## International Joint Commission
## Twelfth Biennial Report on Great Lakes Water Quality

# PHYSICAL INTEGRITY: THE IMPACT OF URBAN AREAS ON GREAT LAKES WATER QUALITY

**September 2004**

### Overview

In the **Great Lakes Water Quality Agreement**, the governments of the United States and Canada agreed "to restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem." Under the terms of the Agreement, the two federal governments agreed "to make a maximum effort to develop programs, practices and technology necessary for a better understanding of the Great Lakes Basin Ecosystem and to eliminate or reduce to the maximum extent practicable the discharge of pollutants into the Great Lakes System."

The **International Joint Commission** (IJC) is directed to make a full assessment of the progress toward achieving the objectives of the Agreement every two years. The **Twelfth Biennial Report on Great Lakes Water Quality** is the Commission's most recent assessment of progress.

### The Twelfth Biennial Report on Great Lakes Water Quality

In September 2004, the International Joint Commission released its *Twelfth Biennial Report on Great Lakes Water Quality*. The purpose of the report is to assess the the progress being made under the Agreement and highlighting issues we conclude need timely and focused attention.

The Commission does not report on all subjects of importance to the Great Lakes, but analyzes and makes eight specific recommendations regarding the Agreement's goals of physical, biological and chemical integrity leading to an ecosystem approach to ecological integrity.

**This information sheet is one of six that highlight important issues discussed in the report.**

## IMPACT OF URBAN AREAS ON GREAT LAKES WATER QUALITY

The need to plan and manage urban growth and mitigate its impact on the natural environment, particularly on urban watersheds and nearshore areas, is one of the major challenges in restoring and maintaining the physical integrity of the waters of the Great Lakes basin ecosystem.

**The fundamental question to be addressed by governments is whether the sum of their policies, programs and management efforts are sufficient to protect water quality from the impact of continued expansion of the major urban areas in the Great Lakes basin**.

This is an important question that is best answered binationally at the lake basin level, with participants drawn from all three levels of government, municipal, state/ provincial, and federal.

Many urban and suburban watersheds – including nearshore areas of major Great Lake cities – are still not safe for swimming, do not have fish that are completely safe to eat, or do not support diverse fish and wildlife communities. The increase in hardened surfaces from roads, rooftops and parking areas means pollutants enter surface waters without any treatment.

### Principal water pollution sources from urban areas include:

- treated effluents discharged from sewage treatment plants and untreated effluents that bypass sewage treatment plants;
- treated and untreated storm water runoff;
- combined sewer overflows that carry a mixture of untreated sewage and storm water;
- air emissions from incidental and accidental releases and vehicles; and
- groundwater discharges.

### The Impact of Urban Development on Ground Water

Within the Great Lakes basin, a significant portion of ground water discharge occurs directly to the lakes or their tributaries. Most ground water contaminants are closely linked to urban land use practices: excessive pesticide and fertilizer use; leaking underground storage tanks; malfunctioning private septic systems; and spills or leachate from industrial sites, uncapped wells and road salts. Reduced flows exacerbate the impact of urban pollutants, causing degradation in overall water quality.

## The Impact of Climate Change on Ground Water and Surface Water Quality

The impact on urban areas, with their extensive hardened surfaces and inadequate storm water infrastructure to manage urban runoff, could be significant if total annual precipitation and the intensity of specific storm events increase as predicted. Under climate change scenarios, extreme weather events can increase the quantity of water bypassing water treatment facilities during storms. Under such scenarios, the potential for more polluted runoff to bypass treatment is of real concern.

## Conclusions

In the United States and Canada, land-use decisions are generally regarded as the exclusive domain of local government, yet local decisions cannot simply be viewed in isolation of other responsibilities at the state/ provincial, and federal levels. Governments need to improve their institutional capacity to coordinate and integrate roles, responsibilities and decisions between and among all levels.

## Recommendation

The Parties take binational actions to address the impact of urban land use on Great Lakes water quality by:

- evaluating under what circumstances best management practices are effective in managing urban runoff;
- ensuring that information on urban best management practices reaches local authorities and implementers; and
- assessing the cumulative effects of management actions to minimize the impacts of urbanization on the Great Lakes, using the Lake Erie basin as an example.

## Scheduled Review of the Great Lakes Water Quality Agreement

This report triggers the much anticipated review of the historic Great Lakes Water Quality Agreement. The current Agreement was signed in 1978 and was amended in 1987. It has not been updated or changed in more than 17 years. During this time, technology and our scientific knowledge and understanding have grown immensely. We need to keep pace with what we know and review the Agreement with an eye toward a sustainable future.

## The International Joint Commission (IJC)

IJC was established through the 1909 Boundary Waters Treaty of the United States and Canada. The Treaty recognizes that each country may be affected by the others actions in the lake and river systems along their common border; its purpose is to prevent and resolve disputes concerning these boundary waters.

## For More Information

Additional information regarding IJC's *Twelfth Biennial Report on Great Lakes Water Quality* can be obtained by contacting an IJC office:

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**Information about the IJC and this report can be obtained from the IJC web page at ww.ijc.org.**