-8.2**	**0.3**	**6.7**	**12.0**	**14.1**	**12.5**	**7.5**	**0.6**	**-8.8**	**-16.6**	**-1.2**	**1**	**Température Quotidienne**
Standard Deviation, Daily Temperature	6.3	5.2	3.1	2.0	1.2	1.6	1.2	1.5	1.3	2.0	5.0	5.8	1.1	1	Écart Type de la Température Quotidienne
Extreme Maximum Temperature	9.0	11.7	11.7	20.6	~~30.0~~ 34.1	34.6	32.8	30.0	26.7	18.9	11.7	8.3	34.4		Température Maximale Extrême
Years of Record	38	38	38	39	39	39	39	39	39	39	39	39			Années de Relèves
Extreme Minimum Temperature	-52.2	-51.1	-40.6	-27.8	-11.7	-2.8	0.0	-4.4	~~-11.7~~ -19.4	~~-28.3~~ -31	-40.6	-47.8	-52.2		Température Minimale Extrême
Years of Record	38	38	38	39	39	39	39	39	39	39	39	39			Années de Relèves
Rainfall	T	T	T	0.8	10.1	29.8	33.9	37.0	25.9	6.7	1.1	0.2	145.5	1	Chutes de Pluie
Snowfall	21.3	15.2	16.4	10.5	2.9	0.9	0.0	0.8	4.5	16.1	23.8	24.2	136.6	1	Chutes de Neige
Total Precipitation	**17.7**	**13.3**	**13.5**	**9.5**	**12.9**	**30.7**	**33.9**	**37.9**	**30.3**	**21.5**	**19.8**	**20.2**	**261.2**	**1**	**Précipitations Totales**
Standard Deviation, Total Precipitation	9.2	8.6	7.5	8.0	10.0	21.6	19.4	21.7	16.7	10.8	8.8	8.1	48.4	1	Écart Type des Précipitations Totales
Greatest Rainfall in 24 hours	0.5	0.4	0.8	3.8	12.4	~~30.2~~ 53.0	21.1	30.7	19.6	18.3	9.4	1.8	~~30.7~~ 53.0		Chute de Pluie Record en 24 heures
Years of Record	37	38	38	38	39	39	39	39	39	39	39	39			Années de Relèves
Greatest Snowfall in 24 hours	14.0	10.4	27.2	16.3	12.2	12.7	0.0	8.6	21.6	12.2	14.6	27.0	27.2		Chute de Neige Record en 24 heures
Years of Record	38	38	38	39	39	39	39	39	39	39	39	39			Années de Relèves
Greatest Precipitation in 24 hours	9.4	10.4	10.4	14.2	12.4	30.2	21.1	30.7	21.6	23.6	11.4	18.7	30.7		Précipitation Record en 24 heures
Years of Record	38	38	38	39	39	39	39	39	39	39	39	39			Années de Relèves
Days with Rain	•	•	•	1	5	9	11	11	10	4	1	•	52	1	Jours de Pluie
Days with Snow	13	10	9	5	2	•	0	•	1	8	12	13	73	1	Jours de Neige
Days with Precipitation	12	10	9	6	6	9	11	11	11	10	12	13	120	1	Jours de Précipitation
WHITEHORSE RIVERDALE															
60° 43'N 135° 1'W 643 m															
Daily Maximum Temperature	-16.1	-7.0	-0.6	7.4	13.9	19.5	21.4	19.5	13.4	5.5	-5.4	-12.7	4.9	8	Température Maximale Quotidienne
Daily Minimum Temperature	-25.5	-18.7	-14.3	-5.5	-0.6	4.6	7.2	5.6	2.1	-3.0	-13.3	-21.5	-6.9	8	Température Minimale Quotidienne
Daily Temperature	**-20.9**	**-12.9**	**-7.4**	**1.0**	**6.7**	**12.1**	**14.5**	**12.6**	**7.8**	**1.3**	**-9.4**	**-17.1**	**-1.0**	**8**	**Température Quotidienne**
Standard Deviation, Daily Temperature	6.3	5.9	3.7	1.7	0.9	1.3	0.9	1.5	1.0	1.9	4.7	6.0	1.1	3	Écart Type de la Température Quotidienne
Extreme Maximum Temperature	8.3	12.8	12.5	22.8	~~27.8~~ 34.5	35.6	33.4	31.7	26.7	19.4	12.2	6.7	35.6		Température Maximale Extrême
Years of Record	21	22	22	22	22	22	21	21	21	22	22	22			Années de Relèves
Extreme Minimum Temperature	-48.3	-51.1	-42.8	-31.7	-13.3	-4.4	-1.7	-5.6	~~-12.2~~ -17.5	~~-28.3~~ -29.5	-41.7	-47.8	-51.1		Température Minimale Extrême
Years of Record	21	22	22	22	22	22	20	21	21	22	22	22			Années de Relèves
Rainfall	0.0	0.0	0.3	1.4	9.3	33.2	33.6	36.3	20.7	7.3	1.6	0.2	143.9	8	Chutes de Pluie
Snowfall	19.5	10.8	13.7	7.9	0.6	0.7	0.0	0.0	2.8	9.3	16.4	18.3	100.0	8	Chutes de Neige
Total Precipitation	**21.6**	**12.1**	**15.4**	**12.2**	**11.1**	**33.9**	**33.6**	**35.2**	**25.1**	**17.5**	**23.6**	**20.4**	**261.7**	**8**	**Précipitations Totales**
Standard Deviation, Total Precipitation	9.2	6.3	9.7	8.8	13.8	13.5	18.5	31.0	22.3	8.2	17.4	11.7	55.2	6	Écart Type des Précipitations Totales
Greatest Rainfall in 24 hours	T	T	0.9	1.8	10.9	43.2	22.6	23.9	25.4	12.8	10.0	1.8	43.2		Chute de Pluie Record en 24 heures
Years of Record	9	8	8	7	7	8	8	7	8	8	8	10			Années de Relèves
Greatest Snowfall in 24 hours	6.4	10.9	10.0	18.5	3.0	0.0	0.0	T	19.8	8.6	19.5	18.4	19.8		Chute de Neige Record en 24 heures
Years of Record	7	7	8	7	7	9	10	9	9	8	9	9			Années de Relèves
Greatest Precipitation in 24 hours	6.4	9.4	10.0	18.5	10.9	43.2	22.6	23.9	25.4	15.5	19.5	18.4	43.2		Précipitation Record en 24 heures
Years of Record	7	7	8	7	7	8	8	7	8	8	8	9			Années de Relèves
Days with Rain	0	0	0	1	5	7	10	10	9	3	1	0	46	8	Jours de Pluie
Days with Snow	11	8	7	4	0	0	0	0	0	5	9	10	54	8	Jours de Neige
Days with Precipitation	11	9	8	5	6	7	10	10	9	8	12	10	105	8	Jours de Précipitation

METEOROLOGICAL SUMMARY
SOMMAIRE METEOROLOGIQUE

WATSON LAKE YUKON

PERIOD JAN 1953 - DEC 1978

DATE	JAN JAN	FEB FEV	MAR MAR	APR AVR	MAY MAI	JUN JUIN	JUL JUIL	AUG AOUT	SEPT SEP	OCT OCT	NOV NOV	DEC DEC	ANNUAL ANNUEL
						PERCENT FREQUENCY							
NNE	.6	.5	.5	.7	1.0	1.5	1.8	1.9	1.8	1.6	1.1	.5	1.1
NE	1.0	1.5	1.7	2.1	2.5	3.3	3.9	4.6	4.4	3.8	1.8	1.4	2.7
ENE	1.5	1.7	2.2	2.8	3.2	3.0	2.9	2.9	4.8	3.3	1.6	1.3	2.6
E	4.1	5.2	10.4	12.3	11.1	8.1	5.9	6.5	9.1	7.8	4.6	4.2	7.4
ESE	3.3	5.6	10.1	11.3	9.0	7.8	5.6	6.3	9.2	10.2	5.1	3.9	7.3
SE	4.4	7.3	9.8	9.9	7.4	7.9	6.4	7.1	9.4	9.9	6.2	5.4	7.6
SSE	2.0	3.6	3.7	2.8	3.1	3.4	2.7	3.8	5.0	5.0	3.1	2.4	3.4
S	1.7	3.0	2.9	3.7	4.0	4.4	4.3	4.8	5.1	6.2	3.8	2.0	3.8
SSW	.5	1.2	1.0	2.3	2.8	2.7	2.4	2.6	2.2	2.5	1.0	.6	1.8
SW	1.1	1.6	1.5	3.8	4.5	4.8	5.1	4.1	2.9	2.9	1.6	.8	2.9
WSW	1.6	2.7	3.3	5.8	7.2	7.8	8.4	6.6	4.6	4.1	1.7	1.4	4.6
W	10.8	10.4	9.4	10.1	12.3	14.6	15.5	12.5	8.6	7.3	10.3	10.0	11.0
WNW	11.9	8.7	7.5	6.5	7.3	8.6	8.9	8.8	6.3	6.4	11.0	11.6	8.6
NW	5.7	4.2	4.2	3.8	4.6	6.4	8.0	7.5	6.6	8.6	9.6	6.5	6.3
NNW	.9	.8	.8	1.1	1.5	2.0	2.5	2.5	2.2	2.6	2.2	1.0	1.7
N	.7	.7	.7	1.3	1.6	2.3	3.1	2.7	2.3	2.4	2.1	.8	1.7
CALM	48.2	41.4	30.3	19.7	16.9	11.3	12.5	15.0	15.4	15.5	33.3	46.1	25.4
						AVERAGE WIND SPEED IN KILOMETRES PER HOUR							
NNE	4.8	5.6	4.8	7.2	8.5	8.6	7.7	6.2	6.2	6.0	4.8	4.5	6.6
NE	4.8	5.5	6.2	8.6	8.7	9.6	7.2	6.7	7.4	6.8	5.4	4.6	7.1
ENE	6.3	7.5	10.5	11.6	12.7	13.2	9.5	8.5	10.6	10.8	7.9	5.4	10.1
E	9.4	10.3	14.3	13.9	14.7	14.5	11.5	11.3	12.9	15.5	11.2	9.7	13.0
ESE	13.6	13.5	15.8	15.6	14.7	14.3	12.4	12.7	14.3	18.0	16.0	13.6	14.9
SE	11.0	12.0	12.3	11.8	10.6	10.8	9.9	10.0	10.8	12.8	11.7	10.9	11.3
SSE	8.8	10.5	11.1	10.5	9.4	9.6	9.0	9.1	9.5	10.3	10.2	9.9	9.9
S	5.9	8.4	8.8	12.0	10.5	9.8	9.1	9.0	9.3	9.5	7.8	7.0	9.2
SSW	6.5	10.4	10.7	13.5	13.0	12.3	10.9	10.8	10.7	10.8	8.4	10.2	11.3
SW	7.4	12.1	13.0	15.6	13.8	13.5	12.6	12.0	13.2	13.3	8.5	8.0	12.8
WSW	9.3	13.4	16.5	19.3	18.2	16.9	17.0	16.2	16.5	18.8	12.1	9.1	16.6
W	5.9	7.4	10.8	14.4	15.0	15.0	14.5	13.6	14.0	12.0	6.8	5.9	11.6
WNW	6.6	8.6	11.3	13.9	14.5	14.5	14.0	13.7	12.7	10.5	7.1	6.7	10.7
NW	6.8	8.5	11.2	12.9	12.6	11.5	11.1	10.8	9.7	9.0	6.7	6.1	9.5
NNW	6.2	7.9	11.2	14.5	10.9	9.9	9.5	8.5	7.8	7.0	6.0	4.4	8.5
N	5.2	5.8	6.9	10.5	9.3	8.8	8.0	6.7	6.5	5.6	4.8	4.7	7.1
ALL	3.9	5.7	8.6	11.1	11.3	11.6	10.5	9.6	9.8	10.2	5.7	4.2	8.5

METEOROLOGICAL SUMMARY
SOMMAIRE METEOROLOGIQUE

WATSON LAKE YUKON

PERIOD JAN 1953 - DEC 1978

DATE	JAN JAN	FEB FEV	MAR MAR	APR AVR	MAY MAI	JUN JUIN	JUL JUIL	AUG AOUT	SEPT SEP	OCT OCT	NOV NOV	DEC DEC	ANNUAL ANNUEL
					MAXIMUM OBSERVED HOURLY SPEED IN KILOMETRES PER HOUR								
NNE	16	16	16	24	27	42	48	29	26	19	23	11	48
NE	24	35	27	45	35	61	42	39	39	39	37	13	61
ENE	32	45	39	48	45	56	32	40	42	45	27	27	56
E	40	48	61	51	56	64	39	45	56	55	45	45	64
ESE	40	39	55	56	56	48	44	42	56	51	45	48	56
SE	40	45	42	45	48	48	40	35	39	45	45	45	48
SSE	40	39	39	35	32	39	29	35	32	35	32	31	40
S	32	42	35	51	40	40	32	32	32	52	29	26	52
SSW	29	39	35	51	42	56	35	45	35	42	39	40	56
SW	31	43	48	51	42	40	40	39	40	48	40	39	51
WSW	48	56	55	56	56	48	45	42	51	80	56	56	80
W	45	48	51	64	58	61	46	48	64	55	56	32	64
WNW	40	64	61	55	80	58	42	45	48	55	48	42	80
NW	35	43	60	51	51	45	40	48	48	48	61	39	61
NNW	32	35	39	48	40	48	40	35	40	35	45	39	48
N	29	24	27	35	35	35	32	32	45	29	16	13	45
EXT	48	64	61	64	80	64	48	48	64	80	61	56	80
					PROBABLE MAXIMUM GUST FOR MAXIMUM HOURLY SPEED								
NNE	30	30	30	40	44	64	71	47	43	34	39	24	71
NE	40	54	44	67	54	88	64	60	60	60	57	26	88
ENE	51	67	60	71	67	82	51	61	64	67	44	44	82
E	61	71	88	75	82	92	60	67	82	80	67	67	92
ESE	61	60	80	82	82	71	66	64	82	75	67	71	82
SE	61	67	64	67	71	71	61	54	60	67	67	67	71
SSE	61	60	60	54	51	60	47	54	51	54	51	49	61
S	51	64	54	75	61	61	51	51	51	76	47	43	76
SSW	47	60	54	75	64	82	54	67	54	64	60	61	82
SW	49	65	71	75	64	61	61	60	61	71	61	60	75
WSW	71	82	80	82	82	71	67	64	75	113	82	82	113
W	67	71	75	92	84	88	69	71	92	80	82	51	92
WNW	61	92	88	80	113	84	64	67	71	80	71	64	113
NW	54	65	87	75	75	67	61	71	71	71	88	60	88
NNW	51	54	60	71	61	71	61	54	61	54	67	60	71
N	47	40	44	54	54	54	51	51	67	47	30	26	67
EXT	71	92	88	92	113	92	71	71	92	113	88	82	113

METEOROLOGICAL SUMMARY
SOMMAIRE METEOROLOGIQUE

WHITEHORSE YUKON

PERIOD JAN 1953 - DEC 1978

DATE	JAN JAN	FEB FEV	MAR MAR	APR AVR	MAY MAI	JUN JUIN	JUL JUIL	AUG AOUT	SEPT SEP	OCT OCT	NOV NOV	DEC DEC	ANNUAL ANNUEL
						PERCENT FREQUENCY							
NNE	.3	.2	.6	.8	1.1	1.7	1.8	1.1	.6	.3	.2	.2	.8
NE	.2	.3	.3	.7	1.1	1.6	1.3	.7	.7	.3	.2	.2	.6
ENE	.1	.1	.1	.2	.4	.4	.4	.3	.2	.1	*	.1	.2
E	.5	.7	.5	.9	1.5	2.0	1.6	.9	.7	.5	.4	.6	.9
ESE	.7	1.0	1.6	2.5	3.9	4.2	4.0	2.8	2.0	1.5	.9	.8	2.1
SE	9.9	13.5	14.9	20.2	24.4	23.5	23.6	23.6	22.2	21.1	13.0	12.9	18.6
SSE	15.6	19.0	17.8	18.1	19.9	17.9	18.3	18.6	22.0	25.8	19.5	16.3	19.1
S	13.3	17.4	14.7	15.7	12.3	10.7	11.5	12.3	15.3	17.5	20.7	19.1	15.0
SSW	.8	1.9	2.3	3.8	4.2	3.4	2.9	2.5	2.3	1.9	1.3	1.1	2.4
SW	.6	1.1	2.4	5.2	4.7	4.5	4.0	3.9	2.8	1.7	1.2	.7	2.7
WSW	.3	.5	1.6	2.1	2.3	2.3	1.8	1.8	1.5	.8	.7	.3	1.3
W	1.4	1.7	3.2	3.3	2.7	3.1	3.0	3.2	2.8	2.3	2.5	1.4	2.5
WNW	2.6	2.3	2.3	1.7	1.6	1.4	1.5	1.6	1.4	1.4	2.7	2.2	1.9
NW	15.0	12.1	11.4	6.0	4.3	4.7	4.7	5.2	5.7	6.4	11.1	12.5	8.2
NNW	11.6	9.4	6.7	4.4	3.1	3.3	3.6	4.1	3.8	4.6	9.0	9.9	6.1
N	9.3	6.5	7.3	6.0	4.2	5.7	6.2	6.3	5.3	4.4	5.0	6.8	6.1
CALM	17.8	12.3	12.3	8.4	8.4	9.5	9.8	11.2	10.7	9.4	11.7	15.1	11.4
						AVERAGE WIND SPEED IN KILOMETRES PER HOUR							
NNE	10.5	7.2	12.3	12.6	11.0	9.7	10.3	8.8	8.8	9.5	7.0	6.7	10.1
NE	4.5	5.0	6.3	8.9	8.0	7.9	7.2	6.1	6.3	7.6	5.0	4.3	7.1
ENE	6.9	5.5	9.7	8.3	8.3	8.6	6.6	5.9	4.4	6.7	6.3	6.7	7.2
E	4.9	7.3	10.6	9.2	8.9	9.3	8.7	7.3	6.7	8.5	6.0	4.9	8.1
ESE	10.7	16.2	18.0	16.9	17.0	16.3	16.5	17.1	16.9	19.8	14.9	10.3	16.5
SE	17.1	19.9	19.8	18.6	17.8	16.8	16.7	17.5	18.7	22.0	20.8	21.0	18.7
SSE	23.1	22.8	20.2	18.3	18.2	16.0	15.6	16.9	19.1	21.1	22.4	23.1	19.7
S	20.7	21.9	16.8	15.2	14.5	12.2	11.7	12.7	14.9	17.3	20.5	21.5	17.2
SSW	16.4	18.5	16.1	15.4	16.2	14.8	13.6	13.2	13.4	14.6	14.5	15.4	15.1
SW	10.3	11.2	11.9	12.7	14.8	13.4	12.0	11.4	10.2	9.9	9.5	8.0	12.1
WSW	8.6	10.1	10.9	12.6	14.2	12.3	10.1	9.2	9.6	9.1	7.9	5.8	11.0
W	7.0	7.3	8.7	8.9	10.0	9.8	8.6	7.9	7.4	7.0	7.2	6.4	8.2
WNW	10.6	10.3	9.9	10.6	11.5	10.8	10.4	9.6	9.0	8.8	9.2	9.7	10.0
NW	11.6	11.6	13.6	13.7	12.4	10.8	10.6	10.3	10.3	11.7	11.9	11.5	11.8
NNW	12.9	13.8	14.9	14.5	13.4	12.0	12.3	11.8	13.3	14.1	14.1	13.5	13.5
N	11.2	11.0	13.5	13.8	12.3	10.6	11.1	10.8	10.9	13.4	12.5	12.0	11.9
ALL	13.1	15.4	14.3	14.4	14.4	12.7	12.3	12.6	13.9	16.3	15.5	14.8	14.1

METEOROLOGICAL SUMMARY
SOMMAIRE METEOROLOGIQUE

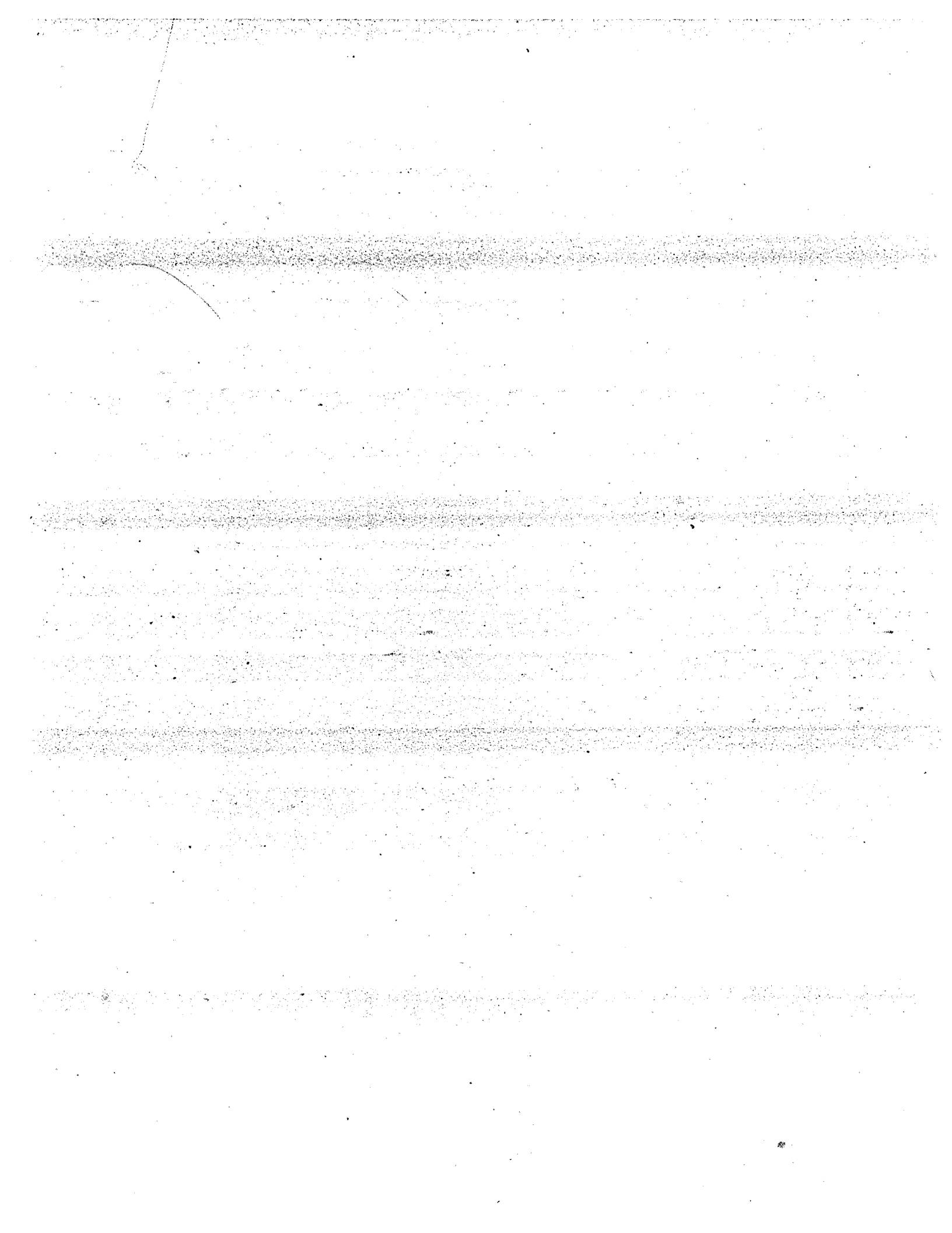
WHITEHORSE YUKON

PERIOD JAN 1953 - DEC 1978

DATE	JAN JAN	FEB FEV	MAR MAR	APR AVR	MAY MAI	JUN JUIN	JUL JUIL	AUG AOUT	SEPT SEP	OCT OCT	NOV NOV	DEC DEC	ANNUAL ANNUEL
						MAXIMUM OBSERVED HOURLY SPEED IN KILOMETRES PER HOUR							
NNE	39	19	39	32	34	35	35	35	32	29	29	23	39
NE	13	16	19	35	29	43	32	18	21	24	14	11	43
ENE	19	13	24	27	19	27	23	23	10	19	10	24	27
E	23	39	32	32	35	32	29	34	37	31	23	22	39
ESE	39	48	45	48	42	48	63	40	56	45	48	32	63
SE	72	56	64	51	61	56	48	45	58	63	68	68	72
SSE	71	68	61	55	64	48	40	48	48	60	64	72	72
S	64	55	64	45	48	40	48	40	72	58	56	58	72
SSW	48	42	51	48	37	42	39	43	45	48	61	39	61
SW	42	55	50	40	45	45	40	48	42	40	58	39	58
WSW	40	39	45	51	51	35	31	32	32	29	32	19	51
W	45	32	35	29	32	39	40	37	32	33	24	20	45
WNW	48	55	40	43	37	43	39	29	29	32	32	27	55
NW	55	51	48	53	45	35	34	32	35	51	48	40	55
NNW	48	42	56	45	43	45	32	37	39	42	55	48	56
N	45	39	56	60	40	48	48	32	56	42	60	48	60
EXT	72	68	64	60	64	56	63	48	72	63	68	72	72
						PROBABLE MAXIMUM GUST FOR MAXIMUM HOURLY SPEED							
NNE	60	34	60	51	53	54	54	54	51	47	47	39	60
NE	26	30	34	54	47	65	51	33	36	40	27	24	65
ENE	34	26	40	44	34	44	39	39	22	34	22	40	44
E	39	60	51	51	54	51	47	53	57	49	39	38	60
ESE	60	71	67	71	64	71	91	61	82	67	71	51	91
SE	102	82	92	75	88	82	71	67	84	91	97	97	102
SSE	101	97	88	80	92	71	61	71	71	87	92	102	102
S	92	80	92	67	71	61	71	61	102	84	82	84	102
SSW	71	64	75	71	57	64	60	65	67	71	88	60	88
SW	64	80	74	61	67	67	61	71	64	61	84	60	84
WSW	61	60	67	75	75	54	49	51	51	47	51	34	75
W	67	51	54	47	51	60	61	57	51	52	40	35	67
WNW	71	80	61	65	57	65	60	47	47	51	51	44	80
NW	80	75	71	78	67	54	53	51	54	75	71	61	80
NNW	71	64	82	67	65	67	51	57	60	64	80	71	82
N	67	60	82	87	61	71	71	51	82	64	87	71	87
EXT	102	97	92	87	92	82	91	71	102	91	97	102	102

TOTAL BRIGHT SUNSHINE (HOURS) 1951-80
INSOLATION EFFECTIVE TOTALE (HEURES) 1951-80

	JAN JAN	FEB FEV	MAR MARS	APR AVR	MAY MAI	JUN JUIN	JUL JUIL	AUG AOUT	SEP SEPT	OCT OCT	NOV NOV	DEC DEC	YEAR ANNEE	CODE CODE
YUKON TERRITORY **YUKON**														
FORT SELKIRK	7.5	91.2	168.2	229.7	281.8	280.0	268.0	246.8	142.9	79.7	16.4	7.7	1819.9	5
HAINES JUNCTION	19.3	78.0	161.4	220.7	282.8	275.7	275.4	235.9	139.8	91.5	24.4	1.7	1806.6	1
WATSON LAKE A	45.1	85.3	134.8	216.6	255.2	265.0	262.6	228.0	126.5	95.6	42.9	31.3	1788.9	5
WHITEHORSE A	46.0	91.0	153.1	229.6	259.2	272.8	250.2	230.7	136.5	93.4	58.3	23.0	1843.8	3
NORTHWEST TERRITORIES **TERRITOIRES DU NORD-OUEST**														
ALERT	0.0	0.0	66.5	389.5	410.1	303.8	299.0	207.2	82.8	8.5	0.0	0.0	1767.4	5
BAKER LAKE	35.8	107.1	189.6	234.5	264.3	262.4	301.1	210.6	107.4	72.3	51.0	7.1	1843.2	6
CAMBRIDGE BAY A	1.1	51.7	184.4	251.5	258.2	267.8	304.6	175.9	82.6	58.2	9.5	0.0	1599.0	5
CLYDE	0.4	40.1	161.4	248.2	251.0	260.7	259.8	191.9	85.0	47.7	4.2	0.0	1550.4	5
COPPERMINE A	4.0	76.6	162.1	215.7	225.0	308.7	318.1	190.6	70.3	46.1	12.2	0.0	1629.4	1
CORAL HARBOUR A	44.0	113.7	198.7	278.2	281.5	282.2	285.0	224.9	107.7	86.6	56.7	28.5	1987.7	1
EUREKA	0.0	0.0	118.0	355.1	520.7	405.0	341.2	240.1	101.8	8.6	0.0	0.0	2090.5	5
FORT SIMPSON A	47.8	96.1	160.3	222.0	274.0	280.6	289.2	246.1	133.7	85.3	51.4	29.3	1915.8	2
FORT SMITH A/UA	57.1	113.7	176.7	243.0	285.9	299.1	301.0	261.7	132.0	87.3	43.5	28.3	2029.3	2
FROBISHER BAY A	35.2	96.3	177.4	235.3	199.9	175.2	202.1	161.2	82.4	57.8	45.6	19.6	1488.0	2
INUVIK A/UA	7.3	65.2	174.1	248.7	295.0	375.1	339.8	216.2	109.4	50.2	17.8	0.0	1898.8	3
ISACHSEN	0.0	0.3	94.6	324.3	338.6	266.6	232.0	143.4	50.0	7.1	0.0	0.0	1456.9	5
MOULD BAY A	0.0	4.6	109.6	286.2	333.3	245.9	276.1	131.0	45.6	10.7	0.0	0.0	1442.7	5
NORMAN WELLS A	29.5	76.4	168.9	236.7	282.6	311.1	288.7	236.7	119.0	58.9	32.3	13.2	1854.0	3
RESOLUTE A	0.0	17.7	145.9	276.4	292.3	255.8	274.4	159.4	59.1	23.7	0.4	0.0	1505.1	1
SACHS HARBOUR A	0.1	42.6	165.8	264.8	284.6	330.6	335.7	189.8	79.7	38.7	4.3	0.0	1736.7	3
YELLOWKNIFE A	44.0	102.3	195.3	266.4	333.6	394.6	382.1	287.6	152.0	56.2	41.7	20.8	2276.6	5
ALBERTA **ALBERTA**														
BANFF	55.5	98.0	133.8	154.4	196.2	204.0	255.6	211.1	163.3	131.5	81.4	39.2	1724.0	5
BEAVERLODGE CDA	74.4	108.7	160.2	209.0	271.0	277.0	300.7	263.1	168.8	141.0	89.3	62.3	2125.5	1
BROOKS AHRC	88.4	116.6	158.2	205.8	269.9	287.1	341.7	304.1	201.2	173.1	111.2	76.5	2333.8	2
CALGARY INT'L A	102.0	127.9	162.2	204.9	253.6	267.0	322.2	282.3	194.7	176.0	123.9	97.7	2314.4	1
COLD LAKE A	90.8	125.2	171.8	228.2	272.1	282.7	312.6	255.3	175.4	154.8	94.3	76.4	2239.6	6
CORONATION A	119.0	133.2	183.4	231.2	290.8	310.4	337.2	286.8	207.6	178.5	128.6	83.6	2490.3	6
EDMONTON INT'L A	97.7	118.5	172.1	232.8	283.5	286.7	313.1	284.3	183.3	162.9	102.5	77.5	2314.9	3
EDMONTON MUNICIPAL A	90.0	116.3	167.5	228.3	277.6	271.7	306.4	276.8	182.2	161.8	107.2	77.9	2263.7	1
EDSON/A	83.0	116.3	153.9	204.3	244.8	254.3	281.2	245.6	162.6	150.8	93.3	65.6	2055.7	4
ELLERSLIE	91.0	121.6	165.1	227.8	286.9	285.8	317.9	280.4	175.4	159.4	97.7	71.4	2280.4	4
FAIRVIEW	68.6	108.2	160.6	225.5	270.4	253.7	280.1	256.1	165.5	135.5	81.7	54.0	2059.9	2
FORT MCMURRAY A	88.2	129.3	165.1	231.6	276.4	272.6	285.4	247.7	143.2	124.5	83.2	61.7	2108.9	6
FORT VERMILION CDA	69.8	109.9	174.6	235.0	282.1	289.9	301.4	261.5	156.4	124.2	63.4	38.7	2106.9	1
HIGH LEVEL A	54.0	125.5	175.0	246.4	283.0	304.6	294.0	255.0	149.4	142.0	70.2	37.0	2136.1	6
KANANASKIS	63.0	112.3	162.8	186.7	211.7	238.8	284.2	236.6	171.0	168.2	85.5	49.0	1969.8	6
KEG RIVER	61.5	95.9	138.6	195.9	239.9	241.0	257.2	228.6	139.5	112.2	61.1	35.2	1806.6	2
LACOMBE CDA	87.5	115.0	162.2	198.3	249.6	251.0	291.7	254.5	178.3	154.9	102.3	79.7	2125.0	1
LETHBRIDGE CDA	95.3	122.9	166.8	197.9	263.3	283.9	345.1	299.2	213.5	175.1	116.8	90.2	2370.0	1
MANYBERRIES CDA	89.3	114.3	162.2	194.4	259.1	261.3	338.9	296.9	217.0	170.5	114.9	89.7	2308.5	1
MEDICINE HAT A	93.0	122.2	162.2	200.9	270.5	278.9	347.6	298.3	199.1	173.3	112.2	86.7	2344.9	1
OLDS	86.2	118.4	156.0	191.6	238.1	239.2	287.7	259.6	184.7	160.8	106.8	80.3	2079.4	2
RANFURLY	87.7	117.8	168.5	222.9	266.9	259.3	293.0	259.2	175.0	152.6	92.9	72.6	2168.4	1
SLAVE LAKE A	83.8	113.5	167.8	233.2	281.1	274.8	292.6	245.3	162.3	148.6	99.0	57.7	2159.7	6
SUFFIELD A	98.1	126.0	179.9	209.7	277.7	286.1	350.9	305.5	207.6	185.3	121.8	88.1	2436.7	1
VAUXHALL CDA	99.2	122.4	163.2	197.2	257.0	282.0	343.7	294.9	203.8	170.0	119.0	91.9	2344.3	3



AVERAGES AND EXTREMES

STATION	LAT.	LONG.	HEIGHT (METRES ABOVE M.S.L.)	AVERAGES BASED ON 1951-80 PERIOD OF RECORD				EXTREMES BASED ON FULL PERIOD OF RECORD										
				YEARS	FROST-FREE PERIOD (DAYS)	LAST FROST (SPRING)	FIRST FROST (FALL)	YEARS	LAST FROST (SPRING)		FIRST FROST (FALL)		LONGEST			SHORTEST		
									EARLIEST	LATEST	EARLIEST	LATEST	LAST FROST (SPRING)	FIRST FROST (FALL)	NO. OF DAYS	LAST FROST (SPRING)	FIRST FROST (FALL)	NO. OF DAYS
	deg. min.	deg. min.																
YUKON TERRITORY (Cont'd)																		
Haines Junction	60 46	137 35	599	30	21	July 6	July 26	36	June 16	July 15	July 16	Aug 19	June 16	Aug 19	63	July 15	July 16	0
Johnsons Crossing	60 29	133 18	690	17	45	June 23	Aug 8	17	June 6	July 6	July 16	Aug 31	June 21	Aug 31	70	June 29	July 16	16
Keno Hill	63 56	135 12	1472	6	55	June 22	Aug 17	6	June 11	July 4	July 24	Aug 31	June 15	Aug 31	76	July 2	July 24	21
Kluane Lake	61 01	138 24	786	8	59	June 19	Aug 18	8	June 9	July 3	July 22	Aug 31	June 9	Aug 31	82	July 3	July 22	18
Komakuk Beach	69 35	140 11	14	22	28	July 2	July 31	22	June 20	July 15	July 18	Sept 1	July 1	Sept 1	61	July 14	July 18	3
Mayo A	63 37	135 52	504	29	71	June 8	Aug 19	57	May 14	July 13	July 20	Sept 11	May 25	Sept 9	106	July 13	Aug 2	19
Ogilvie River	65 22	138 18	579	6	45	June 17	Aug 2	6	May 28	July 2	July 17	Aug 22	June 19	Aug 22	63	June 19	July 18	28
Old Crow A	67 35	139 50	253	9	63	June 14	Aug 17	9	May 22	July 1	July 31	Sept 1	June 10	Sept 1	82	June 28	Aug 6	38
Quiet Lake	61 09	133 04	812	11	62	June 15	Aug 17	11	May 30	July 15	July 16	Sept 8	June 8	Sept 8	91	July 15	July 16	0
Ross River	61 59	132 27	698	13	25	July 1	July 27	13	June 9	July 14	July 16	Aug 21	July 3	Aug 21	48	July 10	July 16	5
Sheldon Lake	62 37	131 17	884	8	16	July 8	July 25	8	June 23	July 15	July 17	Aug 18	July 5	Aug 18	43	July 15	July 17	1
Shingle Point A	68 57	137 13	55	23	49	June 26	Aug 15	23	June 8	July 12	July 18	Sept 3	June 8	Sept 3	86	July 10	July 18	7
Snag A	62 22	140 24	587	16	51	June 19	Aug 10	23	May 29	July 13	July 18	Aug 22	May 29	Aug 20	82	July 10	July 31	20
Stokes Point	69 20	138 46	30	5	31	July 3	Aug 4	5	June 21	July 15	July 23	Aug 24	July 3	Aug 24	51	July 15	July 28	12
Swift River	60 00	131 11	891	13	19	July 4	July 24	13	June 22	July 15	July 16	Aug 29	June 30	Aug 29	59	July 15	July 16	0
Teslin A	60 10	132 45	705	29	60	June 19	Aug 19	35	May 28	July 14	July 16	Sept 12	May 30	Sept 3	95	June 29	July 16	16
Tuchitua	60 56	129 15	724	9	59	June 22	Aug 21	9	June 5	July 2	Aug 10	Aug 29	June 5	Aug 25	80	June 29	Aug 13	44
Watson Lake A	60 07	128 49	689	29	93	June 2	Sept 4	39	May 11	June 25	Aug 10	Sept 27	May 11	Sept 15	126	June 25	Aug 10	45
Whitehorse A	60 43	135 04	703	29	82	June 8	Aug 30	46	May 13	July 6	July 30	Sept 20	May 13	Sept 17	126	July 4	July 30	25
Whitehorse Riverdale	60 43	135 01	643	14	61	June 17	Aug 18	14	June 5	July 3	July 19	Sept 10	June 8	Sept 10	93	June 23	July 19	25
NORTHWEST TERRITORIES																		
Aklavik	68 13	135 00	11	11	78	June 13	Aug 31	32	May 26	July 11	July 22	Sept 28	June 16	Sept 26	101	July 11	Aug 12	31
Alert	82 30	62 20	62	30	4	July 14	July 19	31	July 7	July 15	July 16	Aug 3	July 15	Aug 3	18	July 15	July 16	0
Arctic Bay	73 02	85 09	11	18	12	July 9	July 22	31	June 13	July 15	July 16	Aug 20	June 26	Aug 20	54	July 15	July 16	0
Atkinson Point	69 56	131 24	3	5	36	July 6	Aug 12	5	June 29	July 14	July 20	Aug 31	June 29	Aug 31	62	July 14	July 20	5
Baker Lake	64 18	96 00	12	30	67	June 23	Aug 30	34	June 7	July 15	July 27	Sept 18	June 17	Sept 18	92	July 15	July 29	13
Bathurst Inlet	66 50	108 01	13	5	72	June 15	Aug 27	5	June 9	June 26	Aug 3	Sept 12	June 11	Sept 12	92	June 12	Aug 3	51
Bathurst Island	75 43	98 25	3	9	17	July 4	July 22	9	June 22	July 15	July 16	July 30	June 23	July 28	34	July 15	July 16	0
Brevoort Island	63 21	64 10	371	15	5	July 11	July 17	14	July 4	July 15	July 16	July 23	July 4	July 17	12	July 15	July 16	0
Broughton Island	67 33	63 47	598	22	6	July 13	July 20	22	July 3	July 15	July 16	Aug 10	July 13	Aug 10	27	July 15	July 16	0
Byron Bay	68 45	109 04	112	23	50	June 29	Aug 19	23	June 12	July 15	July 21	Sept 11	June 18	Sept 11	84	July 7	July 21	13
Cambridge Bay A	69 06	105 07	27	30	53	June 28	Aug 21	46	June 4	July 15	July 20	Sept 10	June 4	Aug 25	81	July 15	July 20	4
Cape Dorset A	64 13	76 32	46	5	37	June 29	Aug 6	5	June 22	July 12	July 17	Sept 12	June 22	Sept 12	81	July 12	July 17	5
Cape Dyer A	66 35	61 37	393	21	15	July 10	July 26	21	June 26	July 15	July 16	Aug 23	June 27	Aug 19	52	July 15	July 16	0
Cape Hooper	68 26	66 47	401	21	2	July 14	July 17	22	July 10	July 15	July 16	Aug 12	July 10	July 17	6	July 15	July 16	0
Cape Parry A	70 10	124 41	17	24	31	July 8	Aug 9	24	June 22	July 15	July 16	Sept 12	June 22	Sept 7	76	July 15	July 16	0
Cape Young	68 56	116 55	18	24	36	July 6	Aug 12	24	June 10	July 15	July 16	Sept 12	June 10	Sept 12	93	July 15	July 16	0
Chesterfield	63 20	90 43	6	30	67	June 27	Sept 3	55	June 13	July 14	July 16	Sept 26	June 13	Sept 17	95	June 30	July 16	15
Clinton Point	69 35	120 48	101	24	32	July 4	Aug 6	24	June 13	July 15	July 16	Sept 11	June 13	Sept 8	86	July 15	July 16	0
Clyde	70 28	68 37	25	30	55	July 13	July 19	36	July 4	July 15	July 16	Aug 13	July 13	Aug 13	30	July 15	July 16	0
Contwoyto Lake	65 29	110 22	451	22	47	July 2	Aug 19	22	June 13	July 15	July 17	Sept 12	June 13	Sept 8	86	July 15	July 24	8
Coppermine	67 50	115 07	9	30	59	June 24	Aug 23	49	June 8	July 13	July 23	Sept 14	June 10	Sept 10	91	July 11	Aug 4	23
Coral Harbour A	64 12	83 22	64	30	54	June 27	Aug 21	37	June 8	July 15	July 16	Sept 13	June 8	Aug 27	79	July 14	July 16	1
Dewar Lakes	68 39	71 14	518	21	19	July 11	July 31	21	June 28	July 15	July 16	Sept 5	July 4	Sept 5	62	July 15	July 16	0
Ekalugad Fiord	68 43	68 33	724	5	9	July 14	July 24	5	July 10	July 15	July 16	Aug 5	July 10	Aug 2	22	July 15	July 16	0
Ennadai Lake	61 08	100 54	325	29	78	June 18	Sept 5	30	May 30	July 15	Aug 9	Sept 19	June 11	Sept 19	99	June 15	Aug 9	24
Eureka	80 00	85 56	10	30	36	June 27	Aug 3	34	June 7	July 13	July 16	Aug 28	June 10	Aug 16	66	July 15	July 16	0
Fort Good Hope	66 16	128 38	53	23	79	June 2	Aug 21	30	May 21	July 13	July 25	Sept 12	May 27	Sept 5	100	June 12	July 27	44
Fort Good Hope 2	66 15	128 38	42	11	56	June 14	Aug 10	52	May 23	July 14	July 18	Sept 1	May 25	Sept 1	98	July 14	July 22	7
Fort Liard	60 14	123 28	213	7	115	Apr 25	Sept 18	7	May 15	May 30	Aug 24	Oct 1	May 15	Sept 30	137	May 26	Aug 24	89
Fort McPherson	67 26	134 53	30	23	78	June 8	Aug 26	66	May 23	July 14	July 18	Sept 20	May 29	Sept 10	103	July 10	July 18	7
Fort Norman	64 53	125 34	74	9	64	June 12	Aug 16	48	May 23	July 14	July 19	Sept 16	June 9	Sept 14	96	July 14	July 23	8
Fort Providence	61 20	117 40	159	19	66	June 18	Aug 24	26	May 22	July 13	July 24	Sept 29	June 4	Sept 29	116	July 1	Aug 1	30
Fort Reliance	62 43	109 10	168	30	95	June 12	Sept 16	32	May 19	July 11	Sept 1	Oct 3	May 24	Sept 24	122	July 7	Sept 8	62
Fort Resolution	61 11	113 41	164	27	89	June 6	Sept 4	56	May 19	July 13	July 23	Sept 28	May 24	Sept 26	124	June 29	July 28	28
Fort Simpson	61 52	121 21	132	13	90	June 1	Aug 31	66	May 10	July 14	July 22	Sept 26	May 28	Sept 25	119	July 14	Aug 25	41
Fort Simpson A	61 45	121 14	169	17	79	June 3	Aug 21	17	May 12	June 24	July 17	Sept 19	May 15	Sept 5	112	June 21	July 24	32
Fort Simpson CDA	61 52	121 21	131	9	82	June 4	Aug 26	9	May 15	July 8	Aug 12	Sept 6	May 15	Sept 6	113	July 8	Sept 1	54
Fort Smith A	60 01	111 57	203	30	72	June 8	Aug 20	37	May 15	July 15	July 17	Sept 15	May 23	Sept 3	102	July 9	July 17	7
Frobisher Bay	63 45	68 33	34	29	59	June 28	Aug 27	34	June 13	July 15	July 19	Sept 17	June 19	Sept 17	89	July 8	July 19	10
Gladman Point	68 40	97 48	25	20	28	July 3	Aug 1	20	June 18	July 15	July 16	Sept 3	June 18	Sept 3	76	July 15	July 16	0
Hall Beach A	68 47	81 15	8	23	39	July 3	Aug 12	23	June 15	July 15	July 17	Sept 6	June 15	Aug 29	74	July 15	July 17	1
Hat Island	68 19	100 05	36	5	15	July 10	July 26	5	July 3	July 13	July 18	Aug 5	July 11	Aug 5	24	July 12	July 18	5
Hay River A	60 50	115 47	166	30	100	June 2	Sept 11	85	May 11	July 1	July 31	Oct 4	May 30	Oct 4	126	June 30	Aug 10	40
Hay R/Paradise GDNS	60 39	116 00	213	12	89	June 5	Aug 31	12	May 15	July 8	Aug 15	Sept 12	May 27	Sept 11	106	June 18	Aug 15	57
Holman	70 44	117 47	9	16	22	July 6	July 29	25	June 16	July 15	July 16	Sept 7	July 2	Sept 1	60	July 15	July 16	0
Inuvik A	68 18	133 29	68	23	51	June 23	Aug 14	23	May 28	July 15	July 26	Sept 12	June 8	Sept 6	89	July 15	July 28	12
Isachsen	78 47	103 32	25	27	4	July 13	July 18	30	June 30	July 15	July 16	July 24	June 30	July 20	19	July 15	July 16	0
Jenny Lind Island	68 39	101 44	37	23	24	July 6	July 31	23	June 23	July 15	July 16	Aug 25	June 25	Aug 25	60	July 9	July 18	8
Lady Franklin Pt. A	68 30	113 13	21	23	38	July 5	Aug 13	22	June 12	July 15	July 16	Sept 12	June 28	Sept 11	74	July 15	July 16	0
Longstaff Bluff	68 57	75 18	162	22	28	July 5	Aug 3	22	June 22	July 15	July 16	Sept 9	June 22	Sept 9	78	July 15	July 16	0

Station	Shortest frost free period	Probability of frost-free period equal to or less than indicated period (days)							Longest frost free period
		10% (1 in 10)	25% (1 in 4)	33% (1 in 3)	50% (1 in 2)	66% (2 in 3)	75% (3 in 4)	90% (9 in 10)	
YUKON TERRITORY (Cont'd)									
Ross River	5	5	8	14	19	27	41	48	48
Shingle Point A	7	27	37	39	49	58	62	75	86
Snag A	20	29	36	41	50	57	63	77	82
Swift River	0	0	6	8	19	25	26	51	59
Teslin A	16	31	48	52	61	68	76	85	95
Tuchitua	44	44	52	54	56	61	64	80	80
Watson Lake A	45	71	80	85	92	97	100	113	126
Whitehorse A	40	60	69	77	84	90	92	109	126
Whitehorse Riverdale	25	33	47	50	64	68	70	80	93
NORTHWEST TERRITORIES									
Aklavik	31	37	58	71	79	87	92	97	101
Alert	0	0	0	0	1	3	7	12	18
Arctic Bay	0	0	4	6	9	20	24	36	54
Baker Lake	13	39	54	61	63	74	80	87	92
Brevoort Island	0	0	0	0	0	0	7	9	12
Broughton Island	0	0	0	2	5	7	9	14	27
Byron Bay A	13	16	37	43	51	60	64	77	84
Cambridge Bay A	13	30	45	46	51	60	64	76	81
Cape Dyer A	0	0	2	4	8	15	27	45	52
Cape Hooper	0	0	0	0	1	3	4	6	6
Cape Parry A	0	0	4	7	29	52	58	73	76
Cape Young A	0	8	12	13	31	46	56	71	93
Chesterfield	15	52	60	64	69	73	77	86	95
Clifton Point	0	5	11	12	26	41	48	77	86
Clyde	0	0	0	0	3	6	8	11	30
Contwoyto Lake	8	8	27	35	50	60	64	74	86
Coppermine	23	31	37	48	57	65	73	81	91
Coral Harbour A	1	11	42	44	56	62	63	69	79
Dewar Lakes	0	0	0	3	13	19	35	62	62
Ennadai Lake	24	63	68	71	76	79	90	95	99
Eureka	0	6	23	26	41	48	55	66	112
Fort Good Hope A	44	52	63	66	75	88	93	98	100
Fort Good Hope 2	12	23	43	48	63	68	69	75	98
Fort McPherson	7	47	64	70	80	85	89	95	100
Fort Norman	21	27	40	44	54	62	71	88	96
Fort Providence	30	39	57	65	71	76	85	96	116
Fort Reliance	62	71	77	88	95	103	108	115	122
Fort Resolution A	28	44	79	90	97	106	108	115	124
Fort Simpson	56	72	81	83	88	94	102	115	119
Fort Simpson A	32	33	62	70	82	94	99	110	111
Fort Smith	29	29	54	61	64	84	91	93	93
Fort Smith A	7	27	50	60	72	81	89	96	102
Frobisher Bay A	10	37	47	48	59	66	69	83	89
Gladman Point A	0	1	14	17	24	26	42	61	76
Hall Beach A	1	1	17	23	46	52	53	67	74
Hay River A	67	81	86	89	96	102	108	113	126
Hay R/Paradise GDNS	57	57	86	88	93	95	99	111	112
Holman	0	1	4	8	16	27	33	47	60
Inuvik A	12	18	37	41	50	53	76	88	89
Isachsen	0	0	0	0	1	4	7	12	19
Jenny Lind Island	7	8	11	13	23	31	32	49	60
Lady Franklin Point A	0	0	10	21	35	55	62	74	91
Lake Harbour	11	11	31	44	53	65	70	85	88
Longstaff Bluff	0	0	4	13	21	40	43	67	78
Mackar Inlet	0	0	0	1	5	10	15	28	29
Mould Bay A	0	0	1	2	4	9	14	18	22
Nicholson Peninsula	0	1	6	8	13	35	46	58	64
Norman Wells A	50	61	83	90	99	103	106	122	131
Nottingham Island	0	1	8	11	19	27	40	52	71
Padloping Island	0	0	0	0	5	8	9	52	61

PROBABILITY OF FALL FROST

Table 3
Tableau

Station	Earliest first fall frost	Probability of first temperature in fall of 0°C or lower on or before indicated dates							Latest first fall frost
		10% (1 in 10)	25% (1 in 4)	33% (1 in 3)	50% (1 in 2)	66% (2 in 3)	75% (3 in 4)	90% (9 in 10)	
YUKON TERRITORY (Cont'd)									
Ross River	July 16	July 16	July 17	July 18	July 25	July 29	Aug 1	Aug 16	Aug 21
Shingle Point A	July 18	July 25	Aug 3	Aug 8	Aug 14	Aug 25	Aug 27	Sept 3	Sept 3
Snag A	July 18	July 26	Aug 3	Aug 4	Aug 9	Aug 18	Aug 18	Aug 21	Aug 22
Swift River	July 16	July 16	July 17	July 17	July 18	July 24	July 25	Aug 12	Aug 29
Teslin A	July 16	July 22	Aug 10	Aug 15	Aug 24	Aug 27	Sept 1	Sept 8	Sept 12
Tuchitua	Aug 10	Aug 10	Aug 14	Aug 15	Aug 25	Aug 26	Aug 26	Aug 29	Aug 29
Watson Lake A	Aug 10	Aug 19	Aug 25	Aug 27	Aug 31	Sept 6	Sept 10	Sept 16	Sept 27
Whitehorse A	July 30	Aug 13	Aug 22	Aug 25	Aug 29	Sept 1	Sept 3	Sept 15	Sept 20
Whitehorse Riverdale	July 19	July 22	Aug 3	Aug 6	Aug 23	Aug 30	Aug 31	Sept 5	Sept 10
NORTHWEST TERRITORIES									
Aklavik	July 22	July 30	Aug 19	Aug 21	Sept 2	Sept 8	Sept 12	Sept 19	Sept 26
Alert	July 16	July 16	July 16	July 16	July 17	July 17	July 19	July 25	Aug 3
Arctic Bay	July 16	July 16	July 17	July 17	July 20	July 29	Aug 2	Aug 16	Aug 20
Baker Lake	July 27	Aug 5	Aug 24	Aug 29	Sept 1	Sept 4	Sept 7	Sept 9	Sept 18
Brevoort Island	July 16	July 16	July 16	July 16	July 16	July 17	July 17	July 22	July 23
Broughton Island	July 16	July 16	July 16	July 16	July 18	July 19	July 21	July 29	Aug 10
Byron Bay A	July 21	July 26	Aug 8	Aug 12	Aug 18	Aug 30	Aug 31	Sept 5	Sept 11
Cambridge Bay A	July 22	Aug 3	Aug 11	Aug 15	Aug 19	Aug 26	Aug 29	Sept 6	Sept 10
Cape Dyer A	July 16	July 16	July 17	July 17	July 21	July 26	Aug 3	Aug 18	Aug 23
Cape Hooper	July 16	July 16	July 16	July 16	July 16	July 18	July 18	July 19	July 22
Cape Parry A	July 16	July 16	July 16	July 19	Aug 5	Aug 30	Sept 4	Sept 8	Sept 12
Cape Young A	July 17	July 18	July 20	July 23	Aug 11	Aug 28	Sept 2	Sept 7	Sept 12
Chesterfield	July 17	Aug 22	Aug 31	Sept 3	Sept 6	Sept 9	Sept 12	Sept 15	Sept 26
Clifton Point	July 16	July 17	July 18	July 20	July 28	Aug 15	Aug 28	Sept 8	Sept 11
Clyde	July 16	July 16	July 16	July 16	July 17	July 18	July 19	July 21	Aug 13
Contwoyto Lake	July 17	July 24	Aug 9	Aug 12	Aug 19	Sept 1	Sept 3	Sept 7	Sept 12
Coppermine	July 23	Aug 2	Aug 9	Aug 13	Aug 22	Aug 30	Sept 2	Sept 8	Sept 14
Coral Harbour A	July 17	July 20	Aug 11	Aug 18	Aug 22	Aug 26	Aug 28	Sept 1	Sept 13
Dewar Lakes	July 16	July 16	July 16	July 17	July 24	Aug 3	Aug 13	Sept 3	Sept 5
Ennadai Lake	Aug 9	Aug 17	Sept 1	Sept 3	Sept 7	Sept 9	Sept 10	Sept 14	Sept 19
Eureka	July 16	July 17	July 19	July 22	Aug 8	Aug 11	Aug 16	Aug 21	Aug 28
Fort Good Hope A	July 25	July 27	Aug 6	Aug 7	Aug 18	Aug 29	Sept 1	Sept 7	Sept 12
Fort Good Hope 2	July 25	July 27	Aug 2	Aug 4	Aug 6	Aug 14	Aug 17	Aug 22	Sept 1
Fort McPherson	July 18	Aug 7	Aug 17	Aug 20	Aug 28	Aug 31	Sept 2	Sept 7	Sept 20
Fort Norman	July 22	July 24	July 28	July 31	Aug 7	Aug 21	Aug 24	Sept 14	Sept 16
Fort Providence	July 24	July 31	Aug 16	Aug 19	Aug 25	Sept 2	Sept 4	Sept 20	Sept 29
Fort Reliance	Sept 1	Sept 1	Sept 12	Sept 13	Sept 16	Sept 19	Sept 22	Sept 25	Oct 3
Fort Resolution A	July 23	Aug 5	Aug 27	Sept 3	Sept 11	Sept 16	Sept 20	Sept 23	Sept 28
Fort Simpson	Aug 9	Aug 15	Aug 23	Aug 25	Sept 1	Sept 3	Sept 7	Sept 16	Sept 25
Fort Simpson A	July 17	July 23	Aug 10	Aug 13	Aug 22	Aug 31	Sept 3	Sept 8	Sept 19
Fort Smith	Aug 5	Aug 5	Aug 12	Aug 14	Aug 24	Aug 26	Sept 3	Sept 17	Sept 23
Fort Smith A	July 17	July 28	Aug 13	Aug 16	Aug 20	Aug 25	Aug 27	Sept 5	Sept 15
Frobisher Bay A	July 19	July 26	Aug 20	Aug 23	Aug 29	Sept 2	Sept 7	Sept 10	Sept 17
Gladman Point A	July 16	July 16	July 17	July 27	July 29	Aug 6	Aug 9	Aug 24	Sept 3
Hall Beach A	July 17	July 17	July 21	July 25	Aug 20	Aug 26	Aug 27	Sept 3	Sept 6
Hay River A	Aug 18	Aug 25	Sept 5	Sept 6	Sept 10	Sept 16	Sept 17	Sept 24	Oct 4
Hay R/Paradise GDNS	Aug 15	Aug 15	Aug 19	Aug 27	Aug 31	Sept 9	Sept 10	Sept 12	Sept 12
Holman	July 16	July 16	July 18	July 21	July 22	July 29	Aug 7	Aug 25	Sept 7
Inuvik A	July 26	July 27	Aug 2	Aug 5	Aug 10	Aug 23	Aug 26	Sept 5	Sept 12
Isachsen	July 16	July 16	July 16	July 16	July 17	July 17	July 19	July 23	July 24
Jenny Lind Island	July 16	July 18	July 22	July 27	July 30	Aug 1	Aug 7	Aug 20	Aug 25
Lady Franklin Point A	July 16	July 16	July 18	July 22	Aug 19	Sept 1	Sept 3	Sept 11	Sept 12
Lake Harbour	July 16	July 16	Aug 6	Aug 17	Aug 28	Sept 2	Sept 10	Sept 16	Sept 16
Longstaff Bluff	July 16	July 16	July 17	July 19	July 28	Aug 13	Aug 15	Sept 4	Sept 9
Mackar Inlet	July 16	July 16	July 17	July 17	July 18	July 22	July 27	July 31	Aug 5
Mould Bay A	July 16	July 16	July 16	July 16	July 18	July 19	July 21	July 26	July 29
Nicholson Peninsula	July 16	July 16	July 17	July 20	July 23	Aug 5	Aug 22	Aug 31	Sept 7
Norman Wells A	July 26	Aug 7	Aug 21	Aug 28	Sept 3	Sept 7	Sept 8	Sept 21	Sept 30
Nottingham Island	July 16	July 16	July 17	July 20	July 27	Aug 3	Aug 18	Aug 29	Sept 6
Padloping Island	July 16	July 16	July 16	July 16	July 17	July 19	July 21	Sept 3	Sept 11

PROBABILITY OF SPRING FROST

Tableau

Station	Earliest last spring frost	Probability of last temperature in spring of 0°C or lower on or after indicated dates							Latest last spring frost
		10% (1 in 10)	25% (1 in 4)	33% (1 in 3)	50% (1 in 2)	66% (2 in 3)	75% (3 in 4)	90% (9 in 10)	
YUKON TERRITORY (Cont'd)									
Ross River	June 9	July 14	July 11	July 9	July 3	June 27	June 20	June 9	July 14
Shingle Point A	June 8	July 10	June 30	June 29	June 27	June 23	June 17	June 14	July 12
Snag A	May 29	July 7	July 2	June 28	June 19	June 11	June 3	May 29	July 13
Swift River	June 22	July 14	July 10	July 8	July 4	July 1	June 29	June 22	July 15
Teslin A	May 28	July 4	June 29	June 25	June 17	June 12	June 10	June 4	July 14
Tuchitua	June 6	July 2	June 29	June 25	June 22	June 20	June 19	June 6	July 2
Watson Lake A	May 11	June 15	June 10	June 6	May '31	May 26	May 25	May 18	June 25
Whitehorse A	May 13	June 24	June 19	June 14	June 5	June 2	May 30	May 21	July 2
Whitehorse Riverdale	June 5	June 24	June 21	June 21	June 18	June 12	June 12	June 7	July 3
NORTHWEST TERRITORIES									
Aklavik	May 26	June 30	June 19	June 16	June 12	June 8	June 7	June 3	July 11
Alert	July 7	July 15	July 15	July 15	July 15	July 14	July 13	July 11	July 15
Arctic Bay	June 13	July 15	July 14	July 13	July 10	July 8	July 6	July 26	July 15
Baker Lake	June 7	July 6	June 29	June 27	June 25	June 19	June 18	June 10	July 15
Brevoort Island	July 4	July 15	July 15	July 15	July 15	July 13	July 12	June 23	July 15
Broughton Island	July 3	July 15	July 15	July 15	July 15	July 13	July 13	July 5	July 15
Byron Bay A	June 12	July 15	July 7	July 3	June 28	June 23	June 21	June 15	July 15
Cambridge Bay A	June 4	July 11	July 5	June 29	June 26	June 23	June 22	June 16	July 15
Cape Dyer A	June 26	July 15	July 15	July 15	July 13	July 7	July 7	June 27	July 15
Cape Hooper	July 10	July 15	July 15	July 15	July 15	July 14	July 14	July 11	July 15
Cape Parry A	June 22	July 15	July 14	July 12	July 9	July 5	July 4	June 29	July 15
Cape Young A	June 10	July 15	July 13	July 12	July 9	July 5	July 2	June 19	July 15
Chesterfield	June 13	July 9	July 2	July 1	June 27	June 25	June 24	June 18	July 14
Clifton Point	June 13	July 14	July 12	July 11	July 6	June 29	June 28	June 16	July 15
Clyde	July 4	July 15	July 15	July 15	July 15	July 13	July 12	July 7	July 15
Contwoyto Lake	June 13	July 15	July 12	July 8	July 2	June 26	June 25	June 14	July 15
Coppermine	June 8	July 7	June 30	June 28	June 26	June 21	June 19	June 14	July 13
Coral Harbour A	June 8	July 11	July 4	July 1	June 27	June 23	June 20	June 17	July 15
Dewar Lakes	June 28	July 16	July 15	July 15	July 14	July 8	July 6	July 1	July 15
Ennadai Lake	May 30	July 7	June 25	June 24	June 18	June 11	June 10	June 6	July 15
Eureka	June 7	July 15	July 3	June 29	June 26	June 20	June 16	June 10	July 15
Fort Good Hope A	May 21	June 12	June 7	June 4	May 31	May 27	May 27	May 23	July 13
Fort Good Hope 2	May 23	July 11	June 29	June 17	June 9	May 31	May 31	May 25	July 13
Fort McPherson	May 23	June 27	June 13	June 9	June 6	June 3	June 2	May 28	July 12
Fort Norman	May 23	July 12	June 21	June 18	June 15	June 9	June 6	May 28	July 14
Fort Providence	May 22	July 6	June 27	June 20	June 15	June 10	June 5	May 29	July 13
Fort Reliance	May 19	June 29	June 21	June 20	June 16	June 7	June 2	May 24	July 11
Fort Resolution A	May 19	June 19	June 12	June 9	June 6	June 2	May 28	May 24	July 9
Fort Simpson	May 10	June 23	June 9	June 5	June 1	May 23	May 22	May 16	June 28
Fort Simpson A	May 12	June 23	June 13	June 10	May 31	May 27	May 24	May 15	June 24
Fort Smith	May 23	July 8	June 23	June 22	June 14	June 6	June 5	May 25	July 9
Fort Smith A	May 15	July 3	June 21	June 18	June 10	June 1	May 29	May 20	July 15
Frobisher Bay A	June 13	July 12	July 7	July 4	July 1	June 21	June 19	June 13	July 15
Gladman Point A	June 18	July 15	July 15	July 10	July 3	June 28	June 24	June 19	July 15
Hall Beach A	June 15	July 15	July 9	July 7	July 3	June 29	June 27	June 21	July 15
Hay River A	May 11	June 17	June 11	June 9	June 6	June 4	May 30	May 24	June 27
Hay R/Paradise GDNS	May 15	June 22	June 18	June 11	June 4	May 26	May 24	May 18	July 8
Holman	June 16	July 15	July 15	July 13	July 10	July 7	July 2	June 26	July 15
Inuvik A	May 28	July 15	July 4	July 1	June 20	June 14	June 13	June 6	July 15
Isachsen	June 30	July 15	July 15	July 15	July 15	July 13	July 11	July 7	July 15
Jenny Lind Island	June 23	July 15	July 13	July 12	July 6	July 3	July 1	June 25	July 15
Lady Franklin Point A	June 12	July 15	July 14	July 13	July 5	July 1	June 28	June 16	July 15
Lake Harbour	June 17	July 10	July 6	July 2	June 30	June 26	June 24	June 17	July 10
Longstaff Bluff	June 22	July 15	July 14	July 11	July 4	June 29	June 26	June 25	July 15
Mackar Inlet	July 1	July 16	July 15	July 15	July 14	July 11	July 10	July 1	July 15
Mould Bay A	July 1	July 15	July 15	July 15	July 14	July 12	July 9	July 2	July 15
Nicholson Peninsula	June 21	July 15	July 13	July 12	July 10	July 5	July 3	June 28	July 15
Norman Wells A	May 14	June 12	June 2	May 31	May 27	May 22	May 20	May 16	June 28
Nottingham Island	June 25	July 15	July 13	July 12	July 8	July 4	July 4	June 29	July 15
Padloping Island	July 7	July 15	July 15	July 15	July 15	July 11	July 10	July 7	July 15

SNOW COVER

STATION AND PROVINCE		OCCURRENCE OF SNOW COVER OF 1 INCH OR MORE			DEPTH OF SNOW COVER (INCHES)									
		DATE OF FIRST SNOW COVER	DAYS WITH SNOW COVER	DATE OF LAST SNOW COVER	SEPT. 30	OCT. 31	NOV. 30	DEC. 31	JAN. 31	FEB. 28	MAR. 31	APR. 30	MAY. 31	WINTER MAXIMUM
VICTORIA GONZALES HTS.	48° 25'N 123° 19'W 228 Ft.													
Earliest or Least		Nov. 12	0		0	0	0	0	0	0	0	0	0	0
Latest or Greatest			32	Mar. 25	0	0	0	0	8	0	0	0	0	13
Median (Middle Value)		Jan. 1	5	Feb. 22	0	0	0	0	0	0	0	0	0	3
Arithmetic Mean					0	0	0	0		0	0	0	0	
VICTORIA INT. A	48° 39'N 123° 26'W 53 Ft.													
Earliest or Least		Nov. 12			0	0	0	0	0	0	0	0	0	0
Latest or Greatest			32	Mar. 12	0	0	0	2	7	0	0	0	0	9
Median (Middle Value)		Jan. 17	8	Feb. 4	0	0	0	0	0	0	0	0	0	4
Arithmetic Mean					0	0	0			0	0	0	0	
YUKON TERRITORY														
AISHIHIK A	61° 39'N 137° 29'W 3170 Ft.													
Earliest or Least		Sept. 18	160	Apr. 6	0	0	0	2	4	6	1	0	0	8
Latest or Greatest		Nov. 5	216	May 17	3	4	9	12	15	21	18	6	0	21
Median (Middle Value)		Oct. 3	180	May 5	0	0	5	7	10	10	11	0	0	13
Arithmetic Mean		Oct. 5	183	May 3				7	10	10	10		0	13
DAWSON	64° 04'N 139° 26'W 1062 Ft.													
Earliest or Least		Sept. 15	156	Apr. 8	0	0	1	8	10	12	5	0	0	14
Latest or Greatest		Nov. 16	219	May 16	0	16	23	32	44	43	44	20	0	47
Median (Middle Value)		Oct. 16	187	Apr. 28	0	3	12	18	24	24	20	0	0	30
Arithmetic Mean		Oct. 16	187	Apr. 27	0		11	18	23	24	23		0	27
MAYO LANDING	63° 36'N 135° 53'W 1625 Ft.													
Earliest or Least		Sept. 22	153	Apr. 14	0	0	2	3	4	10	2	0	0	10
Latest or Greatest		Nov. 10	217	May 7	0	11	20	28	30	39	36	5	0	39
Median (Middle Value)		Oct. 16	181	Apr. 25	0	2	8	16	23	27	17	0	0	25
Arithmetic Mean		Oct. 16	183	Apr. 26	0		10	15	19	21	16		0	25
SNAG A	62° 22'N 140° 24'W 1925 Ft.													
Earliest or Least		Sept. 18	175	Apr. 18	0	0	2	6	6	7	5	0	0	11
Latest or Greatest		Oct. 31	220	May 19	3	7	14	18	42	42	26	13	4	44
Median (Middle Value)		Sept. 29	204	May 4	0	4	5	13	17	20	16	3	0	21
Arithmetic Mean		Oct. 4	201	May 3			8	12	17	19	16			22
TESLIN A	60° 10'N 132° 45'W 2300 Ft.													
Earliest or Least		Sept. 29	143	Apr. 15	0	0	0	4	8	9	4	0	0	13
Latest or Greatest		Nov. 25	212	May 19	4	9	17	15	32	27	28	13	0	33
Median (Middle Value)		Oct. 14	187	May 2	0	0	7	12	17	18	14	3	0	21
Arithmetic Mean		Oct. 19	183	May 2				12	16	18	13		0	21
WATSON LAKE A	60° 07'N 128° 49'W 2248 Ft.													
Earliest or Least		Sept. 22	149	Apr. 20	0	0	2	9	10	10	12	0	0	16
Latest or Greatest		Nov. 29	215	May 14	0	8	21	26	37	39	36	11	0	40
Median (Middle Value)		Oct. 22	189	May 3	0		10	20	27	31	20	4	0	35
Arithmetic Mean		Oct. 20	188	May 5	0		10	18	26	30	20		0	32
WHITEHORSE A	60° 43'N 135° 04'W 2289 Ft.													
Earliest or Least		Sept. 28	127	Apr. 7	0	0	0	1	3	2	0	0	0	5
Latest or Greatest		Nov. 30	194	May 9	3	4	14	14	16	22	15	16	0	22
Median (Middle Value)		Oct. 28	167	Apr. 22	0	0	4	8	10	11	5	0	0	14
Arithmetic Mean		Oct. 24	165	Apr. 22				7	10	10			0	14
NORTHWEST TERRITORIES														
AKLAVIK	68° 14'N 135° 00'W 30 Ft.													
Earliest or Least		Sept. 2	206	May 13	0	0	3	4	5	5	9	8	0	11
Latest or Greatest		Nov. 1	244	Jun. 23	6	15	24	26	28	30	37	34	0	38
Median (Middle Value)		Sept. 29	234	May 21	0	7	11	12	16	17	16	15	0	21
Arithmetic Mean		Oct. 1	229	May 21			11	13	16	17	20	16	0	21

APPENDIX IV

SAMPLE OPERATING STATEMENT

(Note: The complete set of operating statements are too bulky for inclusion in this report. They are, however, available upon request.)

12-Dec-88

YUKON NURSERY PROPOSAL -BASED ON 5.0MM SEEDLINGS in 313B

CASH FLOW (WITH 10% CONTINGENCY AND FORGIVABLE GRANT)

Jan1,1989 to Dec31,1989

	YEAR 1												YEAR1
	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
CASH IN													
20%EQUITY BY OWNER	218,000												218,000
40%FORGIVABLE GRANT									436,000				436,000
40%10 YEAR LOAN	436,000												436,000
Crop1							323,750		185,000				508,750
Crop2													0
Crop3													0
Crop4													0
Crop5													0
Crop6													0
TOTAL CASH IN	654,000	0	0	0	0	0	323,750	0	621,000	0	0	0	1,598,750
COST OF SALES													
Supervision	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	24,000
Labour													0
Filling					7,000								7,000
Seeding					17,500								17,500
Thinning						37,000							37,000
Spacing & Moving													0
Weeding								8,000					8,000
Irrigation & Fert													0
Grading & Packing													0
Blockwashing													0
Peat,chem,grit,etc					25,000								25,000
Fertilizer-sow					3,125								3,125
Fertilizer-soluble						2,500	2,500	2,500	2,500	2,500			12,500
Seed					5,000								5,000
Boxes,liners,wrap													0
Propane heating						37,500	17,500	2,500	1,000	1,000	2,500	5,000	67,000
Hydro					1000	2000	2000	1000	400	400	1000	1000	8,800
Poly					42,500								42,500
Styro Blocks 313B					170,000								170,000
Mtce & Rep Labour													0
Mtce & Rep Supplies					1,250			1,500			2,250		5,000
TOTAL COST OF SALES	2,000	2,000	2,000	2,000	274,375	81,000	24,000	17,500	5,900	5,900	7,750	8,000	432,425
OVERHEAD & ADMINISTRATION													
Salaries-Owner	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	48,000
Accounting and Legal		1,000		1,000		1,000			1,000			1,000	5,000
Insurance		7,000											7,000
Communications	300	300	300	300	300	300	300	300	300	300	300	300	3,600
Office Supplies	50	50	50	50	50	50	50	50	50	50	50	50	600
Property Taxes	200						1800						2,000
Travel & Marketing				100	100	100	100	100	100	100	200	100	1,000
Finance Working Capital		0	0	0	0	8,199	9,369	6,613	7,754	1,260	1,462	1,689	36,353
Finance L/T Debt		4,254	4,236	4,217	4,198	4,178	4,158	4,139	4,119	4,099	4,079	4,058	45,735
Employee Training							1000						1,000
Misc	150	150	150	150	150	150	150	150	150	150	150	150	1,800
Contingency	0	0	0	0	0	0	32375	0	18500	0	0	0	50,875

	4,700	16,754	8,736	9,817	8,798	17,977	53,302	15,358	35,973	9,359	10,241	11,347	202,963
CAPITAL													
Land	20,000												20,000
Land Clearing				75,000									75,000
Machinery & Equip			15,000	120,500	401,300	3,000		66,000					605,800
Buildings & Greenhouses		30,000	30,000	130,000	180,000								370,000
Automotive	15,000			26,800									41,800
Misc Equipment													0
TOTAL CAPITAL	35,000	30,000	45,000	352,300	581,300	3,000	0	66,000	0	0	0	0	1,112,600
LOAN PRINCIPAL		1,929	1,947	1,966	1,985	2,005	2,025	2,044	2,064	2,084	2,104	2,125	22,278
TOTAL CASH OUT	41,700	50,683	57,683	366,083	866,458	103,982	79,327	100,902	43,937	17,943	20,095	21,472	1,770,266
NET CASH FLOW	612,300	(50,683)	(57,683)	(366,083)	(866,458)	(103,982)	244,423	(100,902)	577,063	(17,943)	(20,095)	(21,472)	(171,516)
OPENING BANK BAL	0	612,300	561,617	503,934	137,851	(728,607)	(832,589)	(588,167)	(689,069)	(112,006)	(129,950)	(150,045)	0
NET CASH FLOW	612,300	(50,683)	(57,683)	(366,083)	(866,458)	(103,982)	244,423	(100,902)	577,063	(17,943)	(20,095)	(21,472)	(171,516)
CLOSING BANK BALANCE	612,300	561,617	503,934	137,851	(728,607)	(832,589)	(588,167)	(689,069)	(112,006)	(129,950)	(150,045)	(171,516)	(171,516)
TO CONVERT TO OPERATING BASIS													
NET CASH FLOW	612,300	(50,683)	(57,683)	(366,083)	(866,458)	(103,982)	244,423	(100,902)	577,063	(17,943)	(20,095)	(21,472)	(171,516)
ADD :CAPITAL	35,000	30,000	45,000	352,300	581,300	3,000	0	66,000	0	0	0	0	1,112,600
:STYRO BLOCKS	0	0	0	0	170,000	0	0	0	0	0	0	0	170,000
:LOAN PRINCIPAL	0	1,929	1,947	1,966	1,985	2,005	2,025	2,044	2,064	2,084	2,104	2,125	22,278
LESS: STYRO AMORT						4,720	4,720	4,720	4,720	4,720	4,720	4,720	33,040
DEPRECIATION							13,625	13,625	13,625	13,625	13,625	13,625	81,750
FINANCING CAPITAL	554000	0	0	0	0	0	0	0	436000	0	0	0	1,090,000
	(6,700)	(18,754)	(10,736)	(11,817)	(113,173)	(103,697)	228,103	(51,203)	124,782	(34,204)	(36,336)	(37,692)	(71,428)
													(71,428)

12-Dec-88

YUKON NURSERY PROPOSAL -BASED ON 5.0MM SEEDLINGS in 313B
CASH FLOW (WITH 10% CONTINGENCY AND FORGIVABLE GRANT)
Jan1,1990 to Dec31,1990

	1990 JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR2 TOTAL
CASH IN													
20%EQUITY BY OWNER													0
40%FORGIVABLE GRANT													0
40%10 YEAR LOAN													0
Crop1					138,750				277,500				416,250
Crop2							340,000		190,000				530,000
Crop3													0
Crop4													0
Crop5													0
Crop6													0
TOTAL CASH IN	0	0	0	0	138,750	0	340,000	0	467,500	0	0	0	946,250
COST OF SALES													
Supervision	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	25,200
Labour													
Filling	0	0	0	0	7350	0	0	0	0	0	0	0	7,350
Seeding	0	0	0	0	18375	0	0	0	0	0	0	0	18,375
Thinning	0	0	0	0	0	38850	0	0	0	0	0	0	38,850
Spacing & Moving	0	0	0	0	735	0	0	0	0	0	0	0	735
Weeding	0	0	0	840	840	0	0	8400	0	0	0	0	10,080
Irrigation & Fert	0	0	0	0	0	0	0	0	0	0	0	0	0
Grading & Packing	0	0	0	0	0	0	0	16800	0	0	0	0	16,800
Blockwashing	0	0	0	0	0	0	0	0	1470	0	0	0	1,470
Peat,chem,grit,etc	0	0	0	0	26,250	0	0	0	0	0	0	0	26,250
Fertilizer-sow	0	0	0	0	3,281	0	0	0	0	0	0	0	3,281
Fertilizer-soluble	0	0	0	0	0	2,625	2,625	2,625	2,625	2,625	0	0	13,125
Seed	0	0	0	0	5,250	0	0	0	0	0	0	0	5,250
Boxes,liners,wrap	0	0	0	0	0	0	0	36,750	0	0	0	0	36,750
Propane heating	7,500	7500	5000	2500	1000	37500	17500	2500	500	1000	2500	5000	90,000
Hydro	1,000	1,000	1,000	1,000	400	2,000	2,000	1,000	400	400	1,000	1,000	12,200
Poly	0	0	0	0	44,625	0	0	0	0	0	0	0	44,625
Styro Blocks 313B					178,500								178,500
Mtce & Rep Labour													0
Mtce & Rep Supplies	0	0	0	0	1,313	0	0	1,575	0	0	2,363	0	5,250
TOTAL COST OF SALES	10,600	10,600	8,100	6,440	230,019	83,075	24,225	71,750	7,095	6,125	7,963	8,100	534,091
OVERHEAD & ADMINISTRATION													
Salaries-Owner	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	50,400
Accounting and Legal	0	1,050	0	1,050	0	1,050	0	0	1,050	0	0	1,050	5,250
Insurance	0	7,350	0	0	0	0	0	0	0	0	0	0	7,350
Communications	315	315	315	315	315	315	315	315	315	315	315	315	3,780
Office Supplies	53	53	53	53	53	53	53	53	53	53	53	53	630
Property Taxes	210	0	0	0	0	0	1,890	0	0	0	0	0	2,100
Travel & Marketing	0	0	0	105	105	105	105	105	105	105	210	105	1,050
Finance Working Capital	1,930	2,196	2,558	2,800	3,040	5,825	6,961	4,138	5,116	654	854	1,078	37,150
Finance L/T Debt	4,037	4,017	3,995	3,975	3,952	3,931	3,909	3,887	3,865	3,841	3,819	3,795	47,023
Employee Training	0	0	0	0	0	0	1,050	0	0	0	0	0	1,050
Misc	158	158	158	158	158	158	158	158	158	158	158	158	1,899
Contingency	0	0	0	0	13375	0	34000	0	46750	0	0	0	94,625

12-Dec-88

	10,902	19,338	11,278	12,655	25,697	15,636	52,640	12,855	61,611	9,325	9,608	10,753	252,298
CAPITAL													
Land													0
Land Clearing													0
Machinery & Equip					68,250		10,000	0					78,250
Buildings & Greenhouses													0
Automotive													0
Misc Equipment													0
TOTAL CAPITAL	0	0	0	0	68,250	0	10,000	0	0	0	0	0	78,250
LOAN PRINCIPAL	2,146	2,166	2,188	2,208	2,231	2,252	2,274	2,296	2,318	2,342	2,364	2,388	27,173
TOTAL CASH OUT	23,648	32,104	21,566	21,303	386,197	100,963	89,139	86,901	71,024	17,792	19,935	21,241	891,812
NET CASH FLOW	(23,648)	(32,104)	(21,566)	(21,303)	(247,447)	(100,963)	250,861	(86,901)	396,476	(17,792)	(19,935)	(21,241)	54,438
OPENING BANK BAL	(171,516)	(195,165)	(227,269)	(248,834)	(270,138)	(517,584)	(618,547)	(367,686)	(454,586)	(58,110)	(75,902)	(95,837)	(171,516)
NET CASH FLOW	(23,648)	(32,104)	(21,566)	(21,303)	(247,447)	(100,963)	250,861	(86,901)	396,476	(17,792)	(19,935)	(21,241)	54,438
CLOSING BANK BALANCE	(195,165)	(227,269)	(248,834)	(270,138)	(517,584)	(618,547)	(367,686)	(454,586)	(58,110)	(75,902)	(95,837)	(117,078)	(117,078)
TO CONVERT TO OPERATING BASIS													
NET CASH FLOW	(23,648)	(32,104)	(21,566)	(21,303)	(247,447)	(100,963)	250,861	(86,901)	396,476	(17,792)	(19,935)	(21,241)	54,438
ADD :CAPITAL	0	0	0	0	68,250	0	10,000	0	0	0	0	0	78,250
:STYRO BLOCKS	0	0	0	0	178,500	0	0	0	0	0	0	0	178,500
:LOAN PRINCIPAL	2,146	2,166	2,188	2,208	2,231	2,252	2,274	2,296	2,318	2,342	2,364	2,388	27,173
LESS: STYRO AMORT	7,615	7,615	7,615	7,615	7,615	7,615	7,615	7,615	7,615	7,615	7,615	7,615	91,380
DEPRECIATION	12,992	12,992	12,992	12,992	12,992	12,992	12,992	12,992	12,992	12,992	12,992	12,992	155,904
FINANCING CAPITAL													0
	(42,109)	(50,545)	(39,985)	(39,702)	(19,073)	(119,318)	242,528	(105,212)	378,187	(36,057)	(38,178)	(39,460)	91,077
													91,077

12-Dec-88

YUKON NURSERY PROPOSAL -BASED ON 5.0MM SEEDLINGS in 313B
CASH FLOW (WITH 10% CONTINGENCY AND FORGIVABLE GRANT)
JAN 1,1991 to DEC31,1991

	1991 JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR3 TOTAL
CASH IN													
20%EQUITY BY OWNER													0
40%FORGIVABLE GRANT													0
40%10 YEAR LOAN													0
Crop1													0
Crop2					145,000				295,000				440,000
Crop3							357,000		199,500				556,500
Crop4													0
Crop5													0
Crop6													0
TOTAL CASH IN	0	0	0	0	145,000	0	357,000	0	494,500	0	0	0	996,500
COST OF SALES													
Supervision	2,205	2,205	2,205	2,205	2,205	2,205	2,205	2,205	2,205	2,205	2,205	2,205	26,460
Labour													
Filling	0	0	0	0	7,718	0	0	0	0	0	0	0	7,718
Seeding	0	0	0	0	19,294	0	0	0	0	0	0	0	19,294
Thinning	0	0	0	0	0	40,793	0	0	0	0	0	0	40,793
Spacing & Moving	0	0	0	0	772	0	0	0	0	0	0	0	772
Weeding	0	0	0	882	882	0	0	8,820	0	0	0	0	10,584
Irrigation & Fert	0	0	0	0	0	0	0	0	0	0	0	0	0
Grading & Packing	0	0	0	0	0	0	0	17,640	0	0	0	0	17,640
Blockwashing	0	0	0	0	0	0	0	0	1,544	0	0	0	1,544
Peat,chem,grit,etc	0	0	0	0	27,563	0	0	0	0	0	0	0	27,563
Fertilizer-sow	0	0	0	0	3,445	0	0	0	0	0	0	0	3,445
Fertilizer-soluble	0	0	0	0	0	2,756	2,756	2,756	2,756	2,756	0	0	13,781
Seed	0	0	0	0	5,513	0	0	0	0	0	0	0	5,513
Boxes,liners,wrap	0	0	0	0	0	0	0	38,588	0	0	0	0	38,588
Propane heating	7,875	7,875	5,250	2,625	1,050	39,375	18,375	2,625	525	1,050	2,625	5,250	94,500
Hydro	1,050	1,050	1,050	1,050	420	2,100	2,100	1,050	420	420	1,050	1,050	12,810
Poly	0	0	0	0	46,856	0	0	0	0	0	0	0	46,856
Styro Blocks 313B													0
Mtce & Rep Labour	0	0	0	0	0	0	0	0	0	0	0	0	0
Mtce & Rep Supplies	0	0	0	0	1,378	0	0	1,654	0	0	2,481	0	5,513
TOTAL COST OF SALES	11,130	11,130	8,505	6,762	117,095	87,229	25,436	75,338	7,450	6,431	8,361	8,505	373,371
OVERHEAD & ADMINISTRATION													
Salaries-Owner	4,410	4,410	4,410	4,410	4,410	4,410	4,410	4,410	4,410	4,410	4,410	4,410	52,920
Accounting and Legal	0	1,103	0	1,103	0	1,103	0	0	1,103	0	0	1,103	5,513
Insurance	0	7,718	0	0	0	0	0	0	0	0	0	0	7,718
Communications	331	331	331	331	331	331	331	331	331	331	331	331	3,969
Office Supplies	55	55	55	55	55	55	55	55	55	55	55	55	662
Property Taxes	221	0	0	0	0	0	1,985	0	0	0	0	0	2,205
Travel & Marketing	0	0	0	110	110	110	110	110	110	110	221	110	1,103
Finance Working Capital	1,318	1,586	1,953	2,196	2,436	2,439	4,150	1,029	2,015	0	0	0	19,122
Finance L/T Debt	3,772	3,748	3,725	3,701	3,677	3,652	3,627	3,602	3,578	3,552	3,526	3,501	43,661
Employee Training	0	0	0	0	0	0	1,103	0	0	0	0	0	1,103
Misc	165	165	165	165	165	165	165	165	165	165	165	165	1,985
Contingency	0	0	0	0	14500	0	35700	0	49450	0	0	0	99,650

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	10,271	19,115	10,640	12,071	25,685	12,265	51,636	9,702	61,217	8,624	8,708	9,675	239,608
CAPITAL													
Land													0
Land Clearing													0
Machinery & Equip													0
Buildings & Greenhouses													0
Automotive													0
Misc Equipment						50,000							50,000
TOTAL CAPITAL	0	0	0	0	0	50,000	0	0	0	0	0	0	50,000
LOAN PRINCIPAL	2,411	2,435	2,458	2,482	2,506	2,531	2,556	2,581	2,605	2,631	2,657	2,682	30,535
TOTAL CASH OUT	23,812	32,680	21,603	21,315	145,285	152,025	79,628	87,621	71,272	17,686	19,725	20,862	693,514
NET CASH FLOW	(23,812)	(32,680)	(21,603)	(21,315)	(285)	(152,025)	277,372	(87,621)	423,228	(17,686)	(19,725)	(20,862)	302,986
OPENING BANK BAL	(117,078)	(140,890)	(173,570)	(195,173)	(216,488)	(216,774)	(368,799)	(91,427)	(179,048)	244,181	226,495	206,770	(117,078)
NET CASH FLOW	(23,812)	(32,680)	(21,603)	(21,315)	(285)	(152,025)	277,372	(87,621)	423,228	(17,686)	(19,725)	(20,862)	302,986
CLOSING BANK BALANCE	(140,890)	(173,570)	(195,173)	(216,488)	(216,774)	(368,799)	(91,427)	(179,048)	244,181	226,495	206,770	185,908	185,908
TO CONVERT TO OPERATING BASIS													
NET CASH FLOW	(23,812)	(32,680)	(21,603)	(21,315)	(285)	(152,025)	277,372	(87,621)	423,228	(17,686)	(19,725)	(20,862)	302,986
ADD :CAPITAL	0	0	0	0	0	50,000	0	0	0	0	0	0	50,000
:STYRO BLOCKS	0	0	0	0	0	0	0	0	0	0	0	0	0
:LOAN PRINCIPAL	2,411	2,435	2,458	2,482	2,506	2,531	2,556	2,581	2,605	2,631	2,657	2,682	30,535
LESS: STYRO AMORT	9,680	9,680	9,680	9,680	9,680	9,680	9,680	9,680	9,680	9,680	9,680	9,680	116,160
DEPRECIATION	11,642	11,642	11,642	11,642	11,642	11,642	11,642	11,642	11,642	11,642	11,642	11,642	139,704
FINANCING CAPITAL													0
	(42,723)	(51,567)	(40,467)	(40,155)	(19,101)	(120,816)	258,606	(106,362)	404,511	(36,377)	(38,390)	(39,502)	127,657
													127,657

12-Dec-88

YUKON NURSERY PROPOSAL -BASED ON 5.0MM SEEDLINGS in 313B
CASH FLOW (WITH 10% CONTINGENCY AND FORGIVABLE GRANT)
JAN 1,1992 to DEC31,1992

	1992 JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR4 TOTAL
CASH IN													
20%EQUITY BY OWNER													0
40%FORGIVABLE GRANT													0
40%10 YEAR LOAN													0
Crop1													0
Crop2													0
Crop3					152,250				309,750				462,000
Crop4							380,000		209,500				589,500
Crop5													0
Crop6													0
TOTAL CASH IN	0	0	0	0	152,250	0	380,000	0	519,250	0	0	0	1,051,500
COST OF SALES													
Supervision	2,315	2,315	2,315	2,315	2,315	2,315	2,315	2,315	2,315	2,315	2,315	2,315	27,783
Labour													
Filling	0	0	0	0	8,103	0	0	0	0	0	0	0	8,103
Seeding	0	0	0	0	20,258	0	0	0	0	0	0	0	20,258
Thinning	0	0	0	0	0	42,832	0	0	0	0	0	0	42,832
Spacing & Moving	0	0	0	0	810	0	0	0	0	0	0	0	810
Weeding	0	0	0	926	926	0	0	9,261	0	0	0	0	11,113
Irrigation & Fert	0	0	0	0	0	0	0	0	0	0	0	0	0
Grading & Packing	0	0	0	0	0	0	0	18,522	0	0	0	0	18,522
Blockwashing	0	0	0	0	0	0	0	0	1,621	0	0	0	1,621
Peat,chem,grit,etc	0	0	0	0	28,941	0	0	0	0	0	0	0	28,941
Fertilizer-sow	0	0	0	0	3,618	0	0	0	0	0	0	0	3,618
Fertilizer-soluble	0	0	0	0	0	2,894	2,894	2,894	2,894	2,894	0	0	14,470
Seed	0	0	0	0	5,788	0	0	0	0	0	0	0	5,788
Boxes,liners,wrap	0	0	0	0	0	0	0	40,517	0	0	0	0	40,517
Propane heating	8,269	8,269	5,513	2,756	1,103	41,344	19,294	2,756	551	1,103	2,756	5,513	99,225
Hydro	1,103	1,103	1,103	1,103	441	2,205	2,205	1,103	441	441	1,103	1,103	13,451
Poly	0	0	0	0	49,199	0	0	0	0	0	0	0	49,199
Styro Blocks 313B	0	0	0	0	196,796	0	0	0	0	0	0	0	196,796
Mtce & Rep Labour	0	0	0	0	0	0	0	0	0	0	0	0	0
Mtce & Rep Supplies	0	0	0	0	1,447	0	0	1,736	0	0	2,605	0	5,788
TOTAL COST OF SALES	11,687	11,687	8,930	7,100	319,746	91,590	26,708	79,104	7,822	6,753	8,779	8,930	588,836
OVERHEAD & ADMINISTRATION													
Salaries-Owner	4,631	4,631	4,631	4,631	4,631	4,631	4,631	4,631	4,631	4,631	4,631	4,631	55,566
Accounting and Legal	0	1,158	0	1,158	0	1,158	0	0	1,158	0	0	1,158	5,788
Insurance	0	8,103	0	0	0	0	0	0	0	0	0	0	8,103
Communications	347	347	347	347	347	347	347	347	347	347	347	347	4,167
Office Supplies	58	58	58	58	58	58	58	58	58	58	58	58	695
Property Taxes	232	0	0	0	0	0	2,084	0	0	0	0	0	2,315
Travel & Marketing	0	0	0	116	116	116	116	116	116	116	232	116	1,158
Finance Working Capital	0	0	0	0	0	1,171	2,948	0	613	0	0	0	4,733
Finance L/T Debt	3,474	3448	3421	3394	3367	3340	3312	3284	3256	3227	3198	3169	39,890
Employee Training	0	0	0	0	0	0	1,158	0	0	0	0	0	1,158
Misc	174	174	174	174	174	174	174	174	174	174	174	174	2,084
Contingency	0	0	0	0	15225	0	38000	0	51925	0	0	0	105,150

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	8,915	17,918	8,630	9,877	23,917	10,994	52,827	8,609	62,283	8,552	8,639	9,652	230,812
CAPITAL													
Land													
Land Clearing													
Machinery & Equip													0
Buildings & Greenhouses													0
Automotive													0
Misc Equipment						52,500							52,500
TOTAL CAPITAL	0	0	0	0	0	52,500	0	0	0	0	0	0	52,500
LOAN PRINCIPAL	2,709	2,735	2,762	2,789	2,816	2,843	2,871	2,899	2,927	2,956	2,985	3,014	34,306
TOTAL CASH OUT	23,310	32,340	20,323	19,766	346,479	157,927	82,406	90,612	73,032	18,261	20,402	21,596	906,454
NET CASH FLOW	(23,310)	(32,340)	(20,323)	(19,766)	(194,229)	(157,927)	297,594	(90,612)	446,218	(18,261)	(20,402)	(21,596)	145,046
OPENING BANK BAL	185,908	162,597	130,258	109,935	90,169	(104,060)	(261,987)	35,608	(55,005)	391,213	372,952	352,550	185,908
NET CASH FLOW	(23,310)	(32,340)	(20,323)	(19,766)	(194,229)	(157,927)	297,594	(90,612)	446,218	(18,261)	(20,402)	(21,596)	145,046
CLOSING BANK BALANCE	162,597	130,258	109,935	90,169	(104,060)	(261,987)	35,608	(55,005)	391,213	372,952	352,550	330,954	330,954
TO CONVERT TO OPERATING BASIS													
NET CASH FLOW	(23,310)	(32,340)	(20,323)	(19,766)	(194,229)	(157,927)	297,594	(90,612)	446,218	(18,261)	(20,402)	(21,596)	145,046
ADD :CAPITAL	0	0	0	0	0	52,500	0	0	0	0	0	0	52,500
:STYRO BLOCKS	0	0	0	0	196,796	0	0	0	0	0	0	0	196,796
:LOAN PRINCIPAL	2,709	2,735	2,762	2,789	2,816	2,843	2,871	2,899	2,927	2,956	2,985	3,014	34,306
LESS: STYRO AMORT	10,120	10,120	10,120	10,120	10,120	10,120	10,120	10,120	10,120	10,120	10,120	10,120	121,440
DEPRECIATION	10,344	10,344	10,344	10,344	10,344	10,344	10,344	10,344	10,344	10,344	10,344	10,344	124,128
FINANCING CAPITAL													0
	(41,065)	(50,069)	(38,025)	(37,441)	(15,080)	(123,048)	280,001	(108,177)	428,681	(35,769)	(37,881)	(39,046)	183,081
													183,081

12-Dec-88

YUKON NURSERY PROPOSAL -BASED ON 5.0MM SEEDLINGS in 313B
CASH FLOW (WITH 10% CONTINGENCY AND FORGIVABLE GRANT)
JAN 1,1993 to DEC31,1993

1993	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEARS TOTAL
CASH IN													
20%EQUITY BY OWNER													0
40%FORGIVABLE GRANT													0
40%10 YEAR LOAN													0
Crop1													0
Crop2													0
Crop3													0
Crop4					156,000				325,000				481,000
Crop5							394,000		220,000				614,000
Crop6													0
TOTAL CASH IN	0	0	0	0	156,000	0	394,000	0	545,000	0	0	0	1,095,000
COST OF SALES													
Supervision	2,431	2,431	2,431	2,431	2,431	2,431	2,431	2,431	2,431	2,431	2,431	2,431	29,172
Labour													
Filling	0	0	0	0	8,509	0	0	0	0	0	0	0	8,509
Seeding	0	0	0	0	21,271	0	0	0	0	0	0	0	21,271
Thinning	0	0	0	0	0	44,974	0	0	0	0	0	0	44,974
Spacing & Moving	0	0	0	0	851	0	0	0	0	0	0	0	851
Weeding	0	0	0	972	972	0	0	9,724	0	0	0	0	11,669
Irrigation & Fert	0	0	0	0	0	0	0	0	0	0	0	0	0
Grading & Packing	0	0	0	0	0	0	0	19,448	0	0	0	0	19,448
Blockwashing	0	0	0	0	0	0	0	0	1,702	0	0	0	1,702
Peat,chem,grit,etc	0	0	0	0	30,388	0	0	0	0	0	0	0	30,388
Fertilizer-sow	0	0	0	0	3,798	0	0	0	0	0	0	0	3,798
Fertilizer-soluble	0	0	0	0	0	3,039	3,039	3,039	3,039	3,039	0	0	15,194
Seed	0	0	0	0	6,078	0	0	0	0	0	0	0	6,078
Boxes,liners,wrap	0	0	0	0	0	0	0	42,543	0	0	0	0	42,543
Propane heating	8,682	8,682	5,788	2,894	1,158	43,411	20,258	2,894	579	1,158	2,894	5,788	104,186
Hydro	1,158	1,158	1,158	1,158	463	2,315	2,315	1,158	463	463	1,158	1,158	14,123
Poly	0	0	0	0	51,659	0	0	0	0	0	0	0	51,659
Styro Blocks 313B					206,636								206,636
Mtce & Rep Labour	0	0	0	0	0	0	0	0	0	0	0	0	0
Mtce & Rep Supplies	0	0	0	0	1,519	0	0	1,823	0	0	2,735	0	6,078
TOTAL COST OF SALES	12,271	12,271	9,377	7,455	335,733	96,170	28,043	83,060	8,213	7,090	9,218	9,377	618,277
OVERHEAD & ADMINISTRATION													
Salaries-Owner	4,862	4,862	4,862	4,862	4,862	4,862	4,862	4,862	4,862	4,862	4,862	4,862	58,344
Accounting and Legal	0	1,216	0	1,216	0	1,216	0	0	1,216	0	0	1,216	6,078
Insurance	0	8,509	0	0	0	0	0	0	0	0	0	0	8,509
Communications	365	365	365	365	365	365	365	365	365	365	365	365	4,376
Office Supplies	61	61	61	61	61	61	61	61	61	61	61	61	729
Property Taxes	243	0	0	0	0	0	2,188	0	0	0	0	0	2,431
Travel & Marketing	0	0	0	122	122	122	122	122	122	122	243	122	1,216
Finance Working Capital	0	0	0	0	0	0	1,572	0	0	0	0	0	1,572
Finance L/T Debt	3,140	3,110	3,080	3,050	3,019	2,988	2,957	2,925	2,893	2,862	2,829	2,797	35,650
Employee Training	0	0	0	0	0	0	1,216	0	0	0	0	0	1,216
Misc	182	182	182	182	182	182	182	182	182	182	182	182	2,188
Contingency	0	0	0	0	15600	0	39400	0	54500	0	0	0	109,500

	8,853	18,304	8,550	9,857	24,210	9,795	52,924	8,516	64,200	8,453	8,542	9,604	231,808
CAPITAL													
Land													
Land Clearing													
Machinery & Equip													0
Buildings & Greenhouses													0
Automotive													0
Misc Equipaent						55,125							55,125
TOTAL CAPITAL	0	0	0	0	0	55,125	0	0	0	0	0	0	55,125
LOAN PRINCIPAL	3,043	3,073	3,103	3,133	3,164	3,195	3,226	3,258	3,290	3,321	3,354	3,386	38,546
TOTAL CASH OUT	24,167	33,648	21,030	20,445	363,107	164,285	84,194	94,834	75,703	18,865	21,113	22,367	943,756
NET CASH FLOW	(24,167)	(33,648)	(21,030)	(20,445)	(207,107)	(164,285)	309,806	(94,834)	469,297	(18,865)	(21,113)	(22,367)	151,244
OPENING BANK BAL	330,954	306,787	273,140	252,110	231,665	24,558	(139,727)	170,080	75,246	544,543	525,678	504,564	330,954
NET CASH FLOW	(24,167)	(33,648)	(21,030)	(20,445)	(207,107)	(164,285)	309,806	(94,834)	469,297	(18,865)	(21,113)	(22,367)	151,244
CLOSING BANK BALANCE	306,787	273,140	252,110	231,665	24,558	(139,727)	170,080	75,246	544,543	525,678	504,564	482,198	482,198
TO CONVERT TO OPERATING BASIS													
NET CASH FLOW	(24,167)	(33,648)	(21,030)	(20,445)	(207,107)	(164,285)	309,806	(94,834)	469,297	(18,865)	(21,113)	(22,367)	151,244
ADD :CAPITAL	0	0	0	0	0	55,125	0	0	0	0	0	0	55,125
:STYRO BLOCKS	0	0	0	0	206,636	0	0	0	0	0	0	0	206,636
:LOAN PRINCIPAL	3,043	3,073	3,103	3,133	3,164	3,195	3,226	3,258	3,290	3,321	3,354	3,386	38,546
LESS: STYRO AMORT	12,375	12,375	12,375	12,375	12,375	12,375	12,375	12,375	12,375	12,375	12,375	12,375	148,500
DEPRECIATION	9,385	9,385	9,385	9,385	9,385	9,385	9,385	9,385	9,385	9,385	9,385	9,385	112,620
FINANCING CAPITAL													0
	(42,884)	(52,335)	(39,687)	(39,072)	(19,067)	(127,725)	291,272	(113,236)	450,827	(37,304)	(39,519)	(40,741)	190,431
													190,431

12-Dec-88

YUKON NURSERY PROPOSAL -BASED ON 5.0MM SEEDLINGS in 313B
CASH FLOW (WITH 10% CONTINGENCY AND FORGIVABLE GRANT)
JAN 1,1994 to DEC31,1994

1994	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR6 TOTAL
CASH IN													
20%EQUITY BY OWNER													0
40%FORGIVABLE GRANT													0
40%10 YEAR LOAN													0
Crop1													0
Crop2													0
Crop3													0
Crop4													0
Crop5					164,000				341,000				505,000
Crop6							413,500		231,000				644,500
TOTAL CASH IN	0	0	0	0	164,000	0	413,500	0	572,000	0	0	0	1,149,500
COST OF SALES													
Supervision	2,553	2,553	2,553	2,553	2,553	2,553	2,553	2,553	2,553	2,553	2,553	2,553	30,631
Labour													
Filling	0	0	0	0	8,934	0	0	0	0	0	0	0	8,934
Seeding	0	0	0	0	22,335	0	0	0	0	0	0	0	22,335
Thinning	0	0	0	0	0	47,222	0	0	0	0	0	0	47,222
Spacing & Moving	0	0	0	0	893	0	0	0	0	0	0	0	893
Weeding	0	0	0	1,021	1,021	0	0	10,210	0	0	0	0	12,252
Irrigation & Fert	0	0	0	0	0	0	0	0	0	0	0	0	0
Grading & Packing	0	0	0	0	0	0	0	20,421	0	0	0	0	20,421
Blockwashing	0	0	0	0	0	0	0	0	1,787	0	0	0	1,787
Peat,chem,grit,etc	0	0	0	0	31,907	0	0	0	0	0	0	0	31,907
Fertilizer-sov	0	0	0	0	3,388	0	0	0	0	0	0	0	3,388
Fertilizer-soluble	0	0	0	0	0	3,191	3,191	3,191	3,191	3,191	0	0	15,954
Seed	0	0	0	0	6,381	0	0	0	0	0	0	0	6,381
Boxes,liners,wrap	0	0	0	0	0	0	0	44,670	0	0	0	0	44,670
Propane heating	9,116	9,116	6,078	3,039	1,216	45,581	21,271	3,039	608	1,216	3,039	6,078	109,396
Hydro	1,216	1,216	1,216	1,216	486	2,431	2,431	1,216	486	486	1,216	1,216	14,929
Poly	0	0	0	0	54,242	0	0	0	0	0	0	0	54,242
Styro Blocks 313B													0
Mtce & Rep Labour	0	0	0	0	0	0	0	0	0	0	0	0	0
Mtce & Rep Supplies	0	0	0	0	1,595	0	0	1,914	0	0	2,872	0	6,381
TOTAL COST OF SALES	12,884	12,884	9,846	7,828	135,552	100,978	29,446	87,213	8,624	7,445	9,678	9,846	432,223
OVERHEAD & ADMINISTRATION													
Salaries-Owner	5,105	5,105	5,105	5,105	5,105	5,105	5,105	5,105	5,105	5,105	5,105	5,105	61,262
Accounting and Legal	0	1,276	0	1,276	0	1,276	0	0	1,276	0	0	1,276	6,381
Insurance	0	8,934	0	0	0	0	0	0	0	0	0	0	8,934
Communications	383	383	383	383	383	383	383	383	383	383	383	383	4,595
Office Supplies	64	64	64	64	64	64	64	64	64	64	64	64	766
Property Taxes	255	0	0	0	0	0	2,297	0	0	0	0	0	2,553
Travel & Marketing	0	0	0	128	128	128	128	128	128	128	255	128	1,276
Finance Working Capital	0	0	0	0	0	0	0	0	0	0	0	0	0
Finance L/T Debt	2,764	2,730	2,696	2,662	2,628	2,593	2,558	2,523	2,487	2,451	2,414	2,378	30,884
Employee Training	0	0	0	0	0	0	1,276	0	0	0	0	0	1,276
Misc	0	0	0	0	0	0	0	0	0	0	0	0	0
Contingency	0	0	0	0	16400	0	41350	0	57200	0	0	0	114,950

12-Dec-88

	8,571	18,492	8,248	9,618	24,707	9,549	53,161	8,202	66,643	8,130	8,221	9,334	232,876
CAPITAL													
Land													
Land Clearing													
Machinery & Equip													0
Buildings & Greenhouses													0
Automotive													0
Misc Equipment						57,881							57,881
TOTAL CAPITAL	0	0	0	0	0	57,881	0	0	0	0	0	0	57,881
LOAN PRINCIPAL	3,419	3,453	3,487	3,521	3,555	3,590	3,625	3,660	3,696	3,732	3,769	3,805	43,312
TOTAL CASH OUT	24,874	34,829	21,580	20,967	163,814	171,998	86,232	99,075	78,963	19,307	21,669	22,984	766,293
NET CASH FLOW	(24,874)	(34,829)	(21,580)	(20,967)	186	(171,998)	327,268	(99,075)	493,037	(19,307)	(21,669)	(22,984)	383,207
OPENING BANK BAL	482,198	457,323	422,494	400,913	379,947	380,133	208,135	535,403	436,328	929,365	910,058	888,389	482,198
NET CASH FLOW	(24,874)	(34,829)	(21,580)	(20,967)	186	(171,998)	327,268	(99,075)	493,037	(19,307)	(21,669)	(22,984)	383,207
CLOSING BANK BALANCE	457,323	422,494	400,913	379,947	380,133	208,135	535,403	436,328	929,365	910,058	888,389	865,405	865,405
TO CONVERT TO OPERATING BASIS													
NET CASH FLOW	(24,874)	(34,829)	(21,580)	(20,967)	186	(171,998)	327,268	(99,075)	493,037	(19,307)	(21,669)	(22,984)	383,207
ADD :CAPITAL	0	0	0	0	0	57,881	0	0	0	0	0	0	57,881
:STYRO BLOCKS	0	0	0	0	0	0	0	0	0	0	0	0	0
:LOAN PRINCIPAL	3,419	3,453	3,487	3,521	3,555	3,590	3,625	3,660	3,696	3,732	3,769	3,805	43,312
LESS: STYRO AMORT	11,205	11,205	11,205	11,205	11,205	11,205	11,205	11,205	11,205	11,205	11,205	11,205	134,460
DEPRECIATION	8,099	8,099	8,099	8,099	8,099	8,099	8,099	8,099	8,099	8,099	8,099	8,099	97,188
FINANCING CAPITAL													0
	(40,759)	(50,680)	(37,397)	(36,750)	(15,563)	(129,831)	311,589	(114,719)	477,429	(34,879)	(37,204)	(38,483)	252,752
													252,752

APPENDIX V

ROI CALCULATIONS

WATSON LAKE TREE SEEDLING NURSERY
FEASIBILITY ANALYSIS
1 MILLION SEEDLINGS PER YEAR.
WITHOUT YTG SMALL BUSINESS INCENTIVES GRANT

YEAR:	0	1	2	3	4	5	6	7	8	9	10	11
PURCHASE PRICE 1988$												
LAND		20000										
SITE IMPROVEMENT + ROADS		40000										
BUILDINGS		155000										
POLYHOUSES		50000										
MACHINERY + EQUIPMENT		81000										
MOBILE EQUIPMENT		27000										
TOTAL PRICE		373000										
CAPEX SCHEDULE												
LAND	0	0	0	0	0	0	0	0	0	0	0	0
SITE IMPROVEMENT + ROADS	0	5250	5513	5788	6078	6381	6700	7036	7387	7757	8144	
BUILDINGS	0	0	0	0	0	0	0	0	0	0	0	
POLYHOUSES	0	0	0	0	0	0	0	0	0	38783	0	
MACHINERY + EQUIPMENT	0	5250	5513	5788	6078	51051	6700	7036	7387	7757	8144	
MOBILE EQUIPMENT	0	0	0	0	0	34460	0	0	0	0	0	
TOTAL CAPEX	0	10500	11025	11576	12155	91892	13401	14071	14775	54296	16289	
TOTAL REVENUE	102000	189000	199000	210000	219000	229950	241448	253520	266196	279506	293481	
COST OF SALES	57000	85000	93000	98000	101000	106050	111353	116920	122766	128904	135350	
OVERHEAD & ADMINISTRATION	76000	88000	92000	97000	102000	107100	112455	118078	123982	130181	136690	
DEPRECIATION												
SITE IMPROVEMENT + ROADS	2000	2183	2330	2503	2682	2867	3058	3257	3464	3678	3902	

BUILDINGS		6200	5952	5714	5485	5266	5055	4853	4659	4473	4294	4122
POLYHOUSES		5000	4500	4050	3645	3281	2952	2657	2391	2152	5815	5234
MACHINERY + EQUIPMENT		16200	14010	12311	11006	10020	18227	15921	14144	12793	11786	11057
MOBILE EQUIPMENT		8100	5670	3969	2778	1945	11699	8189	5733	4013	2809	1966
TOTAL DEPRECIATION		37500	32295	28373	25418	23193	40800	34679	30184	26894	28382	26281
FINANCING												
L OF C INTEREST		6000	22000	32000	44000	60000	63000	66150	69458	72930	76577	80406
MORTGAGE INTEREST		34000	32000	30000	27000	24000	21000	17000	13000	8000	3000	0
MORTGAGE PRINCIPAL		17000	19000	21000	24000	27000	30000	34000	38000	43000	47000	0
PROFIT BEFORE TAX		-108500	-70295	-76373	-81418	-91193	-108000	-100189	-94120	-88377	-87538	-85245
CUM PROFIT BEFORE TAX		-108500	-178795	-255168	-336586	-427779	-535779	-635968	-730088	-818465	-906003	-991248
TAX PAYABLE		0	0	0	0	0	0	0	0	0	0	0
PROFIT AFTER TAX		-108500	-70295	-76373	-81418	-91193	-108000	-100189	-94120	-88377	-87538	-85245
ADD BACK DEPRECIATION		37500	32295	28373	25418	23193	40800	34679	30184	26894	28382	26281
MINUS CAPEX		0	10500	11025	11576	12155	91892	13401	14071	14775	54296	16289
MINUS MORTGAGE PRIN		17000	19000	21000	24000	27000	30000	34000	38000	43000	47000	0
NET CASH FLOW	-373000	-88000	-67500	-80025	-91576	-107155	-189092	-112911	-116007	-119257	-160453	-75253
CUMULATIVE CASH FLOW	-373000	-461000	-528500	-608525	-700101	-807256	-996349	-1109260	-1225266	-1344523	-1504976	-1580229
CAP. YR 11 CF @ 15%												-501688
TOTAL CASH FLOW	-373000	-88000	-67500	-80025	-91576	-107155	-189092	-112911	-116007	-119257	-160453	-501688
CUM TOTAL CASH FLOW	-373000	-461000	-528500	-608525	-700101	-807256	-996349	-1109260	-1225266	-1344523	-1504976	-2006663

PW OF TOTAL CASH FLOW -865111

IRR OF TOTAL CASH FLOW -200.28%

WATSON LAKE TREE SEEDLING NURSERY
FEASIBILITY ANALYSIS
1 MILLION SEEDLINGS PER YEAR.
WITH Y.T.G. SMALL BUSINESS INCENTIVES GRANT

YEAR:	0	1	2	3	4	5	6	7	8	9	10	11
PURCHASE PRICE 1988$												
LAND		20000										
SITE IMPROVEMENT + ROADS		40000										
BUILDINGS		155000										
POLYHOUSES		50000										
MACHINERY + EQUIPMENT		81000										
MOBILE EQUIPMENT		27000										
TOTAL PRICE		373000										
CAPEX SCHEDULE												
LAND	0	0	0	0	0	0	0	0	0	0	0	0
SITE IMPROVEMENT + ROADS	0	5250	5513	5788	6078	6381	6700	7036	7387	7757	8144	
BUILDINGS	0	0	0	0	0	0	0	0	0	0	0	
POLYHOUSES	0	0	0	0	0	0	0	0	0	38783	0	
MACHINERY + EQUIPMENT	0	5250	5513	5788	6078	51051	6700	7036	7387	7757	8144	
MOBILE EQUIPMENT	0	0	0	0	0	34460	0	0	0	0	0	
TOTAL CAPEX	0	10500	11025	11576	12155	91892	13401	14071	14775	54298	16289	
TOTAL REVENUE	102000	189000	199000	210000	219000	229950	241448	253520	266196	279506	293481	
COST OF SALES	57000	83000	92000	98000	100000	105000	110250	115763	121551	127628	134010	
OVERHEAD & ADMINISTRATION	76000	89000	93000	98000	103000	108150	113558	119235	125197	131457	138030	
DEPRECIATION												
SITE IMPROVEMENT + ROADS	2000	2163	2330	2503	2682	2867	3058	3257	3464	3678	3902	

BUILDINGS		6200	5952	5714	5485	5266	5055	4853	4659	4473	4294	4122
POLYHOUSES		5000	4500	4050	3645	3281	2952	2657	2391	2152	5815	5234
MACHINERY + EQUIPMENT		16200	14010	12311	11006	10020	18227	15921	14144	12793	11786	11057
MOBILE EQUIPMENT		8100	5670	3969	2778	1945	11699	8189	5733	4013	2809	1966
TOTAL DEPRECIATION		37500	32295	28373	25418	23193	40800	34679	30184	26894	28382	26281
FINANCING												
L OF C INTEREST		12000	18000	23000	30000	40000	42000	44100	46305	48620	51051	53604
MORTGAGE INTEREST		17000	16000	15000	14000	12000	10000	9000	7000	4000	2000	0
MORTGAGE PRINCIPAL		8000	9000	11000	12000	13000	15000	17000	19000	21000	24000	0
PROFIT BEFORE TAX		-97500	-49295	-52373	-55418	-59193	-76000	-70139	-64967	-60066	-61013	-58443
CUM PROFIT BEFORE TAX		-97500	-146795	-199168	-254586	-313779	-389779	-459918	-524886	-584952	-645965	-704408
TAX PAYABLE		0	0	0	0	0	0	0	0	0	0	0
PROFIT AFTER TAX		-97500	-49295	-52373	-55418	-59193	-76000	-70139	-64967	-60066	-61013	-58443
ADD BACK DEPRECIATION		37500	32295	28373	25418	23193	40800	34679	30184	26894	28382	26281
MINUS CAPEX		0	10500	11025	11576	12155	91892	13401	14071	14775	54298	16289
MINUS MORTAGE PRIN		8000	9000	11000	12000	13000	15000	17000	19000	21000	24000	0
NET CASH FLOW	-223800	-68000	-36500	-46025	-53576	-61155	-142092	-65861	-67854	-68947	-110927	-48451
CUMULATIVE CASH FLOW	-223800	-291800	-328300	-374325	-427901	-489056	-631149	-697010	-764864	-833810	-944737	-993189
CAP. YR 11 CF @ 15%												-323008
TOTAL CASH FLOW	-223800	-68000	-36500	-46025	-53576	-61155	-142092	-65861	-67854	-68947	-110927	-323008
CUM TOTAL CASH FLOW	-223800	-291800	-328300	-374325	-427901	-489056	-631149	-697010	-764864	-833810	-944737	-1267746

PW OF TOTAL CASH FLOW -539361

IRR OF TOTAL CASH FLOW -199.93%

WATSON LAKE TREE SEEDLING NURSERY
FEASIBILITY ANALYSIS
3 MILLION SEEDLINGS PER YEAR.
WITHOUT YTG SMALL BUSINESS INCENTIVES GRANT

YEAR:	0	1	2	3	4	5	6	7	8	9	10	11
PURCHASE PRICE 1988$												
LAND		20000										
SITE IMPROVEMENT + ROADS		70000										
BUILDINGS		305000										
POLYHOUSES		150000										
MACHINERY + EQUIPMENT		192000										
MOBILE EQUIPMENT		31000										
TOTAL PRICE		768000										
CAPEX SCHEDULE												
LAND	0	0	0	0	0	0	0	0	0	0	0	0
SITE IMPROVEMENT + ROADS	0	5250	5513	5788	6078	6381	6700	7036	7387	7757	8144	
BUILDINGS	0	0	0	0	0	0	0	0	0	0	0	
POLYHOUSES	0	0	0	0	0	0	0	0	0	116350	0	
MACHINERY + EQUIPMENT	0	5250	5513	5788	6078	109760	6700	7036	7387	7757	8144	
MOBILE EQUIPMENT	0	0	0	0	0	39565	0	0	0	0	0	
TOTAL CAPEX	0	10500	11025	11576	12155	155706	13401	14071	14775	131863	16289	
TOTAL REVENUE	305000	568000	598000	631000	657000	689850	724343	760560	798588	838517	880443	
COST OF SALES	191000	290000	317000	332000	360000	378000	396900	416745	437582	459461	482434	
OVERHEAD & ADMINISTRATION	99000	128000	135000	142000	148000	155400	163170	171329	179895	188890	198334	
DEPRECIATION												
SITE IMPROVEMENT + ROADS	3500	3588	3684	3789	3903	4027	4161	4305	4459	4624	4800	

BUILDINGS		12200	11712	11244	10794	10362	9948	9550	9168	8801	8449	8111
POLYHOUSES		15000	13500	12150	10935	9842	8857	7972	7174	6457	17446	15702
MACHINERY + EQUIPMENT		38400	31770	26519	22372	19113	37243	31134	26315	22529	19575	17289
MOBILE EQUIPMENT		9300	6510	4557	3190	2233	13432	9403	6582	4607	3225	2258
TOTAL DEPRECIATION		78400	67080	58153	51080	45453	73507	62219	53543	46853	53319	48159
FINANCING												
L OF C INTEREST		13000	37000	38000	40000	49000	51450	54023	56724	59560	62538	65665
MORTGAGE INTEREST		59000	60000	56000	51000	46000	40000	33000	25000	16000	71000	0
MORTGAGE PRINCIPAL		29000	35000	39000	44000	50000	56000	63000	76000	79000	96000	0
PROFIT BEFORE TAX		-135400	-14080	-8153	14920	8547	-8507	15031	37219	58697	3310	85851
CUM PROFIT BEFORE TAX		-135400	-149480	-155632	-140712	-132166	-140673	-125642	-88423	-29726	-26416	59435
TAX PAYABLE		0	0	0	0	0	0	0	0	0	0	10104
PROFIT AFTER TAX		-135400	-14080	-8153	14920	8547	-8507	15031	37219	58697	3310	75747
ADD BACK DEPRECIATION		78400	67080	58153	51080	45453	73507	62219	53543	46853	53319	48159
MINUS CAPEX		0	10500	11025	11576	12155	155706	13401	14071	14775	131863	16289
MINUS MORTGAGE PRIN		29000	35000	39000	44000	50000	56000	63000	76000	79000	96000	0
NET CASH FLOW	-768000	-86000	7500	1975	10424	-8155	-146706	849	691	11776	-171235	107617
CUMULATIVE CASH FLOW	-768000	-854000	-846500	-844525	-834101	-842256	-988963	-988114	-987422	-975646	-1146881	-1039264
CAP. YR 11 CF @ 15%												717445
TOTAL CASH FLOW	-768000	-86000	7500	1975	10424	-8155	-146706	849	691	11776	-171235	717445
CUM TOTAL CASH FLOW	-768000	-854000	-846500	-844525	-834101	-842256	-988963	-988114	-987422	-975646	-1146881	-429436

PW OF TOTAL CASH FLOW -809113

IRR OF TOTAL CASH FLOW -5.45%

WATSON LAKE TREE SEEDLING NURSERY
FEASIBILITY ANALYSIS
3 MILLION SEEDLINGS PER YEAR.
WITH YTG SMALL BUSINESS INCENTIVES GRANT

YEAR:	0	1	2	3	4	5	6	7	8	9	10	11
PURCHASE PRICE 1988$												
LAND		20000										
SITE IMPROVEMENT + ROADS		70000										
BUILDINGS		305000										
POLYHOUSES		150000										
MACHINERY + EQUIPMENT		192000										
MOBILE EQUIPMENT		31000										
TOTAL PRICE		768000										
CAPEX SCHEDULE												
LAND		0	0	0	0	0	0	0	0	0	0	0
SITE IMPROVEMENT + ROADS		0	5250	5513	5788	6078	6381	6700	7036	7387	7757	8144
BUILDINGS		0	0	0	0	0	0	0	0	0	0	0
POLYHOUSES		0	0	0	0	0	0	0	0	0	116350	0
MACHINERY + EQUIPMENT		0	5250	5513	5788	6078	109760	6700	7036	7387	7757	8144
MOBILE EQUIPMENT		0	0	0	0	0	39565	0	0	0	0	0
TOTAL CAPEX		0	10500	11025	11576	12155	155706	13401	14071	14775	131863	16289
TOTAL REVENUE		305000	568000	598000	631000	657000	689850	724343	760560	798588	838517	880443
COST OF SALES		191000	290000	317000	332000	360000	378000	396900	416745	437582	459461	482434
OVERHEAD & ADMINISTRATION		99000	128000	135000	141000	148000	155400	163170	171329	179895	188890	198334
DEPRECIATION												
SITE IMPROVEMENT + ROADS		3500	3588	3684	3789	3903	4027	4161	4305	4459	4624	4800

BUILDINGS		12200	11712	11244	10794	10362	9948	9550	9168	8801	8449	8111
POLYHOUSES		15000	13500	12150	10935	9842	8857	7972	7174	6457	17446	15702
MACHINERY + EQUIPMENT		38400	31770	26519	22372	19113	37243	31134	26315	22529	19575	17289
MOBILE EQUIPMENT		9300	6510	4557	3190	2233	13432	9403	6582	4607	3225	2258
TOTAL DEPRECIATION		78400	67080	58153	51080	45453	73507	62219	53543	46853	53319	48159
FINANCING												
L OF C INTEREST		24000	29000	23000	16000	14000	14700	15435	16207	17017	17868	18781
MORTGAGE INTEREST		29000	30000	28000	26000	23000	20000	16000	13000	8000	4000	0
MORTGAGE PRINCIPAL		14000	17000	20000	22000	25000	28000	31000	35000	39000	48000	0
PROFIT BEFORE TAX		-116400	23921	36847	64920	66547	48243	70618	89736	109240	114979	132754
CUM PROFIT BEFORE TAX		-116400	-92480	-55632	9288	75834	124077	194695	284431	393671	508651	641405
TAX PAYABLE		0	0	0	1579	11313	8201	12005	33830	42604	44842	51774
PROFIT AFTER TAX		-116400	23921	36847	63341	55234	40041	58613	55906	66636	70137	80980
ADD BACK DEPRECIATION		78400	67080	58153	51080	45453	73507	62219	53543	46853	53319	48159
MINUS CAPEX		0	10500	11025	11578	12155	155706	13401	14071	14775	131863	16289
MINUS MORTGAGE PRIN		14000	17000	20000	22000	25000	28000	31000	35000	39000	48000	0
NET CASH FLOW	-460800	-52000	63500	63975	80845	63532	-70158	78431	60378	59715	-56407	112850
CUMULATIVE CASH FLOW	-460800	-512800	-449300	-385325	-304480	-240948	-311106	-234674	-174296	-114581	-170988	-58138
CAP. YR 11 CF @ 15%												752332
TOTAL CASH FLOW	-460800	-52000	63500	63975	80845	63532	-70158	78431	60378	59715	-56407	752332
CUM TOTAL CASH FLOW	-460800	-512800	-449300	-385325	-304480	-240948	-311106	-234674	-174296	-114581	-170988	581344

PW OF TOTAL CASH FLOW	-242899
IRR OF TOTAL CASH FLOW	9.50%

WATSON LAKE TREE SEEDLING NURSERY
FEASIBILITY ANALYSIS
5 MILLION SEEDLINGS PER YEAR.
WITHOUT YTG SMALL BUSINESS INCENTIVES GRANT

YEAR:	0	1	2	3	4	5	6	7	8	9	10	11
PURCHASE PRICE 1988$												
LAND		20000										
SITE IMPROVEMENT + ROADS		100000										
BUILDINGS		475000										
POLYHOUSES		250000										
MACHINERY + EQUIPMENT		299000										
MOBILE EQUIPMENT		43000										
TOTAL PRICE		1187000										
CAPEX SCHEDULE												
LAND		0	0	0	0	0	0	0	0	0	0	0
SITE IMPROVEMENT + ROADS		0	5250	5513	5788	6078	6381	6700	7036	7387	7757	8144
BUILDINGS		0	0	0	0	0	0	0	0	0	0	0
POLYHOUSES		0	0	0	0	0	0	0	0	0	193916	0
MACHINERY + EQUIPMENT		0	5250	5513	5788	6078	191442	6700	7036	7387	7757	8144
MOBILE EQUIPMENT		0	0	0	0	0	54880	0	0	0	0	0
TOTAL CAPEX		0	10500	11025	11576	12155	252704	13401	14071	14775	209429	16289
TOTAL REVENUE		509000	946000	997000	1052000	1095000	1149750	1207238	1267599	1330979	1397528	1467405
COST OF SALES		295000	447000	489000	513000	559000	586950	616298	647112	679468	713441	749113
OVERHEAD & ADMINISTRATION		122000	168000	178000	186000	195000	204750	214988	225737	237024	248875	261319
DEPRECIATION												
SITE IMPROVEMENT + ROADS		5000	5013	5038	5075	5125	5188	5264	5352	5454	5569	5698

BUILDINGS		19000	18240	17510	16810	16138	15492	14872	14278	13706	13158	12632
POLYHOUSES		25000	22500	20250	18225	16403	14762	13286	11957	10762	29077	26169
MACHINERY + EQUIPMENT		59800	48890	40215	33329	27879	60592	49813	41258	34484	29138	24940
MOBILE EQUIPMENT		12900	9030	6321	4425	3097	18632	13042	9130	6391	4474	3132
TOTAL DEPRECIATION		121700	103673	89333	77864	68641	114666	96278	81975	70797	81416	72570
FINANCING												
L OF C INTEREST		19000	49000	36000	23000	18000	18900	19845	20837	21879	22973	24122
MORTGAGE INTEREST		91000	94000	87000	80000	71000	62000	51000	39000	26000	10000	0
MORTGAGE PRINCIPAL		45000	54000	61000	69000	77000	87000	97000	109000	123000	150000	0
PROFIT BEFORE TAX		-139700	84328	117667	172136	183359	162484	208830	252938	295812	320823	360281
CUM PROFIT BEFORE TAX		-139700	-55373	62294	234430	417789	580273	789102	1042041	1337853	1658675	2018956
TAX PAYABLE		0	0	10590	36838	71510	63369	81444	98646	115367	125121	140510
PROFIT AFTER TAX		-139700	84328	107077	135298	111849	99115	127386	154292	180445	195702	219771
ADD BACK DEPRECIATION		121700	103673	89333	77864	68641	114666	96278	81975	70797	81416	72570
MINUS CAPEX		0	10500	11025	11576	12155	252704	13401	14071	14775	209429	16289
MINUS MORTAGE PRIN		45000	54000	61000	69000	77000	87000	97000	109000	123000	150000	0
NET CASH FLOW	-1187000	-83000	123500	124385	132586	91335	-125923	113263	113198	113467	-82311	276052
CUMULATIVE CASH FLOW	-1187000	-1250000	-1126500	-1002115	-869529	-778194	-904116	-790853	-677657	-564190	-646501	-370449
CAP. YR 11 CF @ 15%												1840350
TOTAL CASH FLOW	-1187000	-83000	123500	124385	132586	91335	-125923	113263	113198	113467	-82311	1840350
CUM TOTAL CASH FLOW	-1187000	-1250000	-1126500	-1002115	-869529	-778194	-904116	-790853	-677657	-564190	-646501	1193848

PW OF TOTAL CASH FLOW -708958

IRR OF TOTAL CASH FLOW 7.74%

WATSON LAKE TREE SEEDLING NURSERY
FEASIBILITY ANALYSIS
5 MILLION SEEDLINGS PER YEAR.
WITH YTG SMALL BUSINESS INCENTIVES GRANT

YEAR:	0	1	2	3	4	5	6	7	8	9	10	11
PURCHASE PRICE 1988$												
LAND		20000										
SITE IMPROVEMENT + ROADS		100000										
BUILDINGS		475000										
POLYHOUSES		250000										
MACHINERY + EQUIPMENT		299000										
MOBILE EQUIPMENT		43000										
TOTAL PRICE		1187000										
CAPEX SCHEDULE												
LAND	0	0	0	0	0	0	0	0	0	0	0	0
SITE IMPROVEMENT + ROADS	0	5250	5513	5788	6078	6381	6700	7036	7387	7757	8144	
BUILDINGS	0	0	0	0	0	0	0	0	0	0	0	
POLYHOUSES	0	0	0	0	0	0	0	0	0	193916	0	
MACHINERY + EQUIPMENT	0	5250	5513	5788	6078	191442	6700	7036	7387	7757	8144	
MOBILE EQUIPMENT	0	0	0	0	0	54880	0	0	0	0	0	
TOTAL CAPEX	0	10500	11025	11576	12155	252704	13401	14071	14775	209429	16289	
TOTAL REVENUE		509000	946000	996000	1052000	1095000	1149750	1207238	1267599	1330979	1397528	1467405
COST OF SALES		295000	447000	489000	513000	559000	586950	616298	647112	679468	713441	749113
OVERHEAD & ADMINISTRATION		121000	168000	177000	186000	194000	203700	213885	224579	235808	247599	259979
DEPRECIATION												
SITE IMPROVEMENT + ROADS		5000	5013	5038	5075	5125	5188	5264	5352	5454	5569	5698

BUILDINGS		19000	18240	17510	16810	16138	15492	14872	14278	13706	13158	12632
POLYHOUSES		25000	22500	20250	18225	16403	14762	13286	11957	10762	29077	26169
MACHINERY + EQUIPMENT		59800	48890	40215	33329	27879	60592	49813	41258	34484	29138	24940
MOBILE EQUIPMENT		12900	9030	6321	4425	3097	18632	13042	9130	6391	4474	3132
TOTAL DEPRECIATION		121700	103673	89333	77864	68641	114668	96278	81975	70797	81418	72570
FINANCING												
L OF C INTEREST		36000	37000	19000	5000	2000	2100	2205	2315	2431	2553	2680
MORTGAGE INTEREST		46000	47000	44000	40000	36000	31000	26000	20000	13000	5000	0
MORTGAGE PRINCIPAL		22000	27000	31000	34000	39000	43000	49000	55000	61000	75000	0
PROFIT BEFORE TAX		-110700	143328	177667	230136	235359	211334	252572	291618	329478	347520	383062
CUM PROFIT BEFORE TAX		-110700	32628	210294	440430	675789	887123	1139695	1431313	1760788	2108308	2491370
TAX PAYABLE		0	5547	32468	89753	91790	82420	98503	113731	128495	135533	149394
PROFIT AFTER TAX		-110700	137781	145199	140383	143569	128914	154069	177887	200980	211987	233668
ADD BACK DEPRECIATION		121700	103673	89333	77864	68641	114668	96278	81975	70797	81418	72570
MINUS CAPEX		0	10500	11025	11576	12155	252704	13401	14071	14775	209429	16289
MINUS MORTAGE PRIN		22000	27000	31000	34000	39000	43000	49000	55000	61000	75000	0
NET CASH FLOW	-712200	-11000	203953	192507	172671	161055	-52124	187946	190791	196002	8974	289949
CUMULATIVE CASH FLOW	-712200	-723200	-519247	-326740	-154069	6986	-45138	142808	333598	529601	538574	828524
CAP. YR 11 CF @ 15%												1932995
TOTAL CASH FLOW	-712200	-11000	203953	192507	172671	161055	-52124	187946	190791	196002	8974	1932995
CUM TOTAL CASH FLOW	-712200	-723200	-519247	-326740	-154069	6986	-45138	142808	333598	529601	538574	2471569

PW OF TOTAL CASH FLOW	58629
IRR OF TOTAL CASH FLOW	21.46%

APPENDIX VI

ALASKA REVIEW

- MEMO -

TO: Mr. Jim Collins
Reid, Collins and Associates, Ltd.
FRM: Cal Kerr
DATE: 13 December 1988
SUBJ: Alaska Seedling Demand

This is a memo report regarding Alaska's market for seedlings, current production, and future demand. Mr. Gary Kenwood, Reid, Collins Nurseries, is evaluating possible nursery establishment in the Yukon Territory and wishes some idea of Alaska potential.

You contacted me on 5 December and followed-up with additional suggestions on 12 December. As discussed, I attended a 2 day workshop on boreal forest management here in Anchorage on December 8th and 9th. Most of the state's reforestation and nursery specialists were at that meeting; my comments follow.

Summary. Current seedling demand for the southcentral and interior portions of Alaska is estimated at 800,000 to 1,000,000 trees per year. Production is not meeting demand with the State Forest Nursery growing 200,000 to 400,000 trees per year, depending on budget support. Seedling cost is $0.25/tree with costs projected at $0.32 to $0.35 in 1989. Most of the demand is located at Fairbanks with lesser amounts used north and south of Anchorage. This demand is currently 100% containerized (Leach tubes).

About 1,000 to 1,500 acres are harvested each year in the southcentral and interior portions of Alaska, mostly (95% plus) state owned. A rough ratio of planted to seeded acreage is 1/3 planted and 2/3 seeded.

A considerable number of seedlings are used for non-timber related uses: Arbor day, shelterbelts, farms, genetic tests (in cooperation with the U.S. Forest Service at Fairbanks).

Discussions. I spoke with Mr. Dave Wallingford (907-762-2122) about the current reforestation program. Dave is a forester-in-charge with the State Department of Natural Resources (DNR), Division of Forestry (DOF).

Oil prices have put the DNR in a severe budget "crunch" and the nursery - reforestation program will receive minimum support for the foreseeable future. Dave indicated the nursery currently has more demand than it can fill; this was confirmed by the nursery manager, Joe Stehlik (discussion following).

A possible policy change is the current Reforestation Fund, established but not funded. Under State provisions, proceeds from stumpage can be set aside for purposes of reforestation on harvested land. The legislature views the process as "dedication of non-legislatively appropriated funds" and has not supported it. Senator Betty Fahrenkamp (Fairbanks) has told the DNR/DOF she will submit a bill into the next legislative session (starting January, 1989) to require a minimum number of

acres to be reforested at a stated $500 per acre. Possibility of passage is unknown.

State Forest Nursery. The State Forest Nursery is located about 10 miles northeast of Anchorage at Eagle River. The Nursery Manager is Joe Stehlik; he can be reached at 907-694-5880 or addressed at:

State Forest Nursery
SR9001 Hyland Road
Eagle River, AK 99577

Production of containerized seedlings (mostly 4 cubic inch Ray-Leach tubes) for the three years noted is:

1989 (est)	400,000	$0.32 each
1988	200,000	$0.25 "
1987	200,000	$0.25 "

The nursery has two (2) greenhouses, built in 1982/83. They are heated with natural gas. Labor is provided by inmates from the adjacent Eagle River Correctional Institute (averaging about $5-7 per person per day).

Joe is a graduate agronomist with 20 years experience growing seedlings, shrubs, and grasses in Alaska; he was formerly with the State Division of Agriculture's Plant Materials Center in Palmer. I hired him as Nursery Manager in 1978/79 before leaving State Government.

A technician has been assigned to the nursery over the years but there is none at the current time. Joe estimates a manager with 3 technicians could grow most of the needed seedlings on a two crop per year basis (100 day cycles - March to October).

Other Facilities. There are no bare root or transplant nurseries in Alaska. However, white spruce seedlings from a Fairbanks seed source were grown (2-0 or 1-1) at the Red Rock Nursery in Prince George around 1978. The 110 day growing season in Fairbanks put the trees at risk in Prince George's 70-80 day season; I recall about 10% survival. Testing was designed to evaluate survival and growth of the bare root stock against Alaskan container stock. I do not know current results of this test.

The U.S. Forest Service established a container nursery in Petersburg about 1 year before (or after!) the State's nursery. They are currently at a low ebb with the "reforestation backlog" apparently erased. Joe recalls potential production at the 1,000,000 seedling level with most recent costs near $0.75 per seedling. This sea-level federal nursery must recover both capital and operating costs; the state nursery recovers operating costs only. Accounting is "tight" at the former and "loose" at the latter.

Rex Lantz at the Alaska Tree Company in Fairbanks has tried seedling production on both a limited container and bare root basis with little success. Mann Leiser, owner of Alaska Greenhouses here in Anchorage, also grew 6" spruce seedlings

(containerized) in 1977 and 1978. Retail pricing was about $0.50 each; I believe he only grew a single crop.

Reforestation. The Tanana State Forest at Fairbanks has a dedicated land base and a 2.5 MMBF per year AAC. Most reforestation in the Interior (north of the Alaska mountain range - running east to west about 120 miles north of Anchorage) will be on cut lands within this forest. Current spacing for white spruce seedlings is 8x8 (about 600 per acre).

Steve Clautice (907-451-2660), reforestation forester at Fairbanks noted the following data:

1988	110 acres planted
1987	308 acres
1986	255 acres
1985	303 acres

Current estimated costs per acre are:

$80/acre	planting labor
50/acre	site prep
150/acre	seedlings
$280/acre	total (about $0.50 per tree)

The State also uses direct seeding (with site preparation) at Fairbanks. Current costs are $36/acre (contract) and $50/acre (State force account). The ratio of planting to seeding, under the Tanana State Forest Management Plan, is:

1,040 acres	harvested, per year
260 acres	planted
780 acres	direct seeding

Both disk trenchers and Cats with shear blades have been used. A production ratio of 3 acres per hour is fairly normal.

Steve noted the DOF was searching for an alternative seedling source due to: (1) poor financial support for the nursery, reducing production below levels needed at Fairbanks, (2) difficulty of matching budget funds to sowing needs when trees are grown on a calendar year basis and funds appropriated on a June-July fiscal year basis, (3) potential of "root bound" seedlings when 2 year old Leach tube stock is planted, and (4) inconsistent size (2 inches to 8 inches) and condition of stock (tops flushing as they are planted).

The DOF has contacted one or more nurseries in B.C. (RCN?) or Washington for trial shipments of about 10,000 trees. The scope of the reforestation backlog is unknown but is apparently increasing.

Opinion. I feel the Alaska seedling market segment has a limited, but profitable, potential for a Yukon based nursery. The limit is due to the relatively low level of timber harvest. I see increasing demand on the timber resource both in the interior and the southcentral area. Actual demand will depend on (1) export markets and (2) local processors. Alaska has been a "last in first out" supplier and we appear to be on or near the top of this upsurge.

The greatest profit potential would be realized with a mix of products, including seedlings (both bare-root and containerized) and wholesale nursery stock. A single truck could haul both from, say, Whitehorse or Watson Lake. The Yukon nursery could hold material from Aldergrove and ship on demand.

Quality plant material, whether seedlings or nursery stock, would build demand over time; I suspect local retailers are somewhat price sensitive but quicker response (from the Yukon versus Tacoma or Vancouver) and consistent, high-quality material would build market share.

APPENDIX VII

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REFERENCES

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