

121-24700-00

# ASSET MANAGEMENT PLAN

PHASE II

CORPORATION OF THE  
TOWNSHIP OF  
TERRACE BAY

JUNE 2014



# ASSET MANAGEMENT PLAN

## PHASE II

Project N° 121-24700-00

Prepared for:  
**Corporation of the Township of Terrace Bay**

Date: June 2014

---

**WSP Canada Inc.**  
185 East Street  
Sault Ste. Marie, ON P6A 3C8

Phone: 705-942-2070  
Fax: 705-942-3532  
**[www.wspgroup.com](http://www.wspgroup.com)**





June 4, 2014

Stan Spadoni, Clerk/Treasurer  
Corporation of the Township of Terrace Bay  
P. O. Box 40, 1 Selkirk Avenue  
Terrace Bay, ON P0T 2W0

**Subject: Asset Management Plan – Phase II**

Dear Mr. Spadoni,

We respectfully submit four (4) copies of the Asset Management Plan – Phase II – FINAL

If you have any questions, please don't hesitate to contact the undersigned.

Yours truly,



David Spacek, P.Eng., PMP

WSP Canada Inc.  
185 East Street  
Sault Ste. Marie, ON P6A 3C8

Phone: 705-942-2070  
Fax: 705-942-3532  
[www.wspgroup.com](http://www.wspgroup.com)





# TABLE OF CONTENTS

<b>ASSET MANAGEMENT PLAN</b>	<b>1</b>
<b>1 EXECUTIVE SUMMARY</b>	<b>1</b>
<b>2 INTRODUCTION</b>	<b>3</b>
2.1 Purpose and Methodology	4
2.2 Project Overview	5
<b>3 STATE OF LOCAL INFRASTRUCTURE</b>	<b>6</b>
3.1 General	6
3.2 Inventory of Assets	6
3.2.1 Water System	6
3.2.2 Wastewater System	8
3.2.3 Stormwater System	10
3.2.4 Buildings	11
3.3 Asset's Current Year Value	12
3.4 Replacement Costs	12
3.4.1 Water System	13
3.4.2 Wastewater System	14
3.4.3 Stormwater System	15
3.4.4 Buildings	16
3.4.5 Summary of Replacement Costs	16
3.5 Asset Conditions	16
3.5.1 Age Condition Index	17

3.5.2	Facility Condition Index	17
<b>3.6</b>	<b>Service Life</b>	<b>18</b>
3.6.1	General	18
3.6.2	Water System	18
3.6.3	Wastewater System	19
3.6.4	Stormwater System	20
3.6.5	Buildings	20
<b>4</b>	<b>DESIRED LEVELS OF SERVICE</b>	<b>22</b>
<b>5</b>	<b>ASSET MANAGEMENT STRATEGY</b>	<b>23</b>
<b>5.1</b>	<b>Non-Infrastructure Solutions</b>	<b>23</b>
<b>5.2</b>	<b>Maintenance Activities</b>	<b>23</b>
5.2.1	Water Distribution	24
5.2.2	Sewers	24
5.2.3	Buildings	24
<b>5.3</b>	<b>Rehabilitation/Replacement Activities</b>	<b>24</b>
5.3.1	General	24
5.3.2	Water System	28
5.3.3	Wastewater System	29
5.3.4	Stormwater System	30
5.3.5	Buildings	31
5.3.6	Summary	32
<b>5.4</b>	<b>Disposal Activities</b>	<b>32</b>
<b>5.5</b>	<b>Overview of Risks</b>	<b>32</b>
<b>6</b>	<b>FINANCING STRATEGY</b>	<b>34</b>
<b>6.1</b>	<b>Capital Plans</b>	<b>34</b>
6.1.1	General	34
6.1.2	Underground Works	35
6.1.3	Aboveground Works	36

6.2	5-year Capital Plan	37
6.3	25-year Capital Plan	38
<b>7</b>	<b>ACCOUNTABILITY AND FEEDBACK</b>	<b>39</b>
7.1	Performance Measures	39
7.2	Plan Updates	39
<b>8</b>	<b>LIMITATIONS</b>	<b>40</b>
<b>9</b>	<b>CONCLUSIONS</b>	<b>41</b>
<b>10</b>	<b>SIGNATURES</b>	<b>42</b>
<b>11</b>	<b>REFERENCES</b>	<b>43</b>

---

## TABLES

Table 3.2-1 - Replacement Costs of Water System Components	7
Table 3.2-2 - Water Main Sizes	7
Table 3.2-3 - Water Main Materials	8
Table 3.2-4 - Water Main Ages	8
Table 3.2-5 - Replacement Costs of Wastewater System Components	8
Table 3.2-6 - Sanitary Sewer Sizes	9
Table 3.2-7 - Sanitary Sewer Materials	9
Table 3.2-8 - Sanitary Sewer Ages	9
Table 3.2-9 - Replacement Costs of Stormwater System Components	10
Table 3.2-10 - Storm Sewer Sizes	10
Table 3.2-11 - Storm Sewer Materials	11

Table 3.2-12 - Storm Sewer Ages	11
Table 3.2-13 – Replacement Cost of Buildings	12
Table 3.6-1 – Service Life for Water System Components	19
Table 3.6-2 - Historical Growth of Water System	19
Table 3.6-3 – Service Life for Wastewater System Components	19
Table 3.6-4 - Historical Growth of Wastewater System	19
Table 3.6-5 – Service Life for Stormwater System Components	20
Table 3.6-6 - Historical Growth of Stormwater System	20
Table 3.6-7 – Service Life for Building Components	20
Table 3.6-8 – Historical Growth of Municipal Buildings	21
Table 5-1 -Average Annual Renewal Cost for Water System	26
Table 5-2 - Average Annual Renewal Cost for Wastewater System	26
Table 5-3 - Average Annual Renewal Cost for Stormwater System	26
Table 5-4 -Average Annual Renewal Cost for Buildings (Excluding water components)	27
Table 5-5 – Remaining Life of Buildings	32
Table 5-5 –Overview of Risks	33
Table 6-1 –Road Reconstruction Estimate	35

---

## APPENDICES

Appendix A – Asset Inventories and Analysis Spreadsheets

Appendix B – Drawings

Appendix C – CCTV Photos

Appendix D – Inspection Sheets

Appendix E – Building Costs

# 1 EXECUTIVE SUMMARY

WSP Canada Inc. (formerly GENIVAR Inc.) has prepared an asset management plan for the Corporation of the Township of Terrace Bay to assist with the maintaining, renewing, replacing, and funding of their assets. The assets include the water treatment plant, water distribution system, raw water pumping station, wastewater lagoon and collection system, stormwater collection system, and municipally owned buildings located throughout the municipality. The municipal infrastructure has been inspected where possible and the results have been provided for input into CityWide Software Solutions database. The Condition Indices have been calculated with input from CityWide which uses an aged based method, and adjusted as necessary based on field inspections.

The asset management plan provides an evaluation of the current performance and characteristics of the local infrastructure and highlights which assets are not providing the expected levels of service. The plan then provides a basic financial strategy based on this information and is broken down into work to be done within the next five (5) years and the next twenty-five (25) years.

A representative sample of the sewers and manholes were inspected and conditions confirmed however the water distribution system was rated solely on an age-based method. The next inspection for buried infrastructure should be done in approximately ten (10) years. In addition, the municipality should become as familiar as possible with CityWide Software Solutions and update the asset's information regularly to discover its full potential. This will assist with managing the assets and predicting the financial state of the Corporation of Township of Terrace Bay.

This report quantifies the full life cycle costs of sustaining the Town of Terrace Bay water, wastewater and stormwater drainage systems in perpetuity. The projected costs for replacement of the various components in the systems over the next 100 years were evaluated to provide a sense of current funding requirements. This study focuses on the renewal of the existing systems and does not investigate the expansion of the systems to service future growth in the Town.

The estimated replacement cost of the water, wastewater and stormwater systems are \$27.2 million, \$10.3 million and \$4.4 million, respectively, for a total of \$41.9 million. The "underground" components of these three systems represent approximately 58% (\$24.4 million) of the total value. The above ground facilities (Water Treatment Plant, Pumping Station, and Sedimentation Tanks) accounting for the remaining 42% (\$10.4 million, \$5.1 million, and \$2.0 million, respectively). This translates into a total overall replacement cost of approximately \$28,600 per capita.

Since detailed information on the condition of each component of the systems is not readily available, a theoretical service life has been assumed for each of the components. The weighted average service life for the water, wastewater and stormwater systems is 62, 73 and 72 years, respectively. In other words, to fully sustain these systems, the Town should renew at least 1.6% of its water system, 1.4% of its wastewater system and 1.4% of its stormwater system each year.

In order to ensure sustainable water, wastewater and stormwater services, the Town should invest \$0.72 million per annum in renewing their systems. This value does not include routine operating or maintenance costs, nor any road reconstruction or other restoration costs necessitated by the replacement of underground components.

In addition to the municipal infrastructure, WSP also reviewed several municipal buildings. These included the water treatment plant, the raw water pumping station, the public works garage, the

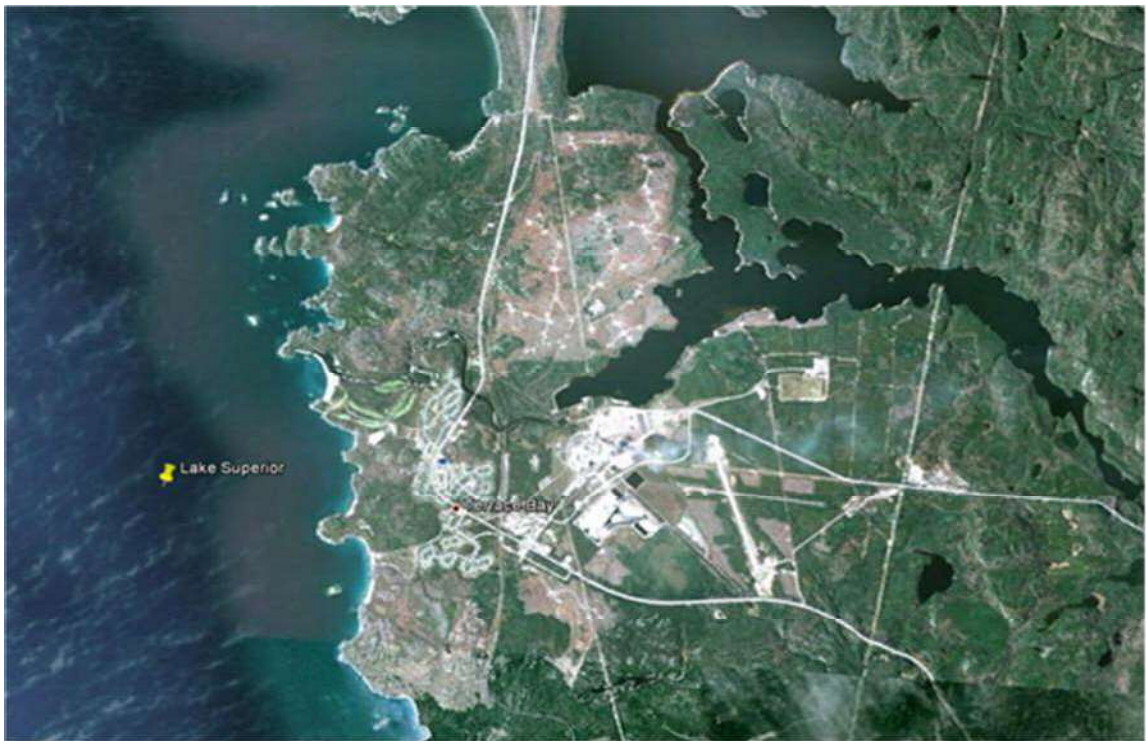
airport office, the airport garage, the tourist information centre, the cultural centre, the pool building, the community centre, the fire hall office, and the fire hall garage. Condition assessments were performed and condition ratings were assigned to help determine the renewal investment required to sustain these assets. In order to sustain the building assets, the Town should invest \$0.532 million per annum. This does not include maintenance.

Buildings are kept separate from the infrastructure in the financial strategy and analysis so the municipality can choose where they want to focus their funds for renewal.

## 2 INTRODUCTION

WSP Canada Inc. (formerly GENIVAR Inc.) was retained by the Township Terrace Bay to develop a comprehensive asset management plan for infrastructure that includes water distribution, sanitary, and storm systems in Terrace Bay as well as municipally owned buildings. The Township can then utilize this as a tool to assist with decisions regarding the operating, maintaining, renewing, replacing, disposing, and funding of their local asset needs.

The Town of Terrace Bay provides water, wastewater and storm drainage service to the urban area within the Town as well as to the Pulp Mill (Figure 2-1). The 2011 population of the Town was approximately 1,466 (Statistics Canada; 2011).



**Figure 2-1. Town of Terrace Bay, Ontario**

The Sustainable Water and Sewage Systems Act, 2002 will require Ontario municipalities to prepare and approve an Inventory and Management Plan for water and wastewater infrastructure that includes an assessment of the full costs for providing these services. They will also be required to submit a Cost Recovery Plan for water and wastewater services describing how they intend to pay the full cost of providing these services.



Municipalities in Ontario recently adopted a full accrual accounting approach to tangible municipal assets in accordance with the Public Sector and Accounting Board (PSAB) Section 3150 requirements. In order to comply with these requirements, a full inventory, costing, and useful life of tangible municipal assets was required which is the start of a comprehensive asset management plan. In addition, The Commission on the Reform of Ontario's Public Services (2012) recommended the implementation of full cost pricing for water and wastewater services, among other things.

In the past, most Ontario municipalities focused their resources on expansion of their infrastructure to service population growth. However, most municipalities are now beginning to expend more resources on renewal of their infrastructure. Furthermore, the public are now demanding a higher level of service; gaining an increasing awareness of environmental issues; and expecting a more transparent decision-making process. As a result of these demands, historical levels of investment in water, wastewater and stormwater infrastructure must be examined relative to the cost of sustaining this infrastructure on a long-term basis.

## 2.1 PURPOSE AND METHODOLOGY

The purpose of the asset management plan is to attempt to establish a workable document that will assist with decisions related to how the Township's infrastructure will be managed to ensure that it is capable of providing the levels of service required to support the Township's goals. An asset management plan is a business strategy used to effectively and efficiently allocate available funds amongst valid and competing asset needs. It links expectations for asset conditions, performance, and availability with management and investment strategies. The asset management plan identifies the overall system components and summarizes key asset and planning information to recommend work for the assets to perform at their expected level of service at a single point and time.

This report is broken down into six (6) elements as follows:

- Executive Summary;
- Introduction;
- State of local infrastructure;
- Desired levels of service;
- Asset management strategy; and
- Financing strategy.

This report estimates the full (life cycle) cost to sustain the Town's water, wastewater and stormwater systems in perpetuity. It is beyond the scope of this study to address the expansion of the existing systems to service future development. Similarly, this report does not address the investment that might be required to comply with new regulations related to municipal water, wastewater and stormwater.

This approach does not explicitly account for the projected growth within the Town or inflation. It has been assumed that the water and wastewater user rates will be increased each year to offset inflation. It should also be noted that the population of the Town decreased from 1,620 to 1,466 (i.e. - 9.5%) from 2006 to 2011 (Statistics Canada; 2006 & 2011). If this trend continues, the Town could be faced with insufficient revenues unless the water and wastewater rates are increased accordingly. However, the population of a small municipality such as Terrace Bay is very dependent on local economic factors since a large industry coming to (or leaving) the area could have a significant impact, and for this reason any population projections beyond a 5-10 year horizon would be very speculative.

As more detailed information becomes available on the condition and rate of deterioration of the water, wastewater and stormwater systems and the effectiveness of various rehabilitation strategies, it will be possible to refine the asset management plan and the life cycle costs. Nevertheless, this report attempts to quantify the magnitude of the projected costs with the expectation that at some point in the future, the level of investment in renewal of these systems will be significantly greater than at present. As a result, it would be prudent for the Town to develop a strategy to sustain their water, wastewater and stormwater systems over the long term.

The cost of sustainable service should be updated every five years or so as more detailed information becomes available on the condition of the water, wastewater and stormwater systems and to account for population changes, the revenue base and inflation in the Town.

## 2.2 PROJECT OVERVIEW

Since January 1, 2009 Public Sector Accounting Board (PSAB) regulation 3150 requires all municipalities to report on their Tangible Capital Assets (TCA) in their annual accounting statements. This requirement can be difficult for municipalities to comply with because typically it is very difficult to retrieve contract tender documentation detailing the cost of these assets when they were installed. The replacement cost estimates contained in this report can be used to assist the Town in determining the present value of the TCA's that comprise the municipally owned buildings, water, wastewater and storm drainage systems.

The Township's assets consist of 199 sections of sanitary sewer, 137 sections of storm sewer, 88 sections of water distribution, a water treatment plant, a raw water pumping station, and two (2) infiltrative lagoons with four (4) sedimentation tanks for pre-treatment. Municipal buildings which are included are the water treatment plant, the raw water pumping station, the public works garage, the airport office, the airport garage, the tourist information centre, the cultural centre, the pool building, the community centre, the fire hall office, and the fire hall garage. WSP completed an evaluation of these assets and prepared this asset management plan. The investigation undertaken by WSP, with respect to this plan and any conclusions or recommendations made in this plan, reflect WSP's professional opinion based on the conditions observed at the time of the inspections, and on information available at the time of preparation of this plan. Extrapolation of visual data was necessary where there was no access and condition ratings were based on material and age where necessary.

The asset management plan is anticipated to be valid for 5 years with diminishing returns and should be updated regularly. The plan should be evaluated and improved through updated information at every scheduled inspection.

# 3 STATE OF LOCAL INFRASTRUCTURE

## 3.1 GENERAL

All assets have a natural service life span. In order to keep water supply, sewers, and buildings functioning in a safe and usable condition, regular maintenance and inspections should be scheduled based on inspection results and service conditions. It is recommended, when possible, for sewers to undergo an inspection every ten (10) years by a trained inspector who is either a professional engineer or under their direction. The inspector should review and rate each asset's condition. These ratings are used in determining the current condition and forecasting future performance. This is done so that the township can be aware of changing conditions and can plan maintenance and rehabilitation activities with confidence. Inspections should be carried out considering seasonal conditions such that harsh weather does not interfere with inspections, causing delays, overlooked information, and unnecessary expenses.

## 3.2 INVENTORY OF ASSETS

All assets' key inventory information, including their installation date, historical cost, and useful life are stored in the CityWide Software Solutions database. The assets have already been segmented into groups by others in 2012. In order to better quantify linear assets, WSP took these asset groups and broke them down into smaller, more manageable segments to enable the township to more clearly visualize which areas are prioritized. WSP has compiled the inventory in a block-to-block fashion and conducted various visual inspections to provide condition ratings for selected assets. The detailed inventory is listed in Appendix A of this plan.

The detailed inventory of the municipal water system, wastewater system, stormwater system, and building assets was compiled through a thorough review of all available drawings, Certificates of Approval, and other municipal records. Staff from the Town were interviewed to fill in gaps in the data, such as the approximate year of construction, and material types. This inventory also includes a breakdown of the total length of water mains, sanitary sewers and storm sewers by diameter, age and pipe material. Buildings are broken down by type, age, and square footage.

Drawings contained in a pocket at the rear of this report, are general plans of the Town which show the municipal Water System (Map 1), Wastewater System (Map 2), and Stormwater System (Map 3). Buildings are also labelled on these drawings.

### 3.2.1 WATER SYSTEM

The Town of Terrace Bay owns one (1) water treatment plant and one (1) Raw Water Pumping Station. In addition, the Town's water distribution system includes approximately 22 km of water main; 114 hydrants and 866 water services. Table 3.2-1 summarizes the inventory of the Town's water system assets.

Table 3.2-1 - Replacement Costs of Water System Components

ASSET	QUANTITY	UNIT COST	REPLACEMENT COST (\$M)
Water Mains (km)	21.8	\$410 / m	\$8.950 M
Hydrants	114	\$8500 ea	\$0.969 M
Water Services	866	\$2100 ea	\$1.819 M
Water Treatment Plant	1	\$10,400,000	\$10.400 M
Pumping Station	1	\$5,100,000	\$5.100 M
<b>Total</b>			<b>\$27.238 M</b>

Note: A 3% inflation rate was used for WTP and PS to convert original construction costs to 2013 dollars.

The water mains supplying the Town's customers range in size from 150 mm to 350 mm in diameter. There is also a 900 mm watermain which services the paper mill however is not owned by the Town. Any costs associated with the 900mm watermain have not been accounted for in this report as it is assumed the mill will pay for all costs in maintaining and/or replacing this watermain. Table 3.2-2 provides a breakdown of the total pipe length by diameter. Approximately 86% of watermains (by length) have a diameter in the range of 150 mm to 250 mm with the remaining 14% being greater than 250mm in diameter.

Table 3.2-2 - Water Main Sizes

DIAMETER (MM)	LENGTH (KM)	% OF TOTAL
150	12.9	59%
200	2.77	13%
250	3.18	15%
300	1.18	5%
350	1.81	8%
<b>Total</b>	<b>21.8</b>	<b>100%</b>

Table 3.2-3 summarizes the breakdown of total length by pipe material. Approximately 69% of mains (by length) are cast iron and ductile iron. HDPE and PVC mains account for the remaining 31% of the total length.

Table 3.2-3 - Water Main Materials

MATERIAL	LENGTH (KM)	% OF TOTAL
PVC	0.85	4%
HDPE	6.0	27%
Cast	10.2	47%
Ductile	4.8	22%
<b>Total</b>	<b>21.8</b>	<b>100%</b>

Similarly, Table 3.2-4 summarizes the breakdown of total length by pipe age. It is apparent that only 26% of the water mains (by length) were constructed since 1970. In other words, the water distribution system is relatively old, having an average age of approximately 55 years.

Table 3.2-4 - Water Main Ages

DECADE	LENGTH (KM)	% OF TOTAL
1950-1959	12.0	57%
1970-1979	4.2	20%
1980-1989	1.6	8%
2000-2009	3.2	15%
<b>Total</b>	<b>21</b>	<b>100%</b>

### 3.2.2 WASTEWATER SYSTEM

The Town's sewage collection system includes approximately 14.6 km of sanitary sewer; 197 sanitary manholes; and 850 sanitary service connections. Table 3.2-5 summarizes the inventory of the Town's wastewater system.

Table 3.2-5 - Replacement Costs of Wastewater System Components

	QUANTITY	UNIT COST	REPLACEMENT COST (\$M)
Sanitary Sewers (km)	14.6	\$330 / m	\$4.818 M
Sanitary Manholes	197	\$9,700 ea	\$1.911 M
Sanitary Services	850	\$1,900 ea	\$1.615 M
Sedimentary Tanks	4	\$500,000	\$2.000 M
		<b>Total</b>	<b>\$10.344 M</b>

The sanitary sewers range in size from 100 mm to 300 mm diameter. Table 3.2-6 provides a breakdown of the total pipe length by diameter. Approximately 86% of sanitary sewers (by length) have a diameter of 200 mm or 250 mm.

**Table 3.2-6 - Sanitary Sewer Sizes**

DIAMETER (MM)	LENGTH (KM)	% OF TOTAL
100	0.4	3%
200	10.2	70%
250	2.4	16%
300	1.6	11%
<b>Total</b>	<b>14.6</b>	<b>100%</b>

Table 3.2-7 summarizes the breakdown of total length by pipe material. Approximately 65% of sanitary sewers (by length) are Clay (VCT) and 5% are PVC. Transite pipes account for the remaining 30% of the total length.

**Table 3.2-7 - Sanitary Sewer Materials**

MATERIAL	LENGTH (KM)	% OF TOTAL
Transite	3.9	27%
VCT	8.6	59%
PVC	2.1	14%
<b>Total</b>	<b>14.6</b>	<b>100%</b>

Similarly, Table 3.2-8 summarizes the breakdown of total length by pipe age. It is noted that approximately 41% of sanitary sewers (by length) were constructed since 1970. In other words, the average age of the sanitary sewers is approximately 51 years.

**Table 3.2-8 - Sanitary Sewer Ages**

DECADE	LENGTH (KM)	% OF TOTAL
1950-1959	7.4	51%
1970-1979	4.1	28%
1980-1989	1.7	11%
2000-2009	1.4	10%
<b>Total</b>	<b>14.6</b>	<b>100%</b>

The sanitary sewers discharge into sedimentation tanks prior to discharging to infiltrative lagoons. There are a total of four (4) sedimentation tanks.

The infiltrative lagoons have been in operation since the development of the town in the early 1950s.

### 3.2.3 STORMWATER SYSTEM

The Town's storm sewer system includes approximately 8.2 km of storm sewers and culverts, 77 manholes, 161 catch basins and 70 catch basin manholes. Table 3.2-9 summarizes the inventory of the Town's stormwater system.

**Table 3.2-9 - Replacement Costs of Stormwater System Components**

	QUANTITY	UNIT COST	REPLACEMENT COST (\$M)
Storm Sewers (km)	8.2	\$300 / m	\$2.460 M
Manholes	77	\$7,800 ea	\$0.601 M
Catchbasins	161	\$4,700 ea	\$0.757 M
Catchbasin Manholes	70	\$7,800 ea	\$0.546 M
	<b>Total</b>		<b>\$4.364 M</b>

The storm sewers range in size from 150 mm to 600 mm. Table 3.2-10 provides a breakdown of total pipe length by diameter. Approximately 83% of storm sewers (by length) have a diameter of 150 mm to 300 mm.

**Table 3.2-10 - Storm Sewer Sizes**

DIAMETER (MM)	LENGTH (KM)	% OF TOTAL
150	1.3	16%
200	2.8	34%
250	1.3	16%
300	1.4	17%
350	0.1	1%
375	0.2	2%
400	0.4	5%
450	0.4	5%
500	0.1	1%
525	0.1	1%
600	0.2	3%
<b>Total</b>	<b>8.2</b>	<b>100%</b>

Table 3.2-11 summarizes the breakdown of total length by pipe material. Approximately 98% of storm sewers (by length) are constructed of Clay (VCT) or Transite. The other 2% of storm sewers (by length) are constructed of PVC (MacDonald Avenue).

**Table 3.2-11 - Storm Sewer Materials**

<b>MATERIAL</b>	<b>LENGTH (KM)</b>	<b>% OF TOTAL</b>
Transite	3.5	43%
VCT	4.5	55%
PVC	0.2	2%
<b>Total</b>	<b>8.2</b>	<b>100%</b>

Similarly, Table 3.2-12 summarizes the breakdown of total length by pipe age. It is noted that 54% of storm sewers have been constructed since 1970 and therefore 46% the storm sewers are approaching 60 years of age. Overall, the average age of the storm sewers is approximately 45 years.

**Table 3.2-12 - Storm Sewer Ages**

<b>DECADE</b>	<b>LENGTH (KM)</b>	<b>% OF TOTAL</b>
1950-1959	3.8	46%
1970-1979	1.9	23%
1980-1989	2.5	31%
<b>Total</b>	<b>8.2</b>	<b>100%</b>

### 3.2.4 BUILDINGS

The Town of Terrace Bay owns nine (9) properties throughout the municipality. Some of these properties have more than a single building on the site and have been considered separately for condition assessments and recommendations. Table 3.2-13 summarizes the inventory of the Town's building assets.

Replacement costs are based on recent construction projects in Northern Ontario. Building cost examples are provided in Appendix E for reference.



Table 3.2-13 – Replacement Cost of Buildings

ASSET	AREA (m <sup>2</sup> )	HISTORICAL COST (IF AVAIL.)	UNIT REPLACEMENT COST (PER SQ.FT.)	REPLACEMENT COST (\$M)
Water Treatment Plant	1540	\$10,400,000		\$ 10.400 M
Raw Water Pumping Station	69	\$5,100,000		\$ 5.100 M
Public Works Garage	520	\$	\$175	\$ 0.980 M
Airport Office	90	\$	\$200	\$ 0.194 M
Airport Garage	139	\$	\$175	\$ 0.262 M
Tourist Information Centre	150	\$	\$225	\$ 0.363 M
Cultural Centre	2032	\$	\$250	\$ 5.466 M
Pool Building	163	\$	\$250	\$ 0.438 M
Community Centre	5110	\$	\$250	\$ 13.746 M
Fire Hall Office	89	\$	\$200	\$ 0.191 M
Fire Hall Garage	270	\$	\$175	\$ 0.508 M
<b>Total</b>	<b>10,172</b>			<b>\$ 37.648 M</b>

The buildings in the Town range in size from 69 m<sup>2</sup> to 5110 m<sup>2</sup>. Table 3.2-13 also provides a breakdown by area of the buildings. Approximately 70% of the buildings (by area) are encompassed by two highly used recreational facilities.

### 3.3 ASSET'S CURRENT YEAR VALUE

According to the suppliers, water distribution infrastructure, sanitary sewers, and storm sewers typically have a 60 to 80 year lifespan, depending on the type of material used during construction. The weighted average service life for the water, wastewater and stormwater systems is 62, 73 and 72 years, respectively.

Buildings have various components with different expected service lives. Structures typically have a 50 year lifespan where roof structures usually have a 15 to 20 year life expectancy. Mechanical equipment typically has a 20 to 30 year life expectancy. Through strategic forecasting, mechanical improvements, and good maintenance, a building can expect to have an 80 year lifespan. The weighted average service life of these specific buildings should be taken as 60 years.

The remaining useful life of each asset should also be taken as the ratio of their condition index. Again, for buried infrastructure, the condition is extrapolated and the remaining life is simply the design life minus the age of the assets. Both the remaining useful life and current year value are listed in Appendix A of this plan.

### 3.4 REPLACEMENT COSTS

There are several ways to estimate the value of assets, including: original book value; depreciated book value; market value; and replacement cost. For the purposes of quantifying life cycle costs, the replacement cost is deemed to be the most appropriate.

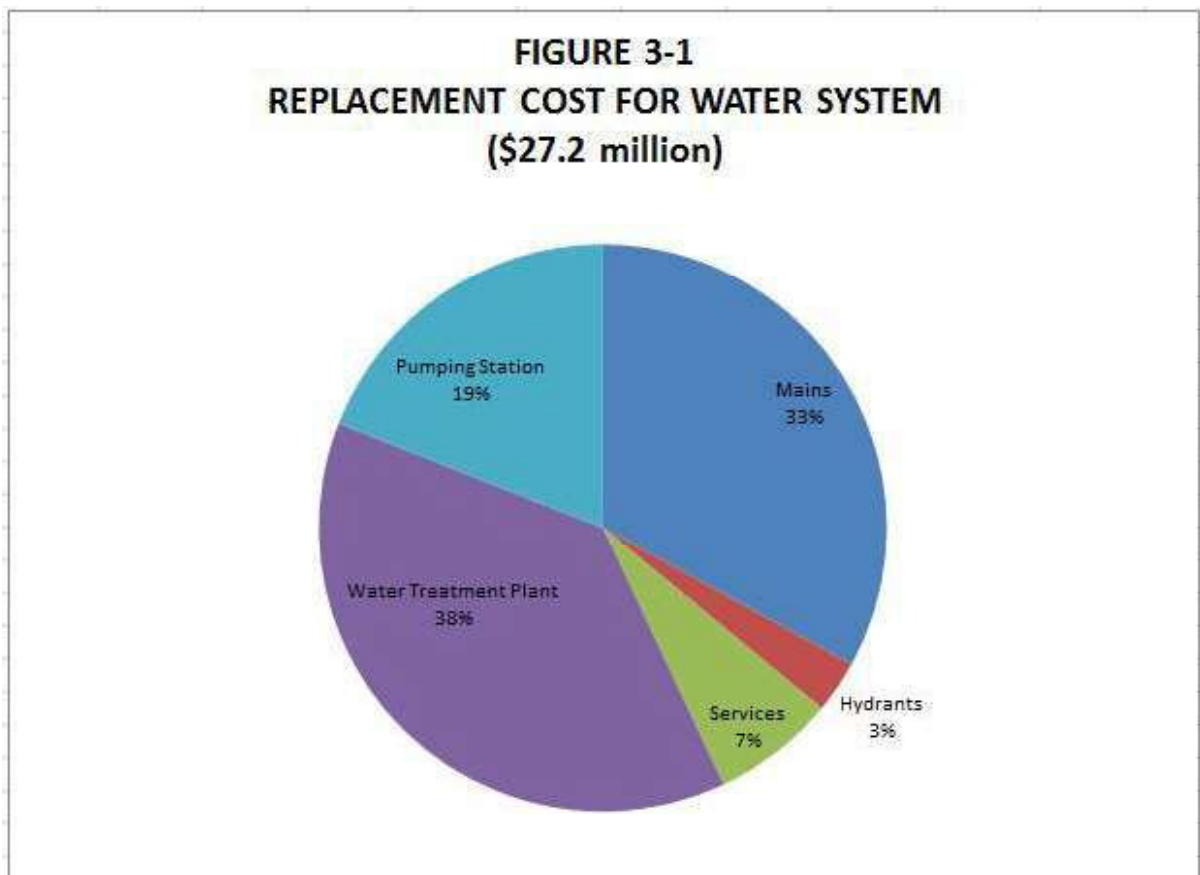
The replacement costs for the water, wastewater, stormwater systems, and building components are based on cost data compiled by WSP from several sources, including recent tenders, surveys and

other studies. These estimates do not include any road restoration costs necessitated by the replacement of underground components.

The cost estimates presented in this report are deemed to be sufficiently accurate for the initial development of an asset management plan. However, a more detailed analysis is required in order to estimate the replacement cost for individual components. A detailed cost estimate should account for restoration requirements, staging of construction, site constraints, and economic factors.

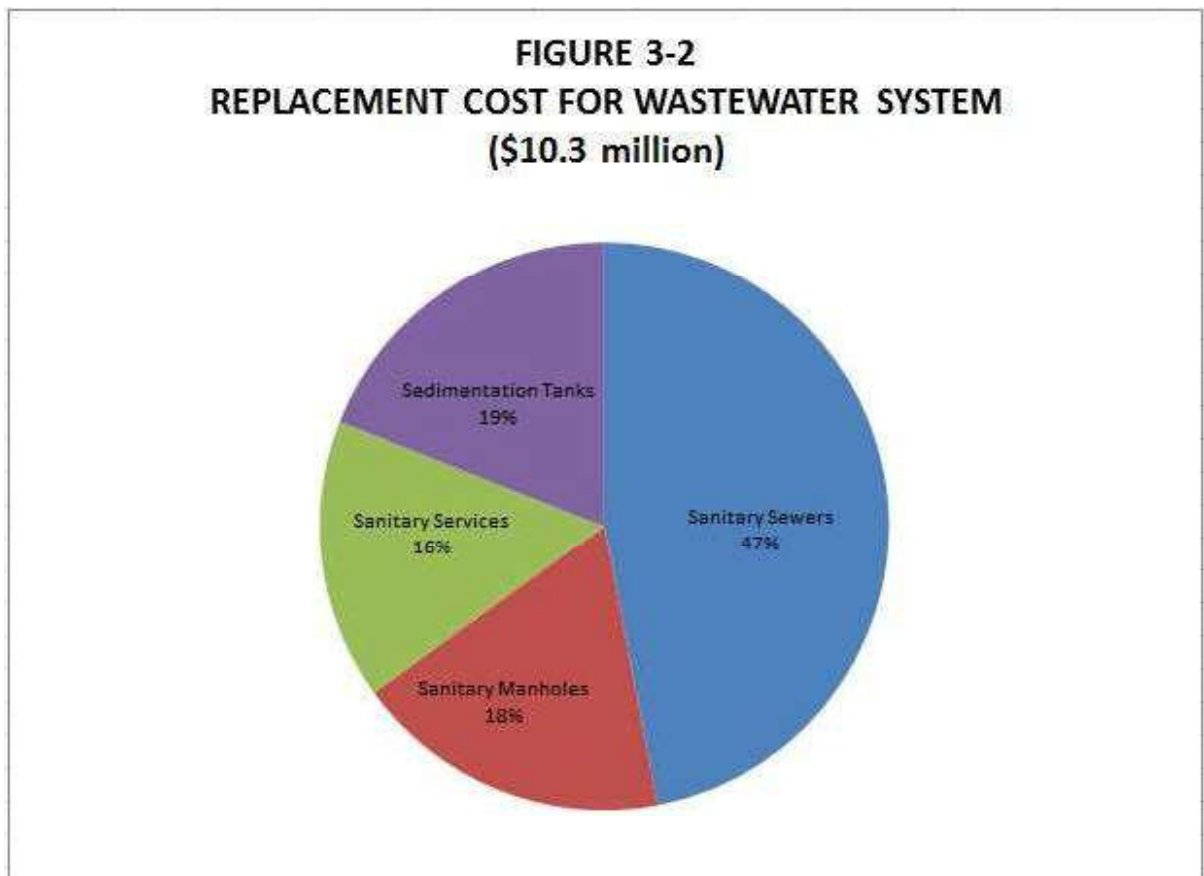
### 3.4.1 WATER SYSTEM

Figure 3-1 illustrates the replacement cost for each water system components based on the inventory and unit costs summarized in Table 3.2-1. The estimated replacement cost of the water system is approximately \$27.2 million. It is apparent from Figure 3-1 that the replacement cost of water mains is approximately 33% of the total replacement cost of the water system.



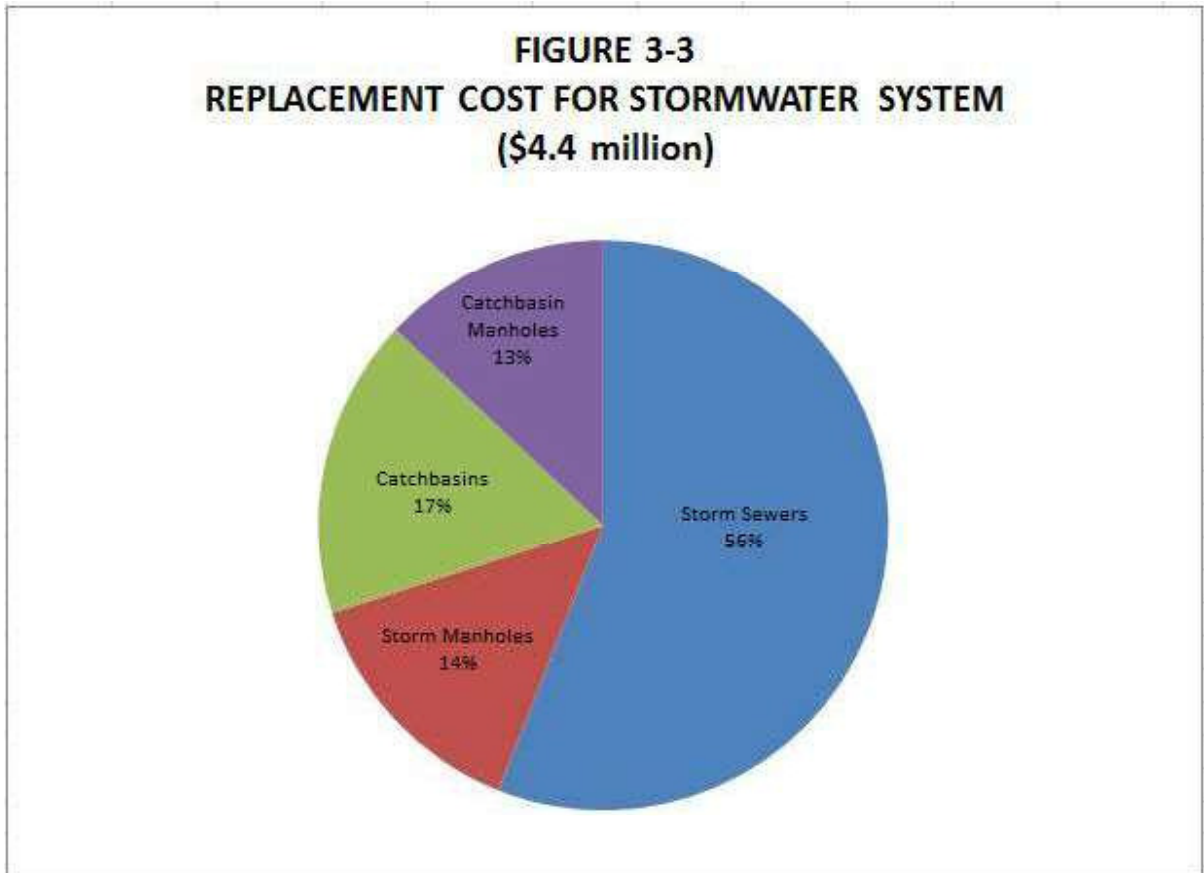
### 3.4.2 WASTEWATER SYSTEM

Figure 3-2 illustrates the replacement cost for each wastewater system component based on the inventory and unit costs summarized in Table 3.2-5. The estimated replacement cost of the wastewater system is approximately \$10.3 million. It is apparent from Figure 3-2 that the replacement cost of sanitary sewers is 47% of the total replacement cost of the wastewater system.



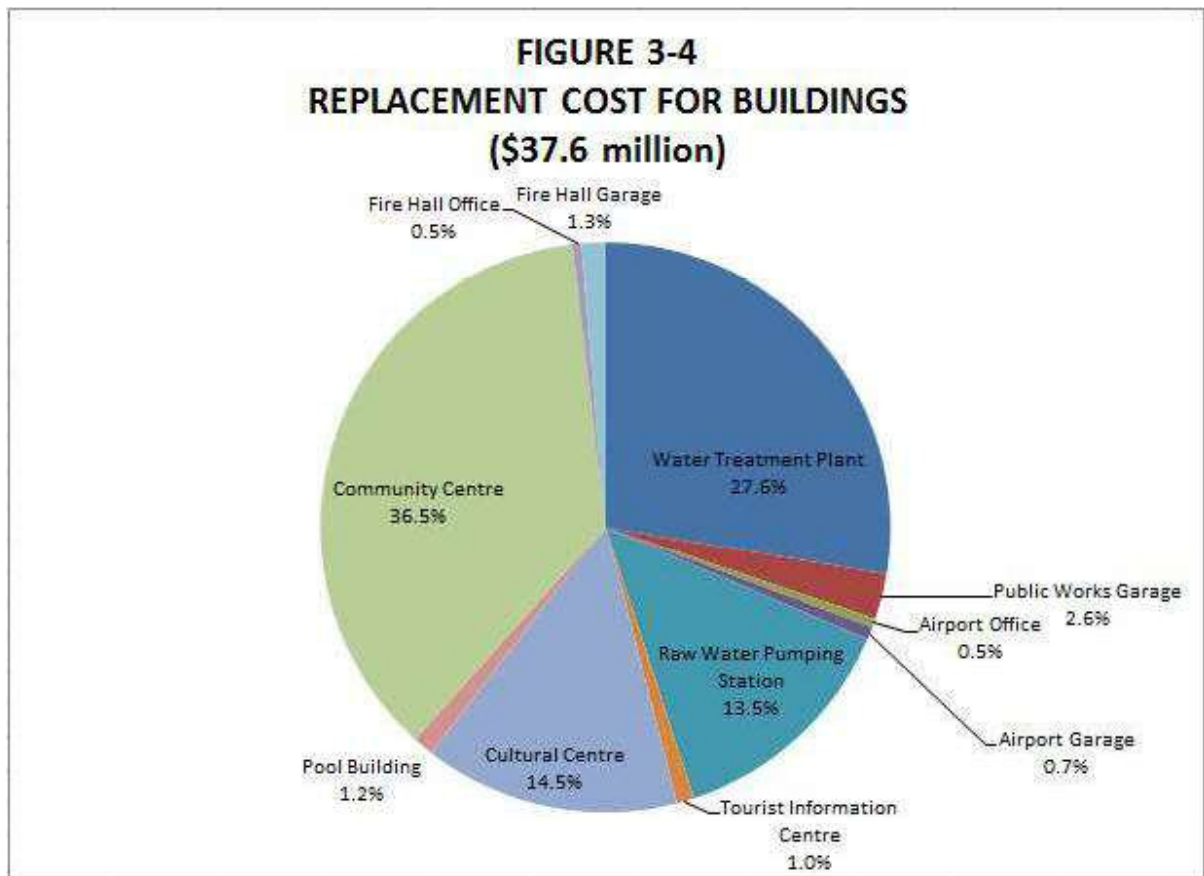
### 3.4.3 STORMWATER SYSTEM

A Figure 3-3 illustrates the replacement cost for each stormwater system component based on the inventory and unit costs summarized in Table 3.2-9. The estimated replacement cost of the stormwater system is approximately \$4.4 million.



### 3.4.4 BUILDINGS

Figure 3-4 illustrates the replacement cost for individual buildings based on the inventory and replacement costs summarized in Table 3.2-13. The estimated replacement cost of all buildings is approximately \$37.6 million. It is apparent from Figure 3-4 that the replacement cost of Community and Cultural Centres are over 50% of the total replacement cost of the building assets.



### 3.4.5 SUMMARY OF REPLACEMENT COSTS

The total replacement cost of the water, wastewater and stormwater systems is approximately \$41.9 million. Including buildings, the replacement cost would amount to \$79.5 million. Since the current population in the Town is approximately 1,466, the replacement cost of the water, wastewater and stormwater systems is approximately \$28,600 per capita or \$54,200 per capita if buildings are included.

### 3.5 ASSET CONDITIONS

The Condition Index (CI) is a planning tool which assists with the scheduling of maintenance and upkeep. A higher number indicates a better overall condition. The CI is a basic economic indication of the current value as a percentage of its replacement cost. The CI is a simple, convenient and inexpensive way to monitor the condition of the assets, identify maintenance and rehabilitation needs,

and to ensure that maintenance budgets are spent wisely. Using the CI can help identify trigger points for preventive maintenance that can stop an asset from deteriorating to the point that it needs expensive rehabilitation.

The condition indices are calculated values representative of the condition of an asset. The values in this plan vary from 0-100 (indicating completely deteriorated to new condition). Buried assets use an age condition index approach similar to the CityWide Software while buildings use a facility condition index. Typically visual inspections are carried out and details are entered into the database which in turn produces a calculated condition index based on inspected elements. Where access is limited or not possible it is necessary to make assumptions considering age, design life, and material. For example, roads are inspected and parameters usually include severity and frequency of items such as potholes, distortion, tire rutting, or washboard. These severities and frequencies can then be entered into the asset management software and in turn produce a condition index. CityWide Software uses a completely age based condition rating system unless overridden. The assets' current conditions are presented in Appendix A of this plan.

### 3.5.1 AGE CONDITION INDEX

The assets vary from critical to excellent age-based condition, and most are currently providing acceptable levels of service. The rating system is as follows:

CONDITION INDEX	100 - 75	74 - 50	49 - 25	24 - 0
Rating	1-Excellent	2-Good	3-Fair	4-Poor

The infrastructures in the municipality were visually inspected where safe access could be gained to determine their current condition and engineering characteristics. CCTV inspections were conducted and reviewed for approximately 4% of the infrastructure assets. Extrapolation to remaining assets was necessary from the CCTV videos.

Normally a Serviceability Condition Index (SCI) is used for applications like these however it is not recommended with assets approaching the end of their useful lives. The SCI takes into account the condition, cost, and criticality (consequence of failure). Because these services are vital and aged, most would produce an SCI of exactly 50.

The Age Condition Index (ACI) is the default condition rating system used by CityWide. Normally this rating system is avoided because they lead to assets being replaced based on age rather than performance. For buried infrastructure this method is recommended simply because access cannot be granted for detailed performance evaluations. Although the CCTV videos are helpful, only select sewers with random distribution were chosen for inspection.

It is recommended that CCTV inspections be conducted and reviewed for the entire storm and sanitary sewer systems, particularly problematic areas, so actual condition rather than age-based condition indices can be established and entered into CityWide. The CI for water distribution systems are purely age and material based (ACI).

### 3.5.2 FACILITY CONDITION INDEX

The facility condition index (FCI) is the adopted method used to evaluate building conditions which indicate the relative financial investment need of a facility or group of buildings independent of

building type, construction type, location or cost. The FCI is a ratio of the cost of remedying the requirements to the current replacement value.

The FCI is not strictly a measure of condition, as it is focused on current needs and not the overall condition. For instance, a building which is generally in very good condition, but which requires some minor (but immediate) needs, will have a lower FCI than a building in fair condition with no immediate needs.

A low FCI would indicate a significant investment required to remedy the requirements relative to the cost of replacing the facility. Good asset management would therefore place a greater level of attention on these assets to determine whether replacement is a better solution to maintenance or rehabilitation.

The buildings throughout the municipality were visually inspected where safe access could be gained to determine their current condition and engineering characteristics. At the time of inspection, roof access was very limited due to snow cover and no recommendations can be provided to the roof structures from the inspections. A good representation of the facilities was achieved and valuable information was collected.

## **3.6 SERVICE LIFE**

### **3.6.1 GENERAL**

The service life of the water, wastewater, stormwater, and building asset components are variable depending upon several factors, such as: construction materials; quality of construction; environmental conditions; and maintenance. In simple terms, the service life of a component is defined as the time period that the component provides an acceptable level of service. The economic service life is defined as the time period when the present worth of the maintenance cost is equal to the present worth of the replacement cost.

The rate of deterioration of assets is also variable. Some components deteriorate in a linear manner, while in other cases they deteriorate in an exponential manner. In a few cases, components will deteriorate rapidly right after construction (typically due to poor construction) and then the rate of deterioration will decline over the balance of its service life.

For the purposes of this study, a theoretical service life has been assumed for each of the Town's water, wastewater, stormwater systems, and building components as indicated in Tables 3.6-1, 3.6-3, 3.6-5 and 3.6-7, respectively. As a result, the remaining life of each system component can be estimated by subtracting the age of the component from its service life.

### **3.6.2 WATER SYSTEM**

Table 3.6-1 summarizes the service life assumed for the water system components. It is recognized that the mechanical and electrical components of the water system's buildings (and all buildings) have a shorter life expectancy than the structural components.

**Table 3.6-1 – Service Life for Water System Components**

COMPONENT	EXPECTED SERVICE LIFE
<b>Raw Water Pumping Station:</b>	
• Structural (70% of value)	50 Years
• Mechanical & Electrical (30% of value)	30 Years
<b>Water Treatment Plant:</b>	
• Structural (70% of value)	50 Years
• Mechanical & Electrical (30% of value)	30 Years
<b>Water Mains, Hydrants, Valves &amp; Services</b>	80 Years

Table 3.6-2 summarizes the decade of original construction for each of the Pumping Station, Water Treatment Plant, water mains, hydrants and services. The year of construction for each of these facilities is included in Appendix A.

**Table 3.6-2 - Historical Growth of Water System**

FACILITY	DECADE OF CONSTRUCTION						TOTAL
	1950-59	1960-69	1970-79	1980-89	1990-99	2000-09	
Pumping Station						1	1
Water Treatment Plant						1	1
Water Main Length (km)	12		4.2	1.6		3.2	21
Hydrants	90	24					114
Water Services	684	182					866

Note: It is assumed that the hydrants and services are installed at the same rate as the water main installation

### 3.6.3 WASTEWATER SYSTEM

Table 3.6-3 summarizes the service life assumed for the wastewater system components.

**Table 3.6-3 – Service Life for Wastewater System Components**

COMPONENT	EXPECTED SERVICE LIFE
Transite Sanitary Sewers	60 Years
Clay Sanitary Sewers	70 Years
Manholes & Services	80 Years

Table 3.6-4 summarizes the decade of original construction for the Town's wastewater system inventory.

**Table 3.6-4 - Historical Growth of Wastewater System**

FACILITY	DECADE OF CONSTRUCTION						TOTAL
	1950-59	1960-69	1970-79	1980-89	1990-99	2000-09	
Sanitary Sewer Length (km)	7.4		4.1	1.7		1.4	14.6
Manholes	110		61	26			197
Water Services	476		264	110			850

Note: It is assumed that the manholes and services were installed at the same rate as the sanitary sewer installation



The Town's current inventory includes the decade of construction for sanitary sewers. However, the inventory does not include the decade of construction for the sanitary manholes. Therefore, it has been assumed that the number of sanitary manholes has increased in proportion to the length of sanitary sewers installed.

### 3.6.4 STORMWATER SYSTEM

Table 3.6-5 summarizes the service life assumed for the stormwater system components.

**Table 3.6-5 – Service Life for Stormwater System Components**

COMPONENT	EXPECTED SERVICE LIFE
Transite Storm Sewers	60 Years
Clay Storm Sewers	70 Years
Manholes, Catchbasins Manholes, & Catchbasins	80 Years

Table 3.6-6 summarizes the decade of original construction for the Town's current stormwater system inventory.

**Table 3.6-6 - Historical Growth of Stormwater System**

FACILITY	DECADE OF CONSTRUCTION						TOTAL
	1950-59	1960-69	1970-79	1980-89	1990-99	2000-09	
Storm Sewer Length (km)	3.8		1.9	2.5			8.2
Manholes	36		18	23			77
Catchbasins	75		38	48			161
Catchbasin Manholes	33		16	21			70

Note: It is assumed that the manholes, catchbasins and catchbasin manholes were installed at the same rate as the sewermain installation

The Town's current inventory includes the decade of construction for storm sewers. However, the inventory does not include the decade of construction for the storm manholes and catch basins. Therefore, it has been assumed that the number of storm manholes and catch basins has increased in proportion to the length of storm sewers installed.

### 3.6.5 BUILDINGS

Table 3.6-7 summarizes the service life assumed for the building components.

**Table 3.6-7 – Service Life for Building Components**

COMPONENT	EXPECTED SERVICE LIFE
Structure	50 Years
Roof Structure	20 Years
HVAC	30 Years
Plumbing & Electrical	30 Years

Table 3.6-8 summarizes the year of original construction for the Town's building inventory.

Table 3.6-8 – Historical Growth of Municipal Buildings

FACILITY	YEAR OF CONSTRUCTION
Water Treatment Plant	2005
Raw Water Pumping Station	2009
Public Works Garage	1975 (1995 addition)
Airport Office	1978
Airport Garage	1979
Tourist Information Centre	1991
Cultural Centre	2010
Pool Building	1962
Community Centre	1959 (1980 & 1998 additions)
Fire Hall Office	1980
Fire Hall Garage	1974

## 4 DESIRED LEVELS OF SERVICE

The Township does not currently have any specific policies outlining desired levels of service for the municipally owned assets, however is currently working on developing a LOS Policy. Township staff strive to maintain the existing infrastructure so that interruptions are minimized. Interruptions may be caused by unexpected or unplanned watermain breaks or beaks in the wastewater or stormwater collection systems.

It is recommended that Level of Service (LOS) policies be established in order to better serve the users of the water and wastewater, and stormwater systems. A typical LOS policy would include metrics such as:

- Acceptable number of breaks per 100km of pipe;
- Response time to watermain / sewer breaks;
- Acceptable duration of service interruption;
- Number of customer complaints;
- Colour/odour/taste of drinking water;
- Water pressure (drinking water system);
- Water temperature;
- Minimum and maximum chlorine residual levels (drinking water system);
- Minimum Fire Hydrant flows;
- Catchbasin debris removal;
- Sewer flow velocity;
- Sewer odour control;
- Percent blockage of sewers;
- Roof/surface drainage;
- Energy efficiency;
- Cleanliness;
- Noise barriers; and
- Barrier-free access.

Once the metrics are available to quantify the Level of Service currently available, the Township can then review the costs associated with maintaining the existing water, wastewater, stormwater systems, and buildings at their current LOS. An increased amount of money must be spent on these systems in order to maintain the current LOS. This is due to the increasing age of the systems. In other words, as the systems get older, they require more money to keep them performing at the same Level of Service they provide today. Some examples of expected levels of service are included Appendix E.

# 5 ASSET MANAGEMENT STRATEGY

## 5.1 NON-INFRASTRUCTURE SOLUTIONS

Non-infrastructure solutions can produce lower, more sustainable costs in maintaining existing assets. Non-infrastructure solutions are solutions that do not include the physical repairs of the assets. It is an organizational approach that will aid in the future by lowering costs, having organized data, saving time, and therefore resulting in better efficiency. Inspection reports should identify the maintenance work required within a timeframe for the work, and an opinion of probable cost. To extend the service life of an asset, the Township should use the information acquired from the inspections to update their financial plan accordingly and ensure that the plan is implemented. For this Township, it is recommended that staff personnel be trained in using their asset management software, CityWide Software Solutions. CityWide is a management tool that stores the asset's historical data and provides an organized future path forward.

CityWide Software Solutions is a powerful tool dedicated solely to asset management. It has capabilities to analyze and determine condition indexes, current values, useful lives, and much more on a variety of asset types. There are many municipalities that have adopted this management system and support is available through the software's developers. The software has the capabilities to store data, show the attributes of an asset, show the condition of an asset, track repairs, and turn data into information useable by policy-makers in understanding the level of investment required to maintain the current infrastructure.

It is important to accurately keep any asset management software up to date; or the municipality increases the risk of having inconsistent and inaccurate information produced. This would make the true value of assets incorrect and future values very difficult to determine. It also compromises any other asset information such as construction costs, replacement information, or useful life.

Mr. Matt Dawe (mdawe@publicsectordigest.com) and Mr. Gabe Metron (gmetron@publicsectordigest.com) from Public Sector Digest (PSD) are the primary contacts for CityWide Tangible Assets technical support, and will be able to assist the Township if needed.

## 5.2 MAINTENANCE ACTIVITIES

Regular maintenance is essential to managing municipal assets. The expected level of service often relies on maintenance activities. It is imperative that the municipality schedules regular inspections for their assets and inspectors identify the needs for maintenance work as well as the required timeframe. They will also identify if immediate action should be taken to address any safety concerns. Regular maintenance can add significant life to assets and save the municipality money in the long term. Routine maintenance and minor repair work to an element can normally be performed without professional engineering direction.

Buried infrastructure such as sewers and water mains should be inspected whenever there is a suspicion of a malfunction or approximately every ten years. WSP recommends inspections be carried out in late spring to early autumn for more detailed and accurate results. The information regarding the characteristics, value, and condition of assets should be updated into CityWide after every inspection.

## 5.2.1 WATER DISTRIBUTION

The major objectives for maintaining water distribution systems are to provide safe and aesthetically pleasing water to residents. While it is not practical to excavate watermain for inspection, new technologies such as in-service CCTV watermain inspections are possible for critical watermain which cannot be taken out of service. It is recommended to only to excavate for watermain replacement when a break is suspected. Some maintenance activities for water distribution systems may include:

- Flushing & swabbing;
- Exercise mainline valves and hydrants; and
- Strategic valve placement / replacement

## 5.2.2 SEWERS

Preventative actions can have substantial impacts on the life and preservation of the assets. Sediments may build up and cause blockages stopping the flow of material. This will cause it to back up into residential dwellings and could lead to extensive property damage and contamination. Sewer maintenance may include:

- Repairing damaged or deteriorated sections of sanitary sewers;
- High pressure flushing to clear debris; and
- CCTV inspections.

## 5.2.3 BUILDINGS

Building maintenance can have a significant impact on the success and service life of a building asset. Maintenance on a building will help maintain the value of the asset by replacing failed mechanical equipment, preserving the functionality of the facility. As previously discussed, various components of a building have different expected service lives.

Aesthetically, maintenance helps keep a facility appearing professional and clean, and will contribute to the success of a building asset, depending on its purpose. Although aesthetics are secondary to the functionality and structural integrity to a building, they are valuable requirements. Building maintenance may include:

- Removing rust and painting steel at initial signs of corrosion;
- Replace ceiling tiles where stained and monitor;
- Investigate roof leaking, caulk if necessary;
- Replace weather stripping at all doors;
- Keep snow away from doors and below window level; and
- Concrete/grout patching in damaged areas.

## 5.3 REHABILITATION / REPLACEMENT ACTIVITIES

### 5.3.1 GENERAL

Rehabilitation/replacement of the assets is necessary when the levels of service do not conform to expectations or any applicable standards. Significant repairs designed to extend the life of the asset

are determined at every inspection. It is essential to schedule regular inspections to monitor the asset's conditions.

Rehabilitation over replacement is advantageous when there are only few components that need repair. Occasionally, the number of repairs is too extensive and rehabilitation is deemed unfeasible or uneconomical. Large cities that are unable to interrupt large volumes of traffic will rehabilitate their sewers by relining them which will add structural integrity and seal them from leakage. This judgement is different for every case and sometimes replacement is the more cost effective alternative when considering future repairs for smaller municipalities.

Replacement is considered when extensive damage or deterioration has occurred to the asset. Replacing assets is sometimes costly and requires considerable additional review; such as detailed investigations. For buried infrastructure, it is understandable that replacement activities are only done in cases of failure or when they are excavated due to unrelated work (i.e. road work, gas lines, etc.) Taking advantage of replacing the buried infrastructure that is beyond its design life while the road is removed will save significant funds in the future if a break were to occur.

It is recommended that whenever an opportunity presents itself (unrelated excavation, breaks, roadwork, etc.), to replace expired watermains/sewers, lead services, decayed valves, and install isolation valves throughout the municipality to control the water flow during breaks or other activities that require water to be diverted.

The Township currently relies on infiltrative lagoons for the treatment and disposal of the sanitary sewage generated by the Town of Terrace Bay. While the system appears to be operating with no apparent failures, the Ministry of Environment may impose on the Township to phase out the use of the infiltrative lagoon and consider the construction of a new Sewage Treatment Plant to treat the sewage using modern methods of sewage treatment. It is recommended the Township prepare for this possible eventuality in future planning.

Replacement of the Ø100mm PVC sewage outfall is recommended. The outfall is undersized and it was discussed that the pipe is thin-walled, installed at a shallow depth with no access chambers. This does not follow current construction standards.

There are specific problem areas that were identified by the township and WSP recommends these issues be resolved before extensive damage occurs to surrounding property. These problem areas can be found in Appendix C. Issues include low spots in sewers, undersized sewers, frequent breakages, and lead water services.

Tables 5-1, 5-2, 5-3 and 5-4 summarize the average annual investment required for renewal of the Town's water, wastewater and stormwater systems, respectively. The average annual investment is based on the replacement cost and the assumed service life for each of the system components. The average annual investment in renewal should be at least \$0.499 million for the water supply system, \$0.164 million for the wastewater system and \$0.061 million for the stormwater system. The water treatment plant and pumping station are considered as part of the water distribution system and financial analysis carries on with that assumption. These two facilities are excluded from the buildings when considering renewal costs. The average annual investment for building renewal is approximately \$0.532 million.

Table 5-1 -Average Annual Renewal Cost for Water System

		REPLACEMENT COSTS (\$M)	SERVICE LIFE (YEARS)	AVERAGE ANNUAL INVESTMENT (\$M)
Water Mains		\$8.950 M	80	\$0.112 M
Hydrants		\$0.969 M	80	\$0.012 M
Water Services		\$1.819 M	80	\$0.023 M
Water Treatment Plant	Structural (70%)	\$7.280 M	60	\$0.121 M
	M & E (30%)	\$3.120 M	30	\$0.104 M
Pumping Station	Structural (70%)	\$3.570 M	60	\$0.060 M
	M & E (30%)	\$1.530 M	30	\$0.051 M
	<b>Total</b>	<b>\$27.238 M</b>		<b>\$0.499 M</b>
	Weighted Average		62	

Table 5-2 - Average Annual Renewal Cost for Wastewater System

	REPLACEMENT COSTS (\$M)	SERVICE LIFE (YEARS)	AVERAGE ANNUAL INVESTMENT (\$M)
Sanitary Sewers	\$4.8 M	65	\$0.084 M
Sanitary Manholes	\$1.9 M	80	\$0.024 M
Sanitary Services	\$1.6 M	80	\$0.020 M
Sedimentation Tanks	\$2.0 M	80	\$0.025 M
	<b>\$10.344 M</b>		<b>\$0.164 M</b>
	Weighted Average	73	

Table 5-3 - Average Annual Renewal Cost for Stormwater System

	REPLACEMENT COSTS (\$M)	SERVICE LIFE (YEARS)	AVERAGE ANNUAL INVESTMENT (\$M)
Storm Sewers	\$2.5 M	65	\$0.038 M
Manholes	\$0.6 M	80	\$0.008 M
Catchbasins	\$0.8 M	80	\$0.009 M
Catchbasin Manholes	\$0.5 M	80	\$0.007 M
	<b>\$4.4 M</b>		<b>\$0.062 M</b>
	Weighted Average	72	

Table 5-4 -Average Annual Renewal Cost for Buildings (Excluding water components)

		REPLACEMENT COSTS (\$M)	SERVICE LIFE (YEARS)	AVERAGE ANNUAL INVESTMENT (\$M)
Public Works Garage	Structural (70%)	\$0.686 M	50	\$13,720
	M & E (30%)	\$0.294 M	30	\$9,800
Airport Office	Structural (70%)	\$0.136 M	50	\$2,720
	M & E (30%)	\$0.058 M	30	\$1,933
Airport Garage	Structural (70%)	\$0.183 M	50	\$3,660
	M & E (30%)	\$0.079 M	30	\$2,633
Tourist Information Centre	Structural (70%)	\$0.254 M	50	\$5,080
	M & E (30%)	\$0.109 M	30	\$3,633
Cultural Centre	Structural (70%)	\$3.826 M	50	\$76,520
	M & E (30%)	\$1.640 M	30	\$54,667
Pool Building	Structural (70%)	\$0.307 M	50	\$6,140
	M & E (30%)	\$0.131 M	30	\$4,367
Community Centre	Structural (70%)	\$9.622 M	50	\$192,440
	M & E (30%)	\$4.124 M	30	\$137,467
Fire Hall Office	Structural (70%)	\$0.134 M	50	\$2,680
	M & E (30%)	\$0.057 M	30	\$1,900
Fire Hall Garage	Structural (70%)	\$0.356 M	50	\$7,120
	M & E (30%)	\$0.152 M	30	\$5,067
	<b>Total</b>	<b>\$22.148 M</b>		<b>\$531,547</b>

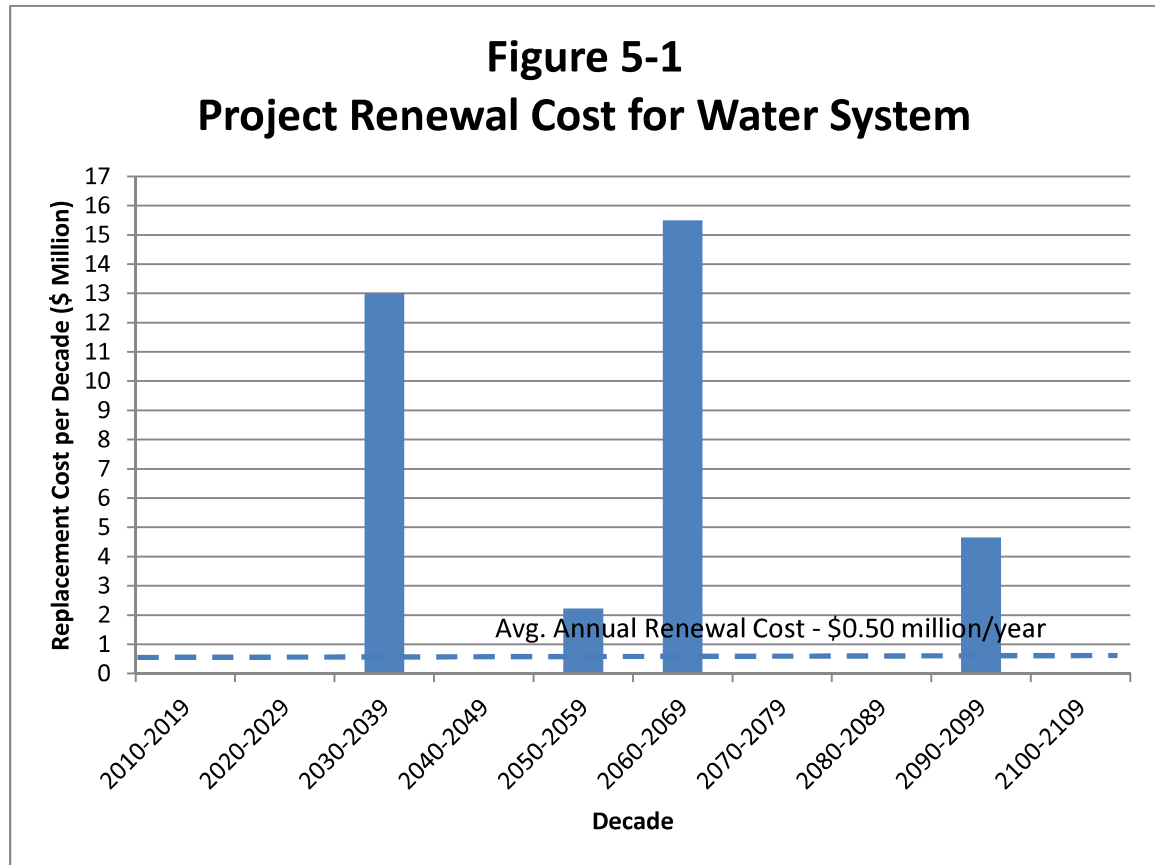
Based on Table 5-1, the weighted average service life for the water system is 62 years. In other words, the Town should renew 1.6% of their water system each year in order to maintain it in perpetuity. Similarly, the weighted average service lives for the wastewater and stormwater systems are 73 and 72 years, respectively. In this case, the Town should renew at least 1.4% of their wastewater system and 1.4% of their stormwater system each year.

The projected replacement costs for each decade over the next 100 years are presented in the following sections.



### 5.3.2 WATER SYSTEM

Figure 5-1 illustrates the projected replacement costs for the water system over the next 100 years based on the replacement cost for the components (Table 3.2-1); the service life for the components (Table 3.6-1); and the age of the components (Table 3.2-4).



It is difficult to quantify the backlog in renewal without conducting a detailed condition assessment of the infrastructure. As previously outlined in Section 4.2 of this report, it has been assumed that there is no significant backlog in renewal of the mechanical and electrical components of the Water Treatment Plant and Raw Water Pumping Station.

Figure 5-1 indicates that the next two decades do not require any investment in the water system. The replacement costs are expected to increase significantly over the next 70 years especially in 30 and 60 years' time when the Water Treatment Plant and Raw Water Pumping Station components will be at the end of their service lives.

### 5.3.3 WASTEWATER SYSTEM

Figure 5-2 illustrates the replacement costs for the wastewater system over the next 100 years based on the replacement cost for the components (Table 3.2-5); the service life for the components (Table 3.6-3); and the age of the components (Table 3.2-8).

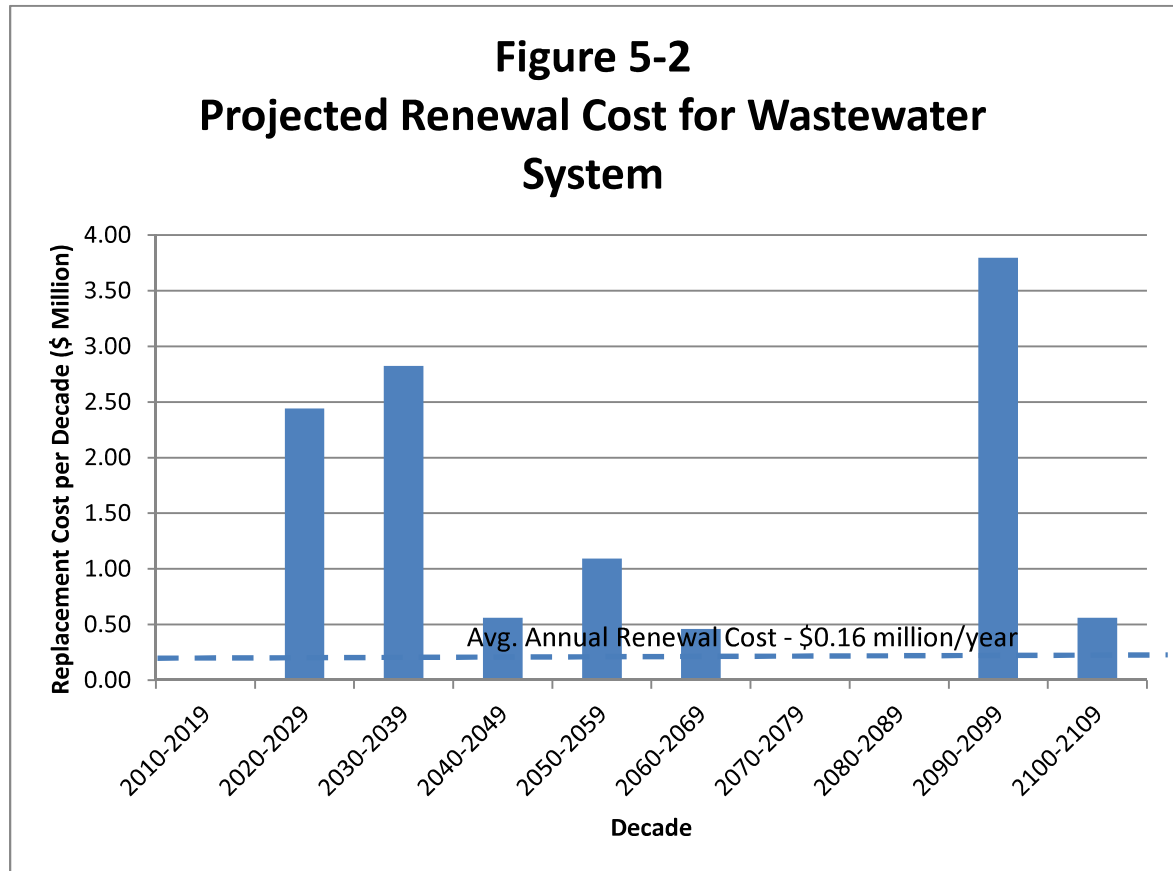


Figure 5-2 indicates that the next decade does not require any investment in the wastewater system. The following two (2) decades replacement costs are expected to increase significantly due to the backlog of clay and transite sewers that are going to be reaching the end of their services lives. Furthermore, it is apparent from Figure 5-2 that replacement costs will decrease over the next 60 years until the same sewers will require replacement once again.

### 5.3.4 STORMWATER SYSTEM

Figure 5-3 illustrates the projected costs for the stormwater system over the next 100 years based on the replacement cost for the components (Table 3.2-9); the service life for the components (Table 3.6-5); and the age of the components (Table 3.2-12).

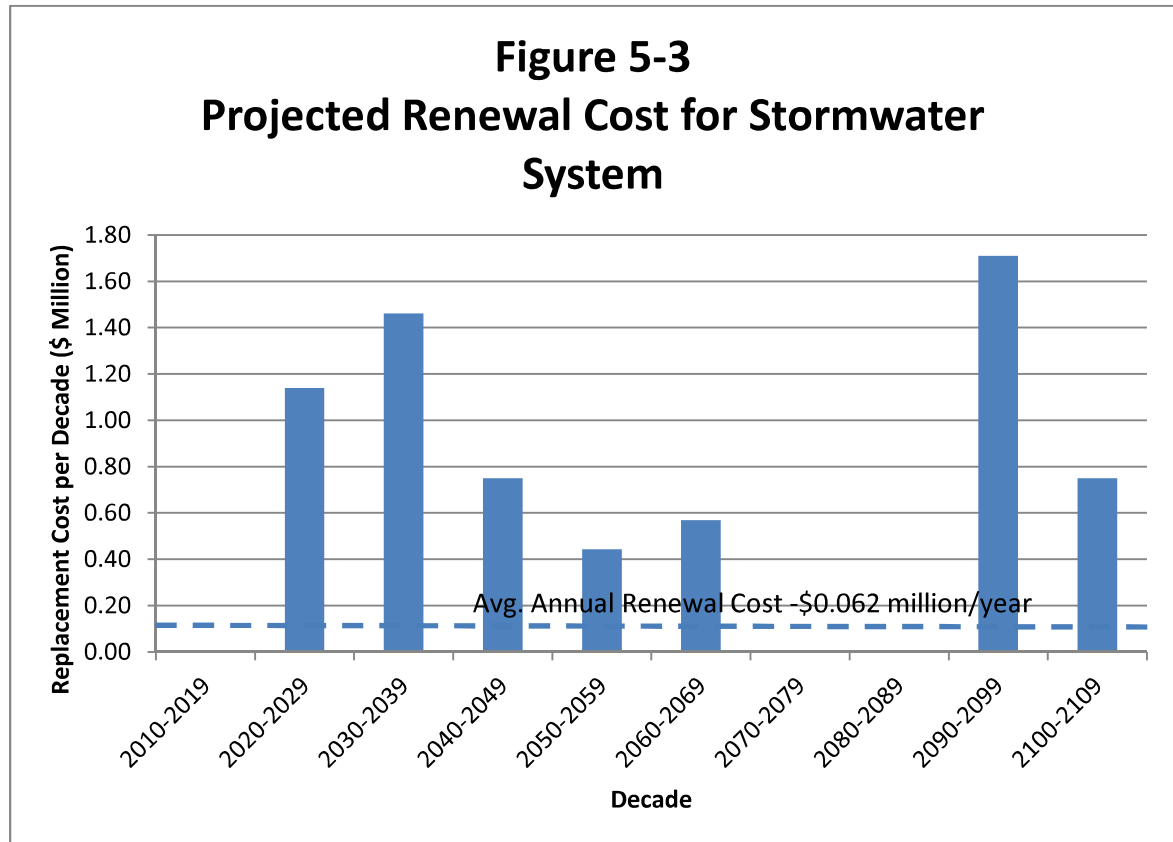


Figure 5-3 indicates that the next decade does not require any investment in the stormwater system. It is apparent that over the next two (2) decades replacement costs will significantly increase due to backlog of clay and transite sewers reaching the end of their services lives. Furthermore, the following three (3) decades require slightly decreased replacement costs due the rest of the stormwater system components reaching the end of their service lives.

### 5.3.5 BUILDINGS

Figure 5-4 illustrates the projected costs for the municipally owned buildings over the next 100 years based on the replacement cost for the components (Table 3.2-13); the service life for the components (Table 3.6-7); and the age of the components (Table 3.6-8).

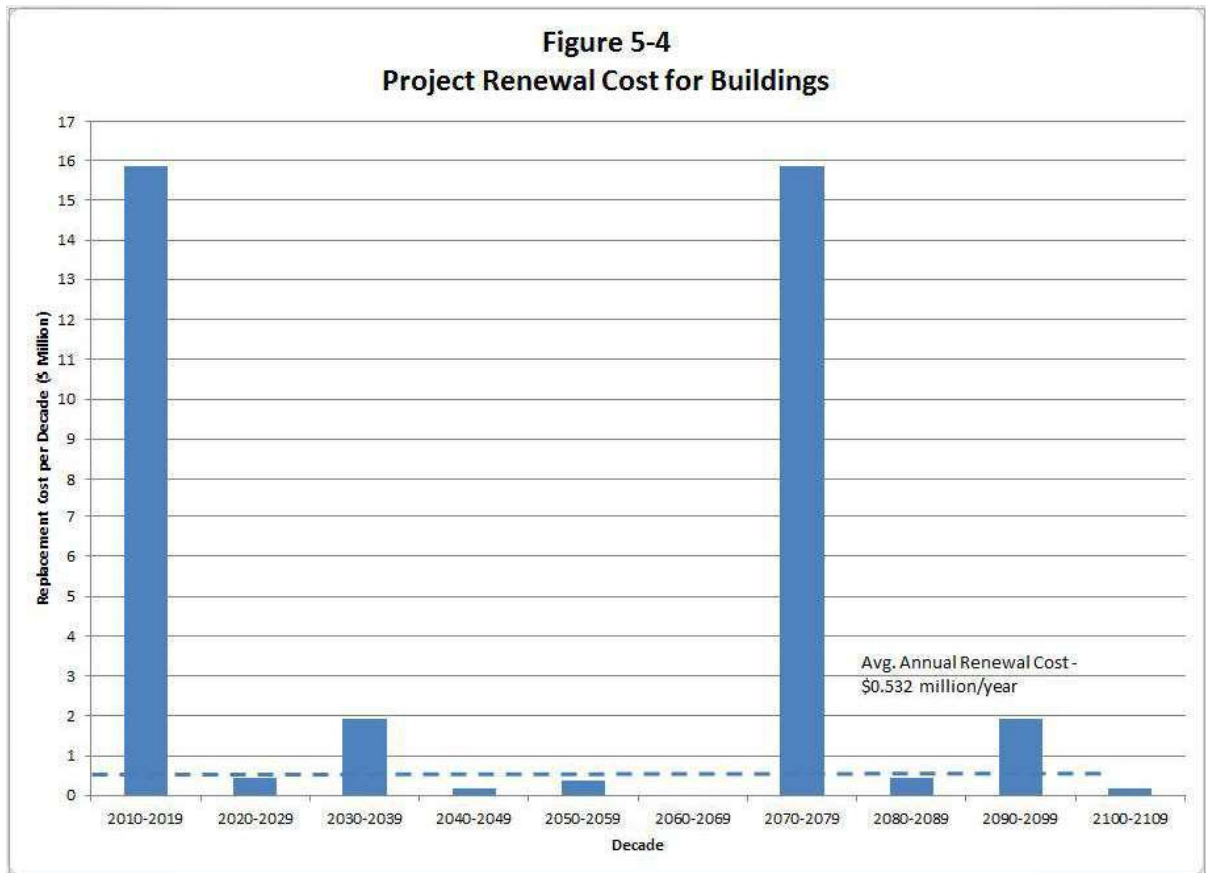


Figure 5-4 indicates that the next decade requires a significant investment in buildings. This is because the community centre and cultural centre are at the end of their theoretical lives and are up for renewal. The municipality has already invested a significant amount into the cultural centre and should consider that. The community centre also has many improvements done recently. The next spike in figure 5-4 is again when the community and cultural centres will be due for renewal.

Table 5-5 summarizes the remaining life for building assets and when they are up for renewal. This indicates when the municipality should disburse the recommended annual investments set aside. The assets will be due for renewal but good maintenance may significantly extend the useful life. Therefore these remaining lives are based on the buildings reaching the end of their service life if no investments are made in the meantime.

**Table 5-5 – Remaining Life of Buildings**

<b>FACILITY</b>	<b>REMAINING LIFE (YRS)</b>
Water Treatment Plant	48
Raw Water Pumping Station	48
Public Works Garage	24
Airport Office	12
Airport Garage	36
Tourist Information Centre	36
Cultural Centre	36
Pool Building	24
Community Centre	36
Fire Hall Office	24
Fire Hall Garage	36

### 5.3.6 SUMMARY

The Town should prepare a long term financial plan for their water, wastewater and stormwater systems to ensure the sufficient resources are available to sustain these systems and to ensure that the money that is invested is spent efficiently. Ideally, the revenues generated from water and sewer rates should be sufficient to cover the full costs of the systems. If the Town's revenue base continues to decline, the water and sewer rates will have to be further increased to generate sufficient revenues.

The recommended annual investment into buildings is kept separate so the municipality can choose where to allocate their funds strategically. The majority of the renewal costs for buildings are not critical to the functionality of the facilities but rather aesthetic recommendations.

## 5.4 DISPOSAL ACTIVITIES

There is no disposal activity anticipated until an asset fails or an opportunity for replacement occurs (i.e. road replacement). The assets currently generally meet the level of service expected.

The level of service defines the current and future operating conditions of assets using qualitative measures. The operating conditions and level of service are normally defined by the municipality, and the characteristics generally include pressure, temperature, and appearance for water distribution. For sewers, characteristics usually include flow velocity, percent blockage, deterioration, and odour control. Buildings expected level of service may include proper surface drainage, energy efficiency, noise barriers, vapour barriers, or barrier-free access.

The level of service also describes what the governing body, 'customer', or community wants, how much it will cost to achieve, and whether it is affordable. Therefore, the levels of service should be specific and measureable, and linked to the strategic objectives and outcomes of the township. Until the assets no longer meet any of the expected levels of service, disposals are not anticipated.

## 5.5 OVERVIEW OF RISKS

Understanding risks is important to the safety and functionality of the community as it relates to its infrastructure. Having assets perform at the expected level of service is important for the Township.

If the assets have to shut down or are compromised, it becomes inconvenient for all. Below are some noted risks gathered during inspections.

**Table 5-5 –Overview of Risks**

	KEY INDICATOR	ISSUE	POTENTIAL IMPACT	CURRENT CONTROLS	ACTION PLAN
Sewer System	Condition Index ACI 0	Potential of sewer failure due to age	Sewage will contaminate the groundwater	None	Replace when possible
	CCTV Video	Potential for sewer blockage	May backup sewage into surrounding buildings and will cause property damage	Some backflow preventers installed at lateral inlets	Flush the sewer systems
Water System	Condition Index ACI 0	Potential for watermain failure	Water supply will be interrupted	None	Replace when possible. Exercise valves
	Township Staff	Lead services in water distribution system	Long-term health effects from high lead concentrations.	Corrosion Control Plan in place	Replace
Buildings	Ice build-up from roof	Blocked surface drainage/eaves	Damage to building or roof structure potentially creating leaks	None	Clear roof drains, remove ice buildup, keep snow clear from downspouts

# 6 FINANCING STRATEGY

A management strategy of planned actions will enable the assets to provide the desired levels of service and extend their useful lives. The values from past years were found in the CityWide Software Solutions inventory and the “Valuation Report of Tangible Capital Asset” spreadsheet created by Suncorp Valuations Ltd. provided by the Township of Terrace Bay. This forecast will help the Township prepare for expenses associated with maintenance and replacement costs. Below are Capital Plans for short-term and long-term forecasting. Some projects require immediate attention while others should be invested in annually. These annual investments were concluded from the costs of maintaining sustainable services and are independent of the townships actual budget. Also included in the Capital Plans are alternative priority projects so the municipality can choose to invest elsewhere, if desired, while still adding value to the assets.

## 6.1 CAPITAL PLANS

### 6.1.1 GENERAL

Based on the age and condition assessment of the municipal infrastructure assets, Capital Plans were developed to guide the Township’s future infrastructure renewal efforts over a 5-year period and over a 25-year period. These Capital Plans establish the Township’s priorities for renewal of the infrastructure systems and show the specific projects that are proposed, how much they will cost, and the timeframe for construction.

The Capital Plans were developed on the basis of the Town providing a minimum investment into infrastructure renewal efforts consistent with the levels established in this report. In other words, it is expected that the Town will set aside funds at least equal to those recommended each year for infrastructure renewal efforts. All of those funds may not necessarily be assigned to capital works in that given year, but should remain in a reserve account to fund future renewal efforts as they become necessary. Therefore, the Capital Plans have been developed such that the amount of funds spent on renewal in any given 5-year period does not significantly exceed that recommended for that period. However, in many cases, the amount spent on capital improvements is less than that recommended with the expectation that the funds not expended will remain in a reserve account to finance future renewal efforts that will be required beyond the 25-year Capital Plan.

In developing the Capital Plans, a distinction was made between underground works and aboveground works. There are significant additional costs associated with the renewal of underground systems. In particular, in order to reconstruct sanitary sewers and appurtenances, watermains and appurtenances, and storm sewers and appurtenances, significant additional costs will be realized for reconstructing the roadway. These additional road reconstruction costs are included in the Capital Plans and they are over and above the minimum amount required in maintaining just the services (pipes).

The buildings are incorporated into the capital plans but as alternative projects. The majority of improvement recommendations are cosmetic and do not require immediate attention from a technical perspective. Maintenance items are not considered as projects for capital planning.

## 6.1.2 UNDERGROUND WORKS

In developing the Capital Plans for the underground components of municipal infrastructure systems, the costs were quantified that will be necessary to support these efforts – namely road reconstruction costs. In doing so, we have assumed that the Township will elect for complete road reconstruction when replacing sewers and watermains, and other amenities. It has been assumed that roads will be constructed with complete curb and gutter systems, sidewalks on one side, and streetlight systems. This takes advantage of cost efficiencies associated with reconstructing all of the roadway components at the same time.

Also, the life expectancy of roadway components, and in particular, asphalt paving, is typically significantly less than sanitary sewers and watermains and most of these roads are in need of reconstruction when the underground works are replaced.

Based on typical construction costs in Northern Ontario, a generic road reconstruction estimate was prepared to assist in the preparation of Capital Plans. The infrastructure assets for which renewal is required, namely water distribution components, stormwater system components, and wastewater system components, were assessed separately from the road reconstruction costs in order to isolate expenditures related to renewal efforts for the water distribution systems and wastewater collection systems.

For budgeting purposes, road reconstruction costs (in 2013 dollars) in the Township of Terrace Bay are estimated as follows:

**Table 6-1 –Road Reconstruction Estimate**

ROADWAY COMPONENT	APPROXIMATE COST PER METRE	PERCENTAGE OF TOTAL
Wastewater System, including sewers, manholes, and services	\$650 / m	16%
Water distribution system, including watermains, valves, hydrants & services	\$785 / m	18%
Stormwater system, including storm sewers, catchbasins and manholes	\$690 / m	17%
Basic Road components, including excavation and removals, granulars, curb & gutter & asphalt	\$1055 / m	25%
Additional roadway components, including sidewalk, driveway reconstruction, sod in boulevards, and streetlight system.	\$990 / m	24%
<b>Total</b>	<b>\$4,170 / m</b>	<b>100%</b>

The above costs represent complete reconstruction costs, including appropriate allowances for engineering and contingencies.

As can be seen in the above table, the cost for the water distribution system and wastewater collection system components (storm and sanitary) represents approximately 49% of the total road



reconstruction costs. A total annual investment in road reconstruction costs of approximately \$0.67 million is necessary for an annual renewal investment of approximately \$0.33 million in underground water and wastewater systems. This matches the investment required for renewal as previously discussed. Considered another way, the combined cost of buried infrastructure system components is approximately \$2,125 / metre. For an average annual investment for renewal of \$0.33 million, this represents renewal of approximately 155 lineal metres of these systems, on average, each year at a total cost of approximately \$0.67 million. Over a 5-year period, this represents, on average, reconstruction of approximately 775 lineal metres of roadway.

### 6.1.3 ABOVEGROUND WORKS

The Capital Plan requirements for aboveground works are more straight-forward than underground works. The replacement costs provided in this report are complete and there are no additional restoration costs involved. The average annual investment required for renewal of aboveground infrastructure components is as follows:

Infrastructure System	Average Annual Investment
Water System – Aboveground components	\$0.336 Million
Wastewater System – Aboveground components	\$0.025 Million
<b>Total</b>	<b>\$0.361 Million</b>

Over a 25-year period, this corresponds to investments in the aboveground components of the water system of approximately \$8.4 million, and the aboveground components of the wastewater system of approximately \$0.625 million, for a total of \$9.025 million. This amount should be either spent on capital works renewal or committed to reserve accounts for future renewal efforts beyond the 25-year period.

The development of Capital Plans for aboveground works was based on the age of the components, estimated service life, visual inspections of the components, and our knowledge of the infrastructure systems. Portions of the aboveground assets may require replacement before other parts of the facility. For example, it is generally assumed that mechanical and electrical components of such things as pumping stations and treatment plants have a limited service life of approximately 30 years, while structural components such as buildings and structural tanks have a greater service life of approximately 50 years. Therefore, renewal requirements for such facilities are separated into mechanical and electrical upgrades and structural upgrades. For the purposes of budgeting, it has been assumed that mechanical/electrical components make up approximately 30% of the total replacement cost of such facilities, while structural elements make up 70% of the total replacement cost.

Buildings require a significant investment of \$0.532 million annually. This is based on the 30% mechanical and 70% structural split of replacement costs of each facility. It is understandable some buildings take priority over others (such as the arena compared to the airport office) even though they equally require the same level of attention. It is up to the municipality to choose which recommendations are priorities.

The alternative projects outlined in the capital plans follow the total recommended investment of annual renewal budget but exclude road reconstruction costs since these should be done when an opportunity is presented (i.e. if a watermain breaks, during the emergency repair, replace accessible lead services, valves, or install isolation valves).

## 6.2 5-YEAR CAPITAL PLAN

The 5-year Capital Plan is presented below. The total expenditure required in renewing underground components of the Capital Plan over the 5-year period is approximately \$6.1 million. This represents a total investment of approximately \$3.0 million in the renewal of the underground water and wastewater infrastructure. The renewal investment during this five year period is somewhat more than that required in an average five year period of approximately \$1.65 million. There are still several areas in township built in the late 1950's that will require renewal sooner than other areas (entire central and southwest portion of town). Most of these areas will require reconstruction in the next 5 to 10 years and will require a considerable investment in the underground infrastructure. However, the investment requirement beyond the 10 year period in underground works should lessen until approximately 2040 and beyond. At that time, much of the underground infrastructure constructed in the 1970's and 1980's will be due for renewal. During the intervening years, funds set aside for underground renewal efforts should be utilized to pay off any debt acquired to finance the works in the first 10 years and once that is done, held in a reserve fund for future requirements.

The 5-year Capital Plan must be flexible and should be reviewed and updated annually. If outside funding is available, it is recommended that the town accelerate renewal efforts in the first 5 years to address known problem areas.

<b>5 Year Capital Plan (2014-2018)</b>					
<b>Project Description</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
<b>Underground/Road works</b>					
1 Kenogami Road - Outfall to Hwy17 (550m - Type 2)	\$2,293,500.00				
2 Hudson Drive - Radisson to Hwy 17 (922m - Type 2)				\$3,844,740.00	
<b>Alternative Projects (applies to 25yr plan also)</b>					
1 Sedimentary Lanks Replacement (4)	\$2,000,000.00				
2 4" PVC Sanitary Outfall Replacement (500m - undeveloped)	\$852,500.00				
3 Valve Replacements (when opportunity present @ \$3,000 ea.)					
4 Isolation Valves (when opportunity present @ \$3,000 ea.)					
5 CCTV Inspections (entire system ~ 21.4 km @ \$20 per m)	\$428,000.00				
<b>Totals</b>	<b>\$2,293,500.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$3,844,740.00</b>	<b>\$0.00</b>

All costs are in "2013" Dollars

Type 1 - No underground services

Type 2 - Full underground services (water, sanitary, storm)

Type 3 - Partial underground services (water, sanitary)

Type 4 - Partial underground services (water only)

Alternative Projects not included in totals.

### 6.3 25-YEAR CAPITAL PLAN

The 25-year Capital Plan is also presented below. The total expenditure required in renewing underground components of the Capital Plan over the 25-year period is approximately \$18.1 million. This represents a total investment of \$8.9 million in the renewal of the underground water and wastewater infrastructure (sanitary and storm).

The 25-year Capital Plan should be reviewed and updated at least every 5 years.

<b>25 Year Capital Plan (2014-2038)</b>					
<i>Project Description</i>	<i>2014 - 2018</i>	<i>2019 - 2023</i>	<i>2024 - 2028</i>	<i>2029 - 2033</i>	<i>2034 - 2038</i>
<b>Underground/Roadworks</b>					
1 Kenogami Road - Outfall to Hwy17 (550m - Type 2)	\$2,203,500.00				
2 Hudson Drive - Radisson to Hwy 17 (922m - Type 2)	\$3,844,740.00				
3 Lakeview Drive - Elizabeth to 700m Westerly (700m - Type 2)		\$2,919,000.00			
4 Princess - Superior to Fort Garry (261m - Type 3)			\$908,280.00		
5 Fort Garry - Superior to Hwy 17 (293m - Type 2)			\$1,221,810.00		
6 Elizabeth - Fort Garry to Lakeview (338m - Type 3)				\$1,176,240.00	
7 Superior Avenue - Princess to Outfall (494m - Type 2)				\$2,059,980.00	
8 Kenogami Road - Outfall to Beach Road (275m - Type 3)					\$957,000.00
9 Selkirk Avenue - Hudson to Hwy 17 (350m - Type 2)					\$1,459,500.00
10 Selkirk Avenue - Hudson to Hudson (300m - Type 2)					\$1,251,000.00
11 Alternative projects - See 5yr plan					
<b>Totals</b>	<b>\$6,138,240.00</b>	<b>\$2,919,000.00</b>	<b>\$2,130,090.00</b>	<b>\$3,236,220.00</b>	<b>\$3,667,500.00</b>

All costs are in "2013" Dollars

Type 1 - No underground services

Type 2 - Full underground services (water, sanitary, storm)

Type 3 - Partial underground services (water, sanitary)

Type 4 - Partial underground services (water only)

Alternative Projects not included in totals.

# 7 ACCOUNTABILITY AND FEEDBACK

## 7.1 PERFORMANCE MEASURES

WSP recommends that the Township receives condition index values at every detailed inspection based on physical characteristics and performance. This will be an excellent and easy way to monitor the conditions of the assets over the years, and forecast replacement when necessary.

It is also recommended that inspections include recommended work; categorized by 1 year, 1 – 5 years, and within 25 years. If the available funds are not sufficient, then strategic decisions must be made in an effort to maintain the required level of service within the municipality. The work must be prioritized by considering the Township's goals and level of service expectations.

## 7.2 PLAN UPDATES

This plan will cover the period from 2014 to 2019 with diminishing returns. The financial needs should be updated when regular inspections are completed and when conditions are re-assessed. It is highly recommended to perform inspections during the spring and summer months for a better representation of the actual conditions.

It is recommended that every asset be inspected either when exposed or by CCTV. Then true representations of the underground assets physical condition can be used in the index methodology rather than an age-based approach with assumptions.

When a better condition rating system becomes applicable, it is recommended that the condition indices (whichever method is chosen) be entered into this plan and CityWide which will take the place of the ACI. Also this will affect the current value and remaining useful life of the assets which should be updated. The condition index of a new perfect asset is 100. The methodologies used for condition indices, current values, and remaining useful lives are:

$$ACI = 1 - \frac{Age}{Design\ Life}$$

$$FCI = 1 - \frac{Immediate\ requirements}{Replacement\ Cost}$$

$$Current\ Value = \frac{C.I.}{100} \times Replacement\ Cost$$

$$Remaining\ Useful\ Life = \frac{C.I.}{100} \times Design\ Life$$

## 8 LIMITATIONS

The information contained in this report represents the professional opinion of WSP Canada Inc. (the Consultant) and their best judgment under the natural limitations imposed by the Scope of Work.

This report is intended solely for the Client named as an indication of the physical condition of the building components addressed in the report. The material in this report reflects the Consultant's best judgment in light of the information available to it at the time of preparation.

Any use a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. The Consultant accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

This report is limited in scope to only those components that are specifically referenced in this investigation. There may be existing deficiencies in this building that we did not record in this report. Such deficiencies were not apparent to us due to the limitations imposed by the scope of work. We can, therefore, accept no liability for any costs incurred by the Client for subsequent discovery, manifestation or rectification of such deficiencies.

Any costs for repair in this report are the Consultant's opinions of probable construction costs and quantities. These estimates do not include any unforeseen conditions that may require repair at the time the repair work is being completed. Any cost estimates provided are subject to confirmation or adjustment at the time competitive bids are obtained from contractors who specialize in the various items of repair work required. The Consultant makes no representation or warranty expressed or implied as to the reliability of these cost estimates.

Do not use any part of this report as a separate entity. The report has been written to be read in its entirety and for the exclusive use of the Client named.

All files, notes, source data, test results and master files are retained in the offices of WSP Canada Inc. and remain the property of the Consultant.

## 9 CONCLUSIONS

Asset management is one of the most cost effective ways to balance the preservation, upgrade, renewal, and replacement of assets. The implementation of the plan will provide guidance for the Corporation of the Township of Terrace Bay to meet the assets' expected level of service and renew the infrastructure over time.

WSP encourages the Corporation of the Township of Terrace to continue using asset management software for long-term infrastructure planning, capital program development, and performance accountability. Being aware of the conditions and the total costs will improve the Township's ability to select options for operations, maintenance, renewal and replacement of municipally owned assets.

The investigation undertaken by WSP with respect to this plan and any recommendations made in this plan reflect WSP's professional opinion based on the sites' conditions observed at the time of the inspections and on information available at the time of preparation of this plan. Extrapolation of visual detail data was necessary where there was no access.



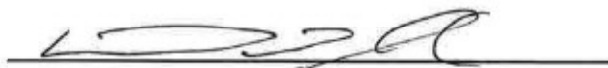
# 10 SIGNATURES

This report was prepared by:



Andrew Mallette, EIT

Reviewed by:



David Spacek, P.Eng.



# 11 REFERENCES

1. Bank of Canada. Historical Data: Inflation, 2013.  
<http://www.bankofcanada.ca/rates/indicators/capacity-and-inflation-pressures/inflation/historical-data> (Accessed July 2013)
2. Statistics Canada 2006 Census Community Profile for Terrace Bay, Ontario
3. Statistics Canada 2011 Census Community Profile for Terrace Bay, Ontario
4. Ontario. Ministry of Infrastructure. Building Together: Guide for Municipal Asset Management Plans, 2012.  
[http://www.moi.gov.on.ca/pdf/en/Municipal%20Strategy\\_English\\_Web.pdf](http://www.moi.gov.on.ca/pdf/en/Municipal%20Strategy_English_Web.pdf)
5. Ontario. Ministry of Natural Resources. Infrastructure Asset Management Framework, 2010.
6. Ontario. Ministry of Transportation. Ontario Provincial Standards. Construction Specifications for Closed Circuit Television Inspection of Pipelines, OPS 409. November 2009.  
[http://www.raqsb.mto.gov.on.ca/techpubs/ops.nsf/d37f5a16d8174ffa85256d130066857f/563f726d6e0eba36852570c9006ae63c/\\$FILE/OPSS%20409%20Nov09.pdf](http://www.raqsb.mto.gov.on.ca/techpubs/ops.nsf/d37f5a16d8174ffa85256d130066857f/563f726d6e0eba36852570c9006ae63c/$FILE/OPSS%20409%20Nov09.pdf)
7. KGS; 1998. Hydraulic Review of the Capacity of the Water Distribution System and the Water Supply/Treatment Works Final Report
8. Asbestos Cement Pipe:  
[http://info.ncsafewater.org/Shared%20Documents/Web%20Site%20Documents/Annual%20Conference/AC%202011%20Papers/CD\\_M.pm\\_02.30\\_Williams.pdf](http://info.ncsafewater.org/Shared%20Documents/Web%20Site%20Documents/Annual%20Conference/AC%202011%20Papers/CD_M.pm_02.30_Williams.pdf)





# Appendix A

ASSET INVENTORIES & ANALYSIS SPREADSHEETS



Terrace Bay Priorities and Costing								
	Street	Rating / Water	Rating / Sanitary	Rating / Storm	Sum Ratings	Total Length	Road Type	Cost of Reconstruction
	Birch Crescent	3	3	3	9	440.70	3	\$1,533,636.00
	Cartier Rd.	3	3	3	9	256.30	3	\$891,924.00
	Elizabeth Ave.	3	3	3	9	338.30	3	\$1,177,284.00
	Fort Garry Rd.	3	3	3	9	293.10	3	\$1,019,988.00
	Highway 17 N.	3	3	3	9	948.10		
	Hudson Drive	3	3	3	9	921.60	2	\$3,843,072.00
	Kenogami Rd.	3	3	3	9	849.10	2	\$3,540,747.00
	Lakeview Rd.	3	3	3	9	1,103.60	2	\$4,602,012.00
	Laurier Ave.	3	3	3	9	768.10	2	\$3,202,977.00
	MacDonald Ave.	3	3	3	9	262.20	2	\$1,093,374.00
	Mill Rd.	3	3	3	9	274.90		
	Poplar Cr.	3	3	3	9	242.60	3	\$844,248.00
	Princess Ave.	3	3	3	9	261.20	3	\$908,976.00
	Radisson Ave.	3	3	3	9	430.00	2	\$1,793,100.00
	Selkirk Ave.	3	3	3	9	699.50	2	\$2,916,915.00
	South Camp Rd.	3	3	3	9	460.00		
	Cavanaugh Cr.	2	3	3	8	319.10	3	\$1,110,468.00
	Southridge Cr.	2	3	3	8	554.70	2	\$2,313,099.00
	Pine Cr.	3	2	2	7	542.80	3	\$1,888,944.00
	Strathcona Ave.	3	2	2	7	303.00	2	\$1,263,510.00
	Superior Ave.	3	2	2	7	865.60	3	\$3,012,288.00
	Beaver Creek Rd.	3	3		6	43.30		
	East Grove Cr.	2	2	2	6	836.00	2	\$3,486,120.00
	Parkway Place	2	2	2	6	618.70	2	\$2,579,979.00
	Terrace Crt	2	2	2	6	139.90	2	\$583,383.00
	Terrace Heights Dr.	2	2	2	6	1,370.60	2	\$5,715,402.00
	Timbergrove Crt	2	2	2	6	141.40	2	\$589,638.00
	Timbergrove Road	2	2	2	6	184.40	2	\$768,948.00
						14,468.80		\$50,680,032.00

Terrace Bay Water Distribution System Inventory												
Asset ID	Street	From	To	Dia. (mm)	Length (m)	Material	Year Installed	Condition Rating	ACI	Remaining Useful Life (yrs)	Estimated Current Year Value	Notes
WT0001	Terrace Heights Dr.	Highway 17 N	Terrace Cr	250	128.9	Ductile	1976	2	66	53	\$10,401.14	
WT0002	Terrace Cr			150	139.9	Ductile	1976	2	66	53	\$11,288.74	
WT0003	Terrace Heights Dr.	Terrace Cr	Timbergrove Rd.	250	65.5	Ductile	1976	2	66	53	\$5,285.29	
WT0004	Timbergrove Road	Terrace Heights Dr.	Timbergrove Cr	150	103.3	Ductile	1976	2	66	53	\$8,335.43	
WT0005	Timbergrove Cr			150	141.4	Ductile	1976	2	66	53	\$11,409.78	
WT0006	Easement	Timbergrove Cr		150	70.1	Ductile	1976	2	66	53	\$5,656.47	
WT0007	Timbergrove Road	Timbergrove Cr	Ridgewood	150	81.1	Ductile	1976	2	66	53	\$6,544.08	
WT0008	Terrace Heights Dr.	Timbergrove Road	East Grove Cr.	250	520.6	Ductile	1976	2	66	53	\$42,008.00	East Grove N. Int.
WT0009	Terrace Heights Dr.	East Grove Cr.	East Grove Cr.	250	85.9	Ductile	1976	2	66	53	\$6,931.40	N. Int. to S. Int.
WT0010	East Grove Cr.	Terrace Heights Dr.	East Grove Cr.	150	516.3	Ductile	1976	2	66	53	\$41,661.02	Terrace Heights N. Int
WT0011	East Grove Cr.			150	52.1	Ductile	1976	2	66	53	\$4,204.03	
WT0012	East Grove Cr.	East Grove Cr.	Terrace Heights Dr.	150	267.6	Ductile	1976	2	66	53	\$21,593.05	Terrace Heights S. Int
WT0013	Terrace Heights Dr.	East Grove Cr.	Cavanaugh Cr.	250	135	Ductile	1976	2	66	53	\$10,893.35	
WT0014	Cavanaugh Cr.			150	319.1	Ductile	1976	2	66	53	\$25,748.66	
WT0015	Terrace Heights Dr.	Cavanaugh Cr.	Parkway Place	250	108.8	Ductile	1976	2	66	53	\$8,779.24	Cavanaugh N. Int.
WT0016	Terrace Heights Dr.	Parkway Place	Cavanaugh Cr.	250	80.2	Ductile	1976	2	66	53	\$6,471.46	Cavanaugh S. Int.
WT0017	Parkway Place	Terrace Heights Dr.		150	97.8	Ductile	1976	2	66	53	\$7,891.63	Entrance Road
WT0018	Parkway Place			150	520.9	Ductile	1976	2	66	53	\$42,032.21	
WT0019	Terrace Heights Dr.	Cavanaugh Cr.	Southridge Cr.	250	92.7	Ductile	1976	2	66	53	\$7,480.10	
WT0020	Southridge Cr.			150	554.7	Ductile	1976	2	66	53	\$44,759.58	
WT0021	Terrace Heights Dr.	Southridge Cr.	Southridge Cr.	250	100.6	Ductile	1976	2	66	53	\$8,117.57	N. Int. to S. Int.
WT0022	Terrace Heights Dr.	Southridge Cr.	Ridgewood	250	52.4	Ductile	1976	2	66	53	\$4,228.23	
WT0023	Hudson Drive	Selkirk Ave.	Birch Cr.	150	247.2	Cast Iron	1952	3	33	26	\$4,245.33	
WT0024	Birch Cr.			150	440.7	Cast Iron	1952	3	33	26	\$7,568.43	W. Int. to E. Int.
WT0025	Hudson Dr.	Birch Cr.	Birch Cr.	150	89.6	Cast Iron	1952	3	33	26	\$1,538.76	
WT0026	Hudson Dr.	Birch Cr.	Poplar Cr.	150	97.8	Cast Iron	1952	3	33	26	\$1,679.58	
WT0027	Poplar Cr.			150	242.6	Cast Iron	1952	3	33	26	\$4,166.33	
WT0028	Hudson Dr.	Poplar Cr.	Poplar Cr.	150	95.4	Cast Iron	1952	3	33	26	\$1,638.37	
WT0029	Hudson Dr.	Poplar Cr.	Selkirk Ave.	150	103	Cast Iron	1952	3	33	26	\$1,768.89	
WT0030	Pine Cr.	Selkirk Ave.		150	77.4	Cast Iron	1952	3	33	26	\$1,329.24	Entrance Road
WT0031	Pine Cr.	Selkirk Ave.	Selkirk Ave.	150	465.4	Cast Iron	1952	3	33	26	\$7,992.62	
WT0032	Hudson Dr.	Selkirk Ave.	Laurier Ave.	300	149	Cast Iron	1952	3	33	26	\$2,558.87	
WT0033	Hudson Dr.	Laurier Ave.	Highway 17 N.	300	28.3	Cast Iron	1952	3	33	26	\$486.01	
WT0034	Hudson Dr.			150	6.1	Cast Iron	1952	3	33	26	\$104.76	Crosses Hudson Dr.
WT0035	Selkirk Ave.	Hudson Dr.	Laurier Ave.	300	101.8	Cast Iron	1952	3	33	26	\$1,748.28	
WT0036	Selkirk Ave.	Laurier Ave.	Laurier Ave.	300	113.4	Cast Iron	1952	3	33	26	\$1,947.49	
WT0037	Selkirk Ave.	Laurier Ave.	Hudson Dr.	300	100.3	Cast Iron	1952	3	33	26	\$1,722.52	
WT0038	Laurier Ave.	Hudson Dr.	Selkirk Ave.	150	209.7	Cast Iron	1952	3	33	26	\$3,601.32	
WT0039	Laurier Ave.	Selkirk Ave.	Selkirk Ave.	150	343.8	Cast Iron	1952	3	33	26	\$5,904.30	
WT0040	Laurier Ave.	Selkirk Ave.	Radisson Ave.	150	214.6	Cast Iron	1952	3	33	26	\$3,685.47	
WT0041	Radisson Ave.	Laurier Ave.	Hudson Dr.	150	103.6	Cast Iron	1952	3	33	26	\$1,779.19	
WT0042	Hudson Dr.	Radisson Ave.	Selkirk Ave.	150	105.2	Cast Iron	1952	3	33	26	\$1,806.67	
WT0043	Radisson Ave.	Hudson Dr.	Selkirk Ave.	150	212.7	Cast Iron	1952	3	33	26	\$3,652.84	
WT0044	Selkirk Ave.	Hudson Dr.	Radisson Ave.	300	158.5	Cast Iron	1952	3	33	26	\$2,722.02	
WT0045	Selkirk Ave.	Radisson Ave.	Highway 17 N.	300	225.5	Cast Iron	1952	3	33	26	\$3,872.66	
WT0046	Radisson Ave.	Laurier Ave.	Kenogami Rd.	150	113.7	Cast Iron	1952	3	33	26	\$1,952.64	Crosses HWY 17 N.
WT0047	Kenogami Rd.	Highway 17 N.	MacDonald Ave.	150	279.2	Cast Iron	1952	3	33	26	\$4,794.89	
WT0048	MacDonald Ave.	Kenogami Rd.	Cartier Rd.	150	262.2	Cast Iron	1952	3	33	26	\$4,502.93	



Terrace Bay Sanitary Sewer System Inventory												
Asset ID	Street	Manhole (from)	Manhole (to)	Dia. (mm)	Length (m)	Material	Year Installed	Condition Rating	Remaining Useful Life (yrs)	Estimated Current Year Value	Notes	
SN0001	East Grove Crescent	MH1	MH2	200	60	Transite	1980	2	66	\$4,837.29		
SN0002	East Grove Crescent	MH2	MH3	200	26.9	Transite	1980	2	66	\$2,168.72		
SN0003	East Grove Crescent	MH3	MH4	200	116.3	Transite	1980	2	66	\$9,376.28		
SN0004	East Grove Crescent	MH4	MH5	200	92	Transite	1980	2	66	\$7,417.18		
SN0005	East Grove Court	MH5	MH6	200	42.9	Transite	1980	2	66	\$3,458.66		
SN0006	East Grove Crescent	MH5	MH7	200	66.3	Transite	1980	2	66	\$5,345.21		
SN0007	East Grove Crescent	MH7	MH8	200	32.8	Transite	1980	2	66	\$2,644.39		
SN0008	East Grove Crescent	MH8	MH9	200	62.3	Transite	1980	2	66	\$5,022.72		
											~Low Spot - Pooling (2m) ~Cross Sectional Deformation	
SN0009	East Grove Crescent	MH9	MH10	200	97.6	Transite	1980	2	66	\$7,868.66		
SN0010	East Grove Crescent	MH11	MH12	200	61.9	Transite	1980	2	66	\$4,990.47		
SN0011	East Grove Crescent	MH12	MH13	200	74.3	Transite	1980	2	66	\$5,990.18		
SN0012	East Grove Crescent	MH13	MH14	200	61.4	Transite	1980	2	66	\$4,950.16		
SN0013	Terrace Heights	MH14	MH15	200	40.7	Transite	1980	2	66	\$3,281.30		
SN0014	Terrace Heights	MH15	MH10	200	40.7	Transite	1980	2	66	\$3,281.30		
SN0015	Terrace Heights	MH16	MH17	200	37.4	Transite	1980	2	66	\$3,015.24		
SN0016	Terrace Heights	MH17	MH18	200	40.2	Transite	1980	2	66	\$3,240.98		
SN0017	Terrace Heights	MH18	MH14	200	100.2	Transite	1980	2	66	\$8,078.28		
SN0018	Terrace Heights	MH10	MH19	200	115.4	Transite	1980	2	66	\$9,303.72		
SN0019	Terrace Heights	MH19	MH20	200	47.9	Transite	1980	2	66	\$3,861.77		
SN0020	Terrace Heights	MH20	MH21	200	65	Transite	1976	2	66	\$3,098.16		
SN0021	Terrace Heights	MH21	MH22	250	72.7	Transite	1976	2	66	\$3,465.17		
SN0022	Cavanaugh Crescent	MH23	MH24	200	114.7	Transite	1976	2	66	\$5,467.05		
SN0023	Cavanaugh Crescent	MH24	MH25	200	66.4	Transite	1976	2	66	\$3,164.89		
SN0024	Cavanaugh Crescent	MH25	MH22	200	110.1	Transite	1976	2	66	\$5,247.80		
SN0025	Terrace Heights	MH22	MH26	250	35.4	Transite	1976	2	66	\$1,687.30		
SN0026	Terrace Heights	MH26	MH27	250	59.2	Transite	1976	2	66	\$2,821.71		
SN0027	Terrace Heights	MH27	MH28	200	60.1	Transite	1976	2	66	\$2,864.60		
SN0028	Terrace Heights	MH28	MH29	200	59.2	Transite	1976	2	66	\$2,821.71		
SN0029	Southridge Crescent	MH30	MH31	200	94.6	Transite	1976	2	66	\$4,509.01		
SN0030	Southridge Crescent	MH31	MH32	200	85.9	Transite	1976	2	66	\$4,094.33		
SN0031	Southridge Crescent	MH32	MH33	250	76.8	Transite	1976	2	66	\$3,660.59		
SN0032	Southridge Crescent	MH33	MH34	250	55.5	Transite	1976	2	66	\$2,645.35		
SN0033	Southridge Crescent	MH34	MH35	250	42.9	Transite	1976	2	66	\$2,044.78		
SN0034	Southridge Crescent	MH35	MH36	250	78.1	Transite	1976	2	66	\$3,722.55		
SN0035	Southridge Crescent	MH36	MH27	250	56.7	Transite	1976	2	66	\$2,702.55		
SN0036	Terrace Heights	MH37	MH38	200	30.1	Transite	1980	2	66	\$2,426.71		

# Terrace Bay Sanitary Sewer System Inventory

Asset ID	Street	Manhole (from)	Manhole (to)	Dia. (mm)	Length (m)	Material	Year Installed	Condition Rating	ACI	Remaining Useful Life (yrs)	Estimated Current Year Value	Notes
SN0037	Terrace Heights	MH38	MH39	200	93.6	Transite	1980	2	66	40	\$7,546.17	
SN0038	Terrace Heights	MH39	MH40	200	19.9	Transite	1980	2	66	40	\$1,604.37	
SN0039	Easement	MH39	MH41	200	58.8	Transite	1980	2	66	40	\$4,740.54	
SN0040	Parkway Place	MH41	MH42	200	59.4	Transite	1980	2	66	40	\$4,788.92	
SN0041	Parkway Place	MH41	MH43	200	23.3	Transite	1980	2	66	40	\$1,878.48	
SN0042	Parkway Place	MH43	MH44	200	67.3	Transite	1980	2	66	40	\$5,425.83	
SN0043	Parkway Place	MH44	MH45	200	68.6	Transite	1980	2	66	40	\$5,530.64	
SN0044	Parkway Place	MH45	MH46	200	70.4	Transite	1980	2	66	40	\$5,675.75	
SN0045	Parkway Place	MH46	MH47	200	82.7	Transite	1976	2	66	40	\$3,941.81	
SN0046	Parkway Place	MH46	MH21	200	87.6	Transite	1976	2	66	40	\$4,175.36	
SN0047	Parkway Place	MH47	MH48	200	67.5	Transite	1976	2	66	40	\$3,217.32	
SN0048	Parkway Place	MH48	MH49	200	62.2	Transite	1976	2	66	40	\$2,964.70	
SN0049	Easement	MH49	MH50	200	49.3	Transite	1976	2	66	40	\$2,349.83	
SN0050	Easement	MH50	MH51	200	38.5	Transite	1976	2	66	40	\$1,835.06	
SN0051	Easement	MH51	MH52	200	31.9	Transite	1976	2	66	40	\$1,520.48	
SN0052	Easement	MH50	MH53	200	10.4	Transite	1976	2	66	40	\$495.70	
SN0053	Easement	MH53	MH54	200	48.1	Transite	1976	2	66	40	\$2,292.64	
SN0054	Terrace Heights Drive	MH54	MH55	200	53.9	Transite	1976	2	66	40	\$2,569.09	
SN0055	Terrace Heights Drive	MH55	MH56	200	26.3	Transite	1976	2	66	40	\$1,253.56	
SN0056	Timbergrove Court	MH55	MH57	200	81.9	Transite	1976	2	66	40	\$3,903.68	
SN0057	Timbergrove Court	MH57	MH58	200	53.4	Transite	1976	2	66	40	\$2,545.25	
SN0058	Timbergrove Road	MH54	MH59	200	42.4	Transite	1976	2	66	40	\$2,020.95	
SN0059	Terrace Heights Drive	MH59	MH60	200	59.5	Transite	1976	2	66	40	\$2,836.00	
SN0060	Terrace Heights Drive	MH60	MH61	200	39.6	Transite	1976	2	66	40	\$1,887.49	
SN0061	Terrace Court	MH60	MH62	200	61.8	Transite	1976	2	66	40	\$2,945.63	
SN0062	Terrace Court	MH62	MH63	200	49	Transite	1976	2	66	40	\$2,335.53	
SN0063	Easement	MH58	MH64	200	49.5	Transite	1979	2	66	40	\$2,667.11	
SN0064	Ridgewood Drive	MH64	MH65	200	34	Transite	1979	2	66	40	\$1,831.95	
SN0065	Ridgewood Drive	MH64	MH66	200	17.1	Transite	1979	2	66	40	\$921.36	
SN0066	Pine Crescent	MH67	MH68	250	110.4	VCT	1952	3	33	23	\$850.11	
SN0067	Pine Crescent	MH68	MH69	250	34.4	VCT	1952	3	33	23	\$264.89	
SN0068	Pine Crescent	MH69	MH70	250	47.2	VCT	1952	3	33	23	\$363.45	
SN0069	Pine Crescent	MH70	MH71	250	36.3	VCT	1952	3	33	23	\$279.52	
SN0070	Pine Crescent	MH71	MH72	250	113.3	VCT	1952	3	33	23	\$872.44	
SN0071	Pine Crescent	MH72	MH73	250	15.6	VCT	1952	3	33	23	\$120.12	
SN0072	Selkirk Avenue	MH73	MH74	250	88.3	VCT	1952	3	33	23	\$679.94	
SN0073	Selkirk Avenue	MH73	MH75	250	77	VCT	1952	3	33	23	\$592.92	
SN0074	Hudson Drive	MH75	MH76	250	14.7	VCT	1952	3	33	23	\$113.19	



# Terrace Bay Sanitary Sewer System Inventory

Asset ID	Street	Manhole (from)	Manhole (to)	Dia. (mm)	Length (m)	Material	Year Installed	Condition Rating	ACI	Remaining Useful Life (yrs)	Estimated Current Year Value	Notes
SN0075	Hudson Drive	MH76	MH77	250	84.8	VCT	1952	3	33	23	\$652.99	~Cracking Present ~Possible Root Present ~Solids Protruding from Joint
SN0076	Hudson Drive	MH77	MH78	250	80.8	VCT	1952	3	33	23	\$622.18	~Cracking Present ~Root Present ~Solid Protruding from Joint
SN0077	Hudson Drive	MH75	MH79	200	15.3	VCT	1952	3	33	23	\$117.81	
SN0078	Hudson Drive	MH79	MH80	200	78.2	VCT	1952	3	33	23	\$602.16	
SN0079	Hudson Drive/Poplar	MH80	MH81	200	15.4	VCT	1952	3	33	23	\$118.58	
SN0080	Poplar Crescent	MH81	MH82	200	37.5	VCT	1952	3	33	23	\$288.76	
SN0081	Poplar Crescent	MH82	MH83	200	29.4	VCT	1952	3	33	23	\$226.39	
SN0082	Poplar Crescent	MH83	MH84	200	63.5	VCT	1952	3	33	23	\$488.97	
SN0083	Poplar Crescent	MH84	MH85	200	31.1	VCT	1952	3	33	23	\$239.48	
SN0084	Poplar Crescent	MH85	MH86	200	36.8	VCT	1952	3	33	23	\$283.37	
SN0085	Hudson Drive	MH80	MH87	200	116.1	VCT	1952	3	33	23	\$894.00	
SN0086	Hudson/Birch	MH88	MH89	200	98.1	VCT	1952	3	33	23	\$755.40	
SN0087	Birch Crescent	MH89	MH90	200	23.3	VCT	1952	3	33	23	\$179.42	
SN0088	Birch Crescent	MH90	MH91	200	62.3	VCT	1952	3	33	23	\$479.73	
SN0089	Birch Crescent	MH91	MH92	200	21	VCT	1952	3	33	23	\$161.71	
SN0090	Birch Crescent	MH92	MH93	200	33.1	VCT	1952	3	33	23	\$254.88	
SN0091	Birch Crescent	MH94	MH95	200	51.9	VCT	1952	3	33	23	\$399.65	
SN0092	Birch Crescent	MH95	MH96	200	75.7	VCT	1952	3	33	23	\$582.91	
SN0093	Hudson Drive	MH96	MH97	200	88.4	VCT	1952	3	33	23	\$680.71	
SN0094	Hudson Drive	MH97	MH98	200	55	VCT	1952	3	33	23	\$423.52	
SN0095	Hudson Drive	MH98	MH99	200	91.3	VCT	1952	3	33	23	\$703.04	
SN0096	Selkirk Avenue	MH100	MH101	250	93.5	VCT	1952	3	33	23	\$719.98	
SN0097	Selkirk Avenue	MH101	MH102	250	18.1	VCT	1952	3	33	23	\$139.38	
SN0098	Laurier Avenue	MH102	MH103	200	108.1	VCT	1952	3	33	23	\$832.40	
SN0099	Laurier Avenue	MH103	MH104	200	45.4	VCT	1952	3	33	23	\$349.59	
SN0100	Laurier Avenue	MH104	MH105	200	33.9	VCT	1952	3	33	23	\$261.04	
SN0101	Laurier Avenue	MH106	MH107	200	79.9	VCT	1952	3	33	23	\$615.25	
SN0102	Selkirk Avenue	MH101	MH108	200	112.5	VCT	1952	3	33	23	\$866.28	
SN0103	Laurier/Selkirk	MH107	MH108	200	16.5	VCT	1952	3	33	23	\$127.05	
SN0104	Laurier/Selkirk	MH108	MH109	200	15.3	VCT	1952	3	33	23	\$117.81	
SN0105	Selkirk Avenue	MH75	MH108	250	94.3	VCT	1952	3	33	23	\$726.14	
SN0106	Laurier Avenue	MH109	MH110	250	75.5	VCT	1952	3	33	23	\$581.37	

Terrace Bay Sanitary Sewer System Inventory												
Asset ID	Street	Manhole (from)	Manhole (to)	Dia. (mm)	Length (m)	Material	Year Installed	Condition Rating	ACI	Remaining Useful Life (yrs)	Estimated Current Year Value	Notes
SN0107	Laurier Avenue	MH110	MH111	250	37.3	VCT	1952	3	33	23	\$287.22	
SN0108	Laurier Avenue	MH111	MH112	250	50.4	VCT	1952	3	33	23	\$388.10	
SN0109	Selkirk/Laurier	MH101	MH113	200	15.1	VCT	1952	3	33	23	\$116.27	
SN0110	Laurier Avenue	MH113	MH114	200	112.1	VCT	1952	3	33	23	\$863.20	
SN0111	Laurier Avenue	MH114	MH115	200	41.2	VCT	1952	3	33	23	\$317.25	
SN0112	Laurier Avenue	MH115	MH116	200	46.7	VCT	1952	3	33	23	\$359.60	
SN0113	Radisson Avenue	MH116	MH117	200	92.1	VCT	1952	3	33	23	\$709.20	
SN0114	Radisson/Hudson	MH117	MH118	200	15.3	VCT	1952	3	33	23	\$117.81	
SN0115	Hudson Drive	MH118	MH119	200	57.6	VCT	1952	3	33	23	\$443.54	
SN0116	Radisson Avenue	MH117	MH120	200	88.2	VCT	1952	3	33	23	\$679.17	~Apparent Penetration
SN0117	Radisson Avenue	MH120	MH121	200	90.6	VCT	1952	3	33	23	\$697.65	~Roots Present
SN0118	Selkirk Avenue	MH100	MH122	250	73	VCT	1952	3	33	23	\$562.12	
SN0119	Selkirk Avenue	MH121	MH122	250	43.1	VCT	1952	3	33	23	\$331.88	
SN0120	Selkirk Avenue	MH121	MH123	250	64.9	VCT	1952	3	33	23	\$499.75	
SN0121	Selkirk Avenue	MH123	MH124	250	57.8	VCT	1952	3	33	23	\$445.08	
SN0122	Selkirk Avenue/HWY 17	MH124	MH125	250	120.4	VCT	1952	3	33	23	\$927.12	
SN0123	Easement	MH125	MH126	250	24.6	VCT	1952	3	33	23	\$189.43	
SN0124	Easement	MH126	MH127	250	31.9	VCT	1952	3	33	23	\$245.64	
SN0125	Easement	MH127	MH128	250	16.7	VCT	1952	3	33	23	\$128.60	
SN0126	Easement	MH128	MH129	250	15	VCT	1952	3	33	23	\$115.50	
SN0127	Cartier Road	MH129	MH130	200	40	VCT	1952	3	33	23	\$308.01	
SN0128	Cartier Road	MH130	MH131	200	21.5	VCT	1952	3	33	23	\$165.56	
SN0129	Easement	MH131	MH132	250	58.6	VCT	1952	3	33	23	\$451.24	
SN0130	Easement	MH132	MH133	250	69.6	VCT	1952	3	33	23	\$535.94	
SN0131	Kenogami Road	MH129	MH134	300	76.7	VCT	1952	3	33	23	\$590.61	
SN0132	Kenogami Road	MH134	MH135	200	17.4	VCT	1952	3	33	23	\$133.99	
SN0133	Kenogami Road	MH135	MH136	200	16.2	VCT	1952	3	33	23	\$124.74	
												~Cracking Present ~Camera Under Water (2nd Vid)
SN0134	Kenogami Road	MH136	MH137	200	125.7	VCT	1952	3	33	23	\$967.93	
SN0135	Kenogami Road	MH137	MH138	200	127	VCT	1952	3	33	23	\$977.94	
SN0136	Kenogami Road	MH138	MH139	200	40.5	VCT	1952	3	33	23	\$311.86	
SN0137	Kenogami Road	MH139	MH140	200	52.1	VCT	1952	3	33	23	\$401.19	
SN0138	Kenogami Road	MH140	MH141	200	49.8	VCT	1952	3	33	23	\$383.47	
SN0139	MacDonald Avenue	MH141	MH142	250	156	VCT	1952	3	33	23	\$1,201.25	
SN0140	MacDonald Avenue	MH142	MH143	250	54.5	VCT	1952	3	33	23	\$419.67	
SN0141	Easement/HWY 17	MH143	MH144	200	56.1	VCT	1952	3	33	23	\$431.99	
SN0142	Kenogami Road	MH141	MH145	200	70.7	VCT	1952	3	33	23	\$544.41	

Terrace Bay Sanitary Sewer System Inventory												
Asset ID	Street	Manhole (from)	Manhole (to)	Dia. (mm)	Length (m)	Material	Year Installed	Condition Rating	ACI	Remaining Useful Life (yrs)	Estimated Current Year Value	Notes
SN0143	Kenogami Road	MH145	MH146	200	28.2	VCT	1952	3	33	23	\$217.15	
SN0144	Kenogami Road	MH146	MH147	200	124.8	VCT	1952	3	33	23	\$961.00	
SN0145	Kenogami Road	MH147	MH148	200	39.9	VCT	1952	3	33	23	\$307.24	
SN0146	Beach Road	MH135	MH149	300	47.1	VCT	1952	3	33	23	\$362.68	
SN0147	Beach Road	MH149	MH150	300	66.7	VCT	1952	3	33	23	\$513.61	
SN0148	Beach Road	MH150	MH151	300	132.9	VCT	1952	3	33	23	\$1,023.37	
SN0149	Beach Road	MH151	MH152	300	15	VCT	1952	3	33	23	\$115.50	
SN0150	Lakeview Drive	MH153	MH154	200	69.3	VCT	1972	2	66	46	\$3,569.82	
SN0151	Lakeview Drive	MH154	MH155	200	66.5	VCT	1972	2	66	46	\$3,425.59	
SN0152	Lakeview Drive	MH155	MH156	200	77.9	VCT	1972	2	66	46	\$4,012.83	
SN0153	Lakeview Drive	MH156	MH157	200	64	VCT	1972	2	66	46	\$3,296.81	
SN0154	Lakeview Drive	MH157	MH158	200	45.5	VCT	1972	2	66	46	\$2,343.82	
SN0155	Lakeview Drive	MH158	MH159	200	83.8	VCT	1972	2	66	46	\$4,316.75	
SN0156	Lakeview Drive	MH159	MH160	200	25.5	VCT	1972	2	66	46	\$1,313.57	
SN0157	Lakeview Drive	MH160	MH161	200	79.3	VCT	1952	3	33	23	\$610.63	
SN0158	Lakeview Drive	MH161	MH162	200	64.2	VCT	1952	3	33	23	\$494.36	
SN0159	Lakeview Drive	MH162	MH163	300	71.1	VCT	1952	3	33	23	\$547.49	
SN0160	Lakeview Drive	MH163	MH164	300	90.1	VCT	1952	3	33	23	\$693.80	
SN0161	Lakeview Drive	MH164	MH165	300	87.8	VCT	1952	3	33	23	\$676.09	
SN0162	Superior Avenue	MH155	MH166	200	77.3	VCT	1972	2	66	46	\$3,981.92	
SN0163	Superior Avenue	MH166	MH167	200	88.9	VCT	1972	2	66	46	\$4,579.47	
SN0164	Strathcona Avenue	MH168	MH169	200	66.3	VCT	1972	2	66	46	\$3,415.28	
SN0165	Strathcona Avenue	MH169	MH170	200	50	VCT	1972	2	66	46	\$2,575.63	
SN0166	Strathcona Avenue	MH170	MH171	200	62.8	VCT	1972	2	66	46	\$3,234.99	
SN0167	Easement	MH158	MH170	250	84.1	VCT	1972	2	66	46	\$4,332.21	Strathcona - Lakeview
SN0168	Superior Avenue	MH172	MH173	200	60.4	VCT	1952	3	33	23	\$465.10	
SN0169	Superior Avenue	MH174	MH175	200	39.1	VCT	1952	3	33	23	\$301.08	
SN0170	Superior Avenue	MH175	MH176	200	69.3	VCT	1952	3	33	23	\$533.63	
SN0171	Superior Avenue	MH167	MH176	200	66	VCT	1972	2	66	46	\$3,399.83	
SN0172	Princess Avenue	MH174	MH177	200	38.3	VCT	1952	3	33	23	\$294.92	
SN0173	Princess Avenue	MH177	MH178	200	39.5	VCT	1952	3	33	23	\$304.16	
SN0174	Princess Avenue	MH178	MH179	200	40	VCT	1952	3	33	23	\$308.01	
SN0175	Princess Avenue	MH179	MH180	200	70.9	VCT	1952	3	33	23	\$545.95	
SN0176	Princess/Fort Garry	MH180	MH181	200	65.1	VCT	1952	3	33	23	\$501.29	
SN0177	Fort Garry	MH181	MH182	200	88.1	VCT	1952	3	33	23	\$678.40	
SN0178	Fort Garry/Superior	MH181	MH183	200	93	VCT	1952	3	33	23	\$716.13	



Terrace Bay Storm Sewer System Inventory												
Asset ID	Street	Manhole (from)	Manhole (to)	Dia. (mm)	Length (m)	Material	Year Installed	Condition Rating	ACI	Remaining Useful Life (yrs)	Estimated Current Year Value	Notes
ST0001	East Grove Crescent	MH1A	MH2A	250	58.6	Transite	1980	2	66	40	\$5,016.73	
ST0002	East Grove Crescent	MH2A	MH3A	250	27.6	Transite	1980	2	66	40	\$2,362.83	
ST0003	East Grove Crescent	MH3A	MH4A	250	115.6	Transite	1980	2	66	40	\$9,896.49	
ST0004	East Grove Crescent	MH4A	MH5A	300	91.8	Transite	1980	2	66	40	\$7,858.98	
ST0005	East Grove Court	MH5A	MH6A	250	41.6	Transite	1980	2	66	40	\$3,561.37	
ST0006	East Grove Crescent	MH5A	MH7A	375	68.8	Transite	1980	2	66	40	\$5,889.95	
ST0007	East Grove Crescent	MH7A	MH8A	525	34.7	Transite	1980	2	66	40	\$2,970.66	
ST0008	East Grove Crescent	MH8A	MH9A	525	52.5	Transite	1980	2	66	40	\$4,494.51	
ST0009	East Grove Crescent	MH9A	MH10A	600	93.6	Transite	1980	2	66	40	\$8,013.08	
ST0010	East Grove Crescent	MH11A	MH12	250	57.7	Transite	1980	2	66	40	\$4,939.69	
ST0011	East Grove Crescent	MH12A	MH13A	250	76.5	Transite	1980	2	66	40	\$6,549.15	
ST0012	East Grove Crescent	MH13A	MH14A	250	57.4	Transite	1980	2	66	40	\$4,914.00	
ST0013	Terrace Heights	MH14A	MH15A	450	43.8	Transite	1980	2	66	40	\$3,749.71	
ST0014	Terrace Heights	MH15A	MH10A	450	34.8	Transite	1980	2	66	40	\$2,979.22	
ST0015	Terrace Heights	MH16A	MH17A	300	39.9	Transite	1980	2	66	40	\$3,415.83	
ST0016	Terrace Heights	MH17A	MH18A	300	42	Transite	1980	2	66	40	\$3,595.61	
ST0017	Terrace Heights	MH18A	MH19A	375	47	Transite	1980	2	66	40	\$4,023.66	
ST0018	Terrace Heights	MH19A	MH14A	450	50.2	Transite	1980	2	66	40	\$4,297.61	
ST0019	Terrace Heights	MH10A	MH20A	600	60.2	Transite	1980	2	66	40	\$5,153.71	
ST0020	Terrace Heights	MH21A	MH22A	200	32.2	Transite	1980	2	66	40	\$2,756.64	
ST0021	Terrace Heights	MH22A	MH23A	200	58.5	Transite	1980	2	66	40	\$5,008.17	
ST0022	Cavanaugh Easement	MH24A	MH25A	300	79.1	Transite	1980	2	66	40	\$6,771.74	
ST0023	Terrace Heights	MH23A	MH26A	300	80.3	Transite	1980	2	66	40	\$6,874.47	
ST0024	Terrace Heights	MH26A	MH27A	300	34.6	Transite	1980	2	66	40	\$2,962.10	
ST0025	Terrace Heights	MH28A	MH29A	300	90.1	Transite	1980	2	66	40	\$7,713.44	
ST0026	Terrace Heights	MH29A	MH30A	300	26.5	Transite	1980	2	66	40	\$2,268.66	
ST0027	Southridge Crescent	MH31A	MH32A	300	96	Transite	1976	2	66	40	\$4,858.85	
ST0028	Southridge Crescent	MH32A	MH33A	300	85.4	Transite	1976	2	66	40	\$4,322.35	
ST0029	Southridge Crescent	MH33A	MH34A	350	72.1	Transite	1976	2	66	40	\$3,649.20	
ST0030	Southridge Crescent	MH34A	MH35A	400	58.4	Transite	1976	2	66	40	\$2,955.80	
ST0031	Southridge Crescent	MH35A	MH36A	300	37.8	Transite	1976	2	66	40	\$1,913.17	
ST0032	Southridge Crescent	MH36A	MH37A	300	79	Transite	1976	2	66	40	\$3,998.43	
ST0033	Southridge Crescent	MH37A	MH28A	300	56.6	Transite	1976	2	66	40	\$2,864.70	
ST0034	Southridge Crescent	MH38A	MH39A	250	30.3	Transite	1976	2	66	40	\$1,533.58	
ST0035	Southridge Crescent	MH39A	MH40A	375	93.4	Transite	1976	2	66	40	\$4,727.26	
ST0036	Southridge Crescent	MH40A	MH41A	375	23.5	Transite	1976	2	66	40	\$1,189.41	
ST0037	Easement	MH40A	MH42A	375	59	Transite	1980	2	66	40	\$5,050.98	
ST0038	Parkway Place	MH42A	MH43A	300	59.4	Transite	1980	2	66	40	\$5,085.22	
ST0039	Parkway Place	MH42A	MH44A	450	24.2	Transite	1980	2	66	40	\$2,071.76	
ST0040	Parkway Place	MH44A	MH45A	450	66.1	Transite	1980	2	66	40	\$5,658.81	
ST0041	Parkway Place	MH45A	MH46A	450	68.5	Transite	1980	2	66	40	\$5,864.27	
ST0042	Parkway Place	MH46A	MH47A	450	75.2	Transite	1980	2	66	40	\$6,437.86	
ST0043	Parkway Place	MH47A	MH48A	200	18.9	Transite	1980	2	66	40	\$1,618.03	

# Terrace Bay Storm Sewer System Inventory

Asset ID	Street	Manhole (from)	Manhole (to)	Dia. (mm)	Length (m)	Material	Year Installed	Condition Rating	ACI	Remaining Useful Life (yrs)	Estimated Current Year Value	Notes
ST0044	Parkway Place	MH48A	MH49A	500	85.3	Transite	1976	2	66	40	\$4,317.29	
ST0045	Parkway Place	MH49A	MH50A	400	69.5	Transite	1976	2	66	40	\$3,517.61	
ST0046	Parkway Place	MH50A	MH51A	400	60.9	Transite	1976	2	66	40	\$3,082.33	
ST0047	Easement	MH51A	MH52A	400	46.8	Transite	1976	2	66	40	\$2,368.69	
ST0048	Easement	MH52A	MH53A	400	41.2	Transite	1976	2	66	40	\$2,085.26	
ST0049	Easement	MH53A	MH54A	400	34.6	Transite	1976	2	66	40	\$1,751.21	
ST0050	Easement	MH52A	MH55A	400	11.1	Transite	1976	2	66	40	\$561.80	
ST0051	Easement	MH55A	MH56A	400	46.2	Transite	1976	2	66	40	\$2,338.32	
ST0052	Timbergrove Road	MH56A	MH57A	400	54.9	Transite	1976	2	66	40	\$2,778.66	
ST0053	Timbergrove Road	MH57A	MH58A	200	24.7	Transite	1976	2	66	40	\$1,250.14	
ST0054	Timbergrove Court	MH58A	MH59A	200	82.2	Transite	1976	2	66	40	\$4,160.39	
ST0055	Timbergrove Court	MH59A	MH60A	200	53.5	Transite	1976	2	66	40	\$2,707.80	
ST0056	Timbergrove Road	MH56A	MH61A	300	40.5	Transite	1976	2	66	40	\$2,049.83	
ST0057	Terrace Heights	MH61A	MH62A	300	60.9	Transite	1976	2	66	40	\$3,082.33	
ST0058	Terrace Heights	MH62A	MH63A	250	44.3	Transite	1976	2	66	40	\$2,242.16	
ST0059	Terrace Court	MH63A	MH64A	200	64.4	Transite	1976	2	66	40	\$3,259.48	
ST0060	Terrace Court	MH64A	MH65A	200	48.6	Transite	1976	2	66	40	\$2,459.79	
ST0061	Lakeview Drive	MH66A	MH67A	200	69.7	VCT	1980	2	66	46	\$7,008.86	
ST0062	Lakeview Drive	MH67A	MH68A	200	64.6	VCT	1980	2	66	46	\$6,496.02	
ST0063	Lakeview Drive	MH68A	MH69A	200	45.2	VCT	1980	2	66	46	\$4,545.20	
ST0064	Lakeview Drive	MH69A	MH70A	250	77.3	VCT	1980	2	66	46	\$7,773.10	
ST0065	Easement	MH69A	CB135	300	81.9	VCT	1980	2	66	46	\$8,235.66	Strathcona - Lakeview
ST0066	Strathcona Avenue	MH71A	MH72A	200	59.6	VCT	1980	2	66	46	\$5,993.23	
ST0067	Strathcona Avenue	MH72A	MH73A	200	66.7	VCT	1980	2	66	46	\$6,707.19	
ST0068	Easement	MH74A	MH75A	300	91.4	VCT	1980	2	66	46	\$9,190.96	Superior/Fort Garry Int.
ST0069	Easement	MH74A	CB127	200	23.2	VCT	1980	2	66	46	\$2,332.93	Superior/Fort Garry Int.
ST0070	Easement	MH75A	MH70A	300	84.2	VCT	1980	2	66	46	\$8,466.94	Superior - Lakeview
ST0071	Easement	MH70A	MH76A	300	57.3	VCT	1980	2	66	46	\$5,761.95	
ST0072	Easement	MH76A	MH77A	300	80	VCT	1980	2	66	46	\$8,044.60	
ST0073	Birch Crescent	CBMH1	CBMH2	200	58.2	VCT	1956	3	33	23	\$687.39	
ST0074	Hudson Drive	CBMH2	CBMH3	200	21.6	VCT	1956	3	33	23	\$255.11	
ST0075	Hudson Drive	CBMH2	CBMH4	200	71.1	VCT	1956	3	33	23	\$839.75	
ST0076	Hudson Drive	CBMH5	CBMH6	150	72.6	VCT	1956	3	33	23	\$857.47	
ST0077	Hudson Drive	CBMH6	CBMH7	150	20.4	VCT	1956	3	33	23	\$240.94	
ST0078	Hudson Drive	CBMH7	CBMH8	150	28.3	VCT	1956	3	33	23	\$334.25	
ST0079	Hudson Drive	CBMH8	CBMH9	150	53.9	VCT	1956	3	33	23	\$636.60	
ST0080	Pine Crescent	CBMH9	CBMH10	150	55.5	VCT	1956	3	33	23	\$655.50	
ST0081	Hudson Drive	CBMH9	CBMH11	150	94.8	VCT	1956	3	33	23	\$1,119.67	
ST0082	Hudson Drive	CBMH11	CBMH12	150	110.5	VCT	1956	3	33	23	\$1,305.10	
ST0083	Selkirk Avenue	CBMH13	CBMH14	200	17.4	VCT	1956	3	33	23	\$205.51	
ST0084	Laurier Avenue	CBMH14	CBMH15	150	82.7	VCT	1956	3	33	23	\$976.76	
ST0085	Laurier Avenue	CBMH15	CBMH16	150	18.9	VCT	1956	3	33	23	\$223.22	
ST0086	Laurier Avenue	CBMH16	CBMH17	150	20.3	VCT	1956	3	33	23	\$239.76	



# Terrace Bay Storm Sewer System Inventory

Asset ID	Street	Manhole (from)	Manhole (to)	Dia. (mm)	Length (m)	Material	Year Installed	Condition Rating	ACI	Remaining Useful Life (yrs)	Estimated Current Year Value	Notes
ST0087	Selkirk Avenue	CBMH14	CBMH18	200	72.5	VCT	1956	3	33	23	\$856.29	
ST0088	Selkirk Avenue	CBMH18	CBMH19	200	37.2	VCT	1956	3	33	23	\$439.36	
ST0089	Laurier Avenue	CBMH19	CBMH20	200	48.2	VCT	1956	3	33	23	\$569.28	
ST0090	Laurier Avenue	CBMH19	CBMH21	200	29.3	VCT	1956	3	33	23	\$346.06	
ST0091	Howe Street	CBMH22	CBMH23	150	73.2	VCT	1956	3	33	23	\$864.55	
ST0092	Hudson Drive	CBMH23	CBMH24	150	18.5	VCT	1956	3	33	23	\$218.50	
ST0093	Hudson Drive	CBMH3	CBMH24	200	48.5	VCT	1956	3	33	23	\$572.83	
ST0094	Hudson Drive	CBMH24	CBMH25	200	89.6	VCT	1956	3	33	23	\$1,058.25	
ST0095	Hudson Drive	CBMH25	CBMH26	200	106.8	VCT	1956	3	33	23	\$1,261.40	
ST0096	Selkirk Avenue	CBMH26	CBMH27	200	50.7	VCT	1956	3	33	23	\$598.81	
ST0097	Selkirk Avenue	CBMH19	CBMH27	200	43	VCT	1956	3	33	23	\$507.87	
ST0098	Hudson Drive	CBMH26	CBMH28	200	57.1	VCT	1956	3	33	23	\$674.40	
ST0099	Hudson Drive	CBMH28	CBMH29	200	52.3	VCT	1956	3	33	23	\$617.71	
ST0100	Radisson Avenue	CBMH29	CBMH30	200	19.7	VCT	1956	3	33	23	\$232.67	
ST0101	Radisson Avenue	CBMH30	CBMH31	200	53.4	VCT	1956	3	33	23	\$630.70	
ST0102	Radisson Avenue	CBMH31	CBMH32	200	57.4	VCT	1956	3	33	23	\$677.94	
ST0103	Radisson Avenue	CBMH29	CBMH33	200	81.6	VCT	1956	3	33	23	\$963.77	
ST0104	Radisson Avenue	CBMH33	CBMH34	200	78.1	VCT	1956	3	33	23	\$922.43	
ST0105	Selkirk Avenue	CBMH35	CBMH36	200	56.9	VCT	1956	3	33	23	\$672.04	
ST0106	Selkirk Avenue	CBMH36	CBMH37	200	53	VCT	1956	3	33	23	\$625.97	
ST0107	Selkirk Avenue	CBMH37	CBMH38	200	68.9	VCT	1956	3	33	23	\$813.77	
ST0108	Selkirk Avenue	CBMH38	CBMH39	200	61.3	VCT	1956	3	33	23	\$724.00	
ST0109	Highway 17	CBMH40	CBMH41	200	122	VCT	1956	3	33	23	\$1,440.92	
ST0110	Simcoe Plaza	CBMH41	CBMH42	200	64.4	VCT	1956	3	33	23	\$760.62	
ST0111	Simcoe Plaza	CBMH42	CBMH43	150	68.3	VCT	1956	3	33	23	\$806.68	
ST0112	Simcoe Plaza	CBMH43	CBMH44	200	76.4	VCT	1956	3	33	23	\$902.35	
ST0113	Simcoe Plaza	CBMH44	CBMH45	200	29.2	VCT	1956	3	33	23	\$344.88	
ST0114	Radisson/Kenogami	CBMH32	CBMH46	375	36.3	VCT	1956	3	33	23	\$428.73	X HWY
ST0115	Kenogami Road	CBMH46	CBMH47	375	57.4	VCT	1956	3	33	23	\$677.94	
ST0116	Kenogami Road	CBMH47	CBMH48	375	41.2	VCT	1956	3	33	23	\$486.61	
ST0117	Kenogami Road	CBMH48	CBMH49	375	75.8	VCT	1956	3	33	23	\$895.26	
ST0118	Kenogami Road	CBMH49	CBMH50	375	48.3	VCT	1956	3	33	23	\$570.46	
ST0119	Kenogami Road	CBMH50	CBMH51	375	62.9	VCT	1956	3	33	23	\$742.90	
ST0120	Kenogami Road	CBMH51	CBMH52	375	45.3	VCT	1956	3	33	23	\$595.03	
ST0121	Kenogami Road	CBMH52	CBMH53	375	59.5	VCT	1956	3	33	23	\$702.75	
ST0122	Lakeview Drive	CBMH53	CBMH54	250	42.1	VCT	1956	3	33	23	\$497.24	
ST0123	Lakeview Drive	CBMH54	CBMH55	250	89.6	VCT	1956	3	33	23	\$1,058.25	
ST0124	Lakeview Drive	CBMH55	CBMH56	250	85.4	VCT	1956	3	33	23	\$1,008.65	
ST0125	Fort Garry	CBMH57	CBMH58	150	73	VCT	1956	3	33	23	\$862.19	
ST0126	Lakeview Drive	CBMH59	CBMH60	250	53.2	VCT	1956	3	33	23	\$628.34	
ST0127	Lakeview Drive	CBMH60	CBMH61	250	47.3	VCT	1956	3	33	23	\$558.65	
ST0128	Lakeview Drive	CBMH61	CBMH62	250	48.6	VCT	1956	3	33	23	\$574.01	
ST0129	Superior Avenue	CBMH63	CB127	250	114.5	VCT	1956	3	33	23	\$1,352.34	Strathcona - Fort Garry

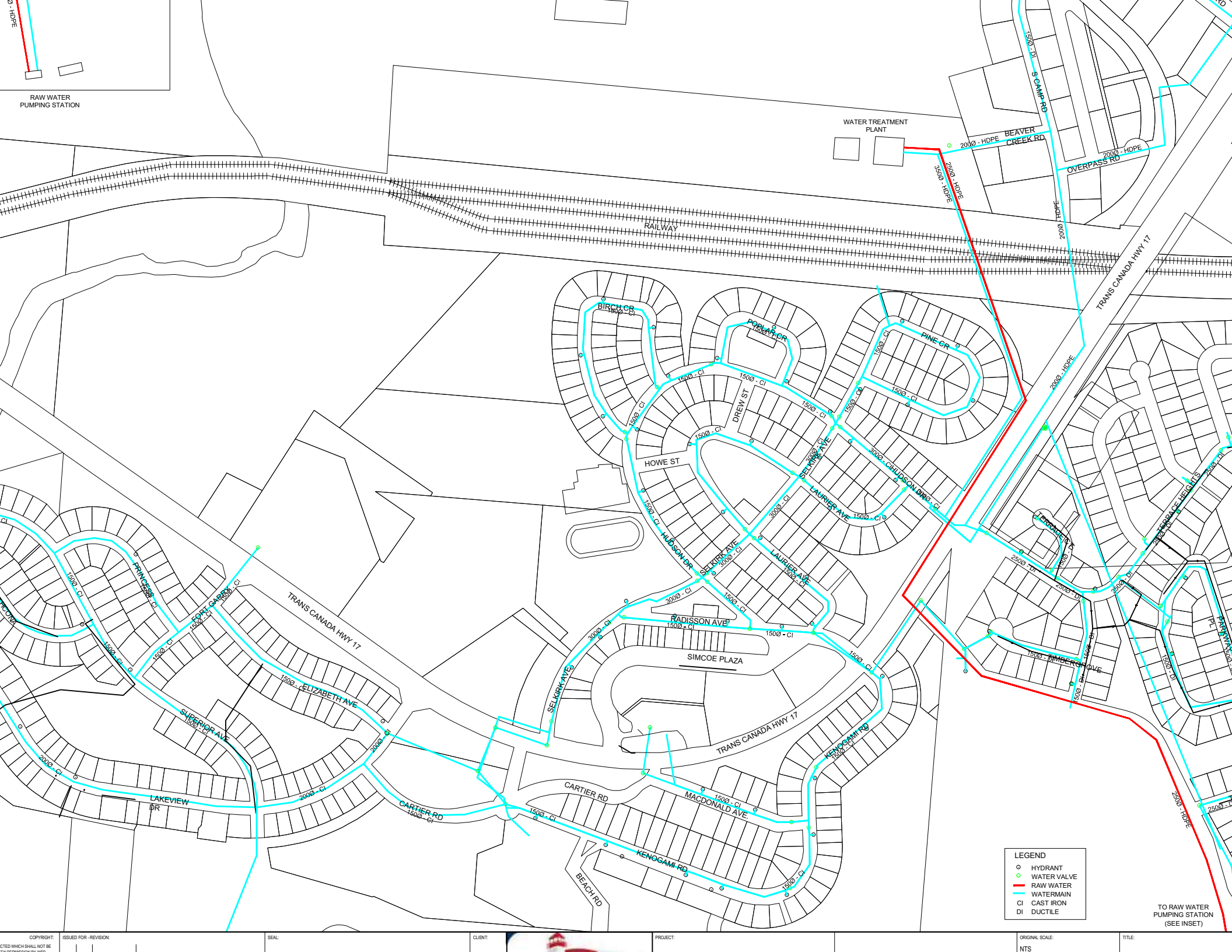
Terrace Bay Storm Sewer System Inventory												
Asset ID	Street	Manhole (from)	Manhole (to)	Dia. (mm)	Length (m)	Material	Year Installed	Condition Rating	ACI	Remaining Useful Life (yrs)	Estimated Current Year Value	Notes
ST0130	Superior Avenue	CBMH64	CBMH65	250	52	VCT	1956	3	33	23	\$614.16	Elizabeth Easement - Lakeview
ST0131	Superior Avenue	CBMH65	MH76 A	250	69.1	VCT	1956	3	33	23	\$816.13	Elizabeth Easement - Lakeview
ST0132	Simcoe Plaza	CBMH45	CBMH66	200	41	VCT	1956	3	33	23	\$484.24	
ST0133	Simcoe Plaza	CBMH66	CBMH67	200	42	VCT	1956	3	33	23	\$496.06	
ST0134	MacDonald Avenue	CBMH68	CBMH69	250	63.4	PVC	1985	3	33	26	\$7,839.96	
ST0135	MacDonald Avenue	CBMH69	CBMH70	250	60.6	PVC	1985	3	33	26	\$7,493.71	
ST0136	MacDonald Avenue	CBMH70	CBMH51	250	31.8	PVC	1985	3	33	26	\$3,932.34	
ST0137	Easement	CB129	CBMH64	200	128	VCT	1956	3	33	23	\$4,522.37	Elizabeth Easement
TOTAL					7982.1							





# Appendix B

**DRAWINGS**



WATER TREATMENT PLANT

RAW WATER PUMPING STATION

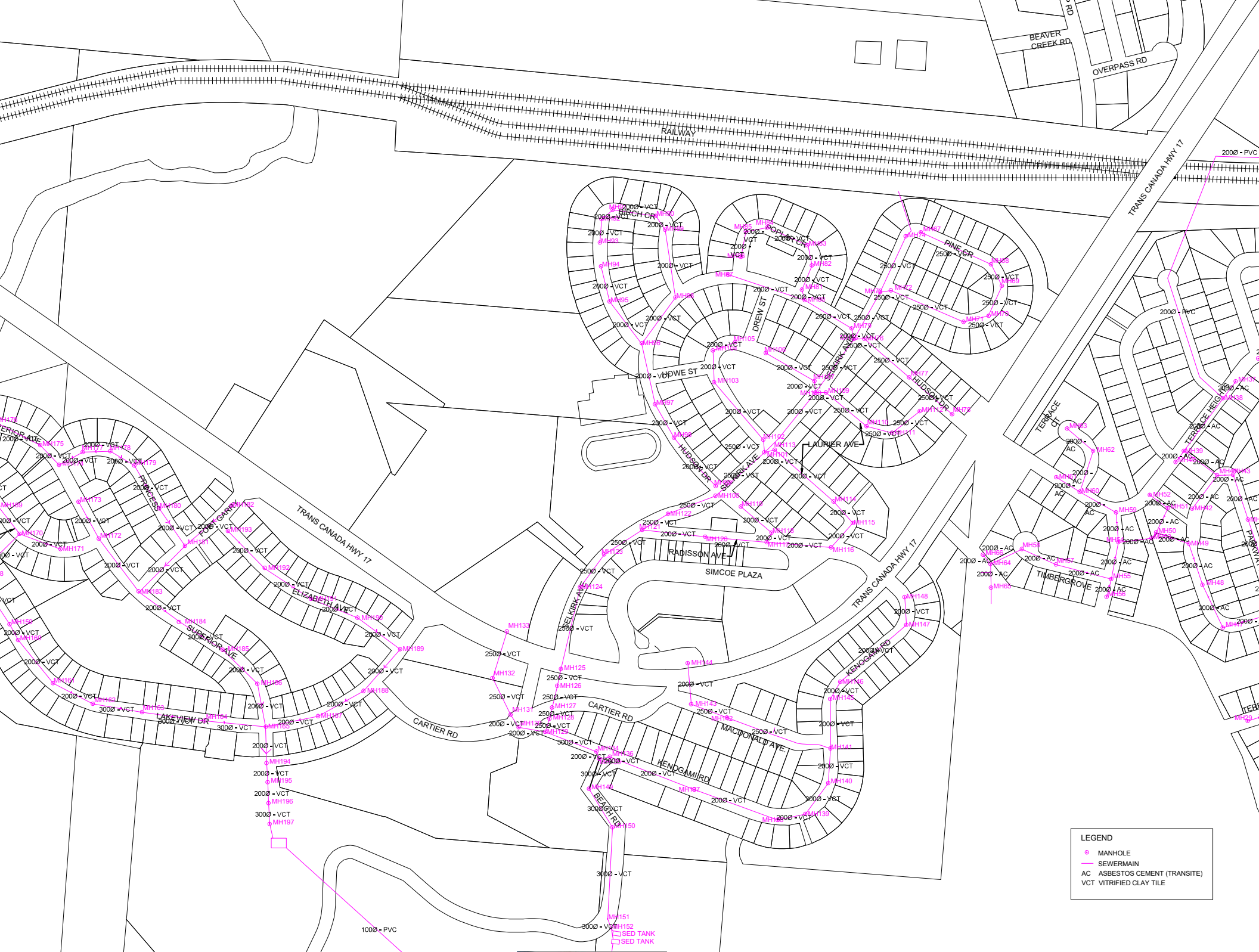
- LEGEND
- HYDRANT
  - WATER VALVE
  - RAW WATER
  - WATERMAIN
  - CI CAST IRON
  - DI DUCTILE

TO RAW WATER PUMPING STATION (SEE INSET)



LEGEND

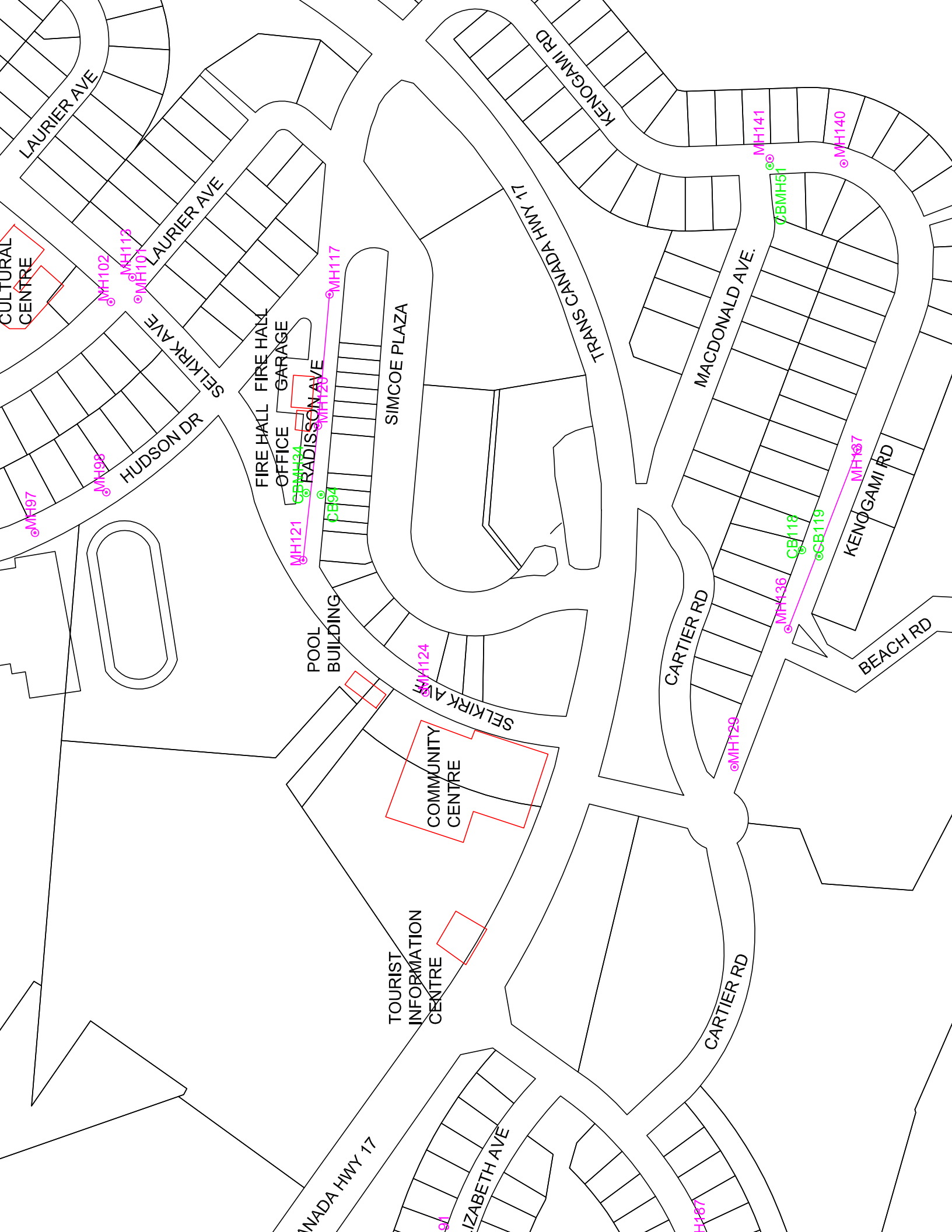
- CATCHBASIN
- CATCHBASIN MANHOLE
- SEWERMAIN
- ASBESTOS CEMENT (TRANSITE)
- VCT VITRIFIED CLAY TILE
- PVC POLYVINYL CHLORIDE



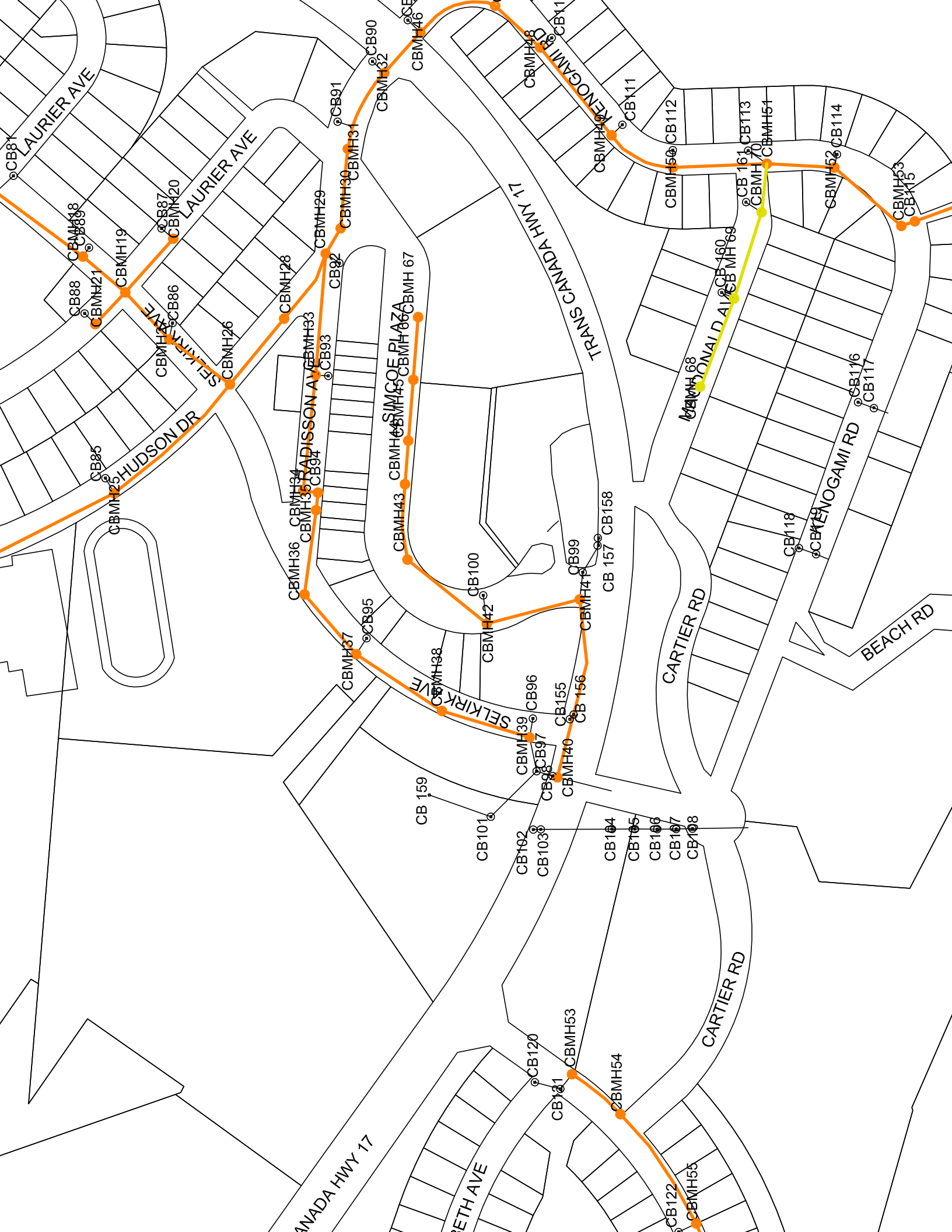
LEGEND

- MANHOLE
- SEWERMAIN
- AC ASBESTOS CEMENT (TRANSITE)
- VCT VITRIFIED CLAY TILE



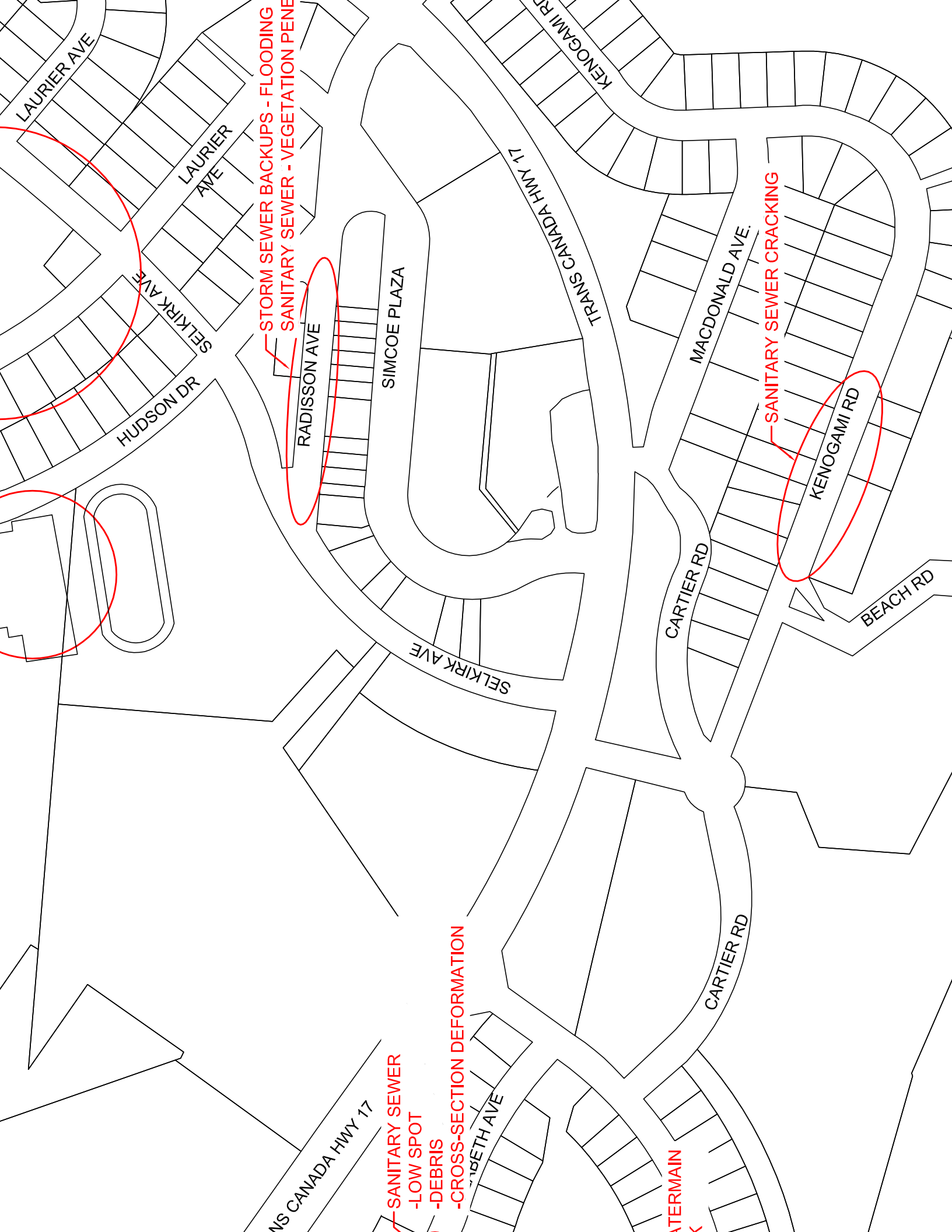












LAURIER AVE

LAURIER AVE

SELKIRK AVE

HUDSON DR

STORM SEWER BACKUPS - FLOODING  
SANITARY SEWER - VEGETATION PENETRATION

RADISSON AVE

SIMCOE PLAZA

TRANS CANADA HWY 17

KENOGAMI RD

MACDONALD AVE

CARTIER RD

KENOGAMI RD

BEACH RD

SELKIRK AVE

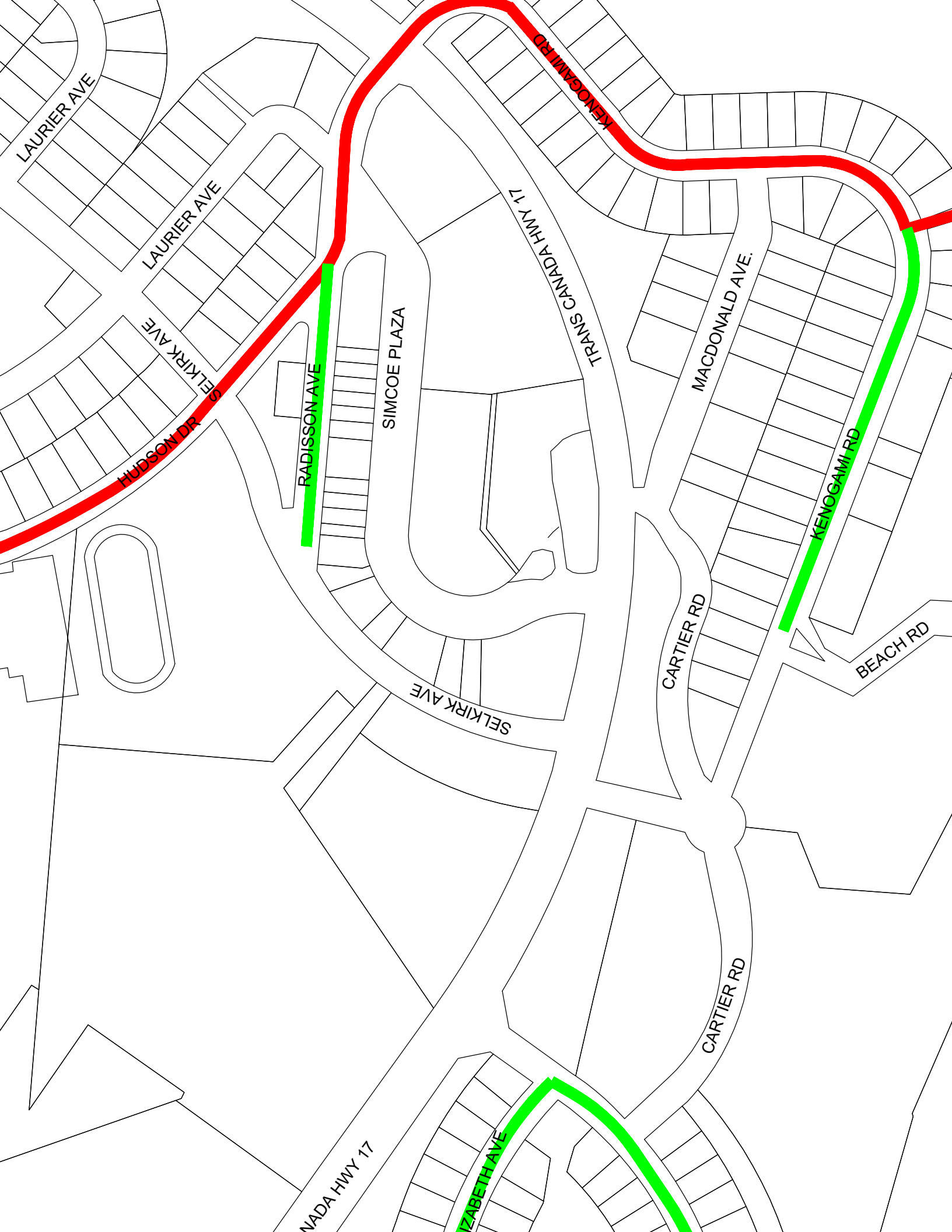
CARTIER RD

TRANS CANADA HWY 17

SANITARY SEWER  
-LOW SPOT  
-DEBRIS  
-CROSS-SECTION DEFORMATION

SELKIRK AVE

WATER MAIN



LAURIER AVE

LAURIER AVE

ELKIRK AVE

HUDSON DR

RADISSON AVE

SIMCOE PLAZA

SELKIRK AVE

TRANS CANADA HWY 17

MACDONALD AVE.

CARTIER RD

CARTIER RD

KENOGAMI RD

BEACH RD

NADA HWY 17

IZABETA AVE

# Appendix C

**CCTV PHOTOS**



**TERRACE BAY SANITARY**  
CCTV SUMMARY

**121-24700-00**

East Grove



Pipe Deformation

Hudson

MH76 SE



Cracking (Top)



Root





121-24700-00

Solids Coming  
Through Joint

Hudson  
MH77SE



Solids Coming  
Through Joint



Root



121-24700-00

Cracking

Hudson  
MH78 NW



Debris

Raddison  
120E



Penetration



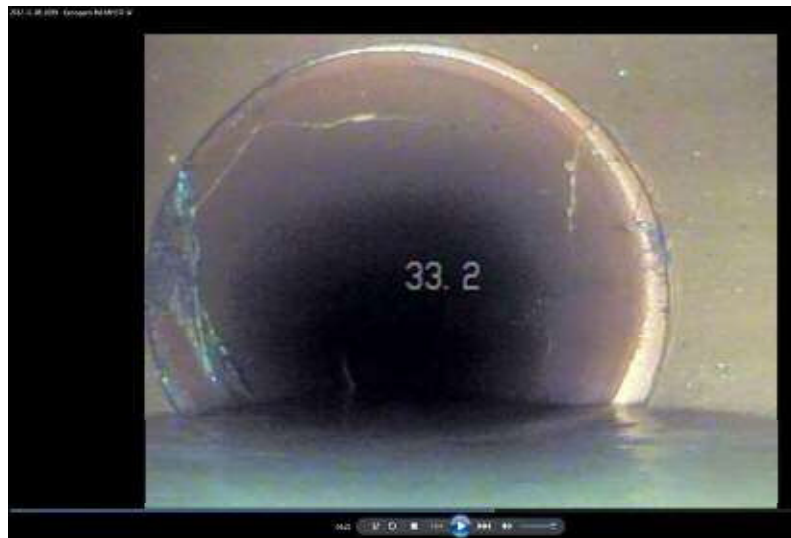
Raddison  
MH120W



121-24700-00

Roots

Kenogami  
MH 137

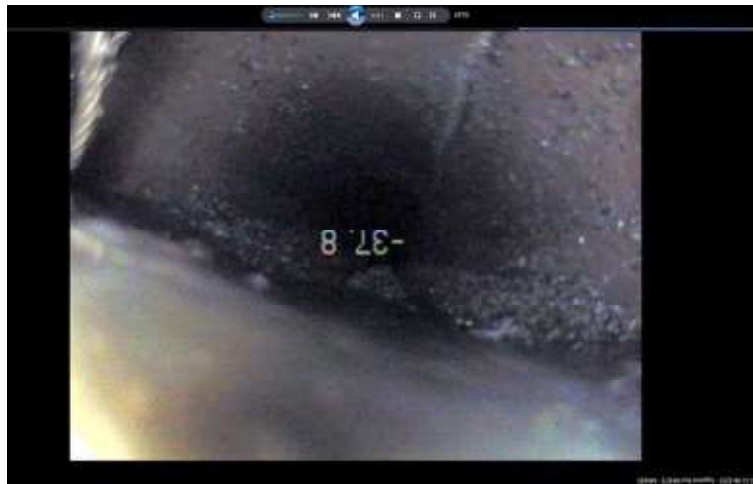


Cracking

Superior  
MH172-183



Crack



121-24700-00

Crack



Roots





121-24700-00

Water Infiltration

Elizabeth

MH191-192



Pipe Deformation



Solid Coming  
Through Joint

# Appendix D

INSPECTION SHEETS



A solid teal-colored diagonal band runs from the bottom-left corner to the top-right corner of the image, creating a split background with white on the other side.

# Catchbasins



## Catch Basin Inspection Sheet

**Location**

City: Terrace Bay, ON

Street: Terrace Heights Dr.

Description: E. Side of Rd., N. of Intersection of East Grove

C.B #: 1

Job No: 121-24700-00

Date: Nov. 5/12

Inspected By: Tasha Shaule & Ryan Wilson

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Hazardous Gas checked: Y / (N)

Reading: \_\_\_\_\_

Visual Infiltration: Y / (N)

- Approx Dia. of Stream: \_\_\_\_\_
- Water flows freely but most runs down wall
- Water flows from leak in a bubbling manner and runs down wall
- Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

C.B Cover: Good / Fair / Poor

C.B Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / (Brick) / Rings

Ladder Rung Condition: Good / Poor / (None)

Benching: Good / Fair / Poor / (None) Sand up to invert

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 900 mm
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SW) Outlet Inv. 1.055 Dia: 200mm Type: CSP

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

**Notes :**


---

---

---

---

---

---

---



## Catch Basin Inspection Sheet

**Location**

City: Terrace Bay, ON

Street: Lakewood Dr.

Description: Front of Civic #81

C.B #: 2

Job No: 121-24700-00

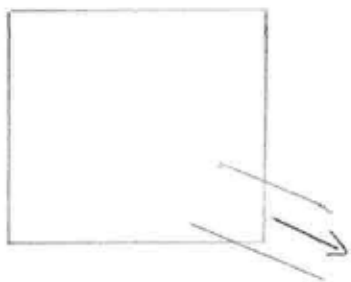
Date: Nov. 6/12

Inspected By: TS & RW

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 600mm x 600mm
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SW) Outlet Inv. 2.06 Dia: 200mm Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y/N

Reading: \_\_\_\_\_

Visual Infiltration: Y/N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☐ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

C.B Cover: Good / Fair / Poor

C.B Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**

crack on NW wall  
(See photo)

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## Catch Basin Inspection Sheet

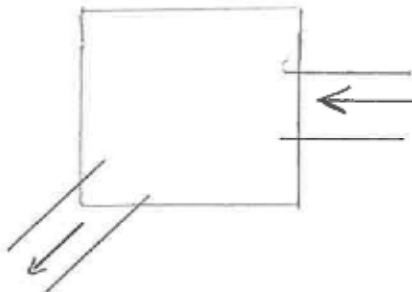
**Location**

City: Terrace Bay, ON  
 Street: Lakeview Dr.  
 Description: Front of civics #63/65  
 C.B #: 3

Job No: 121-24700-00  
 Date: Nov. 6/12  
 Inspected By: TS & RW  
 Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


 Diameter/Dimensions: 600mm x 600mm
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(E) Inlet Inv. 2.271 Dia: 250mm Type: Clay  
 ( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_  
 ( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_  
 ( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_  
 (SW) Outlet Inv. 2.328 Dia: 250 Type: Clay  
 ( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

 Hazardous Gas checked: Y (N)

Reading: \_\_\_\_\_

 Visual Infiltration: Y (N)

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☐ Water flows from leak and runs down wall

 Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

 C.B Cover: Good / Fair / Poor

 C.B Type: Precast / Cast in Place / Brick / Block

 Chimney: Precast / Cast in Place / Brick / Rings

 Ladder Rung Condition: Good / Poor / None

 Benching: Good / Fair / Poor / None

 Overall Condition: Good / Fair / Poor

**Notes :**
Pipes inside CB are broken


---



---



---



---



---

## Catch Basin Inspection Sheet

**Location**

City: Terrace Bay, ON

Street: Elizabeth Ave.

Description: \_\_\_\_\_

C.B #: 4

Job No: 121-24700-00

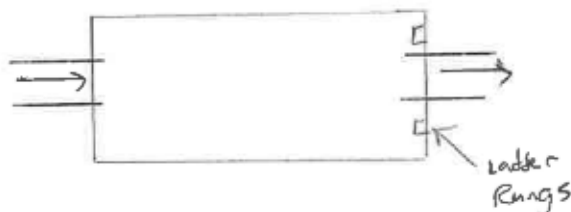
Date: Nov. 6/12

Inspected By: TS & RW

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 1200 x 600
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(SW) Inlet Inv. \_\_\_\_\_ Dia: 200 Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(NE) Outlet Inv. 1.78 Dia: 200 Type: \_\_\_\_\_

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y/N

Reading: \_\_\_\_\_

Visual Infiltration: Y/N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☐ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

C.B Cover: Good / Fair / Poor

C.B Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---



---



---



---



---



---

### Catch Basin Inspection Sheet

**Location**

City: Terrace Bay, ON

Street: Hudson Dr.

Description: \_\_\_\_\_

C.B #: 5

Job No: 121-24700-00

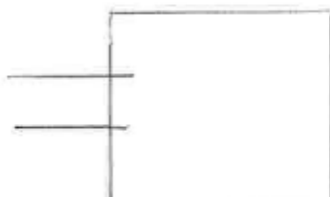
Date: Nov. 6/12

Inspected By: TS & RW

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction



Diameter/Dimensions: \_\_\_\_\_

**Invert Elevations, Diameter and Type**
\* Indicate N,W,S,E, etc

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y / N

Reading: \_\_\_\_\_

Visual Infiltration: Y / N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

C.B Cover: Good / Fair / Poor

C.B Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**
Sump Filled with debris
Video #


---



---



---



---



---

## Catch Basin Inspection Sheet

**Location**

City: Terrace Bay, ON

Street: Kenogami

Description: @ MacDonald Int.

C.B #: 6

Job No: 121-24700-00

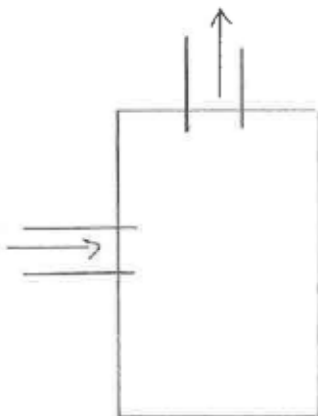
Date: Nov. 6/12

Inspected By: TS & RW

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 1200 x 600
**Invert Elevations, Diameter and Type**

\* Indicate N, W, S, E, etc

(NW) Inlet Inv. 2.01 Dia: 250 Type: PVC

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(NE) Outlet Inv. 2.08 Dia: 350 Type: \_\_\_\_\_

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y / N

Reading: \_\_\_\_\_

Visual Infiltration: Y / N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☐ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

C.B Cover: Good / Fair / Poor No hinges

C.B Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**
silt in sump.

### Catch Basin Inspection Sheet

**Location**

City: Terrace Bay, ON

Street: Timber Grove

Description: @Terrace Heights Int.

C.B #: 7

Job No: 121-24700-00

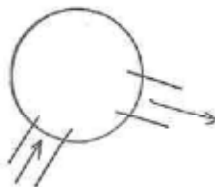
Date: Nov. 6/12

Inspected By: TS & RW

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 650mm
**Invert Elevations, Diameter and Type**

\* Indicate N, W, S, E, etc

(S<sub>E</sub>) Inlet Inv. 1.31 Dia: 200 Type: CSP

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Outlet Inv. 1.29 Dia: 200 Type: CSP

(S<sub>W</sub>) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y/N

Reading: \_\_\_\_\_

Visual Infiltration: Y/N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

C.B Cover: Good / Fair / Poor

C.B Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---

---

---

---

---

---

---

## Catch Basin Inspection Sheet

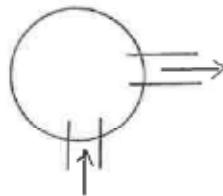
**Location**

City: Terrace Bay, ON  
 Street: Parkway Pl.  
 Description: Front of Civic # 48  
 C.B #: 8

Job No: 121-24700-00  
 Date:         
 Inspected By: TS & RW  
 Field Book No:       

**Plan View**

Indicate Ladder, Benching and Flow Direction



Diameter/Dimensions: 900 mm

**Invert Elevations, Diameter and Type**

\* Indicate N, W, S, E, etc

(SW) Inlet Inv. 0.918 Dia: 150 Type: CSP

( ) Inlet Inv.        Dia:        Type:       

( ) Inlet Inv.        Dia:        Type:       

( ) Inlet Inv.        Dia:        Type:       

(SE) Outlet Inv. 1.040 Dia: 150 Type: CSP

( ) Outlet Inv.        Dia:        Type:       

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y (N)

Reading:       

Visual Infiltration: (Y) N

- ☐ Approx Dia. of Stream:
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other       

C.B Cover: Good / Fair / Poor

C.B Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**

Grass growing around cover

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### Catch Basin Inspection Sheet

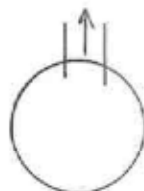
**Location**

City: Terrace Bay, ON  
 Street: Parkway Pl.  
 Description: Side of Civic # 23  
 C.B #: 9

Job No: 121- 24700 -00  
 Date: \_\_\_\_\_  
 Inspected By: TS & RW  
 Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction



Diameter/Dimensions: \_\_\_\_\_

**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_  
 ( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_  
 ( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_  
 ( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_  
 (NE) Outlet Inv. 0.782 Dia: 150 Type: CSP  
 ( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

 Hazardous Gas checked: Y / N

Reading: \_\_\_\_\_

 Visual Infiltration: Y / N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

 Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

C.B Cover: Good / Fair / Poor

 C.B Type: Precast / Cast in Place / Brick / Block

 Chimney: Precast / Cast in Place / Brick / Rings

 Ladder Rung Condition: Good / Poor / None

 Benching: Good / Fair / Poor / None

 Overall Condition: Good / Fair / Poor

**Notes :**


---



---



---



---



---



---



## Catch Basin Inspection Sheet

**Location**

City: Terrace Bay, ON

Street: Terrace Heights

Description: @ East Southridge, Front of #77

C.B #: 10

Job No: 121-24700-00

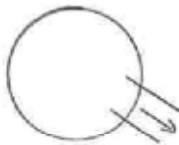
Date: Nov. 7/12

Inspected By: TS & RW

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 900 mm
**Invert Elevations, Diameter and Type**
\* Indicate N, W, S, E, etc

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(E) Outlet Inv. 0.867 Dia: 200 Type: LSP

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y / N

Reading: \_\_\_\_\_

Visual Infiltration: Y / N

- Approx Dia. of Stream: \_\_\_\_\_
- Water flows freely but most runs down wall
- Water flows from leak in a bubbling manner and runs down wall
- Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

C.B Cover: Good / Fair / Poor

C.B Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---



---



---



---



---



---

## Catch Basin Inspection Sheet

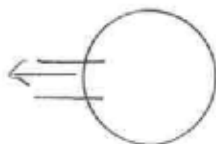
**Location**

City: Terrace Bay, ON  
 Street: Terrace Heights  
 Description: @ East Southridge, Civic #52  
 C.B #: 11

Job No: 121-24700-00  
 Date: Nov. 7/12  
 Inspected By: TS & RW  
 Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction



Diameter/Dimensions: 900 mm

**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_  
 ( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_  
 ( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_  
 ( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_  
 (W) Outlet Inv. 0.943 Dia: 200 Type: CSP  
 ( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y / (N)

Reading: \_\_\_\_\_

Visual Infiltration: Y / (N)

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

C.B Cover: Good / Fair / Poor

C.B Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---

---

---

---

---

---

---



## Catch Basin Inspection Sheet

### Location

City: Terrace Bay, ON

Street: Radisson Ave.

Description: East of Selkirk Ave.

C.B #: 12

Job No: 121-24700-00

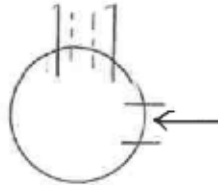
Date: \_\_\_\_\_

Inspected By: TS & RW

Field Book No: \_\_\_\_\_

### Plan View

Indicate Ladder, Benching and Flow Direction



Hazardous Gas checked: Y / N

Reading: \_\_\_\_\_

Visual Infiltration: Y / N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☐ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

C.B Cover: Good / Fair / Poor

C.B Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 900mm

### Invert Elevations, Diameter and Type

\* Indicate N, W, S, E, etc

(W) Inlet Inv. 1.103 Dia: 250 Type: CSP

(N) Inlet Inv. 1.084 Dia: 200 Type: CSP

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(W) Outlet Inv. 1.617 Dia: 150 Type: PVC

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

### Notes :

---



---



---



---



---



---

### Catch Basin Inspection Sheet

**Location**

City: Terrace Bay, ON

Street: Kenogami Rd.

Description: Between #55/57, N. Side of Rd.

C.B #: 13

Job No: 121-24700-co

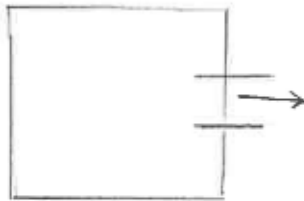
Date: Nov. 7/12

Inspected By: TS & RW

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 650 x 650
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SW) Inlet Inv. 1.940 Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y/N

Reading: \_\_\_\_\_

Visual Infiltration: Y/N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

C.B Cover: Good / Fair / Poor

C.B Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor
**Notes :**
Video #
\* Terry Hanley specifically asked for us to inspect this CB

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Catch Basin Inspection Sheet

**Location**

City: Terrace Bay, ON

Job No: 121-24700-00

Street: Kenogami Rd.

Date: Nov. 7/12

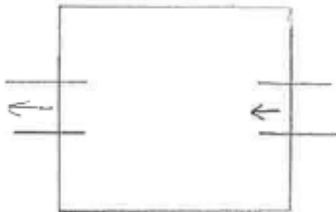
Description: S. side of Rd., Civics #55/57 Inspected By: TS & RW

C.B #: 14

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Hazardous Gas checked: Y/N

Reading: \_\_\_\_\_

Visual Infiltration: Y/N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

C.B Cover: Good / Fair / Poor One (1) hinge missing

C.B Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 650 x 650
**Invert Elevations, Diameter and Type**
\* Indicate N, W, S, E, etc

T/pipe (SW) Inlet Inv. 1.958 Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(NE) Outlet Inv. 2.128 Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover
**Notes :**
Video #
\* Terry Hanley specifically asked us to inspect this CB.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Catch Basin Inspection Sheet

**Location**

City: Terrace Bay, ON  
 Street: Terrace Heights  
 Description: S. of Civic #10, on dirt side rd.  
 C.B #: 15

Job No: 121-24700-00  
 Date: Nov. 8/12  
 Inspected By: TS & RW  
 Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction



Diameter/Dimensions: 900 mm

**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_  
 ( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_  
 ( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_  
 ( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_  
 (E) Outlet Inv. 0.900 Dia: 200 Type: CSP  
 ( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y (N)

Reading: \_\_\_\_\_

Visual Infiltration: Y (N)

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☐ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

C.B Cover: Good / Fair / Poor

C.B Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings

Ladder Rung Condition: Good / Poor / (None)

Benching: Good / Fair / Poor / (None)

Overall Condition: Good / Fair / Poor

**Notes :**


---

---

---

---

---

---

---

### Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Job No: 121-24700-00

Street: Terrace Heights

Date: Nov/03/2012

Description: North of East Grove Cr.

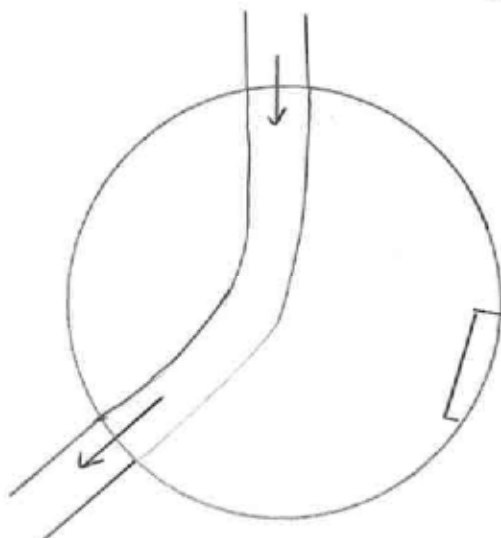
Inspected By: T.S + R.W

M.H #: 1

Field Book No: \_\_\_\_\_

Picture #'s 110-113 (closed), 118  
22
**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: Chimney 1090 MH 1200
**Invert Elevations, Diameter and Type**

\* Indicate N, W, S, E, etc

(NW) Inlet Inv. 3.30 Dia: 200 Type: Trans. Black

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(S) Outlet Inv. 3.37 Dia: 200 Type: Trans. Black

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: (Y) / N

Reading: 0

Visual Infiltration: Y (N)

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☐ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---



---



---



---



---



---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Job No: 121-24700-00

Street: Terrace Heights

Date: Nov/05/2012

Description: N+S of East Grove Cr.

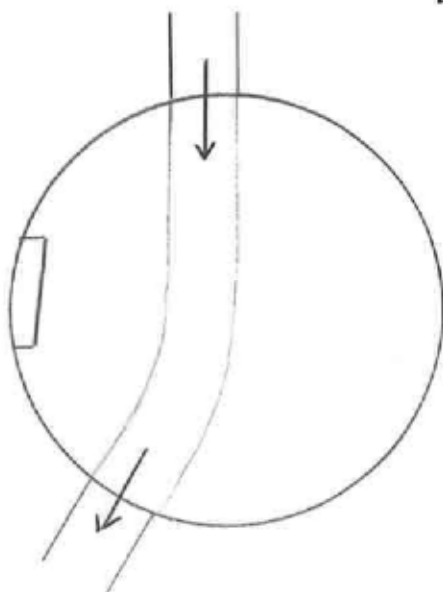
Inspected By: T.S + R.W

M.H #: 2

Field Book No: \_\_\_\_\_

Picture #'s 113(open), 114-117
**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 670 <sup>Chimney</sup> 1200 <sup>MH</sup>
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(NW) Inlet Inv. 2.58 Dia: 500 Type: Trans

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(S) Outlet Inv. 2.60 Dia: 500 Type: Trans

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: (Y) / N

Reading: 0

Visual Infiltration: (Y) / N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---



---



---



---



---



---



## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Job No: 121-24700-00

Street: Terrace Heights

Date: Nov/05/2012

Description: Intersection of Eastgrove (south)

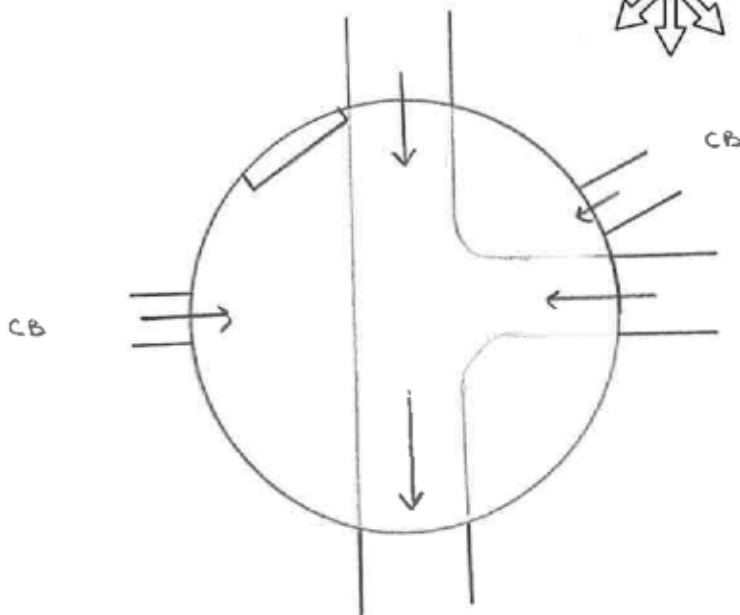
Inspected By: T.S + R.W

M.H #: 3

Field Book No: \_\_\_\_\_

Picture #'s 122, 123 - 128
**Plan View**

Indicate Ladder, Benching and Flow Direction


Hazardous Gas checked: Y (N)

Reading: \_\_\_\_\_

Visual Infiltration: (Y) N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: Chimney 1200 MH 1200
**Invert Elevations, Diameter and Type**

\* Indicate N, W, S, E, etc

(N) Inlet Inv. 4.075 Dia: 500 Type: Trans

(W) Inlet Inv. 2.08 Dia: 200 Type: CSP

(N/E) Inlet Inv. \_\_\_\_\_ Dia: 200 Type: CSP

(E) Inlet Inv. 4.0 Dia: 650 Type: Trans

(S) Outlet Inv. 4.124 Dia: 800 Type: Trans

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

**Notes :**
Above north inlet pipe look like another pipe coming in.



## Man-Hole Inspection Sheet

### Location

City: Terrace Bay

Street: Lakeview Dr

Description: Front of Civic # 81

M.H #: 4

Picture #'s 129 - 132 (open)

Job No: 121-247001-00

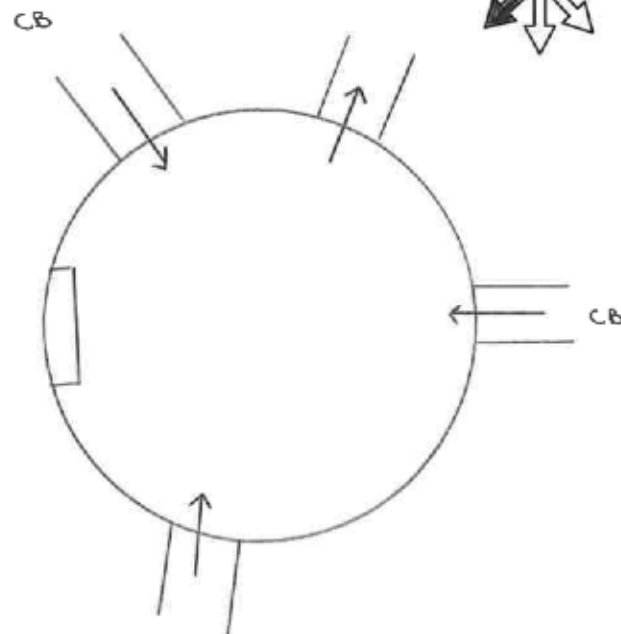
Date: Nov 10/2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

### Plan View

Indicate Ladder, Benching and Flow Direction



Hazardous Gas checked: (Y) / N

Reading: 0

Visual Infiltration: Y (N)

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☐ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 70 <sup>Chimney</sup> 1200 <sup>M.H</sup>

### Invert Elevations, Diameter and Type

\* Indicate N,W,S,E, etc

(E) Inlet Inv. 2.250 Dia: 200 Type: Clay

(NW) Inlet Inv. 3.150 Dia: 200 Type: Clay

~ (SW) Inlet Inv. 2.30 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SE) Outlet Inv. 3.160 Dia: 200 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

### Notes :

No Flow.



## Man-Hole Inspection Sheet

### Location

City: Terrace Bay

Street: Lakeview Dr

Description: Front of civic # 81 (center of Rd)

M.H #: 5

Picture #'s 132 (closed) 137-139

Video Recorded # 2

Job No: 121-24700-00

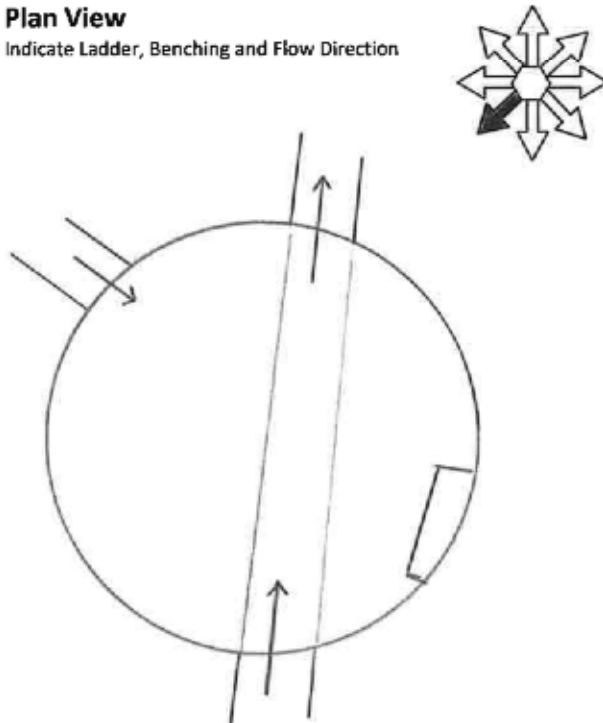
Date: Nov/06/2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

### Plan View

Indicate Ladder, Benching and Flow Direction



Hazardous Gas checked: ☒ Y ☐ N

Reading: 0

Visual Infiltration: ☒ Y ☐ N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: Chimney Manhole  
700 1200

### Invert Elevations, Diameter and Type

\* Indicate N,W,S,E, etc

(NW) Inlet Inv. 3.45 Dia: 250 Type: Clay

(E) Inlet Inv. 3.35 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SE) Outlet Inv. 3.47 Dia: 250 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

### Notes :

200 mm East Pipe is  
obstructed with debris.



## Man-Hole Inspection Sheet

### Location

City: Terrace Bay

Street: Lakavies Dr

Description: Front of Civic # 63

M.H #: 6

Picture #'s 140 - 145 (closed)

Video Recorded # 3

Job No: 121-24700-00

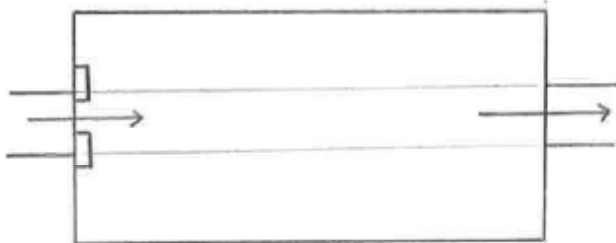
Date: Nov 106 / 2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

### Plan View

Indicate Ladder, Benching and Flow Direction



Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration: (Y) N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☐ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 700 <sup>Chimney</sup> 750 x 1200 <sup>M.H</sup>

### Invert Elevations, Diameter and Type

\* Indicate N, W, S, E, etc

(N) Inlet Inv. 3.395 Dia: 200 Type: clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(S) Outlet Inv. 4.0 Dia: 200 Type: clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

### Notes :

---

---

---

---

---

---

---



## Man-Hole Inspection Sheet

### Location

City: Terrace Bay

Job No: 121-24700-00

Street: Lakeview Dr.

Date: Nov/06/2012

Description: Front of Civic # 63

Inspected By: T.S + R.W

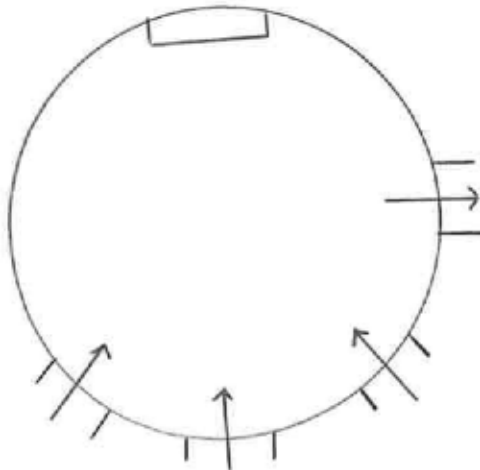
M.H #: 7

Field Book No: \_\_\_\_\_

Picture #'s 145 (open) - 148

### Plan View

Indicate Ladder, Benching and Flow Direction



Diameter/Dimensions: 750 <sup>Chimney</sup> 1200 <sup>M.H</sup>

### Invert Elevations, Diameter and Type

\* Indicate N,W,S,E, etc

(N) Inlet Inv. 2.303 Dia: 250 Type: Clay

(NW) Inlet Inv. 2.034 Dia: 250 Type: Clay

(NE) Inlet Inv. 2.524 Dia: 250 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(W) Outlet Inv. 2.33 Dia: 300 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y/N

Reading: \_\_\_\_\_

Visual Infiltration: Y/N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall near cover

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Notes :

---

---

---

---

---

---

---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Job No: 121-24700-00

Street: Elizabeth Ave

Date: Nov/06/2012

Description: Front of Civic # 6

Inspected By: T.S + R.W

M.H #: 8

Field Book No: \_\_\_\_\_

Picture #'s 154 - 157
**Plan View**

Indicate Ladder, Benching and Flow Direction


Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration: Y / (N)

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☐ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 750 x 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(NW) Inlet Inv. 2.80 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SE) Outlet Inv. 2.83 Dia: 200 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

**Notes :**


---



---



---



---



---



---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Birch Cr

Description: Civic # 30

M.H #: 9

Picture #'s 163-167

Job No: 121-24700-00

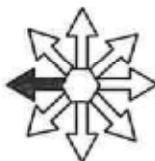
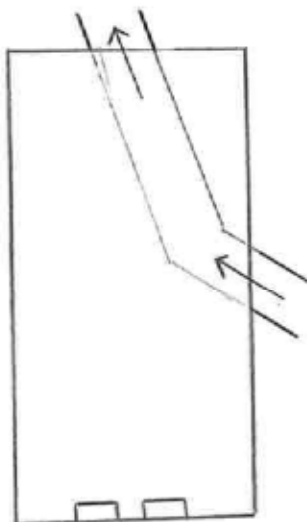
Date: Nov/06/2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration: (Y) N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☐ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 750 x 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(SW) Inlet Inv. 3.13 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(NE) Outlet Inv. 3.18 Dia: 200 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

**Notes :**


---



---



---



---



---



---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Birch Cr

Description: Civic #24

M.H #: 10

Picture #'s 168-172

Job No: 121-24700-00

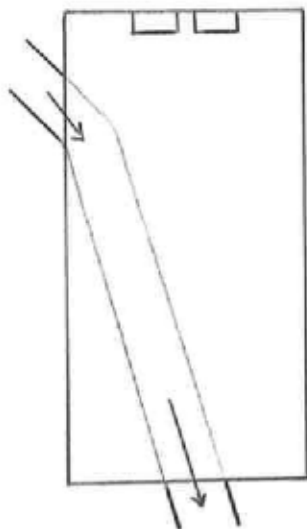
Date: Nov/06/2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 750 x 1200
**Invert Elevations, Diameter and Type**

\* Indicate N, W, S, E, etc

( S ) Inlet Inv. 3.018 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( NE ) Outlet Inv. 3.110 Dia: 200 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration: Y (N)

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☐ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---

---

---

---

---

---

---



## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Job No: 121-24700-00

Street: Hudson Dr

Date: Nov 10/2012

Description: Civ. # 56 - Driveway

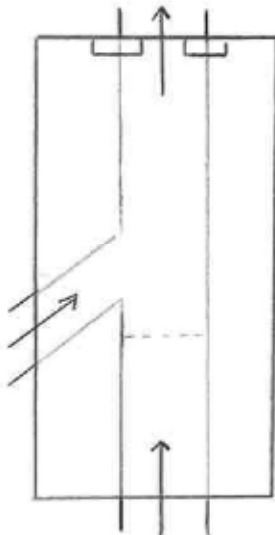
Inspected By: T.S + B.W

M.H #: 11

Field Book No: \_\_\_\_\_

Picture #'s 173-176
Video Recorded # 4
**Plan View**

Indicate Ladder, Benching and Flow Direction


Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration: (Y) N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall (chimney)

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 750 x 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(W) Inlet Inv. 2.997 Dia: 200 Type: Clay

(NW) Inlet Inv. 2.930 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(E) Outlet Inv. 2.930 Dia: 200 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

**Notes :**


---

---

---

---

---

---

---



## Man-Hole Inspection Sheet

### Location

City: Terrace Bay

Street: Poplar Cr.

Description: N of Poplar + Hudson Intersection  
Civic # 27

M.H #: 12

Picture #'s 183 - 187

Job No: 121-24700-00

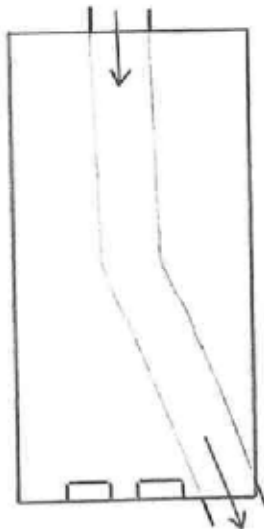
Date: Nov 06 / 2012

Inspected By: T.S + B.W

Field Book No: \_\_\_\_\_

### Plan View

Indicate Ladder, Benching and Flow Direction



Hazardous Gas checked: Y/N

Reading: 0

Visual Infiltration: Y/N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☐ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 750 x 1200

### Invert Elevations, Diameter and Type

\* Indicate N,W,S,E, etc

(N) Inlet Inv. 3.450 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(S E) Outlet Inv. 3.470 Dia: 200 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

### Notes :

---

---

---

---

---

---

---



## Man-Hole Inspection Sheet

### Location

City: Terrace Bay

Job No: 121-24700-00

Street: Selkirk Ave

Date: Nov/06/12

Description: Selkirk Ave + Laurier Ave

Inspected By: T.S + R.W

M.H #: 13

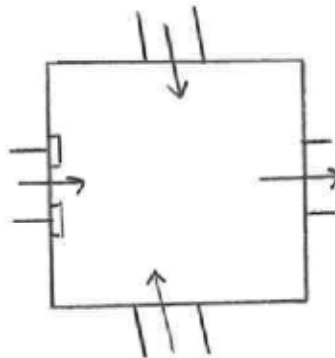
Field Book No: \_\_\_\_\_

Picture #'s 188-193

Video Recorded # 6

### Plan View

Indicate Ladder, Benching and Flow Direction



Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration: (Y) N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 1130 x 1200

### Invert Elevations, Diameter and Type

\* Indicate N,W,S,E, etc

(E) Inlet Inv. 2.530 Dia: 200 Type: Clay

(NE) Inlet Inv. 2.620 Dia: 300 Type: Clay

(NW) Inlet Inv. 2.590 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SW) Outlet Inv. 2.710 Dia: 250? Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

### Notes :

---

---

---

---

---

---

---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Selkirk Ave

Description: Laurier + Selkirk

M.H #: 14

Picture #'s 194-198

Job No: 121-24700-00

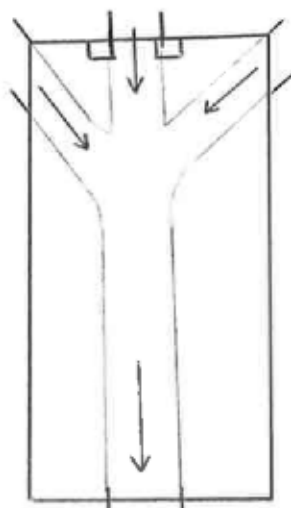
Date: Nov 10/2018

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 750 x 1200
**Invert Elevations, Diameter and Type**

\* indicate N,W,S,E, etc

(N ) Inlet Inv. 3.947 Dia: 200 Type: Clay

(NW) Inlet Inv. 3.946 Dia: 200 Type: Clay

(E ) Inlet Inv. 3.944 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SW) Outlet Inv. 4.01 Dia: 250 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration: (Y) N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**
White Substance From N  
Pipe.

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Job No: 121-24700-00

Street: Laurier Ave

Date: Nov 06/2012

Description: Laurier + Selkirk Civic # 13+18

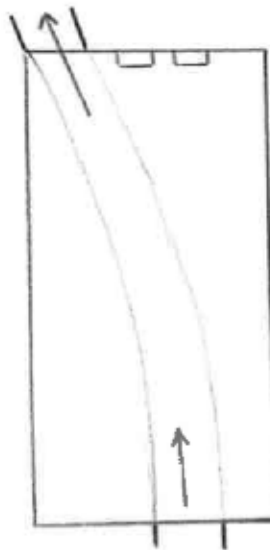
Inspected By: T.S + R.W

M.H #: 15

Field Book No: \_\_\_\_\_

Picture #'s 199-203
**Plan View**

Indicate Ladder, Benching and Flow Direction


Hazardous Gas checked: Y / N

Reading: 0

Visual Infiltration: Y / N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall (Chimney)

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 750 x 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

( E ) Inlet Inv. 3.80 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( SE ) Outlet Inv. 3.78 Dia: 200 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

**Notes :**


---

---

---

---

---

---

---



## Man-Hole Inspection Sheet

### Location

City: Terrace Bay

Street: Kanogami Rd

Description: East of Cartier Rd

M.H #: 16

Picture #'s 204 - 206

Video Recorded \* 7

Job No: 121-24700-00

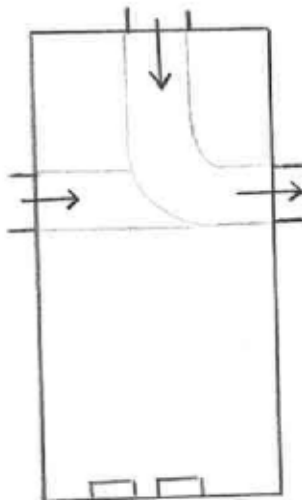
Date: Nov/06/2012

Inspected By: T.S + B.W

Field Book No: \_\_\_\_\_

### Plan View

Indicate Ladder, Benching and Flow Direction



Hazardous Gas checked: Y/N

Reading: 0

Visual Infiltration: Y/N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 750 x 1200

### Invert Elevations, Diameter and Type

\* Indicate N, W, S, E, etc

(NW) Inlet Inv. 3.116 Dia: 200 Type: Clay

(NE) Inlet Inv. 3.270 Dia: 250 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SE) Outlet Inv. 3.320 Dia: 250 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

### Notes :

---



---



---



---



---



---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Kenogami Rd

Description: MacDonald Ave + Kenogami  
South of C.V. 30

M.H #: 17

Picture #'s 210 - 214

Job No: 121-24700-00

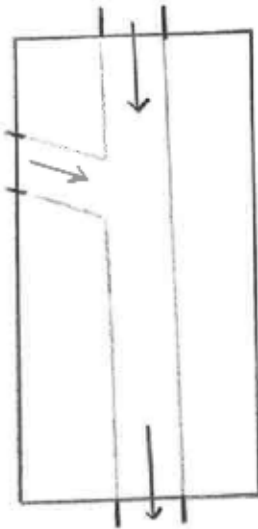
Date: Nov/06/2012

Inspected By: T.S + B.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration: (Y) N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall (whining)

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 750 x 1200
**Invert Elevations, Diameter and Type**

\* Indicate N, W, S, E, etc

(N) Inlet Inv. 4.30 Dia: 200 Type: Clay

(NE) Inlet Inv. 4.316 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SW) Outlet Inv. 4.32 Dia: 200 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

**Notes :**


---

---

---

---

---

---

---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Kenogami Rd

Description: Civic # 38

M.H #: 18

Picture #'s 222-230

Job No: 121-24700-00

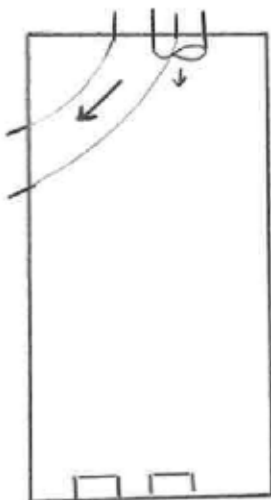
Date: Nov/06/2012

Inspected By: T.S + B.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 750 x 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(N) Inlet Inv. 4.65 Dia: 200 Type: AC?

(N) Inlet Inv. 3.32 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SW) Outlet Inv. 4.695 Dia: 200 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration: (Y) N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---

---

---

---

---

---

---





## Man-Hole Inspection Sheet

### Location

City: Terrace Bay

Street: Timbargrove

Description: Terrace Heights + Timbargrove

M.H #: 19

Picture #'s 231 (open) - 238

Job No: 121-24700-00

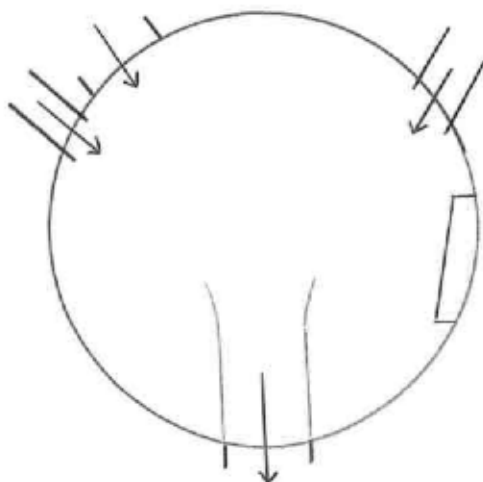
Date: Nov 10 2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

### Plan View

Indicate Ladder, Benching and Flow Direction



Diameter/Dimensions: Chimney 650 M.H 1200

### Invert Elevations, Diameter and Type

\* Indicate N, W, S, E, etc

(NE) Inlet Inv. 2.439 Dia: 200 Type: CSP

~ (NW) Inlet Inv. 2.379 Dia: 250 Type: Trans

~ (NW) Inlet Inv. 2.10 Dia: 200 Type: CSP

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(S) Outlet Inv. 2.752 Dia: 250 Type: Trans

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: YDN

Reading: 0

Visual Infiltration Y N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

### Notes :

---



---



---



---



---



---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Timbergrove

Description: Terrace Heights + Timbergrove

M.H #: 20

Picture #'s 231(closed) 239-246

Job No: 121-24700-00

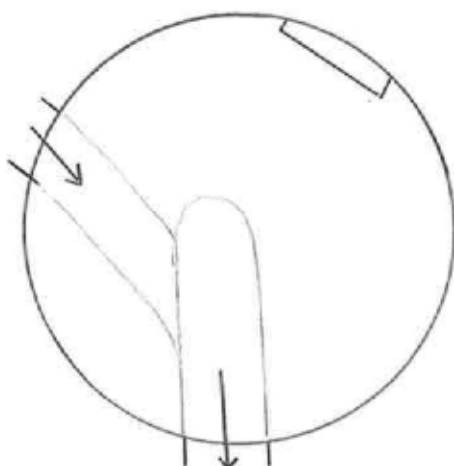
Date: Nov 07/2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(NW) Inlet Inv. 2.916 Dia: 200 Type: Trans

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(S) Outlet Inv. 3.078 Dia: 200 Type: Trans.

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration: (Y) N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---



---



---



---



---



---

## Man-Hole Inspection Sheet

**Location**

City: Torres Bay

Street: Timbergrave

Description: civic # 4

M.H #: 21

Picture #'s 252, 253 (open) - 237

Job No: 121-24700-00

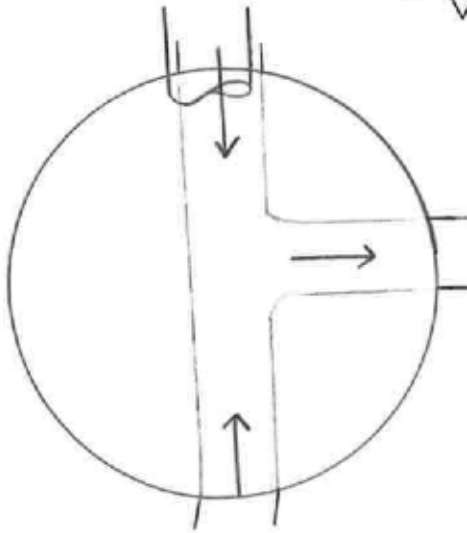
Date: Nov 10 / 2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(N) Inlet Inv. 5.513 Dia: 200 Type: Trans

(N) Inlet Inv. 2.678 Dia: 200 Type: Trans

(S) Inlet Inv. 5.330 Dia: 200 Type: Trans

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(E) Outlet Inv. 5.536 Dia: 200 Type: Trans

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y / (N)

Reading: \_\_\_\_\_

Visual Infiltration: (Y) / N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---

---

---

---

---

---

---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Timbergrove

Description: Civic #4

M.H #: 22

Picture #'s: 253 (closed) 258-262

Job No: 121-24700-00

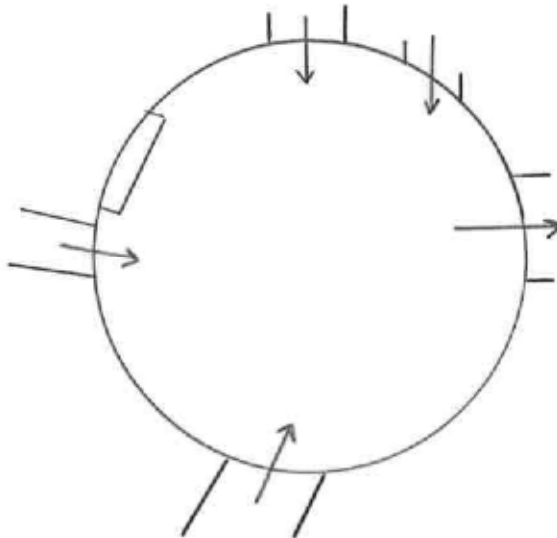
Date: Nov/07/2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 1200
**Invert Elevations, Diameter and Type**

\* Indicate N, W, S, E, etc

(W) Inlet Inv. 2.772 Dia: 150 Type: CSP

(N) Inlet Inv. 2.253 Dia: 300 Type: Trans

(N) Inlet Inv. 5.042 Dia: 300 Type: Trans

(S) Inlet Inv. 4.889 Dia: 450 Type: Trans

(E) Outlet Inv. 5.113 Dia: 350 Type: Trans

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y/N

Reading: \_\_\_\_\_

Visual Infiltration: Y/N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---



---



---



---



---



---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Parkway Pl

Description: civic # 48

M.H #: 23

Picture #'s 263 - 267
Video Recorded #8

Job No: 121-24700-00

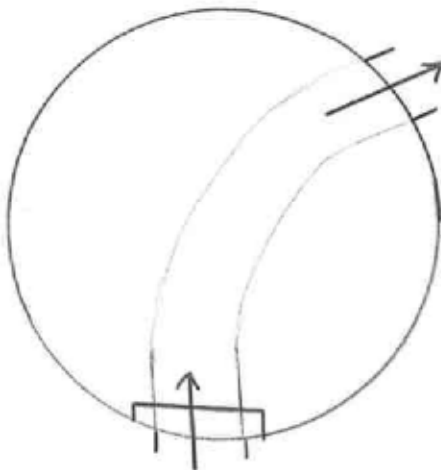
Date: Nov/07/2012

Inspected By: T.S + B.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 650 <sup>Chimney</sup> 1200 <sup>M.H</sup>
**Invert Elevations, Diameter and Type**

\* Indicate N, W, S, E, etc

(SW) Inlet Inv. 2.981 Dia: 200 Type: Trans

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SE) Outlet Inv. 3.012 Dia: 200 Type: Trans

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration: (Y) N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---

---

---

---

---

---

---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Parkway Pl

Description: Civic # 42

M.H #: 24

Picture #'s 278, 279 (open) - 284

Job No: 121-24700-00

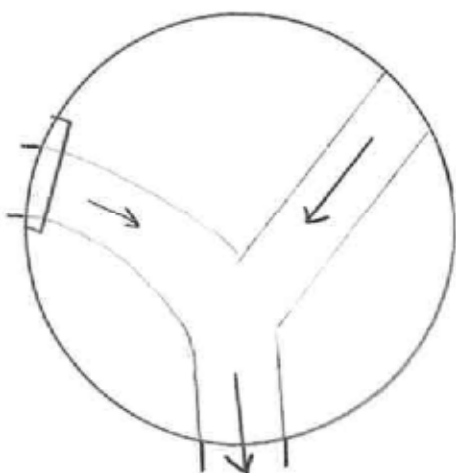
Date: Nov / 07 / 2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 1200
**Invert Elevations, Diameter and Type**

\* Indicate N, W, S, E, etc

(NW) Inlet Inv. 3.182 Dia: 200 Type: Trans

(S) Inlet Inv. 3.140 Dia: 200 Type: Trans

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(E) Outlet Inv. 3.205 Dia: 200 Type: Trans

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y/N

Reading: \_\_\_\_\_

Visual Infiltration: Y/N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall  
Between top and middle section

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---

---

---

---

---

---

---



## Man-Hole Inspection Sheet

### Location

City: Terrace Bay

Street: Parkway Pl

Description: Civic # 42

M.H #: 25

Picture #'s 279 (closed) - 289

Video Recorded # 9

Job No: 121-24700-CR2

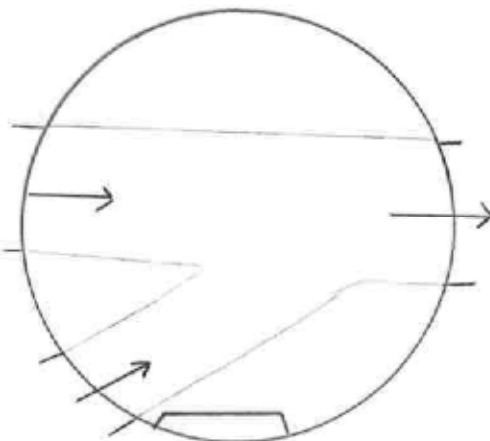
Date: Nov/07/2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

### Plan View

Indicate Ladder, Benching and Flow Direction



Diameter/Dimensions: 1200

### Invert Elevations, Diameter and Type

\* Indicate N,W,S,E, etc

(SW) Inlet Inv. 2.20' Dia: 250 Type: Trans

(W) Inlet Inv. 2.415 Dia: 350 Type: Trans

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(E) Outlet Inv. 2.48' Dia: 450 Type: Trans

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y/N

Reading: \_\_\_\_\_

Visual Infiltration: Y/N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

### Notes :

---

---

---

---

---

---

---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Job No: 121-24700-00

Street: Terrace Heights

Date: Nov 07 / 2012

Description: Civic #10

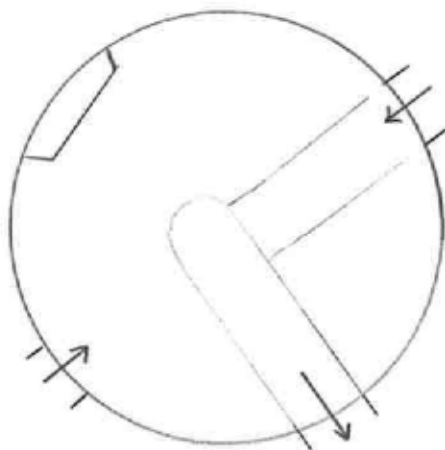
Inspected By: T.S. + R.W.

M.H #: 26

Field Book No: \_\_\_\_\_

Picture #'s 290 (open) - 297
**Plan View**

Indicate Ladder, Benching and Flow Direction


Hazardous Gas checked: (Y) / N

Reading: 0

Visual Infiltration: (Y) / N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(N/E) Inlet Inv. 2.983 Dia: 200 Type: Trans Black

(S/W) Inlet Inv. 3.337 Dia: 200 Type: Black ? Trans

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(S/E) Outlet Inv. 3.666 Dia: 200 Type: Black ? Trans

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

**Notes :**


---

---

---

---

---

---

---





## Man-Hole Inspection Sheet

### Location

City: Terrace Bay

Street: Terrace Heights

Description: Civic

M.H #: 27

Picture #'s 290 (closed) 292-304

Video Recorded # 10

Job No: 121-24700-00

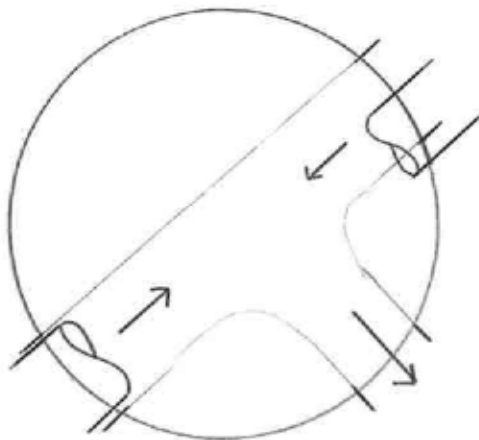
Date: Nov/07/2018

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

### Plan View

Indicate Ladder, Benching and Flow Direction



Diameter/Dimensions: 1200

### Invert Elevations, Diameter and Type

\* Indicate N, W, S, E, etc

(SW) Inlet Inv. 3.521 Dia: 350 Type: Trans

(SW) Inlet Inv. 2.782 Dia: 350 Type: Trans

(NE) Inlet Inv. 3.50 Dia: 350 Type: Trans

(NE) Inlet Inv. 2.50 Dia: 350 Type: Trans

(SE) Outlet Inv. 3.664 Dia: 350 Type: Trans

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration: (Y) N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

### Notes :

---



---



---



---



---



---



## Man-Hole Inspection Sheet

### Location

City: Terrace Bay

Job No: 121-24700-00

Street: Terrace Heights

Date: Nov 10/2012

Description: East Side of Southbridge cr. civic # 77

Inspected By: T.S + R.W

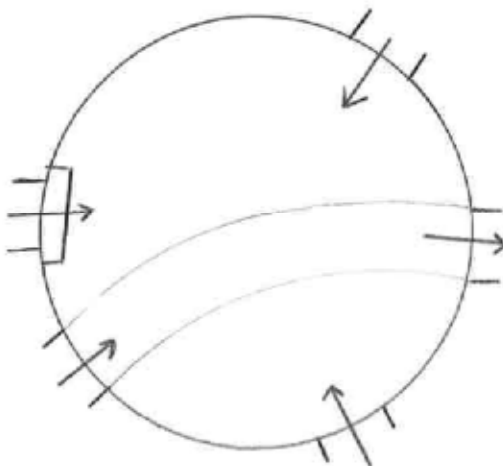
M.H #: 28

Field Book No: \_\_\_\_\_

Picture #'s 305(open) - 312

### Plan View

Indicate Ladder, Benching and Flow Direction



Diameter/Dimensions: 1200

### Invert Elevations, Diameter and Type

\* Indicate N,W,S,E, etc

(NE) Inlet Inv. 1.70 Dia: 200 Type: CSP

(S) Inlet Inv. 1.70 Dia: 200 Type: CSP

(NW) Inlet Inv. 1.58 Dia: 200 Type: CSP

(W) Inlet Inv. 2.22 Dia: 250 Type: Trans

(SE) Outlet Inv. 2.30 Dia: 250 Type: Trans

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration: (Y) N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

### Notes :

---

---

---

---

---

---

---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Job No: 121-24700-000

Street: Terrace Heights

Date: Nov 10 / 2012

Description: East side of Southridge Circle #77

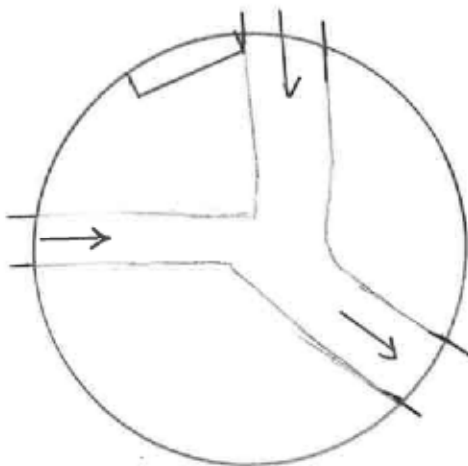
Inspected By: T.S + R.W

M.H #: 29

Field Book No: \_\_\_\_\_

Picture #'s 305 (closed) 313 - 318
**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 1200
**Invert Elevations, Diameter and Type**

\* Indicate N, W, S, E, etc

(N ) Inlet Inv. 2.783 Dia: 200 Type: Trans

(W ) Inlet Inv. 2.820 Dia: 150 Type: Trans

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SE ) Outlet Inv. 2.927 Dia: 200 Type: Trans

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: ☒ Y ☐ N

Reading: 0

Visual Infiltration: ☒ Y ☐ N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---

---

---

---

---

---

---

## Man-Hole Inspection Sheet

**Location**

City: Torres Bay

Street: Bodisdon Ave

Description: Civic & Fire + Emerg. Services

M.H #: 30

Picture #'s 328 - 334

Job No: 121-24700-00

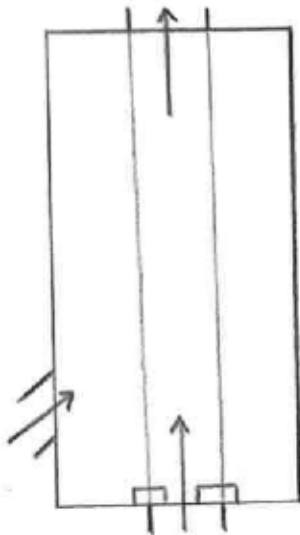
Date: Nov/07/2012

Inspected By: T.S + B.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 750 x 1200
**Invert Elevations, Diameter and Type**

\* Indicate N, W, S, E, etc

(E) Inlet Inv. 3.476 Dia: 200 Type: Clay

(SE) Inlet Inv. 3.046 Dia: 150/200 Type: ?

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(W) Outlet Inv. 3.50 Dia: 200 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y (N)

Reading: \_\_\_\_\_

Visual Infiltration: (Y) N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---

---

---

---

---

---

---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Bedisdon Ave

Description: East of Salkirk Ave

M.H #: 31

Picture #'s 335-341

Job No: 121-24700-00

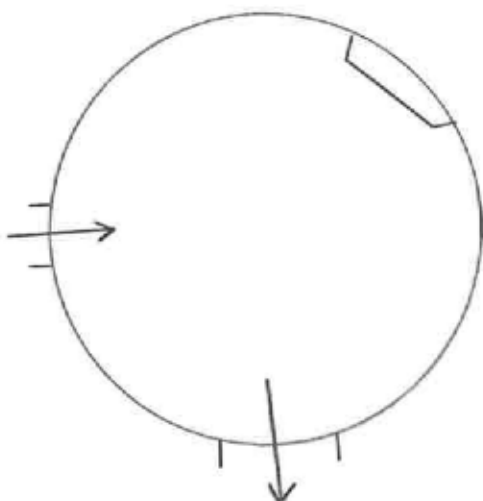
Date: Nov/07/2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(S) Inlet Inv. 1.03 Dia: 200 Type: CSP

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(E) Outlet Inv. 1.10 Dia: 300 Type: PVC

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y/N

Reading: \_\_\_\_\_

Visual Infiltration: Y/N (from cover? )

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---

---

---

---

---

---

---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Job No: 121-24700-00

Street: Superior Ave

Date: Nov/07/2012

Description: Civ. 21+23 at Strathcona Ave

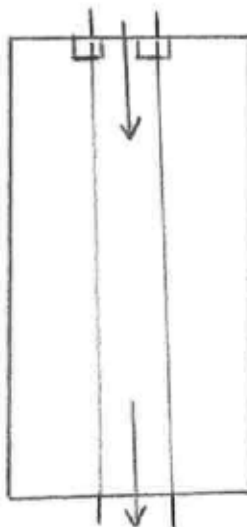
Inspected By: T.S + R.W

M.H #: 32

Field Book No: \_\_\_\_\_

Picture #'s 346 - 350
**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 750 x 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(NW) Inlet Inv. 3.312 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SE) Outlet Inv. 3.546 Dia: 200 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration: (Y) N SW side from Top

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☐ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---

---

---

---

---

---

---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Superior Ave

Description: at Fort Garry

M.H #: 33

Picture #'s 351-356

Job No: 121-24700-00

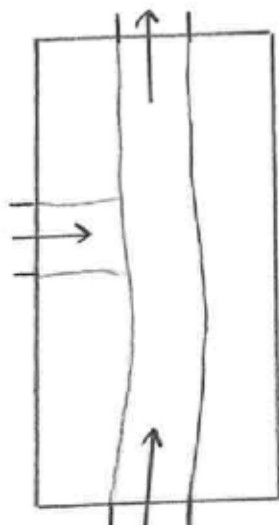
Date: Nov 107/2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Hazardous Gas checked: Y / N

Reading: 0

Visual Infiltration: Y / N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 750 x 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(N.E.) Inlet Inv. 2.719 Dia: 200 Type: Clay

(N.W.) Inlet Inv. 2.840 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(S.E.) Outlet Inv. 2.872 Dia: 200 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

**Notes :**


---

---

---

---

---

---

---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Lakeview Dr

Description: Civic #17

M.H #: 34

Picture #'s 357 - 361

Job No: 121-24700-00

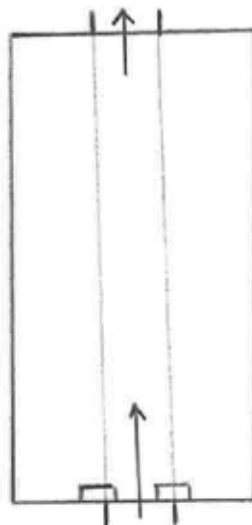
Date: Nov 07/2012

Inspected By: T.S. + R.W.

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration: (Y) N (Near ladder)

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☐ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 750 x 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(N.E.) Inlet Inv. 3.64 Dia: 200 Type: clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(S.W.) Outlet Inv. 3.66<sup>3</sup> Dia: 200 Type: clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

**Notes :**


---

---

---

---

---

---

---



## Man-Hole Inspection Sheet

**Location**

City: \_\_\_\_\_

Street: Lakewood Dr.

Description: Civic 104, Cul-de-Sac

M.H #: 35

Picture #'s 362 - 366

Job No: 121-24700-00

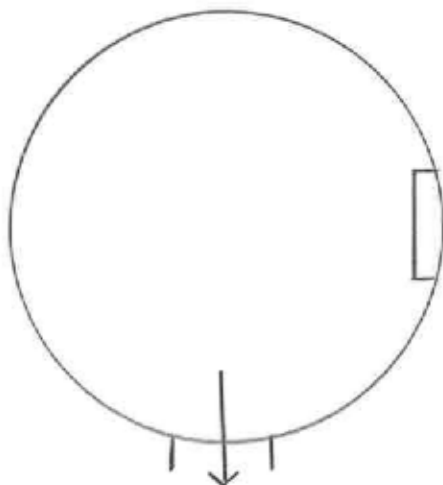
Date: Nov 07/2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 1200
**Invert Elevations, Diameter and Type**
\* Indicate N,W,S,E, etc

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( E ) Outlet Inv. 2.932 Dia: 200 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y / N

Reading: \_\_\_\_\_

Visual Infiltration: Y / N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---



---



---



---



---



---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Superior Ave

Description: Civic # 45 at Strathcona Ave

M.H #: 36

Picture #'s 367-372

Job No: 121-24700-00

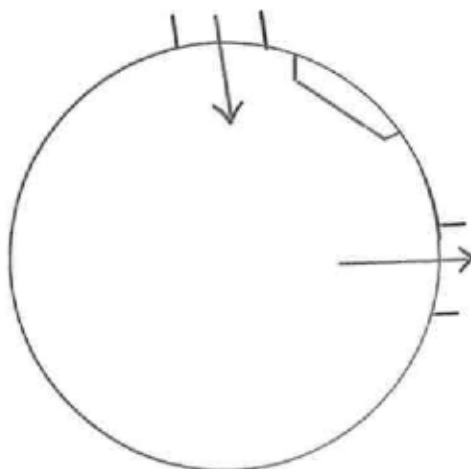
Date: Nov 07 / 2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(N.E.) Inlet Inv. 2.826 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(S.E.) Outlet Inv. 3.136 Dia: 200 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y / (N)

Reading: \_\_\_\_\_

Visual Infiltration: (Y) / N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / (None)

Overall Condition: Good / Fair / Poor

**Notes :**


---

---

---

---

---

---

---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Superior Ave

Description: civic 45 at Strathcona Ave

M.H #: 37

Picture #'s 367 (closed) 373-377

Job No: 121-24700-00

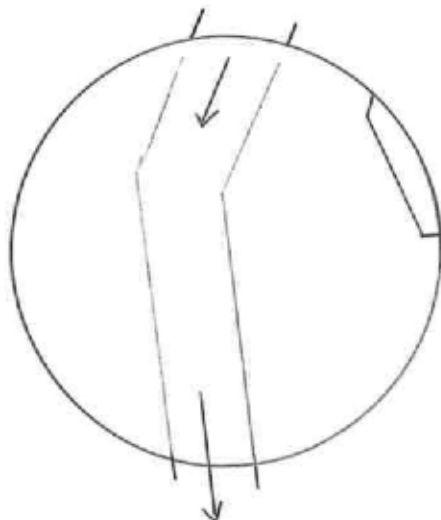
Date: Nov 07/2012

Inspected By: T.S + B.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(N E) Inlet Inv. 3.00 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SW) Outlet Inv. 3.014 Dia: 200 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y (N)

Reading: \_\_\_\_\_

Visual Infiltration: (Y) (N)

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---



---



---



---



---



---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Hudson Dr.

Description: West of Hwy. 17 civic # 83

M.H #: 38

Picture #'s 378 - 384
video Recorded #

Job No: 121-24700-00

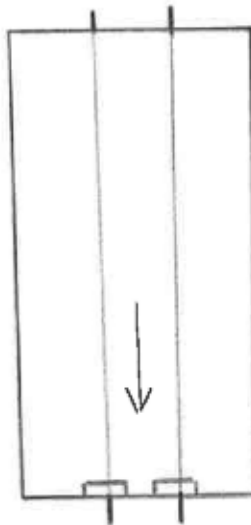
Date: Nov 107/2012

Inspected By: T.S. + R.W.

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 750 x 1200
**Invert Elevations, Diameter and Type**

\* Indicate N, W, S, E, etc

( ) Inlet Inv. 2.900 Dia: \_\_\_\_\_ Type: No R.P.

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(NW) Outlet Inv. 2.914 Dia: 250 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y/N

Reading: \_\_\_\_\_

Visual Infiltration: Y/N (M.N)

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☐ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---



---



---



---



---



---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Terrace Heights

Description: side dirt rd South civic #10

M.H #: 39

Picture #'s 385(open) - 390

Job No: 121-24700-00

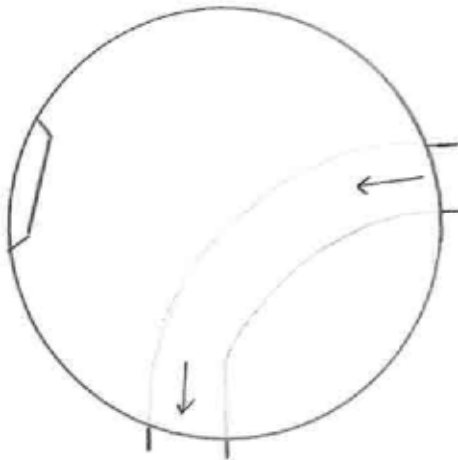
Date: Nov/08/2012

Inspected By: T.S + B.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

? (NW) Inlet Inv. 2.97 Dia: 200 Type: Trans. Black?

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

? (NE) Outlet Inv. 2.97 Dia: 200 Type: Black Trans.

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: (Y) / N

Reading: 0

Visual Infiltration: (Y) N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**

Build up in benching

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



## Man-Hole Inspection Sheet

### Location

City: Terrace Bay

Street: Terrace Heights

Description: side dirt Rd. South of Civic #10

M.H #: 40

Picture #'s 385 (closed) 391 - 393

Job No: 121-24700-00

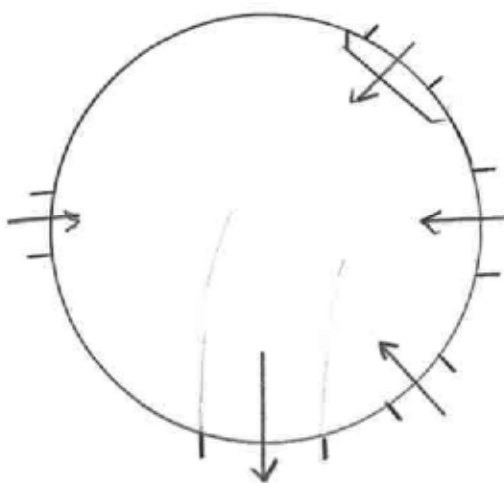
Date: Nov/08/2012

Inspected By: TS + R.W

Field Book No: \_\_\_\_\_

### Plan View

Indicate Ladder, Benching and Flow Direction



Diameter/Dimensions: 1200

### Invert Elevations, Diameter and Type

\* Indicate N,W,S,E, etc

(N) Inlet Inv. 1.751 Dia: 200 Type: CSP

(E) Inlet Inv. 1.687 Dia: 200 Type: CSP

(NW) Inlet Inv. 1.882 Dia: 300 Type: Trans

(SE) Inlet Inv. 1.750 Dia: 200 Type: CSP

(NE) Outlet Inv. 2.085 Dia: 300 Type: Trans

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration: (Y) N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Notes :

---



---



---



---



---



---



## Man-Hole Inspection Sheet

### Location

City: Terrace Bay

Street: Selkirk Ave

Description: Front of Civic #1

M.H #: 41

Picture #'s 401-406

Job No: 121-24700-00

Date: Nov/08/2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

### Plan View

Indicate Ladder, Benching and Flow Direction

Bell



Hazardous Gas checked: Y / N

Reading: \_\_\_\_\_

Visual Infiltration: Y / N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☐ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: \_\_\_\_\_

### Invert Elevations, Diameter and Type

\* Indicate N,W,S,E, etc

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

### Notes :

Filled with water

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



## Man-Hole Inspection Sheet

### Location

City: Terrace Bay

Street: Selkirk

Description: Civic #1

M.H #: 42

Picture #'s 407-413

Job No: 121-24700-00

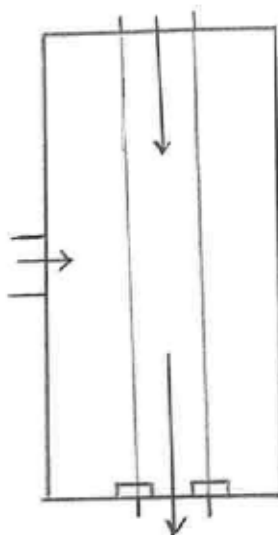
Date: Nov/08/2012

Inspected By: T.S + B.W

Field Book No: \_\_\_\_\_

### Plan View

Indicate Ladder, Benching and Flow Direction



Diameter/Dimensions: 750 x 1200

### Invert Elevations, Diameter and Type

\* Indicate N, W, S, E, etc

(W) Inlet Inv. 3.017 Dia: 200 Type: Clay

(N) Inlet Inv. 3.410 Dia: 250 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(S) Outlet Inv. 3.44 Dia: 250 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y (N)

Reading: \_\_\_\_\_

Visual Infiltration: Y (N)

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

### Notes :

---

---

---

---

---

---

---



## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Job No: 121-24700-00

Street: Hudson Dr.

Date: Nov 08/2012

Description: Civic # 22

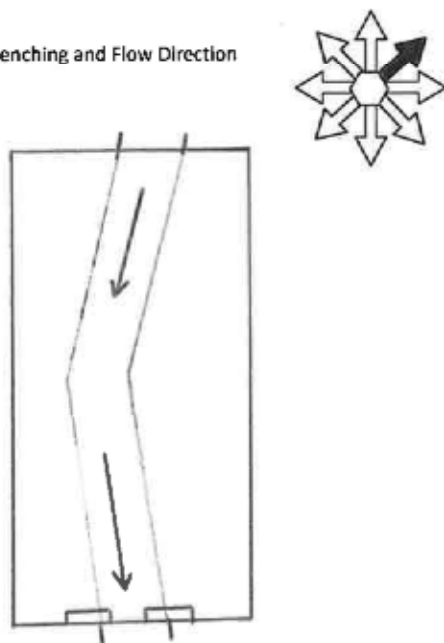
Inspected By: T.S + R.W

M.H #: 43

Field Book No: \_\_\_\_\_

Picture #'s 414-418
**Plan View**

Indicate Ladder, Benching and Flow Direction


Hazardous Gas checked: Y/N

Reading: \_\_\_\_\_

Visual Infiltration: Y/N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 750 x 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(NW) Inlet Inv. 3.270 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SE) Outlet Inv. 3.280 Dia: 200 Type: \_\_\_\_\_

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

**Notes :**


---



---



---



---



---



---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Hudson Dr

Description: Civic # 19728  
(School)

M.H #: 44

Picture #'s 419-423

Job No: 121-24700-00

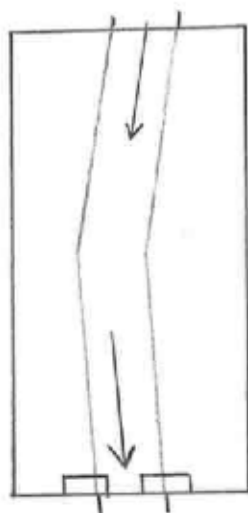
Date: Nov 108/2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 750 x 1200
**Invert Elevations, Diameter and Type**

\* Indicate N, W, S, E, etc

(NW) Inlet Inv. 2.857 Dia: 200 Type: Clay

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SE) Outlet Inv. 2.868 Dia: 200 Type: Clay

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y/N

Reading: \_\_\_\_\_

Visual Infiltration: Y/N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---

---

---

---

---

---

---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: East Grove Cr

Description: Civic # 14

M.H #: 45

Picture #'s 424 (open) - 429

Job No: 121-24700-00

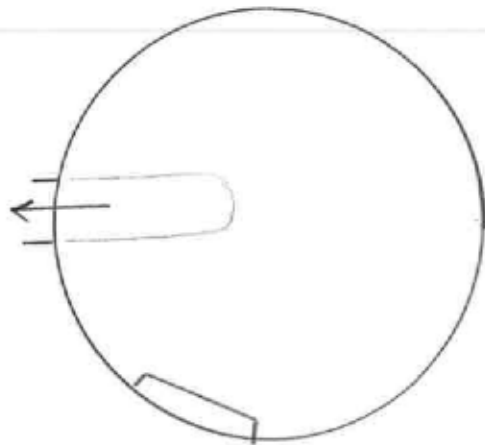
Date: Nov/08/2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 1200
**Invert Elevations, Diameter and Type**
\* Indicate N,W,S,E, etc

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(✓) Outlet Inv. 3.343 Dia: 200 Type: Block? Tras

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration (Y) N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---

---

---

---

---

---

---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Job No: 121-24700-00

Street: East Grove Cr

Date: Nov/08/2012

Description: C.v.c #14

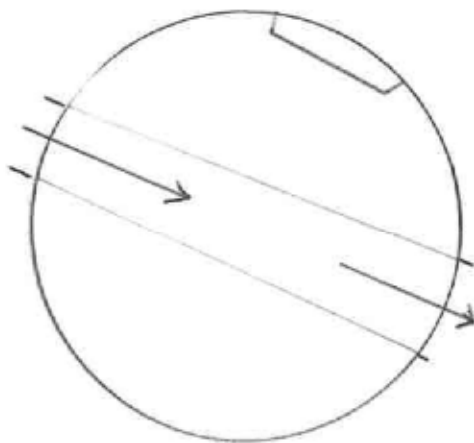
Inspected By: T.S + R.W

M.H #: 46

Field Book No: \_\_\_\_\_

Picture #'s 424 (closed) 430-436
**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 1200
**Invert Elevations, Diameter and Type**
\* Indicate N,W,S,E, etc.

(NW) Inlet Inv. 2.549 Dia: 200 Type: Trans

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SE) Outlet Inv. 2.576 Dia: 300 Type: Trans

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: YN

Reading: 0

Visual Infiltration: YDN

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---



---



---



---



---



---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Job No: 121-24700-00

Street: East Grove Cr

Date: Nov/08/2012

Description: Civic # 50

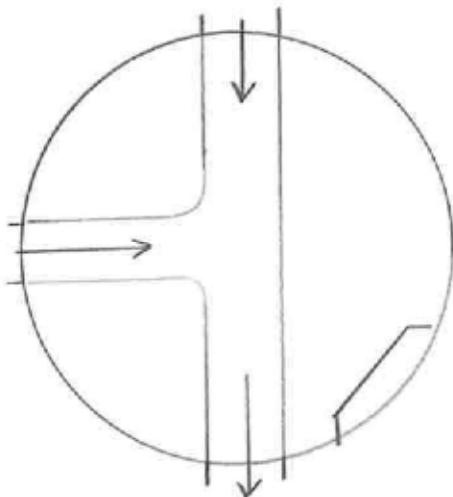
Inspected By: T.S. + R.W

M.H #: 47

Field Book No: \_\_\_\_\_

Picture #'s 437(open) - 443
**Plan View**

Indicate Ladder, Benching and Flow Direction


Hazardous Gas checked: Y/N

Reading: 0

Visual Infiltration: Y / N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

Diameter/Dimensions: 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(NW) Inlet Inv. 3.43 Dia: 200 Type: Black Trans

(SW) Inlet Inv. 3.38 Dia: 200 Type: Black Trans

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(SE) Outlet Inv. 3.46 Dia: 200 Type: Black Trans

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

**Notes :**


---

---

---

---

---

---

---

## Man-Hole Inspection Sheet

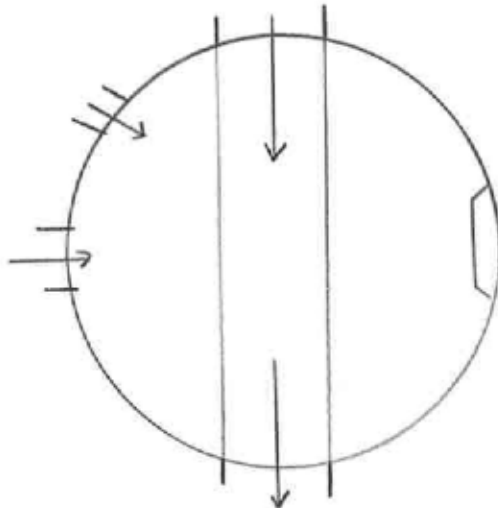
**Location**

City: Terrace Bay  
 Street: East Grove Cr  
 Description: Civic # 50  
 M.H #: 48  
 Picture #'s 437 (closed) 444-448

Job No: 121-24700-00  
 Date: Nov/08/2012  
 Inspected By: TS + R.W  
 Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


 Diameter/Dimensions: 1200
**Invert Elevations, Diameter and Type**

\* Indicate N, W, S, E, etc

(SW) Inlet Inv. 2.711 Dia: 300 Type: Trans  
 (W) Inlet Inv. 2.0 Dia: 200 Type: CSP  
 (NW) Inlet Inv. 2.903 Dia: 300 Type: Trans  
 ( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_  
 (SE) Outlet Inv. 2.998 Dia: 350 Type: Trans  
 ( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

 Hazardous Gas checked: Y/N

 Reading: 0

 Visual Infiltration: Y/N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

 Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

 M.H Cover: Good / Fair / Poor

 M.H Type: Precast / Cast in Place / Brick / Block

 Chimney: Precast / Cast in Place / Brick / Rings / Block

 Ladder Rung Condition: Good / Poor / None

 Benching: Good / Fair / Poor / None

 Overall Condition: Good / Fair / Poor

**Notes :**


---

---

---

---

---

---

---



## Man-Hole Inspection Sheet

### Location

City: Terrace Bay

Street: Sutherland Cr.

Description: Civic #24

M.H #: 49

Picture #'s 449 (open) - 453

Job No: 121-24700-00

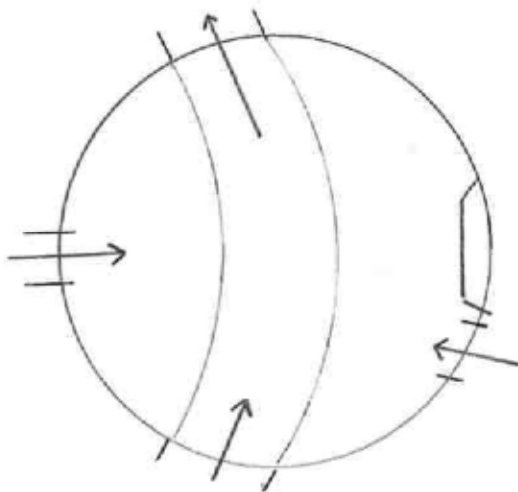
Date: Nov/08/2012

Inspected By: T.S + R.W

Field Book No: \_\_\_\_\_

### Plan View

Indicate Ladder, Benching and Flow Direction



Diameter/Dimensions: 1200

### Invert Elevations, Diameter and Type

\* Indicate N,W,S,E, etc

(S) Inlet Inv. 1.465 Dia: 200 Type: CSP

(NW) Inlet Inv. 1.700 Dia: 200 Type: CSP

(N) Inlet Inv. 2.259 Dia: 350 Type: Trans

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(W) Outlet Inv. 2.261 Dia: 400 Type: Trans

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: (Y) N

Reading: 0

Visual Infiltration: (Y) N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

### Notes :

---



---



---



---



---



---

## Man-Hole Inspection Sheet

**Location**

City: Terrace Bay

Street: Southridge Cr

Description: Civic #24

M.H #: 50

Picture #'s 449 (closed) 454 - 459

Job No: 121-24700-00

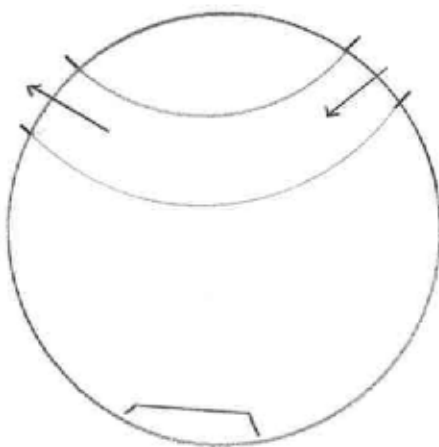
Date: Nov/08/2012

Inspected By: TS + RW

Field Book No: \_\_\_\_\_

**Plan View**

Indicate Ladder, Benching and Flow Direction


Diameter/Dimensions: 1200
**Invert Elevations, Diameter and Type**

\* Indicate N,W,S,E, etc

(N.E.) Inlet Inv. 2.751 Dia: 250 Type: Trans

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

( ) Inlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

(N.W.) Outlet Inv. 2.764 Dia: 250 Type: Trans

( ) Outlet Inv. \_\_\_\_\_ Dia: \_\_\_\_\_ Type: \_\_\_\_\_

\*\*Invert elevations are taken from top of cover

Hazardous Gas checked: Y/N

Reading: 0

Visual Infiltration: Y/N

- ☐ Approx Dia. of Stream: \_\_\_\_\_
- ☐ Water flows freely but most runs down wall
- ☐ Water flows from leak in a bubbling manner and runs down wall
- ☒ Water flows from leak and runs down wall

Surface: Pavement / Gravel / Grass / Other \_\_\_\_\_

M.H Cover: Good / Fair / Poor

M.H Type: Precast / Cast in Place / Brick / Block

Chimney: Precast / Cast in Place / Brick / Rings / Block

Ladder Rung Condition: Good / Poor / None

Benching: Good / Fair / Poor / None

Overall Condition: Good / Fair / Poor

**Notes :**


---



---



---



---



---



---



A large, solid teal shape that starts from the bottom-left corner and extends diagonally towards the top-right corner, covering approximately the lower half of the page.

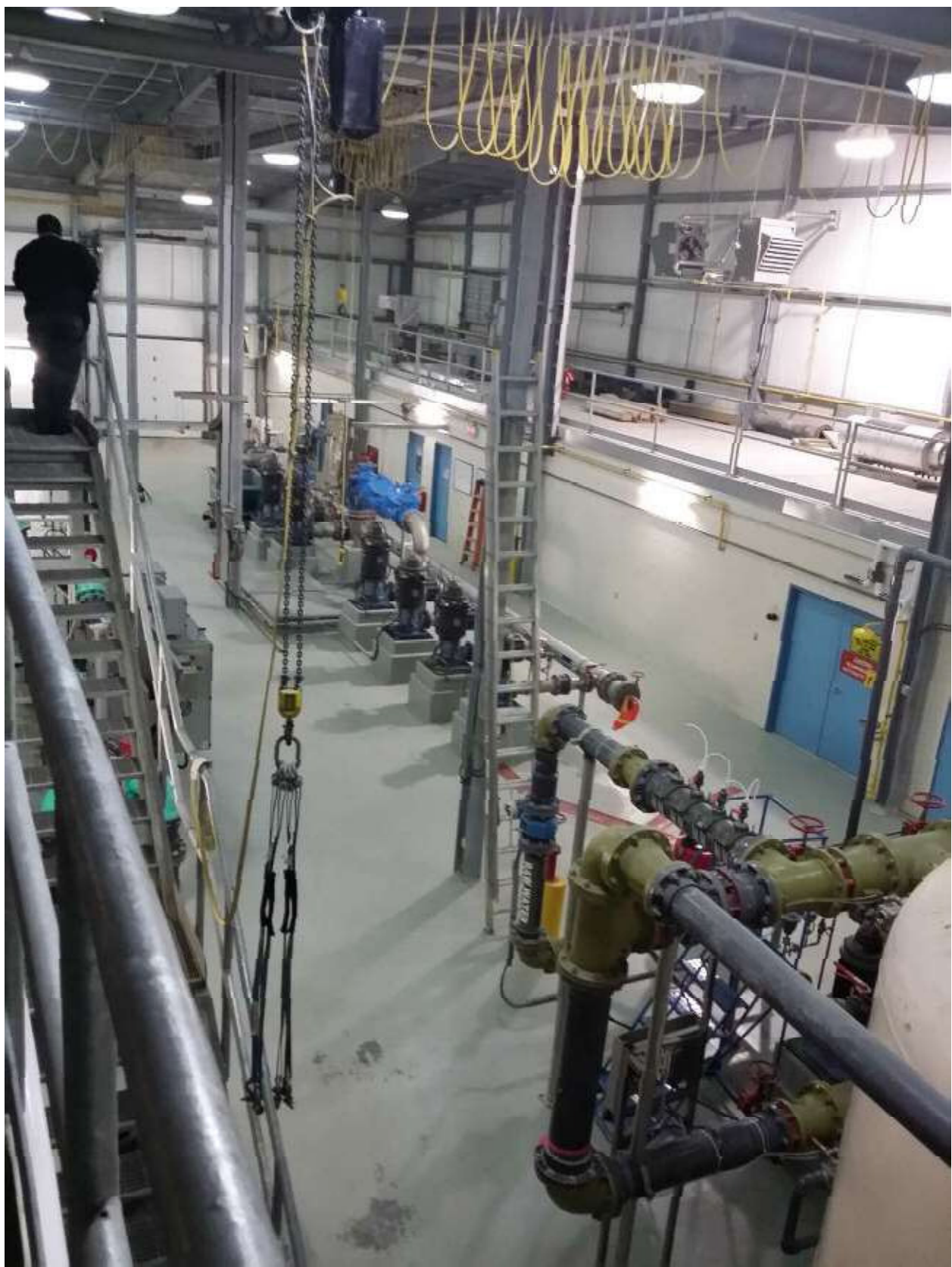
Buildings

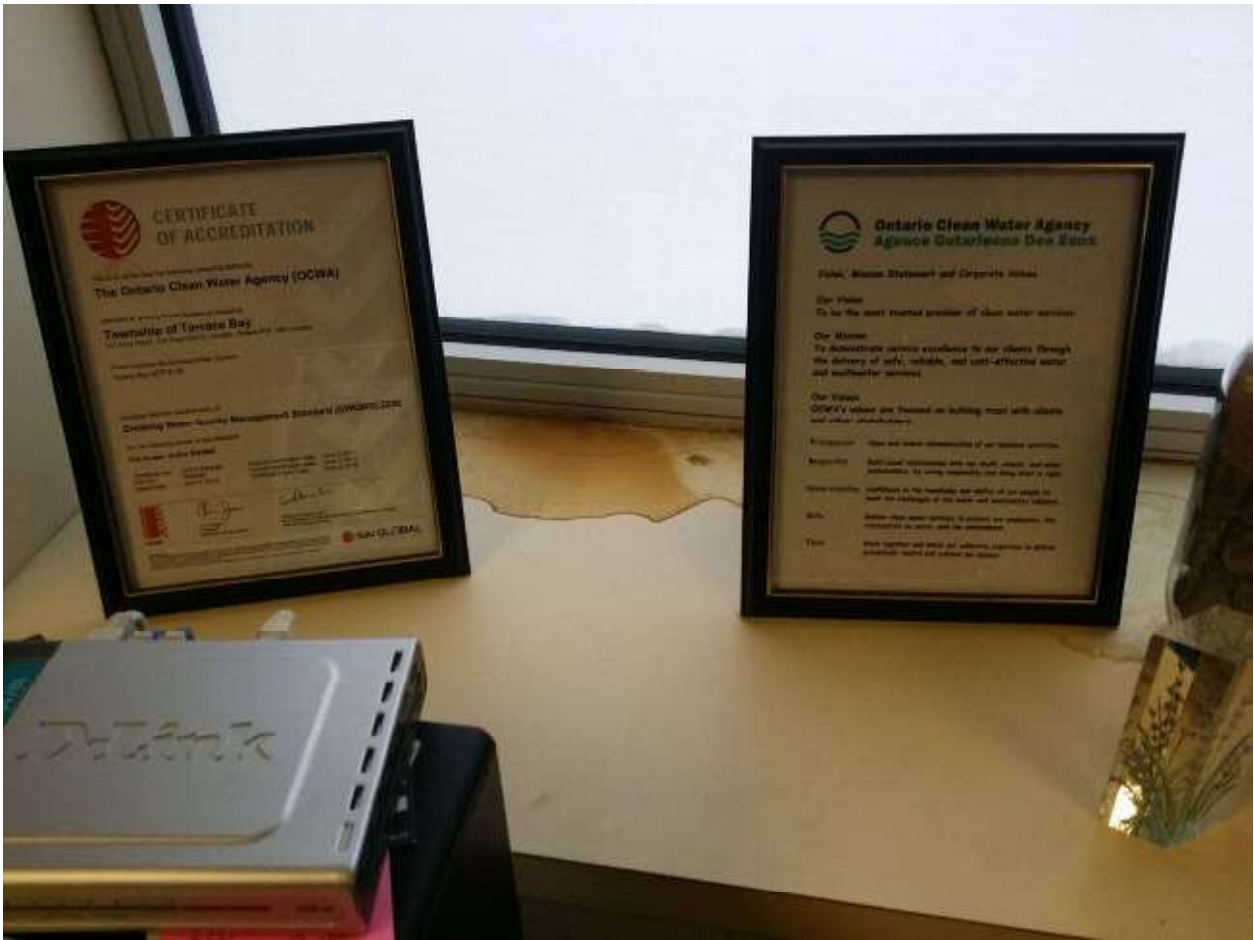


















































































































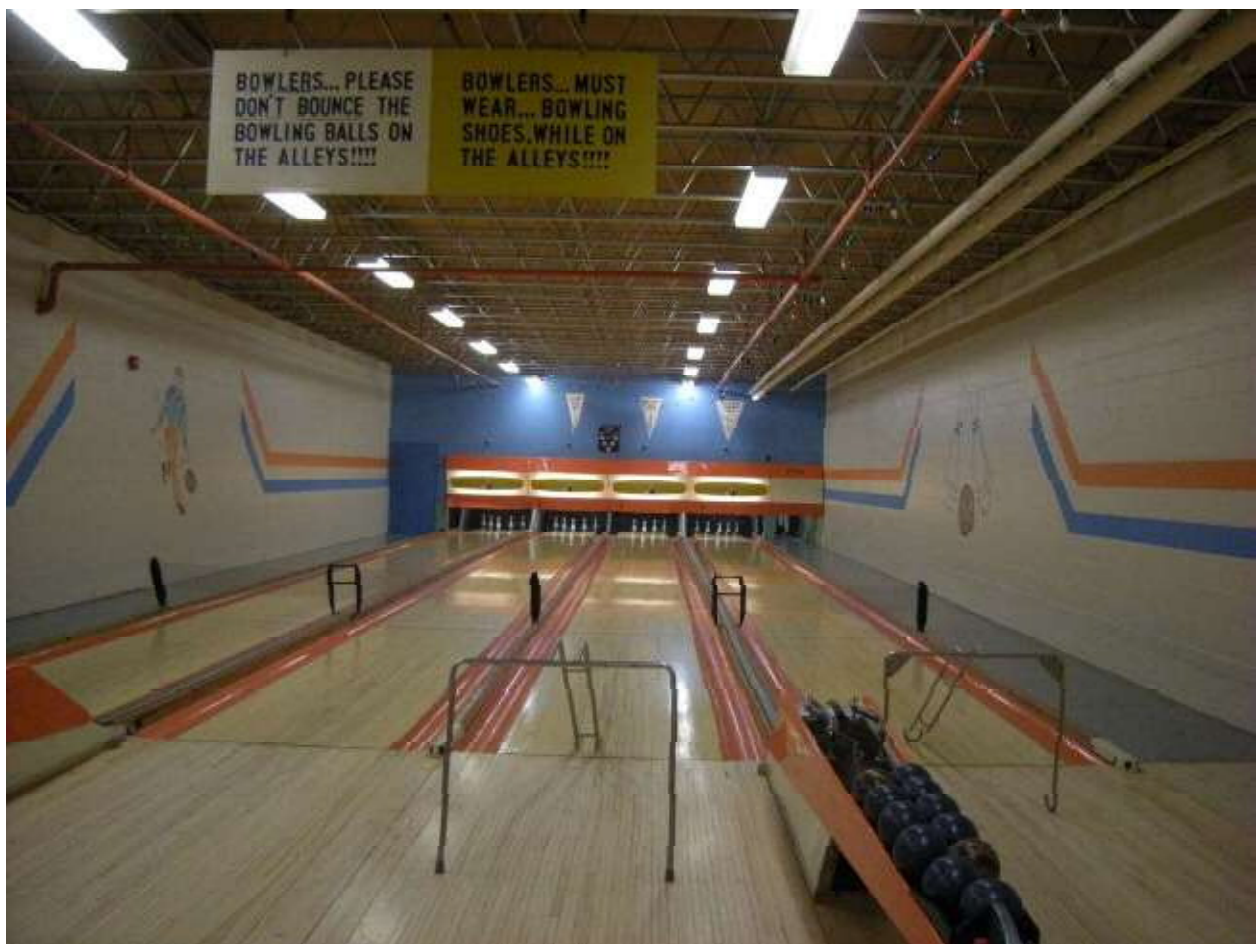






























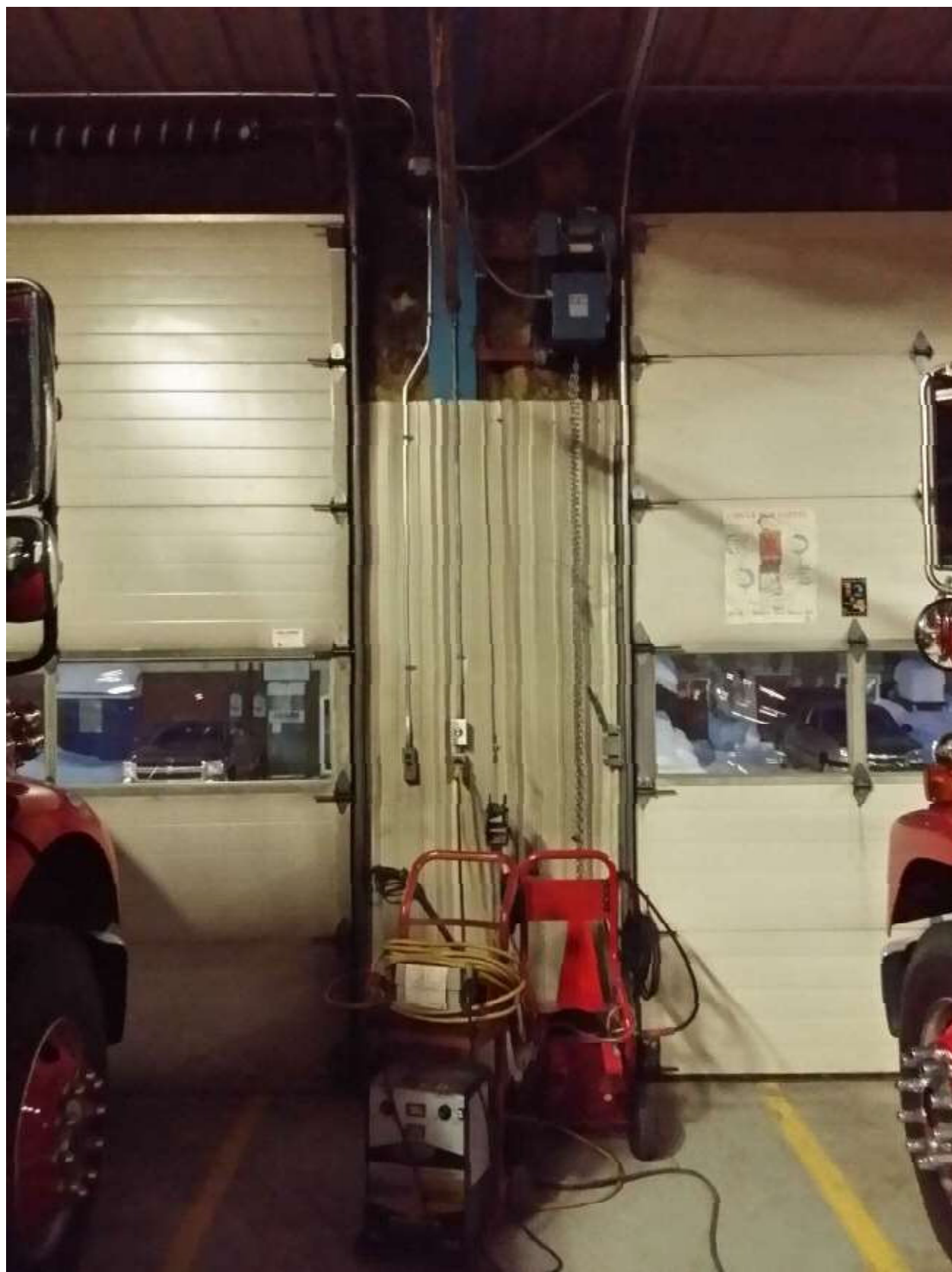


















# Appendix E

BUILDING COSTS



## JOHN RHODES COMMUNITY CENTRE



### LOCATION

Sault Ste. Marie, Ontario, Canada

### YEAR

2000

### HISTORICAL PROJECT COST

\$18 million

### PROJECT COST IN 2013

\$26 million

## TIM HORTON'S COMMUNITY CENTRE



### LOCATION

Cochrane, Ontario, Canada

### YEAR

2006

### HISTORICAL PROJECT COST

\$9.1 million

### PROJECT COST IN 2013

\$13.4 million