homes and industries. There are highly polluted zones around the outfall pipes of these plants.

In heavy rainstorms, combined sewers overflow and send a mixture of stormwater and untreated sewage through 35 outfalls into the Don and Humber rivers and, through another 34 outfalls, directly into Lake Ontario.

In an urban environment, stormwater is a mixture of rain and various pollutants from streets, roofs, parks, gardens, and parking lots. Urban stormwater carries a significant load of bacteria, metals, and organic chemicals, and is funnelled through some 2,250 outfalls into the streams, rivers, and waterfront of the Metro RAP area.

Other sources of pollution include deposition from the air; groundwater contaminated from industrial activities; agriculture or leaking landfill sites; historic contaminants in bottom sediment; and sources "upstream" in the Great Lakes, including the Niagara River.

Problems with the RAP Process

By necessity, remedial action planning is an arduous, time-consuming task. There is no cookbook in which to find the recipe for a Remedial Action Plan, complete with ingredients and the methods to be employed. Each RAP deals with a unique set of problems and is being developed differently. Some, it would appear, are having more success than others. Observers of the Metro Toronto RAP process have identified a number of problems with the RAP process as it has been undertaken in Toronto.

One criticism often levelled at the Metro Toronto RAP is the amount of time being taken to develop it: the original target date set by the IJC to complete RAPs was 1987. This date was overly optimistic, and did not reflect the complexity of the task at hand. Work did not start on the Metro Toronto RAP until 1986, and almost nothing but research was carried out for the first two years. Since that time, efforts have concentrated on developing goals and principles to guide the process, on defining the problems, and on identifying potential remedial options.

Five years after the RAP was initiated, and four years after it was originally to be finished, selection of remedial options has yet to begin. The current target date for the draft Stage 2 document is late 1992.

Remedial Action Plans are developed in stages: Stage 1 defines the problem; Stage 2 selects remedial options; and they are implemented in Stage 3. The scope of the problems facing the Metro waterfront, and the sources of those problems, were detailed in the draft Stage 1 RAP document, *Environmental Conditions and Problem Definition*, released in September 1988. The recent IJC review of this report found that the problem definition and description were inadequate, and that the document focused on conventional pollutants and did not satisfactorily describe the sources and causes of ecosystem impairment due to persistent toxic substances.

In April 1990, the RAP Team released the *Draft Discussion Paper on Remedial Options.* At the Royal Commission's second set of hearings on the environment, this document was criticized as unintelligible to the average reader, and not useful for the process of selecting remedial options. In its 1990 report, *Watershed*, the Royal Commission recommended that the remedial options paper be

rewritten to make it more understandable, that it be reorganized on a watershed basis, and that it clearly link the RAP goals, the impaired uses, and the remedial options. Environment Canada and the Ministry of the Environment indicated to the IJC in September 1991 that they would not be rewriting the *Draft Discussion Paper on Remedial Actions*, but would be updating the remedial options in the Stage 2 document.

If it is to be implemented successfully, a Remedial Action Plan must have broad public support. In the Hamilton Harbour RAP, for example, continuous efforts have been made to inform the general public, to get people excited and involved in the RAP.

This has not been the case in the Metro Toronto RAP, where public outreach has generally been limited to contact with Public Advisory Committee members and representatives of their sectors, with a few newsletters being sent to a wider audience. In general, the Metro Toronto public does not know that a RAP is being developed and has not been involved in goal-setting or debates over remedial options. An outreach program scheduled for the winter of 1991/92 is intended to begin this process by widely distributing the Strategies document, which intended to raise the public profile of the RAP, outline the problems, and indicate the general direction in which the RAP is proceeding.

Developing a Remedial Action Plan that can actually be implemented is possible only if all stakeholders are involved. We have already commented on the lack of a strategy to involve the general public, but it would also appear that some of the municipalities and regions that should be part of the process are not involved in any meaningful way. For example, traced to its sources, the Humber River's main branch starts in Mono Township in Dufferin County, while the east branch originates in Richmond Hill in the Region of York. But there is no evidence that these municipalities and regions pay heed to the RAP in their land-use planning, budget processes or public works planning. Although the municipal sector is represented on the Public Advisory Committee, and representatives of some "downstream" municipalities sit on the RAP Team, it does not appear that all five regional and 17 municipal governments are true partners in developing the RAP.

This lack of involvement by all stakeholders is one aspect of a larger, more troubling problem: the lack of an ecosystem approach. While, from the start, the RAP Team's intentions have been to use an ecosystem approach, in general it has failed to do so thus far. Problems in the draft Stage 1 report include: lack of integration and synthesis of information; concentration on the waterfront and lack of attention to the problems affecting the watersheds; little information about wildlife habitats, land use adjacent to the waterfront and watersheds, and contaminants in aquatic birds. Most important, the information collected to date, and the potential remedial options, are *not* organized on a watershed basis. Instead, the Metro RAP area is treated as a 2,000-square-kilometre (772-square-mile) monolithic block.

As noted, the IJC has said that lack of resources is a problem endemic to RAPs throughout the basin. The Royal Commission has twice commented on the limited resources for the Metro RAP, recommending increased funding, both to the Public Advisory Committee (in *Watershed*) and the overall program (in *Pathways*). In the past

Rouge Valley at Lake Ontario

two years, funding levels have increased to a limited extent.

One of the most serious criticisms levelled at the Metro Toronto RAP is that its development has had the effect of delaying beneficial projects that would otherwise have proceeded in the wake of TAWMS and other studies. Since the RAP started in 1986, some projects have indeed proceeded; for example, a detention tank in Toronto's Eastern Beaches has been built to reduce beach closures by detaining stormwater and combined sewer overflows during rainstorms. Repairs to sewers have been carried out, and work has been done to trace and disconnect illegal sewer hook-ups. Beaches have been cleaned and physically improved. Unfortunately, there is no way to judge whether or not remedial actions would have proceeded more quickly in the absence of the RAP planning process. In part this is because, while municipalities are spending money on items that can be considered "remedial", in some cases the costs of remedial actions are buried in those of routine maintenance and operations.

The potential for delay is a problem in any long-term planning exercise — the need to balance action against the need to develop a strategic, unified, and comprehensive plan. Recognizing this, one of the principles adopted in the Metro RAP is that parties should proceed with remedial actions that are "consistent with RAP goals and principles" while the RAP itself is being developed. This echoes the "two-track" recommendation of the IJC (1988) *Revised Great Lakes Water Quality Agreement of 1978 as Amended by Protocol Signed November 18, 1987*, which encourages acceleration of existing programs while RAPs are under development.

One burden RAPs everywhere (including Toronto) have had to bear is that of too-great expectations. For many reasons — lack of knowledge, bureaucratic buck-passing — RAPs have been touted as the answer to any and all water quality problems in areas such as Toronto. This is simply not true. The Metro Toronto Remedial Action Plan is a site-specific clean-up plan; as such, it deals best with problems originating within its boundaries. Through the RAP, programs can be developed to do such things as keep the beaches open, preserve and rehabilitate local wildlife habitat, manage stormwater better, improve sewage treatment plants, and, to some degree, reduce sewer dumping of chemicals.

But there are problems that require a basin-wide approach, especially when sources lie outside the Metro RAP area. It will take basin-wide efforts to ban persistent chemicals, set multi-media standards for chemical exposure for humans and wildlife, and control deposition of toxic chemicals from air. They will also be required to reduce pollution from "upstream" in the Great Lakes, develop standards for sediment quality, technologies to treat sediments, and prosecute those not in compliance with environmental laws and regulations.

Grassroots Action

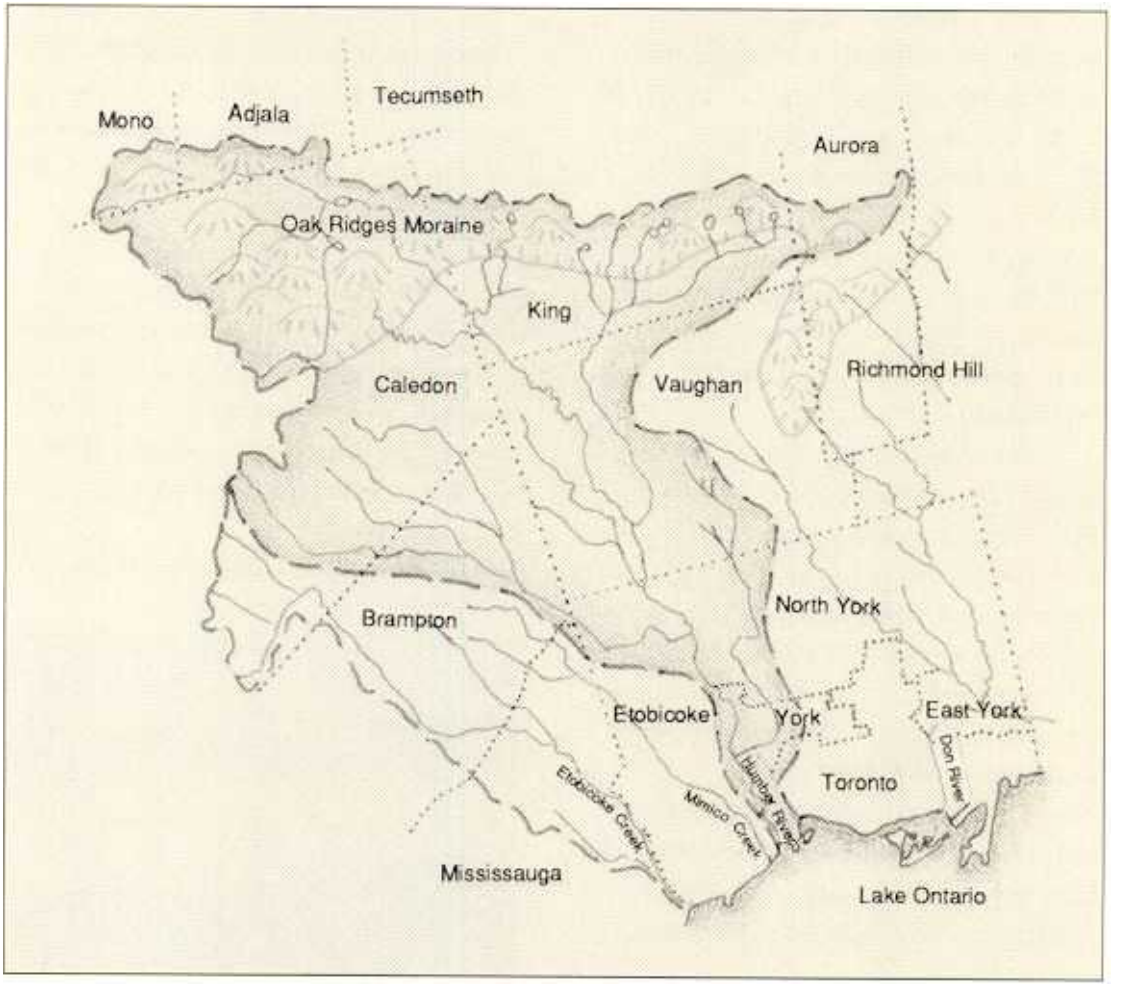
In recent years, a number of grassroots initiatives have emerged, aimed at cleaning up waters in the Metro RAP area. These come from groups that include the Task Force to Bring Back the Don, the Black Creek Project, Save the Rouge Valley System, and Action to Restore a Clean Humber (ARCH). All sprang up to fill what was perceived as a void in government action; the work of ARCH is a good example.

ARCH, formed in 1989, is the newest of these citizens' groups; it is a non-governmental body made up of experts from various disciplines, and of others who have a stake in the Humber. Among its current projects: monitoring development that might affect the watershed and developing a computerized database to assist in clean-up actions. The organization sees its overall purpose as being to resolve the current jurisdictional logjam and to define an effective mechanism for implementing water quality programs on the Humber. To meet these goals, ARCH acts as a catalyst with government and the private sector, urging that clean-up action begin.

ARCH believes that we know how to clean up the Humber River, and that the impediments to progress are not technical or scientific, but institutional. Therefore, ARCH proposes to build on the substantial work already done in the Humber watershed, including the *Humber River Water Quality Management Plan*, completed in 1986 under TAWMS. This plan contains a host of recommendations for restoring water quality in the Humber River watershed, including measures to eliminate combined sewer overflows, reduce flooding, address sewer dumping from homes and industries, and control erosion, among others. According to ARCH, only a few recommendations of minor consequence from the Humber River Water Quality Management Plan have been implemented by Metro Toronto; most remain as "potential remedial options" in the list generated in the RAP process.

In June 1991, ARCH submitted an unsolicited proposal to the Metro Toronto RAP Team for funding to develop a

Map 3.3 Humber River watershed



watershed-based mechanism for implementation of the RAP. The idea was to use the Humber River as a prototype for implementation based on the "watershed partnerships", as articulated by the Royal Commission in *Watershed*. This could then be used as a model for co-ordinated action in the other watersheds. ARCH argued that the Humber River was a logical choice because it has the largest watershed, and affects the greatest number of municipalities. By early December 1991, Environment Canada, the Ontario Ministry of the Environment, and Metro Toronto had agreed in principle to the ARCH proposal, and funding for the project was imminent. While the initiative is laudable, it is unfortunate that ARCH is having to develop a prototype for implementation in the advance of the actual plan — the RAP.

From the earliest days of the RAPs, those involved in developing the plans have been haunted by the question of how to implement them. ARCH is focusing on two of the keys needed to unlock the implementation puzzle: involvement of all key players and use of a watershed approach. The group comprises people who, first and

foremost, like their river, feel some sense of stewardship for it, and want to see it restored. Founding members living near the mouth of the river established connections with upstream dwellers and found that people in York and Peel regions and Dufferin County like their river, too! But the members of ARCH realized that merely involving citizens was not enough; all the players had to be at the table — every level of government, and the private sector as well. Therefore, they proposed a study to determine the best way of doing just that.

The ecosystem approach requires that activities be managed based on "ecological units". What is an appropriate ecological unit? For ARCH's members, logic suggested a unit that was manageable and understandable — the watershed of a river. Watershed planning is firmly grounded in a scale people can comprehend, where they can feel a sense of stewardship.

There is no doubt that support for such a strategy extends beyond the Humber River watershed. Speaking of Watershed Partnerships, the Commission's *Watershed* report said:

> Public support for this collaborative approach is very high. Indeed it is clear that people are prepared to back a common vision that takes into account the long-term health and well-being of the waterfront and its river valleys. The hundreds of deputants before the Commission bore witness to that fact.
>
> They may be well ahead of their governments. Clearly, they want their various levels of government to build on this consensus and move toward restoring the integrity of the waterfront and the ecosystem that sustains and determines it.

Action on the Great Lakes

The health of the Greater Toronto waterfront, as measured by the quality of water, is inextricably tied to the health of the Great Lakes Basin ecosystem. If we are going to clean up our waterfront, we must act regionally (perhaps even globally) as well as locally. This review of the state of the Great Lakes has touched on many of the complex problems facing us, and the institutional stumbling blocks that have so far impeded progress on clean-up. The public pressure for action on remediation grows and grows. But where do we go from here?

Waves breaking, Newcastle

The Royal Commission believes that there is a clear need to clean up the waters along the Greater Toronto waterfront and its watersheds. The following eight major