

Report to the Government of Manitoba

on

Public Meetings:

Flood Protection Options for the City of Winnipeg

Main Report

Terry Duguid, Chair
Manitoba Clean Environment Commission

February 11, 2002

Chairman's Letter

Dear Premier Doer:

At the request of the Government of Manitoba, the Clean Environment Commission conducted public meetings to gather the views of Manitobans on two flood protection options for the City of Winnipeg. The purpose of these sessions was to provide information on the two options, receive comments and concerns from the public and prepare a summary report.

We have done our best to provide a faithful and accurate summary of what the public told us. Please feel free to contact us should you have any questions related to the report and its contents.

Respectfully,

Terry Duguid, Chair
Manitoba Clean Environment Commission

Executive Summary

At the request of the Government of Manitoba, the Clean Environment Commission held public meetings on two flood protection options for the City of Winnipeg during January 2002. The flood protection options – an expanded Red River floodway and a detention structure at Ste. Agathe – are described in the November 2001 report by the KGS Group entitled *Flood Protection Studies for Winnipeg*.

Meetings were held in Winnipeg, Morris, Selkirk and Ste. Agathe from January 10 to 28, 2002. The purpose of the meetings was to provide information on the two flood protection options, receive comments and concerns from the public, and prepare a summary report to government. The public sessions were attended by over 1,000 individuals representing a wide range of interests including property and business owners, farmers, elected officials, organization representatives, government employees, professionals, academics and students. The majority were from the communities of Winnipeg, Ste. Agathe, Selkirk, Morris, East Selkirk, St. Jean Baptiste and St. Adolphe.

During these sessions many residents expressed a high degree of emotion over previous flooding, especially those living immediately south and north of Winnipeg. They spoke about how flooding had affected them personally and financially. The residents immediately north and south of the floodway, who experienced flooding, expressed anger and mistrust towards government and emergency measures officials for what they felt was unfair treatment and inadequate compensation. Some residents from outside Winnipeg expressed resentment for having to pay for the protection of those living inside the city without the same benefits.

The Ste. Agathe detention structure was strongly rejected by area residents at the Morris public meeting. Most at the Winnipeg, Selkirk and Ste. Agathe sessions believed that a decision had already been made to proceed with the expanded Red River floodway option and commented on that option accordingly. However, some participants at the Winnipeg meetings did argue for the detention structure option for its additional protection and lower cost.

The public gave a strong message of getting on with the job of protecting City of Winnipeg residents as well as all Manitobans living along the entire Red River Valley from flooding. They conveyed that the needs of the few living outside Winnipeg should not be sacrificed for the benefit of the many living inside the city. The compensation issue was a common thread at all

public meetings with consistent requests to settle outstanding flood damage claims and to put an effective compensation program in place before proceeding with either flood protection option. The public also expressed a desire to be involved at an early stage in the public participation and environmental assessment processes so their concerns can be addressed before the final design is complete and construction begins.

A total of 116 submissions and statements were either recorded from the four public meeting locations or were received by mail, fax or e-mail. Over 25 issues were identified from the public meetings and other submissions. The top four issues were: compensation, study terms of reference, floodway operation and other flood protection options.

1. Compensation was the most dominant issue raised at the public meetings. It was brought up at each meeting with emotion and resolve. Participants requested that compensation be addressed prior to consideration of any future flood protection options.
2. Substantial concern was expressed at the public meetings over the terms of reference for the KGS study. Participants questioned why the study tended to focus on flood protection options for the City of Winnipeg and not the entire Red River Valley. Residents living south and north of the city were particularly concerned about the narrow geographic scope of the study.
3. Operation of the Red River floodway was raised at each public meeting, particularly at Ste. Agathe and Selkirk. Residents living north and south of the City of Winnipeg expressed strong concern over the floodway rules of operation. They contended that operation of the floodway has resulted in repeated flooding of their properties.
4. Many participants commented on the need to consider other flood protection options. The options most frequently mentioned included constructing a 1 in 1,200 year “super” floodway, extending the floodway all the way into Lake Winnipeg, river dredging the lower Red River between Lockport and Lake Winnipeg and developing upstream water storage structures.

The remaining issue areas included property values, the regional economy, ice jamming, fairness to all valley residents, riverbank erosion, flooding north and south of the city, full cost of flood protection, KGS report credibility, flood protection funding, river management authority, public consultation, river dredging, agricultural interests, groundwater concerns, holistic approach, First Nation interests, flood prevention, summer water levels, aquatic ecosystem protection, recreation opportunities, emergency planning and the Mid-Continent Trade Corridor.

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Introduction

Red River Basin

The Red River basin covers some 116,500 square kms, exclusive of the Assiniboine and Souris rivers, of which nearly 13,000 square kms are in Canada. The remaining 103,500 square kms are in the United States. The Red River basin throughout North Dakota, Minnesota and Manitoba is remarkably flat. The elevation at Wahpeton, North Dakota, the source of the Red River, is 287 m above sea level (asl) while at Lake Winnipeg, the elevation is 218 m asl. The difference is only 71 m over a distance of 872-river km for a slope of less than 0.1 m per km.

The basin is about 500 kms across at its widest point. During major floods, much of the valley becomes a floodplain. In 1997, the Red River spread to a width of about 40 km in Manitoba. The flatness of the terrain means that few natural storage sites are available and opportunities for major flood control reservoirs do not exist.

Flood History

The Red River basin has flooded regularly over recorded history. The earliest recorded flood in the basin was in 1826, although anecdotal evidence refers to larger floods in the 1700s. Early records show several major floods in the 1800s, most notably in 1826, 1852 and 1861. This century, major floods occurred in 1950, 1966, 1979, 1996 and 1997.

The spring of 1997 brought the largest flood in recent memory along much of the Red River. Heavy precipitation fell during the fall of 1996, as much as 15 cm in late October and November, leading to high soil moisture in the basin. Winter brought record or near record snowfall throughout the basin, with many areas experiencing two or three times the average. On April 5 and 6, 1997 a blizzard left significant wet snow on the basin. Temperatures remained cool, then warmed suddenly, sending melt-water surging downstream.

The peak calculated flow under natural conditions for 1997 at The Forks in Winnipeg was 4,616 cms, including 453 cubic metres per second (cms) from the Assiniboine River. The 1997 flood had the same volume of water as the 1950 flood, but had a peak that was much higher and of shorter duration. The area flooded was about 2,000 square kms, which was the largest flood in

Manitoba since current settlement patterns were established. The 1997 flood had a one in 90-year probability of occurrence while that for the 1826 flood was one in 300 years.

Study History

The final report of the International Red River Basin Task Force to the International Joint Commission (IJC) entitled *The Next Flood: Getting Prepared* explored the implications of large floods of the magnitude of 1997 or larger for the people, communities and governments of the Red River basin. The report focused on preparedness and mitigation for large floods, and presented conclusions and recommendations on getting ready for the next major flood.

The IJC report to the Governments of Canada and the United States on reducing flood impacts in the Red River Basin entitled *Living with the Red* endorsed most of the task force's conclusions and recommendations, modified some, and added some new conclusions and recommendations. A total of 28 recommendations that form a blueprint for action were provided for governments at all levels.

At the request of the IJC, the KGS Group examined Winnipeg's flood defences, identified areas of vulnerability and proposed options for reducing flood risks to the city. The 2000 KGS Group report identified two major flood protection alternatives that, if constructed, could substantially reduce Winnipeg's exposure to the risk of major flood damage. The report also listed over 50 recommendations for improved flood protection.

The KGS Group was subsequently commissioned by the Province of Manitoba to carry out additional studies on the two major flood protection options – the Red River floodway expansion and the Ste. Agathe detention structure. The November 2001 KGS report described the key features and costs of the two options, provided a comparison between the options based on economic, socio-economic, legal, operational and other factors, presented the results of additional studies, and identified further study and planning requirements.

Public Meetings

In December 2001, the Premier of Manitoba announced a public consultation process to gather the views of Red River Valley residents on the two flood protection options for the City of Winnipeg. Public meetings were subsequently held in 2002 in Winnipeg (January 10 and 28),

Morris (January 14 and 15), Selkirk (January 21 and 22) and Ste. Agathe (January 24 and 25). The objectives of the public meetings were to provide information on the two flood protection options, obtain feedback from the public and prepare a report to government summarizing the comments received, views expressed and concerns raised.

Purpose of Report

The purpose of this report is to provide a faithful and accurate summary of what was said at the public meetings to assist the government in making a decision on a preferred option for flood protection. There has been no effort to comment on the validity of statements made by the public or present conclusions or recommendations relating to choosing a flood protection option.

Flood Protection Options

Flood protection options for the City of Winnipeg are described in detail in the November 2001 KGS Group report entitled *Flood Protection Options for Winnipeg*. The executive summary (English and French) of the KGS report is provided in Appendix A.

Expanded Red River Floodway

A range of floodway expansion sizes are proposed in the KGS report that would provide protection against a 1 in 500-year flood up to a 1 in 1,200-year flood. The floodway expansion option used for comparison is the 1 in 700-year flood design capacity. This option would include raising the elevations of the east and west dikes, upgrades to existing flood protection infrastructure, expansion of the floodway channel, modifications to the outlet structure and upgrades to the inlet structure. The cost of the floodway expansion is estimated to range from \$660 million for a floodway capable of providing protection up to a flood of 1 in 700 years to \$1.2 billion for capability up to a 1,200 year flood. Preparatory investigations, emergency planning, flood protection funding agreements and final design would take three to four years followed by a four to five year construction schedule for the 1 in 700-year option.

Ste. Agathe Detention Structure

The Ste. Agathe detention structure would provide flood protection up to a 1 in 1,000-year flood. This option would include an earthen dike across the Red River Valley, control structures adjacent to the Red, Marsh and Rat rivers, discharge channel from the Marsh River control structure, diversion channel to the Rat River, upgrades to existing flood protection infrastructure and improvements to the floodway inlet control structure. The cost of the Ste. Agathe detention structure is estimated to be \$500 million, including upgrades to flood protection infrastructure in Winnipeg. Given a straightforward environmental assessment and licensing process it is expected that the Ste. Agathe option could be completed in six years including some 2.5 years of on-site construction.

Public Meetings

Notification

Notice of public meetings on Flood Protection Options for the City of Winnipeg was first issued as a press release from the Manitoba Government on December 12, 2001. Subsequently, the Clean Environment Commission placed meeting notices in newspapers in the Red River Valley during December 2001 and January 2002. These appeared in the *Winnipeg Free Press*, *Winnipeg Sun*, *La Liberte*, *Morris Crow Wing*, *Morris Scratching River Post*, *Selkirk Journal*, *Emerson Journal* and *Altona Red River Valley Echo*. In addition, notices were mailed to over 5,000 government offices, businesses, organizations and individuals. Notification was also provided on the Manitoba Conservation and Clean Environment Commission Web sites. The news releases are provided in Appendix B.

Schedule and Format

Public meetings were held in Winnipeg, Morris, Selkirk and Ste. Agathe. The Winnipeg meeting was held on January 10, 2002 (1:00 – 5:00 p.m. and 7:00 – 10:00 p.m.) with a follow-up meeting on January 28, 2002 (10:00 a.m. – 12:00 noon). The Morris, Selkirk and Ste. Agathe meetings were held on January 14, 15, 21, 22, 24 and 25, 2002. These meetings involved an evening session (7:00 p.m. – 10:00 p.m.) followed by a morning session (10:00 a.m. – 12:00 noon).

The format of the public meetings consisted of introductory remarks by the Chair of the Clean Environment Commission, presentations on flood history and the flood protection options by representatives of Manitoba Conservation (Water Branch), KGS Group and InterGroup Consultants followed by submissions, statements and questions by those attending. The structure of the meetings was kept informal to encourage questions and comments from presenters and the audience.

The meetings were taped but no written transcript of the proceedings was produced. Simultaneous French language translation was provided at the Winnipeg and Ste. Agathe meetings. Written summaries of the meetings were prepared within three days of each meeting and posted on the Clean Environment Commission Web site.

Who the Commission Heard From

The public meetings were attended by over 1,000 individuals representing a wide range of interests including property and business owners, farmers, elected officials, organization representatives, government employees, professionals, academics and students. Attendance at the meetings was estimated as follows: Winnipeg (343 or 32%), Ste. Agathe, (260 or 24%), Selkirk (220 or 22%) and Morris (200 or 20%) (Table 1).

Table 1 – Estimated attendance at public meetings

LOCATION	MEETING TIME			TOTAL
	MORNING	AFTERNOON	EVENING	
Winnipeg (1)		150	175	325
Winnipeg (2)	18			18
Morris	25		175	200
Selkirk	40		180	220
Ste. Agathe	40		220	260
Total	123	150	750	1,023

There were 411 attendees at the meetings who registered to request a copy of the report. These registrants represented 46 communities in southern Manitoba (Table 2). The majority were from Winnipeg (25%), Ste. Agathe (19%), Selkirk (13%), Morris (8%), East Selkirk (7%), St. Jean Baptiste (3%) and St. Adolphe (3%). The locations of the communities ranged from Emerson in the south, to Gimli in the north, to Brandon in the west and to Beausejour in the east. Several attendees were present at more than one meeting.

Winnipeg

Of the 110 registered attendees from both Winnipeg meetings, the majority (84 or 67%) were from the City of Winnipeg (Table 2). Participants from outside the city were from St. Norbert (6), St. Adolphe (3), Ste. Agathe (2), Portage la Prairie (2), Ile des Chenes (2), East Selkirk, Lockport, Dugald, Starbuck, Sanford, Pine Falls, Steinbach and Springfield.

Morris

The majority (29 or 35%) of the 83 registered attendees were from the Town of Morris (Table 2). Participants from outside Morris were from St. Jean Baptiste (13), Ste. Agathe (8), Rosenort (5), Aubigny (4), Winnipeg (3), Letellier (3), Roseau River Reserve (2), Lowe Farm (2), Niverville (2), Dugald (2), Halbstadt, Brunkild, Altona, Gretna, Dominion City, Humboldt, Domaine, Anola, Emerson and St. Pierre.

Table 2 – Registrant community of origin

COMMUNITY	PUBLIC MEETING LOCATION					TOTAL
	WINNIPEG (1)	WINNIPEG (2)	MORRIS	SELKIRK	STE. AGATHE	
Winnipeg	79	5	3	8	9	104
Ste. Agathe	2		8		67	77
Selkirk				50		50
Morris			29		4	33
East Selkirk	1			27	1	29
St. Jean Baptiste			13			13
St. Adolphe	3				7	10
Otterburne					8	8
Niverville			2		5	7
Rosenort	1		5			6
Domaine			1		3	4
Libau				2	2	4
Aubigny			4		3	7
Lockport	1			3		4
St. Norbert	6				3	9
Dugald	1		2			3
Vermette	1			1	1	3
Petersfield				3		3
Letellier			3			3
Portage la Prairie	2					2
Sanford	1				1	2
Ile des Chenes	2					2
Brandon				2		2
St. Pierre			1		1	2
Roseau River Reserve			2			2
Lowe Farm			2			2
Pine Falls	1					1
Steinbach	1					1
Springfield	1					1
Brunkild			1			1
Dugald	1					1
Starbuck	1					1
Gimli				1		1
Beausejour				1		1
Tyndall				1		1
Oakbank				1		1
Stonewall				1		1
Lorette					1	1
Anola			1			1
Gretna			1			1
Emerson			1			1
Halbstadt			1			1
Humboldt			1			1
Dominion City			1			1
Balmoral				1		1
Altona			1			1
Total	105	5	83	102	116	411

Selkirk

The 102 registered attendees were from the City of Selkirk (50), East Selkirk (27), Winnipeg (8), Lockport (3), Petersfield (3), Libau (2), Brandon (2), Gimli, Beausejour, Vermette, Tyndall, Oakbank, Stonewall and Balmoral (Table 2).

Ste. Agathe

Registered attendees were from Ste. Agathe (67), Winnipeg (9), St. Norbert (3) Otterburne (8), St. Adolphe (7), Niverville (5), Aubigny (3), Domaine (3), Morris (4), Libau (2), St. Jean Baptiste, Sanford, St. Pierre, Lorette, Vermette and East Selkirk (Table 2).

Other Submissions

A total of 17 submissions were received by mail, fax or e-mail from individual residents, municipal governments, and private organizations as of January 30, 2002. The submissions were from various locations along the Red River Valley including the City of Winnipeg, R.M of Ritchot, East Selkirk, St. Norbert, Ste. Agathe, Pilot Mound and Oakville.

What the Public Said

A total of 116 submissions and statements were either recorded from the four public meeting locations or were received by mail, fax or e-mail (Table 3). Of the total number of submissions received, 56 were submitted in writing. Summaries of the meetings are provided in Appendix C.

Table 3 – Submissions and statements received

LOCATION	SUBMISSION		STATEMENT	TOTAL
	ORAL	IN WRITING		
Winnipeg (1)	12	9	6	18
Winnipeg (2)	5	4	0	5
Morris	11	9	8	19
Selkirk	12	8	24	36
Ste. Agathe	11	9	10	21
Other (mail, fax, e-mail)	0	17	0	17
Total	68 (56 in writing)		48	116

Over 25 issues related to the flood protection options were identified based on submissions received, statements made and questions asked at the public meetings, as well as submissions received by mail, fax or e-mail. The issues were listed and described as part of the summaries prepared for each meeting. A qualitative comparison of the issues was performed based on the relative frequency that the issues were raised during the meetings and in the submissions (Table 4). Issues raised greater than 10 times during the meeting were give a high ranking while issues mentioned once or not at all were rated low.

Table 4 – Comparison among issue areas

ISSUE	WINNIPEG	SELKIRK	STE. AGATHE	MORRIS	OTHER*
1. Compensation					
2. Study Terms of Reference					
3. Floodway Operation					
4. Other Flood Protection Options					
5. Property Values					
6. Regional Economy					
7. Ice Jamming					
8. Fairness to All Valley Residents					
9. Riverbank Erosion					
10. Flooding: North and South of City					
11. Full Cost of Flood Protection					
12. KGS Report Credibility					
13. Flood Protection Funding					
14. River Management Authority					
15. River Dredging					
16. Public Consultation					
17. Agricultural Interests					
18. Groundwater Concerns					
19. Holistic Approach					
20. First Nation Interests					
21. Flood Prevention					
22. Summer Water Levels					
23. Aquatic Ecosystem Protection					
24. Recreation Opportunities					
25. Emergency Planning					
26. Mid-Continent Trade Corridor					

* Submissions received by mail, fax and e-mail.

Frequency Issue Raised	
> 10	
5-10	
2-5	
< 2	

Winnipeg

Compensation and study terms of reference were major issues at the Winnipeg public meetings (Table 4). Floodway operation, other flood protection options, property values, ice jamming, riverbank erosion, flooding north and south of city, river management authority, river dredging, holistic approach and summer water levels were also determined to be important. Issues related to fairness to all valley residents, cost of flood protection, report credibility, public consultation, groundwater, recreational opportunities and emergency planning were also raised.

Many participants at the Winnipeg public meetings acknowledged that the government had made its preference for a flood protection option known and accordingly focussed their remarks on an expanded floodway. Many presenters stated that protection of Winnipeg through an expanded floodway should not put Manitobans residing north and south of the city at risk. Some support was expressed for the Ste. Agathe detention structure as it promised to provide the greatest level of individual flood protection. Residents living north and south of Winnipeg raised compensation for damages resulting from the 1997 flood as an outstanding concern. They requested that compensation claims for past flooding be resolved and a proactive approach to compensation be established for the future. The need to manage summer water levels within the city limits for recreation and tourism, and to take a broader view of flood protection was also mentioned in a number of submissions.

Morris

Compensation was the main theme of the 19 submissions and statements presented at the meeting (Table 4). Other important issues included study terms of reference, other flood protection options, property values, full cost of flood protection and agricultural interests. Floodway operation, fairness to residents, riverbank erosion, downstream flooding, report credibility, flood protection funding, river management, public consultation, First Nation interests, flood prevention and the Mid-Continent trade corridor were also of concern.

The Ste. Agathe detention structure was strongly opposed at the Morris public meeting. Concern was expressed over the economic uncertainty that a detention structure would bring to the Red River Valley region south of the dike. The impact of the Ste. Agathe structure on property values, business opportunities, population growth, agriculture and north-south trade was of particular concern to Morris area residents. They also advocated up-front compensation for residents living

upstream from the detention structure since residents felt that it would cause a decrease in property values and an increased risk of flood damage.

Selkirk

Compensation, terms of reference, floodway operation, other options, property values, ice jamming, riverbank erosion, credibility of report, river dredging and groundwater were the major concerns at the Selkirk public meeting (Table 4). In addition, fairness to residents, upstream flooding and cost of flood protection were determined to be important. Flood protection funding, river management authority, public consultation, holistic approach, First Nation interests and aquatic ecosystem protection were also of concern.

There was general acknowledgement expressed at the Selkirk public meeting that an expanded Red River floodway would be the likely decision of the government. Most of the participant's comments and concerns were directed towards how the floodway option would affect them personally and financially. The issue raised most frequently was compensation for flood damages resulting from previous flooding in 1996, 1997 and 2001. Residents believed they were not treated fairly by government, particularly in comparison to residents who experienced similar flooding south of Winnipeg. They demanded that compensation for past damages be addressed and that future flood protection agreements include provision for compensation.

Residents also expressed concern that the KGS report could not identify potential flood damage and corresponding mitigation measures north of Selkirk due to inadequate topographic mapping. East St. Paul and Springfield representatives mentioned that the municipalities would forego further tax revenues and incur additional costs with an expanded floodway.

Ste. Agathe

Compensation, study terms of reference, floodway operation and property values were major concerns at the Ste. Agathe public meeting (Table 4). Issues relating to other flood protection options, ice jamming, fairness to residents, downstream flooding, cost of protection, report credibility, flood protection funding, river management, public consultation and flood prevention were also of concern. Riverbank erosion, First Nation interests, aquatic ecosystem protection and emergency planning were brought up less frequently.

Participants at the Ste. Agathe public meeting believed that a decision had been made to proceed with the expanded Red River floodway option and commented on that option

exclusively. Significant concern was expressed over past operation of the floodway and flooding immediately upstream from the floodway inlet. The issue of compensation dominated the Ste. Agathe public meeting. Residents felt that the compensation received for past flood damages was inadequate and noted that there are ongoing legal disputes related to claims. They argued that compensation must be considered in advance of proceeding with a flood protection option and should be provided on the basis on property values and flooding risk.

Other Submissions

Compensation, floodway operation and other flood protection options were the major issues raised in the other submissions received by the Clean Environment Commission (Appendix D). Also raised were issues related to the KGS study's terms of reference, fairness to all valley residents, ice jamming, flood protection funding, river dredging, agricultural interests, holistic approach and recreational opportunities.

Issues Raised

Over 25 issues related to the two flood protection options were identified based on submissions received, statements made and questions asked at the public meetings as well as other submissions received by mail, fax or e-mail. The four issues raised most frequently were: compensation, study terms of reference, floodway operation and other flood protection measures.

Compensation

Compensation was the dominant issue discussed at the public meetings. It was raised at each meeting, often with strong emotion. Many participants insisted that compensation must be addressed prior to further consideration of any flood protection option for the City of Winnipeg. Two of the submissions contained or referenced proposals to include the full cost of compensation as part of the flood protection option being proposed.

Many participants felt that all residents of the valley should be treated equally. They demanded compensation for damages from previous flooding whether it occurred north or south of Winnipeg. Attendees also emphasized that compensation should be provided in advance based upon the annual risk of being flooded or, alternatively, that flooding rights should be purchased from property owners as they are for reservoirs. Further, participants proposed that compensation be enshrined in legislation and form part of the funding agreement for any future flood protection option.

Selkirk, Ste. Agathe and Morris participants referred to outstanding lawsuits over compensation claims arising from past flood events. A legal brief proposing compensation for the Red River floodway expansion was submitted at the Selkirk meeting. A lawyer speaking at the Morris public meeting warned that litigation would likely proceed to the Supreme Court of Canada if issues such as compensation were not dealt with fairly prior to implementation of the preferred option. It was contended that riparian rights as amended by *The Water Rights Act* would apply to flood protection and not *The Emergency Measures Act*.

Many submissions and statements included reference to compensation for the social costs of being flooded and the frustration of dealing with claims adjusters, declaring bankruptcy and other personal hardships.

Study Terms of Reference

There was substantial concern expressed at the public meetings in Winnipeg, Selkirk and Ste. Agathe over the KGS study's terms of reference. Many participants commented that the study focused on flood protection options for the City of Winnipeg and not on the entire Red River Valley. Residents living south and north of the city were particularly concerned with this narrow geographic scope.

Concern was also expressed over the narrow scope in terms of the two flood protection options under consideration. Many participants noted that other flood protection and prevention options should be considered. They also noted that the study did not include compensation and mitigation in the cost of flood protection, particularly north and south of the floodway.

Some participants observed that the KGS study's terms of reference did not include the potential effects of climate change on future flooding in the Red River Valley.

Floodway Operation

Operation of the Red River floodway was raised at each public meeting but it was a particularly significant issue at the Selkirk and Ste. Agathe meetings. Residents north and south of the City of Winnipeg expressed strong views on the floodway operating rules. They believed that operation of the floodway has resulted in repeated flooding of their properties and that premature operation of the floodway has caused ice jamming, which, in turn, has resulted in additional flooding. People also expressed concern about not being notified prior to raising of the floodway gates. Residents living south of the city requested that they be consulted on the floodway operation rules and that financial assistance be provided for their review of these rules.

Those attending the public meetings also requested that they be consulted during the design phase of an expanded floodway in order to ensure that their concerns are taken into account.

Other Flood Protection Options

Participants commented on the need to consider other flood protection options. The options most frequently mentioned were extending the floodway into Lake Winnipeg, dredging the lower

Red River between Lockport and Lake Winnipeg, building upstream retention structures, and making modifications to roads and other infrastructure. Natural river drainages such as Cooks Creek and the Whitemouth River were cited as a means of diverting floodwaters to Lake Winnipeg. Use of a hovercraft and icebreakers were also proposed to break up the ice along the lower reaches of the Red River and provide for the free flow of floodwater into Lake Winnipeg.

The high cost and low benefit/cost ratio for other major flood protection options was not viewed as a deterrent when the value of Winnipeg to the provincial economy was taken into account.

Several attendees mentioned that a variety of flood protection and prevention measures throughout the Red River basin such as water retention structures and drainage controls are required to protect the residents of the Red River Valley over the longer term.

The concept of a future expanded floodway around the City of Winnipeg becoming the main channel of the Red River was also discussed. Flows through Winnipeg would be controlled to provide for flood protection, recreation and other benefits.

Property Values

Participants were particularly concerned about decreasing property values in flooded areas along the Red River Valley north and south of the existing floodway. Those who were affected by lower property values requested that they be compensated for their losses. Many residents living south of Winnipeg commented that the Ste. Agathe detention structure would lower property values, particularly south of the structure, and that they would demand compensation accordingly.

Participants at the Ste. Agathe and Morris meetings suggested that the right to raise water levels above the state of nature can be fairly and legally obtained by negotiating flood easements in advance of flooding events with affected property owners.

Regional Economy

The regional economy of the Red River Valley was raised as a major issue at the Morris public meeting. It was also an important issue at the Selkirk and Ste. Agathe meetings. The uncertainty of living within a floodplain, the prospect of repeated flooding along the Red River Valley and the possibility of a large detention structure at St. Agathe were all viewed as having a negative

impact on the economy of the region. Residents felt the uncertainty of living south of the Ste. Agathe structure would translate into a reduction in regional development and population growth.

Several submissions and statements commented on the absence of economic benefits to municipalities from the existing Red River floodway and the additional burdens these communities are likely to bear as a result of an expanded floodway. The R.M.s of East St. Paul and Springfield, in particular, noted that an expanded floodway would take additional land out of productive use and would result in lower tax revenues.

Still some participants viewed an expanded Red River floodway as a good investment to protect the multi-billion economy of the capital region.

Ice Jamming

Ice jamming was raised as a significant issue at the Selkirk meeting and it was also brought up at the Winnipeg and Ste. Agathe meetings. Selkirk was recognized to be vulnerable to ice jamming due to its northern location and proximity to Lake Winnipeg. Selkirk area residents expressed concern that premature operation of the floodway can result in ice jamming when downstream ice cannot be cleared. They noted that ice jams cause flooding along the lower Red River south of Selkirk. Area residents believe that dredging the Red River will alleviate some of the problems of ice jamming downstream from Selkirk.

Residents immediately south of Winnipeg also perceived that premature operation of the floodway, when there is still ice in the river, has resulted in ice jams, which caused flooding upstream from Winnipeg.

Fairness to All Valley Residents

Fairness to all Red River Valley residents emerged as an important issue at all public meetings, with particular concern expressed at the Selkirk and Ste. Agathe meetings. Residents living north or south of Winnipeg said that they want to be treated in the same way as those living within the city. They do not want to be exposed to future flooding, lose their homes and possessions, go through the compensation process and have to rebuild their lives.

Participants at all meetings commented that the flood protection option selected for Winnipeg should not sacrifice a small number of residents outside the city. They favoured flood protection for all of the Red River Valley and not just for Winnipeg.

Riverbank Erosion

Riverbank erosion was raised as a significant issue at the Selkirk and Winnipeg public meetings and as a general concern at the Ste. Agathe and Morris meetings. At Selkirk, the issue related to erosion of the west bank of the Red River immediately downstream from the floodway exit and along the Red River north of the city.

The variability of water levels over the summer open-water period was also a concern all along the Red River valley. In Winnipeg, several participants noted fluctuating water levels and the resultant instability of riverbanks.

The issue of riverbank erosion is closely related to property values for those residents who live along the Red River and its tributary streams.

Flooding North and South of Winnipeg

Flooding immediately north and south of the City of Winnipeg was a major concern at the Winnipeg, Selkirk and Ste. Agathe public meetings. Many residents spoke of repeated flooding since the Red River floodway was constructed and feared additional effects from an expanded floodway. Residents north and south of Winnipeg felt that they were being sacrificed to protect Winnipeg from flooding or residential sewer back up.

Residents attributed flooding south of Winnipeg to operation of the floodway entrance gates and the resulting backwater effect. They are convinced that the situation is exacerbated by ice jamming which occurs during the early stages of break-up. Several residents recommended removal of the Turnbull dike as a means of directing water into the floodway more effectively.

In the Selkirk area, flooding was attributed to opening the floodway gates when ice is still in the Red River, which results in ice jamming along the Red River from the Selkirk Bridge to Breezy Point and to Netley Lake. Selkirk area residents maintained that operation of the floodway has resulted in increased water levels whether ice was present or not.

Selkirk and Ste. Agathe area residents were particularly concerned that Winnipeg does not appear to be contributing to flood protection costs while the municipalities north and south of the city are incurring flood-proofing costs.

Full Cost of Flood Protection

The full cost of flood protection was raised as an important issue at the Selkirk, Ste. Agathe and Morris public meetings. Attendees at all meetings expressed concern that the benefit/cost analysis did not consider all costs such as mitigation, compensation and flood easements as well as costs to governments, businesses and individuals. Some participants wanted to see economic spin-off benefits including multiplier effects included in the analysis of an expanded floodway.

KGS Report Credibility

Participants at the public meeting in Selkirk and to a lesser extent at meetings in Ste. Agathe and Winnipeg expressed concern over the credibility of the KGS study report and findings. One of the most frequently raised issues at Selkirk was the contention that operation of the floodway causes increased downstream flow and flooding north of the city. Selkirk residents did not accept statements in the KGS report on floodway operation that differed from their observations.

The absence of topographic data north of Winnipeg was viewed as a serious deficiency of the report, which limited flood predictions along the lower Red River and precluded consideration of mitigation measures.

The assumptions contained in the KGS report were challenged on numerous occasions. It was contended that an error in the state of nature stage-discharge relationship of the Red River at the floodway inlet might affect the accuracy of the report.

Despite the criticism, some participants did acknowledge the work of the consultants as credible but criticized the terms of reference as limiting the scope of the study.

Flood Protection Funding

Concern was raised at each public meeting over the high cost of flood protection and the likelihood that sufficient funds would not be available once a decision is made on a preferred option. It was noted that federal and provincial funds are limited due to the current economic slowdown in Canada and as a result of the events of September 11th. Winnipeg's flood protection appeared to be in competition with other priorities such as health care and infrastructure renewal. The United States was mentioned as a possible contributor of funding since they are the source of 80 percent of the floodwaters.

Several participants suggested a staged approach to flood protection rather than a one-time or an all-or-nothing endeavour. Concern was also expressed about deferring funding for flood protection or extending construction over a longer period of time, which, in turn, could leave Winnipeg vulnerable to catastrophic flooding.

It was noted that the cost of the Red River floodway in 1969 was about \$63 million. This amount, in present value, approximates the cost of the proposed floodway expansion at \$660 million.

River Management Authority

The concept of a river (or basin/watershed) management authority was raised by several participants at the Winnipeg and Ste. Agathe public meetings, and was mentioned at the Selkirk and Morris meetings. The authority is meant to address the problem of coordinating the many different jurisdictions involved with flood protection along the Red River Valley including Canada, the United States, Manitoba, cities and other municipalities. It was noted that the IJC recommended flood protection measures for the Red River basin but it is not involved in their implementation. It was also felt that such a river management authority could pool resources and make a real impact on water management in the basin.

The International Coalition for Land and Water Stewardship in the Red River Basin and the Red River Basin Board were recognized as organizations with broad mandates that could take on responsibilities for watershed-wide flood management. It was also noted that these organizations are meeting in February 2002 to address basin-wide co-operation on water management issues.

River Dredging

Dredging in the Red River was raised as a major issue at the Selkirk public meeting and to a lesser extent at the Winnipeg meeting. The discussion on this topic touched on several related issues for the Selkirk area and Winnipeg residents. In particular, it was noted that the federal government ceased dredging and navigation aids services along the Red River about five years ago.

The absence of dredging along the lower Red River from Lockport to the river mouth was viewed as a contributing factor to spring flooding in the Selkirk area and further downstream to Netley Lake. Dredging the river downstream of Selkirk to Breezy Point was suggested as a means to limit ice jamming and subsequent flooding of low-lying areas. Further, dredging the lower Red River was proposed as a means to convey floodwaters to Lake Winnipeg faster and thereby limit overland flooding.

The absence of dredging was also noted to be limiting navigation along the Red River by commercial vessels, tour boats and pleasure craft.

Public Consultation

The issue of public consultation was discussed at all four public meetings but it was of particular concern to residents at the Ste. Agathe meeting. There appeared to be unanimous support for an extended public consultation process following the selection of a preferred option. The present public meetings on flood protection options for the City of Winnipeg were viewed to be adequate for the stated purpose but not acceptable for the next steps in the process.

Many participants requested that intervenor funding be provided so they could participate in the public consultation process and to enable independent technical interpretation of proposals and assessments. Residents also mentioned that they could not understand the technical details of the engineering reports and that information needs to be provided in a form understandable by the public.

A full, transparent and open public consultation process was recommended as a means to regain public trust and instil confidence in the environmental assessment and decision-making process. Residents raised examples where they were denied participation in flood-related

decisions including the floodway operating rules, expropriation procedures and compensation plans.

Agricultural Interests

Residents of the Ste. Agathe and Morris areas raised agriculture as an important issue. They expressed concern that the proposed Ste. Agathe detention structure would take valuable farmland along the Red River Valley out of production that would represent a loss to Manitoba's agricultural industry. They also expressed concern that the detention structure would cause farmland along the valley to be flooded for a greater period of time in the spring. It was noted that a delay in seeding by even one week would significantly reduce the likelihood of a harvestable crop in that year. Concern was also expressed about the effects of flooding on agricultural lands witnessed in recent years including loss of topsoil, leaching of nutrients and exposure of sub-soils, all of which could limit crop yields and incomes to farmers.

It was recommended that an economic study be carried out on agricultural lands affected by flooding since crop insurance programs are not currently tailored to compensate for flooded lands.

Groundwater Concerns

The issue of groundwater was raised at the Winnipeg, Selkirk and Morris public meetings in relation to the proposed flood protection options. The issue was of particular concern to municipalities and residents living north and east of the City of Winnipeg who have encountered problems with their wells since the Red River floodway was constructed. Many of the attendees expressed misgivings about the effects of a deeper floodway on regional aquifers. They requested that compensation be provided to drill their wells deeper or to secure an alternative potable water supply. Concern was also expressed that the expanded floodway would make the groundwater more vulnerable to contamination from agricultural, industrial and other sources.

Holistic Approach

The need to take a broader or holistic approach to flood protection along the Red River Valley and throughout the watershed was expressed at the Winnipeg, Selkirk and Ste. Agathe public meetings. It was recommended that social, cultural, aesthetic, recreational and environmental considerations be taken into account in the planning and design of flood protection measures for

the City of Winnipeg. Greenways along the Red River Valley corridor were recommended as a means to link places, facilities and events, and thereby integrate social, aesthetic, environmental and other values into the engineering of flood protection.

This issue is closely related to summer water levels in Winnipeg and recreational opportunities associated with an expanded floodway.

First Nation Interests

First Nation issues were raised at the Ste. Agathe and Morris meetings in relation to potential effects of the Ste. Agathe detention structure on First Nation residents and resources at Roseau River. At the Selkirk meeting, presenters brought attention to Aboriginal burial sites that are in danger of being lost due to riverbank erosion.

Flood Prevention

The concept of flood prevention was raised as a specific issue at the Ste. Agathe and Morris public meetings and it was mentioned generally at the Winnipeg and Selkirk meetings. It was argued that if more attention were given to prevention now, there would be less concern about flood protection in the future. Flood prevention measures proposed included upstream water retention structures, gated culverts, managed wetlands and highway grids (waffle barriers).

Attendees at each public meeting emphasized that the United States must take greater responsibility for managing upstream flows and preventing downstream flooding.

Summer Water Levels

Several organizations and individuals at the Winnipeg public meetings expressed concern over erratic summer water levels within the City of Winnipeg and the need to consider this when selecting a preferred flood protection option. They noted the importance of stabilizing water levels after the annual spring flood to provide for continued use of The Forks and the river walkways. The benefits of stable water levels to local merchants, tour operators, recreational boaters and various organizations, as well as to the City of Winnipeg in general were discussed. The importance of maintaining summer water levels to control riverbank erosion was also noted at public meetings.

In contrast, maintaining desirable water levels in Winnipeg at the expense of higher water levels for upstream residents was raised as a major concern at the Ste. Agathe and Morris meetings.

Aquatic Ecosystem Protection

The potential effects of the flood protection options on the aquatic ecosystems of the Red River and tributary streams in the valley was raised several times during the public meetings. The most concern was raised with respect to effects of the Ste. Agathe detention structure on the Rat and Marsh rivers. Concern was also expressed regarding the potential effects of an expanded floodway on the Seine River watershed. It was noted that further research is required to fully understand the implications of flood protection on aquatic ecosystems.

Recreation Opportunities

Several submissions discussed potential recreational opportunities in connection with the expanded Red River floodway option. Suggestions included parks, ski hills, pedestrian and biking trails and hang gliding facilities. It was recommended that a broader view be taken to flood protection rather than a strict engineering or economic approach. Such an approach would allow recreational interests to be considered along with social, cultural and environmental values during the planning process. Greenways were proposed as a means to link communities, attractions and events along the Red River corridor.

Flood Disaster Planning

Some concern was expressed at the public meetings over emergency or disaster planning and the need to put plans and procedures in place prior to major flood events. Proactive emergency planning was put forward as a means to decrease the uncertainty that currently exists over future flood events. It was suggested that flood disaster plans be developed in consultation with municipalities along the Red River Valley and that residents receive training to cope with major flood events.

Mid-Continent Trade Corridor

Concern was expressed at the Morris public meeting over the potential effects of flooding on trade with the United States and Mexico along the Mid-Continent Trade Corridor. Potential upstream flooding associated with a Ste. Agathe detention structure was of particular concern. Participants stressed the economic benefits that the corridor provides to communities along the Red River Valley and noted that it is important to keep Highway 75 open for north-south traffic throughout the year.

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