Hydro Dams on the Winnipeg River

By Arlene Davidson

Six hydroelectric dams constructed on the Winnipeg River provide power and a picturesque backdrop for visitors to the region.

Located at Seven Sisters Falls, Great Falls, Slave Falls, McArthur Falls, Pointe du Bois and Pine Falls, these six stations generate a total of 583 megawatts annually for Manitoba Hydro.

Construction of the Slave Falls station was completed in 1948 with a capacity to generate 67 megawatts of power.

The Great Falls station opened in 1928, with six turbines with a capacity of 131 megawatts.

Built in 1955, McArthur is the smallest and most recently constructed generating station on the Winnipeg River with a capacity of 55 megawatts.

The Winnipeg River empties into Lake Winnipeg 13 kilometres from the Pine Falls station, which opened in 1952. Stretching 151 metres, it houses six turbine generators with a capacity of 88 megawatts.

The Seven Sisters Generating Station is the largest Winnipeg River producer of electricity. Construction commenced in 1929 and the project was completed in 1931.

During a four year period from 1948 to 1952, additional units doubled energy output to 165 megawatts. The powerhouse stretches 128 meters across a waterfall drop of 18.6 meters.

Point du Bois is the oldest power plant still operating on the Winnipeg River, and is currently undergoing a major upgrade. The initial construction took 20 years and was completed in 1926. Point du Bois has 16 turbines and a capacity of 78 megawatts.

The existing dam is over 100 years old. The current spillway has 101 gates that require continuous maintenance. The gates must be raised and lowered manually, which is no small task, and poses numerous safety issues for the workers.

The new spillway will have 11 gates and technology will upgrade the structure with mechanized gates which will serve much more efficiently and safely. Seven of the gates will also be heated to prevent ice build-up.

The current powerhouse will remain in operation for the new dam and spillway, but the metal will be removed from the old structure leaving only concrete, similar to what is seen at the Old Pinawa Dam.

Reservoirs referred to as forebays store vast amounts of water upstream of the generating stations. When too much water is accumulated, the spillway gate is opened to allow water to fall onto the tailrace immediately downstream of the generating station.

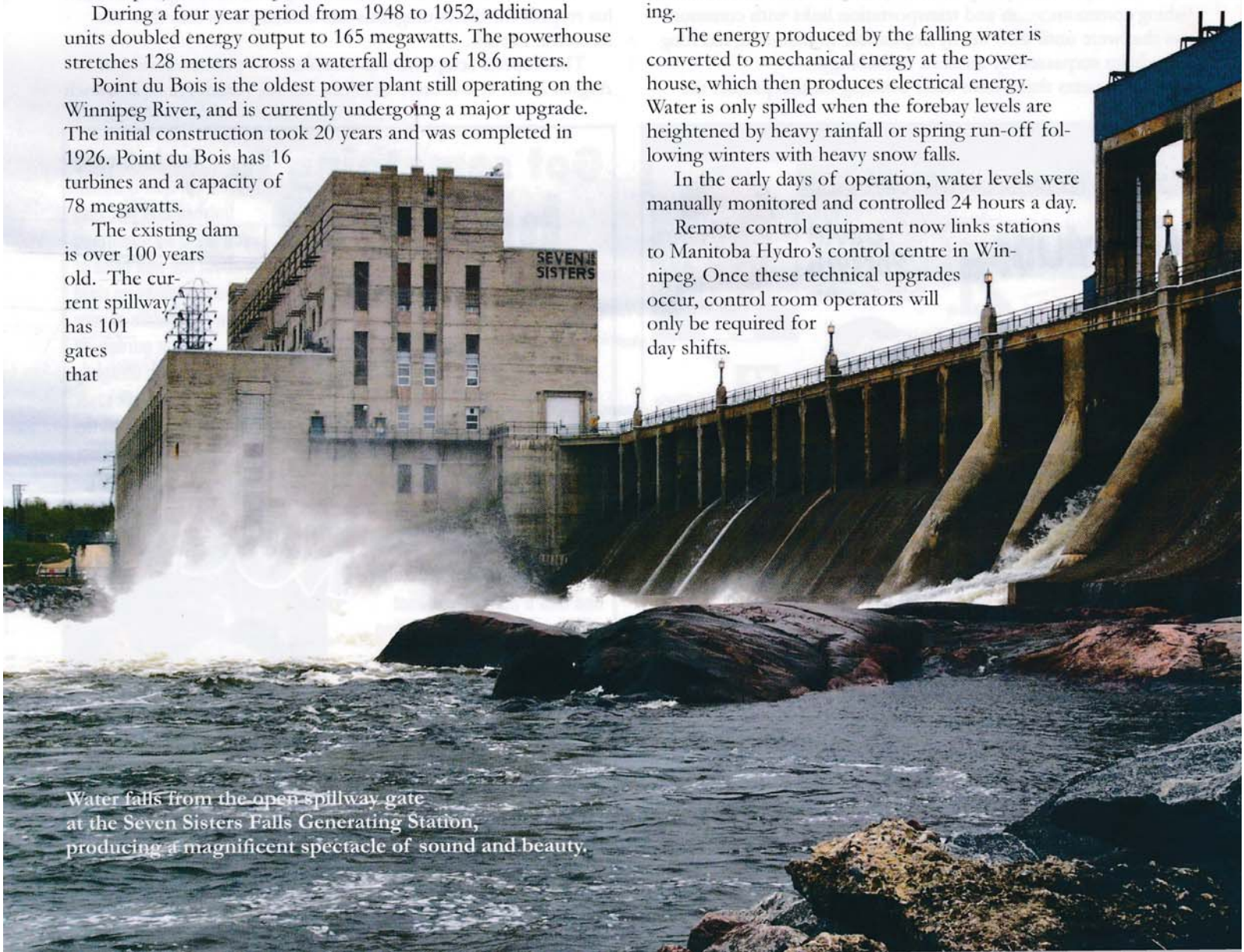
Prior to opening the spillway gate, a siren warns people to move from the river edge and head for higher ground.

When water is discharged into the tailrace, levels in the forebay can drop 20 inches. This powerful release creates a cascade of white-water, mist and rainbows. The roar produced by the movement of water is both powerful and energizing.

The energy produced by the falling water is converted to mechanical energy at the powerhouse, which then produces electrical energy. Water is only spilled when the forebay levels are heightened by heavy rainfall or spring run-off following winters with heavy snow falls.

In the early days of operation, water levels were manually monitored and controlled 24 hours a day.

Remote control equipment now links stations to Manitoba Hydro's control centre in Winnipeg. Once these technical upgrades occur, control room operators will only be required for day shifts.



Water falls from the open spillway gate at the Seven Sisters Falls Generating Station, producing a magnificent spectacle of sound and beauty.