APPENDIX 1

Stephenfield Provincial Park
Wastewater Lagoon Upgrading Study

Stephenfield Provincial Park Wastewater Lagoon Upgrading Study

Final Report

Prepared for:
The Manitoba Water Services Board

And

Manitoba Conservation – Parks and Natural Areas

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Executive Summary

Stantec Consulting Ltd. was retained in June 2012 to undertake the Stephenfield Provincial Park Wastewater lagoon Upgrading Study. This lagoon has experienced both hydraulic and organic overloading which has prevented discharge of treated effluent in the past.

Stephenfield Park has 178 camp sites, 3 group sites, and 6 yurts. Thirty five of the campsites have water service and there are 34 external water standpipes, 7 washroom buildings, 15 outhouses, and employee facilities. Water is supplied from the Stephenfield Lake Regional Water Treatment Plant and distributed by pipe throughout the Park. Wastewater is collected by pipe and pumped by forcemain out of two lift stations to a two cell synthetically lined facultative wastewater lagoon treatment facility.

The lagoon is undersized to handle the projected 20 year hydraulic and organic wastewater treatment requirements of the Park. Further, the lining of the lagoon does not extend to the top of the dykes and this limits available storage. The current practice of dumping outhouse septage in to the primary cell is organically overloading the primary cell. Current infiltration in to the wastewater collection system is estimated to be approximately 130% of wastewater flow when the water table is above the wastewater collection pipes.

Extensive analysis was undertaken to determine the upgrading required to enable the Park to meet the wastewater treatment requirements for the next 20 years. These analyses included site investigations, assessing existing data and operating history, interviews with staff, lift station draw down tests, CCTV wastewater collection pipe condition analysis, soil test holes and classifications, and topographic surveys.

The recommended upgrading Alternative is:

Alternative 3 – Truck Septage Off Site, Upgrade Existing Lagoon, and Construct A New Secondary Cell

- Truck outhouse septage to the City of Winnipeg North End Water Pollution Control Centre.
- Reduce infiltration to a target maximum of 50% of wastewater flow.
- Raise and clay line the existing interconnecting dyke.
- Raise the synthetic liner on existing outer dykes.
- Construct a new 0.30 hectare secondary cell adjacent to the existing secondary cell.
- Reline the existing outfall ditch.
- Repair the interconnecting gate valve and inlet structure.

- Acquire a new Environment Act Licence

This alternative provides 7.6 million L of hydraulic storage in the lagoon and allows for the 20 year design wastewater plus approximately 117% infiltration. The existing primary cell is able to handle the 20 year design organic loading with the above dyke upgrades. The new secondary cell shown on the plan has been sized to suit available Park land.

Stantec's opinion of capital cost estimate in 2013 dollars, including construction contingency and engineering, is $1,180,000 with an estimated annual operation and maintenance cost of $23,000.

1.0 Introduction

Stephenfield Provincial Park is a seasonal Manitoba public recreational facility located approximately 20 km west of Carman, Manitoba. The Park consists of 178 camp sites, three group sites, and six yurts. Thirty five of the campsites offer water service and there are 34 external water standpipes, 7 washroom buildings, 15 outhouses and employee facilities. There are also two outside Provincial Park outhouses which have their waste dumped in to the Stephenfield lagoon.

The Park has a two cell PVC lined wastewater treatment lagoon that has experienced organic and hydraulic overloading, necessitating emergency discharge on occasion in to Stephenfield Lake. The purpose of this study is to assess the wastewater and infiltration hydraulic and organic loading in to the lagoon and to provide recommendations for remedial action. An initial assessment will be made to determine if the 20 year design lagoon operation can be improved without the need of a new Environment Act Licence, through reduction of infiltration and some minor upgrading to the lagoon. The existing primary cell would have to be adequate to handle organic loading in this scenario. If these measures cannot achieve acceptable lagoon operation, then lagoon upgrading or expansion with a new cell directly east of the existing secondary cell, along with reduced infiltration, would be required necessitating a new Licence.

The existing lagoon operates under Environment Act Licence No. 1827, issued May 19, 1994. Manitoba Conservation Environmental Licencing has advised the Park that extending the discharge date is not an option and emergency discharges to Stephenfield Lake will no longer be allowed. Excess wastewater would have to be removed from the lagoon by other means, and disposed of at an approved facility.

2.0 Scope of Work

The original scope of work included the following tasks.

- Project initiation meeting with the MWSB & Parks.
- Site investigation by Stantec Project Team.
- Review of project issues.
- Test hole drilling and soils identification program on the existing lagoon cells and an expansion site directly to the east. Stantec would be on site to log test holes.
- Assess 20 year design population.
- Topographic total station survey of existing lagoon site, potential adjacent new site, and potential new drainage route.
- Preliminary assessment of environmental issues with Manitoba Conservation including fisheries, navigable waters, water rights, soil contamination, heritage resources, construction constraints, and rare and endangered species.
- Determine design hydraulic and organic loading.
- Assess sizing of existing lagoon with respect to estimated wastewater loading.
- DFO considerations with respect to Licence Application.
- Liaise with Manitoba Conservation Environmental Licencing and other stakeholders.
- Assess treated effluent drainage routes.
- Assess ground water conditions on site.
- Develop alternatives as appropriate.
- Prepare preliminary construction quantities.
- Prepare preliminary cost estimates.
- Prepare preliminary design and plan(s) of project components for Licence Proposal.
- Prepare and submit draft final report.
- Receive comments on draft final report from stakeholders.
- Prepare and submit Final Report, incorporating comments.
- Prepare and submit Environmental Act Licence Proposal (7 hardcopies and 22 electronic copies) to Manitoba Conservation, if required.
- Respond to questions of TAC on Environment Act Licence Proposal, if an Application is made.
- Additional to Scope Assessments / Works.
    - Main Lift Station Drawdown Tests (Stantec).
    - CCTV analysis of wastewater collection system (MWSB).
    - Hour meters installed on main lift station pumps (Parks).
    - Assessment of 1994 Lagoon Lining upgrade (Stantec).
    - Sludge measurement in cells (Parks and Stantec).

3.0 Existing Systems

3.1 PARK WATER USE

The Stephenfield Regional Water Treatment Plant supplies metered treated water to the Park. The water supply records are shown on Table 3.1. The water supply records indicate approximately 700,000 ig or 3.2 million L per year are supplied to the Park. Based on an average of 130 days operation per year, this equates to approximately 24,600 L/day on average.

Treated water that does not reach the lagoon is difficult to assess. An approximate estimate is as follows:

1. Standpipes (34);

   5 uses per day x 34 standpipes x 15 L / use x 130 days = 330,000 L

2. Flushing Wastewater Collection Lines (information provided by Parks);

   250 L x 2 standpipes x 20 weeks = 10,000 L

3. Miscellaneous cleaning, vehicle washing, plant watering;

   200 L / day x 130 days = 25,000 L

   Subtotal 365,000 L

Water / Wastewater added to the lagoon;

1. Outhouse Septage (information from Parks) = 10,000 L
2. RV dump, other; estimate = 5,000 L

   Subtotal 15,000 L

Therefore, net estimated water removed from system and not reaching the lagoon = 365,000 – 15,000 = 350,000 L which is approximately 10% of the water supplied.

Therefore the current estimated wastewater, excluding infiltration, currently going to the lagoon is 90% x 3.2 million L = 2.9 million L.

3.2 WATER DISTRIBUTION SYSTEM

The Park has an extensive water distribution system consisting of 38 mm and 75 mm lines. The lines supply the washrooms, standpipes, and other facilities.

Table 3.1

Stephenfield Park Water Use Records. Water Supplied by the Stephenfield Regional Water Treatment Plant

A Neptune 38 mm T-10 water meter provides flow in imperial gallons.

May 2009	82,700		(24 days)
June 2009	115,000		(30 days)
July 2009	182,100		(31 days)
August 2009	165,300		(31 days)
September 2009	63,200		(17 days)
Total 2009	**608,300 IG**	**÷ 133 =**	**4574 IG/day = 20,793 L/day**
May 2010	82,100		(25 days)
June 2010	107,000		(30 days)
July 2010	207,700		(31 days)
August 2010	224,000		(31 days)
September 2010	68,200		(12 days)
Total 2010	**689,000 IG**	**÷ 129 =**	**5341 IG/day = 24,280 L/day**
May 2011	68,600		(22 days)
June 2011	94,000		(30 days)
July 2011	212,200		(31 days)
August 2011	237,700		(31 days)
September 2011	80,600		(14 days)
Total 2011	**693,100 IG**	**÷ 128 =**	**5415 IG/day = 24,617 L/day**

3.3 WASTEWATER COLLECTION SYSTEM

The Park has a gravity wastewater collection system consisting of approximately 2045 m of 150 mm and 200 mm of reportedly clay tile wastewater collection pipe. There are 26 manholes, one main lift station and one secondary lift station. The main lift station pumps the collected wastewater through 940 m of 150 mm forcemain to the lagoon primary cell. There are four air release valves in manholes on this forcemain.

3.4 WASTEWATER LAGOON

The Stephenfield Park lagoon was constructed in 1975 and upgraded in 1994. A plan of the existing lagoon cells is appended. The lagoon has the following characteristics:

- Lagoon constructed in 1975 of sand with reported 0.45 mm clay borrow liner.
- A 150 mm forcemain inlet pipe.
- A 0.22 hectare primary cell and 0.26 hectare secondary cell, at 1.5 m full supply water level.
- 200 mm gravity discharge pipe to a drainage ditch leading north to Stephenfield Lake. This ditch was originally lined with clay but requires relining.
- Non-conventional inner berm 0.6 m below outside 3 m wide dyke. PVC liner ends at top of inner berm.
- 4 / 1 interior and exterior side slopes.
- 200 mm interconnecting pipe and valve.
- Grassed dykes which are mowed regularly.
- Some cattails on the inside of cells.
- Gate and fence.
- Both cells were lined with 20 mil PVC in the 1994 upgrade to the top of the inner berms.

The wastewater lagoon appears to be in reasonably good physical condition. There was no evidence seen at the time of the July 18, 2012 site investigation of external leakage. There have been maintenance issues with the inlet pipe, and the interconnecting valve is difficult to operate. There is some cattail growth on the inside edges of the cells.

John Buermeyer, P.Eng., Manitoba Department of Natural Resources, confirmed in a March 9, 1995 letter that the 1994 upgraded lagoon met the Licence requirements including a 20 mil PVC liner with maximum permeability of 1×10^{-9} cm/sec in both cells, 0.3 m sand cover over the liner, and a gas relief system under the cells. The 20 mil PVC liner is underlain by 100 mm maximum size gravel, and covered with 300 mm of local borrow material, presumably sand. The cells are vented from underneath and there is no recollection from Parks staff of air / water bubbles forming in the liner above the cell bottoms.

The lagoon presently discharges north by ditch to Stephenfield Lake. The ditch was apparently lined with clay during the original construction in 1975. The Park begins discharge when the water is approximately 0.15 m from the top of the interconnecting dyke. The lagoon has required emergency discharge on occasion. The emergency discharges have sometimes occurred near the end of the camping season in early fall when the lagoon has filled up over summer. They have also occurred in the spring as a result of the lagoon not being able to discharge in the previous fall due to the lagoon not meeting Licence organic discharge requirements.

Construction of a new lagoon at another site is not considered feasible as the Park owns no other land in the area.

3.5 MAIN LIFT STATION

The main lift station pumps all wastewater to the lagoon. This lift station wetwell is 1.5 m in diameter and there is no superstructure. The wetwell appeared to be in good condition and there is apparently minimal joint infiltration according to maintenance staff. The lift station contains two submersible pumps and has replacement electronic level controls. The electrical system is older. The original pumphouse recorders did not function. It was decided by the project team to provide new hour measuring recorders on the pumps so that flow to the lift station could be quantified. New hour meters were installed on July 31, 2012. Drawdown tests were done on September 27, 2012 to determine the pumping capacity of each pump. A comparison of the actual flow versus the metered water supply, was then done for the month of August, 2012.

The person entry system in to the lift station is difficult. The lift station is cleaned and flushed regularly. It does not operate in the winter.

3.6 SECONDARY LIFT STATION

There is a smaller secondary lift station near the maintenance compound which appears to be in reasonable structural condition apparently with minimal joint leakage. There is no superstructure. The structure appears to be approximately 1.5 m in diameter and contains one submersible pump. This lift station pumps wastewater from the Park Gate office and the staff quarters.

There was significant flow in to the lift station from a gravity collection pipe. This pipe no longer carries sewage. The CCTV analysis showed that this was likely backflow from when the wetwell liquid level was above the pipe. However, this is likely a point of significant infiltration when the water table is above the pipe. During the CCTV analysis the water table was below the pipe.

This lift station does not operate in the winter.

3.7 WASTEWATER LAGOON EXPANSION AREA

There is an area directly east of the existing secondary cell on Park property where an additional secondary cell could be constructed to provide additional hydraulic storage.

4.0 Main Lift Station Draw Down Tests

Two draw down tests each were done on the two submersible pumps in the main lift station on September 27, 2012, to determine their pumping rates. The test data is provided in Appendix B. The results of the tests are as follows:

Pump #1 (South)	7.8 L/s	Average Pumping Rate
Pump #2 (North)	7.5 L/s	Average Pumping Rate
Combined Pumps	11.3 L/s	Average Pumping Rate

Park personnel provided the daily meter readings for each pump operation, along with metered daily water supply records, for the month of August, 2012 (contained in Appendix B).

An analysis of this data shows that 960,000 L of water was supplied to the Park and 950,000 L was pumped to the lagoon or the same volume. Therefore, the infiltration / extraneous flow would be roughly 10% based on 10% of water supply not entering the system as per Section 3.1. The draw down tests were inconclusive with respect to infiltration because the water table was below the wastewater collection system and minimal, if any, ground water was entering the pipes or manholes. Analysis of pumped wastewater and water supply should be carried out under high ground water table conditions in the future to quantify infiltration volume.

5.0 Closed Circuit TV Analysis of Wastewater Collection Pipes and Manholes

A CCTV analysis of the wastewater collection system and manholes was undertaken in September 2012 by UNI-JET Industrial Pipe Services Ltd. The ground water table elevation at the time of the analysis was below the collection system and infiltration generally was not occurring. Accordingly, the degree of infiltration is inconclusive from this analysis. It is expected that infiltration is significant in wetter years when the water table is above the collection pipes and manholes floors.

Overall, the PVC and vitrified clay wastewater sewers were in fair condition. However, some holes, broken pipe, open joints, cracks and fractures were identified. Repairs will be required on the collection sewer lines and manholes to minimize infiltration. Nominal capital costs amounts have been included in the cost estimates for these repairs.

6.0 Infiltration / Extraneous Flow

The CCTV analysis and lift station draw down tests were inconclusive in quantifying infiltration / extraneous (infiltration) flow as the water table during the analyses was below the collection pipes.

Therefore, the best method of estimating maximum infiltration is to determine the volume of liquid in the lagoon prior to emergency discharge. In this situation, the lagoon liquid volume is at a maximum, caused by high infiltration in a year when the water table is above the sewer collection lines.

During occasions when an emergency discharge has been required, the liquid level in the cells is only 100 mm below the top of the interconnecting dyke. The volume of half the primary cell (the current practiced retention in the primary cell) and the full volume of the secondary cell, minus a 150 mm dead space in the bottom, is calculated to be 6,700 m^3 or 6.7 million L during this event. The previously calculated estimated wastewater flow to the lagoon is 2.9 million L. Therefore, the estimated existing maximum infiltration is (6.7 – 2.9) ÷ 2.9 = 130% of wastewater flow.

Therefore, repairs must be made to the infiltration points identified in the CCTV analysis, including the collection pipe in to the secondary lift station, to significantly reduce infiltration to a manageable volume.

7.0 Topographic Survey of Site

A topographic survey using GPS and total station equipment was undertaken on August 22, 2012. The area surveyed included the lagoon, lagoon expansion area to the east, and an alternative treated effluent discharge route to the Boyne River directly downstream of the spillway.

The survey confirmed that the elevations of the 1995 as-constructed drawings for the lagoon liner upgrading were quite accurate although there are undulations in the dyke elevations. The lagoon expansion site to the east is suitable for an additional secondary cell. The alternative treated effluent discharge route would be suited to piped drainage to the spillway.

8.0 Test Hole Drilling

Maple Leaf Drilling drilled nine test holes to a depth of 3 m each on July 26, 2012. Test hole logs are in Appendix A. The holes were drilled on the lagoon dykes, the open field directly east which could be used for construction of a third cell, and along a potential new outfall east to the existing Stephenfield Lake spillway.

All holes were sand with some traces of organics, silt and clay.

The sand soil would necessitate a synthetic liner if a third cell were constructed. The potential alternate treated effluent discharge to the spillway should be piped.

9.0 Estimated Lagoon Hydraulic and Organic Loadings

9.1 INTRODUCTION

There had been no pump hour recording at the main lift station so the past flow to the lagoon could not be calculated. Hour meters were installed on the pumps in July, 2012 enabling a continuous comparison of water supplied and wastewater pumped to the lagoon. This comparison was done for the month of August 2012. However the water table at this time was below the wastewater collection system and therefore infiltration quantification was inconclusive. Infiltration in years when the water table is above the collection sewers is estimated to be 130%.

Due to the low water table in 2012, the lagoon did not experience hydraulic overloading in the fall.

9.2 20 YEAR DESIGN HYDRAULIC LOADING

The current estimated wastewater loading only (no infiltration / extraneous flow) is 2.9 million L annually.

Parks and Natural Areas recommends that 30 additional sites be included in the 20 year design population. Considering an existing population of approximately 200 equivalent camp sites, this represents an increase of approximately 15% water use. Therefore, the 20 year design wastewater generation would be 1.15 x 2.9 = 3.4 million L annually. We will set the 20 year design wastewater hydraulic loading at 3.5 million L per year. Infiltration / extraneous flow would be added to this volume for the total hydraulic flow to the lagoon.

9.3 EXISTING LAGOON HYDRAULIC STORAGE

There is significant limiting factors in the available storage in the lagoon. The interconnecting dyke is approximately 0.85 m lower than the outside dykes. Also the outside dykes are not lined from the intermediate berm to the top. These conditions limit hydraulic storage significantly. Considering 0.15 bottom dead space and a standard 0.9 m freeboard, the existing available allowable storage of the primary cell (1/2 of total storage) is 892 m^3, and the secondary cell storage is 2208 m^3 for a total of 3100 m^3 (3.1 million L) of hydraulic storage which is inadequate to handle the design hydraulic storage requirement of 3.5 million L plus infiltration.

If the interconnecting dyke was built up 0.85 m to match the exterior dykes, and the lining was raised on the outside dykes, the half primary cell storage would be 1261 m^3 and the secondary storage would be 3013 m^3, for a total storage of 4274 m^3 (4.3 million L) at a maximum operating depth of 1.5 m. This would be adequate for design existing wastewater storage plus approximately 23% infiltration.

The differential height of the primary cell from bottom to top of dyke is 2.95 m, but with the accumulated average of 0.36 m of sludge the actual net differential is 2.59. This differential allows for a normal operating maximum depth of 1.5 m. Therefore, the sludge does not have to

be removed at this time. The 0.36 m average sludge build up in the primary cell was based on 14 survey bottom elevations taken. The secondary cell did not show any sludge accumulation based on another 14 survey elevations on the bottom.

9.4 PAST HYDRAULIC LOADING DATA

In 1993, John Buermeyer, P.Eng., Manitoba Water Resources, estimated that the flow to the lagoon was 1.4 million imperial gallons or 6.4 million liters. He noted considerable extraneous water entering the wastewater collection system from high flow urinals and toilets. He estimated the flow could be reduced to 1.1 million ig or 5.0 million L by reducing infiltration. The Park has reduced flows from the urinals and toilets since that time.

9.5 INCREASE HYDRAULIC STORAGE BY ADDING A SECOND SECONDARY CELL

The topographic survey showed that there is suitable space available for a second approximately 0.30 hectare lined secondary cell directly east of the existing secondary cell. The new cell would share the east dyke of the existing secondary cell but would be extended south and north to maximize volume. The new cell would allow for approximately 3300 m^3 (3.3 million L) additional storage. The new cell floor must be constructed to approximately the same elevation as the existing cells to match existing floors and to eliminate potential bubbling of the liner. Therefore, significant borrow sand must be brought to the site.

9.5.1 If the Existing Primary Cell is Adequate for Organic Loading

Combined total storage, with the new cell, existing interconnecting dyke raised, and raised liner on the outside dykes, would be approximately 4.3 + 3.3 = 7.6 million L. This represents 3.5 million L wastewater flow plus 4.1 million L, or 117%, infiltration / extraneous flow.

9.5.2 If the Existing Primary Cell is Inadequate for Organic Loading

In this case, the existing secondary cell would have to be converted to a second primary cell if the 20 year design organic loading is beyond the capacity of the existing primary cell.

The available hydraulic storage would be as follows and assumes the interconnecting dyke is raised and the interior liner is raised on the existing exterior dykes.

Existing primary cell;	½ x 2521	=	1261 m^3
Existing secondary cell; (converted to primary cell)	½ x 3013	=	1506 m^3
New secondary cell		=	3300 m^3
	Total Hydraulic Storage		***6067 m^3 (6.1 million L)***

This would allow for the wastewater design flow of 3.5 million L plus 2.6 million L or approximately 74% infiltration / extraneous flow. Maximum Infiltration would have to be reduced from 130% to 74% or less. The target will be 50% maximum infiltration.

9.6 20 YEAR DESIGN ORGANIC LOADING - WITH OUTHOUSE WASTE

Domestic sewage organic loading is hydraulically based and has been set at 250 mg/L BOD_5 for domestic sewage. Manitoba Conservation Environmental Approvals has advised that outhouse waste is considered septage. Septage organic loading is set at 7000 mg/L BOD_5. The infiltration / extraneous flow organic loading has been set at 25 mg/L BOD_5. The following assessment is based on infiltration / extraneous flow being 50%. Therefore, the current estimated maximum organic daily loading is:

a) Wastewater Hydraulic Loading

Average Annual Loading	=	3.5 million L		
Average Daily Loading	=	3.5 million L ÷ 130 days = 26,900 L/day		
Estimated Maximum Daily Loading	=	1.75 x 26,900 L/day	=	47,100 L/day

b) Organic Loading

Maximum Day Organic Domestic Loading	=	47,100 L @ 250 mg/L	=	11.8 kg / day BOD_5
Trucked Outhouse Septage Waste; (One outhouse maximum pumped out per day)	=	1000 L @ 7000 mg/L	=	7.0 kg / day BOD_5
Daily Infiltration / Extraneous Flow Loading (50%)	=	1,750,000 L ÷ 130 days 7,690 L @ 25 mg/L	=	0.3 kg / day BOD_5
		Total Maximum Day Organic Loading	=	**19.1 kg/day BOD_5**

9.7 REQUIRED PRIMARY CELL SIZE - WITH OUTHOUSE WASTE

The maximum allowable primary cell loading is 56 kg/day/hectare. Therefore, the minimum primary cell size is 19.1 ÷ 56 = 0.34 hectare area at 1.5 m full supply level (F.S.L). The existing lagoon primary cell has an area of 0.22 hectare at FSL. Therefore, the existing primary cell is inadequate to meet the required organic loading requirements and the existing secondary cell must be converted to a primary cell. The combined two existing cells would have 0.52 hectare surface area which exceeds the required 0.33 hectare area for primary organic treatment at full supply level.

9.8 REQUIRED PRIMARY CELL SIZE – NO OUTHOUSE WASTE

If the outhouse waste of 10,000 L annually is trucked to another facility, the organic loading on the primary cell would be 12.1 kg/day BOD_5 and the required primary cell size would be 12.1 ÷ 56 = 0.22 hectare. The existing lagoon primary cell is 0.22 hectare and is therefore adequate.

9.9 REMEDIATION OF THE TWO EXISTING CELLS

The two existing cells could be remediated by raising the PVC liner from the intermediate lower berm to the higher outside dykes. Also, the interconnecting dyke would be raised 0.85 m. This remediation would seal the existing cells and provide significant increased hydraulic storage.

Removing the sludge and completely relining the two existing cells was also considered. However, the additional cost for this work is estimated to be $365,000. Therefore, this alternative is not considered feasible.

9.10 NEW TREATED EFFLUENT OUTFALL DRAINAGE PIPE TO THE SPILLWAY

A new shallow bury 300 mm gravity treated effluent outfall drainage pipe could be constructed north from the lagoon and east along the south side of the Park road to the spillway. A discharge structure would be required downstream of the spillway. This alternate discharge location would provide environmental benefits to Stephenfield Lake and may be required by Manitoba Conservation Environmental Approvals.

10.0 Wastewater Lagoon Upgrading Alternatives

10.1 ALTERNATIVE 1 – TRUCK SEPTAGE AND EXCESS WASTEWATER OFF SITE

This is the least capital cost and highest O & M cost alternative and the only alternative that does not require a new Environment Act Licence. The required works are as follows:

- Truck all outhouse septage, estimated at 10,000 L to 15,000 L annually, to the City of Winnipeg North End Water Pollution Control Centre (NEWPCC). By doing so, the existing primary cell is adequately sized for organic loading. The volume of septage represents 2 or 3 truck loads per year at 4,550 L per truck load.

- Truck excess normal wastewater to another facility. The existing lagoon can handle 3.1 million L annual storage. The expected required 20 year design storage is 3.5 million L plus a target 50% infiltration for a total of 5.3 million L. Therefore, on average 5.3 – 3.1 = 2.2 million L or approximately 485 truck loads annually of wastewater would be trucked offsite to another wastewater treatment facility. A long term agreement to dispose of wastewater at another facility is recommended.

- Reduce infiltration to target maximum 50%.

- Reline outfall ditch.

- Repair interconnecting valve and inlet structure.

10.2 ALTERNATIVE 2 – TRUCK SEPTAGE OFF SITE AND UPGRADE EXISTING LAGOON

This alternative requires a new Environment Act Licence and includes the following works:

- Truck outhouse septage to the City of Winnipeg NEWPCC.

- Reduce infiltration to target maximum 50%.

- Raise and line existing interconnecting dyke.

- Raise liner on existing outer dykes.

- Reline outfall ditch.

- Repair interconnecting valve and inlet structure.

In this scenario, the total available storage is 4.3 million L for the 20 year design. Therefore, 4.7 – 4.3 = 0.4 million L or approximately 90 loads of wastewater annually would have to be trucked to Winnipeg.

10.3 ALTERNATIVE 3 – TRUCK SEPTAGE OFF SITE, UPGRADE EXISTING LAGOON, AND CONSTRUCT A NEW SECONDARY CELL

This alternative requires a new Environment Act Licence and includes the following works:

- Truck outhouse septage to the City of Winnipeg NEWPCC.
- Reduce infiltration to target maximum 50%.
- Raise and line existing interconnecting dyke.
- Raise liner on existing outer dykes.
- Construct new secondary cell.
- Reline outfall ditch.
- Repair interconnecting valve and inlet structure.

This alternative provides 7.6 million L storage and allows for the 20 year design wastewater plus approximately 117% infiltration. The new secondary cell shown on the plan has been sized to suit available land and is as large as reasonably feasible so that a future lined expansion is hopefully not required.

10.4 ALTERNATIVE 4 – TRUCK SEPTAGE TO LAGOON, UPGRADE EXISTING LAGOON, AND CONSTRUCT A NEW SECONDARY CELL

This alternative requires a new Environmental Act Licence and includes the following works:

- Convert the existing secondary cell in to a primary cell.
- Dispose of outhouse septage into the two primary cells of the lagoon. A maximum of 1500 L per day of outhouse septage could be dumped in to the primary cells. Septage should be dumped equally in to the primary cells to avoid high organic loading which may result in not achieving organic loading discharge limits.
- Reduce infiltration to target maximum 50%.
- Raise and line existing interconnecting dyke.
- Raise liner on existing outer dykes.
- Construct new secondary cell.
- Reline outfall ditch.

- Repair interconnecting valve and inlet structure.

This alternative provides 6.1 million L of hydraulic storage and has capacity for the 20 year design wastewater flow plus approximately 74 % infiltration. There are two main concerns with this alternative. The 74% infiltration may not be achievable which would cause hydraulic overloading. Secondly, the outhouse septage may not be evenly dispersed in the primary cells and consequently the primary cells may not achieve the organic loading limits to allow treated effluent discharge.

10.5 OTHER ALTERNATIVES NOT CONSIDERED FEASIBLE

10.5.1 Aeration of the Existing Lagoon

Aeration, combined with upgrading the lagoon and a new Environment Act Licence, would have very high capital and O & M costs. Therefore, aeration is not considered a viable solution compared with other options.

10.5.2 Truck Septage Off Site and New Boyne River Outfall

No upgrading would be done to the lagoon but a new Environment Act Licence would be required. This alternative would require the disposal of an average of 1.6 million L of excess wastewater in to the Boyne River over the summer months because the lagoon would not have adequate storage. This situation would not be acceptable to Environmental Approvals as it does not provide for a long term solution for hydraulic overloading.

11.0 Opinion of Cost Estimates

The following opinion of construction cost estimates relates to the four alternatives considered in this report. Unit costs are rounded to the nearest $1000 and totals to the nearest $5000, all in 2013 dollars.

11.1 COMPONENT CAPITAL COST ESTIMATES

11.1.1 Raise Existing Lagoon Interconnecting Dyke

▪ Excavate Interconnecting Dyke Top to Liner; L.S.	$10,000
▪ Imported Clay Fill; 500 m^3 @ $40	$20,000
▪ Topsoil and Seed; L.S.	$2,000
Total	***$32,000***

11.1.2 Raise Liner

▪ Raise Liner on Exterior Dykes c/w Cover (Existing Dyke Soil); 5,500 m^2 @ $25	$138,000
▪ Testing; L.S.	$5,000
▪ Topsoil and Seed; L.S.	$5,000
▪ Repair Inlet; L.S.	$5,000
▪ New Interconnecting Pipe & Valve; L.S.	$30,000
Total	***$215,000***

11.1.3 New Lined Secondary Cell

▪ Stripping; Remove, Stockpile and Replace; 650 m^3 @ $7	$5,000
▪ Common Sand Excavation; 1,500 m^3 @ $8	$12,000
▪ Sand Borrow for Dykes and Liner Cover; 7,000 m^3 @ 30	$210,000
▪ Shape Existing East Dyke; L.S.	$2,000
▪ New Interconnecting Pipe & Valve; L.S.	$30,000
▪ New Discharge Pipe & Valve; L.S.	$25,000
▪ Water / Gas Release Pumping; L.S.	$25,000
▪ Ditching; L.S.	$7,000
▪ Topsoil & Seeding; L.S.	$10,000
▪ Synthetic Liner; 6,000 m^2 @ $15	$90,000
▪ Repair Forcemain Discharge Inlet and Interconnecting Valve	$20,000
▪ Fence; L.S.	$20,000
▪ Road Reconstruction; L.S.	$5,000
Total	***$460,000***

11.1.4 Reline Existing Treated Effluent Outfall Ditch

▪ Clean Out Existing Ditch	$10,000
▪ Line with Imported Clay or Synthetic Liner; L.S.	$20,000
▪ Miscellaneous Works	$5,000
Total	***$35,000***

11.1.5 Repair Wastewater Collection System (Nominal Allowances)

▪ Pipe Repair	$75,000
▪ Manhole Top Raising and Joint Sealing	$75,000
Total	***$150,000***

11.1.6 Optional Work

Cost item 11.1.4 above would not be required if this optional work is selected.

New Piped Treated Effluent Outfall to Spillway

▪ 300 mm drainage pipe; 1000 m @ $100	$100,000
▪ Outfall Structure; L.S.	$60,000
▪ Road Restoration; L.S	$5,000
▪ Manholes	$15,000
Subtotal	***$180,000***
Minus Item 11.1.4	**- $35,000**
Net Additional Cost	**$145,000**

20% Construction Contingency and 15% Engineering (total 35%) are to be added to all capital costs.

11.2 ALTERNATIVE COSTS

The total estimated costs for Alternatives 1, 2, 3 and 4 are as follows:

11.2.1 Alternative 1 – Truck Septage and Excess Wastewater Off Site

Capital Cost

▪ Reduce Infiltration to Maximum 50%	$150,000
▪ Reline Outfall Ditch	$35,000
▪ Repair Interconnecting Valve and Inlet Structure	$15,000
Subtotal	***$200,000***
20% Construction Contingency and 15% Engineering (35%)	***$70,000***
Total	**$270,000**

Annual Operating Cost

▪ Truck Septage and Wastewater; 485 Truck Loads @ $500	$243,000
▪ Normal existing lagoon operating costs; allow	$20,000
Total	***$265,000***

11.2.2 Alternative 2 – Truck Septage Off Site and Upgrade Existing Lagoon

Capital Cost

▪ Reduce Infiltration to Maximum 50%	$150,000
▪ Raise and Line Existing Interconnecting Dyke	$32,000
▪ Raise Liner on Existing Outer Dykes	$183,000
▪ Reline Outfall Ditch	$35,000
▪ Repair Interconnecting Valve and Inlet Structure	$15,000
Subtotal	***$415,000***
20% Construction Contingency and 15% Engineering (35%)	***$145,000***
Total	**$560,000**

Annual Operating Cost

▪ Truck Septage and Wastewater; 90 Truck Loads @ $500	$45,000
▪ Normal existing lagoon operating costs; allow	$20,000
Total	***$65,000***

11.2.3 Alternative 3 – Truck Septage Off Site, Upgrade Existing Lagoon, and Construct New Secondary Cell

Capital Cost

▪ Reduce infiltration to Maximum 50%	$150,000
▪ Raise and Line Existing Interconnecting Dyke	$32,000
▪ Raise Liner on Existing Outer Dykes	$183,000
▪ Construct new secondary cell.	$460,000
▪ Reline outfall ditch	$35,000
▪ Repair interconnecting valve and inlet structure	$15,000
Subtotal	***$875,000***
20% Construction Contingency and 15% Engineering (35%)	***$306,000***
Total	**$1,180,000**

Annual Operating Cost

▪ Load & Truck Septage; 3 Truck Loads @ $1000	$3,000
▪ Normal existing lagoon operating costs; allow	$20,000
Total	***$23,000***

11.2.4 Alternative 4 – Truck Septage To Lagoon, Upgrade Existing Lagoon, and Construct New Secondary Cell

Capital Cost

▪ Reduce infiltration to Maximum 50%	$150,000
▪ Raise and Line Existing Interconnecting Dyke	$32,000
▪ Raise Liner on Existing Outer Dykes	$183,000
▪ Construct new secondary cell.	$460,000
▪ Reline outfall ditch	$35,000
▪ Repair interconnecting valve and inlet structure	$15,000
Subtotal	***$875,000***
20% Construction Contingency and 15% Engineering (35%)	***$306,000***
Total	**$1,180,000**

Annual Operating Cost

▪ Load & Truck Septage; 3 Truck Loads @ $500	$2,000
▪ Normal existing lagoon operating costs; allow	$20,000
Total	***$22,000***

11.3 COST ESTIMATES SUMMARY

Alternative	Capital Cost	Annual O & M Cost	Present Worth 20 Year Life Cycle Cost*
Alternative 1	$270,000	$265,000	$4,245,000
Alternative 2	$560,000	$65,000	$1,535,000
Alternative 3	$1,180,000	$23,000	$1,525,000
Alternative 4	$1,180,000	$22,000	$1,510,000

***20 Year Present Worth Parameters**

- 20 year present worth factor = $\frac{(1 + 0.03)^{20} - 1}{0.03\,(1 + 0.03)^{20}} = 15$
- Interest Rate = 3%
- 20 Year Present Worth = (15 x Annual O & M Cost) + Capital Cost = 20 Year Life Cycle Cost

12.0 Conclusions

The conclusions drawn from the assessments undertaken in this report are:

1. The existing 2 cell wastewater lagoon is inadequate to handle the 20 year design organic and hydraulic loading.

2. Alternatives 2, 3 and 4 have the same 20 year life cycle cost based on a 3% borrowing rate.

3. **Alternative 1 – Truck Septage and Excess Wastewater Off Site**, has a very high 20 year life cycle cost. It is also dependent upon finding another wastewater treatment facility to accept 485 truck loads of wastewater annually. Alternative 1 is not considered feasible.

4. **Alternative 2 – Truck Septage Off Site and Upgrade Existing Lagoon**, does not provide adequate on site hydraulic storage necessitating trucking of an estimated 90 loads of wastewater off site annually.

5. **Alternative 3 – Truck Septage Off Site, Upgrade Existing Lagoon, and Construct A New Secondary Cell**, appears to be the best alterative based on cost and operation requirements.

6. **Alternative 4 – Truck Septage To The Lagoon, Upgrade Existing Lagoon, and Construct A New Secondary Cell**, is considered risky with respect to both hydraulic and organic overloading.

7. Outhouse septage should be trucked to the City of Winnipeg North End Water Pollution Control Centre so that the existing primary cell is capable of handling the 20 year design organic loading.

8. Maximum existing infiltration / extraneous flow in to the wastewater collection system is estimated to be 130% of wastewater flow in high water table years. Infiltration must be reduced to an acceptable level and a maximum of 50% is a reasonable target. The CCTV analysis identifies the locations which require repair. The budget for reducing infiltration is reasonable but additional funds may be required.

9. Continuous hour monitoring of the main lift station pumps in future seasons will quantify infiltration / extraneous flow.

10. The existing treated effluent outfall ditch needs to be relined with clay or a synthetic liner.

11. Consideration can be given to relocating the treated effluent outfall to directly downstream of the spillway to the east as an environmental enhancement to the Stephenfield Park recreation area and the Stephenfield Regional Water Treatment Plant

raw water supply. Stantec has discussed this issue with Manitoba Conservation Environmental Licencing and they have not advised yet whether this relocation is a requirement.

12. A new Environment Act Licence is required for Alternatives 2, 3 and 4.

13.0 Recommendations

1. We recommend that **Alternative 3 – Truck Septage Off Site, Upgrade Existing Lagoon, and Construct A New Secondary Cell**, be proceeded with. This alternative maximizes wastewater hydraulic storage providing an estimated 20 year design storage plus 117% infiltration / extraneous flow. Alternative 3 is in the group with the lowest 20 year life cycle cost and has the lowest annual O & M cost. The details of the proposed system are as follows:

   - Truck outhouse septage to the City of Winnipeg NEWPCC.
   - Reduce infiltration to target maximum of 50%.
   - Raise and line with clay the existing interconnecting dyke.
   - Raise synthetic liner on existing outer dykes.
   - Reline existing outfall ditch.
   - Repair interconnecting gate valve and inlet structure.
   - Construct a new 0.30 hectare lined secondary cell.
   - Obtain a new Environment Act Licence.

   Stantec's opinion of capital cost for Alternative 3, including construction contingency and engineering, is $1,180,000 with estimated annual operation and maintenance costs of approximately $23,000.

2. We recommend consideration be given to relocating the treated effluent outfall to downstream of the Stephenfield Lake spillway approximately 1 kilometer east of the lagoon, as an environmental enhancement. The net increase in capital cost for this relocation is estimated to be $195,000 including construction contingency and engineering.

APPENDIX A

Soil Drilling Logs

Drill Hole Logs

Maple Leaf Drilling – July 26, 2012

Stephenfield Provincial Park

Existing Lagoon, Adjacent East Expansion Site, and Alternate Treated Effluent Drainage Route to Spillway

Test Holes Shown on Site Plan

Hole No. 1 – Lagoon

This is the only hole on the high dyke. All others are on the lower inner berm.

4 m West of Gate Valve - ℄ Top of Dyke

0.0 m – 1.5 m	Fine Grain Sand
*	0.75 Minor Oxidization
*	No visible moisture
1.5 m to 1.8 m	Sand - Some Organic – First Soil Sample
1.8 m to 2.5 m	Fine Grain Sand
2.5 m to 3.0 m	Sand – Minor Moisture / Some Silt

Hole No. 2 - Lagoon

6 m East of White PVC Stub – 1.5 m From bottom of 4:1 Slope

0.0 m – 1.0 m	Fine Grain Sand
1.0 m – 1.9 m	Sand - Minor Organic Stain
1.9 m – 2.4 m	Sand - Slightly Lighter Brown
2.4 m – 3.0 m	Saturated Sand – Color Change from Beige to Brown Second Soil Sample - Silt

Hole No. 3 - Lagoon

8 m South of Mowed Grass Line

0.0 m – 1.3 m	Fine Grain Sand
1.3 m – 1.5 m	Sand - Minor Organic Stain
1.5 m – 2.4 m	Fine Grain Sand – Changes to Lighter Brown Slight Mineral Deposits
2.4 m – 3.0 m	Saturated Sand

Hole No. 4 – Lagoon

9 m North of White PVC Stub – 1.5 m East of Bottom of 4:1 Slope

0.0 m – 1.3 m	Fine Grain Sand
1.3 m – 1.5 m	Sand - Minor Organic Stain
1.5 m – 2.4 m	Fine Grain Sand – Changes to Lighter Brown Slight Mineral Deposits
2.4 m – 3.0 m	Saturated Sand

Hole No. 5 - Lagoon

16 m East of PVC Stub – 1.5 m North of 4:1 Slope

0.0 m – 1.3 m	Fine Grain Sand
1.3 m – 1.5 m	Sand - Minor Organic Stain
1.5 m – 2.4 m	Fine Grain Sand – Changes to Lighter Brown Slight Mineral Deposits
2.4 m – 3.0 m	Saturated Sand

Hole No. 6 - Lagoon

℄ of Cell separation - 1.5 m from 4:1 Slope

0.0 m – 1.3 m	Fine Grain Sand
1.3 m – 1.5 m	Sand - Minor Organic Stain
1.5 m – 2.4 m	Fine Grain Sand – Changes to Lighter Brown Slight Mineral Deposits
2.4 m – 3.0 m	Saturated Sand
	Some Silt
1.5 – 3.0 m	Photo taken

Hole No. 7 - Lagoon

18 m West of East Lagoon Mow Line - 1.5 m from 4:1 Slope

0.0 m – 1.3 m	Fine Grain Sand
1.3 m – 1.5 m	Sand - Minor Organic Stain
1.5 m – 2.4 m	Fine Grain Sand – Changes to Lighter Brown Slight Mineral Deposits, Organics
2.4 m – 3.0 m	Saturated Sand, some Silt

Hole No. 8 - Lagoon

12 m North of South Mow Line – 2.0 m from 4:1 Slope

0.0 m – 1.3 m	Fine Grain Sand
1.3 m – 1.5 m	Sand - Minor Organic Stain
1.5 m – 2.4 m	Fine Grain Sand – Changes to Lighter Brown Slight Mineral Deposits, Organics
2.4 m – 3.0 m	Saturated Sand, some Silt

Hole No. 9 - Lagoon

10 m South of North Mow Line – 2.0 m from 4:1 Slope

0.0 m – 1.3 m	Fine Grain Sand
1.3 m – 1.5 m	Sand - Minor Organic Stain
1.5 m – 2.4 m	Fine Grain Sand – Changes to Lighter Brown Slight Mineral Deposits, Organics
2.4 m – 3.0 m	Saturated Sand, some Silt
	* Took Sand Soil Sample

Hole No. 10 – Expansion Site

In Line with Berm / Dyke Ridge South – 3.5 m from Treeline

0.0 m – 0.1 m	Roots with Sand
0.1 m – 1.0 m	Sand
1.0 m – 1.5 m	Silty Sand - Saturated
1.5 m – 2.4 m	Sandy Silt - Saturated
2.4 m – 2.6 m	Silty Clay – Saturated
2.6 m – 3.0 m	Sandy Silt - Saturated

Hole No. 11 – Expansion Site

30 – 35 m North of #10 – 7.0 m From Treeline

0.0 m – 0.1 m	Roots with Sand
0.1 m – 1.0 m	Sand
1.0 m – 1.5 m	Silty Sand
1.5 m – 2.9 m	Sandy Silt - Saturated
2.9 m – 3.0 m	Sand with some Clay - Saturated

Hole No. 12 – Expansion Site

30 – 35 m North of #11 – 12.0 m From Treeline

5 m South of ℄ Berm

0.0 m – 0.1 m	Roots with Sand
0.1 m – 0.7 m	Sand with Organics
0.7 m – 1.0 m	Sand
1.0 m – 1.5 m	Silty Sand
1.5 m – 3.0 m	Sandy Silt With Clay Layers – Saturated

Hole No. 13 – Alternate Outfall Route

6 m South of Road – 12 m East of Picnic Area Sign

0.0 m – 0.1 m	Roots with Sand
0.1 m – 1.9 m	Sand
1.9 m – 3.0 m	Sandy Silt - Saturated

Hole No. 14 – Alternate Outfall Route

4.0 m South of Road – In Line with East Edge of Trees, West Side of Bay 5 Drive

0.0 m – 0.1 m	Roots with Sand
0.1 m – 1.4 m	Sand
1.4 m – 1.9 m	Silty Sand – Saturated
1.9 m – 2.7 m	Sandy Silt with Trace of Clay - Saturated
2.7 m – 3.0 m	Sand

Hole No. 15 – Alternate Outfall Route

48 m East of Culvert at Path Crossing 3 m South of Road

0.0 m – 0.1 m	Roots with Sand
0.1 m – 0.6 m	Dark Sand
0.6 m – 1.7 m	Sand
1.7 m – 3.0 m	Silty Sand - Saturated

Hole No. 16 – Alternate Outfall Route

2.5 m East of Path Sign, 5.5 m South of Road

0.0 m – 0.1 m	Roots with Sand
0.1 m – 1.3 m	Dark Sand
1.3 m – 1.7 m	Sand
1.7 m – 3.0 m	Silty Sand

Hole No. 17 – Alternate Outfall Route

1.5 m South of Road – Just East of End of Spillway

0.0 m – 0.1 m	Root
0.1 m – 1.2 m	Layered Clay, Silt, Organics
1.2 m – 2.0 m	Silty Sand
2.0 m – 3.0 m	Clay

APPENDIX B

Lift Station Draw Down Test Results, August 2012 Water Supply Records, August 2012 Lift Station Pumping Time Records

Memo

Stantec

To: Tim Stratton, P. Eng. From: Rob Gillis, EIT

File: 111213890 Date: September 27, 2012

Reference: Stephenfield Provincial Park Existing Lift Station Draw Downs

The result of the draw down tests conducted by Rocky Vodden, Elaine Peters, and myself this morning is as follows:

- South Pump = 7.8 L/s (123 USGPM)
- North Pump = 7.5 L/s (118 USGPM)
- Combined Pumps = 11.3 L/s (180 USGPM)

Two draw down tests were conducted with the South Pump, and the measured draw down was identical for each. Three were conducted for the North Pump, evenly bracketing the average noted above. A single test was conducted with both pumps operating simultaneously.

Stantec Consulting Ltd.

Robert Gillis

Rob Gillis, EIT
Mechanical Designer
Rob.Gillis@Stantec.com

Attachment: Stephenfield Provincial Park Lift Station Draw Downs

c.

STEPHENFIELD PROVINCIAL PARK LIFT STATION DRAW DOWNS

WET WELL CROSS-SECTIONAL AREA *1.791* *sq. m.*

PUMP ID	WET WELL START LEVEL [m]	WET WELL STOP LEVEL [m]	MEASURED DRAW DOWN [m]	PUMP RUN TIME [sec]	MEASURED INFLOW [m]	CALCULATED DUTY POINT [L/s]	DESIGN DUTY POINT [L/s]
South Pump	1.53	1.79	0.26	60	0.0	7.8	
South Pump	1.5	1.76	0.26	60	0.0	7.8	
* North Pump	1.47	1.7	0.23	60	0.0	6.9	
* North Pump	1.52	1.77	0.25	60	0.0	7.5	
* North Pump	1.425	1.695	0.27	60	0.0	8.1	
Combined Pumps	1.5	1.88	0.38	60	0.0	11.3	

	[L/s]	[USGPM]
Average South Pump Flow Rate	7.8	123.0
Average North Pump Flow Rate	7.5	118.3
Average Combined Pumps Flow Rate	11.3	179.8

Monthly Chlorination Report - Portable Instruments

Manitoba Water Stewardship

WATER SYSTEM: STEPHENFIELD PROV. PARK WATER SYSTEM CODE: WP220.00

MONTH: Jan Feb Mar Apr May Jun Jul (Aug) Sep Oct Nov Dec YEAR: 20 12

OPERATOR-IN-CHARGE: ELAINE PETERS

TYPE OF MEASUREMENT DEVICE (Check Box): Colorwheel ☐ Electronic ☐

Date	TIME	Operator's Initials	Chlorine Residual in mg/L		USAGE GAL	Comments:
			Free Chlorine	Total Chlorine		
1.	8:39	DRW	1.73	2.20	4700	
2.	8:20	DRW	2.12	2.20	7000	
3.	8:21	DRW	2.13	2.20	8400	
4.	8:10	DRW	2.20	2.20	8800	
5.	8:08	DRW	1.80	2.20	11200	
6.	8:11	DRW	1.93	2.20	13900	
7.	8:31	DRW	2.09	2.20	9800	
8.	8:46	DRW	1.36	2.15	6300	
9.	7:20	SP	1.31	1.94	5500	
10.	7:40	SP	1.66	2.20	6300	
11.	7:45	SP	1.50	2.11	10300	
12.	8:05	SP	1.62	2.20	10900	
13.	7:40	SP	1.34	1.94	5400	
14.	7:40	SP	1.46	1.93	3700	
15.	7:35	SP	1.62	2.20	4000	
16.	8:08	DRW	1.54	2.20	3300	
17.	8:12	DRW	1.25	1.87	4300	
18.	8:13	DRW	1.22	1.80	5900	
19.	8:23	DRW	1.21	1.83	8100	
20.	7:40	SP	1.12	1.69	6600	
21.	8:05	SP	1.35	2.01	4600	
22.	9:00	SP	1.46	1.97	4400	
23.	7:35	SP	1.35	2.01	7600	
24.	8:15	SP	1.44	2.09	8100	
25.	7:45	SP	1.80	2.20	5500	
26.	7:45	SP	1.31	1.97	7900	
27.	7:35	SP	1.44	1.99	6200	
28.	7:40	SP	1.25	1.93	5400	
29.	7:30	SP	1.15	1.89	4200	
30.	7:40	SP	1.11	1.67	4900	
31.	7:30	SP	1.36	2.02	7400	

Total Number of Measurements, A:	A: 31
Minimum Free Chlorine Standard:	0.6 mg/L
Number Meeting Standard, B:	B: 31
COMPLIANCE, C = B/A X 100%:	100%
Number of Days in this Month, D:	D: 31
COMPLIANCE, E = A/D X 100%:	100%

TOTAL CONSUMPTION 210,900 ✓

Submitted by (Print): ELAINE PETERS

Signature: Elaine Peters

DISTRIBUTION:
FORWARD THE ORIGINAL TO YOUR DRINKING WATER OFFICER
RETAIN A COPY FOR YOUR RECORDS

PLEASE CONTACT YOUR DRINKING WATER OFFICER WITH ANY COMMENTS, QUESTIONS OR CONCERNS

CDWR-07

Monthly Chlorination Report - Portable Instruments

Manitoba Water Stewardship

WATER SYSTEM: STEPHENFIELD PROV. PARK WATER SYSTEM CODE: WP220.00

MONTH: Jan Feb Mar Apr May Jun Jul Aug (Sep) Oct Nov Dec YEAR: 20 12

OPERATOR-IN-CHARGE: ELAINE PETERS

TYPE OF MEASUREMENT DEVICE (Check Box): Colorwheel ☐ Electronic ☐

Date	TIME	Operator's Initials	Chlorine Residual in mg/L		USAGE	Comments:
			Free Chlorine	Total Chlorine		
1.	8:18	DW	1.43	2.19	8300	
2.	8:08	DW	1.36	2.10	9800	
3.	8:03	DW	1.26	1.94	11200	
4.	7:40	DP	1.54	2.15	7700	
5.	7:40	DP	1.23	1.95	5400	
6.	7:25	DP	1.14	1.77	4000	
7.	8:10	DP	1.53	2.10	4300	
8.	8:15	DP	1.63	2.20	5100	
9.	7:40	DP	1.77	2.20	5600	
10.	9:00	DP	1.83	2.20	5000	
11.	7:40	DP	1.48	2.06	2600	
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						
24.						
25.						
26.						
27.						
28.						
29.						
30.						
31.						

TOTAL USAGE 69,000

Total Number of Measurements, A:	A: 11
Minimum Free Chlorine Standard:	0.5 mg/L
Number Meeting Standard, B:	B: 11
COMPLIANCE, C = B/A X 100%:	100%
Number of Days in this Month, D:	D: 31
COMPLIANCE, E = A/D X 100%:	35.5%

Submitted by (Print): ELAINE PETERS

Signature: Elaine Peters

DISTRIBUTION:
FORWARD THE ORIGINAL TO YOUR DRINKING WATER OFFICER
RETAIN A COPY FOR YOUR RECORDS

PLEASE CONTACT YOUR DRINKING WATER OFFICER WITH ANY COMMENTS, QUESTIONS OR CONCERNS

STEPHENFIELD PROV. PARK

PH : 204-828-3545
FAX : 204-828-3247

AUG. METER READING FOR AUG. + SEPT.

Date	Time	Pump #1	Pump #2	Signature
dd/mm/yy	hh:mm/am	South	North	
01/08/2012	08:30	22:30	20:03	JDN
02/08/2012	8:23	39:31	29:33	JDN
03/08/2012	8:25	42:05	45:35	JRV
04/08/2012	8:23	57:49	40:28	JRV
05/08/2012	8:23	55:42	55:29	JRV
06/08/2012	8:19	108:55	106:05	JRV
07/08/2012	8:45	100:28	96:51	JRV
08/08/2012	8:25	31:08	30:10	JRV
09/08/2012	8:25	25:40	26:43	JP
10/08/2012	2:45pm	108:30	106:14	JP
11/08/2012	8:15	33:46	26:00	JP
12/08/2012	8:15	37:04	39:57	JP
13/08/2012	9:05	33:37	32:07	JRV
14/08/2012	[illegible]	[illegible]	[illegible]	[illegible]
15/08/2012	9:35	33:56	31:29	JRV
16/08/2012	8:46	5:30	6:37	JRV
17/08/2012	8:33	35:15	13:76	JRV
18/08/2012	8:24	22:01	15:27	JRV
19/08/2012	8:35	51:17	57:53	JRV
20/08/2012	8:24	38:22	37:32	JRV
21/08/2012	8:04	20:20	20:10	JRV
22/08/2012	8:07	15:26	13:57	JRV
23/08/2012	8:35	48:36	46:26	JP
24/08/2012	8:30	21:36	20:30	JP
25/08/2012	8:05	27:25	28:08	JP
26/08/2012	8:05	34:16	35:54	JP
27/08/2012	8:45	24:35	36:10	JRV
28/08/2012	9:35	30:42	29:26	JB
29/08/2012	8:08	16:26	16:16	JRV
30/08/2012	8:12	19:17	22:23	JRV
31/08/2012	8:15	33:53	47:45	JRV

1041 M ✓
834 S

994 Min
876 S

Date	Time	Pump #1	Pump #2	Signature
dd/mm/yy	hh:mm/am	South	North	
01/09/2012	8:27	40:22.	39:09	JRW
02/09/2012	8:17	49:35	47:21	JRW
03/09/2012	8:14	54:45	58:54	JRW
04/09/2012	9:05	53:14	43:19	JRW
05/09/2012	7:49	23:39	29:50	JRW
06/09/2012	7:45	15:08	19:14	JP
07/09/2012	8:15	23:00	20:00	JP
08/09/2012	8:20	19:36	22:10	JP
09/09/2012	8:35	28:51	22:39	JP
10/09/2012	8:18	30:53	27:48	JRW
11/09/2012	3:43pm	178:34	47:03	JRW
12/09/2012				
13/09/2012				
14/09/2012				
15/09/2012				
16/09/2012				
17/09/2012				
18/09/2012				
19/09/2012				
20/09/2012				
21/09/2012				
22/09/2012				
23/09/2012				
24/09/2012				
25/09/2012				
26/09/2012				
27/09/2012				
28/09/2012				
29/09/2012				
30/09/2012				
9/31/2012				

APPENDIX C

CCTV Report

THE MANITOBA WATER SERVICES BOARD

P.O. Box 22080
2010 Currie Blvd., Brandon, Manitoba, Canada R7A 6Y9
T 204-726-6076 F 204-726-7196

October 9, 2012

Mr. Tim Stratton, P.Eng.
Stantec Consulting Ltd.
905 Waverley Street
Winnipeg, MB R3T 5P4

Dear Mr. Stratton:

Enclosed is one (1) copy of the CCTV discs and reports completed the week of September 10, 2012. The sewer pipes appear to be in fair condition with little to no damage on most pipes. Some of the older clay pipes have roots which are quite invasive at points. With the low groundwater table at the time of filming, it is difficult to determine if groundwater infiltration has taken place in the past. General assessment written during film review have been included on the reports.

If you have any questions please call me at (204-726-6766) or e-mail me at jaimee.schmidt@gov.mb.ca

Yours truly,

Jaimee Schmidt

Jaimee Schmidt, P. Eng.
Project Engineer

Sewer condition codes Index 2 (alphabetical)

Codes Columns 18 - 21	Joint Notation Available	Definitions	Clock At		Clock From	Clock To	Dia. mm	Intrusion mm	New Dimension	%	% Cross Sectional Area Loss	Gap mm	% Height/ Diameter Loss	% Height/ Diameter	Remarks
B	(J)	Broken pipe (at joint)	27,28		27,28	29,30									
BR		Branch major			27,28	29,30	22-25								>35
CC	(J)	Crack circumferential (at joint)			27,28	29,30									
CL	(J)	Crack longitudinal (at joint)	27,28												
CM	(J)	Cracks multiple (at joint)			27,28	29,30									
CN		Connection	27,28				22-25								
CNI		Connection Intrusion	27,28				22-25	33-35							
CU		Camera underwater													>35
CX		Connection defective	27,28				22-25								
CXI		Connection defective Intrusion	27,28				22-25	33-35							
D	(J)	Deformed sewer (at joint)								32,33					
DB		Displaced bricks	27,28		27,28	29,30									
DC		Dimension of sewer changes							22-25						
DE	(J)	Debris (non-silt/grease) (at joint)									32,33				
DEG	(J)	Debris grease (at joint)	27,28		27,28	29,30					32,33				
DES	(J)	Debris silt (at joint)									32,33				
DI		Dropped invert										34,35			
EH	(J)	Encrustation heavy (at joint)			27,28	29,30					32,33				
EL	(J)	Encrustation light (at joint)			27,28	29,30									
EM	(J)	Encrustation medium (at joint)			27,28	28,29					32,33				
ESH	(J)	Scale heavy (at joint)			27,28	28,29					32,33				
ESL	(J)	Scale light (at joint)			27,28	28,29									
ESM	(J)	Scale medium (at joint)			27,28	28,29					32,33				
FC	(J)	Fracture circumferential (at joint)			27,28	28,29									
FL	(J)	Fracture longitudinal (at joint)	27,28												
FM	(J)	Fractures multiple (at joint)			27,28	28,29									
FH		Finish of Survey													
GO		General observation													>35
GP		General photograph													
H	(J)	Hole in sewer (at joint)	27,28		27,28	28,29									
ID	(J)	Infiltration dripper (at joint)	27,28		27,28	28,29									
IG	(J)	Infiltration gusher (at joint)	27,28		27,28	28,29									
IR	(J)	Infiltration runner (at joint)	27,28		27,28	28,29									
IS	(J)	Infiltration seeper (at joint)	27,28		27,28	28,29									
JDL		Joint displaced large													
JDM		Joint displaced medium													
JN		Junction	27,28				22-25								
JX		Junction defective	27,28				22-25								

Sewer condition codes Index 2 (alphabetical)

Codes Columns 18 - 21	Joint Notation Available	Definitions	Clock At		Clock From	Clock To	Dia. mm	Intrusion mm	New Dimension	%	% Cross Sectional Area Loss	Gap mm	% Height/ Diameter Loss	% Height/ Diameter	Remarks
LC		Lining changes/starts/finishes													>35
LD		Line of sewer deviates down													
LL		Line of sewer deviates left													
LN		Lining defect	27,28		27,28	28,29									>35
LR		Line of sewer deviates right													
LU		Line of sewer deviates up													
MB		Missing bricks	27,28		27,28	28,29									
MC		Material of sewer changes													>35
MH		Maintenance hole/node													>35
MM		Mortar missing medium	27,28		27,28	28,29									
MS		Mortar missing surface	27,28		27,28	28,29									
MT		Mortar miseing total	27,28		27,28	28,29									
OB	(J)	Obstruction (at joint)	27,28		27,28	28,29							32,33		>35
OJL		Open joint large													
OJM		Open joint medium													
PC		Length of pipe changes							22-25						
RF	(J)	Roots fine (at joint)													
RM	(J)	Roots mass (at joint)									32,33				
RT	(J)	Roots tap (at joint)													
SA		Survey abandoned													>35
SC		Shape of sewer changes													>35
ST		Start of Survey													
SSL	(J)	Surface damage spalling large (at joint)	27,28		27,28	28,29									
SSM	(J)	Surface damage spalling medium (at joint)	27,28		27,28	28,29									
SSS	(J)	Surface damage spalling slight (at joint)	27,28		27,28	28,29									
SWL	(J)	Surface damage wear large (at joint)	27,28		27,28	28,29									
SWM	(J)	Surface damage wear medium (at joint)	27,28		27,28	28,29									
SWS	(J)	Surface damage wear slight (at joint)	27,28		27,28	28,29									
V		Vermin													>35
WL		Water level												32,33	
X		Sewer collapsed									32,33				

27,28 - Column numbers in report form

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Query

Street Name: | Location: | Entity ID: | Tape ID: ST01

Date Between: | And | Job No: | Survey By:

EntityID	Exported	Street	Location	InspectDate	SurveyedBy	TapeID	JobNo
MA 1	True	CAMPGROUND	1ST MH W OF PARK GATE TO MH AT PARK GATE	09/10/2012	UJ-RICH/RIE	ST01	1087
MA 3	True	EASEMENT (S OF S	1ST MH N OF STAFF QUARTERS TO MH@ STAFF QUARTER	09/10/2012	UJ-RICH/RIE	ST01	1087
MA 4	True	SERVICE RD	MH@MAINTENCE YARD TO1ST MH E OF MAINTENANCE YAR	09/10/2012	UJ-RICH/RIE	ST01	1087
MA 4	True	SERVICE ROAD	1STMHEOFMAINTENANCEYARDTOMHATMAINTENANCEYARD	09/10/2012	UJ-RICH/RIE	ST01	1087
MA 2	True	SOUTH ROAD	1ST MH W OF PARK GATE TO 2ND MH W OF PARK GATE	09/10/2012	UJ-RICH/RIE	ST01	1087
MA 1	True	SOUTH ROAD	1ST MH W OF PARK GATE TO MH AT PARK GATE	09/10/2012	UJ-RICH/RIE	ST01	1087

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 1

Date: 09/10/2012 | Time: 1254 | Street Name: CAMPGROUND

Location Description: 1ST MH W OF PARK GATE TO MH AT PARK GATE

Start Node: MH 7 | Start Depth: 1.87 | End Node: MH 6 | End Depth: 1.32

Direction: D-DOWNSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 41.1 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST01 | Comments: NO STEEL TAPE, REVERSAL REQ'D, SPLICE VIDEO

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 6
	0.1	DE					00		
	0.1	WL					05		
	2.2	DEG	S1		03	09	00		DEFECT WANDERS
	10.8	DEG	F1		03	09	00		DEFECT WANDERS
	20.7	LR							
00628	21.1	GO							MINI CAMMED
	41.1	SA							REV REQ'D
00900	41.1	FH							

OK

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 3

Date: 09/10/2012 | Time: 1437 | Street Name: EASEMENT (S OF SOUTH ROAD)

Location Description: 1ST MH N OF STAFF QUARTERS TO MH@ STAFF QUARTERS

Start Node: MH 4 | Start Depth: 0.86 | End Node: MH 5 | End Depth: 0.8

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 1 | Measured Length: 35.6 | Location Code: G-WOODLAND

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST01 | Comments: NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 4
	0.1	DE					00		
	0.1	WL					05		
	22.9	SSMJ			03				CHIPPED
	29.1	LL							
	35.3	SSM			07	04			CFHIPPED
	35.3	DE					00		
	35.4	DE					70		DE IN MH
	35.6	MH							MH 5
00940	35.6	FH							

end chipped @ manhole

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 4

Date: 09/10/2012 | Time: 1547 | Street Name: SERVICE RD

Location Description: MH@MAINTENCE YARD TO1ST MH E OF MAINTENANCE YARD

Start Node: MH 1 | Start Depth: 1.13 | End Node: MH 2 | End Depth: 1.44

Direction: D-DOWNSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : VC-VITRIFIED CLAY | Lining:

Pipe Length: 1.5 | Measured Length: 90.3 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST01 | Comments: 90.3M ROOTS @ JT, REVERSAL REQ'D, NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 1
	0.1	WL					05		
	0.4	DE					00		
	3.0	SSMJ			05				CHIPPED
	5.6	DE	S1				00		DEFECT WANDERS
	8.7	CCJ			03	05			
	10.1	CCJ			09	10			
	14.4	DE	F1				00		DEFECT WANDERS
	17.1	RFJ							
	18.6	RFJ							
	20.0	RFJ							
	22.9	CCJ			07	09			
	24.3	RMJ					15		
	25.6	RFJ	S2						
	40.0	SSMJ			03	04			CHIPPED
	44.3	RMJ					05		
	47.1	RFJ	F2						
	55.7	RFJ	S3						
	60.0	RMJ	S4				25		DEFECT WANDERS
	64.3	RMJ	F4				05		DEFECT WANDERS
	81.4	RFJ	F3						
	82.9	RMJ	S5				20		
	90.2	RMJ	F5				20		
	90.3	SA							RMJ, REVERSAL REQ'
03500	90.3	FH							

Roots quite invasive @ some points

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 4

Date: 09/10/2012 | Time: 1643 | Street Name: SERVICE ROAD

Location Description: 1STMHEOFMAINTENANCEYARDTOMHATMAINTENANCEYARD

Start Node: MH 2 | Start Depth: 1.44 | End Node: MH 1 | End Depth: 1.13

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : VC-VITRIFIED CLAY | Lining:

Pipe Length: 1.5 | Measured Length: 33.1 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST01 | Comments: REVERSAL, FULL VIDEO, NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 2
	0.1	RMJ	S1				05		DEFECT WANDERS
	0.1	WL					05		
	16.0	RMJ	F1				20		DEFECT WANDERS
	18.8	RFJ							
	19.5	WL					10		
	21.5	RMJ					15		
	23.1	RFJ							
	24.5	RMJ					05		
	25.9	RMJ	S2				05		
	28.8	RMJ	F2				05		
	31.7	RFJ							
	33.0	RM					20		
	33.1	SA							FULL VIDEO
00710	33.1	FH							

Roots quite invasive @some points.

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 2

Date: 09/10/2012 | Time: 1347 | Street Name: SOUTH ROAD

Location Description: 1ST MH W OF PARK GATE TO 2ND MH W OF PARK GATE

Start Node: MH 6 | Start Depth: 1.87 | End Node: MH 4 | End Depth: 1.23

Direction: D-DOWNSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 114.2 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST01 | Comments: STEEL TAPE WAS 114.2M, BEND IN LINE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 6
	0.1	WL					05		
	21.3	DE	S1				00		DEFECT WANDERS
	114.9	MC							VC
	116.3	DE	F1				00		DEFECT WANDERS
	116.3	SSM			12	01			CHIPPED
	116.5	MH							MH 4
02620	116.5	FH							

OK

end chipped @ manhole

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 1

Date: 09/10/2012 | Time: 1254 | Street Name: SOUTH ROAD

Location Description: 1ST MH W OF PARK GATE TO MH AT PARK GATE

Start Node: MH 6 | Start Depth: 1.32 | End Node: MH 7 | End Depth: 1.87

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 64.9 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST01 | Comments: NO STEEL TAPE, REVERSAL, APPROX 20M MISSING VIDEO

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 6
	0.1	WL					05		
	64.8	LR							
	64.9	SA							20M MISSING VIDEO
01520	64.9	FH							

OK.

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Query

Street Name: | Location: | Entity ID: | Tape ID: ST02

Date Between: | And | Job No: | Survey By:

EntityID	Exported	Street	Location	InspectDate	SurveyedBy	TapeID	JobNo
MA 11	True	BAY 1 EAST WASHROOM	MH AT WASHROOM RO 1ST MH E OF WASHROOM	09/11/2012	UJ-RICH/RIE	ST02	1087
MA 11	True	BAY 1 EAST WASHROOM	1ST MH E OF WASHROOM TO MH AT WASHROOM	09/11/2012	UJ-RICH/RIE	ST02	1087
MA 9	True	CENTER ROAD	MH AT BAY 1 (SLG) TO 1ST MH N OF TRAILER DU	09/11/2012	UJ-RICH/RIE	ST02	1087
MA 9	True	CENTER ROAD	1ST MH N OF TRAILER DUMP TO MH AT BAY 1 (SL	09/11/2012	UJ-RICH/RIE	ST02	1087
MA 8	True	CENTER ROAD	1ST MH N OF TRAILER DUMP TO MH AT TRAILER D	09/11/2012	UJ-RICH/RIE	ST02	1087
MA 8	True	CENTER ROAD	MH AT TRAILER DUMP TO 1ST MH N OF TRAILER D	09/11/2012	UJ-RICH/RIE	ST02	1087
MA 10	True	CENTER ROAD	MH AT BAY 2 (NLG) TO MH AT BAY 1 (SLG)	09/11/2012	UJ-RICH/RIE	ST02	1087
MA 10	True	CENTER ROAD	MH AT BAY 1 (SLG) TO MH AT BAY 2 (NLG)	09/11/2012	UJ-RICH/RIE	ST02	1087
MA 6	True	SERVICE ROAD	1ST MH E OF MAINTENANCE YARD TO LIFT STATIO	09/11/2012	UJ-RICH/RIE	ST02	1087
MA 5	True	SOUTH ROAD	2ND MH W OF PARK GATE TO LIFT STATION	09/11/2012	UJ-RICH/RIE	ST02	1087
MA 5	True	SOUTH ROAD	LIFT STATION TO 2ND MH W OF PARK GATE	09/11/2012	UJ-RICH/RIE	ST02	1087
MA 7	True	TRAILER DUMP	MH AT TRAILER DUMP TO INLET AT TRAILER DUMO	09/11/2012	UJ-RICH/RIE	ST02	1087

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 11

Date: 09/11/2012 | Time: 1310 | Street Name: BAY 1 EAST WASHROOM

Location Description: MH AT WASHROOM RO 1ST MH E OF WASHROOM

Start Node: MH 13 | Start Depth: 1 | End Node: MH 12 | End Depth: 1.11

Direction: D-DOWNSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 33.9 | Location Code: G-WOODLAND

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST02 | Comments: 33.9M BEND IN LINE, REVERSAL REQ'D, NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 13
	0.1	RF							
	0.1	DE	S1				00		
	0.1	WL					05		
	32.0	DE	F1				00		
	33.8	LL							
	33.9	SA							BEND, REVERSAL REQ
00810	33.9	FH							

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 11

Date: 09/11/2012 | Time: 1330 | Street Name: BAY 1 EAST WASHROOM

Location Description: 1ST MH E OF WASHROOM TO MH AT WASHROOM

Start Node: MH 12 | Start Depth: 1.11 | End Node: MH 13 | End Depth: 1

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 23.1 | Location Code: G-WOODLAND

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST02 | Comments: NO STEEL TAPE, MINI CAMMED @10,1M,23.1M FULL VIDEO

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 12
	0.1	DE					00		
	0.1	WL					05		
	7.7	SSMJ			08				CHIPPED
00330	10.1	GO							MINI CAMMED TO END
	10.1	LL							
	23.0	LR							
	23.1	SA							FULL VIDEO
00500	23.1	FH							

OK

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 9

Date: 09/11/2012 | Time: 1204 | Street Name: CENTER ROAD

Location Description: MH AT BAY 1 (SLG) TO 1ST MH N OF TRAILER DUMP

Start Node: MH 10 | Start Depth: 1.43 | End Node: MH 9 | End Depth: 1.46

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 69.2 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST02 | Comments: REVERSAL 69.2M FULL VIDEO, NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 10
	0.1	DE	S1				00		
	0.1	WL					15		
	2.6	WL					05		
	14.3	DE	F1				00		
	51.0	DE	S2				00		DEFECT WANDERS
	62.7	FC			12	01			
	69.1	LR							
	69.1	DE	F2				00		DEFECT WANDERS
	69.2	SA							FULL VIDEO
01650	69.2	FH							

OK

one minor crack @62.7

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 9

Date: 09/11/2012 | Time: 1157 | Street Name: CENTER ROAD

Location Description: 1ST MH N OF TRAILER DUMP TO MH AT BAY 1 (SLG)

Start Node: MH 9 | Start Depth: 1.46 | End Node: MH 10 | End Depth: 1.43

Direction: D-DOWNSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 5.3 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST02 | Comments: 5.3M BEND IN LINE, REVERSAL REQ'D, NO STEEL TPAE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 9
	0.1	DE	S1				00		
	0.1	WL					05		
	5.2	LL							
	5.2	DE	F1				00		
	5.3	SA							BEND, REVERSAL REQ
00210	5.3	FH							

OK

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 8

Date: 09/11/2012 | Time: 1142 | Street Name: CENTER ROAD

Location Description: 1ST MH N OF TRAILER DUMP TO MH AT TRAILER DUMP

Start Node: MH 9 | Start Depth: 1.24 | End Node: MH 8 | End Depth: 1.16

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 26.6 | Location Code: G-WOODLAND

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST02 | Comments: REVERSAL, 26.6M FULL VIDEO, NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 9
	0.1	DE	S1				00		
	0.1	WL					05		
	4.4	ELJ			01	03			
	26.5	OJL							
	26.5	JDL							
	26.5	DE	F1				00		
	26.6	SA							FULL VIDEO
00710	26.6	FH							

open joint @ 26.5m

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 8

Date: 09/11/2012 | Time: 1122 | Street Name: CENTER ROAD

Location Description: MH AT TRAILER DUMP TO 1ST MH N OF TRAILER DUMP

Start Node: MH 8 | Start Depth: 1.16 | End Node: MH 9 | End Depth: 1.24

Direction: D-DOWNSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 39.5 | Location Code: G-WOODLAND

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST02 | Comments: 39.5M JDL & OJL, REVERSAL REQ'D, NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 8
	0.1	DE	S2				00		DEFECT WANDERS
	0.1	WL					05		
	37.8	DEG	S1		03		00		DEFECT WANDERS
	39.4	H			08	04			W VOID
	39.4	JDL							
	39.4	OJL							
	39.4	DE	F2				00		DEFECT WANDERS
	39.4	DEG	F1		12	04	00		DEFECT WANDERS
	39.5	SA							JDL & OJL, REV REQ
01000	39.5	FH							

open joint @ 39.4m.

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 10

Date: 09/11/2012 | Time: 1252 | Street Name: CENTER ROAD

Location Description: MH AT BAY 2 (NLG) TO MH AT BAY 1 (SLG)

Start Node: MH 11 | Start Depth: 1.46 | End Node: MH 10 | End Depth: 1.43

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 14.6 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST02 | Comments: REVERSAL, FULL VIDEO, NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 11
	0.1	DE	S1				00		
	0.1	WL					05		
	4.5	DE	F1				00		
	5.2	D					05		DENT
	14.5	LR							
	14.6	SA							FULL VIDEO
00410	14.6	FH							

OK, dent in pipe @5.2m

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 10

Date: 09/11/2012 | Time: 1231 | Street Name: CENTER ROAD

Location Description: MH AT BAY 1 (SLG) TO MH AT BAY 2 (NLG)

Start Node: MH 10 | Start Depth: 1.43 | End Node: MH 11 | End Depth: 1.46

Direction: D-DOWNSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 40.8 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST02 | Comments: 40.8M BEND IN LINE, REVERSAL REQ'D, NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 4
	0.1	DE	S1				00		
	0.1	WL					05		
	13.0	D					05		DENT
	40.7	DE	F1				00		
	40.7	LL							
	40.8	SA							BEND, REVERSAL REQ
01000	40.8	FH							

OK, dent in pipe @ 13m

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 6

Date: 09/11/2012 | Time: 1017 | Street Name: SERVICE ROAD

Location Description: 1ST MH E OF MAINTENANCE YARD TO LIFT STATION

Start Node: MH 2 | Start Depth: 1.5 | End Node: MH 3 | End Depth: 1.9

Direction: D-DOWNSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : VC-VITRIFIED CLAY | Lining:

Pipe Length: 1.5 | Measured Length: 91.6 | Location Code: G-WOODLAND

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST02 | Comments: CO IN LINE @ END OF RUN, NO STEEL TAPE,VSREAD150MM

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 2
	0.1	WL					05		
	1.5	RMJ	S1				30		DEFECT WANDERS
	31.4	RMJ	F1				05		DEFECT WANDERS
	32.8	RFJ	S2						DEFECT WANDERS
	45.5	RMJ					05		
	49.7	RMJ					05		
	52.5	RMJ					05		
	62.5	RMJ					05		
	83.0	WL					10		
	83.8	WL					20		
	88.6	WL					30		
	89.6	RFJ	F2						
	89.6	WL					50		
	90.2	WL					70		
	91.0	WL					80		
	91.6	MH							MH 3
01800	91.6	FH							

Invasive Roots in Some places

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 5

Date: 09/11/2012 | Time: 0853 | Street Name: SOUTH ROAD

Location Description: 2ND MH W OF PARK GATE TO LIFT STATION

Start Node: MH 4 | Start Depth: 1.23 | End Node: MH 3 | End Depth: 1.35

Direction: D-DOWNSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 97.1 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST02 | Comments: 97.1M BEND IN LINE, REVERSAL REQ'D,NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 4
	0.1	DE	S1				00		DEFECT WANDERS
	0.1	WL					05		
	97.0	LL							
	97.0	DE	F1				05		DEFECT WANDERS
	97.1	SA							REVERSAL REQ'D
02350	97.1	FH							

OK

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 5

Date: 09/11/2012 | Time: 0945 | Street Name: SOUTH ROAD

Location Description: LIFT STATION TO 2ND MH W OF PARK GATE

Start Node: MH 3 | Start Depth: 1.35 | End Node: MH 4 | End Depth: 1.23

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 5.9 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST02 | Comments: REVERSAL, NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 3
	0.1	DE	S1				00		
	0.1	WL					05		
	5.8	LR							
	5.8	DE	F1				00		
	5.9	SA							FULL VIDEO
00200	5.9	FH							

OK

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE Contr. Job No: 1087 City Job No: Sewer ID: MA 7

Date: 09/11/2012 Time: 1117 Street Name: TRAILER DUMP

Location Description: MH AT TRAILER DUMP TO INLET AT TRAILER DUMO

Start Node: MH 8 Start Depth: 1.16 End Node: INLET End Depth: 0

Direction: U-UPSTREAM Height: 150 Width: 0 Shape: C-CIRCULAR

Material : VC-VITRIFIED CLAY Lining:

Pipe Length: 1.5 Measured Length: 6.56 Location Code: G-WOODLAND

Purpose: F-CONDITION ASSESSMENT PreCleaned: Y-YES Weather: 1-DRY

Tape ID: ST02 Comments: 5.2M DC&MC 100MM CAST IRON, FULL VIDEOCANSEE ELBOW

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 8
	0.1	DE	S1				00		
	0.1	WL					05		
	1.5	RFJ							
	3.2	RFJ							
	5.0	DEG			03	09	00		
	5.1	GO							CAN SEE ELBOW
	5.1	DE	F1				00		
	5.1	DC		100					
	5.1	MC							CAST IRON
	5.2	SA							FULL VIDEO
00155	5.2	FH							

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Query

Street Name: | Location: | Entity ID: | Tape ID: ST03

Date Between: | And | Job No: | Survey By:

EntityID	Exported	Street	Location	InspectDate	SurveyedBy	TapeID	JobNo
MA 12	True	BAY 1 (N LEG)	1ST MH E OF EAST WASHROOM TO MH AT CENTER ROAD	09/11/2012	UJ-RICH/RIE	ST03	1087
MA 12	True	BAY 1 (N LEG)	MH AT CENTER ROAD TO 1ST MH E OF EAST WASHROOM	09/11/2012	UJ-RICH/RIE	ST03	1087
MA 16	True	BAY 1 WEST WASHROOM	MH@BAY 2 (SLG)TO 1ST MH N OF BAY 1 WEST WASHROOM	09/12/2012	UJ-RICH/RIE	ST03	1087
MA 15	True	BAY 1 WEST WASHROOM	1ST MH N OFBAY1 W WASHROOM TOMH@ BAY1 W WASHROOM	09/11/2012	UJ-OTHER/RIE	ST03	1087
MA 15	True	BAY 1 WEST WASHROOM	MH@BAY1WESTWASHROOMTO1STMHNOFBAY1WESTWASHROOM	09/11/2012	UJ-RICH/RIE	ST03	1087
MA 19	True	BAY 2 (S LEG)	1ST MH W OF CENTER ROAD TO MH AT CENTER ROAD	09/12/2012	UJ-RICH/RIE	ST03	1087
MA 18	True	BAY 2 (S LEG)	1ST MH W OF CENTER ROAD TO 2ND MH W OF CENTER RD	09/12/2012	UJ-RICH/RIE	ST03	1087
MA 18	True	BAY 2 (S LEG)	2ND MH W OF CENTER ROAD TO 1ST MH W OF CENTER RD	09/12/2012	UJ-RICH/RIE	ST03	1087
MA 17	True	BAY 2 WASHROOM	MH AT BAY 2 WASHROOM TO MH AT BAY 2 (S LEG)	09/12/2012	UJ-RICH/RIE	ST03	1087
MA 17	True	BAY 2 WASHROOM	MH AT BAY 2 (SLG) TO MH AT BAY 2 WASHROOM	09/12/2012	UJ-RICH/RIE	ST03	1087
MA 13	True	CENER ROAD	1ST MH N OF BAY 1 (NLG) TO MH AT BAY 1 (NLG)	09/11/2012	UJ-RICH/RIE	ST03	1087
MA 14	True	CENTER ROAD	MH AT BAY 2 (SLG) TO 1ST MH N OF BAY 1 (NLG)	09/11/2012	UJ-RICH/RIE	ST03	1087
MA 13	True	CENTER ROAD	MH AT BAY 1 (NLG) TO 1ST MH N OF BAY 1 (NLG)	09/11/2012	UJ-RICH/RIE	ST03	1087

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 12

Date: 09/11/2012 | Time: 1408 | Street Name: BAY 1 (N LEG)

Location Description: 1ST MH E OF EAST WASHROOM TO MH AT CENTER ROAD

Start Node: MH 12 | Start Depth: 1.11 | End Node: MH 11 | End Depth: 1.47

Direction: D-DOWNSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 7.9 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST03 | Comments: 7.9M BEND, REVERSAL REQ'D, NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 12
	0.1	DE	S1				00		
	0.1	WL					05		
	7.4	LR							
	7.8	DE	F1				00		
	7.9	SA							BEND, REVERSAL REQ
00450	7.9	FH							

OK.

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 12

Date: 09/11/2012 | Time: 1432 | Street Name: BAY 1 (N LEG)

Location Description: MH AT CENTER ROAD TO 1ST MH E OF EAST WASHROOM

Start Node: MH 11 | Start Depth: 1.47 | End Node: MH 12 | End Depth: 1.11

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 69.3 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST03 | Comments: REVERSAL. 69.3M FULL VIDEO, NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 11
	0.1	DE	S1				00		
	0.1	WL					05		
	8.5	LR							
	69.1	DE	F1				00		
	69.2	RFJ							
	69.2	DE					05		
	69.3	SA							FULL VIDEO
01920	69.3	FH							

OK

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 16

Date: 09/12/2012 | Time: 1645 | Street Name: BAY 1 WEST WASHROOM

Location Description: MH@BAY 2 (SLG)TO 1ST MH N OF BAY 1 WEST WASHROOM

Start Node: MH 15 | Start Depth: 1.28 | End Node: MH 14A | End Depth: 0

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 73.4 | Location Code: G-WOODLAND

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST03 | Comments: VIDEO SHOULD READ LIKE DATABASE PAGE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 15
	0.1	DE	S1				00		
	0.1	WL					05		
	1.5	WL					10		
	3.7	WL					05		
	4.4	LL							
	16.5	DE	F1				00		
	57.7	DE	S2				00		
	73.0	DE	F2				00		
	73.4	MH							MH 14A
01650	73.4	FH							

OK

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-OTHER/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 15

Date: 09/11/2012 | Time: 1709 | Street Name: BAY 1 WEST WASHROOM

Location Description: 1ST MH N OFBAY1 W WASHROOM TOMH@ BAY1 W WASHROOM

Start Node: MH 14A | Start Depth: 0 | End Node: MH 14 | End Depth: 0.97

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 28.2 | Location Code: G-WOODLAND

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST03 | Comments: REVERSAL, NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 14A
	0.1	WL					05		
	0.6	DE	S1				00		
	28.1	DE	F1				00		
	28.2	SA							END REVERSAL
00740	28.2	FH							

OK

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 15

Date: 09/11/2012 | Time: 1604 | Street Name: BAY 1 WEST WASHROOM

Location Description: MH@BAY1WESTWASHROOMTO1STMHNOFBAY1WESTWASHROOM

Start Node: MH 14 | Start Depth: 0.97 | End Node: MH 14A | End Depth: 0

Direction: D-DOWNSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 39 | Location Code: G-WOODLAND

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST03 | Comments: MINI CAM,39MWAS AS FAT AS IT COULD GO,REV REQ'D

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 14
	0.1	DE	S1				00		
	0.1	WL					05		
	3.9	GO							START MINI CAM
	3.9	LL							
	9.8	LL							
	38.9	DE	F1				00		
	39.0	SA							END MINI CAM,REV R
00550	39.0	FH							

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By:	UJ-RICH/RIE	Contr. Job No:	1087	City Job No:		Sewer ID:	MA 19
Date:	09/12/2012	Time:	0957	Street Name:	BAY 2 (S LEG)		
Location Description:	1ST MH W OF CENTER ROAD TO MH AT CENTER ROAD						
Start Node:	MH 17	Start Depth:	1.32	End Node:	MH 18	End Depth:	1.3
Direction:	D-DOWNSTREAM	Height:	150	Width:	0	Shape:	C-CIRCULAR
Material :	PVC-POLYVINYL CHLORIDE	Lining:					
Pipe Length:	4	Measured Length:	78.2	Location Code:	D-FOOTPATH		
Purpose:	F-CONDITION ASSESSMENT	PreCleaned:	Y-YES	Weather:	1-DRY		
Tape ID:	ST03	Comments:	NO STEEL TAPE				

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 17
	0.1	DE	S1				00		
	0.1	WL					05		
	22.3	DEG			08	04	00		
	70.3	D					05		
	78.0	DE	F1				00		
	78.2	MH							MH 18
01750	78.2	FH							

OK

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 18

Date: 09/12/2012 | Time: 0949 | Street Name: BAY 2 (S LEG)

Location Description: 1ST MH W OF CENTER ROAD TO 2ND MH W OF CENTER RD

Start Node: MH 17 | Start Depth: 1.32 | End Node: MH 15 | End Depth: 1.28

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 9.7 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST03 | Comments: NOSTEELTAPE,FULLVIDEO,VIDEO S/RMA18,FROMMH17TOMH15

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 17
	0.1	DE	S1				00		
	0.1	WL					05		
	3.3	WL					10		
	8.7	WL					05		
	9.6	LR							
	9.6	DE	F1				00		
	9.7	SA							FULL VIDEO
00140	9.7	FH							

OK.

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 18

Date: 09/12/2012 | Time: 0914 | Street Name: BAY 2 (S LEG)

Location Description: 2ND MH W OF CENTER ROAD TO 1ST MH W OF CENTER RD

Start Node: MH 15 | Start Depth: 1.28 | End Node: MH 17 | End Depth: 1.32

Direction: D-DOWNSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 77.1 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST03 | Comments: BEND, REV REQ'D, VIDEO S/R "MA18", NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 15
	0.1	DE	S1				00		
	0.1	WL					10		
	2.1	WL					05		
	56.5	WL					10		
	62.0	WL					20		
	71.7	WL					10		
	72.4	WL					05		
	77.0	LL							
	77.0	DE	F1				00		
	77.1	SA							BEND, REVERSAL REQ
01600	77.1	FH							

OK.

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 17

Date: 09/12/2012 | Time: 0846 | Street Name: BAY 2 WASHROOM

Location Description: MH AT BAY 2 WASHROOM TO MH AT BAY 2 (S LEG)

Start Node: MH 16 | Start Depth: 0.98 | End Node: MH 15 | End Depth: 1.28

Direction: D-DOWNSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 26.8 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST03 | Comments: BEND IN LINE, REVERSAL REQ'D, NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 16
	0.1	DE	S1				00		
	0.1	WL					05		
	26.7	DE	F1				00		
	26.7	LL							
	26.8	SA							BEND, REVERSAL REQ
00630	26.8	FH							

OK.

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 17

Date: 09/12/2012 | Time: 0903 | Street Name: BAY 2 WASHROOM

Location Description: MH AT BAY 2 (SLG) TO MH AT BAY 2 WASHROOM

Start Node: MH 15 | Start Depth: 1.28 | End Node: MH 16 | End Depth: 0.98

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 9.9 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST03 | Comments: REVERSAL, NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 15
	0.1	DE	S1				00		
	0.1	WL					05		
	9.8	LR							
	9.8	DE	F1				00		
	9.9	SA							END REVERSAL
00310	9.9	FH							

OK

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 13

Date: 09/11/2012 | Time: 1538 | Street Name: CENER ROAD

Location Description: 1ST MH N OF BAY 1 (NLG) TO MH AT BAY 1 (NLG)

Start Node: MH 11A | Start Depth: 1.77 | End Node: MH 11 | End Depth: 1.49

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 35 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST03 | Comments: REVERSAL, NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 11A
	0.1	DE	S1				00		
	0.1	WL					05		
	30.9	D					05		DENT
	34.9	LR							
	34.9	DE	F1				00		
	35.0	SA							REVERSAL
00920	35.0	FH							

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 14

Date: 09/11/2012 | Time: 1516 | Street Name: CENTER ROAD

Location Description: MH AT BAY 2 (SLG) TO 1ST MH N OF BAY 1 (NLG)

Start Node: MH 18 | Start Depth: 1.35 | End Node: MH 11A | End Depth: 1.77

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 47.6 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST03 | Comments: VIDEOS/R"MA14","TOMH11A","TO1STMHNOFBAY1(NLG)"NOST

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 18
	0.1	DE	S1				00		
	0.1	WL					05		
	9.9	CLJ			12				
	47.5	DE	F1				00		
	47.6	MH							MH 11A
01100	47.6	FH							

OK

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ-RICH/RIE | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 13

Date: 09/11/2012 | Time: 1506 | Street Name: CENTER ROAD

Location Description: MH AT BAY 1 (NLG) TO 1ST MH N OF BAY 1 (NLG)

Start Node: MH 11 | Start Depth: 1.49 | End Node: MH 11A | End Depth: 1.77

Direction: D-DOWNSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 7.6 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST03 | Comments: BEND, REVERSAL REQ'D, NO STEEL TAPE

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 11
	0.1	DE	S1				00		
	0.1	WL					05		
	7.5	LL							
	7.5	DE	F1				00		
	7.6	SA							BEND, REVERSAL REQ
00400	7.6	FH							

OK

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Query

Street Name: | Location: | Entity ID: | Tape ID: ST04

Date Between: | And | Job No: | Survey By:

EntityID	Exported	Street	Location	InspectDate	SurveyedBy	TapeID	JobNo
MA 23	True	BAY 3	MH@CENTER ROAD TO 1ST MH E OF CENTER ROAD	09/12/2012	UJ/RS/VZ	ST04	1087
MA 22	True	BAY 3	MH@BAY 3 WASHROOM TO 1ST MH E OF CENTER ROAD	09/12/2012	UJ/RS/VZ	ST04	1087
MA 21	True	BAY 3 WASHROOM	MH@BAY 3 WASHROOM TO 1ST MH N OF BAY 4 WASHROOM	09/12/2012	UJ/RS/VZ	ST04	1087
MA 20	True	BAY 4 WASHROOM	MH@BAY 4 WASHROOM TO 1ST MH N OF BAY 4 WASHROOM	09/12/2012	UJ/RS/VZ	ST04	1087
MA 26	True	CENTER ROAD	MH@BAY 2 N LEG TO 1ST MH S OF LIFT STATION	09/12/2012	UJ/RS/VZ	ST04	1087
MA 25	True	CENTER ROAD	MH@BAY 2 SLEG TO MH@BAY 2 N LEG	09/12/2012	UJ/RS/VZ	ST04	1087
MA 24	True	PAVILLION	MH@PAVILLION TO LIFT STATION S OF PAVILLION	09/12/2012	UJ/RS/VZ	ST04	1087
MA 24	True	PAVILLION	LIFT STATION S OF PAVILLION TO MH@PAVILLION	09/12/2012	UJ/RS/VZ	ST04	1087

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ/RS/VZ | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 23

Date: 09/12/2012 | Time: 1212 | Street Name: BAY 3

Location Description: MH@CENTER ROAD TO 1ST MH E OF CENTER ROAD

Start Node: MH 19 | Start Depth: 1.07 | End Node: MH 23 | End Depth: 1.07

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 6 | Measured Length: 62.8 | Location Code: G-WOODLAND

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST04 | Comments:

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 19
	0.1	WL					05		
	0.1	DES					05		
	62.6	RF							@ MH
	62.8	MH							MH 23
01455	62.8	FH							

OK

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By:	UJ/RS/VZ	Contr. Job No:	1087	City Job No:		Sewer ID:	MA 22
Date:	09/12/2012	Time:	1147	Street Name:	BAY 3		
Location Description:	MH@BAY 3 WASHROOM TO 1ST MH E OF CENTER ROAD						
Start Node:	MH 24	Start Depth:	0.75	End Node:	MH 23	End Depth:	1.07
Direction:	D-DOWNSTREAM	Height:	150	Width:	0	Shape:	C-CIRCULAR
Material :	PVC-POLYVINYL CHLORIDE	Lining:					
Pipe Length:	6	Measured Length:	62.5	Location Code:	G-WOODLAND		
Purpose:	F-CONDITION ASSESSMENT	PreCleaned:	Y-YES	Weather:	1-DRY		
Tape ID:	ST04	Comments:					

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 24
	0.1	WL					05		
	48.8	DEG	S1		08		00		
	49.9	DEG	S2		04		00		
	55.9	DEG	F1		08		00		
	56.4	DEG	F2		04		00		
	59.8	WL					10		
	62.5	MH							MH 23
01451	62.5	FH							

OK

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ/RS/VZ | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 21

Date: 09/12/2012 | Time: 1118 | Street Name: BAY 3 WASHROOM

Location Description: MH@BAY 3 WASHROOM TO 1ST MH N OF BAY 4 WASHROOM

Start Node: MH 24 | Start Depth: 0.75 | End Node: MH 25 | End Depth: 0.68

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 6 | Measured Length: 75.6 | Location Code: G-WOODLAND

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST04 | Comments:

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 24
	0.1	WL					00		
	21.7	MC							diff type of PVC
	21.7	PC		4000					
	55.2	MC							back to orig PVC
	55.2	PC		6000					
	75.6	MH							MH 25
01617	75.6	FH							

OK

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ/RS/VZ | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 20

Date: 09/12/2012 | Time: 1044 | Street Name: BAY 4 WASHROOM

Location Description: MH@BAY 4 WASHROOM TO 1ST MH N OF BAY 4 WASHROOM

Start Node: MH 26 | Start Depth: 0.65 | End Node: MH 25 | End Depth: 0.68

Direction: D-DOWNSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 6 | Measured Length: 71.8 | Location Code: G-WOODLAND

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST04 | Comments: 11.7m cracks and a hole but looks repaired

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 26
	0.1	WL					00		
	11.7	CL			11				
	11.9	H			11				appears repaired
	11.9	EL			07	11			
	12.0	CC			07	11			
	71.8	MH							MH 25
01811	71.8	FH							

11.7m - Damage to pipe. Crack & hole

28m - cracked pipe@joint

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ/RS/VZ | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 26

Date: 09/12/2012 | Time: 1456 | Street Name: CENTER ROAD

Location Description: MH@BAY 2 N LEG TO 1ST MH S OF LIFT STATION

Start Node: MH 19 | Start Depth: 1.16 | End Node: MH 20 | End Depth: 1.62

Direction: D-DOWNSTREAM | Height: 200 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 6 | Measured Length: 112.7 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST04 | Comments:

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 19
	0.1	WL					05		
	6.4	MC							diff type of PVC
	6.4	PC		4000					
	35.5	DEG	S1		08		00		
	36.0	DEG	S2		04		00		
	38.6	DEG	F2		04		00		
	38.6	DEG	F1		08		00		
	45.0	DEG			08		00		
	45.7	DEG			04		00		
	46.0	DEG			08		00		
	60.5	DEG	S3		04		00		
	60.7	DEG	S4		08		00		
	97.9	DEG	F3		04		00		
	98.9	DEG	F4		08		00		
	112.7	MH							MH 20
01645	112.7	FH							

66.5m. Dent in pipe, otherwise OK.

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ/RS/VZ | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 25

Date: 09/12/2012 | Time: 1427 | Street Name: CENTER ROAD

Location Description: MH@BAY 2 SLEG TO MH@BAY 2 N LEG

Start Node: MH 18 | Start Depth: 1.36 | End Node: MH 19 | End Depth: 1.16

Direction: D-DOWNSTREAM | Height: 200 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 6 | Measured Length: 106.9 | Location Code: D-FOOTPATH

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST04 | Comments:

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 18
	0.1	WL					05		
	12.4	LL							
	98.6	LR							
	106.9	MH							MH 19
01610	106.9	FH							

OK.

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ/RS/VZ | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 24

Date: 09/12/2012 | Time: 1350 | Street Name: PAVILLION

Location Description: MH@PAVILLION TO LIFT STATION S OF PAVILLION

Start Node: MH 22 | Start Depth: 1.55 | End Node: MH 21 | End Depth: 1.46

Direction: D-DOWNSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 53.1 | Location Code: G-WOODLAND

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST04 | Comments:

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 22
	0.1	WL					05		
	3.2	WL					00		
	43.6	LL							
00942	43.6	FH							complete video

OK.

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ/RS/VZ | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 24

Date: 09/12/2012 | Time: 1255 | Street Name: PAVILLION

Location Description: LIFT STATION S OF PAVILLION TO MH@PAVILLION

Start Node: MH 21 | Start Depth: 1.46 | End Node: MH 22 | End Depth: 1.55

Direction: U-UPSTREAM | Height: 150 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 53.1 | Location Code: G-WOODLAND

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST04 | Comments:

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 21
	0.1	WL					00		
	2.0	WL					05		
	2.8	WL					00		
	9.6	LR							
	9.6	SA							cannot make turn
00535	9.6	FH							

OK

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Query

Street Name: | Location: | Entity ID: | Tape ID: ST 05

Date Between: | And | Job No: | Survey By:

EntityID	Exported	Street	Location	InspectDate	SurveyedBy	TapeID	JobNo
MA 27	True	PARKING LOT(S OF LIFT STATIO	LIFT STATION TO 1ST MH S OF LIFT STAT	09/12/2012	UJ/RS/VZ	ST 05	1087
MA 27	True	PARKING LOT(S OF LIFT STATIO	1ST MH S OF LIFT STATION TO LIFT STAT	09/12/2012	UJ/RS/VZ	ST 05	1087

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ/RS/VZ | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 27

Date: 09/12/2012 | Time: 1548 | Street Name: PARKING LOT(S OF LIFT STATION)

Location Description: LIFT STATION TO 1ST MH S OF LIFT STATION

Start Node: MH 21 | Start Depth: 1.36 | End Node: MH 20 | End Depth: 1.62

Direction: U-UPSTREAM | Height: 200 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 4 | Measured Length: 94.2 | Location Code: G-WOODLAND

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST 05 | Comments: Reversal, full video

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 21
	0.1	WL					35		
	4.5	WL					20		
	8.5	WL					05		
	53.1	LL							
	73.6	LR							
	91.5	LR							
01501	91.5	FH							complete video

OK

Sewer Management System - Contractor Module V2.1.6

Sewer Inspection Report

Surveyed By: UJ/RS/VZ | Contr. Job No: 1087 | City Job No: | Sewer ID: MA 27

Date: 09/12/2012 | Time: 1520 | Street Name: PARKING LOT(S OF LIFT STATION)

Location Description: 1ST MH S OF LIFT STATION TO LIFT STATION

Start Node: MH 20 | Start Depth: 1.62 | End Node: MH 21 | End Depth: 1.36

Direction: D-DOWNSTREAM | Height: 200 | Width: 0 | Shape: C-CIRCULAR

Material : PVC-POLYVINYL CHLORIDE | Lining:

Pipe Length: 0.1 | Measured Length: 94.2 | Location Code: G-WOODLAND

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Tape ID: ST 05 | Comments: 2.7 m BEND, REVERSAL REQUIRED

TapeCount	Distance	DefectCode	ContDefect	DiamDimen	ClockAt	ClockTo	IntruPercent	IntruMM	Remarks
00000	0.0	ST							MH 20
	0.1	WL					05		
	2.6	LL							
	2.7	SA							cannot pass LL
00139	2.7	FH							

OK.

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Query

Street Name: | Location: | Entity ID: | Tape ID: MH01

Date Between: | And | Job No: | Survey By:

EntityID	Exported	Street	Location	InspectDate	SurveyedBy	TapeID	JobNo
MH 13	True	BAY 1 EAST WASHROOM	MH AT BAY 1 EAST WASHROOM	09/13/2012	RICHARD	MH01	1087
MH 14A	True	BAY 1 WEST WASHROOM	1ST MH N. OF BAY 1 WEST WASHROOM	09/13/2012	RICHARD	MH01	1087
MH 14	True	BAY 1 WEST WASHROOM	MH AT BAY 1 WEST WASHROOM	09/13/2012	RICHARD	MH01	1087
MH 12	True	BAY 1(N.LEG)	1ST MH W. OF CENTER ROAD	09/13/2012	RICHARD	MH01	1087
MH 16	True	BAY 2 WASHROOM	MH AT BAY 2 WASHROOM	09/13/2012	RICHARD	MH01	1087
MH 15	True	BAY 2(S.LEG)	2ND MH W. OF CENTER ROAD	09/13/2012	RICHARD	MH01	1087
MH 17	True	BAY 2(S.LEG)	1ST MH W. OF CENTER ROAD	09/13/2012	RICHARD	MH01	1087
MH 23	True	BAY 3	1ST MH W. OF BAY 3 WASHROOM	09/13/2012	RICHARD	MH01	1087
MH 24	True	BAY 3 WASHROOM	MH AT BAY 3 WASHROOM	09/12/2012	RICHARD	MH01	1087
MH 26	True	BAY 4 WASHROOM	MH AT BAY 4 WASHROOM	09/13/2012	RICHARD	MH01	1087
MH 25	True	BAY 4 WASHROOM	1ST MH N. OF BAY 4 WASHROOM	09/13/2012	RICHARD	MH01	1087
MH 18	True	CENTER ROAD	MH AT BAY 2 (S.LEG)	09/13/2012	RICHARD	MH01	1087
MH 8	True	CENTER ROAD	MH AT TRAILER DUMP	09/13/2012	RICHARD	MH01	1087
MH 9	True	CENTER ROAD	1ST MH N. OF TRAILER DUMP	09/13/2012	RICHARD	MH01	1087
MH 10	True	CENTER ROAD	MH AT BAY 1(S.LEG)	09/13/2012	RICHARD	MH01	1087
MH 11A	True	CENTER ROAD	1ST MH N. OF BAY 1(N.LEG)	09/13/2012	RICHARD	MH01	1087
MH19	True	CENTER ROAD	MH AT BAY 2(N.LEG)	09/13/2012	RICHARD	MH01	1087
MH 20	True	CENTER ROAD	1ST MH N. OF BAY 3(N.LEG)	09/13/2012	RICHARD	MH01	1087
MH 11	True	CENTER ROAD	MH AT BAY 1(N.LEG)	09/13/2012	RICHARD	MH01	1087
MH 5	True	EASEMENT(S. OF SOUTH ROAD	MH AT STAFF QUARTERS	09/13/2012	RICHARD	MH01	1087
MH 21	True	PAVILLION	1ST MH S. OF PAVILLION	09/13/2012	RICHARD	MH01	1087
MH 22	True	PAVILLION	MH AT PAVILLION	09/13/2012	RICHARD	MH01	1087
MH 1	True	SERVICE ROAD	MH AT MAINTENANCE YARD	09/13/2012	RICHARD	MH01	1087
MH 2	True	SERVICE ROAD	1ST MH E. OF MAINTENANCE YARD	09/13/2013	RICHARD	MH01	1087
MH 4	True	SOUTH ROAD	2ND MH W. OF PARK GATE	09/13/2012	RICHARD	MH01	1087
MH 6	True	SOUTH ROAD	1ST MH W. OF PARK GATE	09/13/2012	RICHARD	MH01	1087
MH 7	True	SOUTH ROAD	MH AT PARK GATE	09/13/2012	RICHARD	MH01	1087
MH 3	True	SOUTH ROAD	3RD MH W. OF PARK GATE	09/13/2012	RICHARD	MH01	1087

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 13 | Date: 09/13/2012 | Time: 1330 | Street Name: BAY 1 EAST WASHROOM

Location Description: MH AT BAY 1 EAST WASHROOM | Manhole Depth: 1

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: G-WOODLAND | Frame Grade Elevation: FCG-FRAME AT GRADE | mm: 0

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CN		150MM @0.1M EAST
4-REDUCER/BASE	CNI	150	150MM @ 0.1M NORTH
4-REDUCER/BASE	RF		0.1M
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 14A | Date: 09/13/2012 | Time: 1348 | Street Name: BAY 1 WEST WASHROOM

Location Description: 1ST MH N. OF BAY 1 WEST WASHROOM | Manhole Depth: 0.95

Tape ID: MH01 | Comments: 900MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: D-FOOTPATH | Frame Grade Elevation: FCA-FRAME ABOVE GRADE | mm: 75

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: NO-NONE

Reducer/Base Material: CO-CONCRETE | Step Material: AS-ALUMINUM STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
4-REDUCER/BASE	CN		150MM @ 0.1M SOUTHWEST
4-REDUCER/BASE	CN		150MM@ 0.1M NORTHEAST
5-BENCHING	NOD		
6-STEPS	SM		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 14 | Date: 09/13/2012 | Time: 1340 | Street Name: BAY 1 WEST WASHROOM

Location Description: MH AT BAY 1 WEST WASHROOM | Manhole Depth: 0.97

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: G-WOODLAND | Frame Grade Elevation: FCG-FRAME AT GRADE | mm: 0

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CNI	125	150MM @ 0.1M NORTHWEST
4-REDUCER/BASE	CNI	125	150MM @0.1M NORTH
4-REDUCER/BASE	RF		0.2M
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By:	RICHARD	Contr. Job No:	1087	City Job No:	1087		
Manhole ID:	MH 12	Date:	09/13/2012	Time:	1355	Street Name:	BAY 1(N.LEG)
Location Description:	1ST MH W. OF CENTER ROAD					Manhole Depth:	1.11
Tape ID:	MH01	Comments:	750MM RISER				
Purpose:	F-CONDITION ASSESSMENT	PreCleaned:	Y-YES	Weather:	1-DRY		
Location Code:	D-FOOTPATH	Frame Grade Elevation:	FCA-FRAME ABOVE GRADE	mm:	50		
Cover Type:	COS-COVER SOLID	Atmospheric Test:	Y-YES	Riser Material:	CO-CONCRETE		
Reducer/Base Material:	CO-CONCRETE	Step Material:	SS-STEEL STEPS	Benching Material:	CO-CONCRETE		

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CN		150MM @ 0.1M EAST
4-REDUCER/BASE	CN		150MM @ 0.1M SOUTHWEST
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 16 | Date: 09/13/2012 | Time: 1410 | Street Name: BAY 2 WASHROOM

Location Description: MH AT BAY 2 WASHROOM | Manhole Depth: 0.98

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 4-SHOWERS

Location Code: G-WOODLAND | Frame Grade Elevation: FCA-FRAME ABOVE GRADE | mm: 25

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CNI	25	150MM @ 0.1M SOUTHWEST
4-REDUCER/BASE	CNI	50	150MM @ 0.1M EAST
4-REDUCER/BASE	RF		0.2M
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 15 | Date: 09/13/2012 | Time: 1401 | Street Name: BAY 2(S.LEG)

Location Description: 2ND MH W. OF CENTER ROAD | Manhole Depth: 1.28

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 4-SHOWERS

Location Code: D-FOOTPATH | Frame Grade Elevation: FCG-FRAME AT GRADE | mm: 0

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CNI	125	150MM @ 0.1M NORT
4-REDUCER/BASE	CNI	125	150MM @ 0.1M EAST
4-REDUCER/BASE	CNI	125	150MM @0.1M SOUTHWEST
4-REDUCER/BASE	RF		0.2M
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 17 | Date: 09/13/2012 | Time: 1415 | Street Name: BAY 2(S.LEG)

Location Description: 1ST MH W. OF CENTER ROAD | Manhole Depth: 1.32

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 4-SHOWERS

Location Code: D-FOOTPATH | Frame Grade Elevation: FCA-FRAME ABOVE GRADE | mm: 35

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CNI	150	150MM @ 0.1M EAST
4-REDUCER/BASE	CNI	150	150MM @ 0.1M WEST
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By:	RICHARD	Contr. Job No:	1087	City Job No:	1087		
Manhole ID:	MH 23	Date:	09/13/2012	Time:	1255	Street Name:	BAY 3
Location Description:	1ST MH W. OF BAY 3 WASHROOM					Manhole Depth:	1.07
Tape ID:	MH01	Comments:	750MM RISER VIDEO SHOULD READ MH 23				
Purpose:	F-CONDITION ASSESSMENT	PreCleaned:	Y-YES	Weather:	1-DRY		
Location Code:	G-WOODLAND	Frame Grade Elevation:	FCA-FRAME ABOVE GRADE	mm:	150		
Cover Type:	COS-COVER SOLID	Atmospheric Test:	Y-YES	Riser Material:	NO-NONE		
Reducer/Base Material:	CO-CONCRETE	Step Material:	SS-STEEL STEPS	Benching Material:	CO-CONCRETE		

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
4-REDUCER/BASE	CN		150MM @ 0.1M WEST
4-REDUCER/BASE	CN		150MM @0.1M EAST
4-REDUCER/BASE	RF		0.2M
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 24 | Date: 09/12/2012 | Time: 1245 | Street Name: BAY 3 WASHROOM

Location Description: MH AT BAY 3 WASHROOM | Manhole Depth: 0.75

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: G-WOODLAND | Frame Grade Elevation: FCG-FRAME AT GRADE | mm: 0

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: NO-NONE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
4-REDUCER/BASE	CN		100MM @ 0.1M NORTH
4-REDUCER/BASE	CN		150MM @ 0.1M SOUTH
4-REDUCER/BASE	CNI	200	150MM @ 0.1M WEST
4-REDUCER/BASE	RF		0.2 TO 0.0
5-BENCHING	RF		0.1
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 26 | Date: 09/13/2012 | Time: 1315 | Street Name: BAY 4 WASHROOM

Location Description: MH AT BAY 4 WASHROOM | Manhole Depth: 0.65

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: G-WOODLAND | Frame Grade Elevation: FCA-FRAME ABOVE GRADE | mm: 50

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: NO-NONE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
4-REDUCER/BASE	CN		100MM @ 0.1M SOUTH
4-REDUCER/BASE	CN		150MM @ 0.1M NORTH
4-REDUCER/BASE	RF		0.2M
5-BENCHING	NOD		
6-STEPS	SM		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 25 | Date: 09/13/2012 | Time: 1310 | Street Name: BAY 4 WASHROOM

Location Description: 1ST MH N. OF BAY 4 WASHROOM | Manhole Depth: 0.68

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: G-WOODLAND | Frame Grade Elevation: FCA-FRAME ABOVE GRADE | mm: 50

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: NO-NONE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
4-REDUCER/BASE	CN		150MM @ 0.1M NORTH
4-REDUCER/BASE	CN		150MM @ 0.1M SOUTH
4-REDUCER/BASE	RF		0.2M
5-BENCHING	NOD		
6-STEPS	SM		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 18 | Date: 09/13/2012 | Time: 1157 | Street Name: CENTER ROAD

Location Description: MH AT BAY 2 (S.LEG) | Manhole Depth: 1.37

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: D-FOOTPATH | Frame Grade Elevation: FCG-FRAME AT GRADE | mm: 0

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CN		150MM @ 0.1M WEST
4-REDUCER/BASE	CN		150MM @ 0.1M SOUTH
4-REDUCER/BASE	CN		200MM @ 0.1M NORTH
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 8 | Date: 09/13/2012 | Time: 1108 | Street Name: CENTER ROAD

Location Description: MH AT TRAILER DUMP | Manhole Depth: 1.16

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: G-WOODLAND | Frame Grade Elevation: FCA-FRAME ABOVE GRADE | mm: 25

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	RFJ		0.9M
4-REDUCER/BASE	CN		150MM @ 0.1M WEST
4-REDUCER/BASE	CN		150MM @ 0.1M NORTH
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 9 | Date: 09/13/2012 | Time: 1120 | Street Name: CENTER ROAD

Location Description: 1ST MH N. OF TRAILER DUMP | Manhole Depth: 1.46

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: D-FOOTPATH | Frame Grade Elevation: FCA-FRAME ABOVE GRADE | mm: 250

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CCJ		0.8M 2 TO 7
4-REDUCER/BASE	CLJ		1.0M @ 3
4-REDUCER/BASE	CN		150MM @ 0.2M NORTH
4-REDUCER/BASE	CN		150MM @ 0.3M EAST
4-REDUCER/BASE	CNI	225	100MM @0.1M SOUTH
4-REDUCER/BASE	CXI	35	150MM @ 0.7M SOUTHEAST
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By:	RICHARD	Contr. Job No:	1087	City Job No:	1087		
Manhole ID:	MH 10	Date:	09/13/2012	Time:	1130	Street Name:	CENTER ROAD
Location Description:	MH AT BAY 1(S.LEG)					Manhole Depth:	1.46
Tape ID:	MH01	Comments:	750MM RISER				
Purpose:	F-CONDITION ASSESSMENT	PreCleaned:	Y-YES	Weather:	1-DRY		
Location Code:	D-FOOTPATH	Frame Grade Elevation:	FCB-FRAME BELOW GRADE	mm:	150		
Cover Type:	COS-COVER SOLID	Atmospheric Test:	Y-YES	Riser Material:	CO-CONCRETE		
Reducer/Base Material:	CO-CONCRETE	Step Material:	SS-STEEL STEPS	Benching Material:	CO-CONCRETE		

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CN		150MM @ 0.1M SOUTH
4-REDUCER/BASE	CN		150MM @ 0.1M NORTH
4-REDUCER/BASE	RF		0.6M TO 1.0M
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 11A | Date: 09/13/2012 | Time: 1145 | Street Name: CENTER ROAD

Location Description: 1ST MH N. OF BAY 1(N.LEG) | Manhole Depth: 1.77

Tape ID: MH01 | Comments: RISER 750MM

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: C-LIGHT ROAD/LANE | Frame Grade Elevation: FCG-FRAME AT GRADE | mm: 0

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: NO-NONE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
4-REDUCER/BASE	CN		150MM @ 0.1M NORTH
4-REDUCER/BASE	CN		150MM @ 0.IM SOUTH
4-REDUCER/BASE	CNI	450	100MM @ 0.4M WEST
4-REDUCER/BASE	CNI	75	100MM @ 0.4M SOUTH
4-REDUCER/BASE	SSM		0.5M TO 0.3M @ 3
5-BENCHING	NOD		
6-STEPS	SM		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH19 | Date: 09/13/2012 | Time: 1205 | Street Name: CENTER ROAD

Location Description: MH AT BAY 2(N.LEG) | Manhole Depth: 1.16

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: D-FOOTPATH | Frame Grade Elevation: FCG-FRAME AT GRADE | mm: 0

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CN		150MM @ 0.2M EAST
4-REDUCER/BASE	CN		200MM @ 0.1M SOUTH
4-REDUCER/BASE	CN		200MM @ 0.1M NORTH
4-REDUCER/BASE	RF		0.1M TO 0.3M
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 20 | Date: 09/13/2012 | Time: 1215 | Street Name: CENTER ROAD

Location Description: 1ST MH N. OF BAY 3(N.LEG) | Manhole Depth: 1.62

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: G-WOODLAND | Frame Grade Elevation: FCA-FRAME ABOVE GRADE | mm: 150

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CNI	200	200MM @ O.1M WEST
4-REDUCER/BASE	CNI	200	200MM @ 0.1M NORTHEAST
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 11 | Date: 09/13/2012 | Time: 1137 | Street Name: CENTER ROAD

Location Description: MH AT BAY 1(N.LEG) | Manhole Depth: 1.46

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: D-FOOTPATH | Frame Grade Elevation: FCG-FRAME AT GRADE | mm: 0

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CN		150MM @ 0.1M SOUTH
4-REDUCER/BASE	CN		150MM @ 0.1M NORTH
4-REDUCER/BASE	CNI	125	150MM @ 0.1M WEST
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 5 | Date: 09/13/2012 | Time: 0916 | Street Name: EASEMENT(S. OF SOUTH ROAD)

Location Description: MH AT STAFF QUARTERS | Manhole Depth: 0.8

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: G-WOODLAND | Frame Grade Elevation: FCG-FRAME AT GRADE | mm: 0

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CN		150MM @0.1M NORTH
4-REDUCER/BASE	CNI	125	100MM @ 0.3M SOUTH
5-BENCHING	NOD		
6-STEPS	SM		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 21 | Date: 09/13/2012 | Time: 0947 | Street Name: PAVILLION

Location Description: 1ST MH S. OF PAVILLION | Manhole Depth: 2.05

Tape ID: MH01 | Comments: LIFT STATION, 1500MM DIAMETER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: G-WOODLAND | Frame Grade Elevation: FCA-FRAME ABOVE GRADE | mm: 75

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: NO-NONE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: NO-NONE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
4-REDUCER/BASE	CNI	200	150MM @ 0.7M NORTHWEST
4-REDUCER/BASE	CNI	250	200MM @0.7M SOUTHEAST
4-REDUCER/BASE	CNI	200	150MM @1.0M NORTHEAST
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 22 | Date: 09/13/2012 | Time: 0933 | Street Name: PAVILLION

Location Description: MH AT PAVILLION | Manhole Depth: 1.55

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: G-WOODLAND | Frame Grade Elevation: FCG-FRAME AT GRADE | mm: 0

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CNI	150	150MM @0.1M SOUTH
4-REDUCER/BASE	CNI	250	100MM @ 0.2M NORTH
4-REDUCER/BASE	RF		0.8M
4-REDUCER/BASE	RM		0.3 TO 0.1M
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 1 | Date: 09/13/2012 | Time: 0830 | Street Name: SERVICE ROAD

Location Description: MH AT MAINTENANCE YARD | Manhole Depth: 1.13

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: D-FOOTPATH | Frame Grade Elevation: FCB-FRAME BELOW GRADE | mm: 150

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	COSS		
3-RISER	NOD		
4-REDUCER/BASE	CNI	300	150MM @0.1M EAST
4-REDUCER/BASE	CNI	25	100mm @ 0.2M SOUTH
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 2 | Date: 09/13/2013 | Time: 0847 | Street Name: SERVICE ROAD

Location Description: 1ST MH E. OF MAINTENANCE YARD | Manhole Depth: 1.5

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: D-FOOTPATH | Frame Grade Elevation: FCG-FRAME AT GRADE | mm: 0

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CNI	50	150MM @ 0.1M WEST
4-REDUCER/BASE	CNI	50	150MM @ 0.1M NORTHEAST
4-REDUCER/BASE	RF		0.2M
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 4 | Date: 09/13/2012 | Time: 1037 | Street Name: SOUTH ROAD

Location Description: 2ND MH W. OF PARK GATE | Manhole Depth: 1.23

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: D-FOOTPATH | Frame Grade Elevation: FCG-FRAME AT GRADE | mm: 0

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CCJ		0.8M 2 TO 7
4-REDUCER/BASE	CNI	25	150MM @ 0.5M SOUTH
4-REDUCER/BASE	CNI	250	150MM @ 0.2M WEST
4-REDUCER/BASE	CNI	50	150MM @ 0.2M EAST
4-REDUCER/BASE	RM		0.4 TO 0.5 @ CNI
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 6 | Date: 09/13/2012 | Time: 1030 | Street Name: SOUTH ROAD

Location Description: 1ST MH W. OF PARK GATE | Manhole Depth: 1.91

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: D-FOOTPATH | Frame Grade Elevation: FCA-FRAME ABOVE GRADE | mm: 125

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: CO-CONCRETE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CNI	150	150MM @ 0.1M WEST
4-REDUCER/BASE	CNI	250	150MM @ 0.1M EAST
5-BENCHING	NOD		
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 7 | Date: 09/13/2012 | Time: 1022 | Street Name: SOUTH ROAD

Location Description: MH AT PARK GATE | Manhole Depth: 1.33

Tape ID: MH01 | Comments: 750MM RISER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: D-FOOTPATH | Frame Grade Elevation: FCA-FRAME ABOVE GRADE | mm: 75

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: CO-CONCRETE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: NO-NONE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
3-RISER	NOD		
4-REDUCER/BASE	CNI	125	150MM @0.1M SOUTH
4-REDUCER/BASE	CNI	300	100MM @0.1M NORTH
6-STEPS	SAS		

Sewer Management System - Contractor Module V2.1.6

Manhole Inspection Report

Surveyed By: RICHARD | Contr. Job No: 1087 | City Job No: 1087

Manhole ID: MH 3 | Date: 09/13/2012 | Time: 0900 | Street Name: SOUTH ROAD

Location Description: 3RD MH W. OF PARK GATE | Manhole Depth: 2.04

Tape ID: MH01 | Comments: LIFT STATION, 1500MM DIAMETER

Purpose: F-CONDITION ASSESSMENT | PreCleaned: Y-YES | Weather: 1-DRY

Location Code: D-FOOTPATH | Frame Grade Elevation: FCA-FRAME ABOVE GRADE | mm: 200

Cover Type: COS-COVER SOLID | Atmospheric Test: Y-YES | Riser Material: NO-NONE

Reducer/Base Material: CO-CONCRETE | Step Material: SS-STEEL STEPS | Benching Material: NO-NONE

Component	Code	IntruMM	Remarks
1-ATMOSPHERE	COP		
1-ATMOSPHERE	HSP		
1-ATMOSPHERE	LELP		
1-ATMOSPHERE	OP		
2-FRAME/COVER	NOD		
4-REDUCER/BASE	CNI	50	150MM @ 0.2M SOUTH
4-REDUCER/BASE	CNI	200	150MM @ 0.7M SOUTHEAST
6-STEPS	SAS		