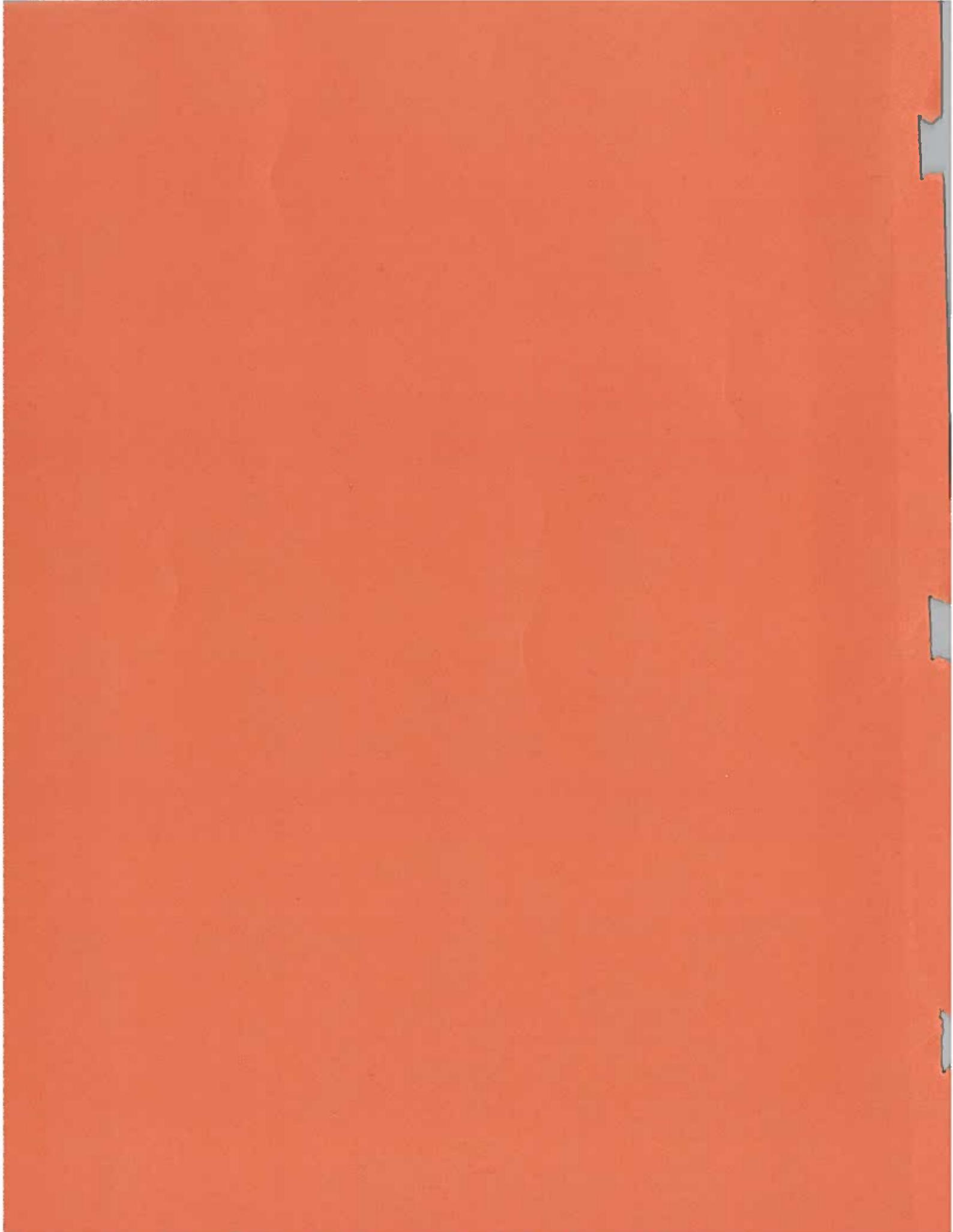


**MANIT****BA**

**REPORT**

**on an Investigation  
of Intensive Livestock  
Production Operations  
in Manitoba**

**The Clean Environment Commission**



**MANIT<sup>BA</sup>**  
CLEAN ENVIRONMENT COMMISSION

Office of the Chairman  
Box 4, 139 Tuxedo Avenue  
Winnipeg, Manitoba  
R3N 0H6

February 26, 1979

The Honourable A. Brian Ransom,  
Minister,  
Department of Mines, Natural  
Resources and Environment,  
Room 302 Legislative Building,  
WINNIPEG, Manitoba.  
R3C 0V8

Dear Mr. Ransom:

As requested in your letter of June 1, 1978, the Commission has conducted hearings for the purpose of investigating potential air, soil and water pollution problems associated with intensive livestock production operations. These hearings were held in seven localities throughout the Province.

The investigation has now been completed and I take pleasure in submitting herewith the Commission's report and recommendations.

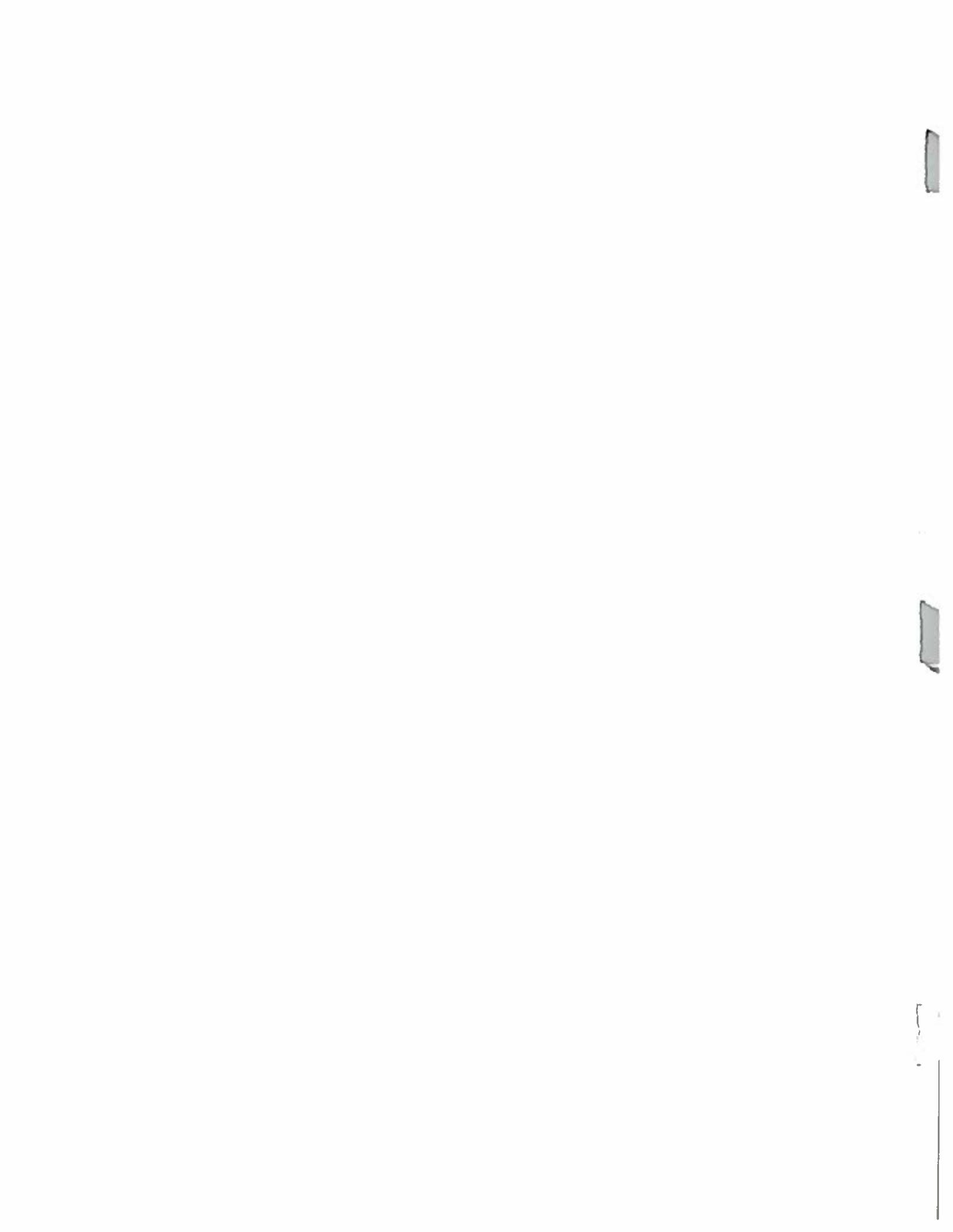
Yours truly,



Guy E. Moore,  
Chairman.

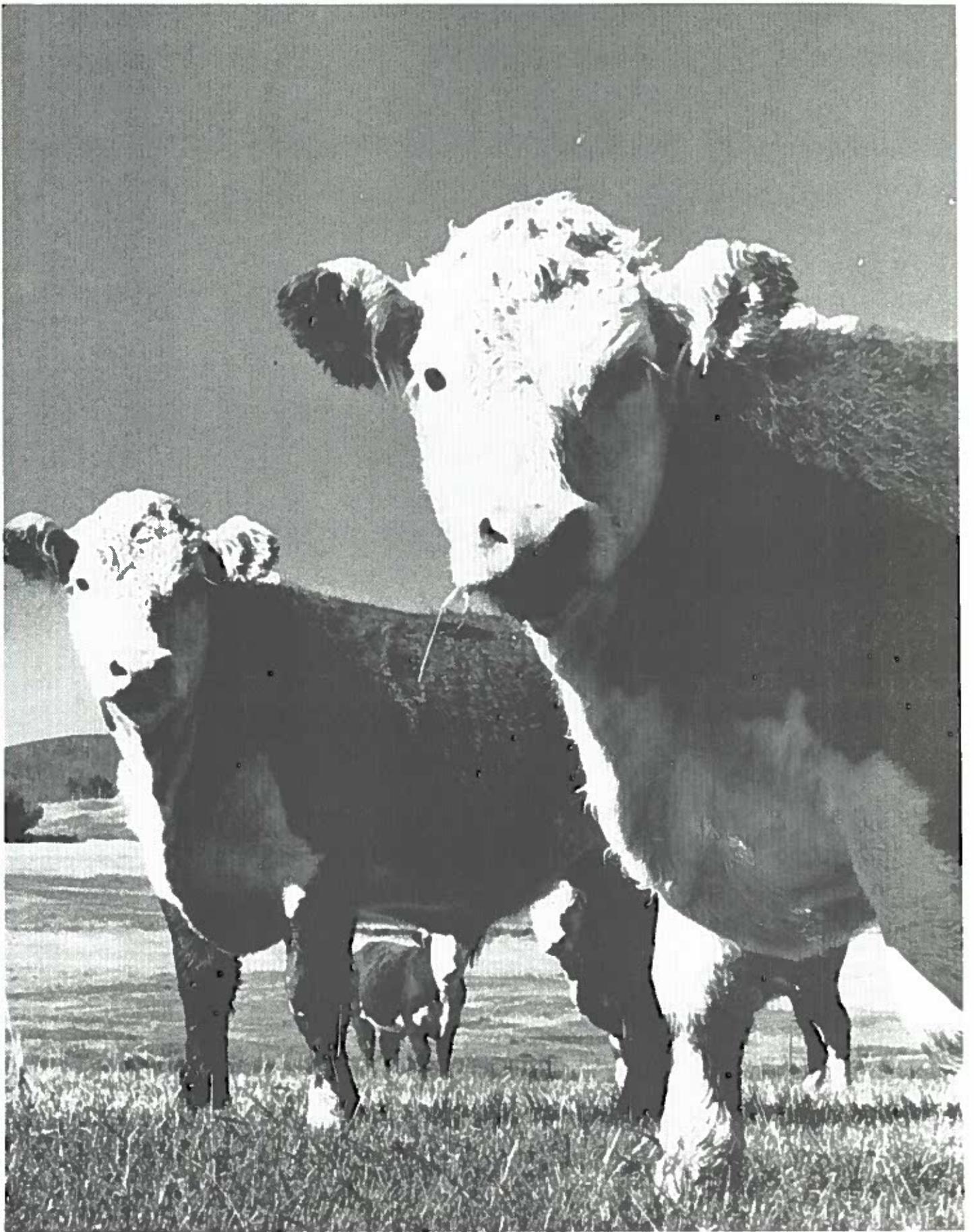


R E P O R T  
ON AN  
INVESTIGATION  
OF  
INTENSIVE LIVESTOCK PRODUCTION OPERATIONS  
IN  
MANITOBA



INDEX

	Page
I. Introduction . . . . .	1
II. Conclusions . . . . .	3
III. Recommendations . . . . .	6
IV. Summary of Environmental Problems Associated with Intensive Livestock Production Operations . . . . .	10
V. Summary of Representations made before the Commission . . . . .	14
VI. Summary of Existing Regulations in Manitoba and Other Jurisdictions . . . . .	32
VII. List of Appendices	
Appendix A - Letter from the Minister	
Appendix B - Letter from the Chairman dated September 20, 1978, with discussion paper, <i>Environmental Problems                   Associated with the Livestock Industry in                   Manitoba</i> , September 1978.	
Appendix C - Commission Hearing Advertisements	
Appendix D - List of Submissions	
Appendix E - Table of Animal Units	
Appendix F - Schedule of Separation Distances	



## INTRODUCTION

On June 1, 1978, the Honourable A. Brian Ransom, Minister of Mines, Natural Resources and Environment, requested The Clean Environment Commission to conduct an investigation of existing and potential air, soil and water pollution problems associated with intensive livestock production operations in Manitoba with the objective of developing guidelines or regulations to provide a workable solution to such problems. The Commission was requested to submit a report and recommendations to the Minister before December 31, 1978. Due to unavoidable delays in the preparation of papers required as a basis in the early preparatory stages of the investigation and after further conversations with the Minister, the target date for the submission of a report and recommendations was set back to February 28, 1979. A copy of the Minister's letter is attached as Appendix "A" to this report.

Hearings were scheduled to take place in late fall after the completion of harvesting to enable agricultural producers to attend. The Commission issued a number of press releases and mailed out a paper entitled *Environmental Problems Associated with the Livestock Industry in Manitoba* prepared by the Environmental Management Division in consultation with producers' organizations. This paper was intended as a means of outlining the contentious issues and problems involved and stimulating public discussion. This paper and a covering letter from the commission chairman are attached as Appendix "B" to this report.

The Commission conducted seven public hearings throughout the agricultural area of Manitoba in connection with this investigation. Hearings were held in Steinbach and Stonewall, November 6 and 7, 1978, Hartney and Winkler, November 13 and 14, 1978, Dauphin and Brandon, November 27 and 28, 1978, and in Winnipeg, December 13, 1978. Copies of the advertisements for these hearings are attached as Appendix "C" to this report. While the Commission was disappointed with the small number of people present at the first three hearings, representations made at these hearings nevertheless raised important and contentious issues. The Winkler hearing, in contrast, was attended by a large number of producers as well as public action groups and planning district representatives, individual citizens, municipalities and government departments. The Commission found

the number and quantity of representations made this and subsequent hearings gratifying. Verbatim transcripts of the proceedings of the hearings are available for consultation in the commission office. Altogether, 78 briefs, representations and other submissions were received by the Commission throughout the investigation. A list of these submissions is attached as Appendix "D" to this report. The Commission wishes to acknowledge the leading roles played throughout the investigation by the Manitoba Departments of Agriculture and Mines, Natural Resources and Environment. These Departments devoted a great deal of care and attention to the development of comprehensive and informative briefs and papers for presentation at each of the public hearings.

## CONCLUSIONS

1. In the past, the intensity of livestock production operations was usually limited by the ability of the land to produce feed and forage. The flocks and herds were more or less "in balance" with the land and the recycling of wastes took place without creating problems.

2. However, modern market conditions and improved animal husbandry methods have resulted in the development of large confinement livestock operations in Manitoba and in other jurisdictions. Experience indicates these intensive operations appear to have a competitive advantage because, at present, they produce animal protein more efficiently than more traditional methods. Economics of scale have resulted in very large production units being set up in the United States containing many thousands of head of stock on very limited acreages. The Commission considers there is a reasonable probability that the size and number of such operations in Manitoba will increase in the years to come.

3. Intensive livestock operations are out of balance with nature because of the very large amounts of waste being produced on restricted areas of land. This waste is a matter of concern as a possible source of pollution of air, soil and water. It also gives rise to problems of incompatible land use if the distances separating intensive livestock operations from other land uses are inadequate.

4. The Commission concludes that problems of pollution and the creation of nuisance conditions should be dealt with in a regulation and that land use zoning plans should be adopted to separate incompatible land uses.

5. The Commission notes that legislation already enacted by the Manitoba government provides sufficient authority for dealing with these problems. This can be done under the provisions of The Clean Environment Act, The Planning Act, The Municipal Act and The Public Health Act.

6. The Commission concludes there is a broadly felt need for the issuance of government guidelines to assist producers in the development and

operation of livestock production units and the management and disposal of resultant wastes. The Commission notes the willingness of producers and their organizations to co-operate in the development, adoption and implementation of such guidelines.

7. The Commission further concludes that there is a need for a second level of guidelines. These should be prepared by the provincial government authorities to assist municipal councils in the development of land use zoning plans and bylaws to solve or prevent livestock-oriented problems.

8. Lakes, rivers and streams can be polluted by run-off of normal precipitation from confinement areas and manure storage facilities of livestock production operations, from the feeding of livestock on the banks of streams and in run-off from fields on which waste has been deposited and not yet incorporated into the soil. Widespread contamination of watercourses can also occur when livestock production operations or manure storage or spreading areas are inundated by floods. Evidence has been submitted that this type of pollution can be prevented by the appropriate design and location of livestock confinement operations and by following sound procedures in manure disposal.

9. Seepage from livestock production operations may pose a serious threat to well water supplies from underground aquifers. This is particularly true in sensitive areas where, due to the permeability of the soil or other conditions, nitrogen and micro-organisms from animal wastes can enter the groundwater supply. However, the livestock producer has a vested interest in ensuring that this does not happen as his operation needs a large and reliable supply of clean water.

10. The Commission is satisfied that returning animal wastes to the soil at appropriate rates of application is the most satisfactory means of disposing of these wastes. A feature of confinement livestock operations is the concentrated production of very large amounts of such wastes. It is essential for the producer to have access to sufficient land to ensure excessive rates of application are avoided. This is to a large extent self-regulating as the productivity of the soil can be reduced and even destroyed by excessive manure application. The Commission considers the most

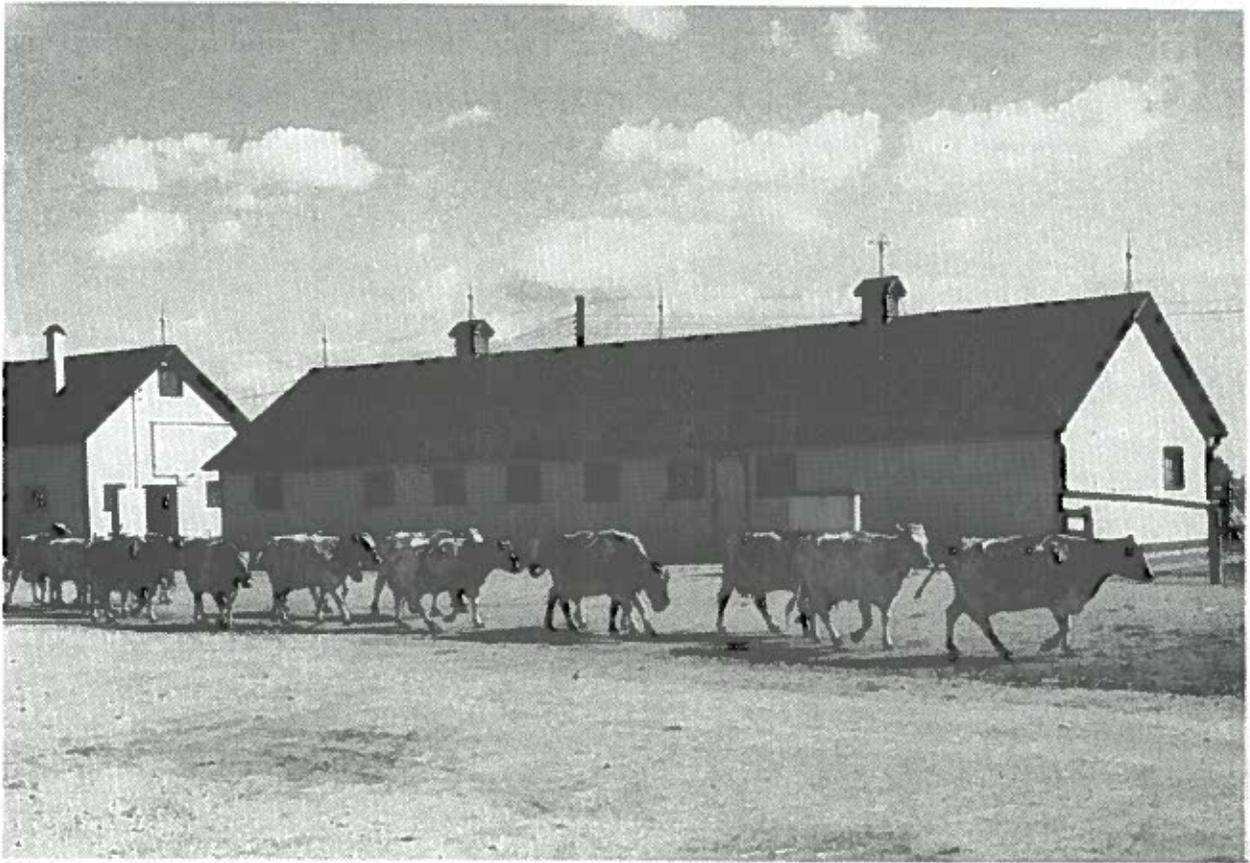
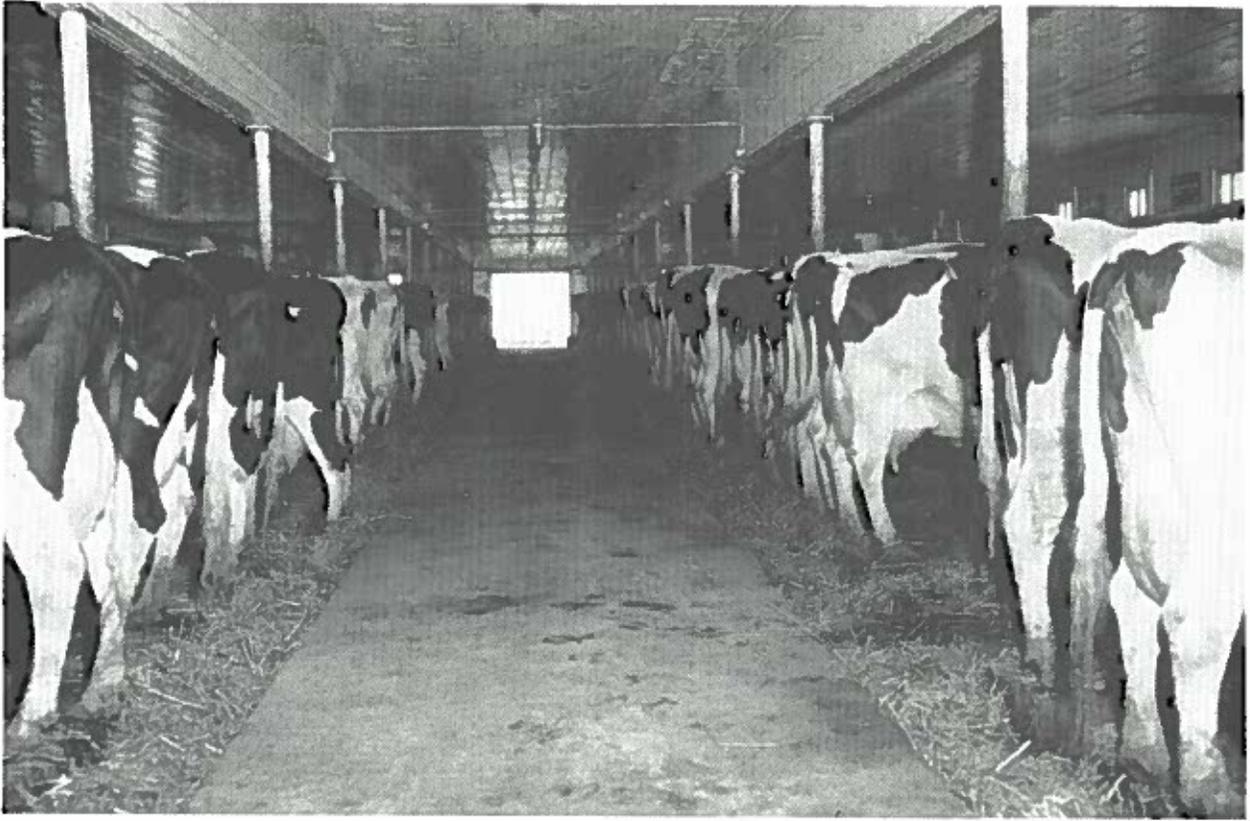
reliable test of the soundness of the rate of application is the ability of the operator to grow crops on the land within a reasonable period of time after such application.

11. Regardless of technical or legal discussions of whether odours constitute an environmental contaminant, the Commission is satisfied that some offensive odour is normally associated with livestock production operations. However, it may be argued, livestock odours can be a substantial nuisance to those not engaged in the production operation. The Commission concludes that the amount and offensiveness of the odours can be greatly reduced by good housekeeping methods on the part of the operator and careful timing of manure handling, spreading and incorporation in the soil. Aside from good housekeeping and efficient storage and handling, the most practical method of alleviating or preventing problems arising from odour contamination is to introduce a considerable separation distance between livestock operations on the one hand and residential or commercial land use on the other. Most of the complaints received by the Commission concerning livestock-related odours came from people who are agricultural producers, some of whom are themselves livestock growers.

12. The Commission notes that serious infestations of flies and rodents can take place in connection with livestock production operations. While the presence of some pests is inevitable, frequent cleaning around feeding facilities and fences and adequate control measures are essential.

13. Dead animals are a hazard to the health of humans and livestock. Prompt disposal by the use of sound methods is an essential ingredient of good livestock production management.

14. The Commission concludes that the measurement of the size of livestock production operations as specified in the present regulation under The Clean Environment Act "livestock waste unit" is unnecessarily complex. It is noted the term "animal unit" is used in several other jurisdictions and as this term is considered less likely to cause confusion and misunderstanding, it has been used throughout this report. A table of animal unit equivalents is attached as Appendix "E".



## RECOMMENDATIONS

1. That a revised regulation be issued under The Clean Environment Act to control contamination of the air, soil and water in connection with the operation of intensive livestock production operations.
2. That, in order to avoid hardship and disruption, owners of existing intensive livestock production operations be given five years to comply with any new regulations issued pursuant to these recommendations and that they be required to file with the Department of Mines, Natural Resources and Environment within two years, a plan and schedule for compliance with the regulations at the end of the five year period.
3. That, on issuance of a revised regulation under The Clean Environment Act, regulations issued under The Public Health Act covering the same matters be rescinded.
4. That, for the purpose of the revised regulation, "intensive livestock production operation" means an operation for the rearing, confinement or feeding of poultry, hogs, sheep cattle or horses in an enclosure where the space per animal unit is less than 400 square meters, but does not include:
  - (a) an operation for the slaughter or processing of livestock;
  - (b) an operation for the grading or packing of livestock or livestock products;
  - (c) an operation for transporting livestock or livestock products;
  - (d) a hatchery; or
  - (e) a livestock auction market.
5. That a person operating an intensive livestock production operation in excess of 300 animal units be required to register with the Department of Mines, Natural Resources and Environment under subsection (4) of section 14 of The Clean Environment Act.
6. That a person proposing to establish a new or expand an existing intensive livestock production operation that will exceed 300 animal units be required to file his proposal under subsection (1) of section 14 of The Clean

Environment Act and that:

- (a) the proposal be filed six months prior to the planned date of the commencement of operations;
- (b) detailed plans of the operation accompany the proposal; and
- (c) no construction shall take place until the proposal has been approved by the Department.

7. That the revised regulation under The Clean Environment Act require:

- (a) that livestock feeding operations be constructed and maintained in such a manner as to retain livestock waste and run-off water from feeding and manure storage areas on land owned or controlled by the operator and that such waste and run-off water not enter any body of water;
- (b) that confinement operations and manure handling and storage facilities not be established in the floodplains of rivers and streams; and
- (c) the existing operations so located either be moved to higher ground or be dyked in such a manner as to prevent inundation by flooding.

8. That areas sensitive to groundwater contamination by livestock wastes be mapped, based on the already very detailed and extensive knowledge of soil types, soil moisture conditions and groundwater aquifer locations in Manitoba, and that this information be used in determining the precautions needed to ensure the protection of the underground water supply.

9. That all intensive livestock operations be required, under the revised regulation, to ensure that feeding, holding and manure storage areas are rendered impermeable to prevent contamination of groundwater from seepage.

10. That the revised regulation require that animal wastes and contaminated run-off water from holding ponds be disposed of by distribution on and incorporation into lands to which the operator has legal access and on which a crop will be harvested within thirty months of the date of application.

11. That animal waste be incorporated in the soil with the shortest practicable delay after application.

12. That producers be required to take appropriate measures at all times to ensure that pests are controlled.

13. That the revised regulation require that dead animals be retained in an inoffensive condition and disposal of by burial with a top cover of one meter of earth or by rendering in a rendering plant unless disposal by some other method is approved.

14. As major conflicts arising from livestock odours relate to conflicting land uses, the Commission recommends that:

- (a) every effort be made to encourage municipalities to form planning districts to develop and obtain approval of land use plans designed to minimize land use conflicts by achieving suitable separation between residential and recreational development on the one hand and livestock production operations on the other; and
- (b) as part of these plans, the designation "limited agriculture" be used for land in the vicinity of urban centres to limit the size and intensity of livestock operations in such areas, and
- (c) every care should also be taken to ensure that residential development is not permitted to encroach on existing livestock production operations located on land designated for unrestricted agricultural use.

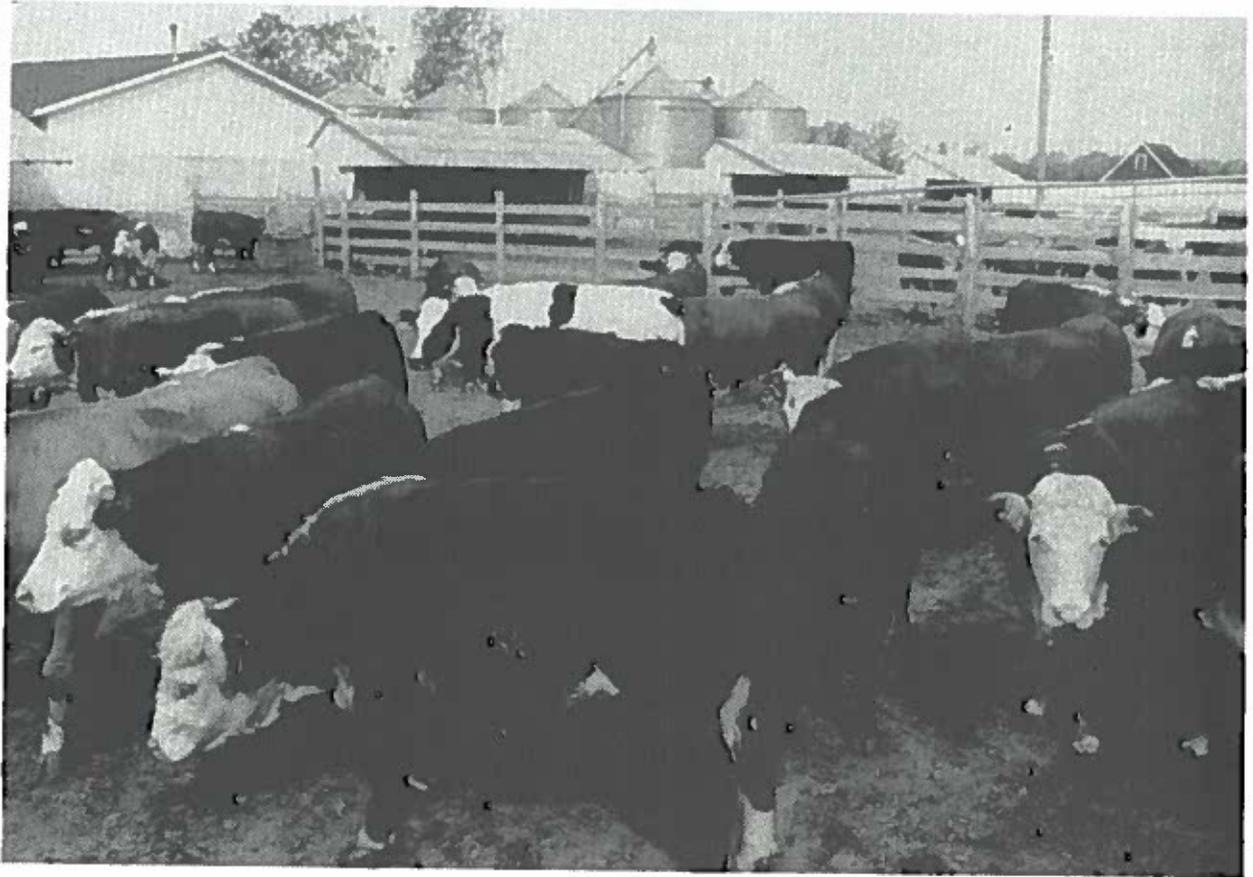
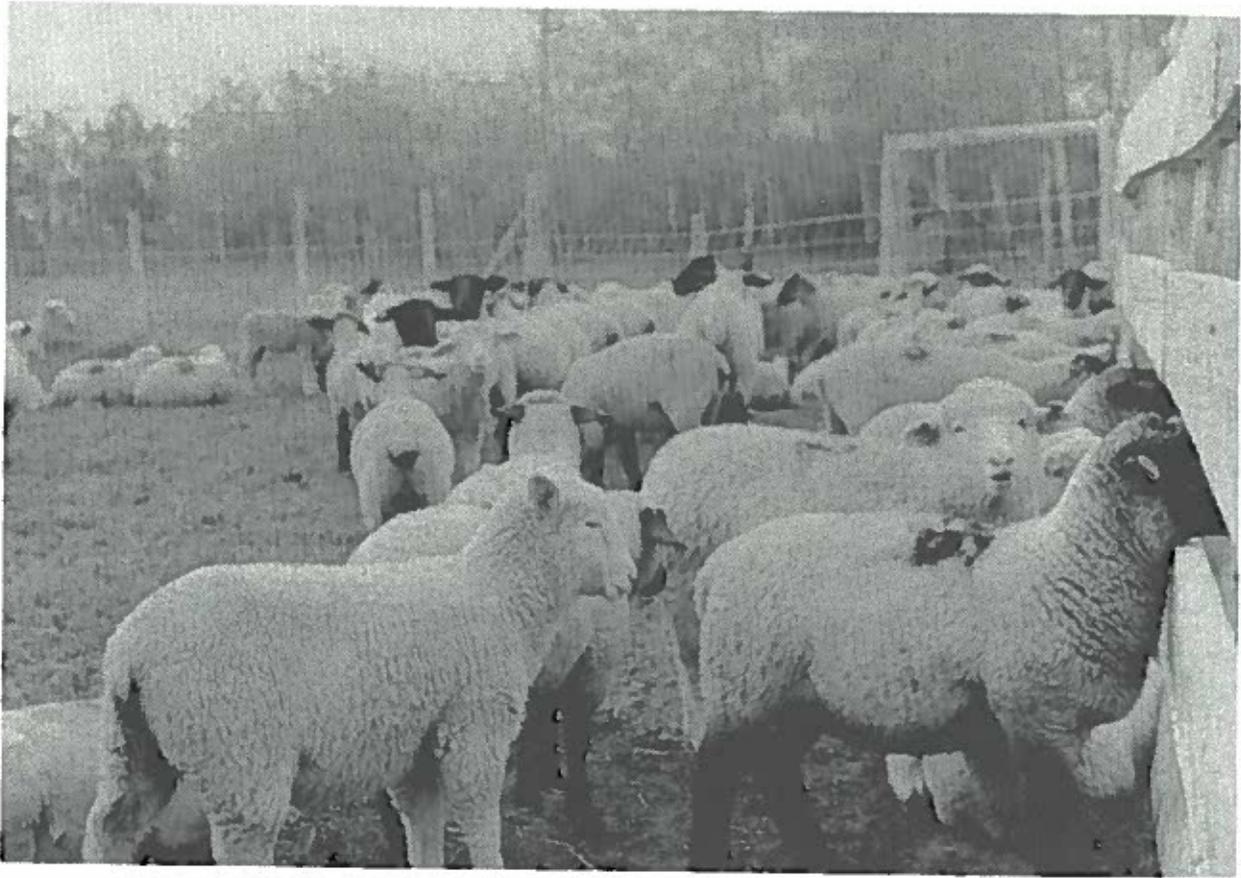
15. Due to the delays and natural inertia associated with the adoption of land use zoning plans and until such time as comprehensive land use plans are in being, it is recommended that:

- (a) municipalities be encouraged to pass interim bylaws establishing suitable separation distances between residential, recreational and other public use facilities and livestock developments and also incorporating prohibitions on the keeping of livestock in sensitive areas; and
- (b) the revised regulation issued under The Clean Environment Act prescribe a schedule of separation distances, such as those

- (b) outlined in Appendix "F", to be applicable in all rural municipalities except those where separation distances are established by means of bylaws or land use zoning plans.

16. That the Department of Agriculture, the Department of Mines, Natural Resources and Environment, and other appropriate departments of government co-operate in the production of guidelines to assist livestock producers to locate, plan, construct and operate in a manner compatible with sound environment practice.

17. That the Department of Municipal Affairs in co-operation with the above Departments issue guidelines to assist municipal councils to avoid or overcome livestock-related problems. Such guidelines should contain information on the adoption of land use plans. They should also include information on the use of bylaws to set limits on livestock operations where this is considered desirable in the circumstances prevailing locally.



ENVIRONMENTAL PROBLEMS ASSOCIATED WITH INTENSIVE  
LIVESTOCK PRODUCTION OPERATIONS

During the course of the hearings, the Commission found that existing or potential environmental problems connected with livestock operations can be divided into five categories:

1. sanitary or health concerns;
2. odours;
3. surface water pollution;
4. groundwater pollution; and
5. soil contamination.

Sanitary concerns centre mainly around the question of the disposal of dead animals. Dead animals left unattended can cause real health hazard to other livestock, other domestic animals and to human beings. Their decay in the open air can lead to an infestation of disease-carrying flies. Under Manitoba Regulation 34/73 "Respecting Livestock Production Operations", dead animals must be delivered to a rendering plant for rendering, buried or disposed of in another manner acceptable to the Minister. Various representations to the Commission pointed out that delivering the animal to a rendering plant can be an excessive burden on the small herd owner, as there are only two outside rendering plants in Manitoba, one in Brandon and one in Winnipeg. For these livestock producers, burial is the logical and environmentally acceptable alternative. However, burial is not possible in the winter due to the frozen ground conditions, and often if the animals are left until spring, they may be well on the way to decay before the ground is thawed enough to bury them.

The Commission received many representations on the question of odours. There was not agreement in the representations as to whether odours are or are not an environmental contaminant. Some evidence tended to view odours as more of a nuisance problem, while others notably the Environmental Management Division, stated that odours are an environmental contaminant.

Section 1(d)(viii) of The Clean Environment Act defines contaminant as:

"contaminant" means any solid, liquid, gas, waste, odour, heat, sound, vibration, radiation, or combination of any of them that ...

(viii) interferes or is likely to interfere with the comfort, well-being or enjoyment of a person;"

In the context of the Act as it is presently written, odours are an environmental contaminant.

Evidence presented to the Commission, both by the Environmental Management Division and various municipalities, indicated that 75% of complaints registered with them concerning livestock operations are made in connection with odours. Any approach to the question of the regulation of the intensive livestock production operations which did not address itself to the control of odours will leave a large part of the problem unresolved.

Experts in the field stated to the Commission that odours are not an actual health hazard, that odours in themselves will not cause disease. However, the effect of odours in different individuals can vary from being perceived as mildly unpleasant to causing nausea and vomiting. Exposure to livestock odours from a nearby facility can deprive a person of the enjoyment of his property.

Odours are associated with two main sources:

1. field spreading of manure; and
2. livestock facilities, i.e. manure storage, hog barns, feedlots, holding ponds.

Odours from manure application to soil cannot be completely eliminated but can be controlled through proper incorporation into the soil soon after application. Winter spreading is not fully acceptable because the manure will thaw and begin to decay well before the ground is thawed and then dry enough to allow the manure to be plowed under.

Odours from livestock facilities can best be controlled through proper design of feedlots to provide good drainage, proper design of manure storage facilities, by the aeration of liquid manure storage facilities in summer, and by good housekeeping practices.

Surface water pollution is a very real problem in Manitoba. Livestock operation can contribute to this pollution in the following ways:

1. dumping of manure and dead animals directly into watercourses or onto floodplains;
2. surface run-off from feedlots, soil spread with livestock wastes and manure storage facilities;
3. flooding of livestock facilities built on floodplains.

The dumping of dead animals into watercourses is prohibited. Dead animals can spread pathogens through the water, and in areas where streams are used as a source of domestic water, could cause serious disease in the population. The dumping of manure directly into watercourses also poses a significant health hazard. Both are completely unacceptable practices.

Contamination of surface water can result when surface run-off from feedlots and manure storage facilities are not properly contained. Precipitation which falls on these facilities comes in contact with livestock wastes and can be contaminated with pathogenic organisms, and nutrients which can be carried to a watercourse through surface run-off and pose a health threat to individuals using the water downstream. The nutrients contribute to the overall nutrient loading on the receiving watercourse. Surface run-off can be contained by containing feeding and manure storage areas to conduct run-off to a holding pond. Run-off from holding facilities can be controlled by providing storage volume adequate to contain above normal precipitation levels.

Run-off from soil that has been used for manure disposal can contain a high level of nutrients such as nitrogen and phosphorus from the breakdown of the livestock wastes. Contamination can be minimized by rapid incorporation of the wastes into the soil. Winter spreading is a particular contributing factor in contamination of watercourses from surface run-off, as the wastes have usually not been plowed under by the time of spring thaw. Ensuring adequate over-winter storage would solve this problem. However, several representations made to the Commission indicated that the cost involved would be prohibitive to most livestock producers.

Flooding of facilities which have been constructed on floodplains of rivers causes a sudden, intense contaminant load which can linger for a long period of time. The removal of intensive livestock production

operations from floodplains of watercourses or the dyking of feeding and manure storage areas can alleviate this problem.

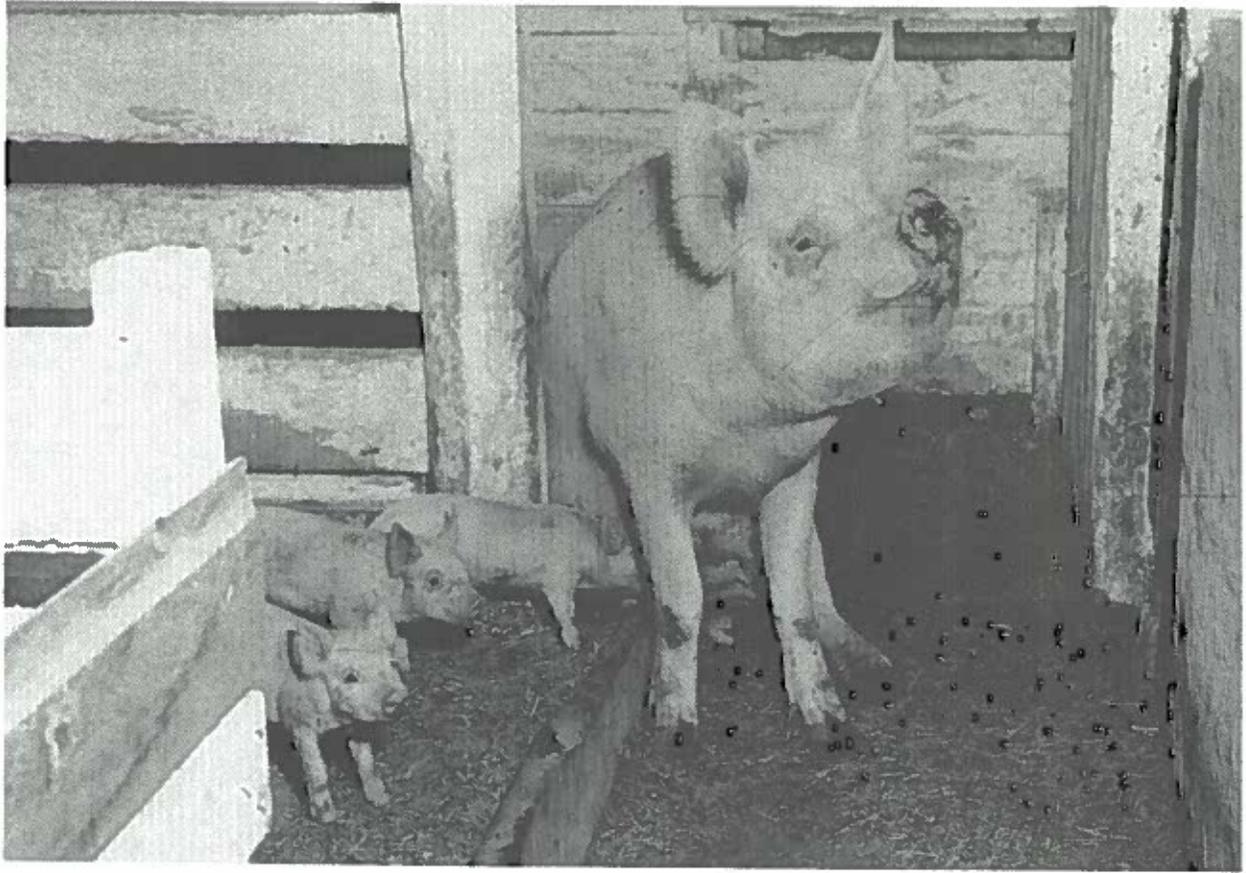
Groundwater pollution poses a most immediate problem especially for residents of rural Manitoba, many of whom obtain their drinking water from wells. Groundwater pollution from livestock operations can originate from disposal of livestock wastes onto soil and from seepage under livestock facilities. Either of these can lead to high levels of nitrate nitrogen in the groundwater.

The Commission received very little evidence concerning the extent of groundwater contamination resulting from land application of manure. The Department of Agriculture stated that there is a paucity of information of this question resulting from a lack of adequate groundwater monitoring programs until now. More work is needed to establish the extent and severity of the risk. Other forms of groundwater contamination are persistent and very difficult to alleviate. Potential problems from this source can be minimized by avoiding application of excessive amounts of wastes to soil, by ensuring that crops are grown on all soils used for manure disposal and by taking additional precautions on soils which are highly permeable.

Contamination of groundwater from seepage under livestock facilities occurs mostly from leaking from manure storage and handling facilities. This can be reduced through proper design and by lining the storage facilities with non-porous material.

The Department of Agriculture pointed to studies done by the University of Manitoba which showed that denitrification of seepage from livestock operations appears to occur within a reasonable short distance of the pollution source.

Livestock wastes applied to soil acts as a fertilizer for crop growth by providing nutrients (nitrogen, phosphorus potash) and organic material. The application of wastes to soil at excessive rates has adverse effects. Salts can be built up in the soil, thereby reducing the availability of nitrogen to the crops and reducing crop growth. This result has a self-regulating effect on the application rates of livestock wastes.



## SUMMARY OF REPRESENTATIONS MADE TO THE COMMISSION

### Manitoba Department Agriculture

Both in its written brief and in the representations made before the Commission, the Department of Agriculture stressed that there are two main aspects of pollution control from livestock operations and that they must be handled separately:

- (a) preservation of soil and water resources and the maintenance public health. These should be incorporated into province wide environmental regulations;
- (b) conflict situations, such as land use should be handled in a separate manner.

Odours from livestock operations are the cause of nearly 75% of complaints against such operations. Odours are the problem in most land use conflicts involving livestock operations. Because the perception of odours is highly subjective and because, at present, there is no effective technology to deal with odours from non-point sources such as livestock operations, the Department is of the opinion that odours should best be controlled by adequate separation distances. Separation distances should obligate both parties. They should prohibit the establishment of livestock operations close to residential areas and they should prohibit the encroachment of residential areas onto land where the livestock industry is a viable and desirable activity. The Department stressed that control of odours is a land use problem, not an environmental or public health problem and, to be effective, should be handled through land use planning.

The provincial government has recently established land use policies and has established the necessary mechanisms whereby municipalities can pass bylaws in accordance with these policies. Two of the policy guidelines deal specifically with the protection of agricultural land. The Department feels that the odour problem can adequately be dealt with under the Planning Act and the Provincial Land Use Policies.

The Department further recommends that there be established a set of environmental guidelines which would integrate the environmental regulations and land use policies. The objective of the guidelines would be

to provide official recommendations for meeting regulatory requirements for the mutual benefit of livestock producers and environment officers. Such guidelines would provide land use planners with technical information on which to base land use decisions.

The responsibilities for the various aspects of environmental control should be as follows:

- (a) The Clean Environment Commission would act as an advisory body to the Minister responsible for environmental protection;
- (b) the Environmental Management Division would enforce regulations and monitor the environment, develop, evaluate and update environmental guidelines;
- (c) a group of technical experts should be given the authority over decisions concerning the protection of groundwater;
- (d) municipalities and planning districts should be responsible for land use planning; and
- (e) the Department of Agriculture would provide technical advice to farmers and land use planners.

#### Environmental Management Division

The Environmental Management Division, in its final representation to the Commission, suggested that intensive livestock operations should be considered in three categories: first, existing operations, second, operations which are to be expanded and third, new operations. Environmental controls could also be divided into those which apply to all livestock operations, and those which apply only to intensive livestock operations. In this context, the Commission must first establish the definition of "intensive livestock operations".

While the Branch strongly opposed the view of the Department of Agriculture that odours are not an environmental problem, the Division did suggest that separation distances and buffer zones are appropriate measures towards odour control. Mr. Grant McLeod, representative of the Division, said that such separation distances are already used in some environmental legislation such as Manitoba Regulation 208/76 "Respecting Waste Disposal Grounds" which stipulates minimum distance requirements between waste

disposal grounds and residences.

The storage, treatment and disposal of livestock wastes that may, in some locations present an environmental hazard to groundwater supplies. Mr. McLeod reminded the Commission of the irreparable nature of groundwater pollution from the gasoline leaks investigated by the Commission and the difficulty of pinpointing the polluting source, even though gasoline does not exist naturally in the soil profile. The difficulty of pinpointing the source of soil polluting substances when these substances occur naturally would be many times greater. For this reason, the Division suggested that site-specific soil and groundwater studies be done before the construction of an intensive livestock operation, to assess the risk of groundwater pollution. The Minister responsible for the environment could then be given authority to declare an area sensitive to groundwater pollution, thus prohibiting or limiting construction of intensive livestock operations in that area.

Surface run-off from agricultural land is a contributor to the pollutant load of watercourses. The collection of such run-off is desirable and technologically feasible and should be required by environmental regulation.

The following is a summary of a list of recommendations made to the Commission by the Division:

1. definition of "intensive livestock operation" in terms of:
  - (a) number of livestock waste units;
  - (b) location of facility and manure-spread land in relation to residences or recreational areas;
  - (c) proximity to surface water body;
  - (d) groundwater pollution hazard.
  
2. amendment to Act to provide approval process, perhaps to include terms other than limits of pollutant emissions, prior to construction of an operation.
  
3. amendment to livestock operation regulation to include:
  - (a) requirements of approval process;
  - (b) basic operational requirements for pollution control.

3. (could use principles and procedures now used for subdivision approval).
4. process for municipal approval in principle of a new or expanding operation before submission to provincial authority.
5. provision of authority to establish areas sensitive to groundwater pollution and to prohibit, limit or qualify any operation on that land.
6. guidelines for design, construction and operation of intensive livestock facilities.
7. pollution control requirements for intensive livestock operations:
  - (a) new operations, to meet requirements from time of start-up;
  - (b) expanding operations to meet requirements at completion of expansion work. Must establish what percent of expansion in operational capacity will constitute an "expanded operation";
  - (c) existing operations to be given a period of time for compliance with requirements, either on an across-the-board basis or as negotiated with individual operators, based on degree of sensitivity of the soil on which the operation is situated. Operations idle 12 months or more could be considered "new operations" at start-up.

Thompson Clean Environment Committee

The Thompson Clean Environment Committee pointed out that the past practice of pasturing small numbers of animals on relatively large tracts of land was environmentally sound. Pollution problems, the brief said, have arisen mainly with the trend to larger, confined livestock operations. The Committee appended the following recommendations:

1. Define "intensive" livestock production operations in animal units per square foot and require permits for their operation.

2. Wastes should be retained on land controlled by operator.
3. Lagoons should be properly designed to hold above normal precipitation levels.
4. Regulations should protect Manitoba waterways.
5. Compliance with proper animal and animal waste handling and disposal procedures should not be left up to the operator, but should be regulated; regulations should be under provincial control.
6. New or altered operations should be designed to meet the requirements of regulations and existing operations should be given 5 years to comply.
7. Controls should vary with the type and size of facility.
8. Control should include environmental protection and land use conflict provisions.
9. Separation distances should be established but should vary with the size of the operation.
10. Intensive livestock operations should be prohibited in areas sensitive to groundwater pollution.
11. Application of manure to soil should be controlled to prevent water pollution.
12. Separation distances should also be established between manure spreading operations and residences, schools, parks, etc.
13. Separation distances should also apply to the encroachment of residences onto agricultural areas.
14. The provincial government should be the authority to permit or

14. reject the construction or expansion of an operation, but specific rules for doing this should be established to prevent a haphazard approach.
15. Public nuisance by a livestock operation could be handled by an arbitration board, with the provincial and municipal governments sharing the cost of any necessary closures.
16. Inspectors should be appointed.

Morden, Stanley, Thompson, Winkler (M.S.T.W.) Planning District

The Morden, Stanley, Thompson, Winkler Planning District encountered some difficulties in trying to apply the Planning Act and in particular the new Provincial Land Use Policies in the control of intensive livestock operations in their area. The land is subdivided into many small parcels and often the livestock operations are located within the boundaries of villages.

The majority of complaints made to the Planning District concern odour:

1. livestock operations have established close to residential, commercial and recreational areas;
2. large, expanded operations have caused odour emissions and fly infestations;
3. residences, commercial and recreational areas have encroached on established agricultural areas.

The MSTW Planning District believes that odours from livestock operations can, and should, be controlled and regulated. Liquid manure pits should be aerated, liquid manure should be injected into soil rather than spread on the surface. Using these good management practices, necessary separation distances could be decreased.

MSTW Planning District believes that livestock operations should be

restricted in development districts. Limits should also be set on distances from surface watercourses. The provincial government should oversee the regulations except in those areas where planning districts have been set up and have developed some expertise. All regulations and inspections should be under only one authority. Producers' organizations could play a role in the processing of complaints.

Council of the Rural Municipality of Roland

The Council of the Rural Municipality of Roland expressed concern on three main points:

1. offensive odours arising from livestock operations constructed too close to residential areas, making the areas unpleasant to live in;
2. pollution of surface waters downstream of livestock operations which can affect recreation, wildlife and waterfowl and which usually are very expensive to restore; and
3. pollution of groundwater aquifers. This type of pollution, once established, is irreversible and can cause insurmountable problems if it affects an urban drinking water supply.

The Council believes that regulatory legislation, not guidelines, is necessary. This legislation, they feel, should be provincial, should cover every segment of the livestock industry and should include:

1. Land use and environmental control.
2. Separation distances between livestock operations and water supplies.
3. Ability of authority to prohibit an operation where there is only one water source available or in heavy run-off areas.
4. Ability of authority to direct operations to areas of low

4. density population and low grade soils.

The Council further says that the producers' organizations should not play a role in the governing of the industry, due to the conflict of interest. Also, legislation should be geared to prevention of problems rather than the clean-up after damage has been done.

Carman District Farm Business Association

The Carman District Farm Business Association also made a representation before the Commission. They stressed that controls should be in the form of guidelines and existing operations should be dealt with separately from new or expanded ones. New and expanding operations should have to meet certain requirements before construction, with the right to appeal.

Concerning separation distances, the Association feels that:

1. Minimum distances from watercourses need not be stipulated if surface run-off is controlled.
2. Livestock production should be protected by land use controls to prevent encroachment by residential areas.
3. Minimum distances between manure spreading operations and residences need not be legislated with good management.

A. A. Kroeker & Sons Ltd.

A. A. Kroeker & Sons Ltd., farmers in the Winkler area, submitted that the proposals in the brief by the Environmental Management Division are excessively restrictive. They feel that the questions, particularly of odour pollution, are entirely subjective. Urban dwellers who move into the country must accept agricultural odours. Land use legislation should neither prohibit the construction of facilities nor should they force farmers to stay on the land (by prohibiting subdividing of agriculturally zoned land).

Dauphin Town Council

The Town Council of Dauphin presented the following comments for the consideration of the Commission. They feel that while stringent limits have been set by the Commission on their operations, the Commission has not set equally stringent limits on private enterprises located within and close to the Town boundary: an alfalfa plant emitting dust and a piggery.

The Town Council feels that land use policies should be provincially applied, so that discrepancies between those applied by the urban municipality are also applied by the surrounding rural municipality. The Council made the following recommendations:

1. Odour control should be accomplished through the use of buffer zones.
2. Existing operations should not be allowed to expand.
3. Manure disposal should be restricted by a certain distance away from urban areas.

Council of the Rural Municipality of Dauphin

The Council of the Rural Municipality of Dauphin informed the Commission that it has adopted a land use planning scheme. The Council points out that planning schemes notwithstanding, a planning decision taken by a municipal council or a planning district may not be to the satisfaction of an adjacent municipality. The provincial government has a responsibility to provide for a right of appeal. The Council suggests the Commission have this arbitrating authority.

The Council feels that its problems have been adequately and fairly dealt with by existing agencies and it does not perceive the need for change in existing regulation. Consultation should occur if changes are made to regulations which will affect municipal authority.

Manitoba Milk Producers' Marketing Board

Concern over groundwater and surface water pollution and odour emissions were expressed by the Manitoba Milk Producers' Marketing Board. The following recommendations are contained in their brief:

1. Livestock facilities not be allowed on permeable soil.
2. Run-off facilities should be large enough to hold above normal precipitation.
3. Buffer zones should be used to control odour pollution. Residential build-up should not be allowed to crowd out agriculture.
4. Livestock wastes should be spread over all land, with the precaution that waste spread within a  $\frac{1}{2}$  mile of a residential area should be worked into the soil within 24 hours.
5. A board should be set up with one representative from every livestock industry and every concerned government department, to deal with all applications for expansions or new constructions, with government paying compensation for all closures and for all court costs in case of appeal.

Manitoba Hog Producers' Marketing Board

The Manitoba Hog Producers' Marketing Board stressed the economic importance of the hog producing industry to the Manitoba economy, not only through the worth of the industry itself, but also its stimulation of other areas of the economy such as barley production, transportation, meat processing, farm implements, etc.

The increasing cost to the producer will force the raising of larger numbers of animals on small lots. This will lead to the accentuation of the problem with manure handling. The brief points out that, properly managed, manure need pose no threat to the environment and can substantially

improve soil nutrients, soil tilth, water retention and thereby crop production.

The board stated that livestock producers should be required to install controls to prevent groundwater and surface water contamination when monitoring programs have shown they are necessary.

Odours are a part of hog production; they may be objectionable, but are not an environmental hazard. Some steps can be taken to prevent them, but the only really effective solution is the establishment of buffer zones. Land use zoning should be used to protect agricultural land.

The board feels that the provincial government is the appropriate authority to administer and enforce regulations on livestock operations and also believes that regional producers' association commodity groups could "self-police" their members before the provincial officials become involved in enforcement.

#### Manitoba Beef Growers' Organization

The Manitoba Beef Growers' Organization is of the opinion that what is needed is a series of straightforward regulations and aid to the planning districts in formulating municipal land use guidelines.

The regulations should preclude civil or criminal charges, if complied with and should be devised bearing in mind the economics of the operations. There are two parts to such regulations; land use control and "sanitation" of livestock operations. The Organization recommended the following pollution control regulations:

1. No new operations below the 10-year flood level in any watercourse and existing facilities should be phased out within 5 years.
2. New operations should be required to contain surface water run-off withholding pond contents to be pumped out annually by October 15.

3. Disposal of livestock waste should be to soil rather than watercourses.
4. Existing facilities to have 5 years to comply.

Protection of groundwater supplies should be carried out under the Manitoba Department of Agriculture by establishing a new groundwater advisory authority to designate suitable areas for the establishment of new livestock facilities. This authority could approve new and existing facilities so as to protect producers from civil or criminal action, but could not actually prohibit construction.

Disposal of dead animals should be by burial or shipment to a rendering plant. Animals could be kept frozen in winter if they are buried as soon as conditions permit in Spring.

Manure disposal should be to crop land, with stockpiling being allowed for up to 18 months.

Responsibility for enforcement of the regulations should be with the Environmental Management Division with the Manitoba Cattle Producers' Association acting a "first line of complaint" empowered to investigate problems and attempt informal solutions before the authorities become involved.

The Manitoba Beef Growers' Association strongly opposes the establishment of separation distances between livestock operations and residences. Instead, areas should be set up in the province which are designated for unrestricted agricultural use, based solely on soil quality, not on present zoning. Local authorities should have the right to change these designations to protect existing residential areas. Residential growth should only be allowed when all land within existing urban areas has been used. The urban area should be surrounded by a zone of limited agricultural development. Municipalities should have the power to relocate livestock operations situated too close to residential development and, within 5 years, should pay 20% of relocation costs with province paying the remaining 80%.

Municipalities should establish set back distances from highways and adjacent properties.

#### Western Groundwater Consultants

Western Groundwater Consultants outlined air pollution and surface and groundwater contamination to be the main potential pollution hazards.

Odours, while being the most obvious problem, are also the most difficult to control with present technology. Buffer zones are the only practical solution.

Land application of livestock wastes is both an economical and an environmentally acceptable method of disposal. It protects surface water from pollution and provides valuable soil fertilizers. Direct disposal of these wastes into watercourses should be discouraged and construction of feedlots on floodplains should be prohibited.

Pollution of surface water by run-off can be controlled through control structures such as perimeter ditches and holding ponds. The content of the ponds can be sprayed or pumped onto fields. Proper land management is necessary to limit nutrients going to soil so as to prevent groundwater pollution through excessive percolation.

Pollution of groundwater can best be prevented by not locating feedlots on soils sensitive to groundwater pollution and this should be confirmed by test drilling on the site of the proposed operation.

#### South East Beef Cattle Improvement Association

The Association, in their brief, stressed that responsibility in land use decisions should rest at the regional planning board level, rather than with the Commission. Concerning the proposal of new regulations, the Association has this to say:

1. There are a number of ways to dispose of dead animals in addition to burial; in remote areas by burning or leaving them

1. for predators, for example, and small cow-calf producers should not have the same restrictions in this area as large feedlot owners.
2. There should be unrestricted access to watercourses for the purpose of watering livestock in the summer. Winter watering along watercourses should also be allowed, but should be regulated and monitored. Feeding and bedding areas should be a safe distance from the stream.
3. There should be no winter spreading of manure.
4. New or expanding operations should be dealt with separately from existing ones.
5. Each class of livestock should be treated separately.
6. There should be guidelines for both land use and pollution control.

Agricultural Waste Management Committee of the Faculty of Agriculture

The Agricultural Waste Management Committee of the Faculty of Agriculture of the University of Manitoba made the point that while regulations are needed, the actuality or probability of pollution by livestock should be established before control measures are required. In this way, the environment can be protected without endangering the economic viability of the livestock industry. Regulations should be formulated with an awareness of the technology required to prevent pollution depending on the size of the operation.

Environmental control should be an entire program and should encompass:

1. regulations;
2. environmental monitoring;
3. land use policies; and
4. implementation guidelines.

Environmental problems connected with livestock production arise chiefly from the disposal of animal wastes; soil, groundwater and surface water pollution and odours.

1. Wastes should be deposited on soil but not in excess amounts. "Excess" needs to be defined.
2. More information is needed to determine whether problems exist with pollution of groundwater by livestock operations. No studies have shown that such problems exist.
3. Control technology is available to virtually eliminate any danger to surface waters. The "allowable" extent of run-off pollution may be difficult to define.
4. Odour is the most difficult "pollutant" to define. Although some control may be necessary, there will have to be acceptance of a certain level of odour.
5. Sanitary measures, e.g. proper disposal of dead animals, should be regulated without delay.

The Committee stated that it is in favour of control through statute law and regulations, with the regulatory agency being given appropriate legal tools for enforcement.

In a brief entitled *Using Swine Manure as Fertilizer*, Messrs. Dennis D. Schulte and Michael B. Tokarz discussed the economical reasons for the use of manure as fertilizer. Manure can provide the soil with nitrogen and phosphorus. Taking into account the cost of installing manure handling facilities, the farmer can still realize a profit by using the manure instead of purchasing commercial fertilizer.

Manitoba Environmental Council

The Manitoba Environmental Council made the following recommendations to the Commission:

1. The administration and enforcement of all regulations and guidelines should come under a single authority.
2. Guidelines should provide livestock operators with information as to how they can meet the pollution control regulations.
3. Regulations should reflect local environmental conditions, e.g. soil permeability, quality of groundwater supplies, etc.
4. Regulations should reflect the size of the operations.
5. Existing operations should be assessed and recommendations made as to upgrading.
6. New or expanding facilities should require an environmental impact study.
7. Environmentally sensitive areas should be identified and protected.
8. Methods of control used in other jurisdictions, or generally available, should be documented before legislation is drafted.
9. Legislation should be drafted with enforcement in mind.
10. A multi-disciplinary body should be established by the regulatory agency so as to develop an integrated approach to the problems.

Mr. Harvey Dan

Mr. Dan made a representation to the Commission on behalf of Parkdale Farms. Mr. Dan cautioned the Commission not to confuse pollution control with land use policies. Once an area is zoned farm land, and buffer zones to villages have been established, the operation should be allowed to develop unhampered. Pollution control in his opinion, is a matter of proper design and operating procedure.

Mr. Dan pointed out that chemical fertilizers too can be detrimental to groundwater supplies. Results of soil tests should be attached to land titles to prevent duplication.

Surface run-off, except in extreme cases, is easy to control with ditches and holding ponds. Odours can be reduced by good drainage and good housekeeping.

Sanitary problems such as the disposal of dead animals can and should be regulated, regardless of the size of the operator.

Large livestock operators should not be discriminated against in the regulations. Guidelines should be developed so that farmers will know exactly what is expected of them to meet the pollution control regulations and to avoid duplication of authority by different government agencies.

The regulatory body eventually set up must have representatives of the livestock industry so that the viability of the industry is taken into account as well as the protection of the environment.

#### Manitoba Naturalists Society

The Society, in their brief, strongly supported the province's move towards regulatory controls of contamination caused by livestock operations. They pointed to surface and groundwater pollution as being the main hazards.

#### Mr. J. D. Graham

Mr. Graham, a farmer in the Carman area, stated that in his opinion there should be no expansion of the livestock industry in Manitoba. Grain that would go for the feeding of these animals could go for human consumption. Manure from existing livestock operations should be used for soil fertilizer.

#### Rural Municipality of Ste. Anne

The Rural Municipality of Ste. Anne stated that, while there are environmental problems connected with livestock production, particularly air

and surface water pollution, the existing regulations are sufficient to deal with them. If further regulations are established:

1. Controls should relate to size of operation.
2. Minimum separation distances should be set between livestock operations and watercourses (200 feet).
3. Design standards should be established for run-off control.
4. Limited livestock operations should be allowed in environmentally sensitive areas.
5. No minimum distance should be set between livestock and manure spreading operations and residences, schools, parks, etc., but buffer zones of a  $\frac{1}{2}$  mile should be established around residential areas.
6. Land use control as well as authority over the expansion on construction of a livestock facility should come under provincial and municipal jurisdiction. Specific rules should be developed for rejection of a permit to expand or construct livestock facilities.

Vercaigne Enterprises Ltd.

Vercaigne Enterprises Ltd. sent the Commission a representation outlining their concerns in connection with process of establishing regulations on the livestock industry. Spreading livestock wastes on cropland at a rate of application that will not interfere with germination and growth is a sound and acceptable practice. This practice is an asset to the crops. Odours may be a nuisance, but they are not a health hazard. There is a need for more rendering plants for disposal of dead animals. Livestock operations should be protected from encroachment by subdivisions.

SUMMARY OF EXISTING LEGISLATION REGARDING  
INTENSIVE LIVESTOCK PRODUCTION OPERATIONS  
IN MANITOBA AND OTHER JURISDICTIONS

Existing Manitoba Legislation

Public Health Act

Insanitary Conditions (P210-R3 Division I) An insanitary condition includes any condition which is offensive or creates a nuisance and would thus include the release of offensive odours. The Medical Officer of Health may order an insanitary condition to be abated; however, with most established livestock production operations there is no practicable method of abating odours other than closure of the operation.

Atmospheric Pollution (P210-R3 Division IV) This regulation prohibits the release of offensive odours from any premises, to the detriment of others. Again, the Medical Officer of Health may order the abatement of the release of odours.

Protection of Water Sources (P210-R3 Division VI) This regulation prohibits the dumping of manure on river banks or ice and prohibits the contamination of water as a result of watering stock.

Keeping of Animals (P210-R3 Division XIV) This regulation requires that permission be obtained from the Medical Officer of Health to keep animals in a city, town, village or suburban municipality. It further specifies separation distances of 200 yards for keeping of hogs and 100 yards for poultry from the boundary of land owned or occupied by another person.

The regulation also prohibits the owner from allowing the premises to become offensive or adversely affect the comfort of other persons by reason of odours.

The Clean Environment Act

Manitoba Regulation 34/73 Respecting Livestock Production Operations  
This regulation requires that those livestock production operations within certain size and distance criteria be registered with the Department. The

regulation also contains operating and waste disposal provisions to ensure that water is not polluted by livestock waste. The problem of dead animal disposal is also dealt with in this regulation. The regulation does not address the problems of odours.

There is a provision under The Clean Environment Act for the municipality to enter cost-shared abatement projects with the Province to have offensive industries re-located. Under this arrangement, the Province may pay up to 50% of the cost incurred, and the municipal corporation must assume the remainder of the costs.

#### Nuisance Act

Under the Nuisance Act, proclaimed on June 11, 1976, where a farmer is operating an agricultural operation in compliance with all applicable legislative requirements, he is, by legislation, immune to civil action from another party whose conflicting use of neighbouring land began after the establishment of the agricultural operation.

#### Planning Act

The Planning Act, which is administered by the Department of Municipal Affairs, was proclaimed in 1976 to expedite and rationalize land use planning in Manitoba. Municipalities were urged to prepare development plans, within which principles they intended future development. In this respect, the local governments were provided some power and discretion regarding the future of their jurisdictions.

Within the framework of newly developed land use policies, local municipalities have some control over the zoning in their area and this can be used to control the location of livestock production operations where they may cause problems and to control residential encroachment on farmlands.

#### Provincial Land Use Policies

The Province of Manitoba has adopted (June 1978) a set of Provincial Land Use Policies, to be used by planners, developers and municipalities in the management of land resources. These policies, designed to provide for a rational allocation of lands, are based on the criteria of

land capability, existing uses, and the maintenance of a reasonably high standard of environmental quality.

The first two policies are applicable to this situation. The first policy is designed "to protect the present and future agricultural industry, to protect land for present and future food production, and to foster growth and development in the agricultural industries". This is to be accomplished by discouraging subdivision of agricultural land into non-agricultural land uses.

The second land use policy is intended "to designate areas where the encroachment and fragmentation of agricultural land by residential and other uses limits full agricultural development". This would be accomplished by allowing viable agricultural activities to function by placing restrictions on further encroachment by incompatible land uses.

#### Legislation from Other Jurisdictions

The concerns previously identified are not unique and restricted to Manitoba. Many other jurisdictions are facing similar problems and are also endeavouring to find equitable solutions. Unfortunately, technical solutions to the problem of odours have not yet been fully developed, and are, therefore, absent in other jurisdictions.

Saskatchewan, through its Pollution (by Livestock) Control Act, and regulations thereunder, requires both Ministerial approvals from three agencies (prior to construction or alteration of intensive livestock production operations) and operating permits for intensive livestock production operations. A reaction pattern to problems includes "stop orders" and ministerial discretion to suspend or cancel permits. Specific design and operating requirements are imposed in regulations and in the "Code of Good Practice" which is referenced in the regulation.

Neither Alberta nor Ontario have specific legislation aimed at controlling livestock production operations directly although there is general environmental legislation with which the operations must conform. Each province has a Code of Practice, however, which was developed jointly by government and industry. Conformance with the Code is encouraged and rewarded with a certificate of compliance. Aside from specific guidelines

regarding design, waste disposal, etc., the Ontario Code of Practice details formulae for minimum separation distance from encroaching and incompatible land uses; to incompatible land uses in the event of new or expanding livestock production operations; and to determine Code compliance with respect to existing distances.

American federal legislation, under the auspices of the Environmental Protection Agency, designates certain feedlots as "point sources" (based on size and discharge routes) and as such they are subject to the waste water discharge permit requirements under the Water Pollution Control Act. The permits and their requirements, however, relate strictly to water pollution. Although some states, e.g. Montana, South Dakota, Colorado and Kansas utilize and administer the Environmental Protection Agency permit requirement system, others, such as North Dakota, impose further requirements on livestock production operations.

In North Dakota, state legislative controls are enforced by the Department of Health. Approvals are required for those operations of 200 animal units or more, and operations meeting criteria for proximity to water. The regulations prohibit feeding livestock on frozen waterways or within 60 feet of the top of waterway banks. In conjunction with these legal requirements, the North Dakota Department of Health has published "guidelines for the Control of Pollution from Certain Livestock Enterprises".

Traditionally, then the main concern with livestock production operations has been potential water pollution, and different jurisdictions have developed various means of minimizing the problems.

The increase in rural residential development has placed odour as a major concern, and the related gaps in the legislation become obvious.

LETTER FROM THE MINISTER

APPENDIX A



MANITOBA

MINISTER

MINES, RESOURCES AND ENVIRONMENTAL MANAGEMENT

WINNIPEG  
R3C 0V8

June 1, 1978.

Mr. G. E. Moore,  
Chairman,  
Clean Environment Commission,  
Box 4, Building 2, 139 Tuxedo Avenue,  
Winnipeg, Manitoba.  
R3C 0V8

Dear Mr. Moore:

Due to concerns about the increasing potential of air, soil, and water pollution problems associated with intensive livestock production operations, it is essential that a detailed investigation be carried out with the objective of developing guidelines or regulations which will provide a workable solution to existing and potential problems.

Accordingly, I hereby request the Clean Environment Commission to investigate this matter and to hold public hearings pursuant to Section 13 (1) of The Clean Environment Act and provide me with a report and recommendations before December 31, 1978.

In conjunction with the Commission's investigation it should feel free to supplement its work by drawing upon the expertise in the Environmental Management Division of this Department and any work the Division may carry out relating to

- (1) a review of relevant legislation and procedures throughout Canada and the United States;
- (2) an assessment of existing and potential environmental problems associated with livestock production operations;
- (3) an assessment of existing provincial legislation and recommendations as to what legislative changes might be required.

It is expected that your report and recommendations will deal with items 1, 2 and 3 above and that the public hearings will provide all interested parties an opportunity to present comments.

Yours sincerely,

A handwritten signature in black ink, appearing to read "A. Brian Ransom".

A. Brian Ransom,  
Minister.

LETTER FROM THE CHAIRMAN DATED SEPTEMBER 20, 1978,  
WITH DISCUSSION PAPER, *Environmental Problems*  
*Associated with the Livestock Industry in Manitoba,*  
*September 1978*

APPENDIX B



CLEAN ENVIRONMENT COMMISSION

Office of the Chairman  
Box 4, 139 Tuxedo Avenue  
Winnipeg, Manitoba  
R3N 0H6

File: C-1-5

September 20, 1978.

To: All livestock producers, interested companies, organizations, individuals, municipalities and government departments.

Re: Intensive Livestock Production Operations - Environmental Problems.

The Clean Environment Commission invites you to participate in an enquiry it is conducting concerning environmental problems and conflicting land-use difficulties arising from feedlots and other intensive livestock operations. The enquiry being carried out results from a request of the Minister of Mines, Resources and Environmental Management to prepare a report and recommendations for workable solutions to existing and potential problems throughout Manitoba.

Livestock producers and interested companies, organizations, individuals, municipalities and government departments are requested to send in briefs or other expressions of their views to reach this office by November 1, 1978. They are also invited to participate in the regional public hearings to be held in various parts of the Province commencing about mid-November 1978. Details of the hearings will be advertised in the newspapers and in radio spot announcements.

Attached, as a basis for discussion, is a paper prepared by the Environmental Management Division of the Manitoba Department of Mines, Resources and Environmental Management. It outlines some control methods being used in other jurisdictions and suggests possible methods of regulating these problems in Manitoba. Please contact the Commission office at 204-895-5333, should you require additional copies of this outline.

We look forward to receiving your comments, briefs or representations and to seeing you in person at one of our public hearings.

Yours truly,

A handwritten signature in cursive script that reads "Guy E. Moore".

Guy E. Moore,  
Chairman.

ENVIRONMENTAL PROBLEMS ASSOCIATED WITH  
THE LIVESTOCK INDUSTRY IN MANITOBA

Prepared by  
Environmental Management Division  
September 1978

TABLE OF CONTENTS

	PAGE
INTRODUCTION . . . . .	1
ENVIRONMENTAL CONCERNS . . . . .	2
Air Pollution . . . . .	2
Surface Water Pollution . . . . .	3
Groundwater Pollution . . . . .	3
EXISTING LEGISLATION IN MANITOBA . . . . .	5
Public Health Act . . . . .	5
Clean Environment Act . . . . .	6
Nuisance Act . . . . .	6
Planning Act . . . . .	6
Provincial Land Use Policies . . . . .	7
LEGISLATION FROM OTHER JURISDICTIONS . . . . .	8

ANNEX 1

Points For Consideration by Clean Environment Commission

ANNEX 2

Specific Questions Which May Be Considered By  
Persons Or Organizations Preparing Briefs For  
Presentation To The Clean Environment Commission

ANNEX 3

Livestock Production Operations  
Relevant Legislation From Other Jurisdictions

## Introduction

As a result of recent trends towards the development and operation of large, intensive livestock production operations, associated environmental and land use problems are becoming of increasing concern. In the past, rearing of livestock was generally associated with relatively small numbers of stock being raised on relatively large parcels of land and the attendant assimilative capacity of the environment was sufficient to minimize environmental contamination problems.

For reasons of economy and efficiency, the modern trend has been toward confined feeding of larger numbers of animals on comparatively limited land areas resulting in a concentration of waste products to be handled and disposed of in an environmentally acceptable manner.

In addition to changing trends in livestock confinement, more efficient manure handling systems have been developed which often results in increased odour emissions at the time of removal and disposal. The liquid manure handling system in hog barns is an example of modern manure handling technology which creates a more intense odour problem.

A major complicating factor is the land use conflict developing with the desire of many urbanites to relocate to rural areas. The resultant expansion of residential areas into or adjacent to areas of concentrated agricultural production adds to the environmental problems of livestock production operators. Many of the urbanites who move to a rural setting have not previously been exposed to the agricultural environment and consequently find the odours associated with livestock production operations offensive.

As a result of the factors outlined above, it has been considered advisable to review the existing legislation and practices in Manitoba and in other Canadian and American jurisdictions with the purpose of developing guidelines or regulations that are acceptable both environmentally and economically for Manitoba.

The following pages briefly outline some of the existing and potential environmental and land use problems associated with Intensive Livestock Production Operations and the existing legislation in Manitoba and neighbouring jurisdictions designed to minimize these problems.

## Environmental Concerns

### Air Pollution

Odours emanating from livestock production operations constitute the most obvious environmental problem and historically have accounted for approximately 75% of complaints received by Environmental Control authorities. Odours from livestock operations, impinging on neighbouring properties, both agricultural and non-agricultural, create an environment considered unacceptable by both residents and visitors. In some cases, odours become so intense that outdoor activities on neighbouring properties must be curtailed. This intensity is most often associated with removal and disposal of wastes, especially when it is spread on the land.

The majority of odour problems are encountered when:

- (a) an intensive livestock production operation is established too close to existing residences, housing and commercial developments and recreational areas; or
- (b) existing livestock production operations are expanded resulting in increased odour emissions; or
- (c) there is encroachment of residences, housing and commercial developments and recreational areas on intensive livestock production operations.

Although practicable technology exists for controlling or reducing odours from point sources such as stacks or vents associated with industrial operations, similar technology for controlling odours from area sources such as feed lots and manure spreading areas is lacking.

Difficulty also arises in the area of precise odour measurement because of the subjective nature of human response to odour and the difficulty in developing an instrument which could be used to measure odours directly. The approach to odour measurement has therefore relied ultimately on the human olfactory mechanism as the detection instrument although mechanical aids are available.

The Environmental Control Branch has developed, and is currently utilizing, an aspirated dynamic dilution apparatus for measuring ambient odour intensities. However, the odour intensity as measured with this apparatus remains essentially a subjective measurement, and is dependent on the sensitivity of the operator to the odorant being measured. To partially counteract this subjective component of the measurement, an odour panel, consisting of a number of persons, is used to determine the odour intensity,

although any system used to measure odour intensity must contain a human element.

Perhaps the only realistic course to pursue in attempting to reduce odour problems associated with area sources would be to establish minimum separation distances or "buffer zones" around the source and to effect positive land use control policies which would preclude conflicting land uses developing adjacent to one another.

#### Surface Water Pollution

The real and potential problems associated with the direct or indirect pollution of surface water from industrial and agricultural sources is a matter of increasing concern to control authorities. Efforts must continue to be directed toward protecting our water courses and maintaining or improving the quality of the water for public water supplies, wildlife, fish and aquatic life, agriculture, industry, recreation and other beneficial uses, by developing comprehensive programs for the prevention, abatement and control of water pollution.

Livestock production operations are a contributing factor to water pollution in Manitoba. This pollution may result from:

- (a) surface run-off from feedlots, from manure piles or from land used for manure disposal; or
- (b) direct discharge of wastes from livestock production operations into watercourses; or
- (c) flooding of livestock facilities which are constructed on floodplains; or
- (d) disposal of manure and/or dead animals on river banks or ice.

Surface water pollution from livestock operations can usually be reduced to an acceptable level by incorporating proper run-off control structures and disposal systems with good operational management. It must be determined, however, after having considered both environmental and economic factors, what level of water pollution is considered acceptable.

#### Groundwater Pollution

Many areas of the province utilize groundwater as a source of potable water for domestic consumption. In recent years, many aquifers have become contaminated and these are no longer considered acceptable as domestic supplies without additional treatment to ensure safety.

Livestock production operations may be a contributing factor to groundwater contamination as a result of:

- (a) the location of intensive livestock production operations on land areas sensitive to groundwater contamination; or
- (b) excessive application or dumping of livestock wastes on land with resultant contamination of groundwater.

## Existing Legislation in Manitoba

Historically, the legislative controls in Manitoba have been exercised under the Public Health Act by providing a general response to both insanitary conditions and public nuisance problems. This legislation was not intended to handle the complex land-use situations associated with the growing intensity and mechanization of today's livestock production operations.

During 1968, The Clean Environment Act was proclaimed with regulations relating to livestock production operations being developed in 1973. These regulations had established a basis for handling water pollution problems, but primarily due to lack of practicable methodology for odour control and measurement, limits for odour emissions were not developed.

### Public Health Act

#### Insanitary Conditions (P210-R3 Division I)

An insanitary condition includes any condition which is offensive or creates a nuisance and would thus include the release of offensive odours. The Medical Officer of Health may order an insanitary condition to be abated, however, with most established livestock production operations, there is no practicable method of abating odours other than closure of the operation.

#### Atmospheric Pollution (P210-R3 Division IV)

This regulation prohibits the release of offensive odours from any premises, to the detriment or annoyance of others. Again the Medical Officer of Health may order the abatement of the release of odours.

#### Protection of Water Sources (P210-R3 Division VI)

This regulation prohibits the dumping of manure on river banks or ice and prohibits the contamination of water as a result of watering stock.

#### Keeping of Animals (P210-R3 Division XIV)

This regulation requires that permission be obtained from the Medical Officer of Health to keep animals in a city, town, village or suburban municipality. It further specifies separation distances of 200 yards for keeping of hogs and 100 yards, for poultry from the boundary of land owned or occupied by another person.

The regulation also prohibits the owner from allowing the premises to become offensive or adversely affect the comfort of another person by reason of odours.

### The Clean Environment Act

With the proclamation of The Clean Environment Act in 1968, it became mandatory for every new and existing industry to file a proposal or register with The Clean Environment Commission and subsequently receive an Order which placed limits on the amounts of discharges the applicant could legally release to the environment. This requirement included livestock production operations. It soon became evident that the logistics of issuing separate orders to all livestock production operations would create an insurmountable problem.

In order to relieve The Clean Environment Commission and agricultural industry of this unrealistic burden, discussions were held with industry, and a regulation respecting livestock production operations was developed and subsequently filed in February, 1973. The regulation required that those livestock production operations within certain size and distance criteria would be registered with the Department. The regulation also contains operating and waste disposal provisions to ensure that water is not polluted by livestock waste. The problem of dead animal disposal is also dealt with in this regulation. The regulation, however, for reasons explained above does not address the problems of odours.

There is a provision under The Clean Environment Act for the municipality to enter a cost-shared abatement program with the Province to have an offensive industry re-located. Under this arrangement, the Province may pay up to 50% of the costs incurred, and the municipal corporation must assume the remainder of the costs.

### Nuisance Act

Manitoba agricultural producers are somewhat protected from problems arising from residential encroachment creating conflicting land uses. Under the Nuisance Act, proclaimed on June 11, 1976, where a farmer is operating an agricultural operation in compliance with all applicable legislative requirements, he is, by legislation, immune to civil action from another party whose conflicting use of neighbouring land began after the establishment of the agricultural operation.

### Planning Act

The Planning Act which is administered by the Department of Municipal Affairs was proclaimed in 1976 to expedite and rationalize land use planning in Manitoba. Municipalities were urged to prepare development plans,

within which principles they intended future development. In this respect, the local governments were provided some power and discretion regarding the future of their jurisdictions.

Within the framework of newly developed land use policies, local municipalities have some control over the zoning in their area and this can be construed as a possible control on livestock production operations where they may pose problems.

#### Provincial Land Use Policies

The Province of Manitoba has adopted (June 1978) a set of Provincial Land Use Policies, to be used by planners, developers and municipalities in the management of land resources. These policies, designed to provide for a rational allocation of lands, are based on the criteria of land capability, existing uses, and the maintenance of a reasonably high standard of environmental quality.

The first two policies are applicable to this situation. The first policy is designed "to protect the present and future agricultural industry, to protect land for present and future food production, and to foster growth and development in the agricultural industries". This is to be accomplished by discouraging subdivision of agricultural land into non-agricultural land uses.

The second land use policy is intended "to designate areas where the encroachment and fragmentation of agricultural land by residential and other uses limits full agricultural development". This would be accomplished by allowing viable agricultural activities to function by placing restrictions on further encroachment by incompatible land uses.

## Legislation From Other Jurisdictions

The concerns previously identified are not unique and restricted to Manitoba. Many other jurisdictions are facing similar problems and are also endeavouring to find equitable solutions. Unfortunately, technical solutions to the problem of odours have not yet been fully developed, and are, therefore, absent in other jurisdictions.

Saskatchewan, through its Pollution (by Livestock) Control Act, and regulations thereunder, requires both Ministerial approvals (from three agencies) prior to construction or alteration of intensive livestock production operations and operating permits for intensive livestock production operations. A reaction pattern to problems includes "stop orders" and ministerial discretion to suspend or cancel permits. Specific design and operating requirements are imposed in regulations and in the "Code of Good Practice" which is referenced in the regulation (see Annex 3 for more detail).

Neither Alberta nor Ontario have specific legislation aimed at controlling livestock production operations directly although there is general environmental legislation with which the operations must conform. Each province has a Code of Practice, however, which was developed jointly by government and industry. Conformance with the Code is encouraged and rewarded with a certificate of compliance. Aside from specific guidelines regarding design, waste disposal, etc., the Ontario Code of Practice details formulae for minimum separation distance from encroaching and incompatible land uses; to incompatible land uses in the event of new or expanding livestock production operations; and to determine Code compliance with respect to existing distances.

American federal legislation, under the auspices of the Environmental Protection Agency, designates certain feedlots as "point sources" (based on size and discharge routes) and as such they are subject to the wastewater discharge permit requirements under the Water Pollution Control Act. The permits and their requirements, however, relate strictly to water pollution. Although some states, e.g. Montana, South Dakota, Colorado and Kansas utilize and administer the Environmental Protection Agency permit requirement system, others such as North Dakota impose further requirements on livestock production operations.

In North Dakota, state legislative controls are enforced by the Department of Health. Approvals are required for those operations of 200 animal units or more, and operations meeting criteria for proximity to water.

The regulations prohibit feeding livestock on frozen waterways or within 60 feet of the top of waterway banks. In conjunction with these legal requirements, the North Dakota Department of Health has published "Guidelines for the Control of Pollution from Certain Livestock Enterprises".

Traditionally, then the main concern with livestock production operations has been potential water pollution, and different jurisdictions have developed various means of minimizing the problems.

The increase in rural residential development has placed odour as a major concern, and the related gaps in the legislation become obvious.

## ANNEX 1

### Points for Consideration by The Clean Environment Commission

1. A definition of "intensive livestock production operations" should be developed to differentiate between intensive and non-intensive livestock production operations. This process would delineate the categories of operations, both size and type, which are of special concern.

e.g. Saskatchewan refers to 300 units and space per animal.

e.g. Hog operations with liquid manure systems, as well as large beef feedlots, may be of special concern while dairy farm operations may not be of such special concern.

2. A major problem relates to odour and, in the absence of specific odour limits, land use control may be the most practical method of problem resolution particularly for new and expanded operations. The Commission should consider the use of the Planning Act and the Provincial Land Use Policies as tools in the resolution of land use problems arising from conflicts between livestock production operations and residences, recreational areas and residential areas.

What should be the role of municipal governments in preventing and resolving such conflicts?

3. Consideration should be given to establishing design criteria to control run-off from the property. The present regulations specify that all the waste shall be retained on land under control of the operator and measures shall be taken to prevent the waste from entering a body of water. This requirement may not be practical under certain weather conditions.

4. In order to prevent environmental problems, a permit system should be considered for certain categories of livestock production operations.

5. The Province is in the process of developing water quality objectives and stream classifications for Manitoba waterways. The Commission might consider relating these objectives and classifications to the establishment and operation of livestock production operations.

6. It is worthy of note that the British Columbia Federation of Agriculture plays a major role in response to public complaints and concerns. The Commission should consider what application this process could have in Manitoba.

ABSTRACT: "A NEW PROGRAM FOR CONTROLLING AGRICULTURAL POLLUTION HAS BEEN DEVELOPED IN BRITISH COLUMBIA. THIS PROGRAM PROVIDES A UNIQUE SYSTEM WHEREBY LIVESTOCK AND POULTRY PRODUCERS REGULATE THEIR OWN SANITATION AND POLLUTION PROBLEMS. IN CASES WHERE VOLUNTEER

ABSTRACT: ACCEPTANCE OF DEFINED ENVIRONMENTAL GUIDELINES IS NOT FORTHCOMING, THE PROGRAM MAKES USE OF EXISTING POLLUTION CONTROL LEGISLATION TO FORCE COMPLIANCE WITH THE STANDARDS. PRODUCERS, THE MINISTRY OF AGRICULTURE, REGULATORY AGENCIES AND PUBLIC OFFICIALS SEEM OPTIMISTIC ABOUT THE PROGRAM AND WHAT IT WILL DO TO IMPROVE WASTE MANAGEMENT PRACTICES ON BRITISH COLUMBIA FARMS."

8. The Province of Alberta has established an "Intensive Livestock Operations Committee" including the following agencies:

Alberta Commercial Egg Producers Association

Alberta Cattle Commission

Western Hog Growers' Association

Western Stock Growers' Association

University of Alberta

Alberta Agriculture

Alberta Environment

Alberta Health and Social Development

Alberta Labour

Alberta Lands and Forests

Alberta Municipal Affairs.

This committee prepares recommendations which are incorporated in a "Code of Practice" for the livestock industry which, if complied with, results in issuance, by the Government, of a Certificate of Compliance. The Commission should consider what application this process could have in Manitoba.

ANNEX 2

Specific Questions Which May Be Considered By Persons or Organizations  
Preparing Briefs For Presentation to The Clean Environment Commission.

1.       A.    Do you think there are environmental and land use problems associated with Livestock Production Operations?  
          B.    If so, are these problems related to air pollution (odours)? surface water pollution? groundwater pollution? insanitary conditions (rodents and insects)?
  
2.       A.    Are additional control required on the livestock industry?  
          B.    If so, should they be in the form of regulatory requirements or guidelines?  
          C.    Should new and expanded operations be controlled separately from existing operations?
  
3.       A.    Should separate controls be developed for each segment of the industry, i.e. beef, hogs, dairy, poultry, sheep?  
          B.    Should controls relate to size of operation, i.e. number of head of stock?
  
4.       Should controls relate to:  
          A.    Pollution control?  
          B.    Land use controls?  
          C.    Both?
  
5.       A.    Pollution Controls  
          (a)  Water Pollution Controls
  - i.    Should there be a minimum separation distance between the livestock operation and watercourses?
  - ii.   If so, what distance do you suggest?
  - iii.  Should design standards for controlling surface run-off from feedlot areas be established and related to such things as a six inch rainfall? or six months snow accumulation? etc.
  - iv.   Should livestock operations be permitted or limited in areas sensitive to groundwater contamination?

5.       A.   (a)   v.   Can you suggest any other methods of control that could be used to prevent water pollution?
  - (b) Air Pollution Controls (Odours)
    - i.   Should there be a minimum separation distance between the livestock buildings and Residences? Parks? Schools? Towns?
    - ii.  Should there be a minimum separation distance between the manure spreading area and Residences? Parks? Schools? Towns?
    - iii. If so, what distances do you recommend?
    - iv.  Should encroachment by residences and subdivisions on livestock production areas be prohibited or limited? If so, how?
    - v.   Should these controls be developed under provincial or municipal jurisdiction?
    - vi.  Can you suggest any other method of controlling odours other than by separation distances?
6.       A.   Would it be feasible for a commodity group for example, the Beef Growers' Association to be the first line of complaint investigation and problem resolution related to that industry prior to referral to the control authorities?
  - B.   Outline how you see this procedure working.
7.       Do you think the provincial government should have the legislative authority to approve or reject the establishment or expansion of a Livestock Production Operation?
8.       Do you think specific rules should be developed for approving or rejecting a Livestock Production Operation?
9.       In the event that you feel an existing livestock operation should not be allowed to expand because of air pollution, would you recommend the operator be compensated? If so, how?

10. In the event that an existing livestock operation is creating a public nuisance, how do you recommend the alleged public nuisance be handled, and if closure is required, what, if any, compensation should be allotted to the operator?

11. If there are any other points that you think are important to this subject, please outline them.

ANNEX 3

Livestock Production Operations Relevant Legislation From Other Jurisdictions

A. SASKATCHEWAN

Controls on livestock production operations are provided in:

- (a) The "Pollution (by Livestock) Control Act";
- (b) Regulations under the "Pollution (by Livestock) Control Act";
- (c) "Intensive Livestock Operations Code of Good Practice"  
(which is referenced by regulation).

(a) Pollution (by Livestock) Control Act Major points under the Act include:

- (1) Ministerial approval is required for construction or alteration of a livestock facility. Prior to issuance of the permit, there must be approval by the Water Resources Commission, the Minister of Public Health, and the Minister of Natural Resources.
- (2) "Intensive Livestock Operations" which are referenced in legislation are defined as:
  - i. more than 300 units in an enclosure where space per unit is less than 4,000 square feet; or
  - ii. less than 300 units and less than 4,000 square feet per unit and where the nearest edge of the enclosure is:
    - within 1,000 feet of a body of water;
    - within 1,000 feet of a dwelling.
- (3) Where, in the opinion of the Minister, an intensive Livestock operation is:
  - i. creating an insanitary condition; or
  - ii. creating a nuisance by reason of odours; or
  - iii. in danger of polluting land or waters;he may issue an Order to have the situation corrected.
- (4) Where a person is convicted of an offense under this Act, the Minister may cancel or suspend his permit.
- (5) The Act provides for the filing of regulations respecting:
  - i. the number of poultry, hogs, sheep, or cattle, the rearing, confinement and feeding of which constitutes an "intensive livestock operation;

- (a) (5) ii. the methods and places for the disposal of waste substances from "intensive livestock operations";
- iii. classifying "intensive livestock operations" and disallowing any or all of those classes from locating in any areas where nearby residents would likely be adversely affected.

(b) Regulations The following are set out in regulations under the "Pollution (by Livestock) Control Act":

- (1) "Animal Unit is defined as being 6.6 feeder pigs or 1.7 feeder cattle.
- (2) "The Code of Good Practice" is referenced in the regulation, thus making the provisions outlined in it enforceable in law.
- (3) The permit application must be accompanied by plans of facilities designed to ensure the following:
- i. all contaminated run-off must be contained on the operator's property until it is disposed of in accordance with the "Code";
  - ii. holding ponds must be located at least 300 feet from any watercourse or body of water, unless otherwise prescribed in the Code;
  - iii. holding ponds must be capable of handling run-off from a three inch rainfall, unless otherwise prescribed in the Code;
  - iv. there must be no pollution of groundwater;
  - v. liquid and solid wastes from the enclosure or holding pond must be stock piled or disposed of in such a manner as to, in the opinion of the Minister, not cause pollution or create a nuisance;
  - vi. wastes disposed of on land must be over sufficient area, and tilled into the soil soon enough to not cause pollution;
  - vii. dead animals or birds must be disposed of in such a manner as to not cause pollution.

(c) Code of Good Practice The Code contains the following:

- (1) Recommended isolation distances from intensive livestock production facilities and manure spreading areas to residences, residential areas, rural businesses, wells, watercourses, and rights-of-way. The distances range up to three miles depending on size of the operation and size of the community.
- (2) Details of run-off diversion and control structures.
- (3) Detail of manure disposal, i.e. one half to one acre per animal unit. It is not to be spread when the wind is blowing odours towards neighbours or populated areas.
- (4) Discussion of odour control, fly control, rodent control, and dead animal disposal.

#### B. ALBERTA

There is no legislation aimed directly at livestock production operations, but all must meet the pertinent requirements of the Clean Water Act, the Clean Air Act, and Public Health Act regulations. A Code of Practice for confinement livestock facilities waste management complements the above legislation. Although compliance with the Code is not mandatory, it has been developed through recommendations by the "Intensive Livestock Operations Committee".

The Code of Practice contains the following:

- (1) "Intensive Livestock Operations" are defined as facilities capable of confining, rearing or feeding of more than 200 animal units in an enclosure where the space per animal unit is less than 4,000 square feet.
- (2) Isolation distances are specified (and are required by Public Health Act regulations respecting the Keeping of Livestock and Poultry - Division 23). Distances include five miles from a city, three miles from an urban centre, one mile from a public place, one-half mile from a country residence, and three hundred feet from surface water.
- (3) General design guidelines are specified for run-off control, manure storage, manure disposal, dead animal disposal, storage lagoons, oxidation ditches, aerated lagoons, and manure handling solid and liquid systems.

A Certificate of Compliance with the Code is issued to the operator.

\* Membership on the "Intensive Livestock Operations Committee" include:

- Alberta Commercial Egg Producers' Association
- Alberta Cattle Commission
- Western Hog Growers' Association
- Western Stock Growers' Association
- University of Alberta
- Alberta Agriculture
- Alberta Environment
- Alberta Health and Social Development
- Alberta Labour
- Alberta Lands and Forests
- Alberta Municipal Affairs.

C. ONTARIO

There is no legislation aimed directly at livestock production operations, but all must meet the pertinent requirements of the Ontario Water Resources Act, the Environmental Protection Act, the Dead Animals Disposal Act, and the Planning Act.

An Agricultural Code of Practice has been prepared by the Ministry of Agriculture and Food, the Ministry of Environment, and the Ministry of Housing, with input from farm organizations, individual farmers and Ontario Agricultural College. Certificates of compliance are issued to operators.

The Code was designed to provide the following:

- (1) Guidelines for assessing design, location and manure management systems.
- (2) Comprehensive manure management plans for all livestock operations.
- (3) Methods to control water pollution and prevent pollution of water supplies.
- (4) Advise on disposal of dead animals.
- (5) Guidelines for regulating encroachment on established livestock farms.

The Code details formulae for minimum separation distance (M.D.S.)  
The three types and their uses follow.

M.D.S. Formula I is used to determine the minimum separation distance between other land uses such as residences establishing or expanding in close proximity to a livestock operation.

M.D.S. Formula II is used to determine the set back and separation distance between a new enlarged or remodelled livestock facility and other non-compatible uses.

M.D.S. Formula III is used by Agricultural Engineers to determine the minimum distance separation for existing livestock operations not contemplating change where a certificate of compliance is requested.

Municipalities are encouraged to incorporate M.D.S. formulae into their planning schemes. Criteria used in calculating M.D.S. are the type and number of livestock, degree of change, manure system, manure storage, factor for reasonable future expansion, and in the case of Formula I, the type of encroachment.

#### D. ENVIRONMENTAL PROTECTION AGENCY - FEDERAL - U.S.A.

Although there is no legislation directly aimed at livestock production operations, under certain conditions feedlots are considered "point sources" of pollution and thus are subject to wastewater discharge permit requirements under the Federal Water Pollution Control Act.

For the purposes of Environmental Protection Agency regulation a "feedlot" is a lot or facility where animals have been are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12 month period and crop vegetation, forage growth or post harvest residues are not sustained in the normal growing season over any portion of the lot or facility.

Permits Are NOT Required regardless of size of the feedlot, if there is no discharge of pollutants except in the event of a 25 year, 24 hour duration storm or a storm of greater magnitude.

Permits ARE Required if there is a discharge due to a storm of a lesser magnitude, and

- (a) feedlot has more than 1,000 animal units; or
- (b) feedlots between 300 and 1,000 animal units and discharges are to a surface watercourse through a man-made ditch, flushing system, etc., and/or pollutants are discharged directly into surface water which pass through the feedlot or otherwise come into direct contact with the animals confined in the lot;

- (c) feedlots in the 300 to 1,000 animal unit category (even if they do not meet above criteria for discharges) if they are designated by Regional Administrator of Environmental Protection Agency or the Director of the State Water Pollution Control Agency as requiring a permit because of the pollution problem associated with the feedlot; designations are made on a case-by-case basis;
- (d) feedlots with less than 300 animal units if they are designated by Environmental Protection Agency Regional Administrator or Director of State Water Pollution Control Agency; designations are made on case-by-case basis.

The permits specify:

- (a) the capacity of runoff control structures;
- (b) monitoring requirements;
- (c) reporting procedures; and
- (d) other management requirements.

NOTE: Environmental Protection Agency Regulations and permit controls relate strictly to water pollution.

#### E. NORTH DAKOTA

Control on Livestock Production Operations are provided in:

- (a) Rules and Regulations for the Control of Pollution from Livestock Enterprises.
- (b) Water Quality Act (1965) together with surface water quality standards which have been adopted; and
- (c) Water Pollution Control Act (1967).

Guidelines for the Control of Pollution from Certain Livestock Enterprises have been published by the State Department of Health. In the regulations, "feedlot" is defined as animals concentrated in an area:

- (a) which is not normally used for pasture or for growing crops and in which animal wastes may accumulate; or
- (b) where the space per animal unit is less than 600 square feet.

The following types of operations require approval by the Department of Health. The approvals may require construction of pollution control facilities.

1. Operations where the number of animals at any one time is equal to or exceeds 200 animal units.
2. Operations located in the floodplain where the number of animal units equals or exceeds 100 (floodplain means an area of river and stream channels and lowlands adjacent thereto, which based on historical records, will be inundated by run-off or flood waters once every three years).
3. Operations where the distance to the nearest point to waters of the State is less than 2 feet per animal unit in the operation at any one time.
4. Any operation, regardless of number of animal units and location, if the Department has found that wastes from the operation are likely to cause water pollution.

Practices prohibited include:

- (a) feeding of any livestock on ice cover over streams or lakes in the winter; and
- (b) feeding of any livestock within 60 feet from the top of the bank of a lake or stream.

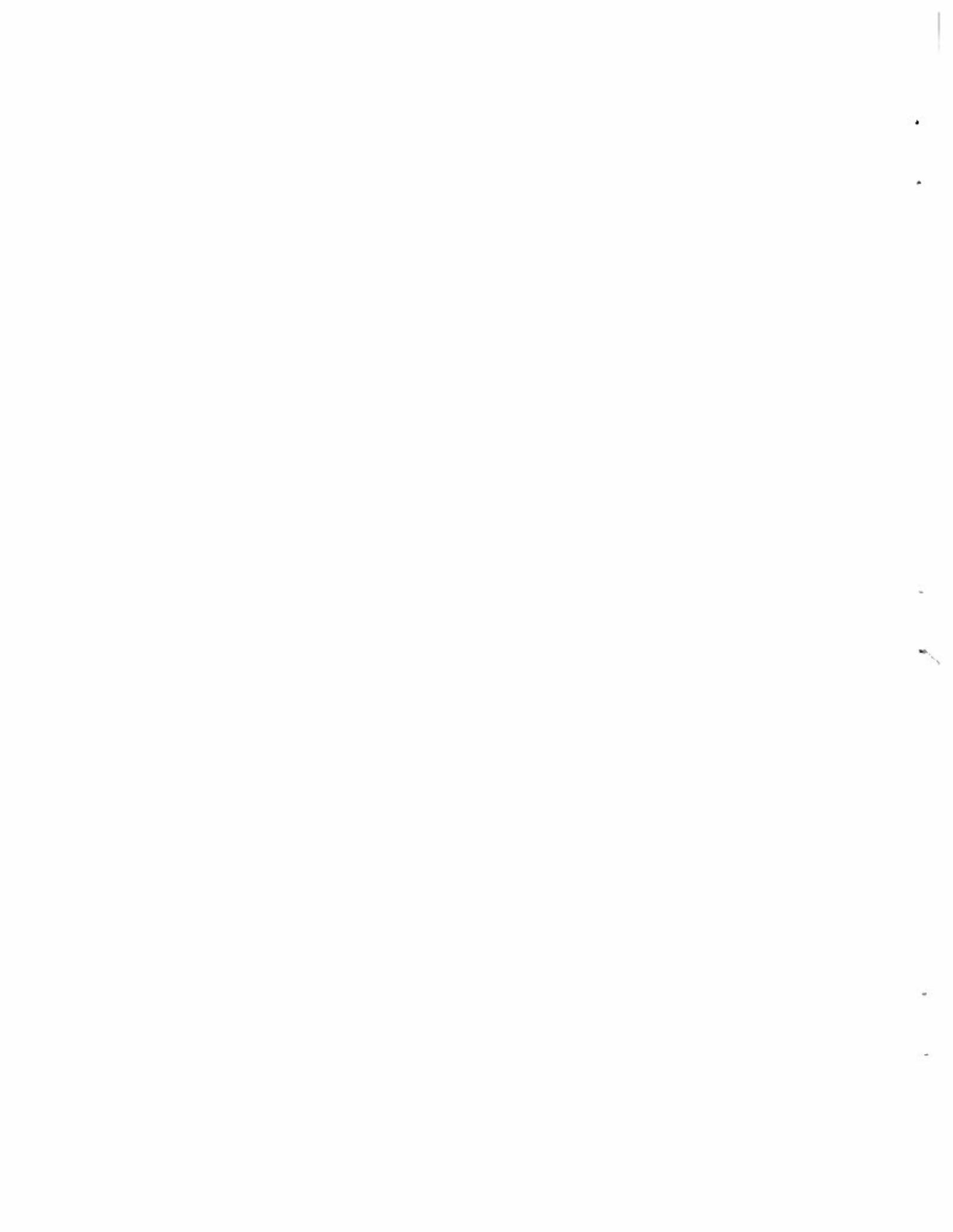
The Guidelines include recommendations and standards as follows:

- (a) runoff control facilities for outside feedyard shall be capable of retaining the runoff from a 10 year, 24 hour storm;
- (b) design criteria for control structures;
- (c) solid and liquid wastes to be disposed of on land; and
- (d) wastes may be discharged to water if treated to meet acceptable state effluent standards and no violation of water quality standards will result.

The Federal Environmental Protection Agency permit system is invoked for operations in excess of 1,000 units.

F. MONTANA, SOUTH DAKOTA, COLORADO AND KANSAS

These States utilize the Environmental Protection Agency permit requirement system (see Section of Environmental Protection Agency).



COMMISSION HEARING ADVERTISEMENTS

## APPENDIX C

### Commission Hearing Advertisements

**MANIT  BA**  
**CLEAN ENVIRONMENT COMMISSION**  
**NOTICE OF PUBLIC HEARINGS**  
REGARDING  
**AN INVESTIGATION OF INTENSIVE LIVESTOCK PRODUCTION OPERATIONS**  
**IN THE PROVINCE OF MANITOBA.**

At the request of the Minister of Mines, Natural Resources and the Environment and pursuant to Section 13(1) of The Clean Environment Act, S.M. 1972, c. 76-Cap. C130, notice is hereby given that The Clean Environment Commission is investigating the increasing potential of air, soil and water pollution problems associated with intensive livestock production operations.

The objective of this investigation is to provide a report and recommendations to the Minister with a view to developing guidelines or regulations which will provide a workable solution to existing and potential problems.

The main thrust of the investigation will be to

- (1) review relevant legislation and procedures throughout Canada and the United States;
- (2) assess existing and potential environmental problems associated with livestock production operations; and
- (3) assess existing provincial legislation and recommend legislative changes that might be required.

In Order to receive responses from the public at the local level, hearings will initially be held in:

**STEINBACH** - Monday, November 6, 1978, at 10:00 a.m. in the Friedenfeld Hall located 3 1/2 miles south of Steinbach on Highway #12 and 1 mile East on Highway #303

**STONEWALL** - Tuesday, November 7, 1978, at 10:00 a.m. in the Odd Fellows Hall, 390-1st Street West in Stonewall, Manitoba.

**HARTNEY** - Monday, November 13, 1978, at 10:00 a.m. in the Town Hall, corner of West Railway Street and Ash Street in Hartney, Manitoba.

**WINKLER** - Tuesday, November 14, 1978, at 10:00 a.m. in the Arena Hall, 600 Park Street in Winkler, Manitoba.

Further local hearings may be announced at a later date, with a final regional hearing in Winnipeg during which the various provincial departments and organizations involved will likely present their final position and recommendations to the Commission. Requests for hearings in particular areas will be given consideration by the Commission.

ANY community, group or individual who feels that there is a local concern regarding pollution or land use or any other aspect of intensive livestock production is invited to attend the hearing(s) and make a representation outlining problems, suggestions, criticism, etc.

It is requested that those planning to make a representation before the Commission or proposing to submit a written representation to the Commission so advise the Commission at Box 4, 139 Tuxedo Avenue, Winnipeg, R3N 0H6 or by Telephoning at 895-5333.

# MANITBA

## CLEAN ENVIRONMENT COMMISSION NOTICE OF PUBLIC HEARINGS

### Regarding An Investigation of Intensive Livestock Production Operations in the Province of Manitoba.

At the request of the Minister of Mines, Natural Resources and the Environment and pursuant to Section 13 (1) of The Clean Environment Act, S.M. 1972, c. 76-Cap. C130, notice is hereby given that The Clean Environment Commission is investigating the increasing potential of air, soil and water pollution problems associated with intensive livestock production operations.

The objective of this investigation is to provide a report and recommendations to the Minister with a view to developing guidelines or regulations which will provide a workable solution to existing and potential problems.

The main thrust of the investigation will be to:

- (1) review legislation and procedures throughout Canada and the United States;
- (2) assess existing and potential environmental problems associated with livestock production operations; and
- (3) assess existing provincial legislation and recommend legislative changes that might be required.

In Order to receive responses from the public at the local level, hearings will initially be held in:

**DAUPHIN** — Monday, November 27, 1978 at 10:00 a.m. in the Dauphin Allied Arts Centre, 104-1st Avenue, N. W. in Dauphin, Manitoba.

**BRANDON** — Tuesday, November 28, 1978 at 10:00 a.m. in the Oak Room of the Red Oak Inn, 3130 Victoria Avenue, Brandon, Manitoba.

Further local hearings may be announced at a later date, with a final regional hearing in Winnipeg during which the various provincial departments and organizations involved will likely present their final position and recommendations to the Commission. Requests for hearings in particular areas will be given consideration by the Commission.

ANY community, group or individual who feels that there is a local concern regarding pollution or land use or any other aspect of intensive livestock production is invited to attend the hearing(s) and make a representation outlining problems, suggestions, criticism, etc.

It is requested that those planning to make a representation before the Commission or proposing to submit a written representation to the Commission so advise the Commission at Box 4, 139 Tuxedo Avenue, Winnipeg, R3N 0H6 or by Telephoning at 895-5333.

# MANIT<sup>BA</sup>

## CLEAN ENVIRONMENT COMMISSION

### **NOTICE OF PUBLIC HEARING — AN INVESTIGATION OF INTENSIVE LIVESTOCK PRODUCTION OPERATIONS IN THE PROVINCE OF MANITOBA**

At the request of the Minister of Mines, Natural Resources and the Environment and pursuant to Section 13(1) of The Clean Environment Act, The Clean Environment Commission is holding a series of hearings to investigate the increasing potential problems associated with intensive livestock production operations.

The objective of this investigation is to provide a report and recommendations to the Minister with a view to developing guidelines or regulations which will provide a workable solution to existing and potential problems.

The main thrust of the investigation is to:

- (1) review relevant legislation and procedures throughout Canada and the United States;
- (2) assess existing and potential environmental problems associated with livestock production operations; and
- (3) assess existing provincial legislation and recommend legislative changes that might be required.

**The final hearing in this series will be held at 10:00 a.m., December 13 and 14, 1978, in Building No. 2, 139 Tuxedo Avenue, Winnipeg, Manitoba.**

**Any organization, company, group or individual who feels that there is a local concern regarding pollution or land use or any other aspect of intensive livestock production is invited to submit a brief to attend the hearing and make a representation outlining problems, suggestions, criticism, etc.**

**It is requested that those planning to make a representation at the hearing or proposing to submit a written representation so advise the Commission at Box 4, 139 Tuxedo Avenue, Winnipeg, R3N 0H6, or by telephoning at 895-5333.**

LIST OF SUBMISSIONS

## APPENDIX D

### List of Submissions

1. Exhibit 1 - Letter from the Honourable A. Brian Ransom, Minister of Mines, Natural Resources and Environment to Mr. G. E. Moore dated June 1, 1978.
2. Exhibit 2 - Advertisement published in various newspapers regarding hearing dates for the investigation.
3. Exhibit 3 - Letter from Mr. G. E. Moore dated September 20, 1978, requesting input from all interested parties.
4. Exhibit 4 - Background paper prepared by the Environmental Management Division dated September 1978 entitled *Environmental Problems Associated with the Livestock Industry in Manitoba*.
5. Exhibit 5 - Brief prepared by the Manitoba Department of Agriculture entitled *Environmental Control Program for Livestock Production Operations*.
6. Exhibit 6 - Brief presented by the Thompson Clean Environment Committee re *Intensive Livestock Production Operations - Environmental Problems*.
7. Exhibit 6A - Chart submitted by the Thompson Clean Environment Committee entitled *Minimum Separation Distance Between Livestock Operations and Residents, Parks, Schools and Towns*.
8. Exhibit 7 - Brief presented by the MSTW Planning District.
9. Exhibit 7A - Supplemental brief presented by the MSTW Planning District.
10. Exhibit 8 - Brief presented on behalf of the Rural Municipality of Roland entitled *Concerns of the Council of the Rural Municipality of Roland Re: Intensive Livestock Production Operations*.
11. Exhibit 9 - Brief presented on behalf of the Carman District Farm Business Association.
12. Exhibit 10 - Letter received from Walter E. Kroeker dated October 31, 1978, re: *Livestock - Environmental Problems*.
13. Exhibit 11 - Letter received from E. C. Day on behalf of the Town of Dauphin dated November 9, 1978, re: *Intensive Livestock Production Operations - Environmental Problems*.
14. Exhibit 12 - Letter presented by A. V. Rampton, Chairman, The Manitoba Milk Producers' Marketing Board, dated 78 11 03.
15. Exhibit 13 - Brief presented by the Environmental Management Division entitled *Intensive Livestock Production Operations*.
16. Exhibit 13A - Excerpt of pamphlet entitled *Survival of Salmonella Typhimurium in Animal Disposal in a Model Oxidation Ditch* presented by Dr. W. George Bowen.

17. Exhibit 14 - Brief presented by the Manitoba Hog Producers' Marketing Board entitled *An Investigation of Intensive Livestock Production Operations in the Province of Manitoba.*
18. Exhibit 15 - Brief presented by the Manitoba Beef Growers' Association.
19. Exhibit 16 - Brief presented by the Western Groundwater Consultants.
20. Exhibit 17 - Brief presented on behalf of the South East Beef Cattle Improvement Association.
21. Exhibit 18 - Brief presented by the Agricultural Waste Management Committee, Faculty of Agriculture, University of Manitoba.
22. Exhibit 18A - Brief presented by Dennis Schulte and Michael Tokarz entitled *Using Swine Manure as a Fertilizer.*
23. Exhibit 19 - Brief presented by the Manitoba Environmental Council.
24. Exhibit 20 - Brief presented by Harvey Dan on behalf of Parkdale Farms.
25. Exhibit 21 - Letter submitted by the Manitoba Naturalists Society dated 27 October 1978.
26. Exhibit 22 - Letter submitted by J. D. Graham dated November 22, 1978.
27. Exhibit 23 - Brief submitted by the Rural Municipality of Ste. Anne dated December 1, 1978.
28. Exhibit 24 - Brief submitted by Vercaigne Enterprises Ltd. dated December 8, 1978.
29. Exhibit 25 - Brief submitted by the Rural Municipality of Dauphin.
30. Report and map submitted by the Department of Agriculture entitled *Degree of Hazard Ratings of Soils for Groundwater Pollution in Manitoba.*
31. Pamphlet by Loren A. Will and Stanley L. Diesch entitled *Leptospire Animal Waste Treatment - Animal Health Problem?*
32. Pamphlet by Philip R. Goodrich, Stanley L. Diesch, Larry D. Jacobson entitled *Airborne Health Hazards Generated While Treating and Land Disposing Waste.*
33. Pamphlet by S. L. Diesch entitled *Survival of Leptospire in Cattle Manure.*
34. Pamphlet by S. L. Diesch entitled *Salmonellosis: Animal-Human Environmental Impact.*
35. Pamphlet by S. L. Diesch, B.S. Pomeroy and E. R. Allred entitled *Survival and Detection of Leptospire in Aerated Beef Cattle Manure.*
36. Book by S. L. Diesch, P. R. Goodrich, B. S. Pomeroy, L. A. Will entitled *Survival of Pathogens in Animal Manure Disposal.*

37. Letter from E. P. Hudek, Acting Deputy Minister, Department of Agriculture dated January 10, 1979.
38. Brief submitted by the Manitoba Chambers of Commerce.
39. Brief submitted by the Manitoba Institute of Agrologists.
40. Book submitted by Biomass Energy Institute Inc. entitled *Biogas Production from Animal Manure*.
41. Excerpt from *Accelerated Capital Cost Allowance Program under Income Tax Act*.
42. Brief from the Manitoba Environmental Council entitled *Legislative Land Use Controls* together with a graph entitled *Impacts of Legislative Land Use Controls*.
43. Copy of a magazine *Cattlemen - The Beef Magazine: Handling Feedlot Waste*, January 1977 edition.
44. Manitoba Department of Agriculture Survey of: *Number of Feedlot Operators and Farmers Finishing Cattle, 1975-77*.
45. Publication of the Provincial Land Use Committee of Cabinet, June 1978, *Manitoba - Provincial Land Use Policies*,
46. List of *Unresolved Land Use Conflicts* as noted in investigations, hearings, deliberations of The Clean Environment Commission - Working Paper Only.
47. Publication of Agriculture Canada entitled *Canada Animal Waste Management Guide*.
48. Publication of the International Joint Commission as prepared by the International Reference Group on Great Lakes Pollution from Land Use Activities entitled *Pollutant Transport to Subsurface and Surface Waters in an Integrated Farm Operation*.
49. Letter from the British Columbia Ministry of Agriculture, Development and Extension Branch, dated August 13, 1978, together with a report entitled *Agricultural Zoning and Waste Management*.
50. Paper prepared by the B.C. Ministry of Agriculture and the B.C. Federation of Agriculture entitled *Environmental Solutions - The British Columbia Agricultural Environmental Control Program*.
51. Pamphlet published by the B.C. Ministry of Agriculture entitled *Let's Be Good Neighbours*.
52. Letter from Alberta Agriculture, Land Use Activities, together with a copy of the Alberta Planning Act and Regulations.
53. Publication of the Alberta Battle River Regional Planning Commission entitled *The Preliminary Regional Plan*

54. Position Paper No. 1 of the Edmonton Regional Planning Commission on the Regional Plan Project entitled *Rural Land Use Policy*.
55. Publication of the Alberta Department of the Environment, Environmental Protection Services, Earth Sciences and Licensing Division, Technical Development Branch, entitled *Field Evaluation of the Effect of Current Practices of Animal Waste Spreading on some Soil Parameters*, March 1976.
56. Publication of the Alberta Department of the Environment entitled *A Study of the Impact of Cattle Feedlots on Soils and Shallow Groundwater*, August 1976.
57. Publication of the Alberta Environment Agriculture entitled *Confinement Livestock Facilities Waste Management - CODE OF PRACTICE - September 1973*.
58. Excerpt of draft report prepared by the Alberta Planning Commission dated April 28, 1978.
59. Draft discussion paper 3 of the Edmonton Regional Planning Commission entitled *Pollution and Urban Growth*.
60. Letter received from M. R. Bennett, Laboratory Scientist, Standards and Approvals Division, Alberta Environment, dated October 19, 1978.
61. Letter from the Province of Saskatchewan, Department of Agriculture, together with a copy of an Act entitled, *An Act Respecting Intensive Live Stock Operations*, assented to April 2, 1971.
62. Copy of Form A - *Application for Permit* from the Province of Saskatchewan Department of Agriculture.
63. Saskatchewan Agriculture publication entitled *The Saskatchewan Intensive Livestock Operations CODE OF GOOD PRACTICE Under The Pollution (by Livestock) Control Act, 1971*.
64. Saskatchewan Agriculture Policy Paper entitled *Relocation of Intensive Live Stock Operations Policy*.
65. Saskatchewan Agriculture Policy Paper entitled *Water Pollution Control Policy for Live Stock Operations in the Qu'Appelle Basin under the Canada-Saskatchewan Qu'Appelle Valley Subsidiary Agreement*.
66. Publication prepared by the Ministry of Agriculture and Food, Government Of Ontario, entitled *Green Paper on Planning for Agriculture FOOD LAND GUIDELINES*.
67. Publication prepared by the Ontario Ministries of Agriculture and Food; Environment; and Housing entitled *Agricultural Code of Practice*.
68. Waste Management Branch, Ministry of the Environment, letter and enclosed report entitled *Ontario Certificate of Compliance Program*.
69. Copy of the Ontario Environmental Protection Act.
70. Ontario Ministry of the Environment Report entitled *The Agricultural Code of Practice and the Certificate of Compliance Procedural Notes*.

71. Letter from the State of Minnesota Department of Agriculture dated August 18, 1978.
72. Minnesota Pollution Control Agency regulation entitled *Regulations for the Control of Wastes from Livestock Feedlots, Poultry Lots and Other Animal Lots.*
73. Minnesota Pollution Control Agency regulation entitled *Regulations for the Processing of Feedlot Permits by the Counties and the Minnesota Pollution Control Agency.*
74. Draft report from the Minnesota Pollution Control Agency entitled *Proposed Changes in the Minnesota Pollution Control Agency Rules on Pollution Control from Animal Facilities, Poultry Lots and Other Animal Lots.*
75. Publication of the Minnesota Pollution Control Agency entitled *Animal Wastes - Run-off Control, Management, Transportation.*
76. State of North Dakota Regulation No. 61-28 *Rules and Regulations for the Control of Pollution from Certain Livestock Enterprises.*
77. State of North Dakota *Guidelines for the Control of Pollution from Certain Livestock Enterprises.*
78. Report prepared by Nova Scotia Federation of Agriculture entitled *Guidelines for Farm Waste Management.*

TABLE OF ANIMAL UNITS

APPENDIX E

Table of Animal Units

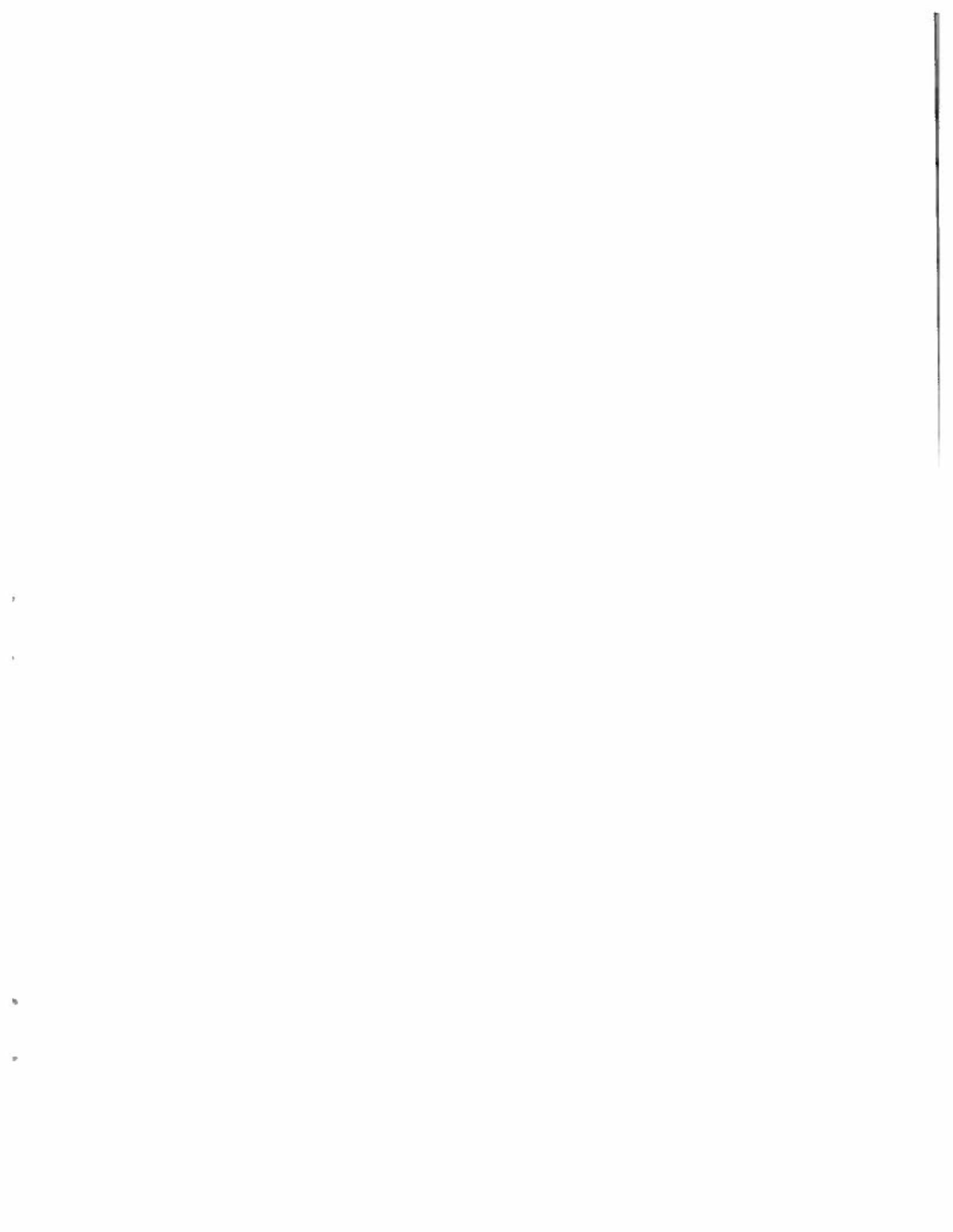
Kinds of Animals	Number of Animals Which Equal One Animal Unit
<b>Dairy Cattle</b>	
producing cow	1.0
producing cow plus dry cows	.83
producing cow plus dry cows, replacement heifers and calves	.7
<b>Beef Cattle</b>	
beef animals of feedlot capacity	2.77
beef cow plus replacements and calves (all year dry lot)	1.43
beef cow plus replacements and calves (winter lot only)	2.38
<b>Swine</b>	
sow (farrow-finish) plus boars, replacements, suckling pigs to market	.5
sow (farrow-weanling) plus boars, replacements and suckling pigs	1.25
feed pig (weanling to market)	5.0
<b>Chickens</b>	
laying hens	111.0
chicken broilers	190.0
hens in breeder flock	83.0
<b>Turkeys</b>	
turkey broilers	118.0
turkey feeders	67.0
turkey hens in breeder flock	45.0
<b>Ducks</b>	
ducks	100.0
<b>Geese</b>	
geese	90.0
<b>Horses</b>	
horses	2.0
<b>Sheep</b>	
ewe plus rams and lambs	10.0

SCHEDULE OF SEPARATION DISTANCES

APPENDIX F

Schedule of Separation Distances

From the Nearest Edge of:	To a site for an intensive livestock production operation including pens, barns, manure storage area, holding pond, manure pile, burial site for:					To a manure spreading area for:	
	50-100 Animal Units	100-300 Animal Units	300-1,000 Animal Units	Over 1,000 Animal Units	Manure Tilled Within 12 Hours	Manure Not Tilled Within 12 Hours	
1. A residential or recreational area with a population of over 50 people. (More distance is suggested from urban centres likely to expand)	800 m	1.6 km	1.6 km	3.2 km	400 m	800 m	
2. An occupied dwelling or rural business located on land not controlled by the I.L.P.O. operator and not located in an urban centre	400 m	400 m	800 m	800 m	200 m	400 m	
3. Water well or spring used for human water supply and located on land not controlled by the I.L.P.O. operator.	90 m	90 m	90 m	90 m	90 m	90 m	
4. A watercourse or body of water not entirely contained on land controlled by the I.L.P.O.	The set-back distance from a watercourse or body of water must be such that the run-off of water from the operation is controlled.						



•

•

•

•

•

•