

REPORT ON HEARING

**NORTH DUCK RIVER
HEADWATER STORAGE PROJECT**

THE CLEAN ENVIRONMENT COMMISSION

AUGUST 8, 1989

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HEADWATER STORAGE PROJECT**

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NORTH DUCK RIVER
HEADWATER STORAGE PROJECT

BACKGROUND

On January 23, 1989 the Water Resources Branch of the Manitoba Department of Natural Resources registered a proposal under the Environment Act to construct a headwater storage project on the North Duck River. The project includes construction of an earth fill dam and reservoir in the upland headwaters to retain peak flows, an access road to the dam and earth dykes in agricultural lowlands to prevent overland flooding. The proposal states that the purpose of the project is to alleviate flooding on the North Duck River, both upstream and downstream of Cowan, Manitoba.

Following receipt of the proposal, the Environment Department advertised its consideration of this proposed development under the Environment Act.

After a number of objections were received by the Environment Department, the Honourable Ed Connery, then Minister of Environment, instructed the Clean Environment Commission to hold a public hearing on the proposal, and to subsequently provide a report and recommendations on the matter.

After giving due notice, and advertising in appropriate newspapers, the Commission convened a hearing in Cowan, Manitoba at 10:00 A.M., June 23, 1989. Commissioners in attendance were: Mr. Stan Eagleton, Chairperson; Mr. Maurice Blanchard; Mr. Leonard Flett; Ms. Betty Pawlicki; and Mrs. Joan Vestby.

DESCRIPTION OF THE PROJECT

The proposed project was described by Mr. John Towle, the Regional Water Manager for the West/Northwestern Region of the Water Resources Branch of the Department of Natural Resources. At the request of the local soil and water conservation group from Cowan, Manitoba, the Water Resources Branch developed the proposal to provide flood control and headwater storage along the North Duck River.

There are two basic components of the proposed project (see Figure 1). A floodwater retention control structure, consisting of an earth-fill dam, dyking and reservoir and a spillway, is proposed to provide temporary storage of peak flows. An access road to the dam is required. The second component of the proposal is a series of dykes at low spots along the river to prevent flooding of agricultural lands. The total construction cost for the project is estimated to be \$613,000 in 1988 dollars.

DESCRIPTION OF PROJECT (continued)

The floodwater retention structure would be located on the North Duck River, upstream of Cowan and any agricultural lands, and upstream of where the river begins a steep descent down the Manitoba Escarpment. From this location approximately 6.9% of the total watershed will be controlled.

Maximum height of the dam will be 11.6 meters(m), with the crest elevation at 524.65 m a.s.l. (See Figure 2). The full supply level of the reservoir will be at 523.12 m a.s.l., with overflow draining through an emergency spillway. The outlet is through a 1200 millimeter (ml) corrugated metal pipe with a morning glory drop uncontrolled inlet at 517 m a.s.l. A 250 ml pipe, located at base level of the dam and equipped with a control valve, would provide the opportunity to draw down the reservoir to the existing channel bed. An emergency spillway to allow passage of overflow will follow natural contours.

During normal operation the reservoir would permanently flood a total area of 7 hectares (ha) of land to the level of the morning glory drop, with a maximum depth of 4 m. The run-off storage capacity of the reservoir will be 4,200 cubic decameters (dam³), temporarily flooding a total area of 2 square kilometers (km²). Following a major run-off event that completely filled the reservoir, it would take 15 days to drain back down to the level of the morning glory drop.

Temporary storage of run-off provides flood protection by reducing flood peaks. The retention structure is designed to provide protection to farmland upstream of Cowan from a 1 in 5 year flood (20% frequency). Streamflow is unaffected by the structure except when there is a flood of this size or larger. The reservoir is large enough to store run-off up to about a 1 in 10 year flood (10% frequency). Larger floods will cause flow over the emergency spillway.

Dykes along the river will be constructed upstream of Cowan, and to a lesser extent downstream. These small dykes, located 125 m apart, on both sides of the river, will be built to a height 0.65 m above the instantaneous peak discharge level for a 20% flood. Located at low spots along the river in agricultural areas, these dykes will prevent overland flow from the North Duck River. Specific locations for these dykes remain to be identified.

NEED FOR THE PROJECT

A number of presentations to the Commission dealt with the need for flood control along the North Duck River.

Mrs. Rosann Wowchyk, Chair of the Cowan Soil and Water Co-op and a Councillor of the L.G.D. of Mountain talked about the effects of flooding. Damages due to flooding include crop losses, deposit of silt and debris, erosion of land, loss of topsoil, siltation of river beds, flooding of basements and gardens, and damage to roads and bridges. Following floods in

NEED FOR THE PROJECT (continued)

1973, 1976 and 1982, damages reported by approximately 30 affected farmers were calculated to be \$130,000, \$170,000 and \$506,000 for the respective years. Losses caused by the flood in May of 1988 have not been calculated, but Mrs. Wowchyk stated that it caused some of the most serious erosion they have ever suffered.

After the flood of 1982, a Steering Committee was struck by members of the community to make suggestions for permanent solutions to flood problems. The outcome of this Committee's work was the decision to establish control over headwater flows, and to make changes to agricultural practices to protect the land. The Cowan Soil and Water Co-op was formed to pursue these objectives. During later testimony by Mr. Towle, the Commission was informed that the Co-op is the real proponent of this proposal, and that the Water Resources Branch is acting on their behalf.

The Soil and Water Co-op has actively promoted and demonstrated soil conservation techniques and alternative land use to preserve land prone to flooding. These measures alone are not a complete solution to flooding problems, and they need to be able to regulate the flow of water to reduce the damage caused during peak periods.

Mrs. Wowchyk showed some pictures of past flooding, and described the tremendous strain on residents of the area during actual flooding, or even in anticipation of flooding. She stated that they had no desire to damage any part of the environment, or the opportunity for others to make a living, and did not believe that the proposed structures would have a negative impact. It was the feeling of the Soil and Water Co-op that if their land base was protected they could continue living in the area as they and their ancestors have for many years.

Mr. Ted Romak, a resident of the area and member of the Soil and Water Co-op pointed out that although farm land subjected to erosion can be repaired to a farmable state, it cannot be repaired to its original condition. He showed a number of slides that illustrated erosion damage and siltation caused by flooding in the Cowan area. The environmental impact resulting from flooding was in Mr. Romak's opinion greater than the impacts that might arise from the proposed control structures.

Mr. Harry Harapiak, M.L.A. for The Pas, was raised in the area and maintains a farm near Cowan. Having had his crops damaged, and experienced the other traumatic effects caused by flooding along the North Duck River, Mr. Harapiak believed the positive benefits of the project would outweigh the negative benefits, and he supported the project. He pointed out that flooding was a natural process, and that the fertility of lands along the river was directly due to past flooding. Changes in land use are partially responsible for an increase in erosion and flooding problems, and he mentioned that reforestation of sloping and marginal farmland is an alternative method to alleviate these problems. Since they have waited years for the project, he felt that a delay of one more year to conduct an environmental impact study

GOVERNMENT REVIEW (continued)

Lake Winnipegosis, Swan Lake and Dauphin Lake is having a negative impact on fisheries in the region.

Mr. Valiant had observed that the North Duck River carried a lot of sediment, especially in years of high run-off. He anticipated that restabilized flows in the North Duck River would have a positive impact from a fisheries point of view. A significant walleye spawning area is known to exist downstream near the mouth of the river, and brook trout have been stocked in some of the upstream sections of the river. Walleye runs are known to have declined over the years, but the decline is not necessarily related to changes in habitat quality.

Mr. Dwayne Davies, the Regional Wildlife Biologist with the Department of Natural Resources did not expect any major negative impacts from the project on wildlife, nor did he expect any major benefits. Slowing down the river runoff will not affect habitat, and Mr. Davies could not foresee any impact on muskrat and beaver populations in any part of the river. Waterfowl may benefit slightly from creation of the 7 ha pond. The reservoir area is moose wintering habitat, but no impacts on moose are expected because changes in habitat are not expected in the temporary reservoir.

Referring to comments received from the Forestry Branch about the proposal, Mr. Towle stated that the project would have little impact on forestry because flooding will be infrequent, and of short duration. Trees in the reservoir area are mainly poplar, and the area has been logged in the past. Further information about vegetation is not available, and no survey to determine if rare or endangered plant species are present was conducted.

All trees will be harvested from the site of the permanent reservoir. The temporary reservoir will be logged if there is any danger of loss, but there is very little marketable timber at that site.

Forestry activity in the North Duck River watershed could increase flooding and siltation problems. The problem would arise, in Mr. Towle's opinion, not from the removal of trees but from the reduction of the rate at which precipitation infiltrated the soil and sub-soil. Infiltration rates are reduced if the soil is disturbed, and thus depend on how logging is conducted.

Impacts on surface water will be to lower water levels during periods of high flow both upstream and downstream of Cowan. During periods of low flow the project will have no effect.

PUBLIC REVIEW AND DISCUSSION OF IMPACTS

Mr. Barry Wild, a local resident, and the Parkland Regional Chairman for the Manitoba Environmental Council, drew attention to the extremely short lead time provided between the first public notification of the Hearing, June 12, and the Hearing date of June 23, 1989. He recommended at least six weeks

PUBLIC DISCUSSION (continued)

contended that minor modifications could extend the period during which retained water was released, without altering the flood control aspects. (During latter discussion it was pointed out that increased permanent storage would decrease the available runoff storage capacity, reducing flood control benefits.)

Finally, Mr. Wild pointed out that flooding was a natural process, and that it brought some benefits. Silts carried from high lands revitalize agricultural soils. Mr. Wild said the project required a great deal of careful thought before proceeding. It was argued that approval for the proposal should be withheld until the Provincial Soil and Water Strategy was completed, and the effects of the North Duck River dam could be factored into the broader provincial scheme.

Mayor J. Sonny Klyne of Camperville said that the native people downstream on the North Duck River were overlooked and not consulted during the planning process. He pointed out that farmers in the area had been working with the government to develop the proposal since at least 1981, but the first he heard about it was three months before the Hearing. People living in the downstream settlements have traditionally relied on natural resources from the land to sustain their livelihood. There are 2000 people living in the communities of Camperville, Duck Bay and Pine Creek who could be potentially affected by the project. Mayor Klyne said that the statements made about impacts from the proposed structures on wildlife and fish were based on assumptions, not actual studies.

Mayor Klyne has worked to make a living off the land himself, and he talked to elders in his community. In their opinion, the floods are a source of transportation for wildlife and fish.

In the spring fish travel upstream to spawn. They are able to move much farther upstream under flood conditions than they could under lower summer flow conditions. It was the opinion of elders that if fish did not reach their traditional spawning location, they would not spawn. If the dam reduces spring flood levels, fish might not get to where they're supposed to spawn, and the cycle won't continue.

Beaver come downstream every spring to the mouth of the river. They then start moving back upstream, find a spouse and settle to build a colony.

These are the cycles that the elders in Camperville see. Changes in river flows will affect the fish and fur bearing animals. Mayor Klyne pointed out that there have been no studies to determine how much of an impact there would be, only assumptions, and suggested the project be put on hold until these questions are answered.

Mayor Klyne had visited a control structure built on the Red Deer Lake River in Saskatchewan. In that system, water levels dropped during the winter to a point where there was no more oxygen and fish died. When the ice

PUBLIC DISCUSSION (continued)

Branch to restrict access on these types of roads. A steel gate will be installed at the boundary of the Provincial Forest, as a requirement under the Forestry Act, and will be operated in response to forest fire conditions. The road will be maintained by the Water Resources Branch, unless the Soil and Water Co-op forms a Conservation District and assumes responsibility for the operation and maintenance of the entire project. A District is not yet in place, but the Soil and Water Co-op is working towards forming one.

The beauty of the land that will be affected by this project was noted by Ms. McCrea. She discussed the historical value of the old Cowan Trail, and asked what had been done to identify archeological sites in the project area. Ms. McCrea's fourth question was what study had been done to determine the effect of the project on heritage resources? In answering this question, Mr. Beck said that the Historic Resources Branch is currently conducting a Heritage Resources Impact Assessment. The assessment is being conducted in accordance with the Heritage Resources Act, and will include an evaluation of the points raised by Ms. McCrea. The final report on the assessment is due at the end of January of 1990.

A small section at the end of the access road would follow the Cowan Trail. This trail is the route historically followed by the original settlers coming into the area. If there was interest in preserving the Cowan Trail as a heritage resource, Mr. Towle said that it was feasible to reroute the access road to avoid it.

Ms. McCrea's fifth question was have any studies been done to determine the effects of the dyking on the environment, and on the people living downstream of Cowan? She referred to the Feasibility Study which stated that during flood periods, higher channel velocities would cause channel degradation and bank erosion. In answer to this question, Mr. Towle said that these questions were studied by the Water Resources Branch. Reduced flooding because of dyke protection will mean that there will be less erosion and other impacts on farmland. Modelling studies of the river, conducted for this project, evaluated flows with and without dykes, and indicated there will be no negative impacts downstream. Erosion and channel degradation are already occurring. The project will reduce overland erosion, and by reducing peak flows should reduce channel erosion. The project will not eliminate erosion, only reduce it.

The sixth question asked by Ms. McCrea was who would maintain the dyking, who was responsible for constructing it, and how much would be constructed? In answer, Mr. Towle said the dykes would be the responsibility of the Province until a Conservation District was formed. The rest of this question was not answered directly, but during earlier testimony, Mr. Bob Stokes, from Engineering and Construction, Water Resources Branch indicated that the specific locations of dykes and how much dyking would be required had not been identified.

Ms. McCrea's seventh question was what would happen to downstream

CONCLUSIONS(continued)

fisheries is human induced flooding and sedimentation in many rivers. Specific impacts that this proposal will have on fish movements and spawning are unknown, but the control structures will only act to moderate extreme flood events, and will have very little impact on normal flows. Most of the extreme events that would be moderated have historically occurred from rainfall events, and not from snowmelt run-off in the spring, when spawning occurs. Impacts on fisheries are considered to be insignificant.

Impacts on wildlife will not be significant. There will be minimal disruption of moose wintering grounds in the temporary reservoir area. Hunting pressure is not expected to increase because there already is access to the area. Minimal impacts on beaver are expected through control programs to prevent blocking of culverts installed under the road. Other impacts on beaver are not expected.

Impacts on vegetation are considered to be acceptable. Temporary flooding of the reservoir will have a minimal impact on vegetation. There is a risk that rare or endangered species may be lost.

Impacts on downstream flooding and erosion will be insignificant. Modelling studies indicate no negative impacts. Impacts on heritage resources will be unknown until the impact assessment is completed in January, 1990.

The Commission concludes, on the basis of the evidence gathered, that no significant impacts will arise from construction of the proposed headwater control structure, and recommends:

- 1.1 That a license be issued to the proponent to construct the development, providing that all other regulatory approvals and required licenses are obtained.
- 1.2 That a survey of rare and endangered species be conducted in areas affected by the proposed project.

Land Use

Flooding problems along the North Duck River are a direct result of human activity. Human activity can increase flood and sedimentation problems, for example, by removing natural vegetative ground cover. Flood and sedimentation problems also result from inappropriate land use, such as building in a naturally flood prone area.

The proposed control structures will provide some relief from extreme run-off events, but will not provide a solution to flooding problems. Land use management is the key to solving flood problems along the North Duck River. It was evident at the Hearing that the Cowan Soil and Water Co-op is aware of this, and is working to make needed changes to agricultural practices, in part through an Agri-Food Agreement.

CONCLUSIONS (continued)

hearing is held.

Brief descriptions of regional resources relevant to the proposal under scrutiny are required. Information for this Hearing which was not provided in the proposal includes descriptions of significant species of wildlife and vegetation present in affected areas, what fish species existed in what reaches of the river, data about seasonal streamflow characteristics, historical changes in streamflow patterns, heritage resources, etc.

Statements provided about impacts to the environment should include a brief discussion to substantiate the conclusions. All potential impacts identified during a review, including those considered insignificant, are required in this summary.

Additional studies conducted to assess potential impacts should be referred to in the proposal. Modelling of flows on the North Duck River to assess downstream impacts of the proposed structures was an additional study which was very important for the overall assessment. There was no indication in the proposal that this study had been conducted.

In order to facilitate informed public participation at future hearings, the Commission recommends:

- 3.1 That information, including a brief description of affected resources, a summary of all identified impacts with a discussion of conclusions reached and reference to all additional studies conducted, be included with proposals for developments referred to the Clean Environment Commission for public hearings.

APPENDIX

NORTH DUCK RIVER HEADWATER STORAGE PROJECT

L I S T O F E X H I B I T S

June 23, 1989
Cowan, Manitoba

1. Mr. Frank Penner, Water Resources Branch, Department of Natural Resources, Environment Act Proposal Form, (dated January 23, 1989).
2. Hon. Ed Connery, Minister of Environment and Workplace Safety and Health, Letter, (dated April 10, 1989).
3. Patricia M. Badertscher, Impact Assessment Officer, Historic Resource Branch, Memorandum, (dated June 23, 1989).
4. Shirley Nadolney, Inter-Office Memo, (dated June 23, 1989).
5. Lynn McCrea, Brief, (dated June 23, 1989).
6. Mr. Harry Harapiak, MLA for The Pas, Brief, (dated June 23, 1989).
7. Roseanne Wowchuk, Councillor Ward II, L.G.D. of Mountain, Brief, (dated June 23, 1989).
8. Mr. Joseph Klyne, Mayor of Camperville, Brief, (dated June 23, 1989).
9. Mr. Ted Romak, Brief, (dated June 23, 1989).
10. Mr. Barry R. Wild, Parkland Regional Chairman, Manitoba Environment Council, Brief, (dated June 23, 1989).