



Water and Waste Department • Service des eaux et des déchets

September 7, 2005

Inspection: Avenue Lemay Land Drainage Sewer, Rue Landry to the Red River

Introduction

On July 26, 2005, representatives of our Department met with the residents of St. Norbert and Councillor Justin Swandel to discuss the flooding on July 16/17, 2005. The flooding was because of a combination of a high river level and extreme rainfall as explained in a previous report.¹

At the meeting, a resident said that Avenue Lemay often floods during normal rainfall. Therefore, we agreed to inspect the land drainage sewer on Avenue Lemay from Rue Landry to the Red River to see if there was a collapse or other reason for this frequent flooding.

Background

This land drainage sewer system begins at Rue Landry, flows east along Avenue Lemay, and drains into the Red River. All but 21.4 metres - installed by the City of Winnipeg in 1992 - was constructed in 1961 by the former RM of Fort Garry.

Figure 9 shows the Avenue Lemay land drainage sewer and the connecting sewers from Avenue St. Gabriel, Rue La Barriere, Rue La Grave, Rue St. Pierre, and Avenue Lord.

Scope

Uni-Jet Industrial Pipe Limited cleaned and videotaped the sewer system - 782.6 metres was completed on August 3, 2005, and the remaining 59.1 metres was completed on August 31.

¹ http://www.winnipeg.ca/waterandwaste/pdfs/sewage/ExtremeRain_170705.pdf

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The sewer system pipe dimensions under Avenue Lemay are standard sizes, and are as follows:

<u>Diameter (millimetres)</u>	<u>Length (metres)</u>	<u>Location</u>
300 mm	185.4 m	Rue Landry to Rue La Barriere
750 mm	310.6 m	Rue La Barriere to Rue La Grave
900 mm	286.6 m	Rue La Grave to Avenue Lord
900 mm	59.1 m	Gate structure to outfall

The sewer pipe from Rue Landry to the first manhole east of Rue Landry (about 21.4 metres) is made of polyvinylchloride (PVC), which is a strong plastic material. The rest of the sewer pipe is made of reinforced concrete. Both of these materials are common in sewer pipe construction.

Observations

The assessment shows that, overall, all sections of the sewer system are in good working condition (see Figures 1 – 4).

The assessment did note the following conditions, none of which prevents the sewer from working.

1. Isolated sections of the sewer contained limited amounts of roots, grease, encrustation (partial evaporation of water containing dissolved salts), and debris.

This is typical of most sewer systems, and would not have impacted the operation of the sewer.

2. Debris had built up in a 30-metre stretch about the midpoint of the 107 metre section between the second manhole east of Rue La Barriere and the manhole at Rue St. Pierre. The debris had filled 20 to 25% of this section of the sewer (see Figure 5).

It is not unusual to get some debris accumulation in sewers. All the debris has been removed.

3. Other pipes pass through the sewer system in several places. This is unusual but does not affect the operation of the sewer system. However, these are areas of structural weakness of the pipe, and we plan to repair these parts of the sewer to prevent a structural failure in the future.

- A 19 mm diameter copper water service was installed through a section of 300 mm diameter sewer between the manhole at Rue Landry and the first manhole east of Rue Landry (see Figure 6). Missing pipe segment and holes can be seen. The holes indicate the service was unintentionally installed through the land drainage sewer. The water pipe would have been installed using trenchless technology, which allows the pipe to be installed with minimal disruption to the ground. The workers have a general idea of where the pipe is travelling, but aren't able to track the exact path of the pipe. This likely occurred during a 1995 water main renewal project.

The sewer still works properly, but there is a structural weakness at this point in the sewer pipe. It is also a point of entry for debris.

- A 150 mm diameter PVC water main was installed through a section of 750 mm diameter sewer between the manhole at Rue La Barriere and the first manhole east of Rue La Barriere (see Figure 7). Missing pipe segments and holes in the land drainage pipe are visible. The construction indicates that the water main was unintentionally installed through the land drainage sewer. This was likely done as part of a 1986 water main renewal project.

The sewer still works properly, but there is a structural weakness at this point in the sewer pipe. It is also a point of entry for debris.

- A 200 mm diameter wastewater sewer was installed through the 900 mm land drainage sewer on Avenue Lemay at Rue La Grave (see Figure 8). The wastewater sewer was installed through the land drainage sewer. The holes are grouted and sealed, indicating this was done intentionally. It was installed as part of work done on the land drainage sewer for the Rural Municipality of Fort Garry in 1961.

This installation was acceptable in unique situations back in the 1960s, but it would likely not occur in present day designs.

Assessment

The inspection shows that the land drainage sewer system on Avenue Lemay, from Rue Landry to Avenue Lord, is in good working order. There aren't any deformities or collapses in the sewer that would explain the flooding of July 16/17 or frequent summer rainstorm flooding.

There are a couple of unique conditions in the sewer system that we will add to our sewer repair list. These unique conditions are causing two things:

- A build-up of debris in one section of sewer
- A structural weakness at specific points in the sewer

These unique conditions do not place the sewer system in any immediate danger. The sewer continues to perform. Until we can make the repairs, we will monitor and clean the section of sewer that is accumulating debris. We will do this annually.



Figure 1 – 300 mm PVC land drainage sewer pipe in good condition.



Figure 2 – 750 mm concrete land drainage sewer pipe in good condition.



Figure 3 – 900 mm concrete land drainage sewer pipe in good condition.



Figure 4 – 900 mm concrete land drainage sewer pipe in good condition.



Figure 5 – Silt debris in 750 mm diameter land drainage sewer on Avenue Lemay. Before cleaning, there was an estimated 20 to 25% build-up of debris in the pipe.



Figure 6 – 19 mm water service through 300 mm diameter land drainage pipe on Avenue Lemay.



Figure 7 – 150 mm diameter PVC water main through 750mm diameter land drainage sewer on Avenue Lemay.

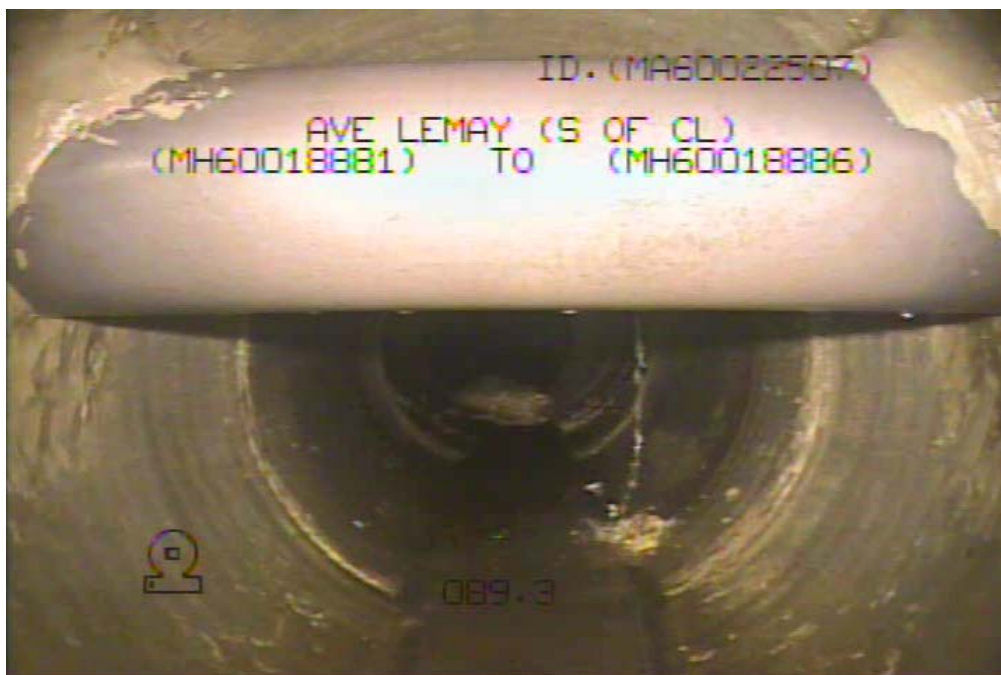


Figure 8 – 200 mm diameter wastewater sewer through 900 mm diameter land drainage pipe on Avenue Lemay.

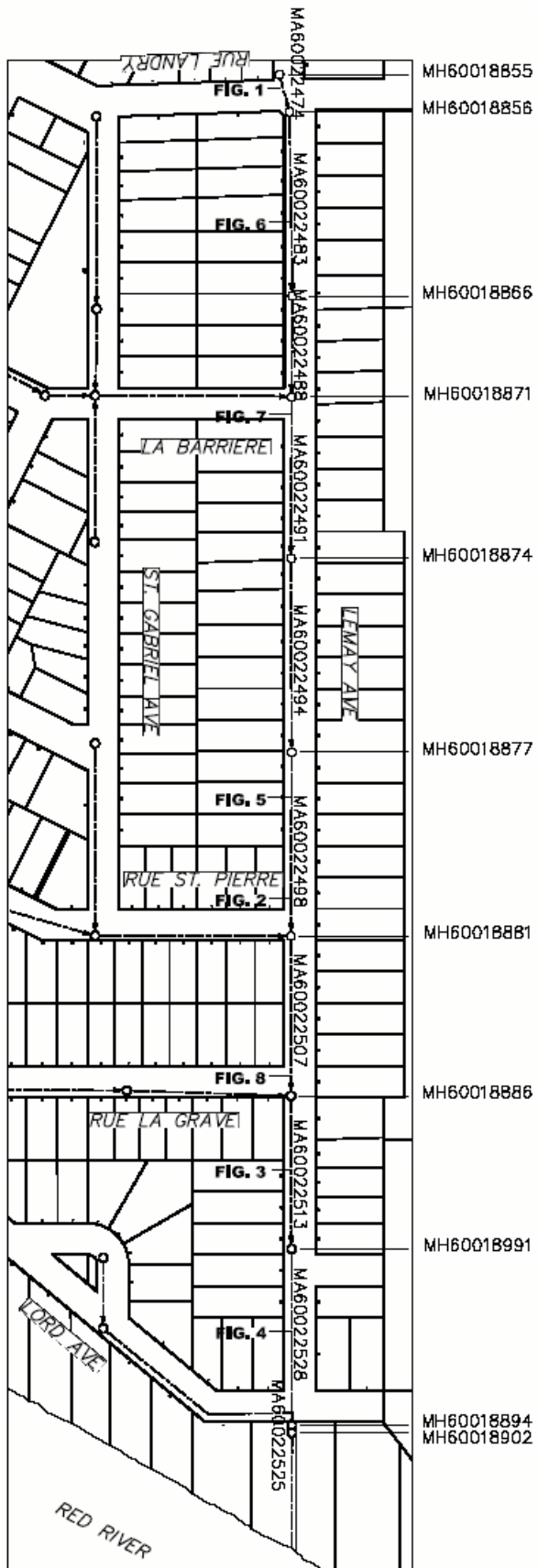


Figure 9 – Map of Lemay Land Drainage Sewer