



Province of
British Columbia

Ministry of
Environment

ENVIRONMENTAL APPEAL BOARD
Victoria
British Columbia
V8V 1X5

Appeal: 84/15 PES

J U D G E M E N T

Appeal by the Arrowsmith Ecological Association
against the Pesticide Control Act - Pesticide
Use Permit 110-146-84/85, issued to MacMillan
Bloedel Limited - Northwest Bay Division,
Nanoose Bay, B.C. for individual tree injection
of Forestamine (2,4-D Amine) and Roundup
(Glyphosate), for conifer release purposes in
the Parksville area.

APPELLANT

ARROWSMITH ECOLOGICAL ASSOCIATION

DECISION

The Panel of the Environmental Appeal Board authorized under the Pesticide Control Act and Environment Management Act to hear the appeal by the Arrowsmith Ecological Association against Pesticide Use Permit 110-146-84/85, issued to MacMillan Bloedel Limited, for individual tree injection of Forestamine and Roundup for conifer release purposes, has considered all of the evidence submitted to it at the hearings held August 28th and September 12th, 1984, and has decided that the implementation of the program in accordance with the terms and conditions specified in the Permit will not cause an unreasonable adverse effect to man and/or the environment.

In coming to its decision, the Panel of the Board is mindful of the terms and conditions of Pesticide Use Permit 110-146-84/85 under which a pesticide treatment is authorized using a method of application which is both highly site and species specific. It is difficult to conceive how any meaningful adverse effect to man or the environment might occur by using a pesticide in a proper manner and applying it by the hack and squirt method. The Panel is reinforced in this conclusion by the fact that the Appellant was unable to report any instance where the hack and squirt pesticide treatment authorized under Pesticide Use Permit 110-122-82/83 had caused any adverse effect which resulted in damage to man or the environment.

The Panel supports the view of the Appellant that pesticides should only be used where no other practical alternative exists and then only sparingly and discriminately. The Permittee has adopted a pesticide-use policy which complies satisfactorily with this objective and has incorporated it into its permit application.

The Panel did not view as unreasonable the request of the Appellant that it be given prior notification by the Permittee of the dates on which treatment was to occur, or that it be permitted to conduct pre- and post-treatment inspection under terms and conditions satisfactory to both parties. The Board is aware that this practise has already been adopted by other Permittees and has inspired increased confidence by environmental groups and others that the permit requirements are, in fact, being fully complied with.

The Panel rejects the requests made by the Appellant that the size of pesticide-free zones be increased in some instances and that flagging of such zones be made a condition of the Permit. There was simply no evidence presented to support the need for such modification to this Permit, particularly when the highly site-specific and species-specific hack and squirt method of application is to be used.

It was the Appellant's contention that the Permittee was not properly assessing or applying worker safety standards and practices, and that the Permittee's health monitoring program did not adequately protect workers using pesticides, nor measure any effects of pesticide use on body organs or on employee offspring.

The Panel supports the objectives of the Appellant in recommending methods by which worker safety may be improved, or exposure to pesticides may be reduced. The Permittee is cognizant of its responsibilities in this area, and is utilizing safety practices and procedures in applying pesticides which are not inconsistent with Workers' Compensation Board requirements. In addition, the Permittee maintains an avenue through which employees engaged in pesticide treatment programs may submit recommendations for improvement in pesticide application practices and procedures. The Panel found no evidence in support of the view that the Permittee was not properly assessing or applying all existing worker safety standards and practices.

The Appellant presented considerable evidence in support of its contention that the Vredenburg girdling method provided a viable and cost-effective alternative to the use of pesticides to achieve conifer release. The Permittee shared this view to the extent that the decision to use manual-mechanical methods realistically had to be limited to those forested areas which contained stands where the use of the girdling tool would be more productive than using the hack and squirt or other method in which pesticides were utilized. The Permittee does, in fact, use both manual-mechanical and chemical methods to achieve conifer release. It is the Panel's view that the choice of alternative selected is properly that of the Permittee, to be decided on the basis of effectiveness and cost, and

that it is not a function of the Environmental Appeal Board to favour one alternative over another, provided that no alternative will cause an unreasonable adverse effect to man and/or the environment.

The Appellant also contended that the Permit authorized the use of the pesticide at rates in excess of those specified by the manufacturer. This aspect of the Permit's terms and conditions was not satisfactorily resolved by evidence presented at the hearing. The Panel, therefore, directs the Administrator, Pesticide Control Act, to recheck the quantities of pesticides and rates of application approved under Pesticide Use Permit 110-146-84/85, and to confirm that the rates of application do not exceed the rates of application as directed on each of the product's labels.

The Panel also directs the Administrator, Pesticide Control Act, to review the "Duration" of Pesticide Use Permit 110-146-84/85 with the Permittee, and, if requested, to change the final date specified in Section 4 to read "September 30, 1986", in recognition of the fact that the appeal process resulted in no treatment occurring in 1984 under the Permit.

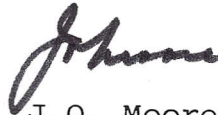


J.O. Moore
Panel Chairman
Environmental Appeal Board

Victoria, B. C.
October 31st, 1984

SUMMARY

The following pages of this Judgement contain a summary of the hearing details and principal points advanced in the testimony of the parties to the appeal.



J.O. Moore,
Panel Chairman
Environmental Appeal Board

October 31st, 1984

Attd: Appendix "A"

HEARING DETAILS:

The hearing was held by a Panel of the Board at the Harbour View Motor Inn, 809 Island Highway, Nanaimo, B. C., on August 28th and September 12th, 1984.

The Panel of the Board in attendance were:

J.O. Moore	Chairman
R. F. Patterson, Ph.D.	Member
J.W. Warr	Member

Miss Shirley Mitchell, Secretary to the Board, acted as Recorder of the proceedings.

REASON FOR APPEAL:

The appeal was taken under Section 15 of the Pesticide Control Act against the issuance of Pesticide Use Permit 110-146-84/85 to MacMillan Bloedel Limited - Northwest Bay Division, for individual tree injection or stump application of Forestamine (2,4-D Amine) and Roundup (Glyphosate) for conifer release purposes in the Parksville Area, on the following grounds:

- (1) The Permit does not comply with the Pesticide Control Act;
- (2) Improper assessment of project sites;
- (3) Alternatives not properly assessed;
- (4) Safety standards and practices are not properly assessed or applied;
- (5) Alternatives are available.

APPELLANT'S REPRESENTATIVES:

Mr. Robert McMillan President Arrowsmith Ecological Association Box 252 Errington, B. C. V0R 1V0	Spokesman
Mr. Robin Ware	Witness
Mrs. Joan Spira	Presented Summation for Appellant

PERMIT HOLDER'S REPRESENTATIVES:

Mr. P. J. Phillips Divisional Forester MacMillan Bloedel Limited Northwest Bay Division Nanoose, B. C. V0R 2R0	Spokesman
Mr. Les Pinder Assistant Divisional Forester	Witness
Ms. Jean Wright Employee Relations	Witness
Mr. Dave Weaver MacMillan Bloedel Limited Port McNeill, B. C.	Witness
Steve Chambers Area Forester, Estevan Division MacMillan Bloedel Limited	Witness

REPRESENTATIVE OF ADMINISTRATOR, PESTICIDE CONTROL ACT

Mr. R.G. Mullett Regional Manager Pesticide Control Branch	Spokesman
--	-----------

EXHIBITS:

- EXHIBIT "A" - Application by the Arrowsmith Ecological Association to change the order in which testimony is presented.
- EXHIBIT "B" - Proposed Amendment to Pesticide Use Permit #110-146-84/85. AEA
- EXHIBIT "C" - Suggested Directive to the Permittee for Board's consideration. AEA
- EXHIBIT "D" - Proposed Additional Amendments to Pesticide Use Permit No. 110-146-84/85. AEA
- EXHIBIT "E" - Letter from Grant Ladouceur, Government of Canada, Fisheries and Oceans, to Bill Spira, Arrowsmith Ecological Association, dated August 28, 1984. AEA
- EXHIBIT "F" - Letter from Workers' Compensation Board to Robert E. McMillan, dated May 9, 1984. AEA
- EXHIBIT "G" - Proposed Additional Amendments to Pesticide Use Permit- "Agency Notification" 110-146-84/85. AEA
- EXHIBIT "H" - Proposed Additional Amendments to Pesticide Use Permit - "Pesticide Quantity". AEA
- EXHIBIT "I" - MacMillan Bloedel Limited Response to Appeal Board, dated August 28, 1984.
- EXHIBIT "J" - MacMillan Bloedel Limited Minutes of Safety Committee, dated July 6, 1984.
- EXHIBIT "K" - "Vredenburg Girdling Tool Trial" by Dave Weaver, Oct. 1983 - Forestry Chronicle.

STATEMENT OF PANEL CHAIRMAN ON BOARD'S POSITION RELATIVE
TO ISSUANCE OF SUBPOENAS

Prior to the commencement of presentation of evidence, the Panel Chairman informed the parties to the appeal that a number of requests had been made by the Arrowsmith Ecological Association for the Board to issue subpoenas requiring the attendance of certain witnesses or presentation of records in the possession of the Permittee and Administrator.

The Panel Chairman advised the Association that arrangements had been made for the witnesses and the records identified to be available during the course of the hearing of the appeal and that the attendance of witnesses and release of records had been arranged without the necessity of the Board issuing any subpoena. This course of action was taken because the Board had not previously formalized its policy with respect to the issuance of subpoenas and payment of costs incurred incidental thereto.

The Board is authorized and is prepared, upon request, to issue a subpoena pursuant to the powers afforded it under the Inquiry Act.

The summons will then be sent to the party who has requested its issuance on the understanding that that party will serve or arrange to serve the subpoena on the party identified in the summons.

Where the attendance of a witness is requested, the party requesting such attendance will be required to pay the reasonable and necessary travel expenses of the witness's attendance. In most instances, the Board will require deposits to cover these costs to be made on or about the time the request for issuance of the subpoena is submitted.

The Chairman made it clear to the parties to the appeal that the Appellant would not be asked by the Board to pay the reasonable and necessary travel expenses of the witnesses whose attendance they had requested for this hearing.

SUMMARY OF PRINCIPAL POINTS ALLEGED IN TESTIMONY OF APPELLANT

At the outset of the presentation of evidence by the Appellant, an application was made to the Board for a change in the manner in which testimony was to be given. In essence, the Appellant's representative wished to bring in the Association's evidence by questioning the representative of the Permittee and the Administrator rather than by making any formal submission or by calling any witnesses. The Appellant's representative detailed the Association's reasons for making the application and their objectives in placing the matter before the Board. (Exhibit "A")

The Chairman advised the Appellant's representative of the hazards of not putting in any evidence before allowing the Permittee to read its presentation. A short recess was called after which the Appellant's representative indicated that the Association had reconsidered its position and wished to withdraw its application for a change in the manner in which testimony was to be given.

The Appellant's representative then proceeded to make the following points in his evidence:

1. Contrary to statements contained in the letter to Mr. Pat Phillips, MacMillan Bloedel Limited, Northwest Bay Division, from Mr. Robin G. Mullet, P.Ag., Pesticide Control Branch, dated June 1, 1983, pertaining to "Site #5", that the stream running through this plot is not ephemeral, pours directly into the Englishman River, and was running on the day following application of the chemical authorized under P.U.P. 110-122-82/83.
2. A violation of the guidelines made by the Pesticide Control Branch occurred at Site #5 in the application of the chemical authorized under P.U.P. 110-122-82/83, because the Permittee did not follow the recommendations made by Mr. Mullet in his letter of June 1st, 1983.
3. The violation of the guidelines occurred notwithstanding that the Administrator was directed by the Board to have the Regional Manager visit Site #5 and the Parker Road Farm Site prior to the time of the application to make a ruling whether the sites contained bona fide wetland areas or water bodies.

4. The recommendations set out in Mr. Mullett's letter to Mr. Pat Phillips, dated June 1, 1983, do not meet the guidelines prescribed in the Handbook used by the Pesticide Control Branch.

5. The stream on Site #5 was not flagged in 1983 prior to the application of the pesticide authorized under P.U.P. 110-122-82/83, nor were any of the other streams in the permit area.

6. The Regional Manager, Vancouver Island Region, Pesticide Control Branch, was as unfamiliar with the stream on Site #5 in 1983 that he erroneously allowed the 10-meter pesticide-free zone along its bank to be reduced to 1 meter.

7. The Regional Manager, Vancouver Island Region, Pesticide Control Branch, could not have consulted with the Fish and Wildlife Branch as directed by the Board in its decision dated September 22, 1982; otherwise, he would have been aware that the stream on Site #5 leads to a fish-bearing stream and the Englishman River.

8. The Regional Manager, Vancouver Island Region, Pesticide Control Branch, could not have consulted with the Ministry of Health; otherwise, he would have known that the Englishman River is an uptake source of water for the Town of Parksville.

9. The Workers' Compensation Board failed to confirm that the Regional Manager, Vancouver Island Region, Pesticide Control Branch, had contacted them to ensure that they were satisfied with the safety procedures followed by the holder of P.U.P. 110-122-82/83 in their pesticide application.

10. The Regional Manager apparently failed to check the application of pesticide authorized under P.U.P. 110-122-82/83 to ensure that the safety procedures of the division met

Pesticide Control Branch standards, or to ensure that all permit conditions had been met.

11. The reduction in pesticide free zones along the stream at Site #5 from the 10 meters set out in the Handbook to the 1 meter recommended in Mr. Mullett's letter to Mr. Phillips, dated June 1st, 1983, could be prevented in future if the Board followed up all instructions given the Administrator by ascertaining that pre- and post-application inspections have been duly carried out, and that all minimum pesticide-free zones are either maintained or increased rather than diminished.

12. The Permittee does not take any periodic soil tests to measure the extent of pesticide residues.

13. The Permittee's divisional forester did not consult with any biologist or toxicologist prior to applying the pesticide to Site #5.

14. The Permittee will not have to return to the areas treated in 1983 as they were satisfied with the results of the application, including the kill rate and crew's performance, and that all guidelines and safety standards for pesticide users had been met.

15. The Permittee issued instructions to its field applicators which were inconsistent with the directions on the manufacturer's label. The instructions given by the Permittee to its employees stated that the pesticide should be applied in a cut made in the tree at the 'lowest convenient height' notwithstanding that the directions on the label require the application to be made 'as close to the ground as possible'.

16. The quantity of pesticide injected into each tree under the Permittee's instructions to its employees exceeded the quantity recommended by the manufacturer. Experiments confirmed that $2\frac{1}{2}$ times the quantity of pesticide recommended by the manufacturer was in fact being used by the Permittee.

If the manufacturer's rate of application recommendations had been carefully followed, the quantity of pesticide approved under P.U.P. 110-122-82/83 could have been reduced from 85 to 34 kgs.

17. The health monitoring program of the Permittee does not adequately protect workers using pesticides, nor does it endeavour to measure any effects of pesticide use on body organs or on employee offspring.

18. Monitoring of pesticide applications by the Permittee is not carried out by the Administrator or other independent policing body.

19. The Arrowsmith Ecological Association would be prepared to enter into an agreement similar to that reached with C.P. Rail for independent and co-operative on-site inspections of the treatment areas to ensure that full compliance with the terms and conditions of the permit has occurred. The existence of such an agreement would remove any doubt in the minds of the public that the Permittee may not be fully complying with all permit requirements.

20. A 50-meter pesticide free zone should be maintained at all school grounds, playgrounds and hospital grounds, and at Waterworks Districts water sources.

21. The boundaries of all pesticide free zones should be clearly marked before and after application.

22. Prior to the time that permits were required to apply pesticides, it was the policy of MacMillan Bloedel Limited to maintain a one-chain (66 ft.) pesticide free zone along all waterbodies.

23. The 10-meter pesticide free zone currently required along all waterbodies is inadequate, particularly when it is known that the waterbodies form part of any waterworks source.

24. The Arrowsmith Ecological Association recommends that a number of amendments to Permit 110-146-84/85 be made to ensure that no contamination of water supplies or environmental damage may occur. (See Exhibits "B", "C", "D", "G", & "H".)

25. The Arrowsmith Ecological Association has reached satisfactory agreements for pesticide applications with C.P. Rail and the Ministry of Transportation and Highways.

26. The Arrowsmith Ecological Association insists on being given the right of prior notification of application and to verify that all pesticide free zones are carefully adhered to.

27. The Environmental Appeal Board has statutory right to amend the terms and conditions of any permit issued under the Pesticide Control Act.

28. The Permittee should be prohibited from applying pesticides when it is raining.

29. The Permittee should be prohibited from removing vegetation from all pesticide free zones along all fish habitat waters.

30. The Permittee should be required to use manual methods for conifer release purposes in all pesticide free zones along all non-fish habitat waters.

31. The Permittee ignored the recommendations of workers made at safety committee meetings held May 4th and July 6th, 1983, and July 4th, 1984.

32. The Workers Compensation Board should be given notice 60 days prior to the commencement of the pesticide application so as to allow them time to arrange site inspections and to review safety procedures with all personnel concerned.

33. Permit No. 110-146-84/85 does not specify any rate of application of the pesticide authorized for use by the Permittee.

ADDITIONAL POINTS BROUGHT FORTH IN THE CROSS-EXAMINATION
OF THE APPELLANT'S SPOKESMAN:

1. The Appellant's spokesman, although he is a member of the forestry crew of MacMillan Bloedel Limited, Northwest Bay Division, refused to participate in the pesticide application authorized under Permit 110-122-82/83.

2. The Appellant's spokesman was excused by the Permittee from participating in the pesticide application authorized under Permit 110-122-82/83 and, hence, was not involved in discussions on practices and procedures held prior to commencement of the project with those members of the forestry crew who were to apply the pesticide.

3. The Permittee's spokesman inspected the bed of the stream on Site #5 the day after the pesticide application authorized under Permit 110-122-82/83 had taken place and found no water in the stream.

4. The Appellant's spokesman likely inspected the stream on Site #5 some time after the treatment made by the Permittee had occurred.

5. Most of the water sources identified in Clause 5(b) of the Proposed Amendments to P.U.P. 110-146-84/85 (Ex. "B") are not within the area in which treatment is authorized under the Permit.

6. The Administrator's representative did contact the Workers' Compensation Board and the Ministry of Health, as directed by the Board in its decision on the appeal against P.U.P. 110-122-82/83.

7. The Appellant's spokesman did not present evidence in support of his allegation that violations occurred in the application of pesticide authorized under PUP 110-122-82/83.

8. The Administrator's representative checked with the Water Management Branch to ascertain whether there were any known licenced water intakes downstream of the treatment planned near the stream passing through Site #5.

9. The agreements reached between C.P. Rail and the Minister of Highways and the Arrowsmith Ecological Association do not form part of the terms and conditions of the Permits to which they refer.

10. The Appellant's spokesman did not have any evidence to support the Arrowsmith Ecological Association's contention that a 50-meter pesticide free zone should be maintained along all public parks and water source headwaters.

11. The Arrowsmith Ecological Association does not have any evidence that the pesticide application authorized under P.U.P. 110-122-82/83 caused any unreasonable adverse effects which resulted in damage to man or the environment in the treatment areas.

12. The use of chemicals such as 2,4-D has been restricted for forestry purposes in Sweden, effective January 1, 1984. The chemical may only be used in remote forest areas.

13. Permit 110-122-82/83 did not require the Permittee to flag the pesticide free zones identified therein.

SUMMARY OF PRINCIPAL POINTS ALLEGED IN TESTIMONY OF
THE PERMITTEE:

The evidence presented by the Permit Holder's representative was submitted to the Panel of the Board, in part, in the form of a brief and was identified for the record as Exhibit "I".

The brief entitled "MacMillan Bloedel Limited Northwest Bay Division - Response to Appeal by Arrowsmith Ecological Alliance Against Permit 110-146-84/85 Allowing Treatment of Alder and Maple with 2,4-D Amine and Roundup" August 23, 1984, was read into the record by Mr. P. J. Phillips, Divisional Forester, MacMillan Bloedel Limited.

The brief contains responses to the concerns expressed by the Appellant in its grounds of appeal, and the views of the Permittee relative to the possibility of any unreasonable adverse effect from the treatment which might result in damage to man or the environment.

A photocopy of the brief is attached to this Judgement as Appendix "A".

Additional points alleged in the evidence of the Permittee are as follows:

1. The forestry crew attached to the Northwest Bay Division consists of four employees, two of whom refused to work with, or apply pesticides.
2. The two members of the forestry crew who are willing to work with and apply pesticides have been directly involved with the Permittee in formulating safety practices and procedures relative to pesticide uses.
3. The Appellant's representative in his capacity as a member of the forestry crew of Northwest Bay Division has not been involved in the formulation of safety practices and

procedures simply because he refuses to work with or apply pesticides and is, therefore, unable to represent the workers who do participate.

4. The Permittee maintains an active Safety Committee and is in frequent contact with representatives of the Workers' Compensation Board relative to safety practices and procedures for pesticide applications.

The following points were brought forth in cross-examination of the Permittee's representatives:

1. The Permittee, in assessing the hazards of pesticide treatment for silvicultural purposes, rejected spray and backpack methods of application as being more hazardous than hack and squirt methods.

2. Mechanical methods of alder control for conifer release purposes were assessed and were rejected because of unsatisfactory, long-term control and worker safety hazards.

3. The odor detected following pesticide applications serves to warn employees and others of its presence and is regarded as a beneficial attribute by applicators.

4. The Workers' Compensation Board is kept informed on an on-going basis of the various programs the Permittee is working on so they may attend if they so wish.

5. The Permittee is currently engaged in formal trials to compare the effectiveness of mechanical-manual versus chemical methods of alder control, utilizing different age groups of trees. It is anticipated that the results of the trials will be made available to the Arrowsmith Ecological Association and others when they are completed.

6. The Permittee was generally satisfied with the results of the pesticide application authorized under Permit 110-122-82/83.

7. At the time treatment occurred at Site #5 and Parker Road, an inspection was made by the representatives of the Permittee and the Administrator, and no water was observed in the stream.

8. The Permittee's representative could not recall any occasion where an accident involving a member of the crew had occurred in using pesticides.

9. The Permittee has safely used pesticides for a period in excess of 10 years.

10. No evidence exists to suggest that the use of pesticides has in any way affected the health of the Permittee's employees who have applied the pesticides.

11. The Permittee declined to enter into any agreement with the Arrowsmith Ecological Association concerning pesticide applications but, instead, provided a letter response outlining specific items on which the Association could anticipate full co-operation.

SUMMARY OF POINTS MADE BY THE ADMINISTRATOR'S REPRESENTATIVE:

The Administrator's representative made no formal presentation of evidence but indicated that he would be prepared to answer any questions relative to the issuance of Permit 110-146-84/85 or arising out of the treatment authorized under Permit 110-122-82/83.

The following points were made as a result of questions which followed:

1. The stream located on Site #5 is regarded by Fisheries authorities to be non-fish bearing.

2. The one-meter pesticide free zone along the stream located on Site #5 was recommended by the Administrator's representative after careful consideration and consultation with other affected government agencies.

3. No violations of the permit's terms and conditions were observed by the Administrator's representative following a check made by him of the treatment authorized under Permit 110-122-82/83. Treatment of one tree within the one-meter pesticide free zone may have occurred.

SUMMARY OF EVIDENCE PRESENTED AT THE ADJOURNED HEARING
HELD SEPTEMBER 12, 1984.

The hearing commenced August 28th, 1984, could not be completed on that date as two witnesses whose attendance had been requested were unavailable. The two witnesses were present at the adjourned hearing held in Nanaimo, B. C. on September 12, 1984.

SUMMARY OF ADDITIONAL POINTS ALLEGED IN TESTIMONY AND
CROSS-EXAMINATION OF APPELLANT'S REPRESENTATIVE

1. The rate of application for Roundup under the Permit should be reduced to 117 kg. to reflect an application of 1 kg. per hectare.
2. The Permittee has selected chemical means of achieving conifer release because trials conducted using manual methods were unsuccessful.
3. Tests conducted by the Permittee established that the Vredenburg girdling tool is a viable alternative to hack and squirt treatment for conifer release.
4. Tests conducted by the B.C. Forest Service found the girdling method of alder removal to be 38 percent faster than the hack and squirt method.
5. The B.C. Forest Service found that when costs of chemicals and labour are considered, the use of girdling methods would appear to represent substantial savings over other methods of achieving conifer release.

6. The girdling tool is simple and safe to use. It can be operated safely and inexpensively, with minimal training and without the use of fuel or chemicals. It is not subject to downtime, nor restricted to where it can be used. It prevents immediate slash buildup conditions, and avoids incurrence of political costs.

7. The use of girdling methods of conifer release provides a viable and cost-effective alternative to the use of pesticides in many of the areas to be treated under the Permit.

8. The Permittee has a fundamental responsibility to the public to reduce the use of pesticides wherever possible, particularly in watershed areas and near public roads, parks, and private residences.

9. The Appellant advocates the adoption of alternatives to the use of chemicals which are viable, cost-effective, and environmentally sound,

10. Before adopting chemical methods to achieve conifer release, much more experimentation with manual methods should be completed.

11. The use of girdling techniques appeared to be equally as effective in achieving conifer release as chemical methods.

SUMMARY OF ADDITIONAL EVIDENCE ALLEGED IN TESTIMONY AND
CROSS EXAMINATION OF PERMITTEE'S REPRESENTATIVES.

1. No girdling was undertaken as part of the 1984 conifer release program in the Permittee's Port McNeill operations because no stands were identified which fit the conditions in which the girdling tool would be more productive than using a hack and squirt treatment.

2. A check of areas in which girdling was completed in 1983 in the Permittee's Port McNeill operations indicated fairly successful results.

3. The use of the girdling tool on coppiced alder presents a number of difficulties which undermines its effectiveness.

4. The use of girdling would not be suitable for a conifer release program in the Estevan Division where more than 5 percent of the alder to be treated are less than 4 cm. in diameter at knee height, the alder to be treated show a wide range of diameters, the alder have a large number of branches within two feet of the ground, the crop trees being released are shade intolerant, or stand conditions are such that a one or two year wait for effective release would jeopardize the conifer stand.

5. In allocating funds for conifer release programs in the Estevan Division in 1984, a 50%/50% split between manual and chemical treatment was made.

6. Roundup is the most effective chemical to use to control maple coppicing.

7. Girdled trees may survive if a gapping of the area girdled develops.

8. In the view of the Permittee, the use of the chemical treatment program planned under the Permit will achieve a more satisfactory result than that which could be expected by girdling methods of conifer release.
