REPORT ON PUBLIC HEARINGS

CITY OF WINNIPEG
DEACON RESERVOIR EXPANSION
RURAL MUNICIPALITY OF SPRINGFIELD

AUGUST, 1993

MANITOBA CLEAN ENVIRONMENT COMMISSION
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PREFACE

This report contains a summation of the evidence presented at the public hearings convened by the Manitoba Clean Environment Commission to hear evidence on a proposal for licensing under The Environment Act, filed by the City of Winnipeg, Waterworks, Waste and Disposal Department. The proposal deals with the potable water supply for the City of Winnipeg and calls for the expansion of the Deacon Reservoir located in the Rural Municipality of Springfield.

A detailed account of the evidence presented before the Commission is contained in the Verbatim Transcript of the hearing and is available for review at the offices of the Clean Environment Commission and at designated Public Registry locations. A list of individuals and organizations who participated in the hearing process, along with a list of the Exhibits filed, is included in this report as Appendix "A", and Appendix "B", respectively.

THE CLEAN ENVIRONMENT COMMISSION

Under The Environment Act (1988) the Clean Environment Commission provides a process for the public to participate in the environmental decision making process in Manitoba. The Commission also provides the Environment Minister with advice and recommendations concerning environmental issues and licensing matters.

Commission membership includes a full-time Chairperson and part-time Commissioners appointed by Order-in-Council. Members come from a wide variety of occupations and reside in different regions of the province.

THE PUBLIC HEARING PROCESS

Public participation in Manitoba's environmental decision-making process is in part facilitated through the Clean Environment Commission hearing process. The Commission conducts these hearings according to procedures that have been developed to encourage and facilitate public involvement.

The Commission strives to ensure that the evidence and opinions of all participants is treated fairly and with due respect and consideration.

COMMISSION TERMS OF REFERENCE

In a letter dated February 26, 1993, The Minister of Environment requested that the Manitoba Clean Environment Commission hold a hearing to review a proposal filed by The City of Winnipeg, Waterworks, Waste and Disposal Department, for the expansion of the Deacon Reservoir in the Rural Municipality of Springfield. In reviewing the proposal, the Clean Environment Commission was to consider public concerns and make recommendations respecting:

- the justification and the need for the proposal, and any alternatives considered to accomplish the proponent's (City of Winnipeg) goals;
- the potential environmental impacts of the project, including measures intended to mitigate adverse impacts on the bio-physical environment, human health, present and currently planned resource, land and water use, terrestrial and aquatic ecosystems;
- the activities associated with site preparation, construction, operation and the final disposition of all the components of the project;
- the social, cultural, health and economic impacts directly related to the environmental effects of the project;
- the effects of the general influx of workers, equipment, and the materials on residents, land and resources;
- the adequacy of measures proposed to mitigate adverse environmental impacts resulting from the project and to compensate for residual adverse effects; and
- the adequacy of proposed plans and procedures for the transportation, handling and disposal of dangerous goods and hazardous materials and for response to environmental accidents and emergencies; and
- the geographic scope of the hearing shall include those areas directly impacted by the proposed Deacon Reservoir Expansion Project.

DEACON RESERVOIR HEARING

The hearing, scheduled for Dugald, Manitoba on April 26, 27 and 28, 1993, was advertised in the Winnipeg Free Press and the Beausejour Beaver. The hearing took place in the Dugald Community Club.

process that had been administered to date;

2. to demonstrate that the assessment process had been administered consistent with the requirements of the Environment Act; and
3. to demonstrate, through the submission of evidence, that there was adequate information available to the Commission upon which to base recommendations.

A total of 11 exhibits were entered by Manitoba Environment including the proposal, the draft environmental impact assessment guidelines, the Environmental Impact Assessment, and the Addendum to the Environmental Impact Assessment. (Exhibits are identified in Appendix B.)

Mr. McNaughton requested the Clean Environment Commission to give "equal" consideration to all the environmental "costs" associated with the expansion of the Deacon Reservoir, and asked that the non-mitigable impacts, reported as residual impacts, be considered as environmental costs. He identified those to include:

- the loss of productive agricultural land;
- the changing of an area of productive terrestrial wildlife habitat to that of an aquatic environment;
- the temporary changes in the local environment due to construction activities associated with building the Deacon cells;
- the permanent changes that would accrue in terms of the quality of the local environment as perceived by those people who reside in the Deacon area; and
- anticipated changes in the socio-economic condition of local residents.

BACKGROUND

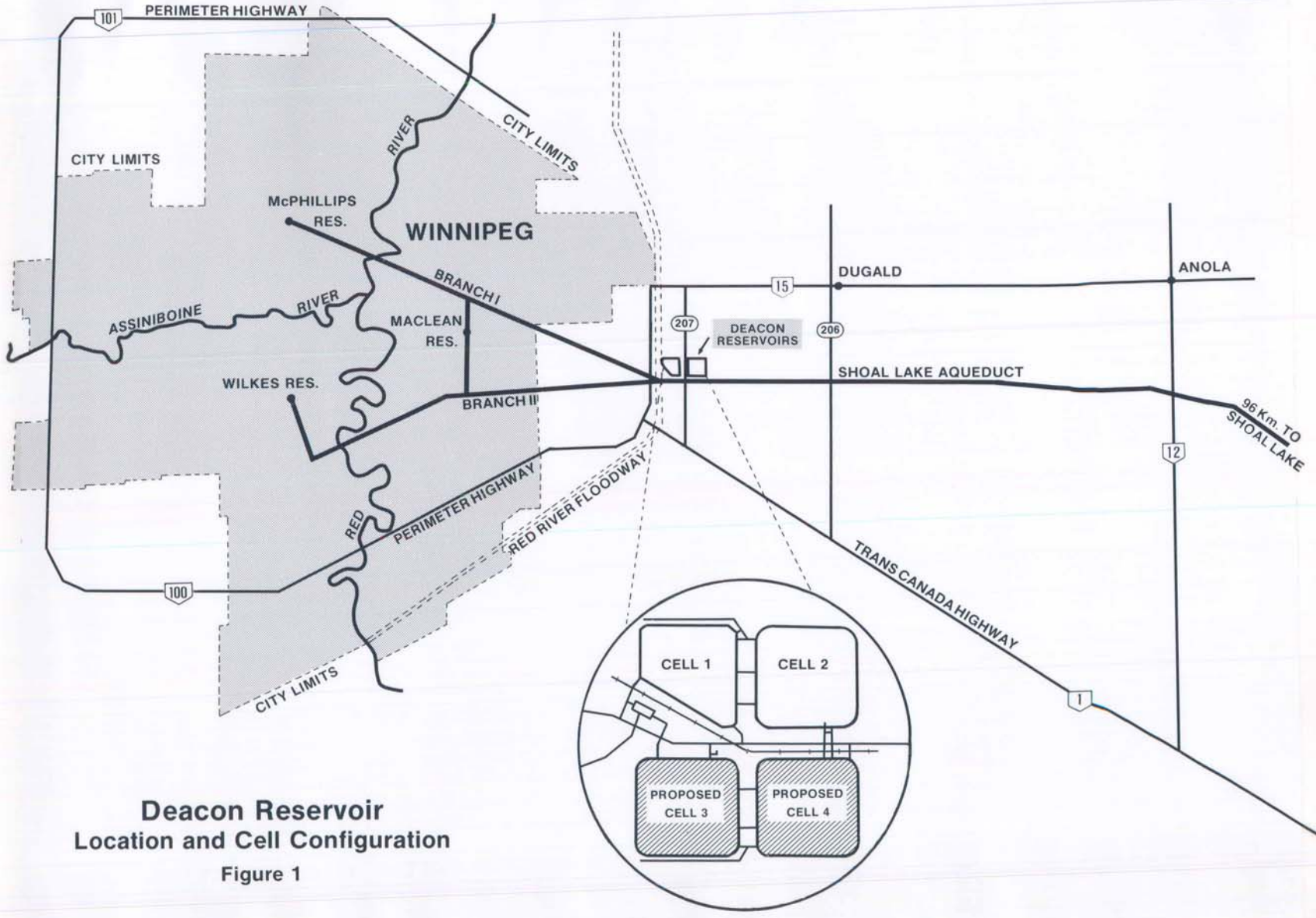
The potable water source for the City of Winnipeg is Shoal Lake, located 160 kilometers southeast of Winnipeg. Shoal Lake is in the Canadian Shield, covering a drainage area of approximately 800 square kilometers, and is part of the Lake of the Woods system.

The construction of a 97 mile (156 kilometer) aqueduct and railway, designed to carry water from the Indian Bay area of Shoal Lake to the City of Winnipeg, began in 1913. In March, 1919, Shoal Lake water first reached the City. The Greater Winnipeg Water District is licensed to draw up to 454 million liters of water per day from Shoal Lake. The aqueduct's design capacity is 386 million liters per day, or 75% of the licensed amount. In 1991 it was estimated that the City's water use averaged about 300 million liters per day.

At the Deacon Reservoir and booster pumping station located on 23-10-4 EPM and 24-10-4 EPM in the Rural Municipality of Springfield, **(Figure # 1)** the water is distributed into branch pipelines and various open and enclosed City reservoirs. Deacon Reservoir serves two key purposes. Firstly, stored reservoir water is used to meet high summer water demands that, at times, exceed the capacity of the aqueduct. (This is referred to as seasonal balancing.) Secondly, the reservoir allows the aqueduct to be temporarily shut down each fall for maintenance.

Today the City of Winnipeg faces a challenge with respect to its water supply. The 74 year old aqueduct requires major repairs in order to extend its life. The existing cells at Deacon permit a shut down for maintenance and repairs of only 8 days, which has been identified as an insufficient period of time to adequately maintain and repair the aqueduct. Expansion of the Deacon Reservoir to increase its storage capacity has been identified as a requirement in order to facilitate shut down of the aqueduct for longer periods to facilitate rehabilitation.

Based on current levels of consumption, the City of Winnipeg water demand is projected to exceed the supply capacity of the aqueduct sometime between 1997 and 2000, depending, in part, on the success of a proposed water conservation program being implemented by the City. Expansion of the Deacon Reservoir by the addition of two cells has been proposed as a "near term" measure to meet the anticipated water supply requirements of the City, and to provide for the maintenance of the aqueduct.



Deacon Reservoir
Location and Cell Configuration
Figure 1

Expansion of the Deacon Reservoir has been a declared intention of the City of Winnipeg since the early 1980s when the City began to acquire additional property for the construction of additional cells. The proposed reservoir expansion would utilize approximately 105 hectares of class 2 agricultural land and 25 hectares of treed land. The necessary approvals from the Rural Municipality of Springfield for construction of additional cells has been obtained.

The City of Winnipeg submitted its expansion proposal to Manitoba Environment in the spring of 1991. After review of the submission, Manitoba Environment requested that a detailed Environmental Impact Assessment (EIA) be prepare for the project. The City retained Tetr*ES* Consultants Inc. to prepare the EIA.

The EIA was submitted in June, 1992. After review of the EIA by Manitoba Environment, the "interdepartmental" Technical Advisory Committee, (TAC) and placement of the document on the Public Registry, additional information was determined to be required. At the request of Manitoba Environment, an EIA Addendum was prepared by the City and submitted in January of 1993.

The EIA and the Addendum dealt with possible impacts of the reservoir expansion and various alternatives to the proposal including:

1. The building of a new aqueduct with no expansion to the Reservoir;
2. Deepening of the existing Deacon Reservoir cells;
3. Expansion of storage further east along the aqueduct; or
4. Expansion of storage at the distribution reservoirs within the City of Winnipeg.

The EIA concluded that the alternatives to expanding the Deacon Reservoir were either impractical or too costly, and did not offer any apparent environmental advantages over the addition of cells #3 and #4 at the Deacon site.

CITY OF WINNIPEG - PROPOSAL SUMMARY

Barry MacBride, Manager of Engineering with the City of Winnipeg, Waterworks, Waste and Disposal Department, introduced the other team members assembled by the City to participate and give evidence at the hearing. They included Jerry Comeau, Professional Engineer and Project

Manager, Tom Pearson, Waterworks Engineer responsible for regional water supply, and Kelly Kjartanson, Research Engineer for the Laboratory Services Division. Len Strijack with the City of Winnipeg Law Department, and Steve Yoshino, Director of the Waterworks, Waste and Disposal Department were also introduced. George Rempel of Tetr*ES* Consultants Inc. was introduced as Project Manager responsible for the Environmental Impact Assessment studies, and Grant Mohr, also of Tetr*ES*, was introduced as the Project Engineer.

In the City's presentation, Mr. Comeau indicated they had held a public open house in the community to explain the proposal to local residents in October 1991, and that members of the Waterworks, Waste and Disposal Department had met with some of the area residents on a number of subsequent occasions.

Mr. MacBride indicated that there were three reasons for the proposed expansion of the Deacon Reservoir:

1. to provide water storage to supply high demand priorities;
2. to supply water when the aqueduct is out of service for repairs; and
3. to provide security of supply under emergency conditions.

Mr. MacBride suggested that the need for water storage capacity had been recognized by the original designers of the aqueduct who had provided a take-off-pipe near the Deacon site as part of the original construction parameters. The need for the Deacon reservoir was confirmed with the construction of the first Deacon Reservoir cell in 1971 and the second cell in 1977.

Mr. Rempel, in summarizing the City's proposal indicated the planned expansion of the Deacon Reservoir called for the construction of two new cells, (#3 and #4) adjacent to the existing cells (#1 and #2). The two new cells would each have a capacity of approximately 2,200 million liters, providing a total reservoir storage of 8,300 million liters.

The City provided further details of the proposed expansion and stated that in addition to the loss of agricultural land, 25 hectares of trees would be removed. All topsoil would be removed and stockpiled for reuse. The new cells would be similar in design to the existing cells with elevated dikes approximately 5 1/2 meters above the current ground level. When completed, a chain link fence would be installed around each cell.

According to Mr. Rempel, the flow capacity of the aqueduct allows the filling of the reservoir during periods of low demand. The stored reservoir water is then used to supplement the demand during high use periods (usually during summer the months) when the City's water use exceeds the capacity of the aqueduct. Mr. Rempel indicated that while a larger aqueduct would likely be required in the future, the expansion of the Deacon Reservoir, to increase water storage capacity at the present time, was identified as a cost effective means of defering the need to construct a new aqueduct.

Mr. Rempel explained that the aqueduct had to be dewatered periodically to permit in-situ repairs to be completed. He indicated that the current storage capacity, which only permits an 8 day shut down of the aqueduct, did not allow for full scale repairs or emergency storage for unplanned shutdowns. Mr. Rempel advised that aqueduct repairs would require aqueduct shut-down periods of 15 days per year for the next 15 years.

Information on the water conservation program was provided, including details of a public awareness campaign, and a residential home retrofit program involving various water saving devices. Mr. Rempel stated that the program would include a revised water rate structure that recognized water conservation as a goal. He further explained that the conservation target was not intended to reduce the existing level of water use, but rather to reduce the projected water demand growth rate. He suggested that instead of this being a crisis driven water conservation program, it would be a sustained commitment towards more efficient water use.

Mr. Rempel stated that the City's water demand would exceed the current supply by the year 2000, even with a water conservation program in place, and suggested that this fact further underlined the need for additional water storage capacity.

Water Supply Alternatives

Mr. Rempel indicated that alternatives to the expansion of the Deacon Reservoir included various approaches to replacing the existing aqueduct and deferring its rehabilitation for as long as practicable.

The first option (A), currently being proposed, was described as the preferred plan. This would require the expansion of the Deacon Reservoir with the addition of cells #3 and #4. The

essential or "critical" aqueduct repairs would then be addressed as a priority during the next 8 to 10 years. In addition to the complete rehabilitation of the existing aqueduct, a new aqueduct with a capacity of 130 mega-liters per day (ML/d) would be constructed to a ground water source at Ross, Manitoba, by the year 2017. Ross is located at approximately the halfway point of the aqueduct (Mile 41). The final phase of option A would consist of aqueduct rehabilitation up to Mile 87 by the year 2025. The cost of option A has been estimated at 183 million dollars.

The second option (B) would see the reservoir maintained as is, with two reservoir cells, and the construction of a new 160 ML/d aqueduct as soon as possible, with repair of the existing aqueduct at a later date. This second option was estimated at 241 million dollars.

A third option (C) considered by the City would also require the two existing reservoir cells to remain, with abandonment of the existing aqueduct and the construction of a new 545 ML/d aqueduct. This option was estimated to cost 444 million dollars.

A final option considered (D) would see the abandonment of the existing cells at the Deacon site and the construction of a new 545 ML/d aqueduct with later repair of the existing aqueduct. This option was projected to cost over 530 million dollars .

Mr. Rempel identified options B, C, and D as all having "high risk periods" on the basis that a 10 year lead time would be required for planning, approvals and design. During this time inadequate storage would be available for necessary repairs. Because Shoal Lake is an international water body, the length of time required for approvals by the International Joint Commission (IJC), would be a significant factor. Summer shortfalls of water were also projected for the 10 year period if either options B, C, or D were implemented.

Environmental Impact Assessment

In addition to examining aqueduct alternatives, Grant Mohr stated that reservoir alternatives had also been considered. He reviewed the various reservoir alternatives which included expansion of the regional reservoirs within the City, deepening the existing Deacon cells, building new cells some distance east of the Deacon Reservoir, and expanding the cells adjacent to and east of the existing cells.

According to Mr. Mohr, both primary and secondary criteria were identified in examining alternatives, and if the primary criteria could not be satisfied, the alternative was not considered further. The primary criteria for considering site alternatives required that the site:

- provide sufficient storage to allow for aqueduct repair, emergency shutdown and summertime balancing;
- should minimize environmental impacts relative to Deacon; and
- must be reasonably cost effective relative to the Deacon site.

The secondary criteria referred to the functionality of either building or operating the reservoirs.

After testing all the identified alternative reservoir sites against the criteria, the City concluded that the Deacon site met all the primary and secondary criteria and was the preferred choice.

Mr. Rempel reviewed the biophysical setting of the Deacon site with respect to geology, soils, and topography. In terms of vegetation, the area was described as mostly agricultural with 25 hectares of wooded or aspen bluffs. These bluffs provide habitat for deer and nesting sites for birds and other small mammals. The existing reservoir cells provide staging areas for snow geese and other migratory waterfowl.

It was recognized that displacement of wildlife would occur with the clearing of the land. Further, in terms of impacts on wildlife, it was suggested that the expansion of the reservoir could lead to an increase in waterfowl staging in the area. Mr. Rempel indicated, however, that changes in the levels of waterfowl staging seemed to be more dependent on harvest conditions than on other factors. (Speaking to the impacts of waterfowl on reservoir water quality, Mr. Rempel advised that while fecal coliform levels in the water can be higher during periods of heavy waterfowl migration, the problem is easily managed through chlorination.)

In terms of any potential increased hunting pressure due to the expansion of the reservoir, Mr. Rempel indicated that increased use of signage would be employed. If crop depredation became a problem, the City stated that it would work cooperatively with wildlife officials and local residents to determine appropriate action.

Regarding zoning and land use, Mr. Rempel indicated that zoning for the site was agricultural and rural residential, and stated that the proposed project complied with existing zoning bylaws. Public infrastructure in the area adjacent to the Deacon Reservoir included the Greater Winnipeg Floodway, transmission lines, drains and highway development.

In terms of the existing operation of the reservoir, the occasional dewatering of the reservoir cells, usually in response to concerns over changes in water quality, was identified as a cause of some limited local flooding. Cell dewatering was reported by Mr. Rempel to have occurred on only three occasions since the construction of the reservoir. Flooding which occurred during a cell dewatering in 1991 was determined to have been caused by a blocked culvert. To mitigate the potential for flooding during dewatering operations, he stated that drains and culverts would be inspected.

Since discharge of water from the cells when sediments had gone into suspension had been identified as an environmental concern, Mr. Rempel suggested that this would be mitigated in the future by not discharging during windy periods.

In terms of impacts of algae blooms on water quality within the reservoirs, Mr. Remple reported that as control of algae had been required on only nine occasions in the past 20 years of reservoir operation, it was not anticipated to be a problem following lagoon expansion.

In terms of reservoir construction, a large number of vehicles would be hauling during the construction period. According to the City, the contractor would determine the type of safety measures required to be implemented during construction. For other potential construction concerns relating to noise and dust levels, the contractor would be required to adhere to local by-laws regarding hours of operation for construction and all applicable permits would be obtained.

Speaking to concerns about the aesthetics of the construction of a 6 meter high embankment, it was stated that for security reasons, the City requires an unobstructed view of the cells and the fence lines. The outside face of the cells would be maintained in a fashion similar to the existing cells.

In closing, Mr. Rempel concluded expansion of the Deacon Reservoir was required to meet future demands, for allowing repair to the existing aqueduct, and for improving the security of

supply. He further stated that the social impact of the expansion had been lessened because of public knowledge that the City had planned for some time to expand at this site.

QUESTIONS

Questions were raised as to why the City projected a four year construction period to replace the aqueduct, when the original aqueduct had been completed in only 5 years utilizing equipment far inferior to that which would be available today. In responding, the City stated that their time estimate included the design, whereas the reported 5 year construction completion of the original aqueduct did not include planning and design time.

Clarification was requested on the cost estimates for all four of the identified options. The City discussed the estimates in detail and suggested that the use of Net Present Value in the estimates was a reliable economic approach. The City stated that the approach of using Equivalent Annual Cost, as requested by one of the participants, would have provided the same results as the Net Present Value approach.

Explanation as to the purpose of the original Deacon reservoir cells was requested. The City confirmed that the original intent was for balancing water requirements for peak flows when the City's demand exceeded the aqueducts ability to supply.

Discussion took place as to the reliability of repairing and rehabilitating the existing aqueduct. The City stated that it was suitable to undertake repairs, and that the life of the aqueduct could be extended by an additional 50 years. The likelihood of an emergency due to the possible collapse of critical portions of the aqueduct was also debated at some length. The worse case scenario of a lengthy breakdown due to aqueduct collapse, and the steps the City was taking to protect against such a vulnerability was discussed. In such an emergency, the City suggested that a 24 day repair requirement would be likely.

The ten year lead time required for environmental approvals for a new aqueduct, as suggested by the City, was identified by the public as unrealistically long. The City provided clarification that 10 years might be the total time for regulatory approvals, design and construction, and that approval to draw more than the licensed 454 ML/d would be a lengthy process because of international agreements and licensing requirements.

Reference was made to a 1967 conceptual planning study that identified future water developments, and questions were raised as to why the recommendations from that study, including the development of new supplies, had not been put in place over the past years. The City indicated that the recommendations where not pursued because the population estimates upon which they were based had not materialized.

Some assurance was requested that repairs to the aqueduct would ensure a sound structure for the next fifty years in spite of the deteriorating affect of high sulfate concentrations in the soils surrounding the aqueduct. The City advised that sulfate resistant concrete was now used to make all repairs.

The $750,000 identified annually for a conservation program in the City of Winnipeg, and the nature of that program, was questioned. The City stated that the conservation program would be directed to more efficient use of water, with emphasis on residential use, since this component of water use had been increasing at the greatest rate. Although the stated goal was to achieve 5% reduction in future demand, it was anticipated that a 10% reduction might be achieved. The City's familiarity with water conservation practices in other jurisdictions was questioned. The City stated that they were aware of the programs being implemented in other jurisdictions.

The nature and extent of the ground water at Ross was questioned, with the City stating that indications were that a draw of 30 ML/d could be achieved but that additional studies and testing would be required to confirm volume and quality.

In the event that the ground water at Ross could not be accessed as a source of supply, and the construction of the new aqueduct to Shoal Lake or to Natalie Lake on the Winnipeg River was to be pursued, concerns were expressed that this could radically change the cost estimates for Option A. The City responded that the costs could increase to $210 million but would still be less costly than option B estimated at $240 million. The City, in responding further to a concern on the limited number of options presented stated that some 60 combinations of analysis were dealt with, and that in excess of 30 combinations were cost estimated.

The possibility of immediately constructing a new line to the ground water source at Ross, as an alternative to development of the additional cells at Deacon, was raised by the Commission. The City responded that the additional cells would still be required. They stated that the construction of a

future connection point to the aqueduct (referred to as a "T") at the Ross site - to provide a connection to the existing aqueduct - would be time consuming and cost an estimated $5 million.

In terms of cost estimate changes in the event that the ground water at Ross was not available, the City further advised that the new aqueduct would have to be completed by the year 2016, instead of 2025, and the cost would increase to $198 million.

Providing information on other possible changes, the City suggested that if the future per capita consumption did not exceed 590 liters per day, and if population leveled off at or below 650,000, a new aqueduct would not be required.

Concern was expressed that the distribution reservoirs within the City had not been included in the calculation of reservoir storage capacity. The City advised that these reservoirs provided for fire emergencies and some balancing, and would add less than two days of overall storage.

In response to a question on compensation, should there be flooding due to aqueduct failure, the City advised that it was self insured and that if required to compensate, the funds would be made available.

Responding to a question concerning the use of the cells for storage, and whether or not water quality would deteriorate over time in the cells, the City indicated that the operation of the cells was as a "flow through" so that water was circulated every 12 days and would not be stored for periods that could impact on quality.

Responding to questions on the per capita use of water and the projections for increased water demand in the future, the City indicated that if per capita water demand did not increase, the existing reservoirs would serve Winnipeg well into the future if no emergencies occurred, or prolonged repairs to the aqueduct were not required.

Clarification was sought as to why aqueduct repairs could not be made in the spring. The City responded by stating that the reservoirs required filling in the spring to accommodate the balancing for the summer, when demand exceeds the direct supply.

The possibility of placing additional reservoir expansion within City boundaries was raised. The City responded that this had been examined, and was reflected in the EIA, but was estimated to

be more costly than expansion at the Deacon site. Placing the new cells some distance east of the Deacon Reservoir would have significant environmental consequences as this option would require changes in the depth limits for the reservoirs, resulting in a requirement for 2 1/2 times the surface area to achieve the same volume of water storage.

Responding to a question as to the costs of removing agricultural land from production, the City stated that this aspect of the proposal had been evaluated and that an estimate of $300,000 net revenue loss (in perpetuity) had been determined for the 1/2 section of agricultural land which would be taken out of production with the construction of the two new reservoir cells.

A Commission question as to whether a problem existed with infiltration from artesian water into the cells was responded to with the City advising that movement of water in or out of the cells was not likely.

The reasons why the floodway and floodway lands had not been considered for cell construction was raised by the Commission. The City indicated that they had reviewed the operation of the floodway relative to the needs at Deacon and concluded that the floodway portion would not be suitable.

The amount of leakage occurring from the aqueduct between Mile 17 to 25 was raised by the Commission. The City advised that metered flows suggested that less than 1 1/2 percent leakage occurs in this reach, which is considered to be less than the error associated with measuring the flows.

The Commission also questioned the amount of taxes paid to the Rural Municipality of Springfield. The City advised that taxes are assessed on the value of the aqueduct and the improvements at Deacon, and that the additional taxes to be provided as new developments take place at Deacon would be at least five times greater than that which is currently paid for agricultural land.

The Commission expressed concern about the removal of trees. The City was asked if some of the trees could be relocated, and also whether altering the shape or the configuration of the cells, or deepening them, could minimize the number of trees that would be removed. The City advised that some of the spruce could be relocated, and the issue of deepening or altering the shape was something that would have to be examined carefully. The City suggested that they might be able to

construct the new cells further north than currently proposed, saving 15 to 20 meters of vegetation. Although they advised that this might create a security problem. The City stated that they would be prepared to consider the idea of cell reconfiguration.

Respecting security, it was suggested by the public that fishing was a fairly common occurrence in the cells, demonstrating that the present security was not working. The City stated that additional security measures were being considered.

PUBLIC PRESENTATIONS

Dr. Eva Pip, Winnipeg, Manitoba

Dr. Pip stated that the building of the additional cells at the Deacon Reservoir site was necessary and, therefore, suggested that mitigation of any possible negative environmental impacts should be the focus. She indicated that the additional cells would attract more waterfowl, and that the resulting higher levels of bacteria and other organisms associated with their presence would require increased chlorination of the water and the subsequent formation of Trihalomethanes (THMs). (Dr. Pip indicated that THMs are formed when dissolved organic chemicals come into contact with chlorine gas. She indicated further that many of the resulting compounds are recognized carcinogens. She also stated that THMs constitute only about 10 percent of the resulting chlorinated compounds, that many of these compounds have not been identified, and that we do not know the potential health problems associated with these compounds.) Dr. Pip further advised that as some organisms such as *Giardia* can not be controlled by chlorination, attention would have to be focussed on reducing the attraction of waterfowl to the cells.

Dr. Pip stated concerns related to the use of copper sulfate to treat algae in the cells, and the threat of toxicity if the treated water was prematurely released. Since the copper sulfate residues settle into the sediments of the cells, she suggested that problems occur when the sediments go back into suspension during periods of low water levels, particularly during windy conditions.

She also expressed concerns about algae accumulation in the cell sediments, how they would be removed, and the tendency of algae to concentrate heavy metals.

Dr. Pip indicated a concern related to the application of toxic chemicals for weed and pest control on nearby agricultural lands, and the possible problem of wind drift carrying these substances into the reservoir.

She stated that ozonation for disinfecting water does not produce chlorinated hydrocarbons and would be a preferred alternative to the use of chlorine.

Norm Binkley, Rural Municipality of Springfield (Springfield Citizens Opposed to Reservoir Expansion - SCORE)

Mr. Binkley stated that the first his organization (SCORE) knew of the proposal was when a representative of the City of Winnipeg had appeared on TV and indicated that an additional 4 reservoir cells were needed at the Deacon site. Mr. Binkley went on to explain that the group he represented did not consider the City to be a good neighbor, and that they would have appreciated the opportunity to have had some dialogue prior to, and during the development of plans for the expansion at the reservoir site.

It was the opinion of SCORE that the City should return to the original concept of the Shoal Lake aqueduct bringing fresh water to the City every day. Mr Binkley stated that plans for aqueduct repair and a new aqueduct had been undertaken many years earlier, and he was critical that no significant action to implement those plans over the past years had been observed.

He stated that Shoal Lake should continue to be the source of the City's water and that a new "pipe" could be started immediately. Mr Binkley suggested that problems such as concern about pesticide spraying and other water quality problems could be avoided utilizing this approach. Natalie Lake water, he suggested, was poor in quality and would not be suitable for mixing with Shoal Lake water.

Mr. Binkley indicated concerns about the City's statement on wildlife, particularly waterfowl. He suggested as local residents, they were very much aware of the waterfowl use, and that at times, had observed thousands of geese in the area. On occasions, they observed a number of dead geese piled up along side the reservoir and stated that they had observed dead carcasses being removed from the bottom of the cells.

Mr. Binkley stated that the possible use of the Ross aquifer had not been well examined, and suggested it would take a number of years to adequately study and bring the supply on stream. Mr. Binkley suggested that the aquifer at Ross could become contaminated with "disagreeable" water due to a draw down.

Helen Woollard, Rural Municipality of Springfield

Ms. Woollard stated that her family would be directly affected by the reservoir expansion since their home is immediately adjacent and south of the expansion site. She stated how important the wildlife and the general setting had been to her family over the past 20 years.

Ms Woollard indicated that drains and ditches at times had been filled with water from reservoir seepage, and she expressed concern about the impact of the reservoir water on their well water quality, as a result of seepage and releases of water.

She suggested that the change to the aesthetics of the area, due to the loss of the trees and placement of mounds of earth and chain length fences, would be disruptive and would likely devalue property.

Ms. Woollard stated that the taxes paid to the Municipality fell far short of the value of the water provided to the residents of the City of Winnipeg.

Because of the controversy over the options and the costs, she indicated that an independent analysis of the proposal should have been provided to the City. She stated that the vision demonstrated by the City in the past, when the aqueduct was planned and built, was not evident today.

Diane Frolick, Winnipeg, Manitoba

Ms. Frolick expressed concern that the Environmental Impact Assessment was completed by the project proponent (City of Winnipeg) and suggested that it should be undertaken by an independent firm.

Ms. Frolick indicated that it seemed as though the primary purpose for the cells was to repair the existing aqueduct. She suggested that the proposal put forth by the the City failed to provide the goal of a safe, secure, long term source of drinking water for the City of Winnipeg.

She stated that she considered the approach of repairing the existing aqueduct as wasteful, and that the building of a new aqueduct in stages would seem to be the most efficient and logical approach.

The Clean Environment Commission was identified as the only real chance of stopping the proposal, and she urged the Commission to reject it on the basis that it was destroying farmland and wildlife habitat, that it made no economic sense, and that it was unnecessary since a new aqueduct could be built.

Bruce Frolick, Rural Municipality of Springfield.

Mr. Frolick stated that he farmed a piece of land 1/2 mile east of the proposed cell #4, and he was concerned both about the impact the development would have on land values, and the lack of compensation for land owners in the vicinity of the Deacon Reservoir. He further indicated his disappointment that the City was reluctant to place trees or greenery around the cells because of security requirements.

Lois Edie, Rural Municipality of Springfield

Ms. Edie indicated that the concerns over the expansion of the reservoir should be addressed on a number of levels; socially, environmentally, and economically. She suggested that the costs of repairs, and the alternative options, varied in the different reports. She felt that aqueduct twinning should have been initiated years earlier. She questioned the decision to build more cell capacity at Deacon Reservoir when, in her opinion, the existing cells had proven to be an unreliable source of emergency water supply for Winnipeg. She stated that the open cells were vulnerable to air pollution, increased toxins and vandalism.

Ms. Edie also provided information about the dumping of cell #1 in October of 1991 when the turbulent water rendered the supply unsuitable for consumption.

She stated her disappointment that the aquifer and the wells in their area were not being monitored.

Ms. Edie suggested that good stewardship meant open communication and trust between neighbors, and that this was lacking between the City and the residents of the Rural Municipality of Springfield. She stated that the amount of taxes the City paid to the municipality was far less than would be received if the property was privately owned. The Greater Winnipeg Water District, she stated, was paid for in forty years, and the revenue should have been placed in a special aqueduct maintenance fund. In terms of current storage, she thought that with 15 % conservation, 3 days supply in the reservoirs within the City, and with the 8 days at Deacon, the required 15 days for repair was available.

In closing, she stated that she questioned the accuracy of the City's data, and that economic costs and numbers appeared to be continually changing.

Garth Kristiansen, Rural Municipality of Springfield.

Mr. Kristiansen stated that he resided adjacent to the proposed cells #3 and #4, and suggested that the new cell #4 would be practically "in his front yard". His family had resided on the property some 61 years and he strongly objected to the proposal. He suggested that the cells would be "ugly" In addition to the loss of wildlife, due to the removal of the bush, Mr. Kristiansen suggested that the increased number of geese staging on the larger reservoir would become a major problem in terms of crop depredation. He requested that the City should provide exact cost estimates on a new aqueduct, and twin the bad sections of the existing pipe rather than proceed with cell expansion.

Mr. Kristiansen stated that the City had absolutely no concern for the residents of Springfield and suggested that even though the City contends that future cells will not be required, he felt the the City could well change their minds in 10 years or so. Mr. Kristiansen proposed that regulating water consumption by restricting use, such as lawn watering, would conserve a good deal of water.

Tim Byers, Winnipeg, Manitoba

Mr. Byers stated that his primary concern with expansion of the Deacon Reservoir was the loss of prime agricultural land, as well as woodlands. He suggested that the Environmental Impact Assessment displayed a cavalier attitude toward farmland loss.

Mr. Byers expressed dissatisfaction that a species list identifying the number of birds that were actually present, nesting, and breeding on the site, was not provided in the EIA. He also expressed his concern that the herptile community to be affected was not identified

Mr. Byers suggested that a combination of deepening of the existing cells, the development of new reservoirs within the City, and an aggressive water conservation program would constitute an effective alternative approach to the expansion of the reservoir system.

Brent Reid, Dugald, Manitoba

Mr. Reid expressed disappointment that the existing aqueduct had been paid for since 1960, and that for 30 years funds for planning and replacement had been squandered. He suggested that priority attention should be directed to repairing the existing aqueduct and twinning with a new line. He also suggested that the construction of additional reservoirs would not be necessary if water consumption at 75% of the existing rate was in place during the construction repair period.

Laura Binkley, R.M. of Springfield

Ms. Binkley expressed her opinion that reservoirs were an inappropriate use of agricultural land, since only 4 % of the land in Canada was arable land of similar quality. She advised that because of zoning restrictions, it would not be possible for land owners within the Rural Municipality to develop land for economic reasons. She felt that it was unfair for the City to have the opportunity to develop the land when local residents did not have the same opportunity. She suggested that the residents of Springfield were being penalized for the poor planning of the City, and that now a crisis situation made the expansion of the reservoir necessary.

In referencing the proposed use of the Sandilands aquifer, near Ross, Ms. Binkley stated that the water quantity and the quality were an issue.

With respect to water use, she stated that Manitoba is filled with gardening enthusiasts who take pride in their lawns and gardens and that this did not represent a frivolous use of water. She stated that we were not making the fullest use of the water available to us from Shoal Lake. Accordingly, the additional dollars required for a new pipeline should be considered if it would provide an adequate future water supply for Winnipeg, and one less prone to failure.

Edwin Douglas, R.M. of Springfield

Mr Douglas suggested that the "least cost alternative" approach, used by the City in estimating the costs of the various options, should be dropped. He also suggested that the cost of water paid by the residents of the City was grossly undervalued, and at an estimated cost of $650 per person for a new aqueduct, water costs within the City would still be relatively inexpensive.

Mr. Douglas went on to say that the past inattention to the replacement of the aqueduct and the continual deferrals suggested poor planning. He stated that the aqueduct must be replaced immediately to provide for the water requirements of the next century. The worse case scenario would be that the water would be shut off. The fact that no real contingency plan existed was a major shortcoming. Under such a crisis he felt that an aqueduct could be replaced in a short period of time.

Ken Emberley, Winnipeg, Manitoba

Mr. Emberley stated that he was very concerned with the propaganda, the intimidation, and the threats that had been appearing in the newspapers. Mr. Emberley questioned the integrity of the process in advising that he had participated in public hearings on the Winnipeg water supply 8 to 10 years ago with exactly the same story - that a crisis existed and that action was required. During those hearings, they were told that the existing aqueduct could be repaired and would provide water for an additional 50 years but has seen no corrective action.

Mr. Emberley also stated that the public should have been involved continuously over the past 8 to 10 years as part of the planning process.

On the issue of the water conservation program, Mr. Emberley stated that the success of other jurisdictions should be examined for examples of an aggressive conservation program. He was concerned that the water conservation program would end when a new supply was provided, and it would be an invitation to waste water. He suggested that water demands could be limited, such that a new aqueduct would not be required for additional supply, and that the existing aqueduct could be repaired.

Diane Cox, Winnipeg, Manitoba

Ms. Cox indicated that Winnipeg would be a good place to implement water conservation because of the stable population of people who are concerned about one another. She stated how disappointing it was to be informed that the water conservation was targeted to reducing the projected increase, rather than a cut back on discretionary water use.

Ms. Cox stated that since the existing aqueduct could be repaired, the only thing that would create an emergency would be a pipe failure. Since repairing the pipeline would be as costly as a new line, she felt it would make good sense to proceed with the construction of a new aqueduct.

Ms. Cox also suggested that it was difficult for private citizens to provide reliable alternate figures, tables and calculations that would prove the City's studies wrong. She expressed concern that outside independent consultants had not been retained to evaluate the options.

Reiterating the point made by others, she expressed concerns about the effects of chlorine and their compounds as well as the impact of pesticides and herbicides on the water held in the reservoirs.

Donald Matheson, Rural Municipality of Springfield (Municipal Councilor)

Councilor Matheson advised that even though SCORE had some 30 registered members, he had talked to an additional 50 residents who oppose the Deacon Reservoir expansion, suggesting to him that a vocal minority was speaking for the majority. On behalf of the Council of the Rural Municipality of Springfield, he indicated formal opposition to the reservoir expansion on the basis that:

- good agricultural land would be taken out of production
- wildlife habitat for deer and waterfowl would be lost; and
- the aesthetics of the expanded facility would not be pleasing either for residents or visitors.

He further stated that in the opinion of Council, little had been done since 1965. Some sections of the aqueduct have walls that have deteriorated to two to three inches in thickness, and due to misaligned road crossings, damage had occurred to the arch panels. He suggested that with

the estimated cost of new cells and aqueduct repair, a new aqueduct was a very attractive alternative.

Responding to a question from the City on the past position of Council, Mr. Matheson read the resolution dated February 12,1991 in support of the project stating:

> *BE IT RESOLVED THAT said preliminary drawings* (of the proposed reservoir expansion)*be approved subject to submission of a proposed landscaping plan for approval by the Council of the Rural Municipality of Springfield.*

Councilor Matheson stated that the approval was provided on the basis that the development was a permitted land use, but that Council supported the position of SCORE, that reservoir expansion should not proceed. In response to a question from the Commission he stated that Council had not provided a subsequent resolution rescinding the earlier one.

Maureen Frolick, Winnipeg, Manitoba

Stating that the family farm was 1/2 mile east of the proposed cell #4 site, she objected to the Deacon expansion. It was her opinion that the existing Deacon cells were not functioning properly and that water was actually being degraded. She also expressed concern about the ease with which the water could be contaminated by vandals.

As a Winnipeg resident she stated no objection to water conservation and favored the development of a new aqueduct so that additional agricultural land would not be lost.

Susan Watson, R.M. of Springfield.

Ms. Watson stated that she and her family lived on a 13 acre parcel of land about 2 miles from the Deacon site. Since a second aqueduct is anticipated in the future, she believed that the new one should be put in place now rather the spending dollars on reservoir expansion. In the short term, the most critical repairs could be made to the existing aqueduct, with the City restricting water use until the new aqueduct was completed.

CLEAN ENVIRONMENT COMMISSION OBSERVATIONS

During the public hearing process, the following general observations were made by the Commission. These observations do not form part of the Commission's specific recommendations concerning the license application, however, they are identified as matters of interest and concern that the Commission believes warrant consideration.

- A lack of public confidence appears to exist in terms of the City's cost estimates for the various project alternatives, and of the water use projections. The Commission is of the opinion that open and honest public participation during project planning might serve to alleviate some of the mistrust held by the public.

- The discussion surrounding the City's water conservation target of reducing increased demand by only 5 percent suggested that a more aggressive water conservation program and higher percentage conservation target might have public acceptance. A highly successful water conservation program would seem to have many benefits for the City and its residents.

- The application of toxic chemicals for weed and pest control on nearby agricultural lands, and the possible problem of wind drift carrying these substances into the reservoir, was raised as a concern. The Commission believes that if chemicals used are those approved for the conditions, and if the application of chemicals is in accordance with the manufactures instructions, the risks associated with drift can be minimized.

- The Commission believes that the accumulation of algae sediments and of heavy metals, the possible re-suspension of these into the water, the use of copper sulfate, and sediment disposal will be ongoing issues that will warrant further investigation and action by the City of Winnipeg.

- The Commission agrees with concerns expressed regarding the need for a contingency plan in the event of an aqueduct failure.

- In terms of the ongoing dialogue between the residents of the Rural Municipality of Springfield and the City of Winnipeg, a "good neighbor" attitude seems to be lacking. The concern of the residents that the development of facilities to service and benefit one jurisdiction, at the expense of some other jurisdiction, reflects the problem. The Commission believes that steps could be taken to improve the relationship and the communication between the City and the residents of the Rural Municipality of Springfield.

CLEAN ENVIRONMENT COMMISSION RECOMMENDATIONS

The Clean Environment Commission recommends that Manitoba Environment issue a license to the City of Winnipeg, Waterworks, Waste and Disposal Department for the expansion of the Deacon Reservoir Facility located on 23-10-4 EPM and 24-10-4 EPM in the Rural Municipality of Springfield, which would include the following conditions:

(1) The cells shall be designed to retain the maximum possible treed buffer on the south side of cells #3 and #4. Changing the shape and the configuration of cell #3, possibly utilizing property along the floodway, is strongly recommended. The final cell configuration plan shall be submitted to Manitoba Environment for approval prior to the commencement of reservoir expansion.

(2) Test wells shall be installed and maintained to provide ongoing monitoring of ground water in the vicinity of the reservoirs. A site plan, detailing the location of all monitoring wells, shall be submitted to Manitoba Environment for approval prior to well installation and the commencement of reservoir expansion. Regular reports are to be provided to the Rural Municipality of Springfield.

(3) A monitoring program for private wells in the vicinity of the Deacon Reservoir facility should be implemented to allay local concerns respecting well water contamination associated with reservoir seepage and dewatering activities.

(4) Regular drainage inspections shall be scheduled to ensure that all drains in the vicinity of the reservoir are free from any debris that might cause local flooding, should dewatering of the cells become necessary.

(5) A Community Liaison Committee shall be established, with representation from the City of Winnipeg (Waterworks, Waste and Disposal Department), the Rural Municipality of Springfield, Manitoba Environment, and local residents to deal with the planning (including matters related to reservoir security) and subsequent operation of the reservoirs and the aqueduct.

(6) The landscape plan for the reservoir shall be developed in consultation with the Community Liaison Committee.

(7) In consultation with the Community Liaison Committee, attempts should be made to ensure that trees (of reasonable size) which are removed from the reservoir site during the expansion program are offered to local residents and the Municipality for replanting on private or community property.

(8) A waterfowl management plan for the Reservoir site should be developed in consultation with representatives of the Department of Natural Resources.

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Winnipeg's Proposed Deacon Reservoir Expansion, as presented by Dan McNaughton, Chief, Environmental Land Use Approvals, **Manitoba Environment**.

of the circulation of the Proposal to the Technical Advisory Committee (TAC), and copies of the responses received by Manitoba Environment to preliminary review of the Proposal. Submitted by Dan McNaughton, Chief, Environmental Land Use Approvals, **Manitoba Environment**.

6. Letter (copy), dated July 15, 1992 from Larry Strachan, P.Eng., Director, Environmental Approvals, Manitoba Environment, to J. E. Comeau, P.Eng., Waterworks, Waste and Disposal Dept., City of Winnipeg. Submitted by Dan McNaughton, Chief, Environmental Land Use Approvals, **Manitoba Environment**.

7. Documents, including *Draft Guidelines for the Preparation of an Environmental Impact Statement for the Proposed City of Winnipeg Deacon Reservoir Expansion Project*, the letter of transmittal forwarding the draft of the *Guidelines* for review, comments received on the *DraftGuidelines*, the letter of transmittal forwarding the *Final Guidelines* to the Technical Advisory Committee, and the letter of transmittal forwarding the *FinalGuidelines* to the City of Winnipeg. Submitted by Dan McNaughton, Chief, Environmental Land Use Approvals, **Manitoba Environment**.

8. Proposed Deacon Reservoir Expansion - Environmental Impact Assessment. TetrEs Consultants Inc, June, 1992. Submitted by Dan McNaughton, Chief, Environmental Land Use Approvals, **Manitoba Environment**.

9. Correspondence, including a copy of the letter of transmittal of the *Proposed Deacon Reservoir Expansion - Environmental Impact Assessment* to the Technical Advisory Committee (TAC) and the Public Registries, and copies of the formal comments received with regard to the document. Submitted by Dan McNaughton, Chief, Environmental Land Use Approvals, **Manitoba Environment**.

10. Letter (copy), dated August 20, 1992 from Larry Strachan, P.Eng., Director, Environmental Approvals, Manitoba Environment, to J. E. Comeau, P.Eng., Waterworks, Waste and Disposal Dept., City of Winnipeg. Submitted by Dan McNaughton, Chief, Environmental Land Use Approvals, **Manitoba Environment**.

11. Proposed Deacon Reservoir Expansion - Addendum to the Environmental Impact Assessment. TetrEs Consultants Inc., January, 1993. Submitted by Dan McNaughton, Chief, Environmental Land Use Approvals, **Manitoba Environment**.

12. Correspondence, including the letter of transmittal forwarding the *Addendum* to members of the Technical Advisory Committee (TAC) and the Public Registries, the comments received from the TAC members and members of the public on the contents of the *Addendum*. Submitted by Dan McNaughton, Chief, Environmental Land Use Approvals, **Manitoba Environment**.

13. (i) Letter (copy), dated February 11, 1993 from Larry Strachan, P.Eng., Director, Environmental Approvals, Manitoba Environment, to J. E. Comeau, P.Eng., Waterworks, Waste and Disposal Dept., City of Winnipeg. Submitted by Dan McNaughton, Chief, Environmental Land Use Approvals, **Manitoba Environment**. (ii) Letter (copy) dated February 11, 1993 from J. E. Comeau, P.Eng., Waterworks, Waste and Disposal Dept., City of Winnipeg, to Larry Strachan, P.Eng., Director, Environmental Approvals, Manitoba Environment with attachments. Submitted by Dan McNaughton, Chief, Environmental Land Use Approvals, **Manitoba Environment**.

14. Introductory Remarks: Clean Environment Commission Hearings - Deacon Reservoir Expansion, April 26, 1993. Submitted by Barry Mac Bride, P. Eng., Manager of Engineering, Waterworks, Waste and Disposal Dept., **City of Winnipeg**.

15. Presentation to the Clean Environment Commission - Proposed Deacon Reservoir Expansion. Submitted by **TetrEs Consultants Inc. and The City of Winnipeg**.

April 27, 1993.

16. Cost Comparison of Aqueduct Alternatives to City's Preferred Plan (Millions $). Submitted by **The City of Winnipeg.**

17. Deacon Taxes (graphical representation). Submitted by **The City of Winnipeg**.

18. Brief, "Reservoir Expansion at Deacon". Submitted by **Garth Kristiansen**.

19. Brief, "Submission to the Manitoba Clean Environment Commission - Subject: Deacon Reservoir Expansion". Submitted by **Tim Byers**.

20. Brief, untitled. Submitted by **Edwin Douglas**.

21. Brief, untitled. Submitted by **Lois Edie**.

22. Documents/Articles (various). Submitted by **Kenneth Emberley**.

April 28, 1993.

23. Brief, untitled. Submitted by **Donald Matheson**, Councillor, Rural Municipality of Springfield.

24. Resolution (No. 91-77) The Rural Municipality of Springfield, February 12, 1991. Submitted by **The City of Winnipeg**.

25. Brief, "Submission to the Manitoba Clean Environment Commission Hearings on Proposed Deacon Reservoir Expansion". Submitted by **Maureen Frolick**.

26. Brief, untitled. Submitted by **Suzanne Watson**.

27. Closing Remarks to The Clean Environment Commission Hearing on The City of Winnipeg's Proposed Deacon Reservoir Expansion. Submitted by Dan McNaughton, Chief, Environmental Land Use Approvals, **Manitoba Environment.**