

# University of Manitoba Archives & Special Collections

## Finding Aid - Red River Floodway Collection (MSS 60 (A1990-063))

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# Red River Floodway Collection

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## Summary information

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<b>Repository:</b>	University of Manitoba Archives & Special Collections
<b>Title:</b>	Red River Floodway Collection
<b>ID:</b>	MSS 60 (A1990-063)
<b>PC [alternative]:</b>	78
<b>Date:</b>	1962-1972 (date of creation)
<b>Physical description:</b>	0.8 m of textual records, 511 photographs, 5 video reels.
<b>Dates of creation, revision and deletion:</b>	Finding aid created by John Burgess (1990). Encoded by Julianna Trivers (September 2002). Converted by Justin Fuhr (July 2016). Revised by N. Courrier (September 2019).

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## Administrative history / Biographical sketch

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### Note

In 1950, Winnipeg experienced one of the last major floods from the Red River. With 103,000 cubic feet per second of water flow and 30.2 feet above the city datum during the flood, the Government of Canada decided to investigate flood preventative measures for the Red and Assiniboine River basins. On average, the City of Winnipeg could expect floods equal to, or surpassing, the flood of 1950 every thirty-six years. With this in mind, the government studied various flood control devices. Increasing the channel flow of the Red River or dyking around Winnipeg were some of the devices studied. However, the construction of a floodway, at approximately \$57 million, was thought to provide the greatest safety for the funds spent on a control mechanism.

The Royal Commission on Flood Cost Benefit was established in 1958, and it was its recommendation that the best form of flood prevention for Greater Winnipeg was the Floodway.

In mid-1961, at the request of the Province of Manitoba (Department of Agriculture, Water Control and Conservation Branch), the University of Manitoba was asked to perform model studies tests of the inlet and outlet models of the Red River Floodway. After receiving the necessary grant, Marshal Gysi (engineer in charge at the University) set about finding a suitable location to perform these studies, finally deciding upon the basement of the new Animal Sciences Building. Under the direction of R. L. Walker, project engineer at H. G. Acres and Co. Ltd (consulting engineers in Niagara Falls), the Civil Engineering Department at the University was to test the models with the data supplied by H. G. Acres. Consequently, any changes in model design could be done only with the approval of this consulting firm.

The purpose of the outlet model was to determine if any modifications to the design were necessary in order to prevent scour at the junction of the Floodway and the Red River or, perhaps as thought, further downstream. Construction of the model began December 18, 1961, and care was taken to prevent any water leakage in the model. In order to test for sediment build-up, scour, and flow patterns, a number of tests were done using different flow velocities and amounts of water. Confetti and dye (potassium

permanganate) were distributed in the water and observations were made on their flow characteristics. The final test was conducted in October 1962.

The inlet model was constructed between April 17 and May 31, 1962, and the tests consisted of four stages. Stage I began June 7, ended June 12, and was concerned only with the river downstream of the control structure. The purpose of stage I was to ascertain what would happen to the river during "high-stage natural flooding." Another determination to be made was to find an artificial method of imitating floodplain roughness. Stage 2 tests began June 26, lasting until July 2, and were designed to find the location of the "transition zone and bordering dykes" which would provide suitable "approach conditions" and weaken the effects of scour. August 20-22 were to accommodate the third stage of tests. There were four designs to the diversion canals. One canal would bypass the water flow of the Red River around the control devices during construction, and stage 3 was to determine which canal model would be the most efficient. The final stage on the inlet model was to find the "rip-rap requirements" upstream and downstream of the control structure. In addition, stage 4 was to provide a "rating curve" for the control structure.

Upon completion of the tests, all pertinent data was forwarded for final study to H. G. Acres and Co. in Niagara Falls. In July 1964, construction of the Winnipeg Floodway began with the design configurations supplied by Acres. The Floodway took approximately three years to construct at an expense of about \$57 million.

#### Chronology of Important Dates

Mid-1961. Project undertaken at the University at the request of the Province of Manitoba.

Dec. 18, 1961. Construction of outlet model begun.

Dec. 18, 1961. Construction of outlet model begun.

April 17, 1962. Construction of inlet model begun.

June 7, 1962. Start of stage 1 tests on inlet model.

Oct. 4, 1962. State 4 tests of inlet model completed.

Oct. 22, 1962. Final outlet model test.

July 11, 1964. Construction of Floodway begun.

## Custodial history

The Red River Floodway Collection came to the University of Manitoba Archives from the Faculty of Engineering Library at the University of Manitoba. This collection presents the University's role in the design and testing of the floodway program.

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## Scope and content

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The Red River Floodway Collection presents to the researcher the University's roll in the design and testing procedures of the inlet and outlet models for the floodway. This collection incorporates a variety of formats, such as films, still photographs, correspondence, and test sheets in aiding the researchers in their study of the floodway design.

For the most part, the correspondence in this collection is to Professor E. Kuiper from R. L. Walker.

From January 26, 1962, to October 1, 1962, correspondence was exchanged within the University, as well as without, with regards to testing procedures, ordering of supplies, staff overtime, and construction recommendations. Although a number of weekly reports were sent by Marshall Gysi (engineer in

charge at the University of Manitoba) to R. L. Walker (project engineer at H. G. Acres), the collection does not include any of Mr. Gysi's copies of the reports.

The records relating to the plans and original data sheets of the Red River Floodway model designs span the period from November 1, 1961 to February 13, 1963. The construction and purpose of the inlet model are documented, as well as such information as examples of test data sheets. Also included is a data sheet containing the light and exposure information used in the photographs of the models. The material encompassing this section details the construction of the models and includes such information as a rating curve, sketch, and contour plans.

Test data for the inlet and outlet models are supplied in the form of test data sheets, sketches of the models on the Red River, velocity cross-sections and photographs, extending from January 22 to October 4, 1962. The correspondence included with this section is useful because it details the testing procedures for the outlet model and all four stages of the inlet model. In addition, the results of the tests highlight this section.

The drawings in this highly detailed group of reference aids are unique and beneficial to the researcher. They depict topographical detail, inlet and outlet models in their various stages of testing, and the hydraulics laboratory at the University.

All the photographs and films were made between 1962-1963. These are black-and-white photos depicting various tests on the models. The 16mm films are also black-and-white, and show current testing and ice flow studies. They are silent films with a running time of approximately five minutes each.

The Red River Floodway Collection is a valuable source of information for researchers studying the design and construction of this flood control device. Although a number of weekly reports is missing, there is enough information to allow the researcher a clear picture of the trials and results brought by the efforts of the Civil Engineering Department. The photographs are an excellent visual source of information as well as a companion to the meticulous drawings.

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## Notes

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### Title notes

### Arrangement

These records are organized into 4 series:

- I. Correspondence
- II. Plans and Original Data Sheets
- III. Test Data of Inlet and Outlet Models 1962-1964
- IV. Drawings

### Restrictions on access

There are no restrictions on access.

## Finding aids

A finding aid can be downloaded from the fonds-level description by clicking on the “Download” link under “Finding Aid” on the right hand side of the screen.

## Other notes

- **Publication status:** published
- **Level of detail:** Partial
- **Status description:** Draft

## Access points

- Textual record (documentary form)
- Graphic material (documentary form)
- Moving images (documentary form)

## Series descriptions

### Correspondence

Date: n.d. (date of creation)

Access points:

- Textual record (documentary form)

Publication status:

published

### File / item list

Ref code	Title	Dates	Access status	Container
	File - Correspondence	1962		A1990-063, Box 0001 File 0001

### Series MSS 60 (A1990-063)-PC 78: Plans and Original Data Sheets

Date: n.d. (date of creation)

Access points:

- Textual record (documentary form)
- Technical drawing (documentary form)

<u>Publication status:</u> published				
File / item list				
Ref code	Title	Dates	Access status	Container
	Item - A. Introduction	1961-1963		A1990-063, Box 0002 Item 0001
	Item - B. Inlet Model Report -- construction, purpose, and results of stages 1-4	n.d.		A1990-063, Box 0002 Item 0002
	Item - C. Correspondence	1962		A1990-063, Box 0002 Item 0003
	Item - D. Report #2 -- re: Hydraulics model study of the outlet channel	n.d.		A1990-063, Box 0002 Item 0004
	Item - E. Example of test data sheet	n.d.		A1990-063, Box 0002 Item 0005
	Item - F. Two outlet works model drawings	n.d.		A1990-063, Box 0002 Item 0006
	Item - G. Outlet model diagram	n.d.		A1990-063, Box 0002 Item 0007
	Item - H. Flow Sketch	n.d.		A1990-063, Box 0002 Item 0008
	Item - I. Floodway model rating curve	n.d.		A1990-063, Box 0002 Item 0009
	Item - J. Descriptive notes on flow pattern	n.d.		A1990-063, Box 0002 Item 0010
	Item - K. Light and exposure data of floodway models	n.d.		A1990-063, Box 0002 Item 0011
	Item - L. Water surface profile	n.d.		A1990-063, Box 0002 Item 0012
	Item - M. Velocity cross-sections	n.d.		A1990-063, Box 0002 Item 0013
	Item - N. Contour plan	n.d.		A1990-063, Box 0002 Item 0014
	Item - O. Flow sketch	n.d.		A1990-063, Box 0002 Item 0015

	Item - P. Rating curve	n.d.	A1990-063, Box 0002 Item 0016
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## Test Data of Inlet and Outlet Models

Date: 1962-1964 (date of creation)

Access points:

- Textual record (documentary form)
- Technical drawing (documentary form)
- Graphic material (documentary form)

Publication status:

published

### File / item list

## A. Outlet model

Date: 1962 (date of creation)

Access points:

- Textual record (documentary form)
- Graphic material (documentary form)

Publication status:

published

### File / item list

Ref code	Title	Dates	Access status	Container
	Item - 1. Correspondence between R. L. Walker and Dr. J. Fulton re: testing program for the outlet model	1962		A1990-063, Box 0003 Item 0001
	Item - 2. Reports on tests	1962		A1990-063, Box 0003 Item 0002
	Item - 3. Test data sheets and photographs	1962		A1990-063, Box 0003 Item 0003
	Item - 4. Test data sheets and photographs	1962		A1990-063, Box 0003 Item 0004
	Item - 5. Correspondence from R. L. Walker Professor E. Kuiper re: interim model test program	1962		A1990-063, Box 0003 Item 0005

## B. Outlet model - final tests

Date: n.d. (date of creation)



Access points:

- Textual record (documentary form)
- Technical drawing (documentary form)
- Graphic material (documentary form)

Publication status:

published

**File / item list**

Ref code	Title	Dates	Access status	Container
	Item - 1. Outlet model - final tests	1962		A1990-063, Box 0004 Item 0001
	Item - 2. Index	n.d.		A1990-063, Box 0004 Item 0002
	File - 3. Correspondence	n.d.		A1990-063, Box 0004 File 0001
	Item - a. from Dr. J. Fulton re: testing of the outlet works model	n.d.		A1990-063, Box 0004 File 0001 Item 0001
	Item - b. to F. H. Jonker re: testing program for flood floes	n.d.		A1990-063, Box 0004 File 0001 Item 0002
	Item - 4. Test data sheets	n.d.		A1990-063, Box 0004 Item 0004
	Item - 5. Sketches	n.d.		A1990-063, Box 0004 Item 0005
	Item - 6. Photographs	n.d.		A1990-063, Box 0004 Item 0006
	Item - 7. Cross-sections	n.d.		A1990-063, Box 0004 Item 0007
	Item - 8. Newspaper clippings from Winnipeg Free Press	1964		A1990-063, Box 0004 Item 0008

**C. Inlet model construction and testing**Date: n.d. (date of creation)Access points:

- Textual record (documentary form)
- Technical drawing (documentary form)

- Graphic material (documentary form)

Publication status:

published

**File / item list**

Ref code	Title	Dates	Access status	Container
	Item - 1. Inlet model construction and testing program	1962		A1990-063, Box 0005 Item 0001
	Item - 2. Index	n.d.		A1990-063, Box 0005 Item 0002
	File - 3. Correspondence	n.d.		A1990-063, Box 0005 File 0001
	Item - a. To F. H. Jonker, re: inlet works model construction and testing program. re: ice tests for stage 2 of the inlet works model. re: testing of the inlet works model stage 3.	1962		A1990-063, Box 0005 File 0001 Item 0001
	Item - b. To A. J. Carlson, re: testing program for stage 4 of the inlet works model.	1962		A1990-063, Box 0005 File 0001 Item 0002
	Item - 4. Test data sheets	n.d.		A1990-063, Box 0005 Item 0004
	Item - 5. Sketches	n.d.		A1990-063, Box 0005 Item 0005
	Item - 6. Photographs	n.d.		A1990-063, Box 0005 Item 0006
	Item - 7. Cross-sections	n.d.		A1990-063, Box 0005 Item 0007

**IV. Drawings**Date: n.d. (date of creation)Physical description: Included in this collection are eighteen drawings of the inlet and outlet models and of the Red River FloodwayAccess points:

- Technical Drawing (documentary form)

Publication status:

published

File / item list				
Ref code	Title	Dates	Access status	Container
	Item - a. Index	n.d.		A1990-063, Box 0006 Item 0001
	Item - b. Location plan showing topographical detail	n.d.		A1990-063, Box 0006 Item 0002
	Item - c. Outlet model	n.d.		A1990-063, Box 0006 Item 0003
	Item - d. Inlet model: general arrangement for stage 1 test program	n.d.		A1990-063, Box 0006 Item 0004
	Item - e. Inlet model: interim control structure	n.d.		A1990-063, Box 0006 Item 0005
	Item - f. Inlet model: template locations for stage 2 test program	n.d.		A1990-063, Box 0006 Item 0006
	Item - g. Inlet model: template location and diversion channel configurations for stage 3 test program	n.d.		A1990-063, Box 0006 Item 0007
	Item - h. Interim outlet model: alternative arrangements of downstream channel	n.d.		A1990-063, Box 0006 Item 0008
	Item - i. Interim outlet model: general arrangement	n.d.		A1990-063, Box 0006 Item 0009
	Item - j. Interim outlet model: plan and sections	n.d.		A1990-063, Box 0006 Item 0010
	Item - k. Outlet model	n.d.		A1990-063, Box 0006 Item 0011
	Item - l. Outlet structure: plan and sections	n.d.		A1990-063, Box 0006 Item 0012
	Item - m. Outlet works model: general arrangement	n.d.		A1990-063, Box 0006 Item 0013
	Item - n. Plan showing survey and cross-sections at outlet	n.d.		A1990-063, Box 0006 Item 0014
	Item - n. Plan showing survey and cross-sections at outlet	n.d.		A1990-063, Box 0006 Item 0015
	Item - n. Plan showing survey and cross-sections at outlet	n.d.		A1990-063, Box 0006 Item 0016
	Item - q. Model study: plates for measuring weirs	n.d.		A1990-063, Box 0006 Item 0017

	Item - r. University of Manitoba: hydraulics laboratory	n.d.	A1990-063, Box 0006 Item 0018
	Item - s. University of Manitoba: Winnipeg floodway model: outlet model plan	n.d.	A1990-063, Box 0006 Item 0019

### Series MSS 60 (A1990-063)-PC 78: Photograph Collection

Date: 1962-1963 (date of creation)

Access points:

- Graphic material (documentary form)
- Moving images (documentary form)

Publication status:

published

#### File / item list

Ref code	Title	Dates	Access status	Container
	File - Photographs 1-216	1962		A1990-063, PC 78, Box 0001 File 0001
	File - Photographs 217-408	1962		A1990-063, PC 78, Box 0001 File 0002
	File - Photographs 409-455	1962		A1990-063, PC 78, Box 0001 File 0003
	File - Photographs 456-500	1962		A1990-063, PC 78, Box 0001 File 0004
	File - Photographs 501-510	1962		A1990-063, PC 78, Box 0001 File 0005
	File - Photograph 511	n.d.		A1990-063, PC 78, Box 0001 File 0006

### Video Reels

Date: 1962-1963 (date of creation)

Access points:

- Moving images (documentary form)

<u>Publication status:</u> published				
<b>File / item list</b>				
Ref code	Title	Dates	Access status	Container
	Item - Item 512	1963		A1990-063, PC 78, Box 0002 File 0007
	Item - Item 513	1963		A1990-063, PC 78, Box 0002 File 0008
	Item - Item 514	1962		A1990-063, PC 78, Box 0002 File 0009
	Item - Item 515	1962		A1990-063, PC 78, Box 0002 File 0010
	Item - Item 516	1962		A1990-063, PC 78, Box 0002 File 0011