

ALBERTA ENVIRONMENTAL APPEAL BOARD

Report and Recommendations

Dates of Hearing - April 8 and May 8, 1998
Date of Report and Recommendations: June 8, 1998

IN THE MATTER OF Sections 84 and 91 of the Environmental Protection and Enhancement Act, (S.A. 1992, ch. E-13.3 as amended);

- and -

IN THE MATTER OF an appeal filed by Fay Ash with respect to Approval No.'s 18445-01 issued to the City of Calgary, Calgary Parks and Recreation and 47150 issued to the City of Calgary, Golf Course Operations # 136 by the Director, Southern East Slopes and Prairie Regions, Environmental Regulatory Service, Alberta Environmental Protection.

Cite as: Ash v. Director of Southern East Slopes and Prairie Regions, Environmental Regulatory Service, Alberta Environmental Protection. *Re: City of Calgary*

PANEL MEMBERSHIP

Dr. William A. Tilleman, Chair
Dr. Ted W. Best
Dr. Steve E. Hrudehy

APPEARANCES

Appellant Mr. Brian O’Ferrall and Ms. Ashley Evans, counsel, Bennett Jones Verchere, representing Ms. Fay Ash, and witnesses, Mr. David Crowe and Mr. Jack Locke

Other Parties Ms. Charlene Graham, counsel, Alberta Justice, representing Mr. Peter Watson, Director, Southern East Slopes and Prairie Regions, Environmental Regulatory Service, Alberta Environmental Protection, Mr. Bob Burland, Approval Coordinator, Alberta Environmental Protection, and Ms. Janet McLean, Head, Pesticide Management Branch, Alberta Environmental Protection

Mr. Timothy Haufe and Mr. Mark Young, counsel, City of Calgary Law Department, representing the City of Calgary and Mr. Todd Reichardt, Parks and Recreation, City of Calgary

Mr. Menno Homan, President, and Ms. Kelly Chambers, Bow River Basin Water Council

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BACKGROUND

[1] These appeals concern two "special use" Approvals, issued on July 25, 1997, by the Director of Southern East Slopes and Prairie Regions, Environmental Regulatory Service, Alberta Environmental Protection.¹ The Director issued the Approvals to the City of Calgary, Calgary Parks and Recreation and Golf Course Operations, pursuant to section 9(1) of the *Alberta Pesticide (Ministerial) Regulation*, AR 43/97. As relevant here, that section prohibits the use or application of a pesticide² within thirty horizontal metres of an "open body of water" except pursuant to a "special use approval" granted by the Director.³

¹ Hereinafter, the "Director". Alberta Environmental Protection will hereinafter be referred to as the "Department".

² Section 1(uu) of the *Alberta Environmental Protection and Enhancement Act* ["the Act"], S.A. 1992, ch. E-13.3, as amended, defines "pesticide," in part, as "[a]ny substance . . . for use in preventing, destroying, repelling or mitigating any insect, nematode, rodent, predatory animal, parasite, bacteria, fungus, weed or other form of plant or animal life or virus. . . ." The Approvals at issue in this appeal concern two forms of pesticides known as "herbicides" and "fungicides". The former are pesticides used to kill or suppress plants; the latter are pesticides used to kill or suppress fungi.

³ That regulation was adopted pursuant to two related sets of provisions under the Act. One set, in Part 2, Division 2 of the Act, prohibits certain "activities" designated by regulation except pursuant to a Department "approval". See sections 58-63 of the Act. Section 81(1)(a) of the Act gives the Environment Minister broad authority to adopt regulations identifying those "activities" requiring an "approval" under Part 2, Division 2. The other relevant set of provisions are in Part 8, Division 2 of the Act. That Division includes section 156, which prohibits the "use" of a pesticide except pursuant to "regulations" and the pesticide's "label". Section 158 grants the Environment Minister authority to adopt regulations "classifying" pesticides for purposes of Part 8 of the Act and any regulations adopted pursuant to section 159. That section, in turn, grants the Lieutenant Governor in Council broad authority to adopt regulations regarding the sale, use, and disposal of pesticides in Alberta. The Lieutenant Governor's regulation, known as the *Pesticide Sales, Handling, Use and Application Regulation*, AR 24/97, provides *inter alia* that certain pesticides shall not be used in a manner "that causes or is likely to cause an adverse effect" (section 5(1)) and contains several specific requirements governing the sale, use, and disposal of pesticides.

[2] Special Use Approval No. 18445-01 allows Calgary Parks and Recreation to use pesticides for three projects: "Project A" is the spraying of an herbicide named Garlon 4 to control "purple loosestrife" along designated Calgary locations within thirty metres of the Bow and Elbow Rivers and Nose Creek; "Project B" is the spraying of four named herbicides⁴ to control certain broadleaf weeds within thirty metres of those same three river-courses; and "Project C" is the spraying of an herbicide named Glyphosate within thirty metres of the Bow River in conjunction with reclamation work at the Inglewood Bird Sanctuary's north field, in Calgary.

[3] The second Special Use Approval No. 47150 is for the use of three listed pesticides on a putting green within thirty metres of a water hazard on the Shaganappi Golf Course.

[4] On August 11, 1997, Ms. Fay Ash and Mr. Don Munroe each filed appeals with the Environmental Appeal Board [the "Board"] of the two Special Use Approvals. The following is a brief outline of the salient portions of the appeal proceedings.

[5] On November 13, 1997, following its receipt of written materials and oral testimony at a preliminary meeting, the Board issued a Decision addressing several preliminary matters.⁵ First, the Board found that, of the two Appellants, only Ms. Ash was "directly affected" by the Approvals under section 84(1)(a)(iv) of the Act. Thus, the Board dismissed Mr. Munroe's appeal pursuant to section 84(5)(a)(i.1) of the Act.⁶ Second, the Board exercised its discretion under section 87(2) of the Act to limit Ms. Ash's appeal to the Approvals' "impact . . . on affected surface water quality."⁷ Finally, the Board denied the Director's and City's requests that the Board dismiss Ms. Ash's appeal

⁴ The four herbicides are: 2,4-D, Dicamba, Glyphosate and Transline.

⁵ *Ash and Munroe v. Director of Southern East Slopes and Prairie Regions, Environmental Regulatory Service, Alberta Environmental Protection*, Appeal Nos. 97-031 and 97-032, Nov. 13, 1997 Decision.

⁶ *Ibid.*, pp. 9-12. As relevant here, the former section provides that an appeal (formerly called a "notice of objection") may be filed by a person who is "directly affected" by the Approval. The latter section authorizes the Board to dismiss an appeal if it finds that the appellant is not "directly affected".

⁷ *Ibid.*, pp. 13-15.

as frivolous.⁸

⁸ *Ibid.*, pp. 15-16.

[6] Following its receipt of numerous requests to participate in the appeal, on December 19, 1997, the Board issued a letter stating that the "full parties" to the appeal consisted of Ms. Ash, the Director, the City, and Mr. Menno Homan, on behalf of the "Bow River Basin Water Council" [the "Bow River Council"].⁹ The Board also allowed eleven other people -- including Mr. Munroe - - to submit "full written arguments" as intervenors by January 19, 1998, which was the deadline for the parties' filing of "written submissions."

[7] On January 19, 1998, the Board received written submissions from Ms. Ash (filed by Mr. David Crowe on her behalf), the Director, and the City. The Board received written statements from only three of the eleven intervenors.

[8] On January 27, 1998, the Board issued a second Decision granting Ms. Ash's request for a temporary adjournment of the hearing pending the Calgary City Council's review of the City's "Integrated Pest Management" Plan and the imminent release of a joint Alberta-Canada water quality report.¹⁰

⁹ The Bow River Council is a multi-public and private stakeholder "advisory body" to the Minister of Environmental Protection. The Council's mission is to "promote awareness, improvement and protection of Bow River water quality, foster cooperation among agencies with water quality responsibilities, and provide communication links among governments, interest groups and the general public." *Preserving Our Lifeline: A Report on the State of the Bow River*, Calgary, Alberta, October, 1994 [hereinafter, *Bow River Report*], p. 1.

¹⁰ *Ash v. Director of Southern East Slopes and Prairie Regions, Environmental Regulatory Service, Alberta Environmental Protection. Re: Adjournment and Other Motions*, No. 97-032, Jan. 27, 1998, pp. 1-7.

[9] Prior to the re-scheduled hearing, the Board received sworn, written direct testimony from Mr. Watson, who is the Director, and from Mr. Robert Burland and Ms. Janet McLean. Mr. Burland has been the “coordinator” for the Director’s Special Use Approval program since 1988 and has been working in the Department’s Pesticide Management Branch since 1977. As coordinator, Mr. Burland appears to be the lead staff person responsible for evaluating and responding to applications for Special Use Approvals.¹¹ Ms. McLean is the head of the Department’s Pesticide Management Branch, which includes the Special Use Approvals program.¹² The Board also received several other written materials, including written "Presentation Notes" from Mr. Homan on behalf of the Bow River Council and a written submission from Mr. Lloyd Ash, an intervenor.

[10] The Board held a hearing on April 8, 1998, at which Ms. Ash, Mr. David Crowe, and Mr. Jack Locke testified for the Appellant. None of these witnesses were qualified as experts. The Board resumed the hearing on May 8, 1998, during which it heard additional testimony from the Director, Mr. Burland, and Ms. McLean, and testimony from Mr. Todd Reichardt, the chief entomologist for the Calgary Parks and Recreation Department. Mr. Reichardt’s testimony consisted primarily of a narrated slide show regarding the City’s general “Integrated Pest Management” program.

[11] This appeal arises in somewhat of a historical context, having followed prior appeals, filed by Ms. Ash and several others, of Special Use Approvals which the Director issued to the City of Calgary in 1994 for the use of pesticides in several areas of the City. The first appeal was resolved by an agreement which essentially directed Calgary Parks and Recreation to develop a "comprehensive, written pest management plan," and to consider a goal of "progressive reduction in pesticide use" and "alternative control techniques."¹³

¹¹ Sworn Written Statement of G. Robert Burland [hereinafter, Burland Written Testimony], p. 1.

¹² Sworn Written Statement of Janet McLean [hereinafter, McLean Written Testimony], p. 1.

¹³ Resolution of Appeal No. 94-006 Regarding Approval No. 94-U-093. The Director provided this document as part of the Director's administrative record of the Approvals at issue in this appeal. Hereinafter, all documents

included as part of that record will be referred to as "AR".

[12] Apparently as a result of this settlement, in 1995 the City formed a multi-stakeholder "Pesticide Advisory Task Force" as a subcommittee under the City's Environmental Advisory Committee.¹⁴ The Task Force, whose members included Mr. Munroe, conducted extensive public hearings and subsequently submitted to the Environment Committee a proposed "Integrated Pest Management" (IPM) policy.¹⁵ The City then developed an IPM plan (discussed in more detail below) to implement this policy. The City Council approved this plan on January 26, 1998.¹⁶

[13] The terms of the City's applications for the Approvals at issue in this appeal reflect due consideration of the Task Force's work and the City's subsequent IPM plan. The Director and City rightly characterize the Approvals as a considerable improvement over the 1994 approvals, because they are more specific in locations and application techniques, they require a reduction in pesticide use near open water and, through the IPM approach, they allow the use of pesticides only "when necessary".¹⁷ Given these improvements, the Director and City imply that they have honoured the 1994 agreement and that Ms. Ash's recent appeal is contrary to the agreement's spirit. Ms. Ash, on the other hand, believes the City's IPM plan generally, and the two new Approvals specifically, do not go far enough. In the item on her appeal form regarding the "relief" being requested, Ms. Ash stated: "No spraying of pesticides . . . within 30 metres of any body of water in the City of Calgary."¹⁸

[14] The Board's recommendations -- that the Minister affirm the Approvals with several modifications, and require the Director to address outstanding policy issues in the long term -- are an

¹⁴ Evaluation and Response to Statements of Concern Re: Approval Application 003-18445 (City of Calgary) [hereinafter, "Director's Response"], p. 1 (AR #1).

¹⁵ *Ibid.*

¹⁶ February 9, 1998 letter from Mr. Haufe to the Board, p. 3.

¹⁷ Director's Response, p. 1 (AR #1); City's Written Submission, p. 10.

¹⁸ Hearing Exhibit 2 - Notice of Appeal from Ms. Fay Ash dated August 10, 1997.

attempt to accommodate the opposing parties' submissions in a manner that best serves the environment and the public interest, generally. The fact that the Board wishes to have the Approval affirmed, though, indicates: (1) the Board's preference for the positions argued by the Department and the City, and, (2) the Board's belief that the Department and the City are moving in the right direction with a cautious approach to pesticide use and support for the IPM concept.

REASONS FOR THE BOARD'S DECISION

[15] As noted in the Background section above, the issue before the Board is the Approvals' "impact . . . on affected surface water quality."¹⁹ In a pre-hearing letter, the Board listed the following as "important elements" of this water quality issue:

- (a) The likelihood that the City's use of pesticides pursuant to the Director's Approvals will cause pesticides, or certain chemical constituents thereof, to contact surface waters and the mechanisms by which any such contact may occur.
- (b) The likely concentrations in surface waters of any pesticides or chemical constituents which contact those waters.
- (c) The toxicity of chemicals in the concentrations identified in (b) above to aquatic life and to humans and other up-land animals and plants who consume or are exposed to the potentially contaminated surface waters.
- (d) The significance of that toxicity, if any, when viewed collectively with other existing or potential impairments (including pesticide pollution loads) to the affected surface waters. [and]
- (e) The potential harm to surface waters from the City's proposed use of pesticides compared to the environmental harm and costs of alternatives to

¹⁹ The Board will hereinafter refer only to Approval # 18445-01, for spraying five herbicides along the Bow and Elbow Rivers, and Nose Creek. The Board believes that Ms. Ash's appeal of Approval No. 47150, for spraying fungicides on a green at the Shagannapi Golf Course, has no merit and warrants no further discussion.

the City's proposal, including:

- the environmental and other costs of doing nothing to control target non-native plants adjacent to surface waters; [and]
- the environmental and other costs of alternative methods for controlling non-native plants including alternative approaches to the use of pesticides, if any.²⁰

[16] Unfortunately, neither side in this appeal address *all* of these elements, though the Board found the Director's submission, in particular and the City's IPM program, in general, to be substantive contributions to the questions posed. The Board will use these elements (in a somewhat different order) as a framework for the following analysis of the parties' positions.²¹ Before beginning that analysis, however, it is necessary to clarify the standards by which the Board reviews those positions.

A. Standard Of Review And Burden Of Proof

[17] As noted above, the Board decided to review the Director's decision to issue the Approval in light of the Approval's potential "impact on surface water quality." The Board must also decide what *standard* it should use to review the Director's positions on this substantive issue. In simple terms, the Board must decide how much deference to afford the Director's positions with respect to the impact of the Approval on surface water quality. The Director argues that the Board should accept the Director's positions unless they are "patently unreasonable."²² The Board believes that this highly deferential standard of review is inappropriate, in light of several factors explained

²⁰ February 4, 1998 Board letter to parties (cc. to interveners), pp. 6-7.

²¹ In its February 9, 1998 letter (pp.5-6), the City argued that only elements (a) and (b) of the five elements listed above were relevant to the water quality issue before the Board.

²² Director's Written Submission, p. 2 ("One must determine if the Director[']s decision was patently unreasonable in issuing this Approval in regards to the above mentioned issue.").

below.

[18] First, the Board conducts appeals on a *de novo* basis,²³ which means that the Board can consider evidence beyond that used by the Director in making the decision which is being appealed. The open-ended nature of the Board’s consideration of evidence suggests that the Board should determine the facts for itself, *i.e.*, without deferring to the Director’s choice of evidence or even his factual and policy conclusions based on that evidence. Moreover, the Board’s own findings of fact are subject to a high degree of deference by courts reviewing the Board’s decisions.²⁴ If the Board itself deferred considerably to the Director in making those findings, the courts’ deferential review of the Board’s findings would be little more than a rubber stamp. This result would diminish the courts’ important role of ensuring that democratic governments are accountable to their electors.

[19] Besides its *de novo* review of factual evidence, the Board is ultimately responsible for interpreting the Act and other relevant statutes and regulations, at least, regarding legal matters other than those relating to the Board’s own jurisdiction.²⁵ The Board would only be shirking this responsibility if it deferred to the Director on legal issues.

²³ *E.g.*, *Graham v. Alberta (Director, Chemical Assessment and Management, Environmental Protection)* (1997), 23 C.E.L.R. (N.S.) 165 at 169 (Alta. C.A.).

²⁴ In *Graham v. Alberta (Director, Chemical Assessment and Management, Alberta Environmental Protection)* (1996), 22 C.E.L.R. (N.S.) 141 at 150 (Alta. Q.B.) the court stated that the recent addition of a “privative” clause in the Act indicated the Legislature’s “evolving intention . . . that decisions of the EAB be protected from judicial review. This intention would support a finding that the EAB is entitled to curial deference.” The Court of Queen’s Bench applied the deferential “patently unreasonable” standard in reviewing the Board’s non-jurisdictional decisions even before the Legislature decided to shield those decisions by a privative clause. *Gulf Canada Resources Ltd. v. Alberta (Minister of Environmental Protection)* (1996), 42 Alta. L.R. (3d) 336 at 340-341 (Alta. Q.B.).

²⁵ *Graham* (1996), 22 C.E.L.R. (N.S.) at 150.

[20] Courts often defer to administrative agencies or tribunals on complex factual or even legal matters with respect to which the administrative officials have particular expertise.²⁶ This factor is less compelling in the Board's review of the Director's decisions, because the members of the Board are generally appointed for their expertise in various aspects of the environmental decisions which come before the Board.²⁷

[21] Another factor relevant to the Board's choice of its standard of review is the Board's role of submitting a "report" to the Minister of the Environment with "recommendations" on whether the Minister should accept, reject, or modify the Director's decision.²⁸ The Minister is ultimately responsible for the actions of the Director and must make the decision that best serves the public interest; hence, the Board's role should be to advise the Minister, with the greatest of caution and fullest inquiry, as to what that "correct" decision is. This role seems inconsistent with a highly deferential standard of Board review which, in effect, gives more weight to a position advocated by the Director than to that advocated by any other party, *per se*.

[22] Given the factors discussed above, the Board believes that it should accept the Director's positions if they best serve the "public interest" viewed in light of the purposes of the Act and other provisions, and its accompanying regulations.²⁹ In theory, this means that the Board will not defer at all to the Director with respect to either factual or legal matters raised in these appeals.

²⁶ *Ibid.*, 22 C.E.L.R. (N.S.) at 149.

²⁷ *Ibid.*, 22 C.E.L.R. (N.S.) at 149 "EAB members are appointed by virtue of their qualifications, abilities and experience and . . . in the course of fulfilling the EAB's environmental mandate, the members are exposed to technical and scientific matters, and consequently develop a body of expertise in the area."

²⁸ *See* section 91(1) of the Act. There are two categories of decisions by the Director with respect to which the Board's review is final. *See* sections 84(1)(k) and (l) and 90 of the Act (Board has plenary appeal authority with respect to the Director's assessment of an "administrative penalty" under section 223 of the Act and the Director's denial of a "request for confidentiality" under section 33(5)(b) of the Act).

²⁹ This standard of review refers to the *content* of the Director's decision. The Board may also consider appeals which question the Director's *process* for reaching his decision. The Board will generally review the Director's decision-making process according to a "reasonableness" standard.

[23] That theoretical rule being said, the Board believes that some degree of deference is inevitable as a practical matter in certain circumstances. For example, the Board may defer to the Director or his staff on a given matter which is particularly complex and with respect to which the relevant government official is particularly qualified, at least, if the opposing party has not presented any similarly qualified experts.³⁰ In addition, where the Director and an opposing party make equally supportable, but contradictory factual claims or offer equally reasonable, but contradictory policies, the Board is likely to accept the Director's facts or policy over those advocated by the opposing party or those developed by the Board on its own. Finally, although the Board conducts *de novo* hearings in theory, as a practical matter the Board starts its review, not with a blank slate, but with the documentary record compiled, and opinions and policies adopted, by the Director. This starting point inevitably leads the Board to afford some degree of deference to the Director, at least, where the Director's own deliberations appear reasonable.³¹ The Board's past references to the "substantial evidence" and "reasonableness" standards of review reflect this "practical" deference, even though the Board has often referred to a non-deferential "correctness" standard which is more similar to that adopted by the Board in this Decision.³²

[24] The Board recognizes that the above explanations may not provide the clearest road map for the Director and other parties in determining just how much deference the Board will give to a factual, legal, or policy position proffered by the Director. However, the Board believes that, in all fairness, both the theoretical and practical aspects of its review should be explained.

³⁰ Of course, one could explain this result in terms of the opposing party's failure of proof, rather than in terms of any presumptions or deference favoring the Director.

³¹ In order to satisfy this criterion, the Director must at least specify the evidence he relied on in making factual findings, and the policies and legal positions he adopted. If it appears to the Board that the administrative record provided by the Director is incomplete, the Board is likely to give the Director's decision less deference than if the record is complete.

³² See, e.g., *Stelter v. Director of Air and Water Approvals Div., Alberta Environmental Protection*, No. 97-051 (May 22, 1998), p. 4 ("Does the Approval . . . serve the purposes of the Act?"); *Gammon Resources Ltd. v. Inspector of Land Reclamation Div., Alberta Environmental Protection* Dec. 5, 1996, p. 7 ("correct" standard); and *Hayspur Aviation Ltd. v. Director of Pollution Control, Alberta Environmental Protection*, No. 97-001 (June 6, 1997), p. 18 ("substantial evidence" standard).

[25] Finally, it is worth clarifying that the Appellant bears the overall burden of proving that she is entitled to the relief sought, but that burden must be viewed in light of the standards discussed above for the Board's review of the Director's decision. At the outset of the appeal, the adequacy of the Director's Approval stands or falls on the basis the record *compiled by the Director* in issuing the Approval, including the Director's decision documents. Given the Board's initial focus, an Appellant could conceivably establish *prima facie* grounds for the Board to recommend that the Minister revoke an Approval by offering no affirmative evidence at all, as long as the Appellant can show that the Approval is invalid on its face or is otherwise unsupported by the Director's record. If the Appellant makes this *prima facie* showing, it is then incumbent on the Director to provide sufficient evidence at the appeal hearing to justify the Approval. However, as noted above, the Board will look closely at any hearing evidence which is offered by the Director to support an Approval decision which is otherwise unsupported by the Director's own record.

B. The City's Need To Use Pesticides To Control Weeds Within Thirty Metres Of Open Bodies Of Water

[26] The record is clear that the use of pesticides generally poses some risk of environmental harm,³³ and that "riparian" zones--*i.e.* up-land areas adjacent to surface waters--are particularly important environments to protect.³⁴ Given these circumstances, the first question for the Board to address is why pesticides need to be used at all in these riparian zones. This question

³³ As Mr. Burland testified, "[w]ater contamination is always regarded as a potential hazard when herbicides are applied near water bodies. Water contamination by pesticides is a potential hazard when the chemical enters the water by moving away from the target application site either via spray drift through the air, leaching through the soil or runoff and soil erosion from storm events." Burland Written Testimony, p. 6. *See also, e.g.*, "IPM Policy" (AR #2) ("Activities to manage vegetation and pests . . . could impact surface and ground water quality.") and "Proposed IPM Plan", p. 18 (AR #2) (same).

³⁴ *See, e.g.*, McLean Written Testimony, p. 1 ("The vegetation along watercourses (known as riparian vegetation) is critical to water quality due to its role in bank stability, chemical filtration, water temperature, and water flow. Riparian vegetation is also important as wildlife habitat. Maintaining healthy riparian vegetation is an important aspect of maintaining healthy water bodies.").

breaks down into the following two questions: (1) why does the City need to control the weeds listed as “target species” in the Approvals; and (2) are there adequate alternatives to the use of pesticides for controlling those weeds?³⁵

1. The City’s Need To Control “Target” Plants

[27] In answer to the first of these two questions, the Director and City respond that the City is required, under the *Alberta Weed Control Act*³⁶ and the City’s *Weeds, Grasses and Plants By-Law No. 30M80*, to control the target plant species.³⁷ Ms. Ash never provided a rebuttal to this legal argument.

[28] The Director and City also respond that, as a practical matter, the target weeds are non-native plants which tend to choke out native plants and thereby reduce the overall diversity of plants and the superior water quality and wildlife benefits provided by native plants in those riparian zones.³⁸ Non-native weeds near rivers also pose a particular risk of spreading to other riparian areas

³⁵ Section 157 of the Act expressly provides that, “[w]here under the regulations an approval . . . is required . . . the Director may require the applicant for the approval . . . to submit information justifying the use or application of the pesticide where, in the opinion of the Director, there are alternative pest control methods that could be used.” In the Board’s view, that section requires the consideration of alternatives, although it is not clear whether that consideration must be given by the pesticide user or the Director, in the first instance.

Section 10 of the *Pesticide (Ministerial) Regulation*, requires that applications for Special Use Approvals include “information” regarding “alternative pest management strategies that have been investigated. . . .” Read literally, this provision suggests that applicants must report on only those alternatives which they have investigated, but it does not affirmatively require applicants to conduct any investigations of alternatives. Under this interpretation, applicants could avoid addressing alternatives altogether simply by not investigating them, unless the Director specifically requested alternatives information pursuant to his authority to request additional information in section 10(f) of the Regulations. The Board believes that there should be more of an affirmative burden upon applicants to investigate alternatives, at least, for applications for special use approvals. Accordingly, the Board recommends that the Minister revise section 10(e) of the Regulations to clarify that applicants should investigate alternatives prior to submitting their application.

³⁶ R.S.A. 1980, c. W-6.

³⁷ *E.g.*, City’s Written Submission, p. 1. Although neither the Director nor the City actually cited or discussed its specific provisions, their reliance on the *Weed Control Act* appears to be justified. Section 31 of the *Weed Control Act* provides that an owner of unoccupied land “shall as often as is necessary,” “destroy” all “restricted” weeds “to prevent the spread, growth, ripening or scattering of the restricted weeds” and “control” “noxious” weeds to prevent their “spread, growth, ripening or scattering”.

³⁸ *See, e.g.*, McLean Written Testimony, p. 1. *See also* Bow River Report, p. 84 (referring to multi-stakeholder

and crop-land, because the rivers can provide a ready means of transporting the weeds' seeds.³⁹

[29] In her closing argument, the Appellant's counsel Ms. Evans suggested that the City's primary motivation for controlling non-native weeds was for cosmetic purposes rather than for environmental protection. This argument was not supported by evidence from the Appellant and completely ignored the evidence provided by the City and the Director regarding the environmental problems caused by non-native plants.⁴⁰ And Ms. Ash failed to present any evidence to refute the legitimacy of the City's and Director's environmental concerns with non-native plants. Thus, the Board accepts the Director's and City's position that non-native weeds adjacent to Calgary's "open waters" need to be controlled.

2. The City's Need To Use Pesticides To Control Weeds

[30] The Director's position is that manual methods of weed control are problematic because they either cause environmental disturbances and/or are ineffective at controlling the target plants. For example, in his response to the statement of concerns submitted on the City's application, the Director stated that "[m]owing or rototilling . . . can cause major disruptions in native plant communities to the detriment of birds and other wildlife. Exposing soil to erosion by physical disturbance caused by tillage or digging can result in siltation of streams and disruption of fish spawning."⁴¹ The Director also stated that "[d]igging up large areas. . . [causes] soil erosion and provides habitat for invading weeds."⁴² The Director added that, "[a]s a rule digging does not

effort to eliminate certain non-native plants along the entire length of the Bow River corridor).

³⁹ E.g., Director's Written Submission, p. 3 ("These weeds are of particular concern near or along waterways because of the high potential for seed transportation via the water to areas downstream.").

⁴⁰ In cross-examination, the City's witness Mr. Reichardt admitted that cosmetics was one reason for controlling one of the target weeds. One cannot leap from this admission, however, to Ms. Evans' claim that cosmetics was the City's *only* reason for controlling *all* target species.

⁴¹ Director's Response, p. 3 (AR #1).

⁴² *Ibid.*, p. 5.

get rid of the loosestrife as it is impossible to remove all the root mass and the plants can regrow.”⁴³
Mr. Burland’s direct testimony confirmed these statements.⁴⁴

[31] In short, the riparian zone appears to present a challenge for weed control. On the one hand, its “sensitive” nature and importance to aquatic ecosystems makes it a risky candidate for the use of potentially harmful pesticides; on the other hand, that same ecosystem value and proximity to water as an effective seed carrier makes it a high priority for the control of non-native plants. The riparian zone’s proximity to open water also increases the potential harm from erosion caused by invasive, non-chemical controls. This challenge makes the Director’s job of deciding whether to issue Special Use Approvals a difficult one.

[32] Ms. Ash maintained steadfastly that there are alternative manual methods of control, but she provided barely any evidence to support her opinion. In her direct testimony, she claimed generally that many Alberta farmers were successfully controlling weeds without the use of pesticides. This “organic” farming trend may well be true and is commendable, but this general trend is insufficient, by itself, to refute the Director’s *specific* concerns with mechanical control methods in the *specific* circumstances at issue here. Ms. Ash provided no details regarding the results of pesticide-free farming and their applicability to the areas and weeds at issue in this appeal. And the Board notes that her reference to alternative means of weed control by “organic” farmers needs to acknowledge that all farmers are inherently engaged in disturbing the soil by mechanical means. We also note that farmers are not in the business of maintaining natural areas where soil disturbance may be the biggest possible impact. The Board believes Ms. Ash’s perspective is selective with respect to alternatives versus pesticide use.

[33] Moreover, Ms. Ash provided scant testimony and documentation expressly refuting,

⁴³ *Ibid.*

⁴⁴ Burland Written Testimony, p. 2.

let alone even addressing, the Director's *specific* concerns with manual controls, as mentioned above. Absent such evidence, Ms. Ash's qualifications--she is a non-expert who has been involved as an advocate on pesticide issues for many years--are insufficient for the Board to accept her opinion.

[34] One exception to this general failure of proof was Ms. Ash's April 8, 1998, direct testimony that, because purple loosestrife reproduces by seed, rather than by its roots, it could be adequately controlled simply by manually clipping the plant's seed heads. This testimony is contradicted, however, by that of the Director's witness Ms. McLean, who testified that the target weeds could also regenerate through their roots.⁴⁵

[35] A more compelling exception to her general lack of proof is Ms. Ash's point that the Director's concerns regarding soil disturbance from digging large concentrations of purple loosestrife are inapplicable in those areas where only a few of the plants exist. The Director actually partially agreed with this comment, by including in the Approval for Project A a condition requiring the City to dig up individual plants when the number of purple loosestrife is 5 or less and the plants occupy 10% or less of any 10m² area.⁴⁶ However, the Director believed that it might be necessary to spray herbicides on the re-growth of purple loosestrife plants removed initially by digging and, therefore, allowed the City to use herbicides on that re-growth.⁴⁷

[36] Ms. Ash did not provide any evidence indicating that this re-growth could be adequately controlled by non-chemical means. However, the Director's approach raises several questions: First, if digging is feasible in the first instance (for small infestations), why can't digging also be used to remove re-growth? On the other hand, if pesticides are ultimately necessary to

⁴⁵ See also Appendix to the City's Application (AR #4) (first unnumbered page noting that an entire pond at the Inglewood Bird Sanctuary was "being choked out" by purple loosestrife after staff had clipped the plant's flowering heads).

⁴⁶ Approval, p.3, Cond. 1 of Project A (AR #16); Director's Response, p. 5 (AR #1).

⁴⁷ Approval, Cond. 1 of Project A (AR #16); Director's Response, p. 5 (AR #1); Burland Written Testimony, p. 3.

prevent future re-growth, then is there any value in digging rather than using pesticides at the outset?

The Director seems to have relied on a City employee for the “dig first-then spray” technique for small loosestrife infestations;⁴⁸ it is not clear the Director has thought this option through fully himself.

[37] There is also evidence in the appeal record suggesting that hand pulling alone has been used for controlling small infestations of purple loosestrife, as well as five other species of non-native plants. The City’s own application states that, for purple loosestrife, “[h]and pulling is used where small numbers are present” and that it “arrange[s] picks/pylls [sic] with volunteers where possible.”⁴⁹ The City listed “hand pulling,” “hand removal,” “mechanical control,” and “mechanical removal” in response to the same question on the application form with respect to the City’s request to use pesticides to control several other target plants.⁵⁰ The second un-numbered page of the “Appendix” to the City’s application lists nine plants described on the previous page as “target species for control”. Five of these nine are identified as being non-native plants whose low infestations “make hand-pulling a viable control method.” Although scentless chamomile is not included on that list of five, the first unnumbered page of the Appendix states that this plant was being controlled by “hand picking the plants prior to seed set. We have been using the inmate work crews for the past five years and it is reducing the number of new sites. No herbicide has been used on the Bow River Project scentless chamomile sites. We will continue to use inmate work crews,

⁴⁸ See Director’s Response, p. 5 (AR #1) (“The City does in fact use manual methods for control. . . . [as] verified by Katrina Horne with the City who is responsible for purple loosestrife control. The City has organized public loosestrife pulls at Inglewood Bird Sanctuary and use a procedure where they dig up small infestations. Spraying occurs on any regrowth that arises from manually removed plants.”). There is at least one other instance where the Director seems to have relied on the City’s representation without further inquiry. Compare June 26, 1997 Reichardt E-mail to Robert Burland (AR #13) (“IBS has determined that purple loosestrife has continued to take up available wetland area on IBS property, despite the previous years of hand pulling. In other words, hand pulling has not elicited a favourable result.”) with Director’s Response, p. 5 (AR #1) (“Inglewood Bird Sanctuary (IBS) has determined that Purple loosestrife has continued to take up available wetland area on IBS property, despite the previous years of hand pulling. In other words, hand pulling has not elicited a favourable result.”).

⁴⁹ City’s Application, Part 2, project 1 (AR #4) (entry for item requesting description of alternative control strategies investigated).

⁵⁰ *Ibid.*

volunteers and staff to pick scentless chamomile along Calgary’s watercourses.”⁵¹

[38] The Director’s witness Mr. Burland confirmed this statement with respect to scentless chamomile in his May 8, 1998, testimony.

[39] In sum, the Director’s own evidence calls into question the validity of the explanations, in the Director’s response to the statements of concerns and in Mr. Burland’s written testimony, regarding the infeasibility of non-chemical control methods. As shown in the next section, however, the Director himself is actually quite supportive of non-chemical control methods.

[40] The Board also notes at least some evidence that the City and the Director have been attempting to shoulder on each other the responsibility for thoroughly considering alternatives. At one point in this appeal, the City claimed that a comparison of the relative environmental costs of using pesticides versus alternatives was "outside of the capabilities and the competency of The City of Calgary. . . ." ⁵² Yet, the Director’s counsel stated, in her closing arguments at the May 8, 1998, hearing, that the Director “defer[s]” to the City with respect to the need to use pesticides over other alternatives, because “it’s their backyard and they have to take care of it.” The Board is concerned that, if both the City and the Director are deferring to each other’s expertise with respect to considering alternatives to pesticides, then neither is fully considering alternatives. The Board’s recommendation for addressing this concern and the conflicting evidence referenced above are discussed in the next section regarding the City’s “Integrated Pest Management” approach.

3. Consideration Of Alternatives Under An IPM Approach

[41] Rather than actually resolve the inconsistencies discussed above between the justification for pesticides and the successful experience with non-pesticide alternatives, the Director

⁵¹ AR #4.

⁵² February 9, 1998 letter from Mr. Haufe to the Board, pp. 5-6.

left it up to the City to consider alternatives on a case-by-case basis. General condition #1 of the Approval permits the City to use pesticides within thirty metres of open water only “where necessary” and only after the City first “evaluate[s]” “non-chemical methods” of weed control as part of an “Integrated Pest Management [”IPM”] approach.”⁵³ The Director holds these requirements out to the Appellant and the Board has assurances that non-pesticide alternatives will be given their full due. According to the Director, the Approval

requires that the City use non-chemical methods unless these are not suitable. . . . Issuance of the approval does not hold the City to using pesticides but rather accommodates pesticide use should the City determine through its IPM process that they are not necessary.⁵⁴

In even stronger terms, the Director stated that pesticides will be used only as a “last resort”.⁵⁵

[42] Ms. Ash insists that condition #1 fails to ensure that pesticides will be used only as a “last resort,” because the condition gives the City “discretion for determining when the use of pesticides is appropriate. . . .”⁵⁶ The Board believes that giving the City discretion is appropriate, *as long as* there are clear, rational criteria for the City to exercise its discretion on a site-by-site basis, and there is a mechanism for the public and the Director to ensure that the City’s *ad hoc* pesticide use decisions are consistent with these criteria.

⁵³ Approval, p.1 (AR #16).

⁵⁴ Director’s Response, p.3 (AR #1); *see also ibid.*, p. 2 (“The City of Calgary will consider the relative benefits of pesticide application before deciding on whether to use pesticides.”), p. 3 (“Alternatives are used in accordance with the appendix to the application form.”); and p. 5 (pesticides will be used “only where necessary. . . . [The Approval] allows the option to use pesticides where needed--it does not force the City to use pesticides where other control methods will provide effective control with less environmental impact. . . . The City does in fact use manual methods for control. . . .”).

⁵⁵ *Ibid.*, p. 4.

⁵⁶ Ms. Ash’s Written Submission, p. 9.

[43] As currently written, condition #1 does not meet these requirements. To begin with, the condition contains no express criteria for deciding when pesticides are “necessary” nor even a process for establishing those criteria. The condition simply requires the City to evaluate non-chemical alternatives through an “IPM approach.” Ms. Ash correctly points out that the Approval does not define this term. Accordingly, she requests that the Approval be modified to “clearly define what IPM is, and provide a test for determining whether the City is actually taking an IPM approach.”⁵⁷ The City and the Director have only bolstered Ms. Ash’s complaint, by insisting that the IPM term in condition #1 was not intended to incorporate by reference the City’s express IPM plan, in either the draft form existing at the time the Director issued the Approval or the final form adopted recently by the City Council.⁵⁸

[44] What, then, is the “IPM approach” referenced in Condition #1? According to Mr. Burland, it is a “philosophy” toward the use of pesticides which places an “increased onus on the City to consider and use alternative methods of pest control in these sensitive areas.”⁵⁹ This description essentially repeats the terms of condition #1 of the Approval. Mr. Burland elaborates that this “philosophy” is “commonly accepted” as “involv[ing] the consideration of all methods of pest control and incorporat[ing] the best method or combination of methods to deal with a pest problem.”⁶⁰ If anything, this description is inconsistent with the prior statement and with condition #1, because it does not suggest that pesticides will be used only when “necessary” or as a “last resort.”

⁵⁷ *Ibid.*

⁵⁸ See the Board’s January 27, 1998 Decision, p. 2; see also Sworn Written Statement of C. Peter Watson [“Watson Written Testimony”], p. 2, par. f (“I did not require that the draft IPM Plan form part of the Approvals, but rather required the City to adopt an IPM approach in the planning and design of their programs.”) and Burland Written Testimony, p. 2 (“Condition 1 was not intended to require that the City follow their formal IPM Plan that was ultimately adopted by City Council in January 1998.”).

⁵⁹ Burland Written Testimony, p. 2.

⁶⁰ *Ibid.*

[45] The City's IPM plan itself defines IPM as an "ecological approach" to pest control "in which all necessary techniques are consolidated in a unified program. . . ." The City defines an "ecological approach," in turn, as a "systems" approach of picking control methods "based on the relationship between the target's organisms life cycle and its environment." The IPM definition also emphasizes the importance of taking actions to "prevent" pests from occurring by properly "plan[ning] and manag[ing] ecosystems".⁶¹ The Dictionary of Natural Resource Management defines IPM in similar terms, as a "systematic approach that uses a variety of techniques to reduce pest damage or unwanted vegetation to economically and socially tolerable levels." Under this definition, chemical pesticides are used "when necessary and appropriate."⁶²

[46] These concepts are laudable, in the abstract, but they still do not provide clear criteria for determining when pesticides are "necessary". For this reason, they do not ensure that the City is *accountable* for its decisions pursuant to condition #1 of the Approval.

[47] Likely recognizing that condition #1 is unenforceable as written, the Director's witness Mr. Burland emphasized at the May 8, 1998, hearing that condition #1 was intended only to set the right "tone" for the City's conduct pursuant to the Approval; the Director's counsel stated similarly in her closing argument that condition #1 was intended to be "directional" in nature, rather than a "do this/do that" kind of condition.

[48] The Board agrees that the drafting of condition #1 has the *effect* of making that condition merely "directional," but the Board believes that the condition should be enforceable as well, because its requirements are a significant component of the Approval. This significance is confirmed by the Director's own repeated references to the condition #1 in response to public

⁶¹ "Proposed IPM Plan," pp. 33-34 (AR #2).

⁶² Dunster, Julian and Katherine, *Dictionary of Natural Resource Management*, 177-78 (1996).

concerns.⁶³ The City itself adopts public accountability as an IPM goal,⁶⁴ yet condition #1 is not phrased in a way that will promote that goal.

[49] In order to make condition #1 enforceable, yet still provide the City with the flexibility to make site-by-site decisions, the Board will recommend that the condition be modified to require the City to establish and periodically update the following, for each target plant covered by the Approval:

- an “action” level -- *i.e.*, the minimum number of plants per unit of area for which some control method must be used; and,
- a prioritized list of possible control methods and the circumstances in which each method might be the most appropriate.

[50] The City should give the Director an opportunity to review and provide comments on drafts of these criteria before adopting them. Any site-by-site decision that it is “necessary” for the City to use pesticides should be based upon these criteria. Each such decision should be written and should include an explanation of how the criteria were applied and what other factors, if any, were reflected in the decision. The written explanation should include a brief description of the site -- *e.g.*, location, topography, plant species -- and a statement of the City’s control objectives. The City’s written decision records should be available for review by the public.

[51] The Board believes that this approach is consistent with the “prescription components” identified in page 41 of the City’s Proposed IPM Plan (AR #2), and with the Director’s and City’s May 8 1998, testimony in response to the Board’s questions about how they would revise the Approval in light of the concerns raised by Ms. Ash in this appeal.

⁶³ See citations in the Board’s January 27, 1998 Decision, p.4, n.6.

⁶⁴ “Proposed IPM Plan” (AR#2), p. 24 (Including as a goal: "To ensure public accountability in any pesticide use.").

[52] The Board also believes that the Approval should be modified to require the City to conduct annual audits of its use of pesticides under the Approval. The audit recommended in the City’s IPM Plan⁶⁵ provides a useful model for the kind of audit that should be required by the Approval. The Board commends the City for adopting this audit program.

[53] Finally, the Board recommends that, in addition to giving some “teeth” to condition #1, the Director should prepare a study of the variety and feasibility of non-chemical control methods under the various circumstances that municipalities are likely to encounter in areas within 30 metres of open water. In preparing this study, the Director should solicit input from appropriate stakeholders.

C. The Water Quality Effects Of Using Pesticides Within 30 Metres of Open Water

[54] The previous section addressed the feasibility of alternatives to pesticides based on the general presumption that pesticides do pose environmental risks. This section focuses in more detail on those risks. Unfortunately, the picture is quite ambiguous as to the magnitude of those risks and, thus, a precautionary approach to the use of pesticides is appropriate given this uncertainty. However, given the adverse environmental consequences of failing to control non-native plants altogether, and the apparent limitations of non-chemical control methods, the Board does *not* agree with Ms. Ash’s position that a precautionary approach requires banning pesticide use altogether within 30 metres of open water. Rather, the Board believes that the “last resort” approach described in the previous section, with additional steps recommended below regarding the application of pesticides and assessment of impacts, will provide a reasonably precautionary approach.⁶⁶ The

⁶⁵ See “Recommendations From Pesticide Advisory Task On The City Of Calgary’s IPM Policy” (AR #2), #15, pp. 3-4 (calling for an annual audit summarizing all pest infestations, the cost of controlling the problem, the methods of control, how much product was used, and whether the City met its control objectives). Calgary Parks and Recreation accepted this recommendation. See “Calgary Parks and Recreation Report to the Environmental Advisory Committee” (AR #2), p. 14, # 15.

⁶⁶ The Board notes with some concern that it is unclear whether the Director himself has adopted a policy on the use of pesticides within 30 metres of open water. In her statement of concern regarding the City’s application,

Board's conclusion is explained in more detail below.

[55] In summary, Ms. Ash's position is that the "active" and "inert" constituents of the pesticides covered by the Approval have been shown to be harmful to aquatic environments (and humans who frequent those environments and/or drink water exposed to pesticides) by themselves and collectively, and on an acute and chronic basis.⁶⁷ Ms. Ash also emphasizes that the full magnitude of these effects are as yet unknown but that, given the history of other chemicals and environmental risks, the effects are likely to be more significant than what we have thought.

[56] The Director counters Ms. Ash's propositions, first, with the argument that the degree of risk must be determined, not in the abstract, but by the extent of pesticides that are likely to be released into the environment. According to the Director, from this perspective, the risk is low because the Approvals, together with related requirements, will ensure that the City's use of pesticides will result in little or no environmental exposure. The Director also argues that, even under a "worst case" release of pesticides, the pesticide concentrations in open waters will still be less than applicable ambient water quality standards for those pesticides.

Ms. Ash commented that the use of pesticides around open bodies of water was improper. In response, the Director stated that this comment was a "value statement and cannot be addressed in the approval. The City of Calgary Parks and Recreation Department disagrees." Director's Response (AR #1), p. 4. This response suggests that the Director believed he was obligated to accept the City's "value" or policy and lacked authority to form his own opinion. On the contrary, the Act and the *Pesticide (Ministerial) Regulations* give the Director considerable discretion to adopt a policy toward the use of pesticides within 30 metres of open water; he need not and should not accept that of the applicant. Accordingly, the Board recommends that the Director should develop an overall policy toward the use of pesticides in special use areas. In so doing, the Director should consider the size of the buffer zones used in other jurisdictions.

⁶⁷ See generally Ms. Ash's Written Submission. Recent reports of possible damage to human endocrine systems from exposure to pesticides and other chemicals (see, e.g., Colborn, Theo, *et al.*, *Our Stolen Future* (1996) (referenced in Ms. Ash's Written Submission, p. 12)) provide a particularly compelling cause for concern.

1. The Extent Of Exposure

[57] Pesticides sprayed within 30 metres of open water have the potential to reach open water from spray drift, leaching through the soil, runoff from plants and/or soil, and soil erosion from storms.⁶⁸ The Director argues that the risk of exposure through these pathways is minimal because of the nature of the pesticides being used and the Approval, and other relevant legal conditions governing the manner in which they are allowed to be used.

[58] The Board notes at the outset that, in two respects, the Approval seems inconsistent with the Alberta Environmental Code of Practice for Pesticides (Exhibit 15).⁶⁹ Section 16(6) of that Code allows pesticide use within 30 metres of open water for the control of herbaceous plants, only if they are listed as “restricted” and “noxious” under the *Alberta Weed Control Act*. Yet, the Approval for “Project C” -- Inglewood Bird Sanctuary North Field reclamation project -- allows the City to use Glyphosate on all vegetation in the area. In addition, section 16(3) of the Code requires a five metre “no observable impact zone” adjacent to open waters for the pesticides covered by the Approval. Yet, the Approval has no such zone for the control of purple loosestrife in Project A, only a one metre zone for two pesticides covered in Project B, and a one metre zone for pesticide applications in Project C. The Director should address these apparent inconsistencies.

[59] The Board notes the dearth of studies provided by the Director in this appeal regarding the likelihood of exposure through these pathways.⁷⁰ However, the Board was more concerned with the deficiency of Ms. Ash’s evidence relative to the specific issues before the Board, as well as supporting references. She cited numerous studies for the proposition that pesticides

⁶⁸ See, e.g. Burland Written Testimony, p. 6.

⁶⁹ Section 10 of the *Pesticide Sales, Handling, Use and Application Regulation* provides that “[n]o applicator shall use, apply or handle a pesticide other than in accordance with the latest edition of the [Code].”

⁷⁰ Besides the documents which the Director actually submitted as evidence, Mr. Burland’s written testimony (p. 16) includes a list of eight references. Of these references, however, only one--a “Herbicide handbook”--appears to potentially relate to pesticide exposure through the kind of backpack spraying that the City will use pursuant to the Approval. That document is nearly ten years old and, thus, is unlikely to reflect the latest research.

generally can be exposed to the environment, including surface waters, but she did not focus on the likelihood of exposure from the specific method of backpack spraying that the City proposes, together with the application requirements contained in the Approval, provincial regulations and code of practice, and the federally-approved pesticide labels.⁷¹

[60] Ms. Ash's primary evidence regarding the exposure likely to result from the City's specific application method is indirect--she argues that there is a serious risk the City will not comply with appropriate application requirements and that there is little chance the Director will monitor the City's non-compliance.⁷² Ms. Ash bases this view, in part, on Mr. Locke's review of Calgary's records of past pesticide applications which, in Mr. Locke's view, shows that the City has a history of disregarding its Approvals or other application requirements. The Board believes that Mr. Locke's conclusions were generally disorganized and, in several instances, unwarranted.⁷³

⁷¹ Like Ms. Ash's submission, Mr. Ash's written submission was only general in its focus. A considerable portion of Ms. Ash's own direct testimony was spent arguing that the basis for the Approval is more a cultural "habit" of un-questioned pesticide use than an objectively reasoned assessment of pesticides. The Board does not believe that the City's impetus for its proposed pesticide spraying can be explained so simply, given the environmental risks of failing to adequately control non-native plants and the problems of manual control methods. At any rate, the "last resort" approach reflected in condition #1, based on an *accountable* IPM approach, hardly reflects an un-questioned pesticide dependence.

⁷² Ms. Ash also argues that the Approval is contrary to the labels, as discussed in more detail below.

⁷³ For example, at the May 8, 1998 hearing, Ms. Ash's counsel used prior application records in an attempt to show, through cross-examination of the Director's witnesses, that the City had sprayed pesticides at numerous times when the wind speed exceeded applicable wind speed limitations in the pesticides' labels. However, as the Director's witnesses explained several times, the labels' wind speeds applied to aerial spraying, not to the City's ground-level spraying for which the records at issue were kept.

Another example is Mr. Locke's testimony, at the April 8, 1998 hearing, in which he questioned the validity of wind speed notations on the application records, because those speeds were different than wind speeds reported by Environment Canada for the same days. However, Mr. Locke did not indicate where Environment Canada monitored wind speeds. Given that wind speeds in Calgary are likely as variable as the City's variable topography, Mr. Locke's comparison is unproductive without evidence that Environment Canada's monitors reasonably reflect the wind speeds at the locations where the City applied pesticides. The Board does recognize that the variability of wind speeds throughout Calgary makes it difficult for the Director to independently verify the speeds reported on the City's application records and for the applicators themselves to determine wind speeds. The Board has two recommendations addressing wind speeds, as discussed in paragraph 65.

However, several of Mr. Locke's findings -- regarding lack of 1996 records for spraying purple loosestrife, and lack of specificity in reporting location -- raise some concern. The Board nevertheless feels that the City's "ecological approach" to weed control, as reflected in its newly-adopted IPM Plan, warrants viewing the City's compliance with its current pesticide application requirements from a clean slate, at least, for purposes of this appeal.

[61] Besides her witness' review of the City's records, Ms. Ash points to general condition #3 of the Approval, which requires the holder of a "Pesticide Applicator Certificate" to be on-site during all pesticide applications, but does not actually require only Certificate holders -- who are trained to follow applicable provincial and federal application standards -- to apply the pesticides.⁷⁴ Ms. Ash's cross-examination of the Director's witnesses also made it clear to the Board that the Director has scarce resources generally to monitor compliance with Special Use Approvals by either reviewing the City's records⁷⁵ or attending actual pesticide applications.

[62] In response to these concerns, the Board believes that condition #3 should be amended to clarify that Certificate holders must actually *supervise* pesticide applications (*i.e.* they must be on-site during the application and cleanup). Condition #9 should also be modified to clarify that each pesticide applicator must be knowledgeable of not only the Approval requirements, but of the requirements in the Alberta regulations and code of practice and of the pesticide labels.⁷⁶ The Board also believes that the Approval should be modified to require the City to notify the Director

⁷⁴ While the Approval does not require that all pesticide applicators hold Application Certificates, condition #9 states that the application crews must be "knowledgeable" of the Approval's requirements and must have a copy of the Approval in their possession at the application sites.

⁷⁵ General condition #8 of the Approval, and section 11 of the *Pesticide (Ministerial) Regulations*, both require the City to keep records of its pesticide application records. But the City is not required to actually submit those records, or a summary of those records, to the Director.

⁷⁶ This recommendation is consistent with the testimony of Mr. Reichardt, at the May 8 hearing, that he would like to see more training for pesticide applicators. The Board assumes that pesticide applicators who are not the Certificate holders are "pesticide applicator assistants" as referenced in section 5(1) of the Department's Environmental Code of Practice for Pesticides, and s. 12 of the Alberta *Pesticide Sales, Handling, Use and Application Regulation*.

immediately of any pesticide releases contrary to the Approval.

[63] The Board agrees with Ms. Ash that, due to the Director's lack of resources for compliance monitoring, the Director should exercise particular caution in deciding whether to grant Special Use Approvals in the first place. However, the Board feels that the Approvals, together with the modifications recommended immediately above and elsewhere in this Decision, and the City's general commitment to an IPM approach, will provide the requisite degree of caution.⁷⁷

[64] Besides questioning the City's *inclination* to comply with its application requirements, Ms. Ash questions the *adequacy* of those requirements for preventing pesticide exposure to surface waters. As noted above, one of these potential exposure pathways is spray drift. As assurance that there will be no drift, the Director and the City point to the pesticides' labels, which prohibit spraying when wind speeds exceed a given speed,⁷⁸ and to the limited nature of spray resulting from the particular kind of hand-held spraying method that the City will use. Ms. Ash cited studies documenting pesticides which had apparently drifted in the air over long distances, but she failed to indicate whether that pesticide drift resulted from the kind of spraying which the City proposes to conduct.⁷⁹ The Director and City likewise did not provide studies regarding the effectiveness of wind speed restrictions and the particular application technique in eliminating drift. The labels themselves provide mixed messages.⁸⁰ The Board is also concerned about the potential

⁷⁷ The Board also encourages Ms. Ash and her colleagues to regularly review the City's pesticide application records. After hearing testimony from the Director's staff and the City's Mr. Reichardt, the Board is confident that those officials will pay close attention to any problems identified by private citizens from those records.

⁷⁸ See, e.g., "Garlon* 4 Herbicide" (Manufacturer's Fact Sheet), p. 5 (attached to the City's February 9, 1998 letter to the Board) (spray only when wind is < 16 k/hr); Environment Canada, "Pesticides" (Exhibit 7) (2,4-D "should not be sprayed when winds are greater than 15 km/h.").

⁷⁹ Ms. Ash's Written Submission; see also Mr. Lloyd Ash's Feb. 28, 1998 Submission, pp. 3-4.

⁸⁰ For example, the Garlon 4 information sheet (attached to the City's February 9, 1998 letter) states (p. 2) that, when applying a dilute spray solution, applicators should "wear clean coveralls over normal working clothes, impermeable head covering, chemical resistant gloves . . . and chemical resistant footwear. . . ." These extensive applicator precautions suggest that there is an appreciable spray drift. The label also states (p. 4) that "small quantities of the spray, which may not be visible, may seriously injure susceptible crops and damage sensitive non-target habitat." The Environment Canada's information sheet for 2,4-D (Exhibit 7) states that "2,4-D can drift away during spray operations and contaminate nearby areas."

that the labels' wind speed restrictions will be exceeded, given that Calgary's highest daily average winds apparently occur during the summer months when the City will conduct spraying⁸¹ and given the unpredictable nature of Calgary's summer weather, in general.⁸²

[65] The Board has two recommendations to address these concerns regarding spray drift:

- First, the labels' wind speed restrictions should be included in the Approvals to give them greater emphasis and to make it clear that they are enforceable under the Approval.
- Second, the sprayer should include a "shroud," as suggested by Calgary's chief entomologist, Mr. Reichardt, at the May 8, 1998, hearing in response to a question from the Board.

[66] Another exposure pathway of concern is from runoff caused by rain. Mr. Burland suggests the risk of surface water exposure through this pathway is low because, given the flat slopes and dense vegetation in "[m]ost" of the application areas, pesticides are unlikely to run off into surface waters. Mr. Burland adds, however, that "[u]nfortunately rainfall is a variable that cannot be controlled. Certified applicators are trained not to apply herbicides if rainfall is imminent."⁸³ The problem, of course, is that rain storms are both frequent and unpredictable in Calgary during the summer months.⁸⁴ The requirement to have pesticide applications supervised by certified applicators will bring their training and resulting judgment to bear on this concern.

⁸¹ See "Proposed IPM Plan" (AR#2), p. 4 ("The highest level of . . . daily average winds are during June, July and August. . .") and Mr. Lloyd Ash's Written Submission, p. 4 (table showing average wind speeds for June, July, and August are 17, 15, and 14 km/h, respectively).

⁸² "Proposed IPM Plan" (AR#2), p. 4 (referring to "Calgary's unpredictable weather conditions. . ."). Mr. Burland himself asked, in his cross-examination: "Who can predict the weather?"

⁸³ Burland Written Testimony, p. 8.

⁸⁴ See "Proposed IPM Plan" (AR#2), p. 4 ("The highest level of precipitation . . . [is] during June, July and August. . . Calgary's unpredictable weather conditions. . ."), and Mr. Ash's Written Submission, p. 6 (table showing that the number of days during each month between May - August in which there is measurable rain ranges from 10 to 13).

[67] The Board wishes to address the matter of buffer zones. During the hearing, a letter from a Health Canada official, was tabled. This letter stated that, pursuant to the [Garlon 4 pesticide] label, “it is left to the provinces to determine what, if any, buffer zones are needed. . . .”⁸⁵ The official made it clear, however, that a province’s decision that a buffer zone is “not required” should be indicated in a “positive manner such as, for example, by specifying a zone of 0 metres, rather than by omitting any reference to a buffer zone.” The Board questions whether this official’s position, that the Garlon 4 label could allow a zero buffer as long as it is affirmatively identified, is consistent with the label’s insistence that “appropriate buffers [should be] maintained.” In any case, the Board believes the Director must make an explicit determination on the matter of a buffer zone based on a defensible interpretation of the facts.

[68] The Board also wishes to address the need for an assessment of cumulative effects. This need was featured, in part, by the recent Canada-Alberta report which indicates that pesticides are frequently detected at low levels in Alberta surface waters generally.⁸⁶ The limited pesticide monitoring data collected by the province shows a significant increase in the percentage of detections of 2,4-D at Bow River monitoring locations above and below Calgary; the data also show an increase in detections of Dicamba from monitoring locations above and below the City.⁸⁷

[69] Besides the data showing a frequency of pesticide detections in Alberta and an increase in those detections on the Bow River as it passes through Calgary, the record also shows that the Bow River is being stressed by multiple sources of harm besides pesticides. The 1994 report

⁸⁵ April 17, 1998 Gordon letter, p. 2 (Exhibit 13).

⁸⁶ Canada-Alberta Environmentally Sustainable Agriculture Agreement, “Agriculture Impacts on Water Quality In Alberta” (1998) (“CAESA Report”), pp. 25 (“Pesticides were detected frequently, sometimes at concentrations which exceeded guidelines.”), 31 (“[V]ery low level herbicide detections were frequently found in many surface waters and some groundwater.” Dicamba “frequently exceeded irrigation water quality guidelines in irrigation canals” with maximum concentrations found at “return flow locations, where the water returned to the river”), and 89 (noting that pesticide contaminated irrigation return flows “may contribute to river water quality degradation.”).

⁸⁷ McLean Written Testimony, Appendix #6 and #7.

on the state of the Bow River concluded that the River’s water quality ranged from being “unaffected” in the headwaters, to being “impacted by pollutants and restrictive for some water uses in the lower reaches.”⁸⁸ The report lists urban stormwater and Calgary’s wastewater treatment plant as the major sources of pollution in the Bow River as it passes through Calgary, although the report notes a serious lack of water quality data for that stream section.⁸⁹ The report also notes that the water quality in the section of the Bow River immediately below Calgary (from route 22X to Carsland) “was poor enough in this reach to affect, to some degree, all water uses specified for this reach except livestock watering. . . .”⁹⁰ The report did say that, overall, the Bow River was “generally in a reasonably good state,”⁹¹ but cautioned that the river was a “limited renewable resource with a limited capacity to assimilate the impact of many uses.”⁹²

[70] The Director has the difficult task of assessing applications for approvals which may affect water quality as if the Bow River was otherwise pristine, when it is not. The 1994 Bow River study offers several general recommendations for accomplishing the task of assessing cumulative impacts, including “allocation” of the River’s “assimilative capacity” among multiple pollutant sources⁹³ and “[d]etermin[ing] the relative contributions of wastewater effluent, stormwater and agricultural runoff to changes in water quality of the river,”⁹⁴ and developing “goals and guidelines”

⁸⁸ Bow River Report, p. 1. The report similarly stated (p. 17) that, “[a]long the length of the river, generally the number and frequency of water quality variables meeting guideline levels decreased.”

⁸⁹ *Ibid.*, pp. 41, 46.

⁹⁰ *Ibid.*, p. 51.

⁹¹ *Ibid.*, p. 2.

⁹² *Ibid.*, p. 3.

⁹³ *Ibid.*, p. 2.

⁹⁴ *Ibid.*, p. 70 (capitalizations omitted).

for water quality, as well as “other aspects of the river ecosystem.”⁹⁵ There may well be numerous other ways to account for cumulative impacts which the Director should in due course investigate.

BOARD’S DECISION

[71] The Board believes that the City’s application for the Approval generally reflects a commendable effort by the City and noteworthy response by the Department to reduce pesticide use through an ecological, systems-based, IPM approach to land management. Accordingly, the Board recommends that the Minister affirm the Director’s Approval of the City’s application subject to the following specific recommendations.

COSTS

[72] The Board’s Decision on costs will follow in due course.

RECOMMENDATIONS SPECIFIC TO APPROVALS 18445-01 AND 47150

[73] The Board believes that there are several aspects of the Approval which could be strengthened to provide greater assurance that the City’s pesticide use will promote what the Board view to be the City’s sincere environmental objectives. Specifically, the Board recommends that:

1. Condition #1 should be modified to require the City to establish and periodically update the following, for each target plant covered by the Approval:

⁹⁵ *Ibid.*, p. 68. These other aspects are: “water quantity, riparian vegetation, fish and fish habitat, waterfowl and wetland habitat, and wildlife and wildlife habitat.” *Ibid.*

- an “action” level--*i.e.*, the minimum number of plants per unit of area for which some control method must be used; and,
- a prioritized list of possible control methods and the circumstances in which each method might be the most appropriate.

The City should give the Director an opportunity to review and provide comments on drafts of these criteria before adopting them. Any site-by-site decision that is “necessary” for the City to use pesticides should be based upon these criteria. Each such decision should be written and should include a brief explanation of how the criteria were applied and what other factors, if any, were reflected in the decision. The written explanation should include a description of the site--*e.g.*, location, topography, plant species. The City’s written decision records should be available for review by the public.

2. The Approval should be modified to require the City to conduct annual audits of its use of pesticides under the Approval.
3. Condition #3 should be amended to clarify that Certificate holders must actually *supervise* pesticide applications (*i.e* they must be on-site at least once during the application and cleanup).
4. Condition #9 should be modified to clarify that each pesticide applicator must be knowledgeable of not only the Approval requirements, but of the requirements in the Alberta regulations and code of practice and of the pesticide labels.
5. The Approval should be modified to required the City to notify the Director immediately of any pesticide releases contrary to the Approval.
6. To reduce the risk of spray drift,
 - the labels’ wind speed restrictions should be included in the Approval; and
 - the sprayer should include a “shroud”, as suggested by City of Calgary witness Mr. Reichardt.
7. To address the confusion regarding the buffer zone for Garlon 4, the Approval should be modified to clearly designate an “appropriate” buffer zone for that pesticide. If the Director believes that a zero buffer is appropriate, he should say so and provide reasons for his decision.

GENERAL RECOMMENDATIONS NOT SPECIFIC TO THESE APPROVALS

[74] The Board also recommends that the Department and/or Director take several steps to improve the Director's consideration of factors relevant to Special Use Approvals and Approvals generally. These steps are:

1. The Department should revise section 10(e) of the *Pesticide (Ministerial) Regulations* to clarify that applicants should investigate alternatives prior to submitting their application for a Special Use Approval.
2. The Director should prepare a study of the variety and feasibility of non-chemical control methods under the various circumstances that municipalities are likely to encounter in areas within 30 metres of open water. In preparing this study, the Director should solicit input from proper stakeholders.
3. The Director should develop an overall policy toward the use of pesticides in special use areas. In so doing, the Director should consider the size of the buffer zones used in other jurisdictions, and in particular, the CAESA recommendations.
4. The Director should ensure that no inconsistencies exist between approvals of this type and the Alberta Environmental Code of Practice for Pesticides.
5. The Director should compile studies regarding the extent of exposure from spray drift.
6. The Director should develop a policy for addressing cumulative impacts of proposed water pollution sources in the Bow River system, together with other existing or expected pollution and other aquatic ecosystem harms, in issuing Approvals that could significantly affect the water quality of the Bow River.

[75] Following the Minister's decision, copies of this Report and Recommendations will be sent to the following parties:

- Mr. Brian O'Ferrall, counsel, Bennett Jones Verchere, representing Ms. Fay Ash;
- Mr. Timothy Haufe, counsel, City of Calgary Law Department, representing the City of Calgary;

- Ms. Charlene Graham, counsel, Alberta Justice, representing the Director, Alberta Environmental Protection;
- Mr. Menno Homan, President, Bow River Basin Water Council; and
- Mr. Don Munroe, Mr. Lloyd Ash, Ms. Victoria Page, Mr. R.E. Wolf and Mr. Chris Reynolds.

Dated on June 8, 1998, at Edmonton, Alberta.

“Original signed by”
Dr. William A. Tilleman, Chair

“Original signed by”
Dr. Ted W. Best

“Original signed by”
Dr. Steve E. Hrudehy

ORDER

I, Ty Lund, Minister of Environmental Protection:

_____ Agree with the Recommendations of the Environmental Appeal Board and order that they be implemented.

yes Do not agree with the Recommendations of the Environmental Appeal Board and make the alternative Order set out below or attached.

Section 74, - general recommendations not specific to these approvals – is much too general and are only to be used as suggestions. No approvals are to be withheld in the future because of perceived lack of action on these suggestions.

Therefore section 71 – the boards decision and section 73 – recommendations specific to approvals 18445-01 and 47150 are to be implemented

Dated at Edmonton this 9 day of June 1998.

“original signed by”

Honourable Ty Lund
Minister of Environmental Protection

_____ Refer to Attachments (only if applicable)