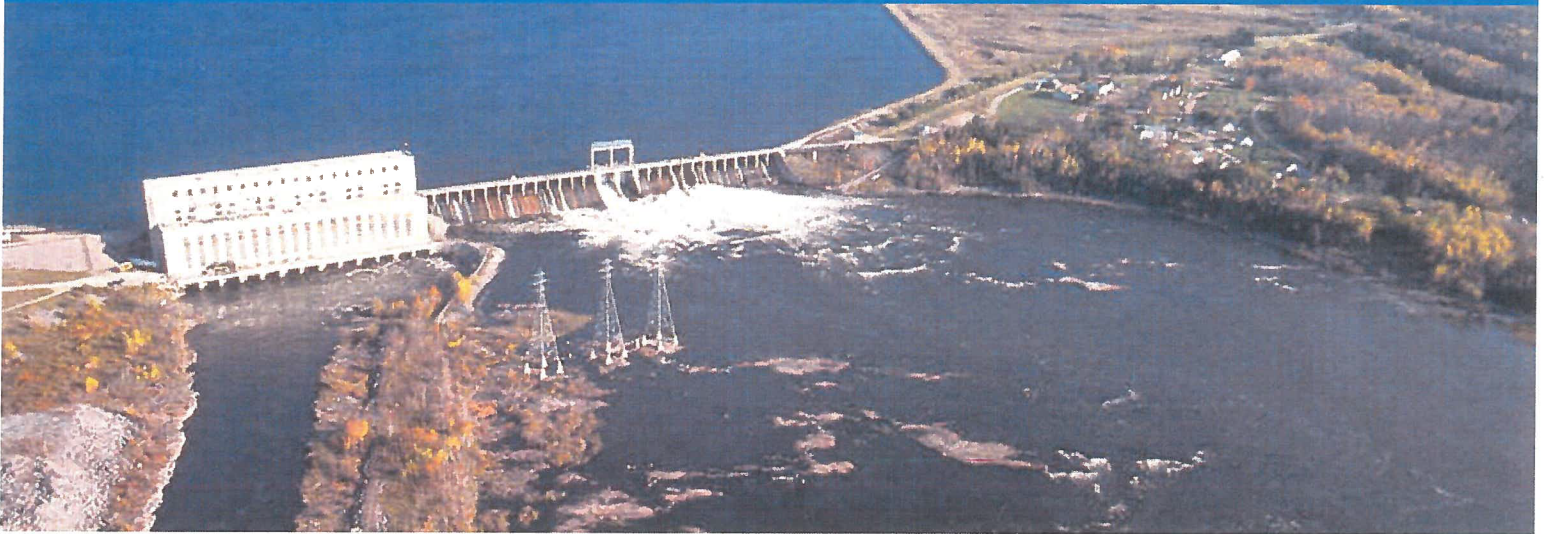


# SEVEN SISTERS GENERATING STATION

Report in Support of a Request for a

## RENEWAL LICENCE

Under The Water Power Act and Regulations



Original signed A.S. Kotula

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WP&O 18-02



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## Executive Summary

The purpose of this document is to demonstrate that Manitoba Hydro has fulfilled all obligations required to obtain a Renewal Licence under The Water Power Act *C.C.S.M. c. W60* (The Water Power Act) for the Seven Sisters Generating Station (GS). The document provides details on the observances of all the terms and conditions under the Final Licence and applicable sections of Manitoba Regulation 25/88R pursuant to The Water Power Act (the Regulation). Manitoba Hydro is providing this documentation to assist the Minister responsible for The Water Power Act in the decision to issue a Renewal Licence for the Seven Sisters GS.

Seven Sisters GS has an installed capacity of 180.6 MW and is located approximately 90 kilometres northeast of Winnipeg on the Winnipeg River.

To date, the Seven Sisters GS has operated under the authority of a Final Licence and under two Short-Term Extension Licences (STELs). Manitoba issued the Final Licence on June 3<sup>rd</sup>, 1966, and covered a term of fifty (50) years from January 1, 1932 to December 31, 1981. Manitoba Hydro submitted a request for a Renewal Licence on January 19, 1978. Project improvements to the spillway between 1979 and 1983 and those to the powerhouse between 1993 and 1998 resulted in a delay in the decision to issue a Renewal Licence. Since then resource constraints at Manitoba Hydro and Manitoba Sustainable Development have been the primary cause for the delay in the renewal of this licence. The current STEL expires on September 30, 2020.

Division 1 of this document provides an overview of the project, its history and operation. Division 2 provides context for the decision to renew the licence for another 50 years. Division 3 demonstrates how Manitoba Hydro has fulfilled terms of the second short-term extension and Final Licences and articles of the Regulation pertaining to a final licensee and which require a statement of observance.

Division 4 concludes the report highlighting Manitoba Hydro's commitment to the ongoing safe operation of Seven Sisters GS and its request for a Renewal Licence under The Water Power Act.

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## Division 1 – Introduction and Background

### Purpose

The purpose of this document is to demonstrate that Manitoba Hydro has fulfilled all obligations required to obtain a Renewal Licence under The Water Power Act *C.C.S.M. c. W60* (The Water Power Act) for the Seven Sisters Generating Station (GS). The document provides details on the observances of all the terms and conditions under the Final Licence and applicable sections of the Manitoba Regulation 25/88R pursuant to The Water Power Act (the Regulation). Manitoba Hydro is providing this documentation to assist the Minister responsible for The Water Power Act in the decision to issue a Renewal Licence for the Seven Sisters GS.

### Report Overview

Division 1 of this document provides background information including an overview of the project, its history and operation, and highlights Manitoba Hydro's commitment to dam safety and the project's significance in the overall system. Division 2 summarizes the key aspects of the Renewal Licence requiring provincial decision and approval. Division 3 demonstrates how Manitoba Hydro has fulfilled terms of the second short-term extension and Final Licences and shows compliance with pertinent articles of the Regulation. Manitoba Sustainable Development (MSD) agreed to the selection of pertinent articles of the Regulation. Previous names of MSD are referenced in this document and include Manitoba Conservation and Water Stewardship as well as Manitoba Water Stewardship. Division 4 concludes the report highlighting Manitoba Hydro's commitment to the ongoing safe operation of Seven Sisters GS and its request for a Renewal Licence under The Water Power Act.

### The Water Power Act

Manitoba grants the right to develop water power under the authority of The Water Power Act and the Regulation. The Water Power Act is part of a suite of natural resource allocation acts through which the province allows various entities to develop Crown resources. It is broad in its application in that it provides authority for Manitoba to; allocate provincial water powers and crown lands required for the development of water power/expropriate private lands, authorize the construction of all undertakings with respect to the water power development, regulate all power and energy produced, and to authorize all incidental matters.

The Water Power Act allows for a licence to take on one of three main types: interim, final and renewal, depending on the stage of development. An interim licence is issued prior to the start of construction subject to certain terms and conditions. Upon successful completion of the development and satisfaction of the Interim Licence terms and conditions and the Regulation, the licensee is expected to request a Final Licence. When granted, a Final

Licence will expire in no more than fifty years. Between four and six years before expiry, the licensee is once again expected to apply for a Renewal Licence.

More information on Water Power Act Licensing is available on the provincial web site at: [http://www.gov.mb.ca/sd/waterstewardship/licensing/water\\_power\\_licensing.html](http://www.gov.mb.ca/sd/waterstewardship/licensing/water_power_licensing.html).

## Licensing Background

Manitoba Hydro operates the Seven Sisters GS in accordance with the second short-term extension licence for the development of water power at the Seven Sisters Falls Site on the Winnipeg River.

Manitoba Hydro is the holder of a Final Licence for the development of water power at the Seven Sisters Falls Site, dated June 3, 1966. Manitoba issued the Final Licence with a term of 50 years from January 1, 1932 to January 1, 1982. Manitoba Hydro requested a Renewal Licence on January 19<sup>th</sup>, 1978 in accordance with Section 46 of the Regulation. Major rehabilitation of the north non-overflow dam and spillway, powerhouse improvements and resource constraints brought about delays in renewing the Final Licence. The first Short-Term Extension Licence (STEL) dated November 3, 2010 (retroactive) with a term to and including September 30, 2015 extended the term of the Final Licence. Manitoba issued a second STEL in accordance with Section 92(6) of the Regulation that authorizes operations for a term of October 1, 2015 to and including September 30, 2020.

## Licence Area

The current licence area is shown in Manitoba drawing number 21-7-1016 and includes lands impacted by raised water levels (Natalie Lake to just upstream of Otter Falls), a segment of the Winnipeg River 2.5 km downstream of the project, and approximately 1.6 km of the Pinawa Channel below the Pinawa Rockfill Dam. Manitoba designated a significant portion of the existing licence area as Whiteshell Provincial Park in 1961.

## Project Description

The Seven Sisters Generating Station consists of a powerhouse, spillway and dykes and has a name plate capacity of 180 MW (242,160 horsepower (HP)). The station was developed in two stages. The first stage was completed in 1931 and involved construction of three units. The second stage was completed in 1952 following World War II during the Farm Electrification Program (1945-1953) and involved construction of the additional three units.

The project is located on the Winnipeg River, approximately 90 km northeast of the City of Winnipeg, and approximately 72 km upstream of Lake Winnipeg, as shown in Figure 1. Figure 2 shows a photograph of the Seven Sisters Generating Station powerhouse and spillway, while Figure 3 shows an overall site map of the major project components. Figure 4 shows the concrete structures while Figures 5 and 6 show the North and South Dykes respectively. Figures 7 and 8 show the newly refurbished North Non-Overflow Dam and Pinawa Rockfill Dam.

The Winnipeg River drainage basin is an area of approximately 150,000 km<sup>2</sup> that lies mostly in northwestern Ontario but also includes the south-east portion of Manitoba and part of northern Minnesota in the United States. Most of the basin is located within the Canadian Shield and is scattered with many lakes and rivers including the Winnipeg, Bird, Lee, Whitemouth and English Rivers. The basin is mainly forested and rocky.

Although the Winnipeg River drainage basin is approximately 765 km in length, running from Lake Superior to Lake Winnipeg, the Winnipeg River is only 260 km long and flows from Lake of the Woods in a north-westerly direction, draining into Lake Winnipeg. Due to the multi-purpose nature of the Winnipeg River drainage basin, the Lake of the Woods Control Board (LWCB) regulates flows on the Winnipeg River.

Manitoba Hydro owns and operates six hydraulic generating stations on the Winnipeg River:

1. Pointe du Bois Generating Station
2. Slave Falls Generating Station
3. Seven Sisters Generating Station
4. McArthur Falls Generating Station
5. Great Falls Generating Station
6. Pine Falls Generating Station

### Physical Structures

The station components include a six-unit powerhouse, a two-bay gated sluiceway dividing a 27-bay spillway into two sections, two non-overflow dams, and north and south dykes. The dykes extend for 5.6 km upstream on the Winnipeg River's north shore and 7.2 km upstream on the south shore. The Pinawa Rockfill Dam, located at the Pinawa town site, is also required for the Seven Sisters development. Seven Sisters forebay impoundment created Natalie Lake. Figures 4, 5, and 6 show the general arrangement of concrete and earth structures. Tables 1 and 2 summarize major characteristics of the station and project components.

Table 1 Construction Specifications and Operating Parameters of the Seven Sisters Generating Station.

Construction Period	1929 to 1952 (two stages)
Licensed Capacity	167.8 MW (225,000 HP)
Average Annual Generation (2017)	1,005 million kW-h
Waterfall Drop (head)	18.6 m
Maximum Licence Forebay Elevation	274.17 m (899.5 ft)
Maximum Operating Forebay Elevation	274.17 m

Table 2 Principal Structures of the Seven Sisters Generating Station.

<i>Powerhouse</i>	Number of Units	6
	Length	128.2 m
	Discharge Capability (at full gate)	1,040 m <sup>3</sup> /s
	Power Production Unit 1* Unit 2* Unit 3* Unit 4* Unit 5,6	1 unit @ 31.3 MW/unit = 31.3 MW 1 unit @ 30.7 MW/unit = 30.8 MW 1 unit @ 30.5 MW/unit = 30.5 MW 1 unit @ 32.1 MW/unit = 32.1 MW 2 units @ 28.0 MW/unit = 56.0 MW TOTAL = 180.6 MW
<i>Spillway</i>	Number of Bays	Two spillways with 27 bays, divided by a sluiceway with 2 bays
	Length	225.0 m
	Discharge Capacity (at full supply level**)	4,014 m <sup>3</sup> /s
<i>Dykes and Non Overflow Dams</i>	Material	Rock with a clay core
	Crest Elevation	Dams: 276.0 m Dykes: 276.2 m
	Available Freeboard	Earth Structures: 2.0 m Concrete Structures: 1.8 m

\*Units 1, 2, 3, and 4 were refurbished between 1992 and 1998. Refurbishment of units 5 and 6 is not yet scheduled.

\*\*Full Supply Level is 274.17 m measured at the forebay.

### Pinawa Rockfill Dam

Pinawa Rockfill Dam is located approximately 12 km upstream of the Seven Sisters GS. It was constructed on top of the old Pinawa Control Dam that was used to divert water from the Winnipeg River to the Pinawa Channel for the operation of the now decommissioned Pinawa Generating Station (GS). The Pinawa GS was retired in 1951 during the completion of the second phase of the Seven Sisters powerhouse when the final three units were added. The Pinawa Rockfill Dam was built to contain the flow of the Winnipeg River and direct the flow to Seven Sisters while maintaining a riparian flow in the Pinawa Channel. Since 1951 the flow in the Pinawa Channel has been comprised primarily of seepage through the Pinawa Rockfill Dam which generally varies with the level of the Winnipeg River.

### Project Upgrades

Manitoba Hydro undertook significant rehabilitation of the Seven Sisters Generating Station between 1979 and 1983, including building a new north non-overflow dam, concrete repairs to the north, south and center sluiceway piers as well as several spillway piers and rollways. The original concrete was low-strength concrete and did not have adequate durability. Exposed portions began to deteriorate soon after construction, which led to annual repairs. Investigations to evaluate the condition of the concrete structures occurred



from 1975 to 1978. The rehabilitation efforts were based on the recommendations from these investigation reports.

Major dyke upgrades occurred in 1980 and included placement of quarried rock on the north and south dykes to improve upstream slope protection, as well as the placement of granular fill to upgrade the crest and repair areas of settlement. Remedial work has also included construction of stabilizing berms at the downstream toe of the dykes and topping up of the dykes.

The structural stability of the spillway, sluiceway and south non-overflow dam was improved by installing anchors in 1994.

Rehabilitation of four out of the six available generating units occurred throughout the 1990's. Units 1 to 4 were refurbished between 1992 and 1998 with the following increased capacity: Unit 1(1993) -31.3 MW (42,000 horsepower), Unit 2 (1992) - 30.8 MW (41,260 horsepower), Unit 3 (1994) – 30.5 MW (40,900 horsepower) and Unit 4 (1998) – 32.0 MW (43,000 horsepower).

Further improvements to the condition of the embankment dams were accomplished beginning in the late 1990's. These activities were the result of extensive hydrotechnical and geotechnical engineering studies. They included construction of a new Pinawa Rockfill Dam, extensive dyke stabilization works, dyke crest upgrading and upstream slope protection rehabilitation. As a result of these activities, in 2015 the embankment dams were assessed to be in excellent condition, which has significantly reduced the probability of an embankment dam failure. In 2003, a fibre optic line was installed in the south dyke to provide early detection of movement.

None of the above rehabilitation works required amendment to the Water Power Act Final Licence or issuance of an Environment Act Licence as the works were not considered a major alteration of the existing project and environment.

### Operational Description

Manitoba Hydro currently operates the Seven Sisters Generating Station under a Second Short-Term Extension Licence (STEL) issued in accordance with the provisions of The Water Power Act on October 1, 2015. The STEL is in effect until September 30, 2020. The operating terms of the STEL are identical to those of the Final Licence issued on June 3, 1966.

Manitoba Hydro's System Control Centre (SCC) remotely operates the Seven Sisters GS from Winnipeg. Maintenance and emergency staff are stationed at the Winnipeg River Operations Centre located adjacent to the Great Falls Generating Station. The generating station is operated in a run-of-river mode with a forebay having an approximate area of 32 km<sup>2</sup> at the normal water level of 274.2 m (899.5 ft.). Inflows are affected by flow releases in Ontario and runoff from the local watershed.

The Lake of the Woods Control Board (LWCB) is a Canadian board which regulates the water levels of Lake of the Woods and Lac Seul, and the flows in the Winnipeg River and English River downstream of these lakes to their junction. As a result the flow on the Winnipeg River as it enters Manitoba is regulated in Ontario upstream of Manitoba Hydro's generating stations. Manitoba Hydro participates in meetings with the LWCB to provide input into LWCB's annual regulation strategy based on current and projected water conditions in Manitoba.

During high Winnipeg River flows, the forebay water level at Seven Sisters is reduced to lessen flooding of docks, boat houses, and cottages in the Whiteshell Provincial Park between Seven Sisters and Otter Falls. The operating range of the Seven Sisters forebay varies from the licence limit of 274.2 m (899.5 ft.) to 272.9 m (895.5 ft.) depending on the magnitude of inflow.

### Historic Power Generation

The original turbines were rated at 28.0 MW (37,500 horsepower) at a design head of 20.1 m (66 feet), a total of 167.8 MW (225,000 horsepower) for six units. This became the basis for the licensed capacity in Term 2 of the Final Licence. However due to cost constraints in developing the tailrace channel, the plant operated at a nominal 18.6 m (61 feet) of head, reducing the maximum generation capacity to 149.1 MW (200,000 horsepower), or 24.9 MW (33,333 horsepower) per unit. In 1952 the next downstream plant, McArthur Falls Generating Station, was built to a level that took advantage of the undeveloped head at Seven Sisters thereby maximizing the use of the available water resource below Seven Sisters GS.

Manitoba Hydro rehabilitated four out of the six available generating units during the 1990's. Units 1 to 4 were refurbished between 1992 and 1998 with the following increased capacity: Unit 1(1993) -31.3 MW (42,000 horsepower), Unit 2 (1992) - 30.8 MW (41,260 horsepower), Unit 3 (1994) – 30.5 MW (40,900 horsepower) and Unit 4 (1998) – 32.1 MW (43,000 horsepower). Based on rated conditions, the new installed capacity is 180.6 MW (242,160 horsepower). Figures 11 to 16, on pages 46 and 48, show the current nameplates of each of the units.

Figure 10 shows the monthly power generation and Seven Sister's powerhouse capacity from the issuance of the Final Licence to date. As shown, prior to refurbishment, Seven Sisters GS regularly generated power near the 149.1 MW (200,000 horsepower) reduced capacity limit. Since refurbishment, power generation was relatively higher than pre-refurbishment however the generation was consistently below the new capacity limit of 180.6 MW (242,160 horsepower). The primary factors responsible for the gap between the new capacity limit and actual generation include the Ontario tie-line transmission limit, and reduced head at the Seven Sisters powerhouse during higher than normal inflows.

Through the development and implementation of modern technology and computer programs, Manitoba Hydro optimizes energy generation across the overall system to maximize revenues while satisfying various system constraints. The constraints include provincial energy demand, export contracts as well as physical, environmental and social requirements. A computer-based control system installed in 1984 in the System Control Centre in Winnipeg enables operators to monitor Manitoba Hydro's generating stations, transmission lines and exports. The computer systems, known as AGC and SCADA, are able to automatically adjust electricity generation to correspond with customers' needs. The Market Optimized Short Term (MOST) computer model enables operators to make optimal decisions based on real time inputs.

### Existing Project Significance in Manitoba Hydro System

Currently, Seven Sisters GS provides 3% of the generating capacity in the Manitoba Hydro system, with the Winnipeg River stations providing 11% of the total capacity in the Manitoba Hydro system. Seven Sisters GS at 180.6 MW of installed capacity, is Manitoba Hydro's largest generating station on the Winnipeg River and has approximately 28% of the licensed capacity of the entire Winnipeg River. Through turbine replacement in the 1990's the Seven Sisters GS has increased efficiency in producing electricity and can be expected to do so for decades to come.

Seven Sisters GS is unique in the overall Manitoba Hydro system in that it is one of a few generating stations that contain black start capability. This is the ability to restore power to the electric grid without relying on any external electric power transmission network. Other benefits of Seven Sisters include its proximity to Winnipeg, a major load centre, and its contribution in reducing drought risk as it is located on a different river system compared to other generation on the Nelson River. Seven Sisters GS is financially viable as it results in a positive rate of return in a hydro system that is known for some of the lowest energy rates in Canada.

Finally, Seven Sisters GS is an integral part of an overall hydro system which generates renewable energy as it helps to reduce carbon emissions. By doing so, it helps to support the Manitoba Clean Energy Strategy which focuses on protecting the environment while ensuring a prosperous and environmentally conscious economy.

### Dam Safety Summary

Manitoba Hydro's Dam Safety Program is based on the Canadian Dam Association (CDA, 2007) Guidelines and operates in accordance with two key CDA principles:

#### Principle 1a

*The public and the environment shall be protected from the effects of dam failure, as well as release of any or all retained fluids behind a dam, such that the risks are kept as low as reasonably practicable.*

## Principle 2d

*Documented surveillance procedures shall be followed to provide early identification and to allow for timely mitigation of conditions that might affect dam safety.*

The program objectives are to detect changes in the condition of dams and to ensure that timely remedial measures are initiated when necessary. The program includes visual inspections, instrument data analysis, engineering analysis, testing, evaluations, and reporting. Manitoba Hydro created inspection guidelines for surveillance of concrete and embankment dams based on the dam classification, its condition and professional judgment. Concrete and embankment dams continue to be inspected at regular intervals for any anomalies or deficiencies. Manitoba Hydro staff performs routine inspections once per month for the embankment dams and bi-monthly for the concrete dams, including the spillway. Specialists from Manitoba Hydro's Generation and Asset Management Division perform additional inspections of all dams annually.

Regular inspections have led to concrete and embankment dam rehabilitation improving the structural condition and the safety of key structures. The Project Upgrades section on page 4 of this report describes the works done as a result of regular site inspections.

Dam Safety Reviews (DSR) of generating stations and water control structures are undertaken on an intermittent schedule. This type of review is a systematic evaluation of dam safety through a comprehensive performance assessment of the structures and review of original design, construction, operation and maintenance records to ensure that the generating station meets current industry standards. The CDA Guidelines are the applicable standard. The DSR are carried out by qualified external consulting engineering firms and typically include a site inspection of the station, dams, and spillway gates, including mechanical and electrical aspects of gate operation. A comprehensive DSR report includes observed deficiencies and recommendations for follow-up.

McMillen Jacobs Associates performed the most recent DSR for Seven Sisters GS in 2015. Their report listed various recommendations which were assessed to determine an action plan, priority where applicable, and a suitable time frame. The next DSR for Seven Sisters GS is tentatively planned for 2021.

As outlined in CDA's *Dam Safety Guidelines*, all dam owners should have emergency response procedures and emergency preparedness plans in place if lives are at risk or if implementation of emergency procedures could reduce the potential consequences of dam failure. Manitoba Hydro has developed and is continually updating the Emergency Preparedness Plan (EPP) for Seven Sisters GS which is issued to local authorities and emergency response agencies to assist in responding to an emergency situation. The EPP contains detailed information regarding the verification, and classification of the emergency, and contains communication notification and reporting procedures.

## Annual Reporting

Since 2007, Manitoba Hydro has submitted an Annual Water Levels and Flows report to the Province. The report contains information on data collection, verification and reporting related to Water Power Act licences, as well as a summary of deviations from licence conditions during the year. Manitoba Hydro and Manitoba Sustainable Development (MSD) use the information in this report as a framework for discussions regarding future system operation and monitoring of licence compliance. MSD publishes the Annual Water Level Reports at [www.gov.mb.ca/waterstewardship/licensing/water\\_power\\_licensing.html](http://www.gov.mb.ca/waterstewardship/licensing/water_power_licensing.html).

The Seven Sisters Licence Implementation Guide (LIG) defines the methodology for evaluating, notification of, and reporting non-compliance with respect to critical water levels. Manitoba Hydro prepared this guide to document a common understanding of compliance with the water regime terms of the Seven Sisters Water Power Act Licence. Manitoba Sustainable Development (MSD) has approved this document and publishes it at [http://www.gov.mb.ca/sd/waterstewardship/licensing/seven\\_sisters.html](http://www.gov.mb.ca/sd/waterstewardship/licensing/seven_sisters.html).

## Community Involvement

One of Manitoba Hydro's foundational principles is respectful engagement with communities and stakeholders affected by its system and operations with a priority to respect and support Indigenous peoples in all aspects of its business. In addition to having a business unit dedicated to Indigenous Relations, Manitoba Hydro has a section within the Hydraulic Operations Department tasked with overall community and stakeholder engagement. The Waterway Community Engagement Section strives to be inclusive with all communities and stakeholders that may have an interest in waterways affected by Manitoba Hydro. The staff in this section have identified and contacted over 20 municipalities, Indigenous communities and non-government organizations along the Winnipeg River. Manitoba Hydro responded to all issues raised and held discussions with all stakeholders who raised concerns or had an interest in learning about Manitoba Hydro's operations.

## Coordinated Aquatic Monitoring Program

The Coordinated Aquatic Monitoring Program (CAMP) is a long-term partnership between Manitoba Hydro and the Province of Manitoba with the objective of monitoring and studying the health of the aquatic ecosystem affected by Manitoba Hydro's generating system. The geographic scale of CAMP makes it the largest holistic aquatic monitoring program in Manitoba. The purpose of CAMP is to enhance the understanding of the effects of hydroelectric activity on the aquatic ecosystem and support more informed decision making when it comes to water management.

CAMP has established monitoring sites downstream and upstream from Seven Sisters Generating Station at Lac du Bonnet and upstream of the Pointe du Bois GS. These monitoring sites are representative of aquatic conditions near Seven Sisters. Monitoring at these sites helps our understanding of fish community composition, water quality, benthic



invertebrates and other aquatic ecosystem conditions along the Winnipeg River. More information about CAMP is available at [www.campmb.com](http://www.campmb.com).

### Environment Act Licensing

The intent of Environment Act Licensing is to develop and maintain an environmental protection and management system in Manitoba which will ensure that the environment is protected and maintained to sustain a high quality of life, including social and economic development, recreation and leisure for present and future generations. The Environment Act has been in effect in Manitoba since March 31, 1988. Manitoba Hydro is not required to obtain Environment Act licences for any of its legacy projects including Seven Sisters because these projects predate this legislation. In the event that Seven Sisters would undergo major changes to the existing project configuration, Manitoba Hydro would be required to seek an Environmental Act Licence. More information on Environment Act Licensing is available at <http://www.gov.mb.ca/sd/eal/index.html>.

### Integrated Watershed Management Plan

The IWMP process is a cooperative effort by watershed residents, government and other stakeholders to create a long term plan to manage land, water and related resources on a watershed basis. Manitoba Hydro plans to participate when the Province begins an IWMP process that covers the Winnipeg River watershed. More information on the IWMP process, and existing planning and progress reports are available at <https://www.gov.mb.ca/waterstewardship/iwmp/index.html>.

## Division 2 – Renewal Licence Request

### Renewal Licence Term

Section 45(1) of the Regulation limits the term of a Final Licence to no more than 50 years from the completion of the initial development. It is up to the Minister to determine the duration of the Renewal Licence term. Manitoba Hydro is committed to the safe and productive long-term operation of the Seven Sisters GS and requests a 50-year term for this Renewal Licence.

### Renewal Licence Capacity

Term 2 of the Final Licence provides for an installed capacity of 225,000 horsepower. However refurbishment of units 1 through 4 in the 1990's resulted in increased generation capacity. On March 8, 1990 Manitoba Hydro submitted a memo to the province detailing a proposed capacity expansion plan which included replacement of turbine runners, and enlargement of throat ring diameters. The province responded on May 8, 1990 confirming receipt of the capacity increase request and indicated that the Renewal Licence would reflect the new capacity. Manitoba Hydro refurbished units 1 to 4 with increased capacity as authorized by the province throughout the 1990's. Copies of the 1990 letters of request and authorization are shown in Appendix C on pages 69 and 75. Manitoba Hydro requests that the Renewal Licence reflects the current installed nameplate capacity of 242,160 horsepower which is equivalent to approximately 180.6 MW.

### Renewal Licence Area

The Water Power Act allocates Crown lands required in connection with the development of water power. A Renewal Licence implies a renewal of the decision to allocate Crown lands for another set term of time as defined by the Minister and specified by the Renewal Licence. A new severance line drawing that reflects all approved changes to the licence area as defined by a severance line, showing the inclusion of the Pinawa Channel will be submitted separately from this report under Manitoba Hydro drawing file 1-00105-PE-07310-0001 and Manitoba file number WPL-1-00105-PE-07310-0001.

The Renewal Licence area is a combination of lands required for the project and impacted by the project. It is based on the existing licence area defined by the Final Licence and Short Term Extension Licences. The Renewal Licence area includes lands required for project structures, site access, and present and future maintenance activities. It also includes lands impacted by project operations including;

- lands which could be unsafe to the public,
- lands which experience a modified water regime due to project operations, and
- lands which could prove to be geotechnically unstable as a result of project operations.

Manitoba Hydro conducted a site visit to view project components and to interview site staff regarding present and future land use, to confirm the proposed severance line location. Manitoba Sustainable Development must review and agree to the proposed Renewal Licence area as part of the Renewal Licence process.

The Water Power Act Regulation requires that the severance line that delineates a licence area is legally definable. Therefore the severance line must be based on legal survey plans on record in the provincial land titles system, or on the Dominion Government Survey System, or on a combination of both. Manitoba Hydro obtained and reviewed the most recent property assessment information (2015) available from the Crown Lands and Property Agency (CLPA) to evaluate the availability of legal information surrounding the lands required for the project. The nearest available legal survey information was chosen to define the Renewal Licence severance line. Where legal survey plans did not exist, the severance line was defined by the nearest legal subdivision line of the Dominion Government Survey System. The resulting severance line is a combination of legal surveys obtained from CLPA and the section grid defined by the Dominion Government Survey System and is entirely legally definable.

The most significant change in the Renewal Licence area is the inclusion of lands surrounding the Pinawa Channel between the Pinawa Rockfill Dam and the old Pinawa Generating Station up to the southern boundary of the Pinawa Dam Provincial Heritage Park. This expansion is required because the Pinawa Rockfill Dam passively regulates the flow of the Pinawa Channel.

A significant portion of the Seven Sisters licence area is within Whiteshell Provincial Park. Whiteshell Provincial Park was designated a provincial park by the Government of Manitoba in 1961, after the completion of all hydroelectric developments on the Winnipeg River.

The Manitoba Parks Branch of Manitoba Sustainable Development administers Crown Lands located within the licence area and inside Whiteshell Provincial Park. The Lands Branch of Manitoba Sustainable Development and the Crown Lands and Property Agency (CLPA), a special operating agency of Manitoba Infrastructure, administer Crown Lands located within the licence area but outside the park. Restrictions on land use within the Renewal Licence area will vary based on Manitoba Hydro's use of the land. Crown Lands located within the licence area required for project components, access and maintenance are not available for use by the public. However, the public may still use some Crown Lands impacted by project operations with some restrictions.

## Division 3 – Compliance with Final Licence and The Regulation

This division of the report provides detailed supporting information that demonstrates the fulfillment of the requirements of the Final Licence, the Short Term Extension Licence (STEL) and Manitoba Regulation 25/88R pursuant to The Water Power Act (the Regulation). Manitoba issued the Final Licence in 1966 and it may contain references that are obsolete.

### Observance of Final Licence Terms

1. The Licensee may divert and use continuously for the development of power at the said Seven Sisters Site all the water of the Winnipeg River which may be flowing at the said Site from time to time during the term of this Final License, subject, however, to the Provisions of Section 72 of the Regulations.

#### Observance

Manitoba Hydro has and continues to exercise its rights granted under this term of the licence. Regulation 72 states: *“Every licence shall be deemed to have been executed on the express condition that the licensee shall (a) divert, use or store the water authorized to be diverted, used, or stored by him in such a manner as not to interfere, in the opinion of the minister, with the maximum advantageous development of the power and other resources of the river or stream upon which the works are located; (b) conform to and comply with any orders in respect of the control or regulation of the flow of the waters of such river or stream as may be made from time to time by the minister or any person authorized by the minister in that behalf; and (c) at no time cause or permit the surface level of the waters of such river or stream or of any storage reservoir operated by the licensee to be raised or lowered beyond the limits which shall be fixed from time to time by the minister or by a person authorized by the minister in that behalf.”*

Manitoba Hydro owns and operates all plants on the Manitoba portion of the Winnipeg River. Manitoba Hydro operates the Seven Sisters GS to maximize power generation while considering social and environmental effects. The Minister or other authorized person has issued no specific orders other than those defined by the Final Licence and Short Term Extension Licence. Observance of the maximum operating limit is provided in term 4 of the Final Licence.

2. The undertaking authorized to be maintained and operated by the Licensee under this Final License shall comprise the following: a powerhouse with six main hydro-electric generators, having a capacity of 225,000 horsepower; one station service generator; a concrete dam with regulating sluices and spillway; dykes; a rock-cut tailrace channel; switching facilities in the powerhouse; transmission lines; roads; and all necessary works, machinery and equipment for the complete development, generation and transmission of electric power available at the said Seven Sisters Falls Site, all as

shown by plans and descriptions thereof filed in the office of the Director at Winnipeg, as follows:

<u>Manitoba Water Control and Conservation Branch File Number</u>	<u>Licensee's File Number</u>	<u>Description</u>
21-7-1017	0105-E-1001 (Rev. 0)	General Plan of Powerhouse, Sluiceway and Dam.
21-7-1018	1564-E-4 (Rev. 1)	Seven Sisters Power Plant, Tailrace Canal, Plan Profile and Section.
21-7-3034	1677-C-5 (Rev. 3)	Powerhouse Superstructure, South Elevation of Generator Room, Switch House and Gate House.
21-7-3035	965-C-4 (Rev. 2)	Powerhouse Superstructure, North End Elevation.
21-7-3036	1678-E-5 (Rev. 2)	Powerhouse Superstructure, Elevation Downstream Generator Room and Switch House Walls.
21-7-3037	1676-E-5 (Rev. 1)	Powerhouse Superstructure, Elevation Upstream Gatehouse and Switch House Walls.
21-7-1019	1450-E-5 (Rev. 1)	General Arrangement of Powerhouse, Elevations.
21-7-3038	578-R-4 (Rev. 1)	General Arrangement of Powerhouse, Plans.
21-7-3039	1557-C-5 (Rev. 13)	General Arrangement of Powerhouse Extension.
21-7-3040	577-E-4 (Rev. 3)	Powerhouse Cross-Sections through Units 1-2-3 and Service Unit.



21-7-1020	548-E-3 (Rev. 1)	Seven Sisters Development, Layout of Sluice and Spillways.
21-7-1021	1543-S-2 (Rev. 1)	Plan, Profile and Typical Sections of Proposed Dykes at Seven Sisters.

Observance

Manitoba Hydro constructed the Undertaking as described in the plans listed above. Significant rehabilitation was undertaken between 1979 and 1983 as authorized in a June 13, 1979 letter. This included building a new non-overflow dam, concrete repairs to the north, south and centre sluiceway piers as well as several spillway piers and rollways.

On March 8, 1990 Manitoba Hydro submitted a memo to the province detailing a proposed capacity expansion scheme which included replacement of turbine runners, and enlargement of throat ring diameters. The province responded on May 8, 1990 confirming receipt of the capacity increase request and indicated that the Renewal Licence would reflect the new capacity. Manitoba Hydro refurbished units 1 to 4 with increased capacity as authorized by the province throughout the 1990's. Copies of the 1979 and 1990 letters of authorization are shown in Appendix C on pages 68, 69 and 75.

3. Lands of the Province which may be entered upon, used or occupied for the maintenance and operation of the said undertaking shall be the following:

(a) Lands of the Province not covered by water required for main diverting works, powerhouses, etc.

All those portions of the following lands not covered by the waters of the Winnipeg River, as shown outlined in green on Record Plan No. 21-7-1022, Sheets 1 and 2, filed in the office of the Director at Winnipeg and which is the Licensee's No. 0105-R-0201, Sheets 1 (Rev. 0) and 2 (Rev. 0):

- (i) In Township Thirteen (13) and Range Twelve (12) East of the Principal Meridian in Manitoba: South Half of Section Thirty-two (32); South Half of Section Thirty-one (31); Road Allowance west and east respectively of Section Thirty-one (31).
- (ii) In Township Fourteen (14) and Range Twelve (12) East of the Principal Meridian in Manitoba: North Half and South-west Quarter of Section Six (6); road allowance west of Section Six (6).
- (iii) In Township Thirteen (13) and Range Eleven (11) East of the Principal Meridian in Manitoba: South-east Quarter of Section Thirty-six (36); North Half of Section Twenty-five (25); road allowance west of Section Twenty-

five (25); North Half of Section Twenty-six (26); road allowance west of Section Twenty-six (26); East Half and North-west Quarter of Section Twenty-seven (27); South Half and Northeast Quarter of Section Thirty-four (34); road allowance east of Section Thirty-four (34); North Half of Section Thirty-five (35); road allowance North of Section Thirty-five (35).

- (iv) In Township Fourteen (14) and Range Eleven (II) East of the Principal Meridian in Manitoba: South-east Quarter of Section Two ( 2); road allowance east of Section Two (2); South Half of Section One (1).

(b) Lands of the Province covered by water required for main diverting works, powerhouses, etc.

All those portions of the North-west Quarter of Section Twenty-seven (27), the South-west Quarter of Section Thirty-four (34) and the East Half of Section Thirty-three (33), all in Township Thirteen (13) and Range Eleven (11) East of the Principal Meridian in Manitoba, covered by the waters of the Winnipeg River, as shown outlined in red on Record Plan No. 21-7-1022, Sheets 1, 2 and 3, filed in the office of the Director at Winnipeg and which is the Licensee's No. 0105-R-0201, Sheets 1 (Rev. O), 2 (Rev. O) and 3 (Rev. O).

(c) Lands of the Province required only to be flooded in connection with the storage or pondage of water.

All those portions of the following Townships shown outlined in brown on Record Plan No. 21-7-1015 filed in the office of the Director in Winnipeg, excepting thereout, first, all those lands heretofore described as required for works and, second, all those lands shaded yellow on the said Plan No. 21-7-1015:

- (i) Townships Thirteen (13) and Fourteen (14) in Range Eleven (11) East of the Principal Meridian in Manitoba.
- (ii) Townships Thirteen (13) and Fourteen (14) in Range Twelve (12) East of the Principal Meridian in Manitoba.
- (iii) Townships Thirteen (13) and Fourteen (14) in Range Thirteen (13) East of the Principal Meridian in Manitoba.

(d) Lands of the Province required only for rights of way for transmission Lines

All those portions of the following lands shown coloured in pink on plans entered and filed in the Winnipeg Land Titles Office as Nos. 3408 and 3409, copies of which are filed in the office of the Director at Winnipeg:

- (i) In Township Thirteen (13) and Range Eleven (11) East of the Principal Meridian in Manitoba: South-east Quarter of Section Twenty-nine (29).
- (ii) In Township Twelve (12) and Range Ten (10) East of the Principal Meridian in Manitoba: South Half and North-east Quarter of Section Thirty-three (33); North Half of Section Thirty-four (34).
- (iii) In Township Twelve (12) and Range Nine (9) East of the Principal Meridian in Manitoba: North-west Quarter of Section Twelve (12); North Half and South-West Quarter of Section Eleven (11); East Half and South-west

Quarter of Section Ten (10); South-east Quarter of Section Nine (9); North Half of Section Four (4); North Half of Section Five (5); South Half of Section Six (6).

#### Observance

Refinement of the severance line showing the lands required for the project as identified in plans referenced in term 3 is in progress. This line is legally definable either by the Dominion Government Survey System or legal survey plans and is being reviewed by MSD. The drawing showing the refined line if approved will form part of the Renewal Licence and is shown on Manitoba drawing WPL-1-00105-PE-07310-0001 (Manitoba Hydro drawing No. 1-00105-PE-07310-0001).

4. The Licensee shall not raise the headwater of the development to an elevation higher than 899.5 above mean sea level, Canadian Geodetic Datum, 1929 Adjustment, provided, however, that with the consent of the Licensee of the next development upstream, namely, Slave Falls Generating Station, and with the prior written approval of the Director, the Licensee may raise and maintain the headwater elevation in accordance with Section 72 of the Regulations.

#### Observance

The Seven Sisters GS Licence Implementation Guide (LIG) for Water Levels defines the criteria for compliance with this licence term. The guide shows the location of the water level monitoring station, outlines the methodology used to determine water level compliance, and describes reporting procedures to be followed. Compliance with the Seven Sisters Water Power Act Licence is evaluated against the hourly forebay water level measured at the Seven Sisters Generating Station. Manitoba Sustainable Development approved the Seven Sisters LIG on December 29, 2017. The letter of approval and LIG are shown in Appendix D on pages 81 and 82.

In 2005 a compliance monitoring program was implemented which required Manitoba Hydro to report compliance to Manitoba on an annual basis. Manitoba Hydro submitted the first Annual Water Level and Flow Report to the province in 2007. Using the criteria of any single hourly water level exceeding an elevation of 899.5 ft, annual compliance from 2007 to 2016 has ranged from 99.85% to 100% with an average annual compliance of 99.94% of the time (Table 3). Manitoba Sustainable Development (MSD) publishes all Annual Water Level and Flow Reports at:

[www.gov.mb.ca/waterstewardship/licensing/water\\_power\\_licensing.html](http://www.gov.mb.ca/waterstewardship/licensing/water_power_licensing.html).

Table 3 Annual water level compliance reported in Annual Water Levels and Flows reports.

Year	Hourly Water Level Readings in Forebay	Number of Times Reading Above Licence Limit	Percentage of Readings Below Licence Limit	Number of Reportable Events*
2017	8760	0	100.0	0
2016	8784	13	99.85	0
2015	8760	4	99.95	2
2014	8760	0	100.0	0
2013	8760	3	99.97	0
2012	8784	3	99.97	1
2011	8760	8	99.91	0
2010	8760	3	99.97	0
2009	8760	4	99.95	1
2008	8784	8	99.91	0
2007	8759	5	99.94	0

\*Reportable events were defined as those exceeding the Equipment Error Tolerance (EET) level of 0.1 ft and requiring provincial notification and explanation of events leading to the exceedance.

Throughout the project's operation Manitoba Hydro submitted hydraulic and energy generation data to the province in raw form for review and evaluation. The format and frequency of the data changed over time from daily to hourly time step, with submission frequency increasing from an annual to a monthly basis.

Table 4 summarizes forebay water level compliance on a daily basis and shows the relative improvement in compliance by decade since the Final Licence came into effect. A chart of daily forebay water levels for the same time periods is provided in Figure 9 on page 44. As shown, forebay water level compliance improved in the 1980's and continued to exceed 99% for nearly three decades.

Table 4 Historic Daily Average Forebay Water Level Compliance by Decade

Time Period	Variable	Days Exceeding Limit	Total Number of Days	% Compliance
2010-2017	Mean Daily Water Level	0	2922	100 %
2000-2009	Mean Daily Water Level	2	3653	99.9 %
1990-1999	Mean Daily Water Level	18	3652	99.5 %
1980-1989	Mean Daily Water Level	52	3653	98.6 %
1966-1979	Mean Daily Water Level	574	4696	87.8 %

Various reasons may have contributed to relatively poor forebay water level compliance in the late 1960's and 1970's. Although no clear reason has been documented it is presumed that main reasons stemmed from the Atomic Energy of Canada Limited (AECL) agreement (1962) with Manitoba Hydro which restricted water levels at the town of Pinawa to a range of 893 to 903 feet. This limit would have been observed for a period of four years, (1962 to issuance of Final Licence in 1966), while Seven Sisters was operated under the Interim Licence which did not have a similar forebay water level constraint. Nonetheless compliance has improved significantly following project rehabilitation work in the 1980's to date. A copy of the AECL Agreement is shown in Appendix F on page 96.

5. The Licensee shall not be responsible for loss or damage of or to lands or property upstream from the Seven Sisters Falls Development caused by or resulting from the operation of the said Development at headwater elevations not exceeding those from time to time authorized.

#### Observance

This provision requires no observance statement by the licensee.

6. In accordance with the provisions of the Regulations the term of this Final License shall be Fifty (50) years from and after the first day of January, A.D. 1932, and the said term shall thereafter be subject to renewal or extension in accordance with the provisions of the laws and Regulations relating thereto and then in force.

#### Observance

This provision requires no observance statement by the licensee.

7. On the second day of January in each and every year during the term of this Final License the Licensee shall pay an annual rental in advance of Five Hundred Dollars (\$500.00) for the use and occupation of lands of the Province described in parts (a), (b) and (c) of Article 3 hereof. The Licensee shall in addition during the said term pay an annual rental in advance of One Dollar (\$1.00) per acre for the use and occupation of lands of the Province described in part (d) of Article 3 hereof.

#### Observance

Manitoba Hydro paid land rentals on a fiscal year basis (before April 1 of each year) during the term of the Final Licence (June 1966 to December 1981). This was a result of invoicing being done on a fiscal year basis and an assumption of a 60-day grace period as defined by article 48(3.5)(b) regarding water rentals. In an October 30, 1991 letter, the Director advised Manitoba Hydro that land rentals would be from that time onward invoiced in November for payment on the first normal working day of the following January. Manitoba Hydro has complied with this requirement. Manitoba adjusted land rental rates over time to reflect more up to date land values along the Winnipeg River with changes coming in effect in 1996 and 2011. Manitoba Hydro has made payments in accordance with rates dictated



by the Regulation of the day. The Deputy Minister of Natural Resources notified Manitoba Hydro on November 4, 1996 of a change in billing practice from a calendar year to a fiscal year basis beginning with the 1997-1998 fiscal year. Since then land rentals are payable on April 1. Copies of the 1991 and 1996 letters are shown in Appendix C on pages 76 and 78 respectively.

8. The Licensee shall also pay an annual rental during the term of this Final License for the use of water for the development of power, determined in accordance with the principles set out in Section 48 of the Regulations and payable at the times and in the manner therein provided, and at the following rates:
  - (a) The rentals in the first twenty years of the term of this License shall be the greater of:
    - (i) an annual rental of fifty (50) cents per installed horsepower;
    - (ii) an annual rental of one dollar and twenty-five cents (\$1.25) per horsepower year output.
  - (b) The annual rental to be paid after the expiry of the said twenty year period shall be determined as provided in the regulations in force at such time.

#### Observance

Manitoba Hydro paid annual water rentals in accordance with the Regulation and provincial direction of the time. The Deputy Minister of Natural Resources notified Manitoba Hydro in a February 29, 1996 letter of a change in billing practice from an annual to a monthly basis beginning in April 1996. Since then generation data has been submitted, and invoices and payments generated on a monthly basis. A copy of the 1996 letter is shown in Appendix C on page 77.

9. The Licensee shall from the first day of January, A. D. 1932 pay annually the proportionate share chargeable to its development of the annual costs of operating and maintaining water storage in Lake of the Woods and Lac Seul; the first of such annual payments shall be made on the first day of January, A. D. 1933 and subsequent annual payments thereafter shall be made on the first day of January of each and every year until the termination of this License, each payment to represent the Licensee's share of the said annual operating costs for the preceding calendar year.

#### Observance

Since 1932, throughout the entire term of the Final Licence (June 1966 to December 1981), and from 1981 to date, Manitoba Hydro made annual payments as invoiced for the operation, maintenance and rehabilitation of structures associated with water storage in Lake of the Woods and Lac Seul. Currently payments are made to Ontario Power Generation (previously Ontario Hydro) and Environment Canada (Lake of the Woods Secretariat and Water Survey of Canada Winnipeg) in accordance with the Tripartite Agreement (1922) for Lake of the Woods and Lac Seul Agreements (1928 and 1990) for Lac Seul.

10. The Severance Line as defined in Section 1 of the Regulations shall be as shown on Record Plan number 21-7-1016 filed in the office of the Director.

Observance

This provision requires no observance statement by the licensee.

11. All record plans filed with the said Director and referred to in this Final License are incorporated herewith and made a part hereof.

Observance

This provision requires no observance statement by the licensee.

12. This Final License is issued upon the express condition that it shall be subject to the provisions of the Regulations and all subsequent amendments thereto.

Observance

This provision requires no observance statement by the licensee.

### Observance of Short Term Extension Licence (STEL) Terms

1. This Second Short-term Extension Licence shall apply from October 1, 2015 to an including September 30, 2020.

Observance

This provision requires no observance statement by the licensee. A copy of the Second Short-term Extension Licence is provided in Appendix B on page 54.

2. On the second day of January in each year the Licensee shall pay an annual rental in advance for the use and occupation of lands of the Province described in parts (a), (b), (c) and (d) of Article 3 of the Final Licence at the rates set from time to time by Regulation under The Water Power Act.

Observance

Manitoba Hydro pays land rentals annually in advance on a fiscal year basis in accordance with the Regulation and Ministerial notification of changes in billing practice. Land rental payments are discussed in the observance of Final Licence Term 7.

3. The Licensee shall pay an annual rental for the use of water for the development of power at the rates set from time to time by Regulation under The Water Power Act and payable at the times and in the manner provided for by Regulation under The Water Power Act.

### Observance

Manitoba Hydro pays water rentals monthly in arrears in accordance with the Regulation and Ministerial notification of changes in billing practice. Water rental payments are discussed in the observance of Final Licence Term 8.

4. The terms and conditions set out in the Final Licence apply as if set out specifically in this Second Short-term Extension Licences, except where inconsistent with the terms and conditions set out specifically in this document, in which case the terms and conditions set out in this document will apply.

### Observance

This provision requires no observance statement by the licensee.

5. The Licensee shall comply with The Water Power Act and the Water Power Regulation.

### Observance

Manitoba Hydro believes it has fulfilled its obligation under the Regulation as demonstrated through its observances of pertinent articles as follows.

## Observance of Pertinent Water Power Act Regulation Articles

This section of the report provides supporting information for pertinent articles of the Regulation that demonstrate the fulfillment of the requirements of the Regulation. Manitoba Sustainable Development (MSD) has agreed to the selection of those articles of the Regulation that are pertinent to the Renewal Licence application. Each article is shown in italics followed by a statement how the licensee has fulfilled its obligations.

### Renewal or termination

*46(1) Not less than four nor more than six years prior to the termination of any licence, the licensee may apply in writing for an extension of rights held under such licence, and applications may also be filed with the director by any persons looking to the future utilization of the site to which the licence applies. Any application for this purpose including the application for renewal of the licence shall be in such form and contain such statements and information as will satisfy the laws and regulations then in force, and such application for renewal by the licensee shall in every case be accompanied by a suitable undertaking on the part of the licensee that he or she will comply with all the said laws and regulations.*

### Observance

Manitoba Hydro applied for a licence renewal on January 19<sup>th</sup>, 1978. The four to six-year window of application as defined by Section 46(1) spanned January 1, 1975 to December 31, 1977. Although the application was late, Manitoba Hydro received confirmation from the Minister on February 23, 1978 stating its application was under review. Copies of the letters of application and provincial confirmation are attached in Appendix A, on pages 50 and 52.

### Land use rental rates

*48 (3.1) A licensee shall pay rent for the use of Crown lands occupied for water power purposes under a licence issued under the Act or a regulation at the annual rate of \$1.80 per acre.*

### Observance

Manitoba Hydro has made annual land rental payments since the beginning of project operation at the rate in effect at the time. Details provided in observance of Final Licence term 7 on page 19.

### Water use rental rates

*48(3.2) A licensee shall pay rent for the use of water under a licence issued under the Act or a regulation, (a) in the case of a licensee with a total capacity of 268,096 horsepower or more, at an annual rate equal to the greater of (i) the horsepower capacity of the licensed installation during the year, multiplied by \$8.13, or (ii) the horsepower year output of the licensed installation during the year, multiplied by \$20.32; and (b) in the case of a licensee with a total capacity less than 268,096 horsepower, at an annual rate equal to the greater of*

- (i) the horsepower capacity of the licensed installation during the year, multiplied by \$3.96, or*
- (ii) the horsepower year output of the licensed installation during the year, multiplied by \$9.90.*

Observance

Manitoba Hydro has made annual and monthly water rental payments in accordance with the Final Licence Term 8 or at the rate in effect at the time. Details provided in observance of Final Licence Term 8 on page 20.

**Water use rental statement**

**48(3.4)** *A licensee shall, on or before March 1 following each rental period, submit all data required by the director for the determination of the annual water use rental for the rental period. On receipt of the required data, the director shall without delay prepare and provide to the licensee a statement of the water use rent payable by the licensee for the rental period.*

Observance

Manitoba Hydro has submitted all data required by the director for the determination of the annual water use rental in accordance with Section 48(3.4) throughout the duration of the Final Licence. The Deputy Minister of Natural Resources notified Manitoba Hydro on February 29, 1996 of a change in billing practice from an annual to a monthly basis beginning in April 1996. Since then, all data required for the determination of water rentals for the Seven Sisters GS, has been submitted on a monthly basis. A copy of the 1996 letter can be found in Appendix C, on page 77.

**Time of payment of rentals**

**48(3.5)** *The rent for each rental period is payable in the case of land use rental, on January 2 of the rental period; and in the case of water use rental, within 60 days after receipt of the director's rental statement for the year for the rental period.*

-----  
*M.R. 168/95*

Observance

Requisite payments have been provided as follows:

- (a) Manitoba Hydro paid land use rentals on a fiscal year basis during the term of the Final Licence. The January 2<sup>nd</sup> due date was observed from 1991 to 1996. A final change to billing practice included payments being made on a fiscal year basis beginning with the 1997-1998 fiscal year. Details provided in observance of Final Licence term 7 on page 19.
- (b) Manitoba Hydro paid water use rentals in arrears on a fiscal year basis and within 60 days of the director's rental statement. Details provided in observance of Final Licence term 8 on page 20.

**48(11)** *Every licensee generating electrical energy, unless excused by the director in writing from compliance with this subsection, shall install an approved curve drawing recording wattmeter and shall preserve and produce for inspection all records made by such wattmeter.*

#### Observance

The Seven Sisters GS is equipped with meters which continuously measure power at each generator. The meters transmit the power readings to the control room where they are recorded electronically in the station operating records. These records are available to the province.

#### **Care of lands**

**54(1)** *The interim or final licensee shall at all times maintain the lands, works and property held or used by the licensee in respect of his or her licence in a manner satisfactory to the minister, including the maintenance of all flooded or other areas in a sanitary condition and the improvement of the lands from the point of view of landscape architecture, and shall do all in his or her power to protect the lands and the interest of the Crown therein against injury by anyone engaged on or about the works, or by any other person.*

#### Observance

Manitoba Hydro's number one priority is the safety of its staff and the public at Manitoba Hydro facilities. As such, Manitoba Hydro implements Manitoba Hydro's Public Water Safety Around Dams Program to ensure safety of the public at Seven Sisters GS. Some of the key features at Seven Sisters include fencing around the powerhouse and spillway; site specific signage; and a spillway safety boom. Manitoba Hydro also strives to meet or exceed all provincial regulatory requirements related to workplace health and safety through its regular development and enforcement of safety policies, safe work procedures, communication regarding safety awareness, investigation of incidents and deployment of improvement measures, and employee training.

Term 5 of the Final Licence specifies that Manitoba Hydro is not liable for erosion upstream of the project for water levels below the maximum permissible.

**54(2)** *Every interim or final licensee shall do everything reasonable within his or her power, both independently and on request of the minister to prevent and suppress fires on or near the lands to be occupied under the licence.*

**54(3)** *For the purpose of limiting the spread of fires or for other reasonable purposes, every interim or final licensee shall clear and keep clear the lands of the province along his or her transmission lines for such width and in such manner as the minister may direct.*

**54(4)** *Every interim or final licensee shall, to the satisfaction of the minister, dispose of all brush, refuse or unused timber on lands of the province resulting from the construction and*

*maintenance of the works, and shall keep the lands covered by his or her licence clear of unnecessary combustible material at all times.*

Observance for Sections 54(2) to 54(4)

Manitoba Hydro maintains site lands and transmission rights-of-way to reduce the risk of fires and implements Manitoba Hydro's corporate fire prevention and protection program designed to eliminate risks of fire or explosion.

**56** *Every interim or final licensee shall protect all telephone, telegraph and power transmission lines in existence prior to the construction of his or her own lines where crossed by or in close proximity thereto to the satisfaction of the director or competent provincial authority if any, and shall operate, maintain and render safe to the public his or her own transmission, telephone and other lines to the satisfaction of the director or the said authority if any.*

Observance

Canadian Standards Association clearance standards were used in the design of Manitoba Hydro's transmission system for safety of staff and the public. Public safety is further enhanced through regular maintenance, signage, and public safety education campaigns.

**57(1)** *Except as expressly provided in this regulation, the interim or final licensee shall not erect any buildings or structures whatever upon any lands of the province without first submitting plans thereof to the director and securing the director's approval for such building or structure and the site thereof.*

Observance

Manitoba Hydro has notified the province of all significant maintenance and rehabilitation of works which would require temporary structures to be erected. No permanent structures have been erected on lands of the province following completion of the initial development.

**58** *No roads, trails, telephone lines, buildings or other improvements that are the property of the Crown shall be removed, altered or in any way affected by any interim or final licensee in the construction or operation of his or her works, without the minister's consent in writing having been first obtained, and except upon such conditions as the minister by such writing may impose. The minister, if the minister considers it necessary, may require the licensee to furnish a bond for the satisfactory carrying out of the provisions of this section.*

Observance

Since the issuance of the Final Licence in 1966, there have been no removals, alterations or other effects to Crown-owned improvements.

**59** *Any lands desired by an interim or final licensee for subdivision for townsite or other purposes shall be set out in the application, interim or Final Licence separately from lands*



*required for other purposes connected with the undertaking, and the promotion of any such townsite shall be subject to the approval of the minister and to such conditions with respect to town planning, landscape architecture and sanitation as the minister may impose.*

#### Observance

Manitoba Hydro's Renewal Licence request does not include lands for a townsite nor did the Final Licence allocate land for a townsite.

**61** *Any authority granted under this regulation for entry upon, or for the use or occupation of lands situated within any forest reserve or park shall, notwithstanding any provisions of this regulation, be subject to the careful observance by the interim or final licensee of the provisions of any regulation relating to forest reserves and parks, and also of any conditions which the minister may, from time to time, impose with respect to the care, upkeep and management of such forest reserve or park.*

#### Observance

The Seven Sisters severance line includes portions of the Whiteshell Provincial Park. Manitoba Hydro complies with all provincial legislation as it relates to forest reserves and parks.

#### **Works, maintenance, and operation**

**62(1)** *The licensee shall at all times install and use first class, modern, standard works, plant, and equipment, giving consideration to their requisite suitability of design, safety, strength, durability, efficiency, and all other relevant factors whatsoever, and shall maintain the same in good repair and condition, and shall exercise all due skill and diligence so as to secure satisfactory operation thereof.*

#### Observance

The installed equipment, machinery and structural components at Seven Sisters are technologically modern and designed according to appropriate engineering standards. It is in Manitoba Hydro's best interest to continuously optimize all components that have a role in producing electricity.

An annual flow and water level report is provided to the province which also contains an annual summary of major construction and maintenance activities.

**64** *The licensee, before making any material change in any existing works or in their location, shall submit a complete and satisfactory statement and plans of such proposed change to the director, and shall not proceed to carry out the same until such proposed change has been authorized.*

### Observance

Manitoba Hydro undertook significant rehabilitation of the concrete and earth works associated with Seven Sisters Generating Station between 1979 and 1983. Manitoba Hydro notified the province, provided an interim report detailing the proposed works, and requested authorization on May 4, 1979. Manitoba Hydro received approval to proceed on June 13, 1979. Copies of the 1979 letters are shown in Appendix C on pages 66 and 68.

*65(1) The director may require any licensee to install and maintain in good operating condition at such places and in such manner as the director shall approve, accurate meters, measuring weirs, gauges or other approved devices which shall be adequate for determining the amount of water used or power developed in the operation of the works, for determining the flow of the stream or streams from which water is or will be diverted, and for determining the amount of water held in or drawn from storage.*

*65(2) The licensee shall keep accurate and satisfactory records of the determinations referred to in subsection (1) and shall from time to time make such returns, supported if necessary by statutory declaration, as the director may require.*

### Observance for subsections 65(1) and 65(2)

Seven Sisters GS is equipped with modern instrumentation necessary to adequately report on water usage and energy generation. Water level data, unit discharge, spillway discharge, head, and plant output are recorded electronically in the station operating records as a record of hydraulic activity at the station. Manitoba Hydro maintains records of all gauge readings and submits energy and flow data to the province as part of monthly water rental billing.

### **Change in undertaking**

*68 If a licensee desires to develop, sell, use or dispose of any greater quantity of power than authorized by his or her licence, whether such increased disposal of power does or does not necessitate any addition to or alteration in the works, or desires to use or dispose of any power in connection with his undertaking in a manner or for a purpose other than as provided in such licence, the licensee must first apply for an interim licence authorizing the construction of the works or for a Final Licence authorizing such additional development, sale, use or disposal or authorizing such use or disposal in such other manner or for such other purpose, as the case may be.*

### Observance

As explained in Division 2, the licensed installed capacity was under-utilized until Manitoba Hydro refurbished units 1 to 4 in the 1990's. Manitoba Hydro notified the province regarding the proposed capacity increase noting that at the time of the proposed refurbishment the Final Licence had expired. The province responded on May 8, 1990 confirming receipt of the capacity increase request and indicated that the Renewal Licence

would reflect the new capacity. The March 8<sup>th</sup> memo and May 8<sup>th</sup> letter of response are shown in Appendix C on pages 69 and 75.

### **Stream regulation and control**

*72 Every licence shall be deemed to have been executed on the express condition that the licensee shall*

*(a) divert, use, or store the water authorized to be diverted, used, or stored by him in such a manner as not to interfere, in the opinion of the minister, with the maximum advantageous development of the power and other resources of the river or stream upon which the works are located;*

*(b) conform to and comply with any orders in respect of the control or regulation of the flow of the waters of such river or stream as may be made from time to time by the minister or any person authorized by the minister in that behalf; and*

*(c) at no time cause or permit the surface level of the waters of such river or stream or of any storage reservoir operated by the licensee to be raised or lowered beyond the limits which shall be fixed from time to time by the minister or by a person authorized by the minister in that behalf.*

#### Observance for subsections 72(a) to 72(c)

Seven Sisters GS operations are maximized by operating when possible at the most efficient head and wicket gate opening based on periodic field tests. The energy production is integrated into the Manitoba Hydro system such that available stream flow is utilized optimally relative to the overall system requirements by using computer models.

To date, the province has not ordered operations respecting the control or regulation of flow at the Seven Sisters GS.

Observance of Final Licence Term 4 pertaining to a maximum water level limit is addressed earlier in this division.

### **Accounting**

*78(1) Every licensee shall keep a true and detailed account of all expenditures made in each calendar year in respect of the works, lands and properties and such other information as follows:*

*respecting the works:*

*the actual cost thereof, giving separately each class of expenditures as indicated in the definition of "actual cost";*

*amounts expended in that year for enlargements and permanent improvements authorized by the minister, and*

*depreciation in value from any and all causes for that year;*

*respecting lands, tenements and appurtenances not included in clause (a), a statement setting out, in each case, the actual cost thereof in accordance with the provisions of Section 36;*

*respecting capital stock:*

*the amount authorized and the number of shares into which it is divided,*

*the number of shares subscribed for and allotted, the number of shares forfeited to date, and the owners, for the time being, of all outstanding shares,*

*the amount of calls made on each share, and the total amount received from shareholders in cash on account of stock,*

*the number of shares, if any, issued as fully paid up shares as consideration for any service rendered or otherwise, specifying in each case for what consideration such shares were issued, and*

*the amounts of dividends declared and paid;*

*respecting bonds or debentures:*

*the amount authorized, and the period of redemption,*

*the amount sold (face value) and the rate of interest,*

*the amount realized from sales,*

*the annual amount set aside as sinking fund to meet bonded indebtedness, and date of commencement;*

*the indebtedness other than stock and bonds, specifying the nature and amounts, and the rate of interest such indebtedness is bearing;*

*a statement showing the total revenues of the undertaking, specifying the amount received from each and every source;*

*the maintenance and operation expenditures, separating those expenditures which are incurred at or near the works from head office and other expenditures relating to general administration;*

*the names of officers and the classification of employees, with salaries, expenses, or other remuneration paid or allowed;*

*the proposed extensions during ensuing years;*

*if a company, such annual return shall have attached thereto a copy of the bylaws of the company, showing all amendments thereto during the year covered by that return;*

*such other data as the minister may require.*

**78(2)** *Every licensee shall file annually with the director on or before March 1 by a return for the year ending December 31 preceding a detailed summary of all information included under clauses 1(a) and (b).*

#### Observance for subsections 78(1) and 78(2)

Manitoba Hydro tracks financial information for the integrated system as a whole except for projects involving a partnership or separate legal entity. It does not submit financial information specific to Seven Sisters GS annually with the director on or before March 1. Instead, Manitoba Hydro publishes annual reports on a fiscal year basis ending on March 31<sup>st</sup> and makes these annual reports available to all Manitobans. The most current annual report is located at <https://www.hydro.mb.ca/corporate/financial.shtml>.

The annual reports contain financial reviews and consolidated financial statements which reference current system value of property, plant, and equipment. Financial information presented in the annual reports is prepared in accordance with International Financial Reporting Standards (IFRS) and undergoes an independent audit. The independent auditors' report summarized in Manitoba Hydro's 2016-2017 annual report concluded that "the consolidated financial statements present fairly, in all material respects, the financial position of Manitoba Hydro-Electric Board as at March 31, 2017, and the results of its operations and its cash flows for the year then ended in accordance with the International Financial Reporting Standards."

Detailed information pertaining to clauses 1(a) and (b) of Section 78 is available upon request.

### **Transfers**

**80(1)** *Lands inside the severance line used or occupied for the purposes of the undertaking shall not be alienated, sold, or disposed of by the licensee without either (a) the consent of the minister; or (b) failing such consent, an order of the court; and subject to such terms as the minister or the court may lay down for the protection of the undertaking.*

### Observance

All licence area amendments were carried out with the consent of the Minister or delegate.

### **Miscellaneous provisions**

**82** *Before executing any licence, the minister shall submit to the prospective licensee a draft of the proposed licence and shall secure from the licensee an acceptance thereof and an undertaking to observe and fulfill all the terms and conditions which under the licence and under this regulation such licensee is required to observe or fulfill, with particular reference to the right of Her Majesty to take over the works, lands and properties held by the licensee in connection with the licence in certain contingencies as this regulation provides. Such acceptance and undertaking shall be made to bind the executors, administrators and assigns, or in the case of a corporation the successors and assigns of the prospective licensee.*

### Observance

This provision requires no observance statement by the licensee.

**87** *Notwithstanding any rights granted or approval given by any licence, every licensee shall comply fully with the provisions of the Navigable Waters Protection Act (Canada) and any rules and regulations promulgated thereunder; and shall also comply fully with the provisions of any provincial statutes or regulations governing the preservation of the purity of waters or governing logging, forestry, fishing, wildlife or other interests present or future which might be affected by any operations conducted under the licence and shall also*

*observe and carry out any instructions of the minister concerning any of those matters not inconsistent with the said statutes and regulations.*

#### Observance

Manitoba Hydro is committed to and continues to observe the provisions of the *Navigation Protection Act (NPA)*, formerly the Navigable Waters Protection Act, as well as all provincial statutes and regulations.

#### **Minister may issue short-term extension licences**

**92(1)** *Despite section 46, if*

*a Final Licence has expired; or  
the licensee has not applied for an extension of the Final Licence within the period set out in subsection 46(1);*

*the minister may upon written application from the licensee in a form satisfactory to the minister and containing any information required by the minister, issue to the licensee a short-term extension licence for a term of not more than five years from the date issued.*

**92(2)** *A short-term extension licence may apply retroactively to the time that the Final Licence expired in addition to a term of not more than five years as set out in subsection (1).*

**92(6)** *A short-term extension licence may be renewed for one or more terms, provided that the term of any such renewal does not exceed five years. A renewed short-term extension licence must include the terms and conditions contained in the Final Licence, except where the minister considers it in the public interest to amend any term or condition, and may include such other terms or conditions as the minister may impose.*

#### Observance for subsections 92(1), 92(2), and 92(6)

On November 8, 2010, under Section 92(1) and in accordance with Section 92(2) the province issued the first Short-Term Extension Licence (STEL). This first STEL applied retroactively from January 1, 1982 to and including September 30, 2015. Under provision of Section 92(6), Manitoba issued a second STEL on September 8, 2015. Manitoba Hydro operates Seven Sisters GS under the 2<sup>nd</sup> STEL which is in effect from October 1, 2015 to September 30, 2020.

#### **Renewal of Final Licence**

**93(1)** *Where a short-term extension licence is issued under subsection 92(1), or authorized under subsection 92(5), the licensee shall be deemed to have applied for an extended Final Licence, and section 46 applies with necessary changes.*

#### Observance

This provision requires no observance statement by the licensee.

*93(2) The minister may (a) conduct any public hearing that the minister considers necessary in accordance with subsection 46(3); and (b) provide for any consultations with First Nations or aboriginal communities about an extended Final Licence; during the term of the short-term extension licence.*

#### Observance

This provision requires no observance statement by the licensee.



## Division 4 – Closure Statement

Manitoba Hydro continues to operate the Seven Sisters GS in accordance with the 2<sup>nd</sup> Short Term Extension Licence and the terms of the expired Final Licence (1981) for the development of water power at the Seven Sisters Falls Site on the Winnipeg River. Manitoba Hydro operates and maintains the generating station and associated structures based on the Canadian Dam Association Dam Safety Guidelines. Manitoba Hydro maximizes operations of the Seven Sisters GS to produce energy for the benefit of all Manitobans. Seven Sisters GS continues to be integral to the overall system energy supply. This report is submitted to Manitoba Sustainable Development to provide supporting information in the decision to issue a Renewal Licence under the Water Power Act for another set term as specified by the Minister.

## Figures

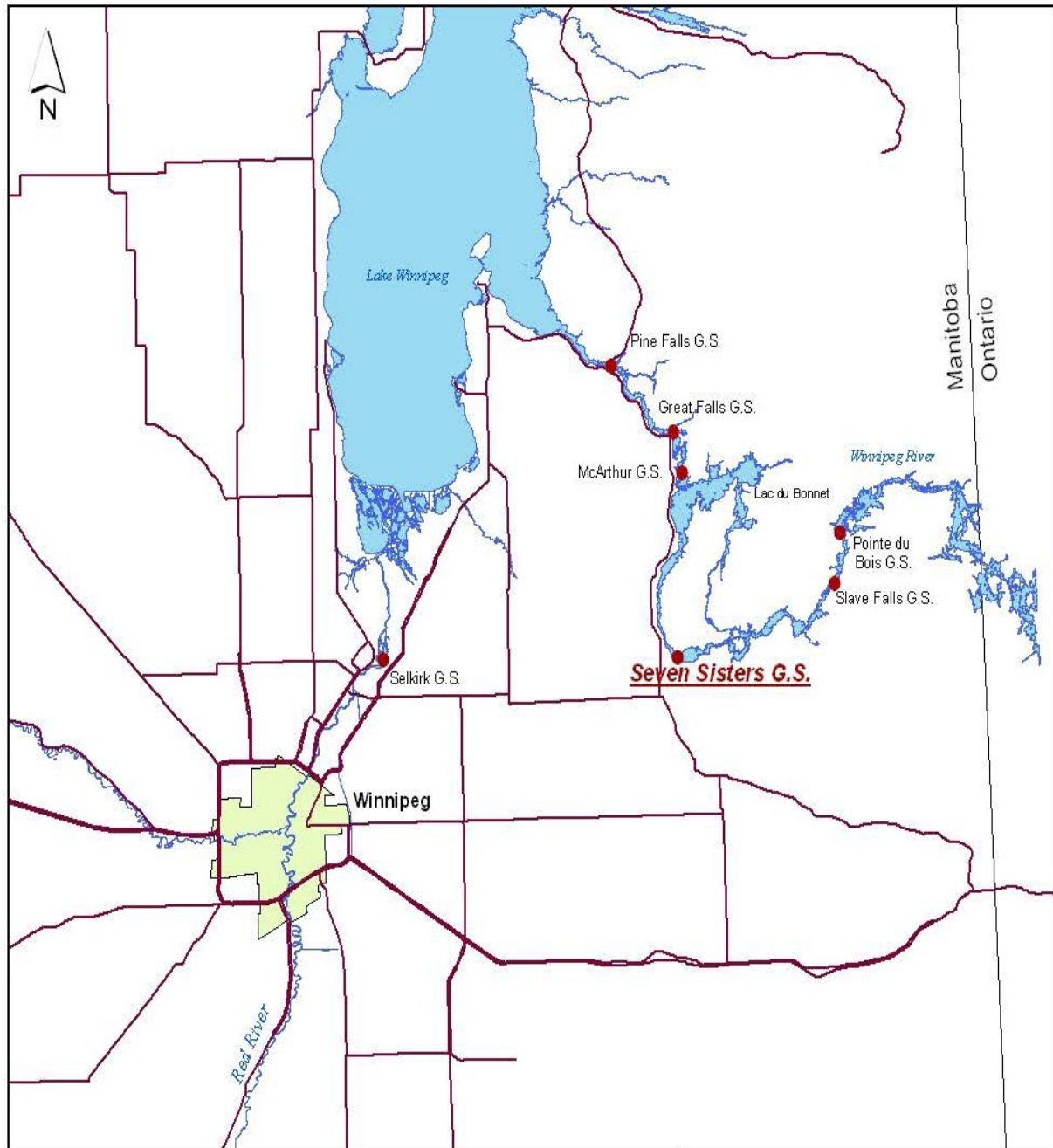


Figure 1 Geographical Location of Seven Sisters GS

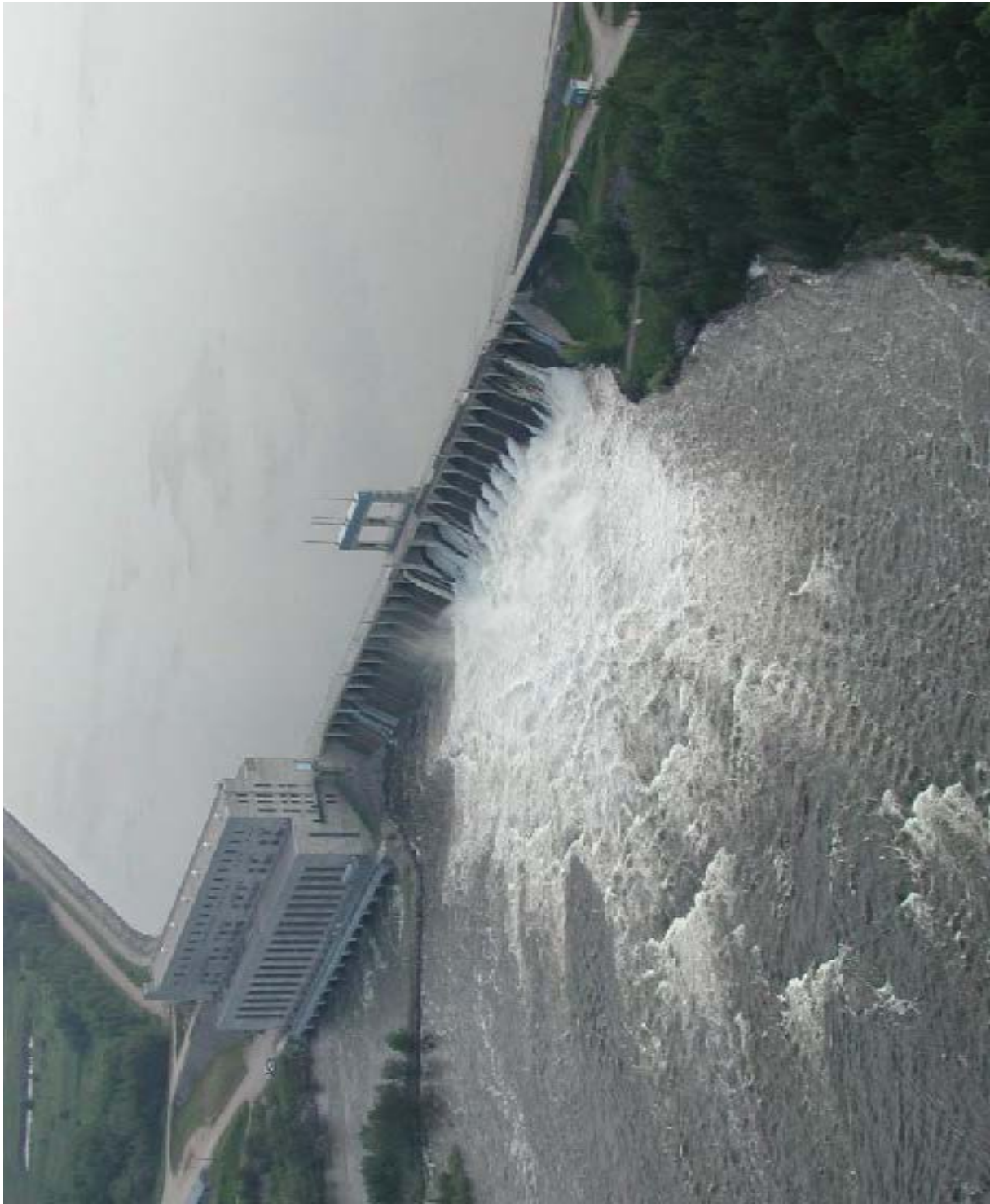


Figure 2 Photograph of Seven Sisters GS

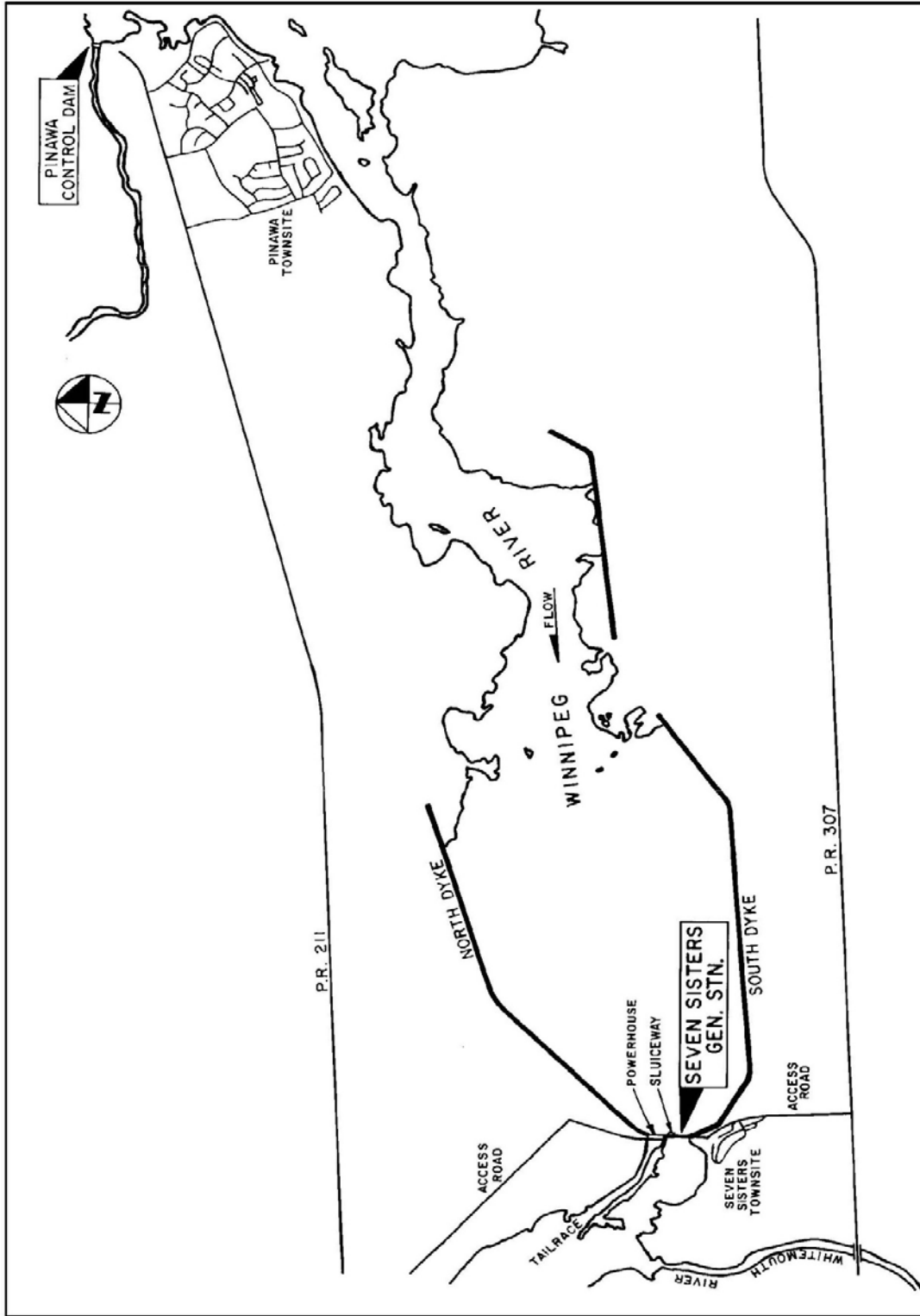


Figure 3 General Arrangement of Seven Sisters GS

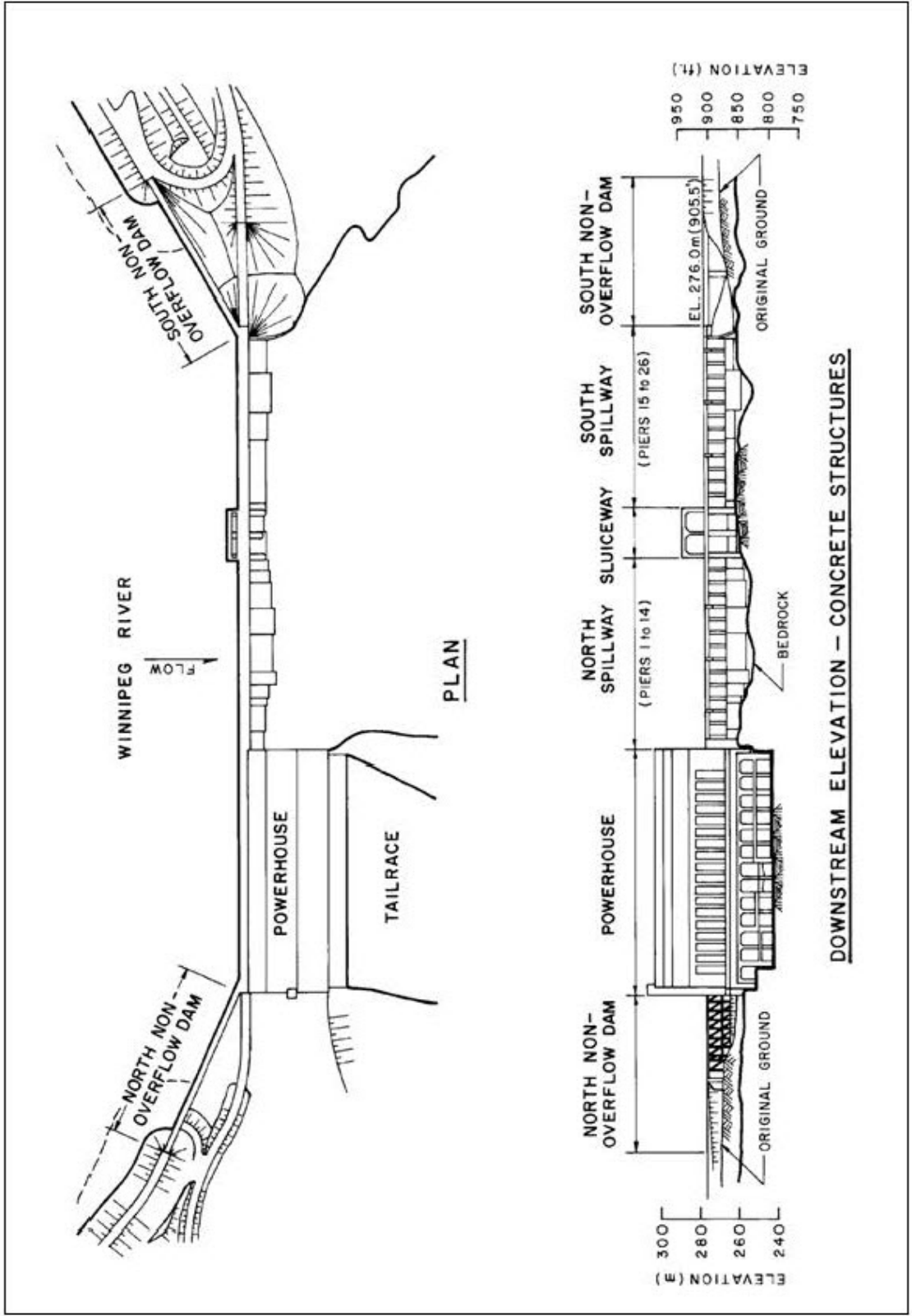


Figure 4 Concrete Structures

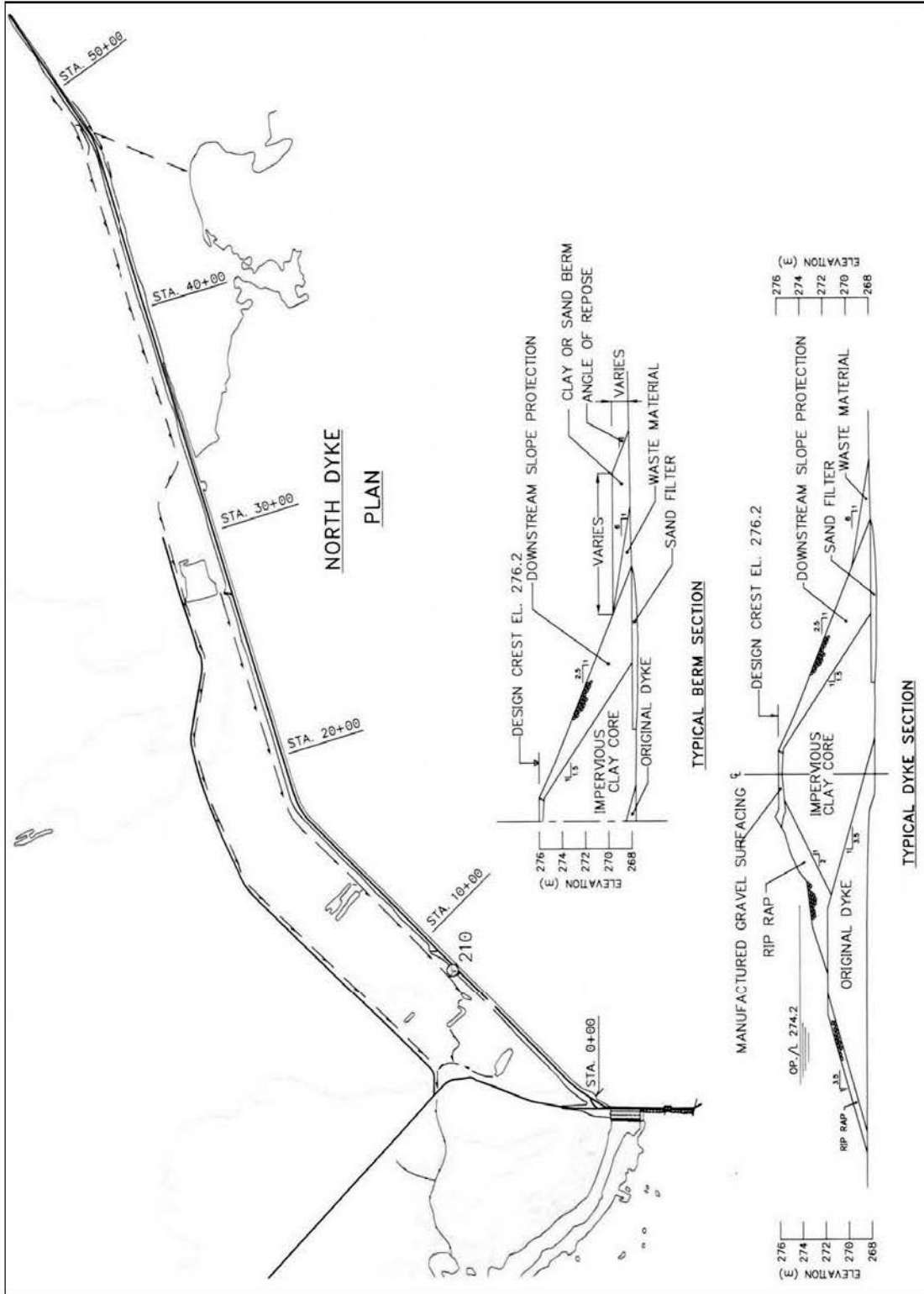


Figure 5 North Dyke



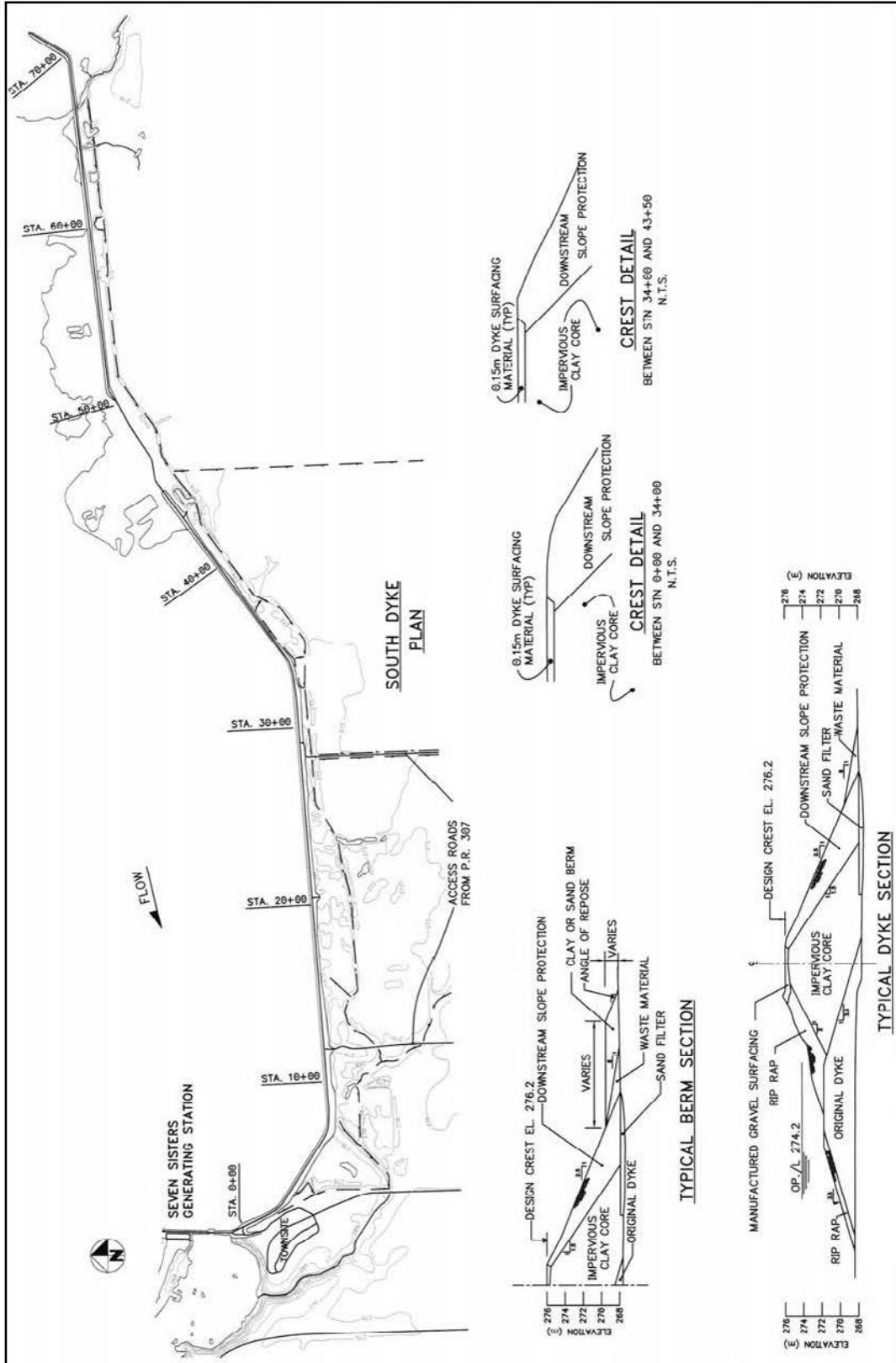


Figure 6 South Dyke

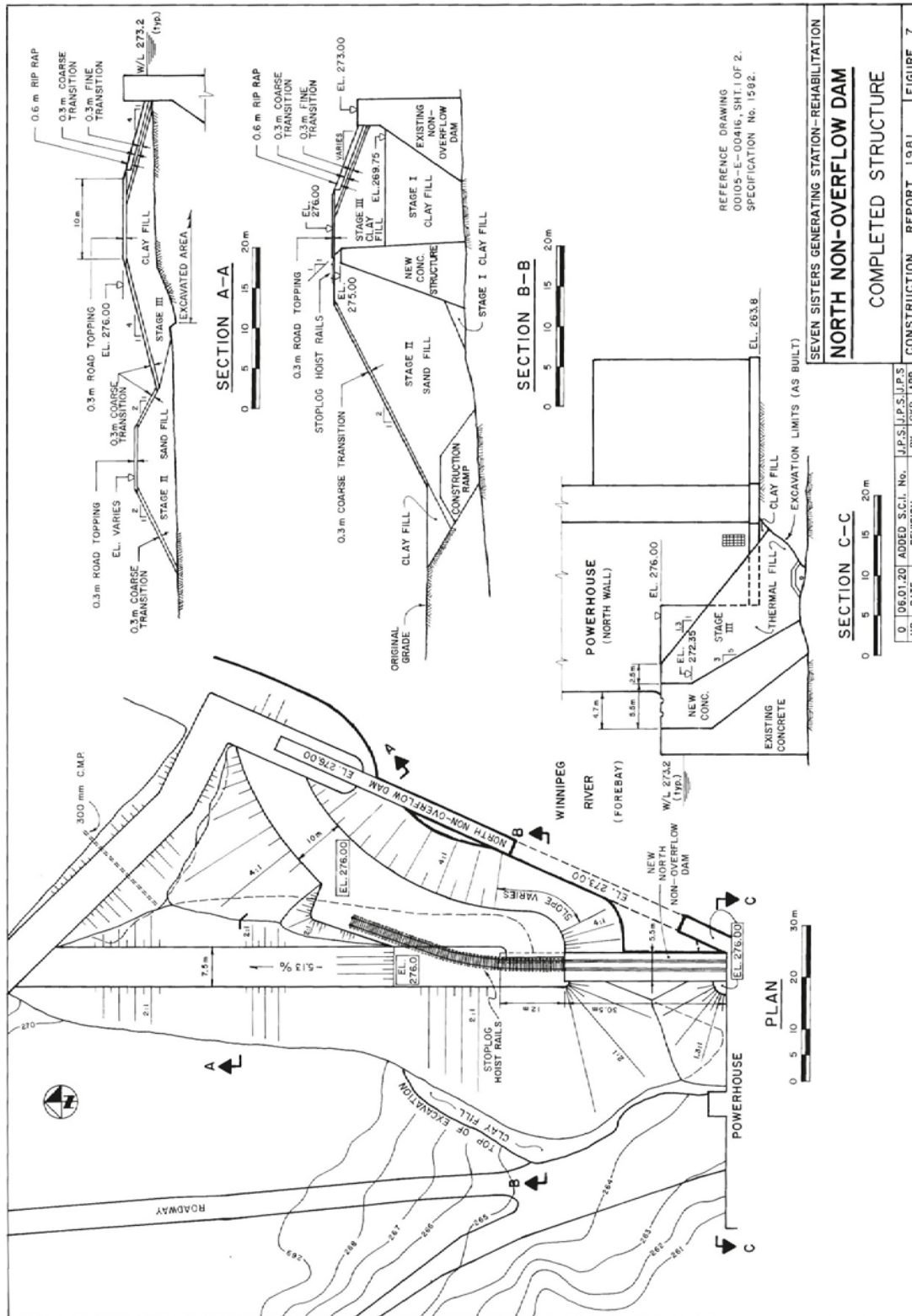
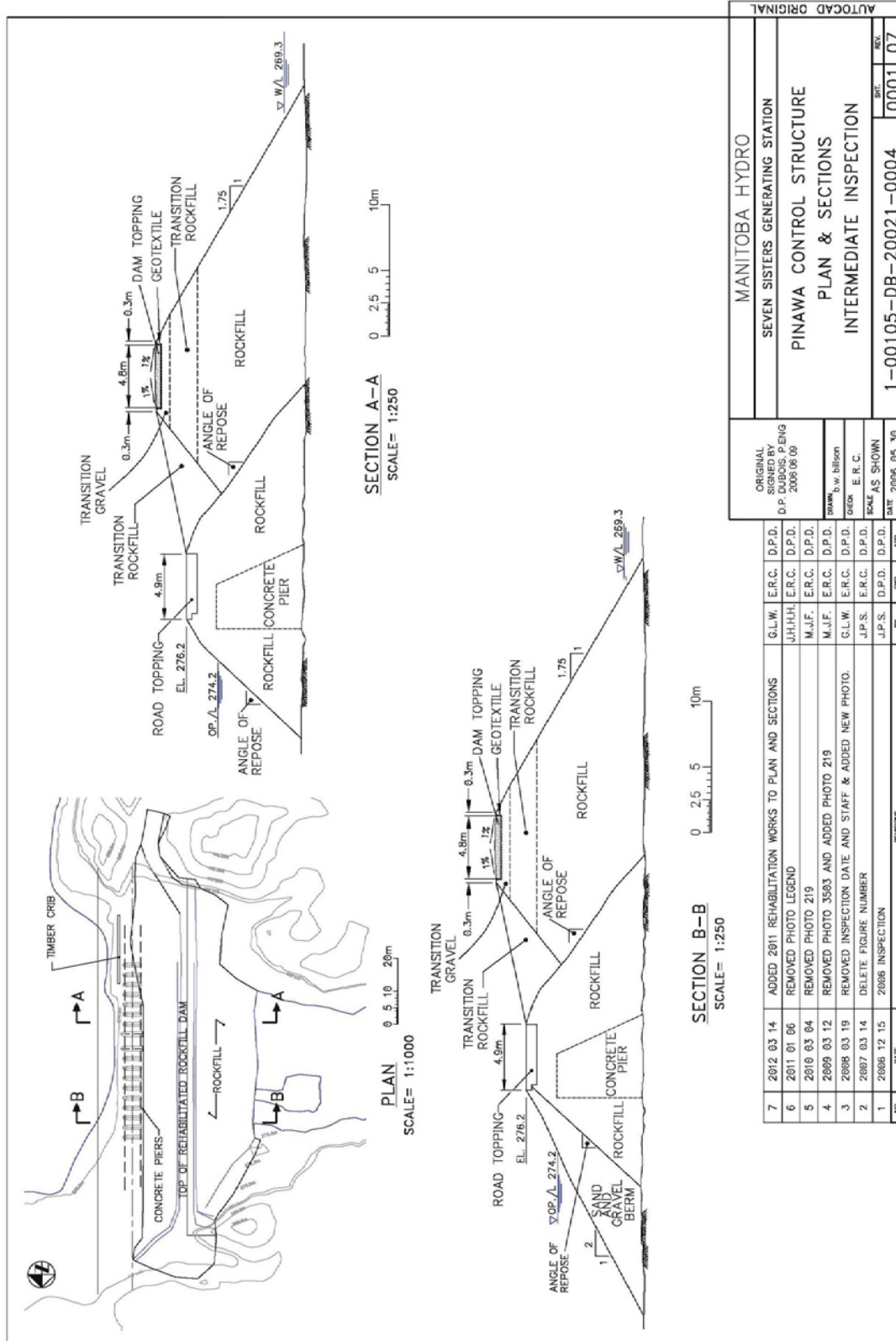


Figure 7 North Non-Overflow Dam



MANITOBA HYDRO	
SEVEN SISTERS GENERATING STATION	
PINAWA CONTROL STRUCTURE	
PLAN & SECTIONS	
INTERMEDIATE INSPECTION	
1-00105-DB-20021-0004	0001   07

ORIGINAL SIGNED BY D.P. DOBOS P.ENG 2008 08 08	SCALE AS SHOWN	DATE 2006 05 30
DRAWN BY b.w. bilson	CHKD. E.R.C.	DATE 2006 05 30

Figure 8 Pinawa Rockfill Dam after Rehabilitation

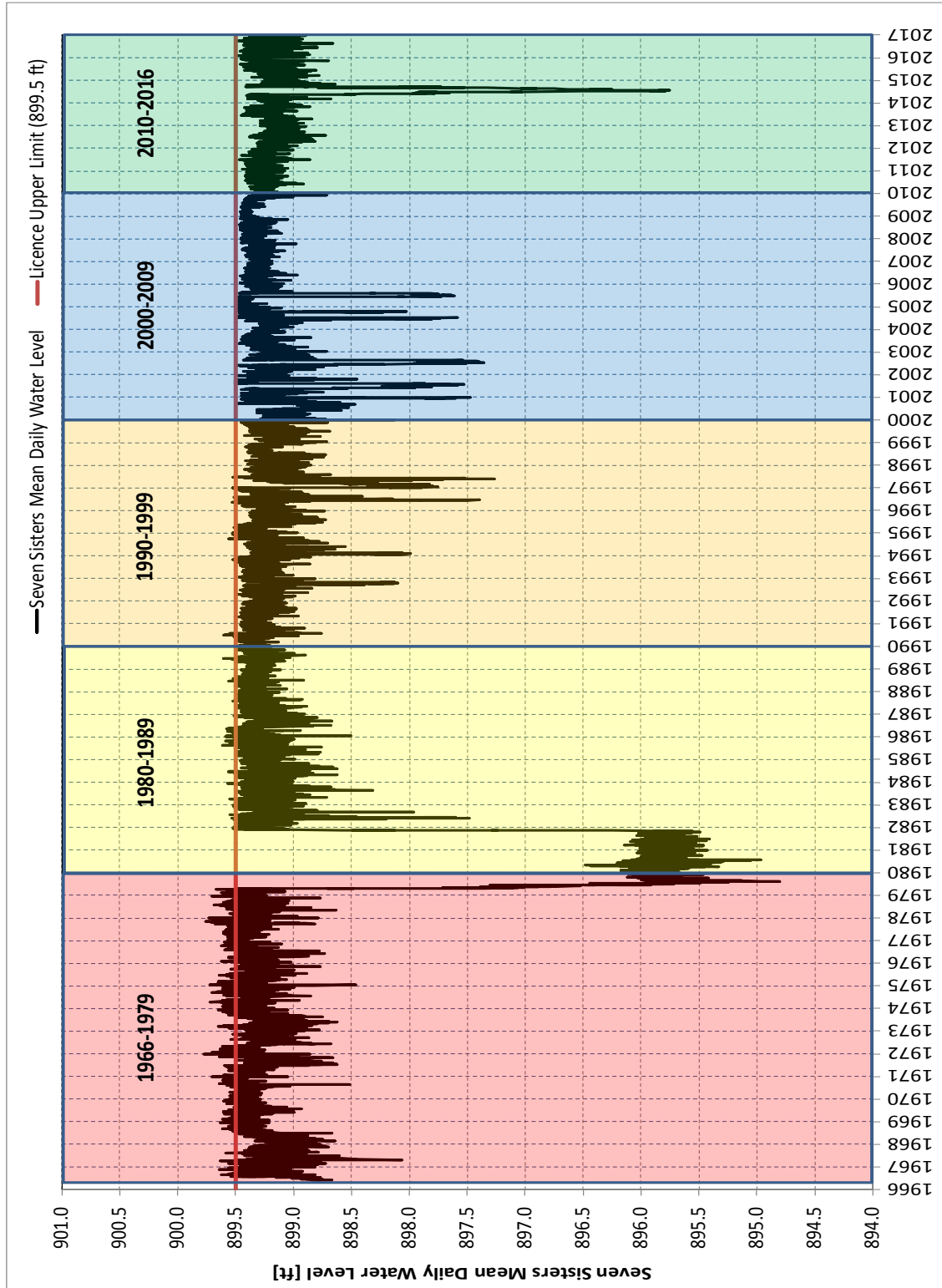


Figure 9 Seven Sisters GS Historic Water Level Compliance



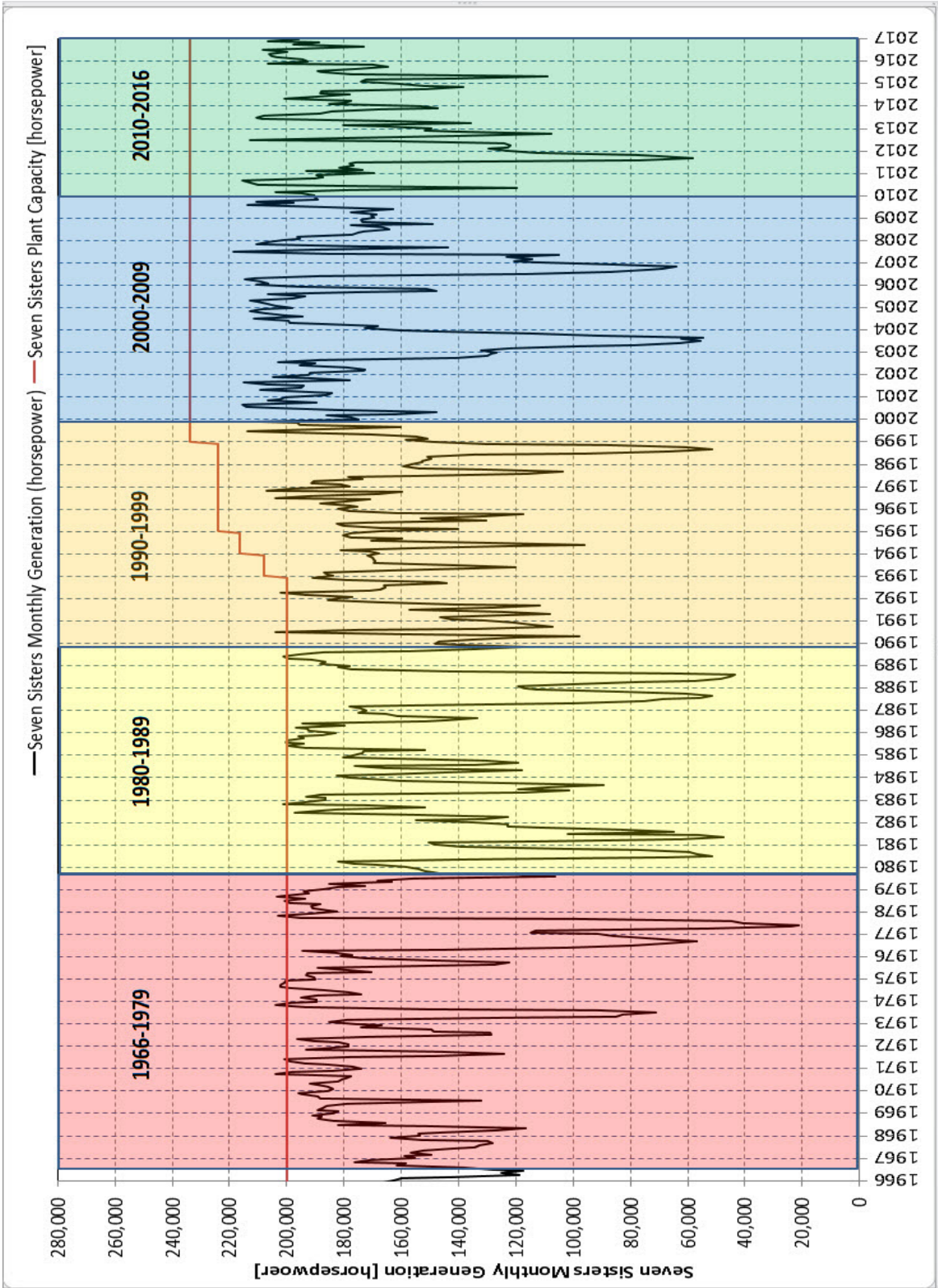


Figure 10 Seven Sisters GS Historic Power Generation, (horsepower)



Figure 11 Unit No. 1 Nameplate post refurbishment, 1993



Figure 12 Unit No. 2 Nameplate post refurbishment, 1992









Figure 15 Unit No. 5 Nameplate Original, 1952



Figure 16 Unit No. 6 Nameplate Original, 1952

## Appendix A: Renewal Licence Request

**MANITOBA HYDRO**

BOX 815 • WINNIPEG, MANITOBA R3C 2P4

January 19, 1978

Mr. T. E. Weber  
Water Resources Division  
1577 Dublin Avenue  
Winnipeg, Manitoba  
R3E 3J5

Dear Mr. Weber:

Re: Seven Sisters Licence Renewal

We note that the Seven Sisters Final Licence, dated June 3, 1966, Article 6 states:

"6. In accordance with the provisions of the Regulations the term of this Final Licence shall be Fifty (50) years from and after the first day of January, AD. 1932, and the said term shall thereafter be subject to renewal or extension in accordance with the provisions of the laws and Regulations relating thereto and then in force."

The licence therefore expires on Dec. 31, 1981. We also note the provisions of Article 46.(1) of the Manitoba Water Power Act and Regulations for the renewal of licences, which states:

"46.(1) Not less than four nor more than six years prior to the termination of any licence, the licensee may apply in writing for an extension of rights held under such licence. . . ."

The earliest date upon which Manitoba Hydro may have applied for a renewal was therefore Jan. 1, 1975, and the latest date was Dec. 31, 1977, which deadline has now passed.

Notwithstanding, Manitoba Hydro hereby applies for a renewal of the Seven Sisters Final Licence, under the provisions of article 46.(1) of the Regulations. It is our belief that Manitoba Hydro has met all the requirements of the existing licence, has constructed and maintained all of the works so covered in the said licence, has operated the plant beneficially for the power requirements of the people of Manitoba, has paid all those water and land rentals as required under the terms of the licence except those currently owing for which billing has not yet been received, and has complied with any special requests from the Director or the Minister

. . . . . 2

Appendix A: Renewal Licence Request (January 19, 1978)

MANITOBA HYDRO

Mr. T. E. Weber  
January 19, 1978  
Page 2

It is Manitoba Hydro's intention to continue the maintenance and beneficial operation of this plant in the future as it has done in the past, should the licence renewal be granted. Manitoba Hydro hereby declares its willingness to continue its compliance with all the said laws and regulations.

Yours very truly,

J. F. Funnell  
General Counsel & Secretary

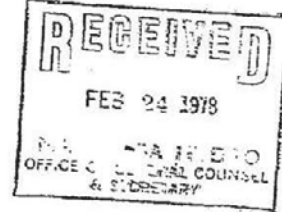
PMA/rm

Appendix A: Province's Renewal Licence Acknowledgement (February 23, 1978)

MINISTRE DE L'ÉNERGIE ET DES RESSOURCES EN EAU  
MINISTER OF ENERGY AND ENVIRONMENTAL MANAGEMENT

February 23, 1978.

Mr. J.F. Funnell;  
General Counsel & Secretary,  
Manitoba Hydro,  
P.O. Box 815,  
Winnipeg, Manitoba.  
R3C 2P4



Dear Mr. Funnell:

Re: Seven Sisters Licence Renewal.

This will acknowledge your letter of January 19th, 1978 to the Water Resources Division applying for an extension of rights held by Manitoba Hydro under the Seven Sisters Water Power Licence, issued on June 3rd, 1966.

We will contact you upon completion of a review of your application.

Yours sincerely,

Original signed A. Brian Ransom

A. Brian Ransom,  
Minister.

Appendix B: Current Short Term Extension Licence (STEL) valid October  
1, 2015 to and including September 30, 2020



APPENDIX B – Short Term Extension Licence, valid October 1, 2015 to September 30, 2020

**PROVINCE OF MANITOBA  
MANITOBA WATER STEWARDSHIP**

**SECOND SHORT-TERM EXTENSION LICENCE  
FOR THE DEVELOPMENT OF WATER POWER  
Seven Sisters Falls Site, Winnipeg River**

Issued to Manitoba Hydro, being a duly incorporated by Act of the Legislature of the Province of Manitoba whose head office address is at 360 Portage Avenue, Winnipeg, Manitoba, R3C 2P4  
Issued in accordance with The Water Power Act (C.C.S.M. c. W60),  
and the Water Power Regulation (M.R. 25/88R).

WHEREAS:

- A. Manitoba Hydro (hereinafter called “the Licensee”) the is the holder of a Final Licence for the development of water power at the Seven Sisters Falls Site, dated June 3, 1966 (a copy of that Final Licence is attached as Schedule “A” to this Second Short-term Extension Licence);
- B. The term of the Final Licence was for a term of fifty (50) years from January 1, 1932;
- C. The Licensee by letter dated January 19, 1978 signed by J. F. Funnell, General Counsel and Secretary, applied for a renewal of the Seven Sisters Final Licence;
- D. The Final Licence has not yet been renewed. The Final Licence was extended by a Short-Term Extension Licence, dated November 3, 2010 with a term to and including September 30, 2015. The Licensee has applied by letter dated June 26, 2015 signed by W. V. Penner, Manager, Hydraulic Operations Department, to Rob Matthews, Manager of Water Use Licensing, Manitoba Conservation and Water Stewardship for a renewal of the Short-term Extension Licence for the Seven Sisters Falls development in accordance with section 92(6) of the Water Power Regulation and has done all things which, in the opinion of the Director, are required to be done by the Licensee prior to the issuance of this Second Short-term Extension Licence;
- E. It is contemplated that decisions will be made about the application for a renewal of the Final Licence during the term of this Second Short-term Extension Licence.
- F. The Licensee has duly executed an acceptance of the terms and conditions of this Second Short-term Extension Licence and has undertaken to observe and fulfill all the terms and conditions which the Licensee is required to observe and fulfill under this Second Short-term Extension Licence.

This Second Short-term Extension Licence is issued, granting to the Licensee:

- (a) The right to impound divert and use water of the Winnipeg River at and near the Seven Sisters Falls Site,
- (b) The right to develop electric power and energy from the said waters,

APPENDIX B – Short Term Extension Licence, valid October 1, 2015 to September 30,

2

- (c) The right to generate, transmit, distribute, sell and deliver the said electric power and energy and for that purpose to use and occupy the lands of the Province described in the Final Licence, and
- (d) The right to operate and maintain the undertaking, the location and description of which is shown upon the record plans numbered and filed in the office of the Executive Director at Winnipeg.

on the same terms and conditions as set out in the Final Licence, subject to the following specific terms and conditions:

1. This Second Short-term Extension Licence shall apply from October 1, 2015 to and including September 30, 2020.
2. On the second day of January in each year the Licensee shall pay an annual rental in advance for the use and occupation of lands of the Province described in parts (a), (b), (c) and (d) of Article 3 of the Final Licence at the rates set from time to time by Regulation under *The Water Power Act*.<sup>1</sup>
3. The Licensee shall pay an annual rental for the use of water for the development of power at the rates set from time to time by Regulation under *The Water Power Act* and payable at the times and in the manner provided for by Regulation under *The Water Power Act*.<sup>2</sup>
4. The terms and conditions set out in the Final Licence apply as if set out specifically in this Second Short-term Extension Licences, except where inconsistent with the terms and conditions set out specifically in this document, in which case the terms and conditions set out in this document will apply.
5. The Licensee shall comply with *The Water Power Act* and the Water Power Regulation.

ISSUED at Winnipeg this 26<sup>th</sup> day of August, 2015.

Minister  
Conservation and Water Stewardship

<sup>1</sup> Rental rates for land use are currently set out in s. 48(3.1) of the Water Power Regulation.

<sup>2</sup> Rental rates for the use of water for the development of power are currently set out in s. 48(3.2) of the Water Power Regulation.

2020



APPENDIX B – Short Term Extension Licence, valid October 1, 2015 to September 30, 2020, Schedule "A" – Final Licence dated June 3, 1966

PROVINCE OF MANITOBA  
DEPARTMENT OF AGRICULTURE AND CONSERVATION  
WATER CONTROL AND CONSERVATION BRANCH

FINAL LICENSE FOR THE DEVELOPMENT OF WATER POWER  
Seven Sisters Falls Site, Winnipeg River

Issued in accordance with the provisions of the Water Power Act, Chapter 288, Revised Statutes of Manitoba, 1954, and amendments, and of the Regulations in force thereunder to govern the mode of granting and administering Provincial water-power rights.

WHEREAS, pursuant to the provisions of The Dominion Water Power Act and Regulations, the Minister of the Interior of Canada issued to Northwestern Power Company Limited an Interim License dated September 17, 1928, to divert and use water for the development of power at the Seven Sisters Falls Site on the Winnipeg River in the Province of Manitoba;

AND WHEREAS the Manitoba Natural Resources Act provides that from and after July 15, 1930, any power or right theretofore exercised by the Minister of the Interior relating to the natural resources of Manitoba, including lands and water power, was thereafter to be exercised by the Minister of Mines and Natural Resources of Manitoba;

AND WHEREAS under the authority of said Interim License, Northwestern Power Company Limited completed its initial power development at the Seven Sisters Falls Site as of December 31, 1931;

AND WHEREAS Northwestern Power Company Limited, with the assent of the Minister of Mines and Natural Resources of Manitoba, assigned to Winnipeg Electric Company as of June 8, 1936, all its right, title and interest in and to said Interim License;

AND WHEREAS the Winnipeg Electric Company has, since December 31, 1931, completed the development of the Seven Sisters Falls Site;

AND WHEREAS, pursuant to The Department of Agriculture and Immigration Act Amendment Act, 1959, the administration of water-powers and lands in the Province of Manitoba required for their protection, development, maintenance and operation were transferred to and vested in

APPENDIX B – Short Term Extension Licence, valid October 1, 2015 to September 30, 2020, Schedule "A" – Final Licence dated June 3, 1966

the Minister of Agriculture and Conservation;

AND WHEREAS Winnipeg Electric Company, with the assent of the Minister of Agriculture and Conservation of Manitoba, assigned to Manitoba Hydro as of April 1, 1961, all its right, title and interest in and to said Interim License;

AND WHEREAS Manitoba Hydro, a corporation duly incorporated by Act of the Legislature of the Province of Manitoba, and whose head office address is 820 Taylor Avenue in the City of Winnipeg (hereinafter called "the Licensee") has applied by letter dated September 14, 1959, signed by D. M. Stephens, Chairman and General Manager, to the Director of Provincial Water Powers at Winnipeg (hereinafter called "the Director") for a Final License for the said Seven Sisters development and has done all things which in the opinion of the Director are required to be done by the Licensee prior to the issuance of a Final License;

AND WHEREAS the Licensee has duly executed an acceptance of the terms and conditions of this Final License and has undertaken to observe and fulfill all the terms and conditions which the Licensee is required to observe and fulfill under this Final License and under the Water Power Act, R.S.M. 1954, Cap. 288 (hereinafter called "the Act") and the Manitoba Water Power Regulations being Manitoba Regulation 95/45 and all amendments thereto (hereinafter called "the Regulations");

NOW THEREFORE, under authority of and subject to the provisions of the Act and the Regulations thereunder this Final License is issued, granting to the Licensee:

- (a) The right to impound, divert and use waters of the Winnipeg River at and near the Seven Sisters Falls Site,
- (b) The right to develop electric power and energy from the said waters,
- (c) The right to generate, transmit, distribute, sell and deliver the said electric power and energy and for that purpose to use and occupy the lands of the Province hereinafter described, and

APPENDIX B – Short Term Extension Licence, valid October 1, 2015 to September 30, 2020, Schedule "A" – Final Licence dated June 3, 1966

- (d) The right to operate and maintain the undertaking, the location and description of which is shown upon the record plans numbered and filed in the office of the Director at Winnipeg.

Subject, nevertheless, to the provisions of the Regulations and any other regulations now or hereafter in force governing the granting and administering of Provincial water-powers and the lands required in connection with the development and use thereof, and to the following special terms and conditions, namely:

1. The Licensee may divert and use continuously for the development of power at the said Seven Sisters Site all the water of the Winnipeg River which may be flowing at the said Site from time to time during the term of this Final License, subject, however, to the Provisions of Section 72 of the Regulations.
2. The undertaking authorized to be maintained and operated by the Licensee under this Final License shall comprise the following: a powerhouse with six main hydro-electric generators, having a capacity of 225,000 horsepower; one station service generator; a concrete dam with regulating sluices and spillway; dykes; a rock-cut tailrace channel; switching facilities in the powerhouse; transmission lines; roads; and all necessary works, machinery and equipment for the complete development, generation and transmission of electric power available at the said Seven Sisters Falls Site, all as shown by plans and descriptions thereof filed in the office of the Director at Winnipeg, as follows:

HAVE USED:  
200,000 hp  
(150 MW)

<u>Manitoba Water Control and Conservation Branch File Number</u>	<u>Licensee's File Number</u>	<u>Description</u>
21-7-1017	0105-E-1001 (Rev. 0)	General Plan of Powerhouse, Sluiceway and Dam.
21-7-1018	1564-E-4 (Rev. 1)	Seven Sisters Power Plant, Tailrace Canal. Plan Profile and Section.
21-7-3034	1677-C-5 (Rev. 3)	Powerhouse Superstructure, South Elevation of Generator Room, Switch House and Gate House.

APPENDIX B – Short Term Extension Licence, valid October 1, 2015 to September 30, 2020, Schedule "A" – Final Licence dated June 3, 1966

<u>Manitoba Water Control and Conservation Branch File Number</u>	<u>Licensee's File Number</u>	<u>Description</u>
21-7-3035	965-C-4 (Rev.2)	Powerhouse Superstructure, North End Elevation.
21-7-3036	1678-E-5 (Rev.2)	Powerhouse Superstructure, Elevation Downstream Generator Room and Switch House Walls.
21-7-3037	1676-E-5 (Rev. 1)	Powerhouse Superstructure, Elevation Upstream Gate- house and Switch House Walls.
21-7-1019	1450-E-5 (Rev. 1)	General Arrangement of Power- house, Elevations.
21-7-3038	578-R-4 (Rev. 1)	General Arrangement of Power- house, Plans.
21-7-3039	1557-C-5 (Rev. 13)	General Arrangement of Power- house Extension.
21-7-3040	577-E-4 (Rev. 3)	Powerhouse Cross-Sections through Units 1-2-3 and Service Unit.
21-7-1020	548-E-3 (Rev. 1)	Seven Sisters Development, Layout of Sluice and Spill- ways.
21-7-1021	1543-S-2 (Rev. 1)	Plan, Profile and Typical Sections of Proposed Dykes at Seven Sisters.

3. Lands of the Province which may be entered upon, used or occupied for the maintenance and operation of the said undertaking shall be the following:

(a) Lands of the Province not covered by water required for main diverting works, powerhouses, etc.

All those portions of the following lands not covered by the waters of the Winnipeg River, as shown outlined in green on Record Plan No. 21-7-1022, Sheets 1 and 2, filed in the office of the Director at Winnipeg and which is the licensee's No. 0105-R-0201, Sheets 1 (Rev. 0) and 2 (Rev. 0);

(i) In Township Thirteen (13) and Range Twelve (12) East of the Principal Meridian in Manitoba: South Half of Section Thirty-two (32); South Half of Section Thirty-one (31); Road Allowance west and east respectively of Section Thirty-one (31).

APPENDIX B – Short Term Extension Licence, valid October 1, 2015 to September 30, 2020, Schedule "A" – Final Licence dated June 3, 1966

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- (ii) In Township Fourteen (14) and Range Twelve (12) East of the Principal Meridian in Manitoba: North Half and South-west Quarter of Section Six (6); road allowance west of Section Six (6).
  - (iii) In Township Thirteen (13) and Range Eleven (11) East of the Principal Meridian in Manitoba: South-east Quarter of Section Thirty-six (36); North Half of Section Twenty-five (25); road allowance west of Section Twenty-five (25); North Half of Section Twenty-six (26); road allowance west of Section Twenty-six (26); East Half and North-west Quarter of Section Twenty-seven (27); South Half and North-east Quarter of Section Thirty-four (34); road allowance east of Section Thirty-four (34); North Half of Section Thirty-five (35); road allowance North of Section Thirty-five (35).
  - (iv) In Township Fourteen (14) and Range Eleven (11) East of the Principal Meridian in Manitoba: South-east Quarter of Section Two (2); road allowance east of Section Two (2); South Half of Section One (1).
- (b) Lands of the Province covered by water required for main diverting works, powerhouses, etc.
- All those portions of the North-west Quarter of Section Twenty-seven (27), the South-west Quarter of Section Thirty-four (34) and the East Half of Section Thirty-three (33), all in Township Thirteen (13) and Range Eleven (11) East of the Principal Meridian in Manitoba, covered by the waters of the Winnipeg River, as shown outlined in red on Record Plan No. 21-7-1022, Sheets 1, 2 and 3, filed in the office of the Director at Winnipeg and which is the Licensee's No. 0105-R-0201, Sheets 1 (Rev. 0), 2 (Rev. 0) and 3 (Rev. 0).
- (c) Lands of the Province required only to be flooded in connection with the storage or pondage of water.
- All those portions of the following Townships shown outlined in brown on Record Plan No. 21-7-1015 filed in the office of the Director in Winnipeg, excepting thereout, first, all those lands heretofore described as required for works and, second, all those



APPENDIX B – Short Term Extension Licence, valid October 1, 2015 to September 30, 2020, Schedule "A" – Final Licence dated June 3, 1966

Lands shaded yellow on the said Plan No. 21-7-1015:

- (i) Townships Thirteen (13) and Fourteen (14) in Range Eleven (11) East of the Principal Meridian in Manitoba.
  - (ii) Townships Thirteen (13) and Fourteen (14) in Range Twelve (12) East of the Principal Meridian in Manitoba.
  - (iii) Townships Thirteen (13) and Fourteen (14) in Range Thirteen (13) East of the Principal Meridian in Manitoba.
- (d) Lands of the Province required only for rights of way for transmission lines

All these portions of the following lands shown coloured in pink on plans entered and filed in the Winnipeg Land Titles Office as Nos. 3408 and 3409, copies of which are filed in the office of the Director at Winnipeg:

- (i) In Township Thirteen (13) and Range Eleven (11) East of the Principal Meridian in Manitoba: South-east Quarter of Section Twenty-nine (29).
- (ii) In Township Twelve (12) and Range Ten (10) East of the Principal Meridian in Manitoba: South Half and North-east Quarter of Section Thirty-three (33); North Half of Section Thirty-four (34).
- (iii) In Township Twelve (12) and Range Nine (9) East of the Principal Meridian in Manitoba: North-west Quarter of Section Twelve (12); North Half and South-west Quarter of Section Eleven (11); East Half and South-west Quarter of Section Ten (10); South-east Quarter of Section Nine (9); North Half of Section Four (4); North Half of Section Five (5); South Half of Section Six (6).

4. ~~The licensee shall not raise the headwater of the development to an elevation higher than 899.5' above mean sea level, Canadian Geodetic Datum, 1929 adjustment,~~ provided, however, that with the consent of the Licensee of the next development upstream, namely, Slave Falls Generating Station, and with the prior written approval of the Director, the Licensee may

APPENDIX B – Short Term Extension Licence, valid October 1, 2015 to September 30, 2020, Schedule "A" – Final Licence dated June 3, 1966

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- raise and maintain the headwater elevation in accordance with Section 72 of the Regulations.
5. The Licensee shall not be responsible for loss or damage of or to lands or property upstream from the Seven Sisters Falls Development caused by or resulting from the operation of the said Development at headwater elevations not exceeding those from time to time authorized.
  6. In accordance with the provisions of the Regulations the term of this Final License shall be Fifty (50) years from and after the first day of January, A.D. 1932, and the said term shall thereafter be subject to renewal or extension in accordance with the provisions of the laws and Regulations relating thereto and then in force.
  7. On the second day of January in each and every year during the term of this Final License the Licensee shall pay an annual rental in advance of Five Hundred Dollars (\$500.00) for the use and occupation of lands of the Province described in parts (a), (b) and (c) of Article 3 hereof. The Licensee shall in addition during the said term pay an annual rental in advance of One Dollar (\$1.00) for the use and occupation of lands of the Province described in part (d) of Article 3 hereof.
  8. The Licensee shall also pay an annual rental during the term of this Final License for the use of water for the development of power, determined in accordance with the principles set out in Section 48 of the Regulations and payable at the times and in the manner therein provided, and at the following rates:-
    - (a) The rentals in the first twenty years of the term of this License shall be the greater of:
      - (i) an annual rental of fifty (50) cents per installed horsepower;
      - (ii) an annual rental of one dollar and twenty-five cents (\$1.25) per horsepower year output.
    - (b) The annual rental to be paid after the expiry of the said twenty year period shall be determined as provided in the regulations in force at such time.

APPENDIX B – Short Term Extension Licence, valid October 1, 2015 to September 30, 2020, Schedule "A" – Final Licence dated June 3, 1966

- 8 -
9. The Licensee shall from the first day of January, A. D. 1932 pay annually the proportionate share chargeable to its development of the annual costs of operating and maintaining water storage in Lake of the Woods and Lac Seul; the first of such annual payments shall be made on the first day of January, A. D. 1933 and subsequent annual payments thereafter shall be made on the first day of January of each and every year until the termination of this License, each payment to represent the Licensee's share of the said annual operating costs for the preceding calendar year.
  10. The ~~Severance line~~ as defined in Section 1 of the Regulations shall be as shown on Record Plan number ~~2127-1015~~ filed in the office of the Director.
  11. All record plans filed with the said Director and referred to in this Final License are incorporated herewith and made a part hereof.
  12. This Final License is issued upon the express condition that it shall be subject to the provisions of the Regulations and all subsequent amendments thereto.

ISSUED at Winnipeg this 3rd day of June A. D. 1966 ,  
at the direction of the Honourable the Minister of Agriculture and Conservation.

Minister of Agriculture and Conservation.



## Appendix C: Reference Documents

## APPENDIX C

This appendix contains copies of key documents referenced previously in this report related to the licence renewal process. The following is a list of all relevant documents along with the page number location:

- May 4, 1979 letter from Manitoba Hydro requesting authorization to proceed with major rehabilitation works, page 66.
- June 13, 1979 letter from the Minister authorizing major rehabilitation works, page 68.
- March 8, 1990 memo from Manitoba Hydro to Manitoba describing proposed capacity expansion and requesting clarification of Section 68 of the Water Power Act Regulations, page 69.
- May 8, 1990 letter from Manitoba acknowledging capacity increase refurbishment plans and concurrence with incorporating increased capacity into the Renewal Licence, page 75.
- October 30, 1991 letter from the Minister notifying of change in billing of land rentals to calendar year, page 76.
- February 29, 1996, letter from the Deputy Minister notifying of change in billing of water rentals from annual to monthly, page 77.
- November 4, 1996, letter from the Deputy Minister notifying of change in billing of land rentals from calendar year to fiscal year beginning April 1, page 78.

APPENDIX C – May 4, 1979 letter

John F. Funnell  
General Counsel and Secretary  
Manitoba Hydro

Mr. T. E. Weber, P.Eng.  
Senior Assistant Deputy Minister  
Water Resources Division  
1577 Dublin Avenue  
Winnipeg, Manitoba R3E 3J5

May 4, 1979

SEVEN SISTERS REHABILITATION WORK

Extensive deterioration has taken place at several structures at the Seven Sisters Generating Station. Accordingly, a scheme for rehabilitation has been prepared.

The scheme consists generally of:

- a) Building a new dam downstream and partially connecting to the existing non-overflow dam and north wall of the powerhouse, removal and repair of deteriorated concrete on the abutting sections of the existing non-overflow dam and the north wall of the powerhouse, placement of fill materials to enclose the new non-overflow dam and tie in to the existing north dyke. Removal of the top section of the existing non-overflow dam is also proposed.
- b) The north, south and centre sluiceway piers require concrete repairs.
- c) Several spillway piers require concrete repairs as well as several spillway rollways.
- d) In the powerhouse area, the intake headblocks and tailrace deck require surface repairs.

The upstream reservoir will be lowered 3.5 feet to elevation 896 because of concern for the stability of the north non-overflow dam.

If construction activities can begin immediately, it would permit an in-service date for the new north non-overflow dam in 1980. Completion date of the remaining work would be 1982. Total project cost is estimated at \$25,400,000 including escalation and interest.

Attached for your information is a copy of the "Interim Report on Rehabilitation of Structures - Seven Sisters Generating Station", prepared by our Civil Design Department. This report generally outlines our intentions, and we trust it will constitute an adequate statement for the purposes of Section 64 of the Water Power Regulations.

.../2

APPENDIX C – May 4, 1979 letter

- 2 -

In accordance with Section 64 of the Water Power Regulations, your authorization to proceed with this project is requested.

In anticipation of this work, and as a safety measure, it is our intention to gradually lower the Seven Sisters forebay by 3.5 feet, beginning immediately.

If further information is required, please advise.

REG/JFF/ac  
attach.

bc: L. J. Holden, Project Manager, Seven Sisters Rehabilitation  
D. B. Sinclair, System Operations  
J. A. Taylor, System Operations

APPENDIX C – June 13, 1979 letter

MINISTER  
MINES, NATURAL RESOURCES AND ENVIRONMENT  
WINNIPEG  
R3C 2P4

June 13, 1979.

Mr. J. F. Funnell,  
General Counsel and Secretary,  
Manitoba Hydro,  
P.O. Box 815,  
Winnipeg, Manitoba.  
R3C 2P4



Dear Mr. Funnell:

Re: Seven Sisters Rehabilitation Work

This is further to your memorandum of May 4, 1979 to Mr. T. E. Weber requesting authorization to proceed with rehabilitation work at the Seven Sisters Generating Station. The memorandum and the accompanying report and plans have been determined to be "a complete and satisfactory statement and plans" of the proposed change, as required under Section 64 of the Water Power Regulation.

Section 64 of the Regulations reads as follows:

"64. The licensee, before making any material change in any existing works or in their location, shall submit a complete and satisfactory statement and plans of such proposed change to the Director, and shall not proceed to carry out the same until such proposed change has been authorized."

Under Section 64 of the Water Power Regulation authorization is hereby granted to Manitoba Hydro to carry out the proposed change in the existing works at the Seven Sisters Generating Station in accordance with the statement and plans submitted to the Department.

Yours sincerely,  
Original signed A. Brian Ransom

A. Brian Ransom,  
Minister.

c.c. The Honourable Donald W. Craik  
79 06 14 - XC to J.J. Arnason, G. C. March - for information  
Original to Central Files

APPENDIX C – March 8, 1990 memo

B1510

MANITOBA HYDRO  
INTEROFFICE MEMORANDUM

FROM P. M. Abel  
Manager  
Reservoir and Energy Resources  
System Operating Division

TO Mr. L. J. Whitney  
Executive Director  
Water Resources Branch  
1577 Dublin Avenue

---

DATE 1990 03 08

FILE NO.

SUBJECT MODIFICATIONS TO WINNIPEG RIVER GENERATING STATIONS

A few weeks ago, during a telephone conversation, we had discussed Manitoba Hydro's program for upgrading turbines installed in the four plants on the Winnipeg River. At the time, you requested me to advise you formally in writing the details of this program.

The work involved at Great Falls, Seven Sisters and Pine Falls consists of the replacement of turbine runners to coincide with the major rehabilitation of the associated generators. The major rehabilitation of a generator includes a complete rewind of the generator stator and requires an outage of six to eight months. It is a once or twice-in-a-lifetime project. If a generating station is deemed to have a life of, say, sixty-six years, a generator rewind is certain to be required sometime during that period after thirty or forty years' service. If civil works are deemed to have a life of 100 years, such rewinds could occur twice in that lifetime. Two of the generators at Pine Falls are beginning to show their age after 39 years of service. Some of the generators at Great Falls and Seven Sisters are coming in for their second rewinds, as these plants are now 67 and 59 years old respectively. The outage time of six to eight months can create a serious loss in generation potential and can result in high cost. Therefore such outages are not taken casually.

In the world of hydraulic runner design, considerable progress has been made in the last decade with the availability of advanced digital computers to add to the old analog methods. There has been significant improvement in efficiency and capacity/diameter ratios over what was available in 1923 and 1931. There are undoubted benefits simply to replace all runners immediately, but the costs of outage time of another six or eight months for turbine refitting and refurbishment often swallows up the benefits achieved.

Therefore, the policy which has evolved for an ongoing maintenance program for the Winnipeg River is to leave units as they are until a rewind job on the generator becomes mandatory, and then simultaneously to replace the turbine runner with an improved design, making one six-to-eight month outage do double duty.



APPENDIX C – March 8, 1990 memo

Mr. L. J. Whitv v  
1990 03 08  
Page 2

We have tended to regard this program as simply one of prudent maintenance in which there were no implications with regard to licensing or the Water Power Act. On the other hand, because of the considerable cost of rewinding and rewheeling, it is expedient to consider the work as a capital maintenance project, with costs spread out over the expected future life of the turbine and generator.

In carefully reviewing the provisions of the Water Power Regulations, paragraph 68 might apply in a formal sense, requiring any "licensee desiring to develop ..... a greater quantity of power than authorized by his licence ..... must first apply to the Minister..... for an interim licences ..... or for a final licence authorizing such additional development....." We had always interpreted this paragraph to mean the installation of additional turbines above the number licenced. If a narrower interpretation is required, involving an application for licence changes where the capacity of existing units is affected, then Manitoba Hydro should lose no time in submitting the appropriate applications for revised licences.

However, as you know, renewal of the final licences for both Great Falls and Seven Sisters have been held up for a number of successive reasons, making the amendment of expired licences a little awkward. The new licences could be reworded as required. Pine Falls, on the other hand, has a full and valid final licence remaining in force until the year 2001. It could be handled by applying for an amended final licence. We have no immediate plans for modifications at McArthur, for which the final licence remains valid until 2004.

The following is a detailed description of the program:

Great Falls

The original turbines for units 1, 2 and 3 were rated at 28 000 hp, as were units 5 and 6 later on. These five units are Dominion Engineering Works turbines, with Canadian General Electric generators. Although rated at 28 000 hp, these units have been called upon to deliver about 29 500 hp almost since original commissioning with the Great Falls forebay raised to a higher elevation. Generator no. 1 had been recently rewound for the second time, when in 1984, the turbine was considered to be in sufficiently poor shape, it would have to be replaced. For example, the throat ring was loose and literally flapping in the breeze. It was taken out of service on May 11, 1984 at 05:10 hours and returned to service on November 26, 1984 at 19:47 hours.

During this period, the maintenance work included a redesigned runner, a slightly larger throat ring, with the turbine setting lowered by some 14.5 inches. The rotational speed had to remain the same at the generator's synchronous speed, as there was no intention to alter the number of poles in the generator.



APPENDIX C – March 8, 1990 memo

Mr. L. J. Whittr  
1990 03 08  
Page 3

The new runner has about 6% greater efficiency and has been assigned a horsepower rate of 32 500 hp at a net head of 56 feet. While we, as system operators, prefer to rate turbines at gross head (averaging about 58 feet) as this is the observed difference between forebay and tailrace, turbine manufacturers prefer to rate turbines at net head, that is, the net Bernoulli hydraulic head acting on the turbine. This excludes entrance, trash and trashrack losses, but considers velocity head in the intake and lost velocity head in the draft tube.

The increase from 28 000 hp to 32 500 hp represents an increase of 16%, although in comparison to the output the plant has been producing for years with its raised forebay, it is an increase of only 10%. Nonetheless, if all six units at Great Falls were eventually modified, it would increase the plant capacity from 132 MW to 145 MW. The original nameplate rating for the plant was only 113.4 MW at a power factor of .90, or 126 MW at a power factor of unity.

With the success of turbine no. 1, when generator no. 5 came up for a rewind, it was decided to install a new runner in its turbine. Unit no. 5 was taken out of service on May 19, 1987 at 02:10 hours and returned to service with its new runner, lower setting and enlarged throat ring, on December 11, 1987 at 16:25 hours.

At the present time there is no firm commitment to do any further units at Great Falls, but there is a general understanding that units 3 and 6 will come up for consideration some time in the next few years. There is less certainty about unit 4, as it is an S. Morgan Smith turbine of a significantly different design, especially in the draft tube. Unit no. 2 on the other hand, had its runner replaced once before and is not like to justify replacement in the near future. Some doubt has been suggested as to whether there are economic benefits available to last through all six conversions. In any event, we feel the licence should be amended to provide for all six units.

It should be pointed out that the expired Great Falls licence provided for the installation of 28 000 horsepower turbines (total of 168 000 hp) which was done, but also allowed the forebay to be raised above the normal forebay level of 808.0 feet, as high as 814.0 feet, but not to be operated above 808.0 feet after the next upstream development was completed. Almost immediately after initial commissioning in 1923, Great Falls was operated up to 812 feet, and occasionally as high as 813 feet. This amounts to licence approval to operate at 29 500 hp per unit (total of 177 000 hp).

Even after McArthur was built, the forebay at Great Falls continued to be operated at these higher levels, with the result that McArthur, licenced for 80 000 hp, has been nominally rated at only 75 000 hp. Generator capacity, with a nameplate of 64 MW, is nominally rated at only 56 MW. We are not aware of the

## APPENDIX C – March 8, 1990 memo

Mr. L. J. Whitrov  
1990 03 08  
Page 4

requisite permission of the Minister having even been requested nor granted to continue operating Great Falls at a higher level after the completion of McArthur. Nes Mudry and I discussed the problem in an exchange of correspondence in 1979. But the fact remains that part of the increased capacity at Great Falls is due to the raised forebay. The licence article covering the forebay should be revised to suit the field conditions.

### Seven Sisters

Nothing as yet has occurred at Seven Sisters. Manitoba Hydro has committed itself to a contract with Dominion Engineering Works (C.G.E.) to conduct hydraulic model studies for turbine no. 1. It was determined that the generators for units 1 and 3 were due for rewind jobs, and budget estimates were submitted for runner replacement on these two turbines, but these have not yet received management approval. On the other hand, budget estimates for generator rewinds have not yet been submitted.

The original turbines were rated at 37 500 horsepower apiece at a design head of 66 feet, a total of 225 000 hp for six units. This was based on the expectation the tailrace could be excavated deep and wide enough. This was only partially successful due to cost restrictions, and it was decided the last five feet could be better developed by raising the McArthur forebay. Hence Seven Sisters has operated since 1948-1952, when the plant was enlarged, at a nominal head of 61 feet, and a capacity of only 200 000 hp, or 33 333 hp per unit. The generators all along have been capable of considerably higher output, but have never been taxed to capacity. The proposal for Seven Sisters is to replace runners, and possibly enlarge throat ring diameters, to reach a capacity of 37 500 hp per turbine, as originally intended, with an expected increase in efficiency of at least 6%. The increase in capacity at Seven Sisters would be 12.5%. Preliminary calculations have suggested the cost-benefit ratios at Seven Sisters are even higher than at Great Falls.

We would draw your attention to the fact that the expired Seven Sisters final licence already provided for an installation of 225 000 horsepower, a capacity which it never attained.

### Pine Falls

The situation at Pine Falls is entirely different. When Pine Falls was under consideration by the Department of Mines and Natural Resources, the Manitoba Paper Company was well established with certain rights on the Winnipeg River, and had used it for running booms of logs, and requiring a certain percentage of the flow in the river. Thus, the turbine installation was limited to six units, where normally a seventh unit would have been installed if the plant were to be designed to the same level of development as the other plants on the river.



APPENDIX C – March 8, 1990 memo

Mr. L. J. Whitney  
1990 03 08  
Page 5

The seventh unit was replaced by a log chute. The paper company used the log chute for a number of years, but it proved to be a slow tedious job to pass a boom of logs. The company, with Manitoba Hydro's reluctant approval, permitted the much faster and efficient run of logs through a main sluice opened wide, reducing a two day job to a two hour one. Manitoba Hydro's objection was that it used twice as much water.

It was soon realized that the passage of booms occurred relatively infrequently, and has not happened at all since 1968. Pine Falls was built under the direction of Mr. D. M. Stephens, who was deputy minister at the time. As Manitoba Hydro's first chairman, he readily acknowledged that Pine Falls should have been built with seven units. The six unit configuration created the need for careful routing of flow from Great Falls. At peak discharge, Great Falls' 34 000 cfs was greater than Pine Falls' peak discharge of 30 000 cfs. At lower flows this required continual forebay manipulation and the correct sequence of bringing units on or taking them off load each day. With higher flows, the surplus water was wastefully spilled at Pine Falls.

We had sometimes considered the option of adding a seventh unit, but the benefits of utilizing the spillage could not begin to cover the considerable capital cost of civil works, cofferdamming, construction mobilization and overhead.

With the improvements being achieved in turbine design, it came to be realized that another option was available at a fraction of the cost. This option was to replace runners when generators came due for rewinding, in spite of the fact that the existing turbines and runners are perhaps the best in the system with regard to their operating and efficiency characteristics. By combining rerunning with rewinding, it was determined that the costs could be covered by the expected benefits.

Manitoba Hydro has therefore adopted a program for progressive replacement of runners, with unit no. 6 committed for the summer of 1990 and unit no. 5 for the summer of 1991. The original turbines have a nameplate rating of 19 000 hp each (total plant = 114 000 hp) at a gross head of 37 feet. The new runners are expected to have a nameplate rating of 22 300 hp each, or an increase of 17.3%, although no increase in efficiency is expected. When all six turbines have been replaced, the total plant capacity will equal 134 000 hp. In this way, the "seventh" unit will have been achieved at a fraction of the cost.

It would therefore appear appropriate for Manitoba Hydro to apply for an amended final licence to provide for this program.

In conclusion

I would recommend that the program which has already begun at Great Falls, and which is anticipated for Seven Sisters, be

APPENDIX C – March 8, 1990 memo

Mr. L. J. Whittr ·  
1990 03 08  
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dealt with in the licence renewals. These licence renewals have been pending for a number of years, and my current objective is to pursue these actively to clean them up. I am writing a separate memo on this subject, which you will be receiving shortly.

With regard to an amended licence for Pine Falls, I would request your instructions as to how you would like me to proceed. Presumably this would take the form of a formal application under the provisions of the Regulations, and would be forwarded through our Corporate Counsel, Mr. J. F. Funnell.

It may be worth noting that the enhanced capacity at these three plants will not affect water rentals payable by virtue of a greater installed capacity, since all the Winnipeg River plants have a sufficiently high annual load factor that the payment of water rentals based on capacity will never come into play. All water rentals have been, and are expected to continue, being based on energy generated as expressed in horsepower-years. In this regard there can be expected a modest increase in water rentals payable, reflecting the increased efficiency at Great Falls and Seven Sisters of about 6% for each unit rewheeled, and reflecting the generation of some water previously spilled at Pine Falls. It is also worth noting that the rewheeling of units 1 and 5 at Great Falls has already produced some increased water rentals paid over the past five years.

PMA/eeh  
xc: J. F. Funnell  
M. J. Minor  
D. A. Kilgour  
D. A. Shearer  
E. A. Zaleski  
B. J. Osiowy  
J. LeRoye

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**Manitoba**



**Memorandum**

Date May 8, 1990

To Mr. P.M. Abel, P. Eng.  
Manager, Reservoir & Energy Resources  
System Operating Division  
Manitoba Hydro  
P.O. Box 815, Winnipeg. R3C 2P4

From L.J. Whitney, P. Eng.  
Executive Director  
Water Resources Branch  
1577 Dublin Avenue

Subject **MODIFICATIONS TO WINNIPEG RIVER  
GENERATING STATIONS**

Telephone File: 21.2.2; 21.3; 21.7  
6395

First | Fold

This is in response to your memorandum dated March 8, 1990 regarding modifications to the capacity of the Pine Falls, Great Falls and Seven Sisters generating stations.

I concur with your suggestion to incorporate these changes in output capacity into the Renewal Licences for Great Falls and Seven Sisters. These changes will be included in the drafts of the Renewal Licences.

Your memorandum will be considered as an application for an amendment to the Pine Falls Final Licence pursuant to Sec. 68 (Change in Undertaking) of the Water Power Regulation. We will subsequently prepare a draft Amended Final Licence for Manitoba Hydro's consideration.

Please provide any comments and/or concerns relative to the above.

Original signed L.J. Whitney

*L.J. Whitney*

c.c. V.M. Austford





Minister of  
Natural Resources

Legislative Building  
Winnipeg, Manitoba, CANADA  
R3C 0V8

October 30, 1991

RECEIVED

NOV 4 1991

EXECUTIVE VICE-PRESIDENT

Mr. R.O. Lambert, P. Eng.  
Executive Vice-President  
Manitoba Hydro  
P.O. Box 815  
Winnipeg, Manitoba  
R3C 2P4

Dear Mr. Lambert:

Pursuant to Section 85 of the Water Power Regulation, you are hereby notified that the time of payment of rentals on Crown land required for water power purposes will be changed starting with the rentals due for 1992.

Currently, the annual land rentals (payable in advance) and the water power rentals (payable in arrears) for all the hydro-electric generating stations are invoiced for payment by the end of the fiscal year. Land rentals for Churchill River Diversion and Lake Winnipeg Regulation are invoiced individually.

Effective immediately, all land rentals associated with water power developments, due to this department by Manitoba Hydro, will be invoiced during November for payment by the first normal working day of the following January.

Your cooperation in providing payment of the account by the due date would be appreciated.

Original signed Harry J. Enns

Harry J. Enns  
Minister

cc. L.J. Whitney  
V.M. Austford

1991 11 04 xc: D.W. Gunter  
"ROL"



**Manitoba**



**RECEIVED**

Deputy Minister of  
Natural Resources

Legislative Building  
Winnipeg, Manitoba, CANADA  
R3C 0V8

FEB 29 1996

**EXECUTIVE VICE-PRESIDENT  
ENGINEERING AND ENVIRONMENT**

FEB 29 1996

Mr. Ralph O. Lambert  
Executive Vice President  
Manitoba Hydro  
P.O. Box 815  
Winnipeg, Manitoba  
R3C 2P4

Dear Mr. Lambert:

The purpose of this letter is to notify Manitoba Hydro of a change in billing practice for water use rental as provided in The Water Power Act and Regulations.

Heretofore charges for water power rental have been applied at the end of each calendar year based on the actual usage for that year. Beginning with the month of May 1996, water power rental charges will be applied monthly. The methodology of doing so will be decided after consultation with Manitoba Hydro staff.

Early in May, an invoice will be issued for the months of January, February, March, and April of 1996 to bring the water use rental charges up to date for the start of monthly billing.

The details of the monthly billing procedure will be communicated to you after the above noted consultations have taken place.

Staff look forward to working cooperatively with Manitoba Hydro in the implementation of this revised billing practice.

Yours truly,  
Original signed David Tomasson

David Tomasson  
Deputy Minister

1996 02 29  
xc: E.A. Zaleski  
"ROL"

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**RECEIVED**

FEB 29 1996

DIVISION MANAGER  
SYSTEM OPERATING DIVISION



# Manitoba



Deputy Minister of  
Natural Resources

Legislative Building  
Winnipeg, Manitoba, CANADA  
R3C 0V8

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35011

Mr. A.D. Cormie, P. Eng.  
Manager  
Energy, Security & Sales  
Power Supply  
Manitoba Hydro  
820 Taylor Avenue  
Winnipeg, Manitoba  
R3M 3T1

Dear Mr. Cormie:

The purpose of this letter is to notify Manitoba Hydro of a change in billing practice for land use rentals as provided in The Water Power Act and Regulation.

Heretofore, land use rentals have been payable at the beginning of each calendar year, on January 2. Beginning with the 1997-1998 fiscal year, land use rentals will be payable at the beginning of the fiscal year, on April 1.

The purpose of this change is to eliminate the need to accrue the revenue received to the proper fiscal year as required under the accounting procedure recently adopted by the department.

Early in February of each year, an invoice will be issued for the annual land use rentals for the ensuing fiscal year. Payment of this amount will be required on April 1. Early in November, 1996, an invoice will be issued for January, February, and March of 1997. The payment of this amount, which is 90/365 of the annual rentals, will be required on January 2, 1997.



- 2 -

This payment will bring the land use rentals up-to-date for the start of the fiscal year billing interval.

My staff looks forward to working cooperatively with Manitoba Hydro in the implementation of this revised billing practice.

Yours truly,

Original signed David Tomasson

David Tomasson  
Deputy Minister

Appendix D: Seven Sisters Generating Station Licence Implementation  
Guide for Water Levels

Appendix D: Seven Sisters Generating Station Licence Implementation Guide for Water Levels



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Environmental Stewardship Division  
Environmental Approvals Branch  
Water Power Act Licensing Section  
Box 16, 200 Sauleaux Crescent, Winnipeg MB R3J 3W3  
T: 204-945-6118 F: 204-948-2357

December 29, 2017

File: 21.7

Mr. W. V. Penner, P. Eng.  
Manager, Hydraulic Operations Department  
Manitoba Hydro  
16-360 Portage Avenue  
Winnipeg, MB R3C 0G8

Dear Mr. Penner:

**Re: Seven Sisters Generating Station – Licence Implementation Guide**

This correspondence acknowledges receipt and acceptance of the Seven Sisters Generating Station – Licence Implementation Guide for Water Levels (October 2017) received with your letter dated November 1, 2017. The Guide documents a common understanding of the water regime terms of the Seven Sisters Water Power Act licence.

If you have any questions regarding this letter please feel free to contact Mr. Puru Singh, P. Eng. at 204-945-3613 or the undersigned at 204-945-6118.

Yours truly,  
Original signed Rob Matthews

Rob Matthews, P. Geo  
Manager,  
Water Power Act Licensing Section,  
Sustainable Development

c: B. Webb, P. Singh

Appendix D: Seven Sisters Generating Station Licence Implementation Guide for Water Levels

**Manitoba Hydro  
Seven Sisters Generating Station  
Licence Implementation Guide for Water Levels**

*Prepared for:*

Water Power Act Licensing Section  
Manitoba Sustainable Development  
200 Saulteaux Crescent  
Winnipeg, Manitoba R3J 3W3

*Prepared by:*

Hydraulic Operations Department  
Manitoba Hydro  
360 Portage Avenue  
Winnipeg, Manitoba R3C 0G8

October 2017

Report No. WP&O 17/10

Appendix D: Seven Sisters Generating Station Licence Implementation Guide for Water Levels

### Version History

Version	Description	Date
Rev 0	Issued to Manitoba Sustainable Development for Approval	2017-10-31

# Manitoba Hydro Seven Sisters Generating Station Licence Implementation Guide for Water Levels



PREPARED BY: Original signed P.G. Chanel  
P.G. CHANEL

REVIEWED BY: Original signed B.W. Giesbrecht  
B.W. GIESBRECHT  
Original signed W.V. Penner

NOTED BY: W.V. PENNER

DATE: 2017-10-31

REPORT NO: WP&O 17/10



## **Executive Summary**

### **Introduction**

Manitoba Hydro prepared this guide to document a common understanding of compliance with the water regime terms of the Seven Sisters Water Power Act Licence. This document sets out the mutually understood and agreed to:

- 1) Methodology to be used for determining critical water levels;
- 2) Definition of licence compliance; and
- 3) Protocol for reporting.

### **Seven Sisters Forebay Water Level**

The **Seven Sisters Forebay Water Level** is directly measured at the beginning of each hour at the generating station.

### **Compliance**

Compliance with the Seven Sisters Water Power Act Licence will be measured against the **Seven Sisters Forebay Water Level**.

### **Reporting**

In the event that the **Seven Sisters Forebay Water Level** is not in compliance with the licence limit, Manitoba Hydro will notify Manitoba Sustainable Development within one week of the incident. A follow-up report on causes contributing to the event and changes to operations, if any are needed to prevent such an event in the future, will be provided to Manitoba Sustainable Development. A record of water levels and licence compliance will also be provided in an annual report.

### **Change Management**

Proposed revisions to this guide will be drafted by Manitoba Hydro as required or directed by Manitoba Sustainable Development. Following review and approval of revisions by Manitoba Sustainable Development, a revised copy of this guide will be produced and distributed by Manitoba Hydro.

Appendix D: Seven Sisters Generating Station Licence Implementation Guide for Water Levels

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## 1. Introduction

Seven Sisters Generating Station is located approximately 90 km northeast of the City of Winnipeg and approximately 72 km upstream of Lake Winnipeg.

The Seven Sisters Generating Station was constructed in two stages between 1929 and 1952 and has the greatest generation capacity of the Manitoba Hydro plants located on the Winnipeg River.

Manitoba Hydro currently operates the Seven Sisters Generating Station under a Second Short-Term Extension Licence (STEL) issued in accordance with the provisions of The Water Power Act on October 1, 2015. The STEL is in effect until September 30, 2020. The operating terms of the STEL are identical to those of the final licence issued on June 03, 1966. Seven Sisters Generating Station has a licenced capacity of 167.8 MW (225,000 horsepower).

### 1.1 Definitions

For the purposes of this guide, unless the context otherwise requires, the following terms shall have the respective meanings set out below and grammatical variations of such terms shall have corresponding meanings:

**ASL** means above sea level

**Controlling Benchmark** means Geological Survey of Canada (GS of C) benchmark 10K. Benchmark 10K is a shank in bedrock located 2 miles below Seven Sisters close to the edge of the right bank at the first prominent point below Seven Sisters.

**Seven Sisters Gauge** refers to a float attached to a steel tape that is draped over a pulley connected to a Selsyn (self-synchronous) system that measures the forebay water level.

**Seven Sisters Forebay Water Level** means the hourly water level as measured by the **Seven Sisters Gauge**.

### 1.2 Datum

In accordance with Article 4 of the Seven Sisters First Renewal Water Power Act Licence, water level information for the operation of the Seven Sisters Project is measured in terms of elevations **ASL**, **GS of C**, Canadian Government Vertical Datum (CGVD) 1928, 1929 Local Adjustment.

## Appendix D: Seven Sisters Generating Station Licence Implementation Guide for Water Levels

### **1.3 Quality Control**

#### **1.3.1 Benchmarks**

Vertical control surveys have been performed to establish appropriate local benchmarks at the Seven Sisters Generating Station.

Seven Sisters benchmarks were established by level transfer from **Controlling Benchmarks** using spirit levelling methods.

#### **1.3.2 Direct Water Level Measurements**

Staff monitor the **Seven Sisters Gauge** equipment weekly and as required to maintain gauge performance. Direct water level measurements are taken during these checks and compared to the level indicated by the water level gauge. Direct water level measurements that differ by more than 0.1 feet are reported and repaired.

#### **1.3.3 Gauge Readings**

The forebay gauge consists of a float attached to a steel tape that is draped over a pulley connected to a Selsyn (self-synchronous) system. This system electronically transmits the angular position of the pulley to a receiving device in the control room. The position information is converted to a water level, indicated on a display and also output to the Remote Transmittal Unit for transmission to Manitoba Hydro's System Control Centre.

### **1.4 Quality Assurance Procedure for Water Level Data**

#### **Seven Sisters Plant Data**

Data is collected on site and signed off by the operating supervisor. Data is then sent to the Energy Operations Planning & Technology Department of Manitoba Hydro, uploaded into a database and checked for errors. Data errors are then corrected or verified by plant operating staff with technical assistance from Energy Operations Planning & Technology staff as needed. Once data has been verified, it may be used for operations planning, studies, model development and reporting.

## 2. Seven Sisters Forebay Water Level

Article 4 of the Seven Sisters Water Power Act Licence places a limit on the **Seven Sisters Forebay Water Level**. A map showing the location of the **Seven Sisters Gauge** is provided in Appendix A. Water levels are largely influenced by the operation of the Seven Sisters Generating Station and local meteorological events. Due to the size of the forebay and location of the **Seven Sisters Gauge**, wind effects on the **Seven Sisters Forebay Water Level** are negligible.

**Seven Sisters Forebay Water Level** measurements are taken continuously and recorded at the beginning of each hour and reported to Manitoba Hydro's System Control Centre.

### 3. Compliance

#### 3.1 Seven Sisters Water Power Act Licensing Requirement

##### Maximum Water Level

Article 4 of the licence stipulates that:

*“The Licensee shall not raise the headwater of the development to an elevation higher than 899.5 above mean sea level, Canadian Geodetic Datum 1929 Adjustment, provided, however, that with the consent of the Licensee of the next development upstream, namely, Slave Falls Generating Station, and with the prior written approval of the Director, the Licensee may raise and maintain the headwater elevation in accordance with Section 72 of the Regulations.”*

The forebay water level shall be in compliance with the limit described above if the hourly **Seven Sisters Forebay Water Level:**

- a) does not exceed 899.5 feet by more than 0.1 feet; and
- b) does not exceed 899.5 feet more than two times or for more than two consecutive hours in any 24-hour period.

Based on the accuracy and location of the **Seven Sisters Gauge**, Manitoba Hydro defines instances where the licence limit is exceeded by 0.1 feet as reportable events.

#### 3.2 Reporting

##### 3.2.1 Compliance Reporting

In the event that the **Seven Sisters Forebay Water Level** is not in compliance with the licence limit as described in Section 3.1, notification shall be made to Manitoba Sustainable Development within one week of the incident. A follow-up report on causes contributing to the event and changes to operations, if any are required to prevent such an event in the future, will be provided to Manitoba Sustainable Development.

##### 3.2.2 Maintenance and Emergencies

During maintenance and emergencies there may be times when Manitoba Hydro is required to deviate from a licence condition for safety or other purposes. Manitoba Hydro will be considered compliant with the licence as long as:

1. Advanced notification is provided to Manitoba Sustainable Development of the upcoming licence deviation together with the reason. This will include a description of the operating plan, details of the expected licence deviation, a summary of anticipated impacts to stakeholders, and confirmation that stakeholders will also be notified; and



## Appendix D: Seven Sisters Generating Station Licence Implementation Guide for Water Levels

2. Advanced notification is provided to stakeholders of pertinent impacts to flow and water levels; and
3. Following the deviation, notification by letter is provided to Manitoba Sustainable Development on the details of the operation(s).

### **3.2.3 Regular Annual Reporting**

Water levels and licence compliance will be reported annually to Manitoba Sustainable Development.

## **4. Change Management**

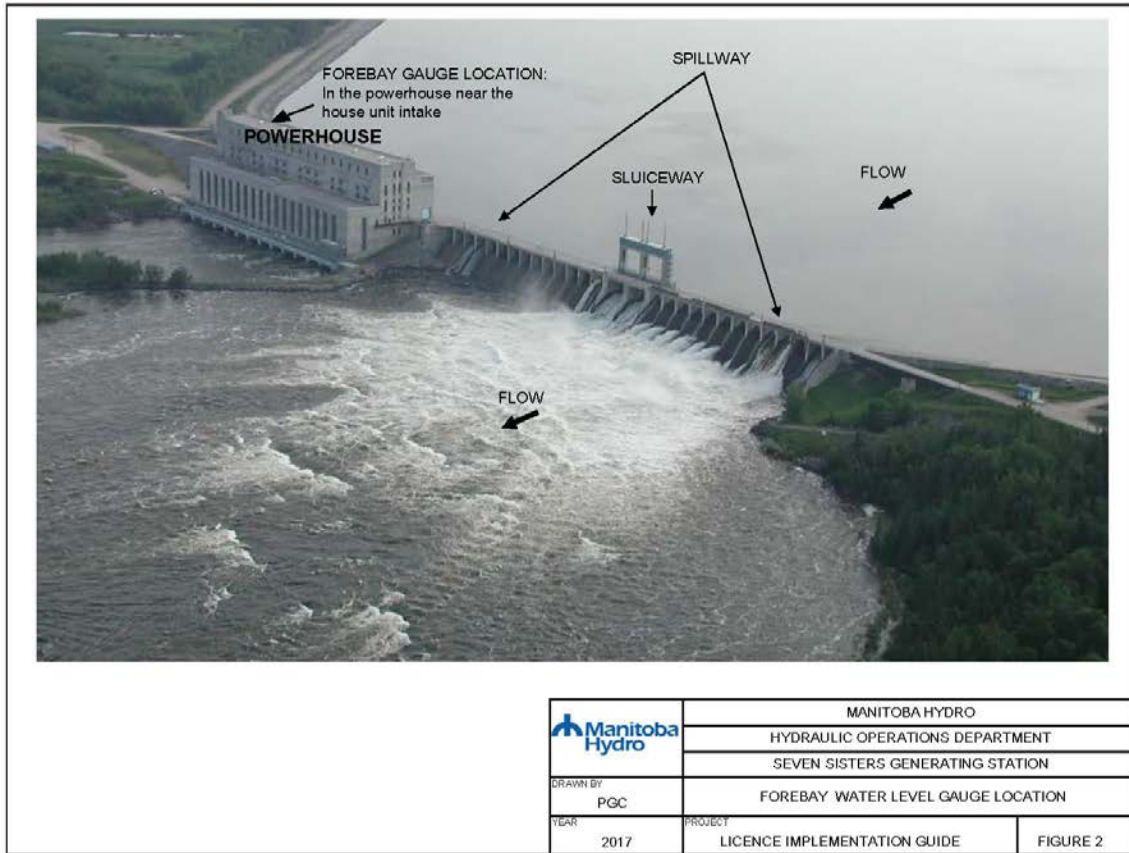
### **4.1 Regular Updates**

Proposed revisions to this Guide will be drafted by Manitoba Hydro as required or directed by Manitoba Sustainable Development. Following review and approval of revisions by Manitoba Sustainable Development, a revised copy of this Guide will be produced and distributed by Manitoba Hydro.

## **Appendix A**

### **Forebay Water Level Gauge Location**

Appendix D: Seven Sisters Generating Station Licence Implementation Guide for Water Levels



Appendix E: Atomic Energy of Canada Limited (AECL) Agreement

Appendix E: Atomic Energy of Canada Limited (AECL) Agreement

DATED this \_\_\_\_\_ day of \_\_\_\_\_, 1962

BETWEEN:

ATOMIC ENERGY OF CANADA LIMITED

OF THE FIRST PART,

- and -

THE MANITOBA HYDRO-ELECTRIC BOARD

OF THE SECOND PART.

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A G R E E M E N T

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The Manitoba Hydro-Electric Board  
Legal Department



Appendix E: Atomic Energy of Canada Limited (AECL) Agreement

THIS AGREEMENT made the 13<sup>th</sup> day of June 1962,  
BETWEEN:

ATOMIC ENERGY OF CANADA LIMITED  
(hereinafter called "AECL")

OF THE FIRST PART,

- and -

THE MANITOBA HYDRO-ELECTRIC BOARD  
(hereinafter called "Manitoba Hydro")

OF THE SECOND PART.

WHEREAS by a Memorandum of Understanding, dated June 21, 1960 between The Government of the Province of Manitoba and AECL relating to the development of a nuclear research establishment and townsite associated therewith on the Winnipeg River in the neighbourhood of Seven Sisters, Manitoba, it was, amongst other things, provided that AECL should acquire certain lands in Township 14, Ranges 10 and 11 East of the Principal Meridian, with appropriate rights of access to the Winnipeg River, that so far as reasonably within the control of the Government of the Province of Manitoba or of any person or corporation deriving rights or powers through the said Government and having regard to the provisions of the Lake of the Woods Control Board agreement, the water levels of the Winnipeg River at the townsite should be kept within the limits of 893 feet and 903 feet above mean sea level and at the plantsite within the limits of 830 feet and 845 feet above mean sea level or within such other limits as might from time to time be agreed upon between the parties to the said Memorandum of Understanding, and that neither AECL, nor its successors

. 2 .

or assigns, would make any claim against Manitoba Hydro in respect of the erosion, slipping, or deterioration of the bank of the Winnipeg River or of damage to any building, improvement or chattel on the bank of the said river, caused by fluctuations in the level of the said river within the said limits;

AND WHEREAS Manitoba Hydro is the holder of certain rights and interests in the lands hereinafter described which border on the Winnipeg River;

AND WHEREAS it has been agreed that Manitoba Hydro shall release its rights and interests in the said lands upon the terms and conditions hereinafter set out in lieu of retaining the said rights and interests and granting to AECL rights of access, passage and use over the said lands;

NOW THEREFORE THIS AGREEMENT WITNESSETH and is hereby agreed by and between the parties hereto as follows:

1. Manitoba Hydro shall release to and in favour of Her Majesty the Queen in right of the Province of Manitoba all its right, title and interest in and to the following described land, namely:

Parcel No. 1 - In Township 14 and Range 11 East of the Principal Meridian in Manitoba, and being:

Firstly - All that portion of Section 29 required for water storage which lies on the East side of the Winnipeg River, shown bordered red and green on a plan deposited in the Winnipeg Land Titles Office as No. 6014.

Secondly - All those portions of Sections 17, 18, 19 and 20 required for water storage as the same are shown bordered red and green on said plan No. 6014.

. 3 .

Parcel No. 2 - In Township 14 and Range 12 East of the Principal Meridian in Manitoba, and being:

Firstly - All those portions of Section 3, of the South half of Section 4 and the fractional Southeast quarter of Section 5 which lie to the North of the North bank of the Winnipeg River, as the same are shown coloured pink on a plan hereto attached as Schedule "A";

Secondly - All those portions of Sections 10 and 11 lying to the South of the Pinawa Channel, excepting out of said portion of Section 10 so much thereof as is not more than 100 feet radially distant from the Diversion Dam on the said Pinawa Channel;

Thirdly - All those portions of said Section 3 shown as three islands in the Winnipeg River and coloured pink on said plan;

Fourthly - All those portions of Sections 1, 2, 11 and 12 shown coloured pink on said plan.

Fifthly - All that portion of the East half of Section 8 shown as Winnipeg River Power Reserve on a map or plan of Sections 8, 9, 16, 17 and 18 in the said Township and Range approved and confirmed at Ottawa on the 14th day of June, 1923 by T. Shanks.

Sixthly - All those portions of Sections 9 and 16 and of the East half of Section 17 shown as Winnipeg River Power Reserve on said map or plan dated the 14th day of June, 1923 which lie to the South and Southwest of the Pinawa Channel as the same is shown on a map or plan of said Township and Range approved and confirmed at Ottawa on the 8th day of April, 1909 by E. Deville.

2. Manitoba Hydro will ensure that so far as reasonably within its control and having regard to the provisions of the Lake of the Woods Control Board agreement, the water levels of the Winnipeg River in the vicinity of Parcel No. 1 shall be kept within the limits of 830 feet and 845 feet above mean sea level or within such other limits as may from time to time be agreed upon between the parties, and the water levels of the Winnipeg River in the vicinity of Parcel No. 2 shall be kept within the limits of 893 feet

. 4 .

2. (cont'd)

and 903 feet above mean sea level, or within such other limits as may from time to time be agreed upon between the parties; the levels aforesaid being based upon the 1928 Geodetic Survey of Revision and the levels aforesaid being measured as of a calm day without regard to wind and waves.

3. AECL acknowledges that the water level in the Winnipeg River is subject to fluctuations brought about, among other things, by the opening and closing of the gates of the various hydro-electric power plants constructed on the Winnipeg River and AECL further acknowledges that Manitoba Hydro shall continue to have the right from time to time and whenever it sees fit to continue to raise and/or lower the level of the waters of the Winnipeg River within the limits referred to in Section 2 hereof without being liable for whatever damage may naturally result therefrom, and accordingly AECL covenants and agrees with Manitoba Hydro that it will design and construct all buildings and other improvements on the lands hereinbefore described so as to take into account the fluctuations in river level within the limits fixed by or as contemplated by Section 2 hereof; and with respect to the lands hereinbefore described, AECL, for itself, its successors and assigns, covenants and agrees that it will use and occupy the said lands entirely at its own risk and will not make any claims or demands against Manitoba Hydro in respect of the erosion, slipping or deterioration of the bank of the Winnipeg River or of damage to any building, improvement or chattel on the said lands caused by or resulting from fluctuations in the level of the said river within the said limits; and AECL, for itself, its successors and assigns, as operators of the said research est-

. 5 .

3. (cont'd)

abishment, agrees that it will not make any claims or demands against Manitoba Hydro in respect of such adjoining or neighbouring lands acquired by AECL, its successors and assigns, for the purpose of the plantsite or the townsite as may reasonably be considered by Manitoba Hydro as apt to be affected by the raising of the said waters as aforesaid in respect of damage to any building, improvement or chattel on such last mentioned lands caused by or resulting from fluctuations in the level of the said river within the said limits.

4. The parties hereto will execute and deliver such further documents and assurances as may reasonably be requested of them respectively for registration or otherwise in order to carry out the intent of this agreement.

5. This agreement and the covenants herein contained shall run with the said lands and shall bind and enure to the benefit of AECL and Manitoba Hydro their respective successors and assigns, and upon their and each of their successors in title to the said lands, or any part or parts thereof.

IN WITNESS WHEREOF the parties hereto have hereunto affixed their corporate seals attested by the hands of their proper officers in that behalf the day and year first above written.

ATOMIC ENERGY OF CANADA LIMITED

By: \_\_\_\_\_  
President

\_\_\_\_\_  
Secretary

THE MANITOBA HYDRO-ELECTRIC BOARD

By: \_\_\_\_\_  
General Manager

\_\_\_\_\_  
Secretary



3. (cont'd)

abishment, agrees that it will not make any claims or demands against Manitoba Hydro in respect of such adjoining or neighbouring lands acquired by AECL, its successors and assigns, for the purpose of the plantsite or the townsite as may reasonably be considered by Manitoba Hydro as apt to be affected by the raising of the said waters as aforesaid in respect of damage to any building, improvement or chattel on such last mentioned lands caused by or resulting from fluctuations in the level of the said river within the said limits.

4. The parties hereto will execute and deliver such further documents and assurances as may reasonably be requested of them respectively for registration or otherwise in order to carry out the intent of this agreement.

5. This agreement and the covenants herein contained shall run with the said lands and shall bind and enure to the benefit of AECL and Manitoba Hydro their respective successors and assigns, and upon their and each of their successors in title to the said lands, or any part or parts thereof.

IN WITNESS WHEREOF the parties hereto have hereunto affixed their corporate seals attested by the hands of their proper officers in that behalf the day and year first above written.

ATOMIC ENERGY OF CANADA LIMITED

By: \_\_\_\_\_  
President

*Adeline* Secretary

THE MANITOBA HYDRO-ELECTRIC BOARD

By: \_\_\_\_\_  
General Manager

Secretary

*Adeline*

APPROVED AS TO FORM  
Legal Officer  
Approved  
*[Signature]*  
Property  
Manager



