RIVER QUALITY AND COMBINED SEWER OVERFLOWS

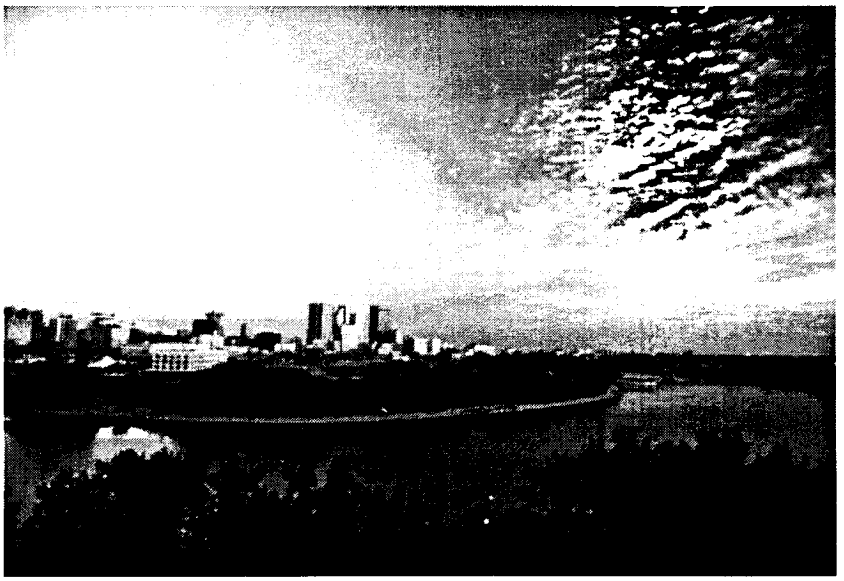
City of Winnipeg
Water and Waste
Department

UPDATE
January, 1999

Since 1996, the City has published Update Brochures providing information on Winnipeg sewer systems, what a combined sewer overflow (CSO) is, and the City's study, which is considering the impact of CSOs on river water quality and the costs and benefits of CSO control options for Winnipeg. This study is known as the **Combined Sewer Overflow Management Study**.

In Winnipeg, the Red and Assiniboine Rivers are considered important natural amenities. The rivers have played an integral part in our history and heritage and today enhance our downtown area and provide an environment for urban wildlife and urban recreation.

The City has made a longstanding commitment to the rivers. Improvements in the way the City collects and treats wastewater started back in the 1930s. At that time, the provincial government responded to public concerns regarding the disposal of untreated sewage into our rivers by establishing the Greater Winnipeg Sanitary District. The District soon built a sewage treatment plant to remove a high portion of solid materials prior to discharging the wastewater to the rivers. The City has progressively expanded on this wastewater treatment program to the stage where it currently has three sewage treatment plants, known as Water Pollution Control Centres, which are operated by the City of Winnipeg Water and Waste Department. The Centres provide state-of-the-art secondary treatment to all sewage discharged during dry weather.



The facilities are valued at approximately $500 million. In total, it costs the City utility in excess of $70 million/year to operate and maintain its sewage collection and treatment systems.

Today, about 99% of our sewage is treated prior to discharging into the rivers. The remaining estimated 1% of our sewage enters the rivers untreated during wet weather events (i.e., snowmelt and/or rainfall) in the portion of the City serviced by combined sewers.

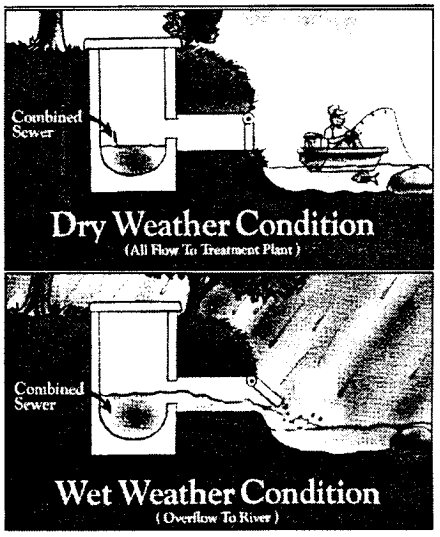
In 1992, the provincial government recommended that the City evaluate the impacts of combined sewer discharges or overflows on river water quality. In response to this request, and recognizing the need to protect the rivers adequately, the City

has been studying the effects of Combined Sewer Overflows (CSOs) on river water quality.

WHAT IS A CSO?

A combined sewer overflow (CSO) is a discharge of a mixture of untreated sewage and storm water runoff into the rivers without any prior treatment.

These overflows, which take place only during rainfall (and/or snowmelt) occur only in combined sewer systems, in older areas of the City, that carry both sanitary wastewater and stormwater runoff in the same pipe.



During dry weather, all the wastewater in the combined sewer systems is intercepted and carried to the treatment plants. During wet weather the combined volume of wastewater and stormwater runoff is often greater than the capacity of the system. The excess flow is discharged directly to the river at various overflow points in the sewer system.

Today sewer construction involves the installation of two separate sewers, one to carry sewage to treatment plants and one to carry runoff from rainfall and snowmelt to retention ponds or directly to the rivers.

Combined sewers service 40% of Winnipeg and there are over 70 overflow points located along the Red and Assiniboine rivers.

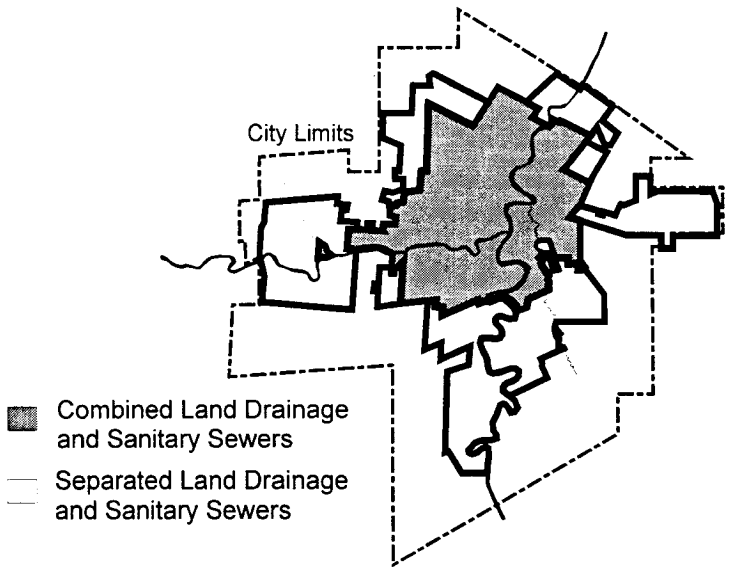
CSOs contribute to the pollution of our rivers. The diluted untreated sewage contains micro-organisms from human and animal waste, and objectionable floating debris such as feminine hygiene products, syringes and condoms. Some of the micro-organisms in the overflows may be pathogens (disease causing) and can pose a health risk to those who use the river for recreational activities that involve immersion in the water (e.g., water skiing).

WATER QUALITY OBJECTIVES AND ENVIRONMENTAL REVIEW

The provincial government has developed river water quality objectives to protect our health when participating in various river recreational activities.

Occasionally in the summer, river water samples are taken and tests are conducted to determine the quantity of fecal coliform bacteria present. These bacteria are used as an indicator of whether or not disease-causing organisms are present. If the measured quantity of these "indicator organisms" is too high, the river water is not considered suitable for some types of recreational use.

The quantity of fecal coliform bacteria upstream of Winnipeg usually meets the recreation objective, however, within



Winnipeg the objectives are met only 50-85% of the time.

The City has commenced a program of disinfection of sewage treatment plant effluent which will increase compliance with the objectives in dry weather.

In wet weather, CSOs often increase the quantity of fecal coliforms above the objective. The increased quantity of micro-organisms entering the water suggests that certain types of recreational use on our rivers may not be appropriate at all times.

WHAT'S BEING CONSIDERED FOR CSO CONTROL?

The Combined Sewer Overflow Management Study has been split into 4 phases as follows:

Phase 1
Defining the effects of CSOs on river quality

Phase 2
Evaluating the options for controlling wet weather flow

Phase 3
Evaluating costs and benefits of potential plans

Phase 4
Developing alternative control implementation plans for cleaner rivers

When completed, the study will present a number of alternative CSO control plans outlining their costs and control performance (benefits) for review and consideration by City Council.

The brochures published to date provide information on the study progress, including details regarding the effects of CSOs on river quality (Phase 1), and the feasibility, costs and benefits of the various CSO control options studied (Phase 2).

The control options studied range from optimizing the use of the existing infrastructure, underground storage tanks or tunnels, or separation of the combined sewers.

The study team has just completed Phase 3 of the study and potential methods for controlling combined sewer overflows have been developed. Earlier brochures have discussed the range of options available. The cost of these control alternatives, for area-wide application, vary from about $100 million to over $1,500 million.

CSO CONTROL IS A PUBLIC POLICY ISSUE

The focus of the City's communications with the public has been two-fold:

- to raise public awareness regarding CSOs;
- to utilize public comment to help define the level of CSO control that is cost-effective, practical and provides acceptable environmental stewardship.

In Phase 1 and Phase 2 of the Study, the emphasis of the communication program was to provide an awareness of the existing CSO condition.

The Study Team has participated in numerous public events, and given a number of presentations to various interest groups that utilize the rivers for recreational activities and various environmental groups that are concerned about river water quality.

The Study Team also completed a number of feature articles in local publications.

The emphasis of the program changed in Phase 3. The Study Team has been actively requesting feedback and opinions on the issues from the public.

Currently, the study is at a key stage. Additional public comment is being requested to help define a recommended CSO Control Plan for the City.

INPUT FROM WINNIPEG RESIDENTS IS NEEDED

Just what constitutes an appropriate level of CSO control depends on community consensus (as well as regulatory action). Many citizens who attended public events over the past 4 years have shown interest in the study and have subsequently been contacted by the Study Team and given additional information about the Study and its progress.

Response by the public to the issues that must be addressed before a preferred CSO Control Plan can be developed is welcomed. These include:

- Personal issues – what recreational activities are appropriate on the rivers and how would CSO Control protect or enhance these uses;
- Technical issues – choosing the control options which are reliable, proven techniques and are cost effective;
- Financial issues – what is affordable and willingness to pay.

STUDY SCHEDULE

The Study was initiated in 1994 and originally expected to be complete by now. Additional evaluation of the various control options and a shift in City priorities during the 1997 Flood crisis has resulted in the need for an extension of the Study. It is now anticipated that the Study will be complete by December 31, 1999.

WHO WILL MAKE THE FINAL DECISION

Upon completion of the Study, City councillors and administrators will review the study findings and alternative plans and develop a City position on the study results. The City's position and the Study findings will be submitted to the Clean Environment Commission.

The Clean Environment Commission will, in turn, hold public hearings and review the findings. The Commission will submit its recommendations to the Minister of the Environment, who will subsequently direct the City on any required action and implementation of the CSO Control Plan.

PLEASE GET INVOLVED

If you would like to receive any of the brochures and reports available, give us a call. Your participation will ensure public involvement in the decision-making process.

Please get involved by calling (204) 986-3333 or mail to the address provided below.

CITY OF WINNIPEG
CSO MANAGEMENT STUDY
WATER & WASTE DEPT.
1500 PLESSIS ROAD
WINNIPEG, MB
R2C 5G6