



**109 JAMES AVENUE**

**HIGH PRESSURE PUMPING STATION**

HISTORICAL BUILDINGS COMMITTEE

28 May 1982

## **109 JAMES AVENUE HIGH PRESSURE PUMPING STATION**

As a life-giving force, historically water has been subject to politics. Although Winnipeg presently seems untouched by this tradition, this was not always the case because water was a very political issue at the turn of the century.

From 1880 to 1900, a private utility, the Winnipeg Water Works, supplied the city from pumps running into the Assiniboine River to provide the domestic water supply and fire protection hydrants. When water resources became unacceptably low, City Council decided to establish a municipal system.<sup>1</sup> Surveys and plans were drawn up under the direction of the City Engineer, H.N. Ruttan.

Ruttan was an interesting individual who was formative in the course of the politics of water supply. It was Ruttan who supervised and partially designed the James Avenue high pressure system in 1906. Born in Ontario in 1848, Ruttan worked as a survey engineer, junior to Sir Sanford Fleming of the Intercolonial Railway. In the 1870s, he began a two-year study of municipal engineering, returning to Winnipeg in 1885 as the City Engineer.<sup>2</sup> He retained that position until his official retirement in 1914, during which time Winnipeg's population grew from 16,000 in 1885 to 130,000 in 1911.<sup>3</sup>

Ruttan maintained a parallel career in the military service. Beginning with a militia raised against the Fenians in 1866, Ruttan also fought in Saskatchewan in 1885. He eventually became the Lieutenant-colonel commanding the 20th Infantry Brigade in Winnipeg, and was generally referred to by this military title.<sup>4</sup> A charter member of the Canadian Society of Civil Engineers, Ruttan was elected president of the society in 1910. He was described then as "one of the best known and respected engineers in Canada."<sup>5</sup>

Ruttan's career with the city was mottled with highs and lows. As City Engineer, he was in a powerful position and he took full advantage of it. He never hesitated in making his views known, often using the press to sway public opinion. It was Col. Ruttan who designed the city's artesian well system in 1900 which gave Winnipeg its first pure water in decades. But it was this same man who stubbornly refused to abandon the artesian system when a better system was suggested.<sup>6</sup>

Despite the purity of the artesian water, it quickly became obvious that the volume (and pressure) was simply not adequate for the burgeoning population. When additional pressure was needed during the summer, or to fight a large fire, the pressure was maintained by pumping additional water from the Assiniboine. The results of this were totally unacceptable because, by 1900, the river was badly polluted. In the Fall of 1904, a serious fire had forced the river pumps into action and shortly after typhoid fever broke out all of the city. The culprit was quickly traced to the river water.<sup>7</sup>

Shortly after this, the Fire Underwriters' Association presented a report to City Council. In the event of a major fire, the report observed that the city would find itself deficient of three million gallons of water. This was based on the present rate of service, with over half of the homes in the north end not yet serviced by water mains.

With a dual problem of low volume and a disease-carrying supplementary system, Council responded in a political manner. The north end was grossly underrepresented in Council, while those people with the most to lose in a fire lived in the south end. In September, 1905, Council decided to build a high pressure system to give fire protection for the large and costly buildings in the downtown district. It was not until 1919, that Winnipeg finally assured its every district of pure water in great abundance through the creation of the Shoal Lake aqueduct.<sup>8</sup> The city had prioritized against human needs in the water shortage.

The total cost of the high pressure pumping station reach approximately \$1,000,000, but this cost was borne only by the businesses along the 8-mile high pressure mains. When it was constructed in 1906, the system was one of the most sophisticated in the world. It consisted of three main

structures: the powerhouse, the gas producing plant and the gas storage tank.

The powerhouse is the topic of this study. It is made of solid buff-coloured brick, 158 by 92 feet, with walls 17 inches thick. The building is divided into two gabled bays, each spanned with a huge crane running the length of the interior. The engine-house floor is sunk 18 feet below street level with the pumps in a trench below this. The six engines were manufactured by Crossley Brothers of Manchester, and ran off the gas produced in the plant. The water was pumped from the Red River through concrete intake wells set 45 feet below street level, funnelled through the engines and fed into the mains at a continuous pressure of 300 pounds per square inch.<sup>9</sup> Upon receipt of an alarm by telephone or fire box through the Central Fire Hall, the pressure automatically increased.<sup>10</sup>

Although a tangle of valves, cylinders and pumps, all six engines could be started and working to capacity in 3½ minutes from receiving a call. The four larger engines each delivered 1,800 gallons of water per minute, while two smaller ones delivered 900 gallons each.

The gas-producing plant was attached to the pumping station. Coal or coke was conveyed from a hopper to the four boilers, where the coal was burned to a gas under pressure and passed through filters. It was cooled and passed by pipes to the gas storage tank east of the pumping station.

The tank, called a gasometer, was a steel tank with a facing of brick. It was 65 feet high, 40 feet in diameter, with brick reaching to a height of 23 feet.<sup>11</sup> The tank has a capacity of 250,000 cubic feet which was sufficient to supply the power plant for one and a half hours with producer gas or five hours of city gas.

Col. Ruttan drew up the specifications and designed the buildings.<sup>12</sup> The generating and pumping equipment was supplied by W. Jacks and Company of Glasgow, with the city running the special high-pressure mains and hydrants. The new system was so successful that by 1911, no fire had progressed beyond the building where it began.<sup>13</sup>

In actual operation, the mains ran eight miles beneath the surface of Winnipeg's downtown. Seventy special all-weather hydrants were installed, with each one capable of four streams. The 300 pound pressure fed through 3" hoses for outside work that could be gauged down. The Central Fire Hall, on the present Market Square site, controlled the use of the high-pressure system for fighting fires while the city waterworks operated the pumping plant.

Situated on the banks of the Red River, the high-pressure system bordered on Victoria Park, where the City's steam plant now exists. Victoria Park, along with Central Park were the city's first formal parks, each purchased in 1883. Victoria Park was small by today's standards, only a few acres, but attractively landscaped and grouped around a small wooden bandstand on the western (river) side.

A block down the street from this park was the Labor Temple at 165 James. This was the centre of organized labour after the first world war, so it was here that some of the decisions leading to the general strike in 1919 were made. Immediately before and after the strike began on 15 May, the Labor Temple was the scene of several large meetings, but as the weather grew warmer, and the crowds grew larger, the meetings came to be held in Victoria Park. While the Labor Temple was branded the "James Street Soviet" by the strikers' opponents,<sup>14</sup> the Labor Church moved its Sunday services to the park.

Victoria Park also was the scene where the strike leaders spoke to the strikers on several occasions. The Strike Bulletin, published daily by the labour press to keep strikers informed, was read and posted in Victoria Park<sup>15</sup> for the crowds who used it as a gathering place. A picture of the crowds in the park, taken from the roof of the gas-producing plant, is on the cover of D.C. Masters' book The Winnipeg General Strike.

On 7 June, Mayor Gray spoke to the strikers in Victoria Park to explain his ban on parades and on 10 June, he again spoke to crowds there to convince them not to demonstrate.<sup>16</sup> On 17 June, there was a large meeting in the park to express the workers' solidarity with their imprisoned leaders. Two days before "Bloody Saturday," the riot that ended the strike, speakers addressed crowds in the park,

urging confrontation rather than the official line of passive resistance.<sup>17</sup>

After the strike, Victoria Park was closed to prevent any further organizing. By 1924, the massive Steam Plant was erected on the site of the park in what may have been a deliberate act of City Council to erase the memory of civil disobedience in Winnipeg.

Both the gas-producing plant and the gas storage plant are now gone.<sup>18</sup> The handsome brick pumping station remains, its brick façade recently sand-blasted to a light buff colour. The building's façade faces the south-east, its big windows designed to capture maximum light. The architecture of the plant is functional but not without an eye to decoration. The windows are rhythmical and attractive, with their outline to the big arched window in the centre of the gable accented by brickwork. Brick and glass combine to give the impression of power. When the building was constructed in 1906-07, Ruttan designed it to look as imposing as its function: a large and complex gas-fed high pressure system. Although fed by natural gas, the pumping still operates today.

## FOOTNOTES--

1. Alan F.J. Artibise Winnipeg: A Social History of Urban Growth 1874-1914 McGill-Queen's University Press Montreal and London 1975, p. 211-14.
2. "Convention of Canadian Society of Civil Engineers" Construction March 1910 p. 77.
3. The Canadian Year Book 1916-17 Ottawa, p. 80.
4. The Leading Financial and Professional Men of Winnipeg published by Edwin McCormick, no date, no pagination.
5. "Convention of Engineers" op.cit., p. 77.
6. "Immediate Supply Necessary, View of City Engineer" Winnipeg Telegram 9 September 1912.
7. Artibise, op.cit., p. 216-17.
8. In the meantime, under Ruttan's direction, the City sank several more artesian wells near Poplar Springs to bring the supply up from 1901.
9. "J.E. Buchanan" High-Pressure Fire Service: Its Operation and Efficiency" The Canadian Engineer 19 January 1911 p. 199.
10. It seems that a lower pressure was maintained in later years under this automatic alarm system.
11. Western Canadian Fire Underwriters' Atlas of Winnipeg 1918 p. 209.
12. The buildings alone cost \$250,000. The internal equipment, main and hydrants cost \$750,000.
13. Buchanan, op.cit., p. 202.
14. David Jay Bercuson Confrontation at Winnipeg McGill-Queen's University Press Montreal and London 1974 p. 130.
15. D.C. Masters The Winnipeg General Strike University of Toronto Press Toronto 1973 p. 49.
16. Ibid., p. 90 & 97.
17. Bercuson, op.cit., p. 170.
18. The gas plant was demolished in 1962. David Spector "The Architecture of Functionality:

Winnipeg Fire Halls, Hydro Terminals and Sub-Stations, Pumping Stations, and Police Stations to 1927." Report prepared for the City of Winnipeg September 1981 p. 39.

**109 JAMES AVENUE – HIGH PRESSURE PUMPING STATION**



Plate 1 – James Avenue High Pressure Pumping Station, ca. 1980. (City of Winnipeg, Planning Department.)



Plate 2 – James Avenue High Pressure Pumping Station, 1970. (Courtesy of the Provincial Archives of Manitoba, Architectural Survey.)

**109 JAMES AVENUE – HIGH PRESSURE PUMPING STATION**



Plate 3 – Lt. Col. Henry Norlande Ruttan, ca.1914. (Courtesy of the Provincial Archives of Manitoba, N5188.)



Plate 4 – The bandstand in Victoria Park during the 1919 strike. Taken from the roof of the gas producer plant. (Courtesy of the Provincial Archives of Manitoba, Foote Collection #1684 [N2750].)

**109 JAMES AVENUE – HIGH PRESSURE PUMPING STATION**

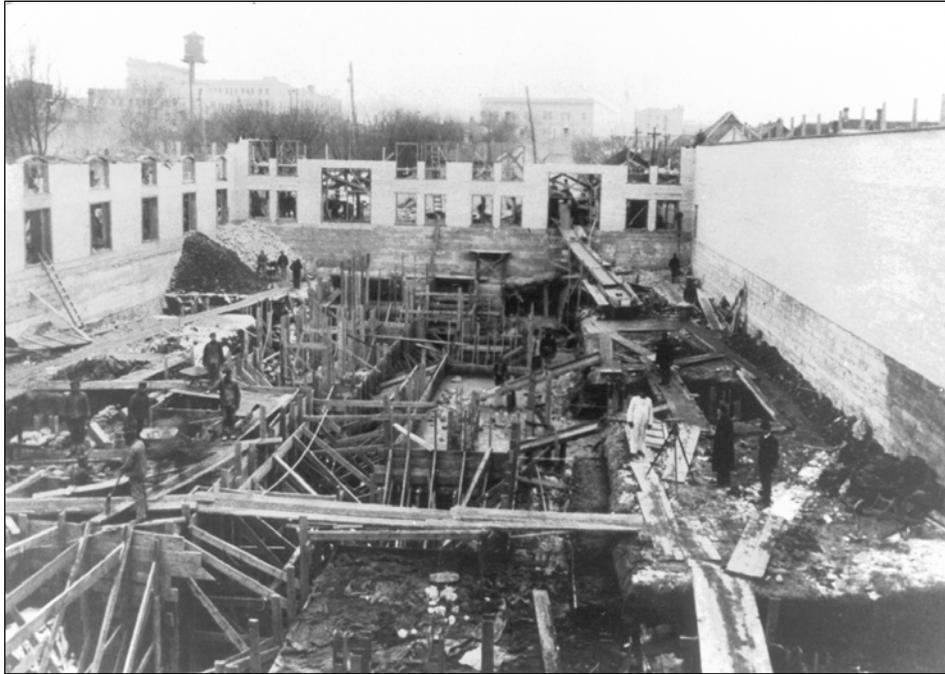


Plate 5 – Construction of the High Pressure Pumping Station, ca.1906. (Courtesy of the City of Winnipeg.)

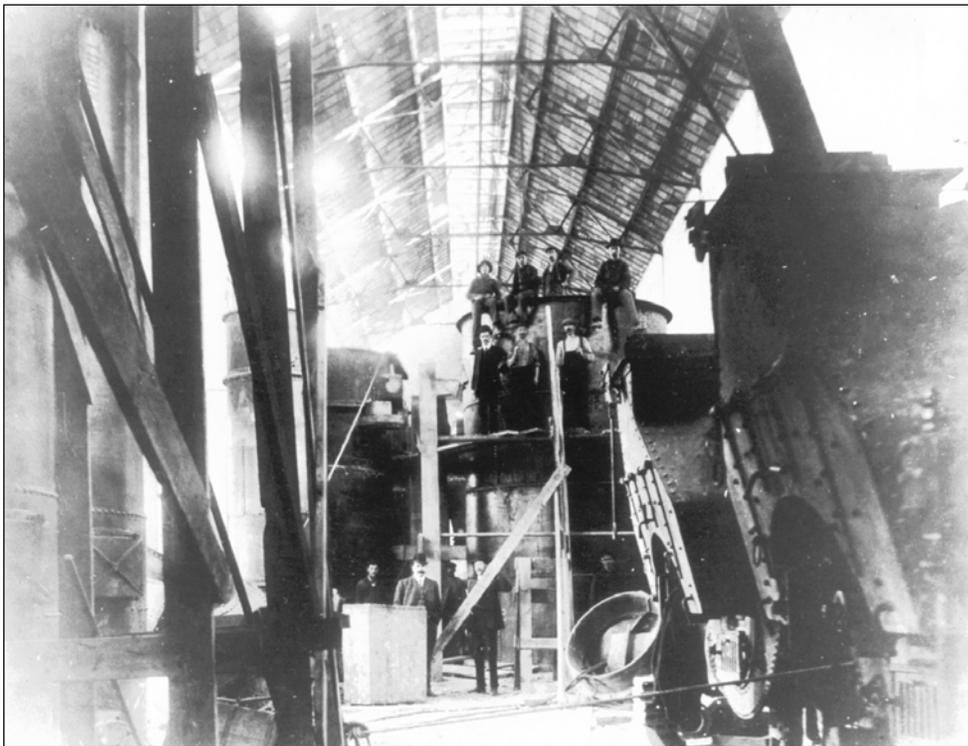


Plate 6 – Interior of the High Pressure Pumping Station during construction, ca.1906. (Courtesy of the City of Winnipeg.)

**109 JAMES AVENUE – HIGH PRESSURE PUMPING STATION**

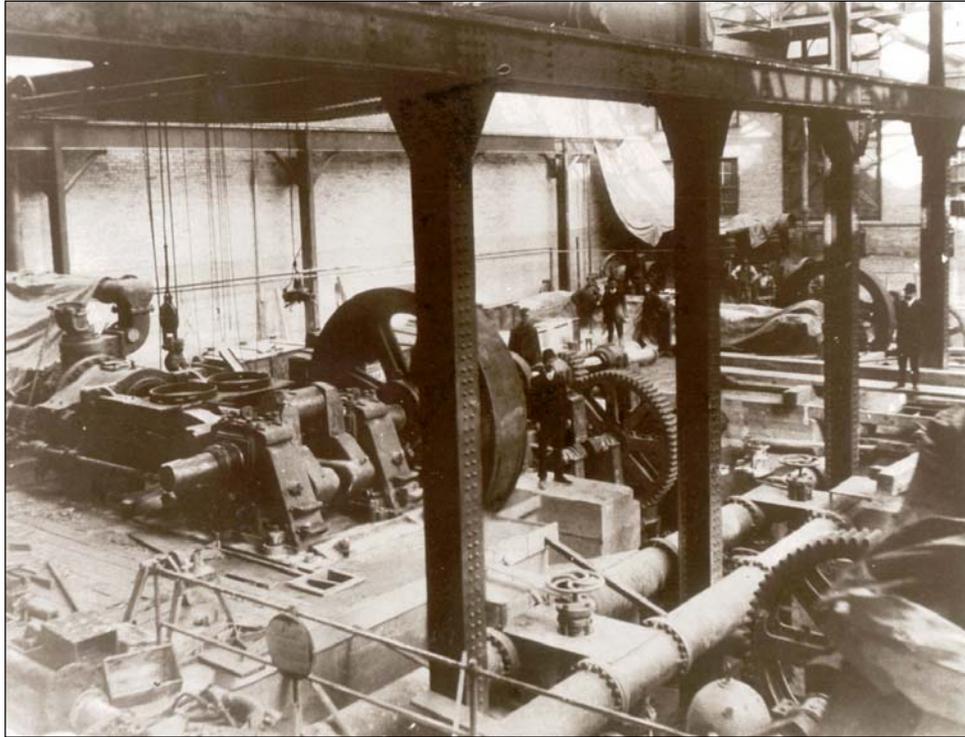


Plate 7 – Interior of the High Pressure Pumping Station during construction, ca.1906. (Courtesy of the City of Winnipeg.)



Plate 8 – Interior of the High Pressure Pumping Station, ca.1980. (Courtesy of the City of Winnipeg, Planning Department.)