Cutting our flood losses

Cutting our flood losses

Tumbled ruins of a waterfront home. . . . .

. . . . attest the destructive power of floods.

"River, stay 'way from my door," an old song pleads. But too many doors are much too close to the river — and the river won't stay away.

Predictably, the result is damage and disruption due to floods, sometimes with the loss of human life.

Governments at all levels are working together to reduce flood losses, under a program announced by the federal government in 1975. This is the national Flood Damage Reduction Program, aimed at limiting damage rather than providing compensation or other expensive remedies.

Floods cost Canadians many millions of dollars every year. They have brought disaster to our largest cities, including Montreal, Toronto, Winnipeg and Vancouver. In the Toronto area, in the wake of a tropical storm, 81 people died in floods that washed away a whole city street.

Governments have spent millions of dollars on the construction and maintenance of dikes, dams

and other flood control projects. Millions more have been paid for flood relief and rehabilitation, by governments and other agencies — $60 million in 1974 alone. And the potential cost of flood damage increases year by year because of continued building in flood prone areas.

The national Flood Damage Reduction Program is designed to identify such areas and discourage further development there that might be damaged by flood waters. Only by avoiding those areas, the program recognizes, can we be sure of escaping the ravages of floods.

FLOODS ARE NATURAL

Floods are not mysterious freak happenings, but entirely natural events. They rarely strike without some advance warning, and they usually occur in places where we might reasonably expect flooding — areas known as flood plains.

A flood plain is the relatively flat land beside a lake or river, naturally liable to flooding if any overflow occurs. It is really part of the water's living space, which it uses periodically to stretch

and spread out. Floods are most destructive in that part of the flood plain known as the floodway, where the water flows fastest.

Spring floods are generally caused by rapid snowmelt, heavy rainfall or both combined. They are often aggravated by water backing up behind ice jams or other obstructions, such as bridge abutments. At other times, devastating flash floods may be caused by heavy rains accompanying thunderstorms or hurricanes — especially on small streams.

Flash floods give less warning than the usual spring flood, and can be just as damaging and disastrous. Again, however, the most vulnerable areas are flood plains.

Like other natural events, floods seem to occur in long-term cycles. Consequently, by studying streamflow records over many years, we can estimate the probability of a dangerously high flow. This can be expressed either as a percentage or as a recurrence interval. For example, we may say a flood has a one-per-cent chance of occurring in any year, or we may call it a one-in-a-hundred-year flood.

FLOOD PLAIN
FLOODWAY
FLOOD LEVEL
FLOOD-PROOFED STRUCTURE
NORMAL RIVER CHANNEL
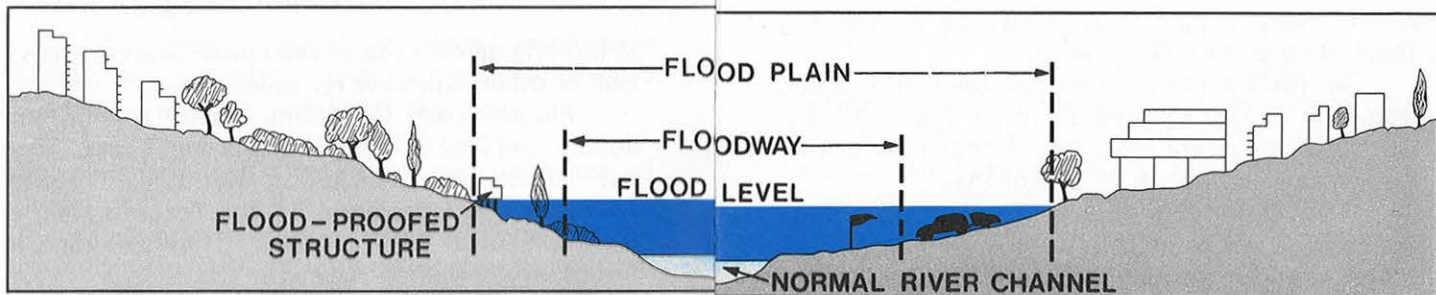
The flood plain, the flat land beside the water. . . . .

. . . . is really part of the river's living space.

Allan R. Leishman
There is no safety in numbers for houses built on flood plains.

WILL WE EVER LEARN?

Unfortunately, past calamities are easily forgotten — especially if there has been no serious flooding for many years. And flood plains often are deceptively attractive building sites. As a result, many people imprudently go on building there, despite the risk involved.

In 1948 a major flood damaged some 2,000 homes in British Columbia's lower Fraser Valley. But today there are more homes than ever in that same area — more than 26,000 of them.

This continuing encroachment on our flood plains is a problem too serious to ignore. The longer it continues and the further it expands, the more disastrous and costly any future flood becomes. And here we have to recognize that we
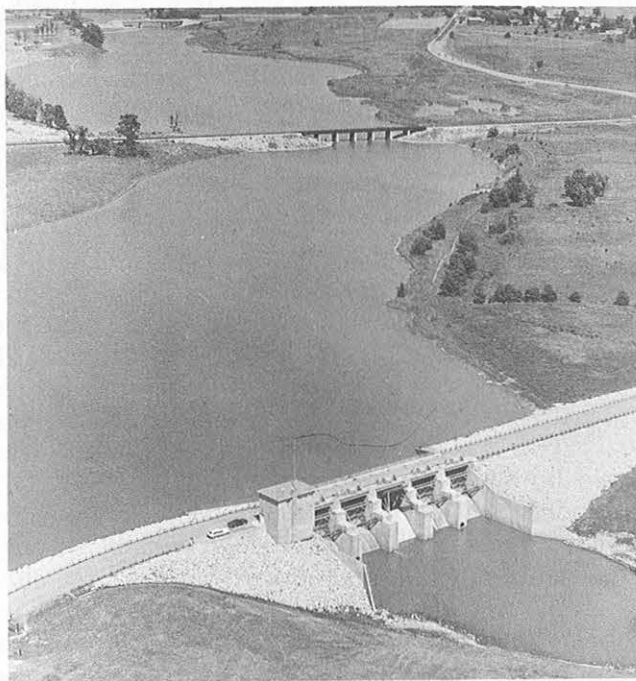
Metro Toronto and Region Conservation Authority
Control dams provide protection for developed flood plains.

can never eliminate floods entirely.

Considerable protection is provided by flood control dams, storage reservoirs, permanent dikes, channel improvements and other engineering works. An example is the Winnipeg Floodway, built at a cost of $60 million. In a single year, 1974, this prevented an estimated $200 million in flood damages.

Projects of this kind are enormously expensive both to build and to maintain — and they are no sure guarantee against disaster. Dikes and dams

can be overtopped and channel capacities can be exceeded. Moreover, elaborate flood defences can inspire a false sense of security, thereby encouraging further development in flood prone areas.

EVERYBODY PAYS

Floods strike hardest at people living in those areas. But the rest of us also pay a significant part of the cost — including the cost of building and maintaining flood control works. Over the past 20 years, the federal and provincial governments have spent close to $200 million for this purpose.

This is a sizeable expenditure of public funds, paid by all taxpayers, for the benefit of the small proportion living in the flood plains. So are flood relief payments made under the federal Disaster Assistance Program and various provincial programs.

When a flood causes damages costing more dollars than the number of people in the province, the federal government will — if the province requests it — share the cost of assistance payments on a graduated scale. In 1974, the Government of Canada paid out more than $30 million under this cost-sharing arrangement.

Obviously, though, expensive flood control projects and disaster assistance programs are not the answer to Canada's flood problems. What we urgently need is a more realistic and more equitable approach — one that goes to the root of the trouble. Such an approach is the national Flood Damage Reduction Program.

Briefly, the purpose of this program is to help people keep out of trouble. This is much more effective, and very much cheaper, than trying to help them after they find themselves faced with a serious problem.

HOW THE PROGRAM WORKS

The national Flood Damage Reduction Program provides for joint action by all levels of government to assure the wiser use of flood prone land. It takes effect through the signing of agreements between a province and the Government of Canada.

The two governments sign a general agreement in which they undertake to map and publicize flood risk areas. They also sign a flood risk mapping agreement, listing the areas to be mapped and setting out other mapping specifications.

Flood risk maps are the key to the whole program. Besides normal water surfaces and other geographical features, they show the extent of past floods and areas liable to flooding. People are thus enabled to avoid those areas when planning new construction.

Within those designated flood risk areas, the governments agree not to finance or engage in any further projects liable to flood damage. They will also withhold flood relief payments for damage to anything constructed there in future, after the site is designated as a flood risk area.

At the same time, they will encourage suitable land use and appropriate zoning to restrict development in those areas. And here, of course, local governments have a most important role to play.

Suitable land use in flood risk areas might include some types of agriculture, gardening, recreation, public parking or use as wildlife habitat. Outside the floodway, other developments might
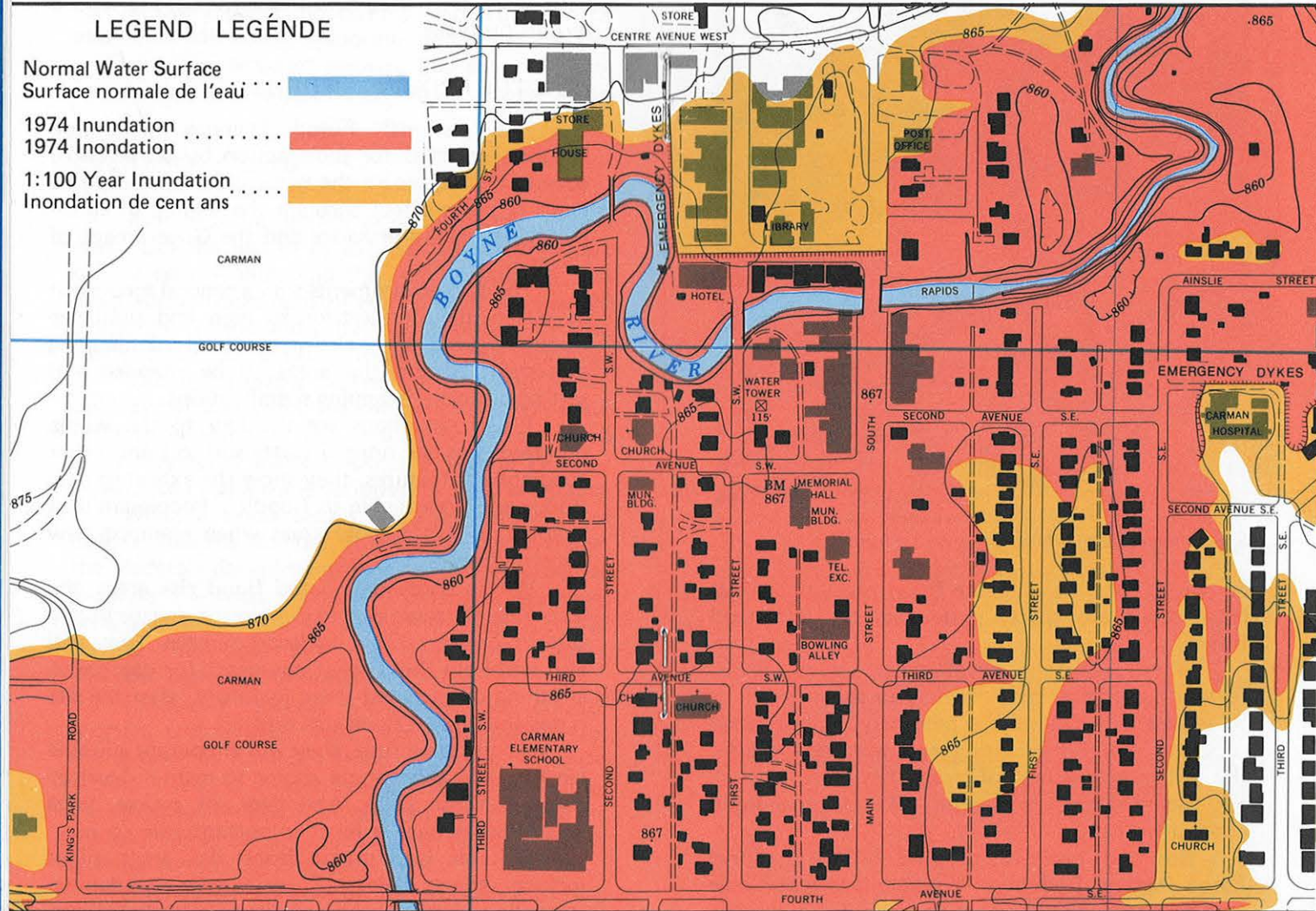
LEGEND   LEGÉNDE

Normal Water Surface
Surface normale de l'eau ····

1974 Inundation
1974 Inondation ········

1:100 Year Inundation
Inondation de cent ans ·····

Part of a typical flood risk map · *the key to the whole program.*

Northern Forest Research Centre
Snow surveys help in forecasting spring floods.

be permitted with adequate flood proofing — that is, if they are specially designed to withstand floods.

Where existing development warrants it, further agreements may provide for other measures to reduce flood damage. These may include flood proofing, flood forecasting and warning systems, the public acquisition of properties or easements, and the construction of dams, dikes or other flood control works.

But the essential purpose of the national Flood Damage Reduction Program is to discourage any new development that endangers life or property.

SOME QUESTIONS ANSWERED

Q. How will I know if my property is in a designated flood risk area?
A. A public information program will keep you informed about the progress of the flood risk mapping program.

Q. What happens when an area is "designated"?
A. Policies agreed to by the federal and provincial governments then come into effect. For example, neither government will build structures subject to flood damage in that area; and government agencies such as Central Mortgage and Housing and the Department of Regional Economic Expansion will no longer help finance new developments there. Meanwhile, disaster assistance programs will no longer cover losses due to the flooding of new developments in the area.

Q. If my house was already built when the area was designated, does this mean I will be ineligible for government disaster assistance?
A. No. You may still be eligible for such aid, provided all other requirements under these assistance programs are met. You can obtain further details from the responsible provincial government agency in your province.

The Flood Damage Reduction Program is intended to discourage new development in flood risk areas, not to interfere with existing development.

Q. Suppose I build a new structure in a designated flood risk area, which therefore would not be covered by flood disaster assistance. Would I also

be refused assistance if a tornado or some other disaster occurred?

A. Not necessarily. Although disaster assistance payments are not made automatically, you still might qualify for help if you suffered loss from some disaster other than a flood.

Q. Can I buy flood insurance?

A. Probably not. But check with your local insurance agent.

Q. What about farm crops lost through flooding?

A. You probably can get help if you suffer losses of this kind. The federal Crop Insurance Act of 1959 covers losses to crops from practically all causes, including floods. Under this legislation the federal government matches provincial expenditures to assist farmers who suffer crop damage. Some provinces also have crop damage programs which could cover flood losses.

Q. What can I do myself to reduce flood damage?

A. There are several flood proofing techniques you can apply. These include permanently closing unused doors and windows, anchoring or raising buildings and erecting temporary barriers or flood shields during a flood. You can also move your belongings to higher ground or to the upper floors of your building whenever a flood warning is issued.

Any structural changes should meet technical standards and conform to local zoning and building codes.

Allan R. Leishman

Often following the flood plains. . . . .

D.R.E.E.

. . . . *transportation routes may be severed.*

Q. Can I build an addition to my house in a designated flood risk area?

A. Possibly, if local zoning bylaws and building regulations allow it. In some places these have been amended to prohibit the building of any structure vulnerable to floods.

Remember, too, that you won't be able to get a loan from Central Mortgage and Housing to build your addition. And you won't be eligible for disaster assistance to cover any flood damage to it.

Q. Why can't I take my chances and do as I please with my own flood plain property?

A. What you do with you property may adversely affect other people and their property. For example, by erecting new buildings you may aggravate future floods by obstructing the flood waters and causing them to back up. This could result in flooding properties which otherwise might have escaped flooding.

Q. Will governments stop building dams and dikes to prevent flooding?

A. Not necessarily. But they will rely, wherever possible, on other methods of preventing or reducing flood damage.

Although it has no plans to intervene in every possible flood situation, the federal government becomes involved whenever the problem is of national concern. Then, working with the provincial government, it has a number of strategies to choose from.

In flood risk areas where development already exists, all practical means of reducing flood damage will be carefully considered. These may include the construction of dams, dikes or other flood control

Allan R. Leishman

Emergency measures . . . .

D.R.E.E.

. . . . *a grim battle against rising flood waters.*

works. But they may also include allowing some flooding to occur.

The choice will be made on the basis of cost, effectiveness, environmental impact and associated benefits — for example, a possible increase in hydroelectric power production, or improved recreation facilities.

In areas where there is no development, dams and dikes will probably not be built or needed. Instead, new development will be directed away from the flood risk area.

ANY OTHER QUESTIONS?

Further information is available from any of the following offices:

Inland Waters Directorate
Environment Canada
Room 502
1001 West Pender Street
Vancouver, B.C.
V6E 2M9

Inland Waters Directorate
Environment Canada
Motherwell Building
1901 Victoria Avenue
Regina, Saskatchewan
S4P 3R4

Inland Waters Directorate
Environment Canada
P.O Box 5050
Burlington, Ontario
L7R 4A6

Inland Waters Directorate
Environment Canada
P.O. Box 10,100
Champlain Building
2700 Laurier Blvd.
Ste. Foy, Quebec
G1V 4H5

Inland Waters Directorate
Environment Canada
Gulf Building
6009 Quinpool Road
P.O. Box 365
Halifax, N.S.
B3J 2P8

Inland Waters Directorate
Environment Canada
Ottawa, Ontario
K1A 0E7

A number of provincial governments have been engaged for some time in flood risk mapping and zoning for flood damage reduction. So inquiries may also be directed to provincial departments responsible for the environment, natural resources or municipal affairs.

Environment
Canada

Environnement
Canada