

# The Icelandic River and Washow Bay Creek Watershed Watershed Issues

---

## **Introduction**

Members of the East Interlake Conservation District (EICD), in partnership with Manitoba Water Stewardship and other Provincial, Federal, non government organizations (NGOs) and local stakeholders, are developing an Integrated Watershed Management Plan (IWMP) for the Icelandic River and Washow Bay watershed. The EICD initiated the planning process in the spring of 2006, and has since published a resource inventory and compiled a list of watershed ‘issues.’ Watershed issues, or problems and concerns identified by residents or watershed stakeholders, will help the watershed planning advisory team to develop a relevant and practical action plan. This document summarizes the methodology used to obtain issue statements, the issue statements, and suggests a categorization of this information received from watershed stakeholders to aid in the development of focused solutions.

## **Purpose**

The purpose of this document is to provide a summary of watershed issues received through the public consultation process and through the watershed planning advisory team.

## **Background**

Identifying watershed issues is one of the first steps involved in the development of an action plan for the Icelandic River and Washow Bay watershed. The identification and prioritization of issues will help the watershed planning team to develop the framework for an action plan.

## **Methodology**

To identify issues watershed stakeholders were asked to provide their point of view on problems and concerns in the Icelandic River and Washow Bay Creek watershed. Issue statements were requested from two types of watershed stakeholders: 1) the general public and 2) a technical subgroup of watershed planning advisory team.

### **1) The General Public**

Watershed planning and advisory team representatives advertised using a variety of media types to encourage public participation in the watershed planning process. Including public consultation as part of the planning process is important in understanding issues of concern of watershed residents, ensuring community acceptance of the plan upon implementation, as well as for informing the public on issues that may affect them. Issue statements were requested from the public using five media formats: a request printed on the last page of a resource inventory report; a public meeting; an online questionnaire; roadside signage; and, through the local newspaper.

A resource inventory entitled “Know Your Watershed, the Icelandic River and Washow Bay Watershed.” was tendered by the EICD in January of 2007 to Golder and Associates. The purpose of this report was to inform the public of the watershed planning effort, provide basic resource information, and to encourage participation in the planning process. The report included a description of the IWMP process, a summary of submissions received from the watershed planning advisory team, a series of maps,

tables and graphs depicting the physiographic features of the watershed, and an invitation to take part in a public meeting. The report also provided the internet home page of the EICD, with a direct link to an online questionnaire. The report was provided to all residential mailboxes in the Town of Arborg, the Village of Riverton, Poplarfield, and Arnes and copies were made available in the RM of Bifrost, RM of Gimli and Village of Riverton municipal offices. A copy of this report is provided in Appendix A.

A public meeting was hosted by the EICD on April 19<sup>th</sup>, 2007 between the hours of 5:30 pm and 9:00 pm. Presentations included: an overview of the IWMP process, provided by Barry Oswald of Manitoba Water Stewardship; and a review of the watershed planning process in the Icelandic River and Washow Bay watershed to date, by Sarah Coughlin of the EICD. A handout was provided to all attendees and included the following questions:

*“Individually, list your top 5 natural resource/watershed issues in the Icelandic River and Washow Bay watershed (this includes the Lake Winnipeg shoreline):*

*Now, working with the group at your table, please share and discuss the above noted issues. Please allow each member of your group to share their issues. Please select the top 3-5 issues for your group to share with the audience.*

*Please write the group issues on the large sheets of paper provided.*

*On your own, review your original issues and suggest solutions.*

*Take a moment to discuss solutions to each of the issues selected for discussion.*

*Select a representative for the group to present these issues and potential solutions to the audience.*

*Are there any other comments, suggestions, trends, missing pieces of information, or program suggestions that you would like to provide. Please write below. If you would like to submit comments anonymously, please see our online questionnaire at [www.eicd.ca](http://www.eicd.ca)”*

A copy of the hand out is provided in Appendix B.

The April 19<sup>th</sup> public meeting was advertised in the local weekly newspaper, the Interlake Spectator, for one week (advertisement provided in Appendix B) as well as through roadside signage posted three days before the meeting took place. Signs were also placed in the Town of Arborg and the Village of Riverton. The date, time and location of the public meeting was also posted on the EICD web page.

The online questionnaire was made available to the general public from April 19<sup>th</sup> to July 17, 2007. The online questionnaire was formatted to closely follow the questions presented in the handout provided in the April 19<sup>th</sup> public meeting. A copy of the online questionnaire is provided in Appendix B.

On May 1<sup>st</sup>, 2007 a watershed planning representative hosted a similar public consultation process with grade 11 and 12 high school students at Arborg Collegiate

High School. An educational handout was provided to the class (see Appendix B) and students participated in the same issue exercise as noted above for the April 19<sup>th</sup> public meeting.

2) The WPAT Technical Team

On May 31<sup>st</sup>, 2006, a meeting was held in Arborg, Manitoba to introduce the watershed planning process and invite provincial and federal government agents and NGOs, to provide information and issue statements to the EICD for inclusion in the watershed plan. The form included the following request for information:

*“To maintain flow/consistency between different sections of the State of the Watershed report the following headings are suggested for organizing technical contributions; however, if the information you provide does not fit within these categories, please feel free to include your own headings*

1. *Existing Conditions*
2. *Issues/Areas of Concern*
3. *Data gaps/Future Considerations*
4. *Management Recommendations”*

The request form also identified a specific format for submitting information (see Appendix B for an example of the request form), and a CD of electronic files which included a map of the watershed, the spatial boundaries of the watershed in ArcView shape file format, and the request form.

**Results**

**Public Consultation**

On April 19<sup>th</sup>, 2007, 66 people attended the public consultation (approximately 58 males and 8 females). Of the 66 people in attendance, 63 participated in the group exercise (see example handout questions above) and 43 submitted a completed handout.

Figure 1. The April 19<sup>th</sup>, 2007 public consultation.

Figure 2. Group presentations of issues statements.

On May 1<sup>st</sup>, 2007, seven students from Arborg Collegiate participated in the consultation process. All seven submitted a completed handout.

Results from the question: “Individually, list your top 5 natural resource/watershed issues in the Icelandic River and Washow Bay watershed (this includes the Lake Winnipeg shoreline).” Individuals were asked to prioritize their issues by placing their first priority

issue in the first section of the table, and the second priority issue in the second section of the table, and so on. Results were grouped into the 17 broad categories, and listed in Table 1 below.

Table 1. Categorized results of April 19<sup>th</sup>, 2007 public consultation, individual responses.

Categories	Issue Priority					Total
	1	2	3	4	5	
1 the need for more water quality monitoring	0	0	2	2	0	4
2 water quality of Lake Winnipeg	2	3	1	0	0	6
3 concern over water quality in general	0	2	7	4	1	14
4 groundwater quality	11	7	3	1	2	24
5 concern over hog barns	2	1	0	1	0	4
6 nutrients from municipal lagoons	2	0	0	0	2	4
7 general concern over nutrients	2	2	4	4	1	13
8 improved surface water management	22	7	7	4	1	41
9 more retention areas	1	1	0	0	2	4
10 concern over agricultural industry	0	3	2	0	1	6
11 concern over riparian areas	0	2	1	1	0	4
12 concern over the preservation of natural areas	0	2	1	1	3	7
13 accountability	0	0	0	1	0	1
14 shoreline erosion	0	0	2	3	1	6
15 the Hecla causeway	1	0	0	0	0	1
16 other	0	10	3	2	0	15
17 blank	0	3	10	19	29	61

The process of categorizing responses required subjectivity of the author. The process of categorizing responses in most cases required little decision making. For example, on issue sheet #12 the first priority response was

*“Preservation of the quality of the aquifer, capping unused wells.”*

This response was categorized as ‘groundwater quality.’ In some cases the response fell into two or more general categories. For example, on issue sheet #31 the respondent wrote:

*“Erosion, shores of Lake Winnipeg, loss of land! Pollution.”*

This response could be categorized as either ‘shoreline erosion,’ ‘general water quality’ or ‘water quality of Lake Winnipeg.’ In this instance, the response was categorized as ‘shoreline erosion.’ In some cases the respondent’s statement was unique. For example, on issue sheet #33 the third priority issue states:

*“A common problem of all Conservation Districts is huge underfunding by the Province to carry out their valuable objectives.”*

This issue was not mentioned in any other response statement and was categorized as ‘other.’

Results of individual responses indicate that 69 of the 284 available responses were related to water quality. Groundwater quality received the highest number of responses at 24, with concern over water quality in general and general concern over nutrients receiving 14 and 13, respectively. Some respondents were more specific and implied a source of water quality pollution with a total of eight responses related to water quality concerns as a result of hog barns and municipal lagoon discharges. A total of four respondents commented on the need for more water quality sampling in the watershed.

Individual responses indicate a significant concern for surface water management with 45 of the 284 available responses related to drainage and retention. Responses relating to surface water management included issues such as: the need to restrict further drainage in non municipal and agricultural lands (i.e., issue sheet #33); the need to improve existing drainage (i.e., issue sheet #7); the length of time required to receive drainage permits (i.e., issue statement #22 and 23); and, a lack of retention areas (i.e., issue statement #10).

Respondents also commented on the health of riparian areas, the preservation of natural areas and government accountability. Figure 3 displays the results of individual responses.

After completing individual responses, attendees were divided into 9 groups of approximately 6-8 people (labeled groups A-I). Group responses closely followed individual results with an emphasis on water quality concerns and surface water management. Responses were placed into 14 categories (less than the 17 categories needed for individual responses). A total of 17 responses related to water quality with concern over water quality in general listed most frequently at five responses.

A total of 10 group responses related to surface water management, with new issues recognizing the need for surface water planning, such as group F’s comment “*Study areas where old drainage authorities converged and develop plans for more effective surface water management system*” or group I’s comment “*Maintaining existing drainage systems. Long term plans for drainage issues.*” Figure 4 displays the results of group responses.

Table 2. Categorized results of April 19<sup>th</sup>, 2007 public consultation, group responses.

Categories	Issue Priority					Total
	1	2	3	4	5	
the need for more water quality monitoring	0	0	1	0	0	1
water quality of Lake Winnipeg	0	0	1	2	0	3
concern over water quality in general	1	1	1	2	0	5
groundwater quality	3	1	0	0	0	4
concern over hog barns	0	0	0	0	1	1
nutrients from municipal lagoons	1	0	0	0	0	1
General concern over nutrients	1	0	1	0	0	2
improved surface water management	3	6	1	0	0	10
concern over agricultural industry	0	0	0	0	1	1
concern over riparian areas	0	1	2	1	0	4
concern over the preservation of natural areas	0	0	2	1	0	3
accountability	0	0	0	1	1	2
Other	0	0	0	1	0	1
blank	0	0	0	1	6	7

Responses from both individuals and groups were prioritized to provide an indication of an issue’s level of importance. Prioritization is an important measure to consider when developing a management plan to better represent a respondent’s intent.

To calculate weighted response, the following was summed: Total of first priority issue multiplied by 5, total of second priority issue multiplied by 4, total of third priority issue multiplied by 3, total of fourth priority issue multiplied by 2, total of fifth priority issue multiplied by 1. Weighted responses are displayed in Figures 4 and 5.

Results of weighting the prioritized results reflect a similar sequence of issues with water quality concerns receiving the highest weighting of 236 and 59 for the individual and group responses, respectively. Surface water management concerns receive the second highest weighted result at 168 and 42, respectively.

Results of issue statements received from the consultation held with Arborg Collegiate students indicate more general concerns with statements such as: *“Keep water as clean as possible,”* and *“Don’t dump waste in water.”* Student concerns included water quality, drainage and irrigation, littering, wildlife, and the maintenance of natural areas.

#### Solutions

The public consultation handout also requested input on solutions to the issues presented. In the handout a section titled: *“On your own, review your original issues and suggest solutions”* contained frequent blanks (no written answer), with 22 out of a total of 43 suggestions provided for first priority issues, 18 (of 43) for the second and third priority issues, 10 for the fourth and 7 for the fifth priority issues.

**Watershed Planning Advisory Team Issue Statements**

By February of 2007 \*\* submissions were received from various government agencies. The type of information received varied from raw data to completed management plans. The type of information received has been categorized into four classes: raw data; maps and alternation information; reports; and, summary and issue statements. The following table (Table 3) summarizes the type of information received from each watershed planning advisory team member and the preliminary literature search.

Table 3. Information provided by the WPAT team and a preliminary literature search.

Type of Agency/Organization Agency/Organization Name Section Within Agency	Type of Information Provided				
	No Information Provided to Date	Raw Data	Maps or Alternative Information	Existing Report (date of report)	Summary and Issue Statements
<b>Federal</b>					
1) Environment Canada	x				
2) Canadian Wildlife Service	x				
3) Fisheries and Oceans Canada	x				
4) Prairie Farm Rehabilitation Administration			x	X (1999) <sup>1</sup> (2004) <sup>2</sup>	x
<b>Provincial</b>					
5) Manitoba Agricultural, Food and Rural Initiatives			X	X(2005) <sup>3</sup>	
6) Manitoba Conservation					
a) Conservation Data Centre		x			
b) Forestry	x				
c) Environment Office			x		x
d) Parks				X (1988) <sup>4</sup>	
e) Regional Lands				X (1986) <sup>5</sup> (2001) <sup>6</sup>	
f) Wildlife					x
7) Manitoba Infrastructure and Transportation					x
8) Manitoba Intergovernmental Affairs	x				
9) Manitoba Science, Technology, Energy and 10) Mines			x		
11) Manitoba Water Stewardship					
a) Drainage and Litigation				X(1985) <sup>7</sup>	
b) Fisheries Branch		x		X (1990) <sup>8</sup>	
c) Groundwater Management Section			x	X (1981) <sup>9</sup> (1995) <sup>10</sup>	x
d) Office of Drinking Water			x		x
e) Surface Water Management Section			x		x
f) Water Quality Management Section			x	X(1996) <sup>11</sup> (1997) <sup>12</sup>	x
<b>Municipal</b>					
12) East Interlake Planning District				X(1982) <sup>13</sup>	
13) Rural Municipality of Armstrong	x				
14) Rural Municipality of Bifrost	x				
15) Rural Municipality of Fisher	x				
16) Rural Municipality of Gimli	x				
<b>Additional Information</b>					
17) Manitoba Lands Initiative			x		
18) Icelandic River Habitat Assessment			x	X(2007) <sup>14</sup>	
19) Washow Bay Habitat Assessment			x	X(2007) <sup>15</sup>	

- <sup>1</sup> Land Resource Unit. October 1999. Soils and Terrain. An Introduction to the Land Resource. Rural Municipality of Bifrost. Information Bulletin 99-17, Brandon Research Centre, Research Branch, Agriculture and Agri-Food Canada
- <sup>2</sup> Agriculture and Agri-Food Canada - Prairie Farm Rehabilitation Administration, Prairies East Region. 2004. Summary of Resources and Land Use Issues Related to Riparian Areas in the Icelandic River Watershed Study Area. Agriculture and Agri-Food Canada - Prairie Farm Rehabilitation Administration, Winnipeg.
- <sup>3</sup> Manitoba Agriculture, Food and Rural Initiatives. November 2005. North Interlake Area Scan. Growing Opportunities. Winnipeg, Manitoba.
- <sup>4</sup> Manitoba Parks Branch, Department of Natural Resources. March 1988. Management Plan for Hecla Provincial Park and Grindstone Provincial Recreation Park. Province of Manitoba, Winnipeg, Manitoba.
- <sup>5</sup> Crown Land Classification Committee. 1986. Provincial Crown Land Plan for the Washow-Fisher Peninsula. Province of Manitoba, Winnipeg, Manitoba.
- <sup>6</sup> Information in handbook summarized from Lake Winnipeg Shoreline Erosion Study prepared for the Lake Winnipeg Shoreline Erosion Advisory Group by W.F. Baird & Associates Coastal Engineers Ltd. March 2001. Lake Winnipeg Shoreline Mangement Handbook. Province of Manitoba.
- <sup>7</sup> J. Waggoner. September 1985. Washow Bay Watershed Drainage System Study. Department of Natural Resources, Province of Manitoba, Winnipeg, Manitoba.
- <sup>8</sup> R. Cann and M. Erickson. August 1990. Preliminary Survey of the Icelandic River. Department of Natural Resources, Fisheries Management Section, Province of Manitoba. Winnipeg, Manitoba.
- <sup>9</sup> M. Rutulis. February 1981. Groundwater Resources in the Eastern Interlake Planning District. Manitoba Department of Natural Resources, Water Resources Branch, Winnipeg, Manitoba.
- <sup>10</sup> R. Betcher et al. March 1995. Groundwater in Manitoba: Hydrogeology, Quality Concerns, Management. Environment Canada, the State of the Environment Reporting and the National Hydrology Research Institute and the Manitoba Department of Natural Resources.
- <sup>11</sup> D. Green. December 1996. Summary document – Surface Water Quality Impacts Following Winter Applications of Hog Manure in the Interlake Region of Manitoba, Canada, 1996. Water Quality Management Report No. 96-15. Manitoba Environment, Province of Manitoba. Winnipeg, Manitoba.
- <sup>12</sup> D. Green. August 1997. Water Quality of the Icelandic River, 1995 and 1996 Status Report, Icelandic River Study. Water Quality Management Report No. 97-10. Manitoba Environment, Province of Manitoba. Winnipeg, Manitoba.
- <sup>13</sup> Resource Allocation Working Group. August 1982. Planning Report on Natural Resources – Eastern Interlake Planning District. Department of Natural Resources. Province of Manitoba.
- <sup>14</sup> North/South Consultants Inc. July 2007. East Interlake Conservation District: Icelandic River Watershed Riparian Assessment Survey – with Emphasis on the Icelandic River and Associated Drains – 2006. Winnipeg, Manitoba.
- <sup>15</sup> North/South Consultants Inc. June 2007. East Interlake Conservation District: Washow Bay Creek Watershed Riparian Assessment Survey – with Emphasis on the Washow Bay Creek and Associated Drains – 2006. Winnipeg, Manitoba.



A review of the WPAT technical team revealed a variety of issue common to much of agro-Manitoba, and some issues unique to this watershed. After reviewing each technical submission, and relevant available reports, a summary of WPAT issues is provided. Issues are numbered to match the contributor in Table 3 above.

#### Federal

- 1) Environment Canada  
No issues provided by Environment Canada. No additional reporting was reviewed.
- 2) Canadian Wildlife Service  
No issues provided by the Canadian Wildlife Service No additional reporting was reviewed.
- 3) Fisheries and Oceans Canada  
No issues provided by Environment Canada. No additional reporting was reviewed.
- 4) Prairie Farm Rehabilitation Administration  
A submission was provided by PFRA in July of 2007. This report outlined uptake of the Canada-Manitoba Farm Plan Program in the Icelandic River and Washow Bay Creek watershed up to March 31, 2007. Popular program areas include: wintering site management, improved crop systems, product waste management and riparian area management.

#### Provincial

- 5) Manitoba Agricultural, Food and Rural Initiatives  
The "North Interlake Area Scan," completed in November of 2005, was submitted in addition to a series of maps illustrating water and wind erosion risk, surface texture, soil salinity, impacts of irrigation, soil drainage, land use/land cover, suitability of irrigation, and agricultural capability.

Selected issues outlined in the North Interlake Area Scan include:

Two RM's in this watershed experienced population growth over the last 5 years (this report reviewed Statistics Canada data from 1996 and 2001, the author reviewed 2006 data when possible). A review of 2006 data indicate this trend continued in 2006 to reveal a 10 year overall increase in population in the RMs of Armstrong and Bifrost. Population in the RM of Fisher declined over the same 10-year period.

The largest employer for men is agricultural and resource-based industries, whereas the largest employer for women is the sales and service industry (1996 and 2001 data). Members of the agriculture industry are aging, with only 12% under the age of 35.

On average, persons working in the north interlake, employed full time, earn substantially less than the provincial average annual wage. This difference, \$24,980 for north interlake vs. \$36,729 as a provincial average, are a result of substantially lower income earned by men.

Other demographic issues of importance include: a severe doctor shortage, access to technology, underemployment, low levels of post-secondary education, and a high reliance on primary industries and a long distance to markets.

Overall, the total number of farms in the North Interlake declined 15% (between 1996 and 2001) and there is a decline in small farms. From 1996 to 2001 the number of farms under \$50,000 decreased by 62%.

The report also outlined issues for agriculturally-related industries:

- There is difficulty assembling and managing large parcels of land
- Minimal profitability and issues of economy of scale

- Lack of links with packers and/or large feedlots
- Cull cattle over thirty months of age cannot travel to United States
- Predator control (timber wolves)
- Distance to slaughter markets
- Reluctance of financial institutions to get involved with feedlot operations
- Environmental engineering requires large financial investment
- Packer funded feedlots are developing in areas where there is experience (Feedlot Alley in southern Alberta)
- Grass-fed carcass will be penalized for yellow fat and lack of finish, and in general market development is a necessity for grass fed beef
- Grass fed beef cattle which finish over 30 months of age cannot be shipped to United States
- The dairy industry has declined in the North Interlake due to retirement, the high cost of quota and lack of training and labor services
- Expansion in the hog industry is unlikely due to lack of investment for establishing new operations, lack of skilled labor force, environmental regulations and community acceptance, and issues related to dealing with waste
- Poultry issues include prohibitive cost of quota, turkey consumption stable for past years, avian influenza, animal welfare and world trade negotiations
- Issues relating to forages include cow herd increases resulting in an increased strain on the land needed to sustain the herd, especially during a drought.
- Brush encroachment is a serious problem, especially when producers adopt rotational grazing techniques. Brush encroachment and the lack of biodiversity have resulted in the exodus of wildlife

6) Manitoba Conservation

a) Conservation Data Centre

The Conservation Data Centre provided a list of species found in the Icelandic River watershed. Two plant species were listed as “very rare” and include the Engelmann’s Spike Rush (*Eleocharis engelmannii*) and the Richardson Needle Grass (*Stipa richardsonii*). One animal species was listed as rare, the piping plover (*Charadrius melodus*). The report does not indicate sensitive range areas within the watershed.

b) Forestry

No issues provided by provincial foresters. Additional reporting reviewed included land cover mapping and the Terrestrial Ecozones of Canada.

c) Environment Office

A list of manure management plans for the Interlake region was provided by the Environment Office. Also, crop insurance data was provided for this region and a list of projects that have either undergone an environmental assessment under the Environment Act or have received a license under this Act.

There are three wastewater disposal systems located in the watershed, each using a lagoon for wastewater treatment, two fertilizer and pesticide storage and sales facilities licensed under the Act, and three waste disposal grounds (listed as Class 3) under the Act.

d) Parks

The Hecla/Grindstone Provincial Park Management Plan was provided. (GET COPY FROM EICD)

e) Regional Lands

Crown land designations and a report on Lake Winnipeg Shoreline were provided. Issues can be inferred from the designations noted on the map (see Figure ##).

f) Wildlife

All or portions of four wildlife management areas are located in the Icelandic River watershed and include: Moose Cree, established to provide secure habitat for a wide variety of ungulates, birds and furbearers; Lee Lake, established to help restore the Eastern Prairie population of Canada Geese; Washow Bay, established to protect waterfowl staging habitat; and Rembrandt, established to protect white-tailed deer winter range and maintain habitat for ruffed grouse.

- An important elk wintering area exists in the extreme west portion of the watershed
- High quality waterfowl staging and summer molting marshes are located in the Washow Bay and Riverton areas. Waterfowl staging numbers are highly dependent on water conditions on adjacent agricultural areas. It is extremely important that these marshes are managed in a manner that ensures this habitat is sustained for waterfowl
- Moose are found in the aspen and mixed wood ridges and bogs in the northeast portion of the watershed
- Neo-tropical birds and various raptor species use the riparian habitat along the Icelandic River and Lake Winnipeg. They provide complex habitats between the aquatic zone and surrounding terrestrial areas. Clearing of riparian habitat should be discouraged.
- Piping plover, a nationally and provincially endangered shorebird, breeds and nests on the pebbly beaches of Riverton Sandy Bar peninsula. This is critical habitat for the endangered species, and disturbance from all terrain vehicle traffic has disturbed this sensitive habitat.
- Of particular importance are the varieties of orchids, such as the swamp-pink, Rams Head Lady's Slipper, Round-leaved Bog Orchid and Fringed Orchid, that thrive on excessively moist conditions of the bog and fen complexes at Silver and Washow Bay. Land use planning around these bog and fen complexes should incorporate acceptable buffers to intensive agricultural development and the operation of high capacity wells.

7) Manitoba Infrastructure and Transportation

- The public is developing higher expectations regarding the level of service provided for drainage. Requests for drainage work have increased and private landowners are now starting to undertake drainage improvements on public land.
- Ditches along our roads and the municipal roads have been deepened to improve drainage, however these improvements have lead to numerous slope failures along the roadways
- Drainage and drainage improvements are a significant concern for our department. The majority of our public complaints are related to drainage issues.
- Spills of hazardous materials along highways are identified as risk to the watershed.
- Our department would like to see the development of standards for drainage improvements to address side slope failures, steep side slopes (a roadside hazard for motorists) and erosion control

8) Manitoba Intergovernmental Affairs

No issues provided by Intergovernmental Affairs. No additional reporting was reviewed.

9) Manitoba Science, Technology, Energy and Mines  
(GET MINING STUFF FROM EICD)

10) Manitoba Water Stewardship

a) Drainage and Litigation

No issues were provided by Water Control Systems Management, the provincial section responsible for drainage and other water control works.

b) Fisheries Branch

- A considerable portion of the watersheds have been converted into constructed drains, including sections of the mainstem of the Icelandic River and Washow Bay Creek. The channelization of rivers, creeks and streams degrades the ability of the waterway to conduct its natural hydrologic processes which in turn develop natural pools and riffles beneficial to fish.
- The removal of riparian vegetation through this process and other anthropocentric activities is another concern. Naturally vegetated stream banks are important for maintaining the ecological integrity of waterways.
- Barriers to fish movement exist in both watersheds as well, but seemingly more on the Icelandic River. Barriers often block fish spawning migrations to traditional spawning habitat as well as disrupt natural stream flows, sediment transport and thermal regimes. Two major barriers identified on the Icelandic River are the weir in the Town of Arborg and a PFRA dam and fish ladder located near Vidir.
- Two habitat assessments have been completed by consultants tendered by the EICD. Please review recommendations outlined in these reports.

c) Groundwater Management Section

- Flowing artesian areas (expand)
- Vulnerable groundwater areas (expand)
- Sinkholes (expand)
- Groundwater quality (arsenic, fluoride, boron, nitrate, micro-organisms) (expand)

d) Office of Drinking Water

e) Surface Water Management Section

f) Water Quality Management Section

Municipal

- 11) East Interlake Planning District
- 12) Rural Municipality of Armstrong
- 13) Rural Municipality of Bifrost
- 14) Rural Municipality of Fisher
- 15) Rural Municipality of Gimli

Additional Information

- 16) Manitoba Lands Initiative
- 17) Icelandic River Habitat Assessment
- 18) Washow Bay Habitat Assessment