2025

Asset Management Plan Water Services

The Corporation of The City of Peterborough

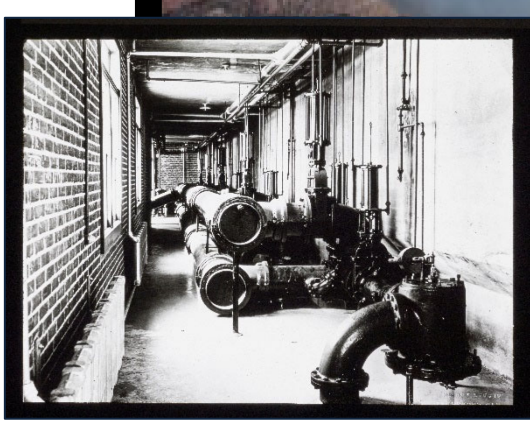


TABLE OF CONTENTS

EXECUTIVE SUMMARY

OVERVIEW

The City of Peterborough's water services (water treatment and distribution system) were previously operated and maintained by the Peterborough Utilities Commission (PUC). As of April 1, 2025, PUC was amalgamated with The Corporation of The City of Peterborough (The City). The water services are now operated and maintained by The City of Peterborough. This Asset Management Plan (Plan) has been developed in accordance with The City of Peterborough Asset Management Policy.

The purpose of this Plan is to identify and describe current asset management (AM) programs for the City of Peterborough's Water services, which inform how the water assets will be managed to achieve service levels and Key Performance Indicators (KPI). Water assets include assets that relate to the collection, production, treatment, storage, supply, or distribution of drinking water.

The functional responsibility of the Plan is to ensure the supply and distribution of clean, safe drinking water to all properties in the City of Peterborough that are connected to the municipal supply, including all support activities that are performed to achieve all levels of service. Water assets are considered Core Assets under Ontario Regulation (O.Reg) 588/17.

ASSET INVENTORY SUMMARY

The City of Peterborough's water treatment and distribution system comprises of one (1) water treatment plant, nine (9) pumping stations, five (5) water storage facilities, one (1) bulk fill station and approximately 470 km of watermains.

The overall water treatment and distribution system has an estimated replacement value of $1.177 billion dollars at the beginning of 2025. The water distribution system (including all watermains, valves and associated chambers, water services, hydrants, and water meters) accounts for approximately $940 million of the total replacement value or 80%.

The average remaining useful life of major water asset categories (including facilities, fleet, watermains, water services, ancillaries (valves and hydrants) and water meters) varies from 21% to 80%.

The overall condition of all water assets, using a weighted average based on replacement cost and grouped by category, are considered to be in good condition, with approximately 69% of assets in good condition and 31% of assets in fair condition.

Vertical water assets (including the water treatment plant and all facilities) are considered to be in overall fair condition (55%) with 12% in very good condition, 7% in good condition, 11% in poor condition and 15% in very poor condition.

Linear water assets (including watermains, valves and water services) are considered to be in overall good condition (68%), with 26% in fair condition and 6% in poor condition.

In general, the condition of water assets is regularly assessed through physical condition assessments, however physical assessments are not always possible due to the location of some assets such as buried pipes and valves. Where physical assessments are not possible, the asset condition is estimated based on industry standards, historical data, and staff experience.

LEVELS OF SERVICE

The levels of service provide a summary of key performance indicators, current measures, and associated targets for the water service area. Comparing the measures to the targets indicates how well the water utility is performing and helps confirm the effectiveness of the overall asset management program. Targets have been set based on industry standards as well as staff experience and statistics specific to the Peterborough water system.

Some performance indicators include the number of watermain breaks per 100 km, water service breaks, customer quality complaints, boil water advisories, and percentage of non-revenue water pumped into the water distribution system.

Based on year-end 2024, all identified targets have been achieved or exceeded.

LIFECYCLE STRATEGIES AND COSTS

The City of Peterborough carries out various strategies and activities to maintain current levels of service and maintain/extend the useful life of water assets. Major activities that are undertaken in this regard include infrastructure rehabilitation and replacement, and regular inspection and maintenance activities.

Capital and operating costs for the water utility are reviewed and approved yearly through the City of Peterborough Water Services Division, which is typically comprised of the mayor of the City of Peterborough as Chair and various city councillors as members.

As of 2025, the combined capital and operating costs on a yearly basis are currently close to $20 million dollars and have been summarized, respectively, for a ten (10) year planning period.

RISKS

The impacts of climate change highly influence the overall asset management strategy and associated decision making, and directly correlate with many risks faced by all water utilities.

A risk assessment analysis for the Peterborough water system has been developed under the City of Peterborough Drinking Water Quality Management System (DWQMS) and includes risks associated with, or impacted by, climate change. The risk assessment is comprehensively reviewed annually by the City's senior leadership team. A copy of the 2022 risk assessment is included in Appendix D for reference.

Risks have been identified and rated based on three (3) criteria – likelihood, impact, and level of risk, respectively. Higher rated risks directly influence decisions made in the asset management and financial budgeting process.

SUMMARY

The City of Peterborough has been overseeing the Peterborough water system for over 100 years. Since then, asset management has been a core function. Ensuring that the water utility is operated effectively, efficiently, safely, and reliably.

The Plan provides detailed information on the framework for managing all water assets in the City of Peterborough, as well as key metrics to measure effectiveness and long-term sustainability. The Plan will be reviewed and updated in future iterations, incorporating new best practices, strategies, and recommendations over time as well as tracking new assets, overall asset conditions, and rehabilitation/replacement efforts.

The majority of water infrastructure (69%) is in good condition, however there are several assets that are in poor to very poor condition that will require rehabilitation or replacement prioritization in the coming years. Diligence and continued use of asset management planning is required to ensure that the financial allocation of resources continues to keep the water assets in overall good condition while reducing risks and minimizing operating costs.

1.0 INTRODUCTION

1.1 BACKGROUND

The Water Utility in Peterborough was established in 1882, making it among the oldest in the country. Over the years the utility has established itself as a leader in water quality and supply, including being among the first to establish a rapid sand filtering system and to introduce chlorine disinfection. In addition, the City of Peterborough has some unique features including the ability to generate electricity and use turbines to harness power from the Otonabee River to pump water through the distribution system from the treatment plant.

1.2 ASSET MANAGEMENT PLAN PURPOSE AND RESPONSIBILITY

The purpose of this Plan is to identify and describe current asset management (AM) programs for the City of Peterborough's Water services, which inform how the water assets will be managed to achieve service levels and Key Performance Indicators (KPI). Water assets include assets that relate to the collection, production, treatment, storage, supply, or distribution of drinking water.

The functional responsibility of the Plan is to ensure the supply and distribution of clean, safe drinking water to all properties in the City of Peterborough that are connected to the municipal supply, including all support activities that are performed in order to achieve this service. Water assets are considered Core Assets under Ontario Regulation (O.Reg) 588/17.

1.3 SUMMARY OF WATER ASSETS AND ASSOCIATED DATA

For a high-level summary of the assets covered in this Plan, refer to Table 3 in Section 2.1. For detailed summaries of assets, please refer to Section 2.5 for vertical assets and Section 2.6 for linear assets. The infrastructure assets included in this Plan have a total replacement value of approximately $1.177 billion dollars as summarized in Table 4 in Section 2.2.

Most of the information in this Plan, including financial information, is based on data available as of January 2025 Condition assessments for all major vertical assets, including the water treatment plant, have been performed in 2025 and are included in Appendix A for reference.

1.4 ASSET MANAGEMENT PLANNING PERIOD AND SERVICE LEVEL REQUIREMENTS

The Plan uses a 10-year planning period and takes into account the lifecycle of the various assets to forecast investment and renewal requirements. This Plan is updated to include the proposed service level requirements for these assets in accordance with the 2025 updates associated with O.Reg 588/17. The Plan will be reviewed and reported to the Council every five (5) years.

1.5 KEY BACKGROUND AND PLANNING DOCUMENTS

The Plan is to be read with other City and PUC planning documents. This should include the Strategic Asset Management Policy (SAMP) along with other key planning documents. Note that all documents described below refer to the current version.

- City of Peterborough Asset Management Plan
- Water Utility Master Plan
- Development Charges Background Study
- City of Peterborough Official Plan (Adopted November 2021)
- Water Street Dam and Pumphouse Structural Assessment

All supporting documentation can be found either on the City of Peterborough's website at www.peterborough.ca or on the Peterborough Utilities Services website at www.peterboroughutilities.ca.

1.6 ASSET CONDITION RATINGS

Major water assets have been assigned a condition based on a physical inspection or, where this is not feasible, an estimated condition. The rating scale used to describe an asset's condition and corresponding points scale is shown below in Table 1.

Table 1: Asset Condition Rating Scale

Asset Condition	Numerical Rating
Very Poor	1
Poor	2
Fair	3
Good	4
Very Good	5

1.7 ASSET MANAGEMENT PLAN KEY STAFF

The Plan has been prepared by internal staff in the City. Key staff in the preparation, review, and implementation of this Plan are summarized below in Table 2.

Table 2: Asset Management Plan Key Staff

Key Staff	Position
Ilmar Simanovskis	Commissioner, Municipal Operations
Lorne Dainard	Director, Environmental Services
Michael Meyers	Water Utility Manager
Kevin Conlin	Water Utility Engineer
Elysha Doyle	Water Engineering Technician

2.0 STATE OF INFRASTRUCTURE

2.1 OVERALL INVENTORY DETAILS

The water assets in the City of Peterborough have been divided into two (2) overall categories: vertical and linear assets. Vertical assets include all facilities and related items and are summarized in Section 2.5. Linear assets include all underground infrastructure such as pipes, valves, and water services, as well as water meters, communication devices and fire hydrants, and are summarized in Section 2.6. For detailed information on both vertical and linear assets, refer to these sections. For a detailed map of the City of Peterborough Water System, including distribution system and major facilities, see Appendix A.

Table 3 below provides high level details of the City of Peterborough's overall water asset inventory including both vertical and linear assets.

Table 3: Overall Water Asset Inventory

Asset Class and Sub-Class	Asset	2025 Quantity	Unit of Measure
Vertical (Treatment/Pumping/Storage)			
Facilities	Water Treatment Plant	3	Buildings
	Water Street Dam	1	Structures
	Pumping Stations	9	Buildings
	Water Storage	5	Structures
	Bulk Fill Station	1	Buildings
Fleet	Vehicles, Backhoes, Trucks	30	Each
Linear (Distribution)			
Watermains	All Sizes	470	Km
Services	All Sizes	28,348	Each
Ancillaries	Valves (incld Chambers)	7,303	Each
	Hydrants	2,501	Each
Water Meters	All Types	29,315	Each
Communication Devices	All Types	44	Each

2.2 OVERALL REPLACEMENT COSTS

The estimated replacement costs for the beginning of 2025 water utility totals approximately $1.177 billion dollars. Replacement costs were determined using competitive pricing from recent construction projects, including all applicable overhead, where possible. Historical costs in conjunction with inflation were used where recent costing information was not available.

Figure 1 and Table 4 below summarize the overall replacement cost by asset sub-class.

Figure 1: Overall Replacement Cost by Asset Sub-Class

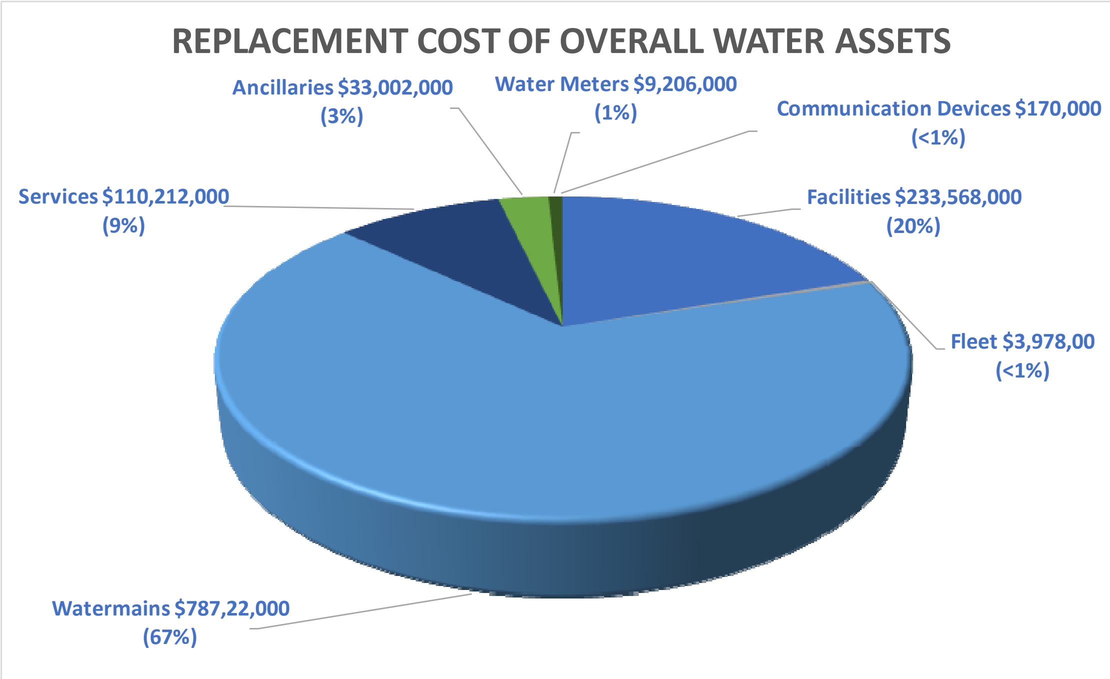


Table 4: Overall Replacement Cost by Asset Sub-Class

Asset Class and Sub-Class	Asset	2025 Replacement Cost
Vertical (Treatment/Pumping/Storage)		
Facilities	Water Treatment Plant	$125,584,000
	Water Street Dam	$35,232,000
	Pumping Stations	$28,776,000
	Water Storage	$43,415,000
	Bulk Fill Station	$561,000
Fleet	Vehicles, Backhoes, Trucks	$3,978,000
Linear (Distribution)		
Watermain	All Sizes	$787,282,000
Services	All Sizes	$110,212,000
Ancillaries	Valves (incld Chambers)	$13,956,000
	Hydrants	$19,046,000
Water Meters	All Types	$9,206,000
Communication Devices	All Types	$170,000
TOTAL		$1,177,418,000

2.3 OVERALL REMAINING USEFUL LIFE

The expected useful life of an asset is the estimated period of which use of the asset is anticipated. Estimates are based on the calculated age (not observed age) and take into account any betterments that extend the useful life of the assets.

The overall expected useful life and average remaining useful life have been calculated using weighted averages based on the respective asset replacement value. The percent of useful life is a weighted average based on replacement value of each sub asset from the vertical and linear asset detailed breakdowns, which are summarized in Sections 2.5 and 2.6.

The age of water assets is highly variable due to the age of the Peterborough water system, and there is not always a linear relationship between age and condition considering each asset type.

Table 5 below shows details of the overall remaining useful life.

Table 5: Overall Remaining Useful Life

Asset Class and Sub-Class	Expected Useful Life (Years)	2025 Average Remaining Useful Life	
		(Years)	(%)
Vertical (Treatment/Pumping/Storage)			
Facilities	60 to130	19	21%
Fleet	12 to 25	8	37%
Linear (Distribution)			
Watermains	100	53	53%
Services	75	24	32%
Valves	40	13	33%
Hydrants	60	32	54%
Water Meters	20	8	40%
Communication Devices	30	24	80%

2.4 OVERALL ASSET CONDITION

The water assets are currently rated overall in good condition. Where condition inspections have not been completed, age-based ratings were used, and this is particularly applicable to linear assets which are difficult to physically inspect due to location.

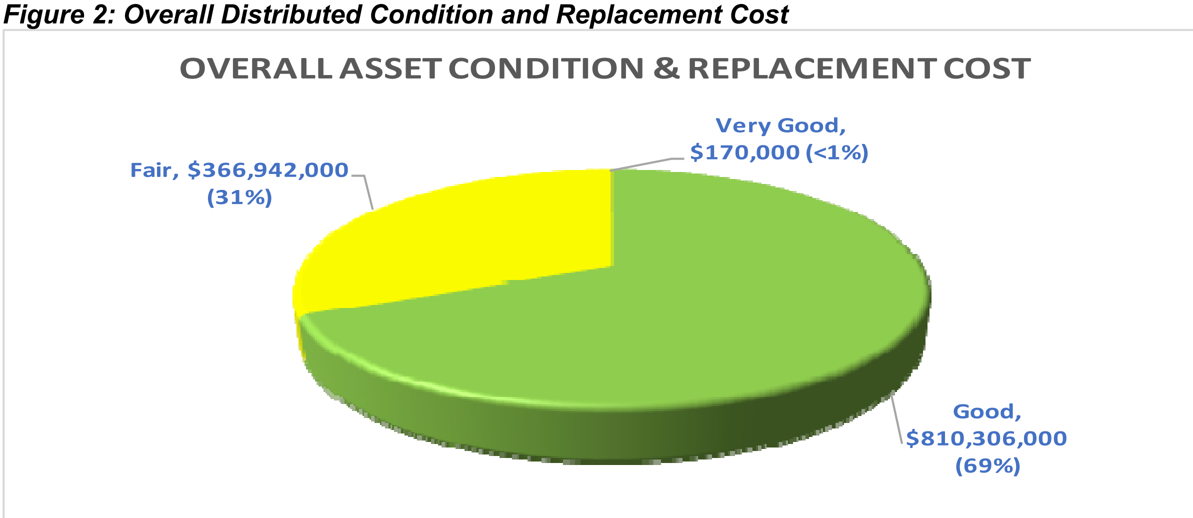
Based on replacement cost, 69% or $810,306,000 of the total overall assets are rated as being in good condition and 31% or $366,942,000 are rated to be in fair condition. The overall asset condition ratings are based on the summary of the vertical and linear conditions which are summarized in more detail in Sections 2.5 and 2.6 and have been calculated using weighted averages based on the respective asset replacement value.

Table 6 and Figure 2 below provides condition details and associated replacement costs of the water assets as a whole.

Table 6: Overall Asset Condition Ratings

Asset Class and Sub-class	Asset	2025 Condition Rating
Vertical (Treatment/Pumping/Storage)		
Facilities	All Facilities	**Fair**
Fleet	Vehicles, Backhoes, Trucks	**Good**
Linear (Distribution)		
Watermains	All Sizes	**Good**
Water Services	All Sizes	**Fair**
Ancillaries	Valves (incld chambers)	**Fair**
	Hydrants	**Good**
Water Meters	All Sizes	**Fair**
Communication Devices	All Types	**Very Good**

Figure 2: Overall Distributed Condition and Replacement Cost



2.5 VERTICAL ASSETS – DETAILED INVENTORY, REPLACEMENT COST, USEFUL LIFE AND CONDITION

Vertical assets include the water treatment plant and all associated structures and appurtenances, as well as pumping stations, water storage facilities, the water street dam and pumphouse, and the bulk water fill station. The water fleet is also included in the vertical asset classification.

See Figure 3 and Table 7 below for a summary of the vertical asset inventory and associated replacement cost.

Figure 3: Summary of Vertical Asset Inventory and Replacement Cost

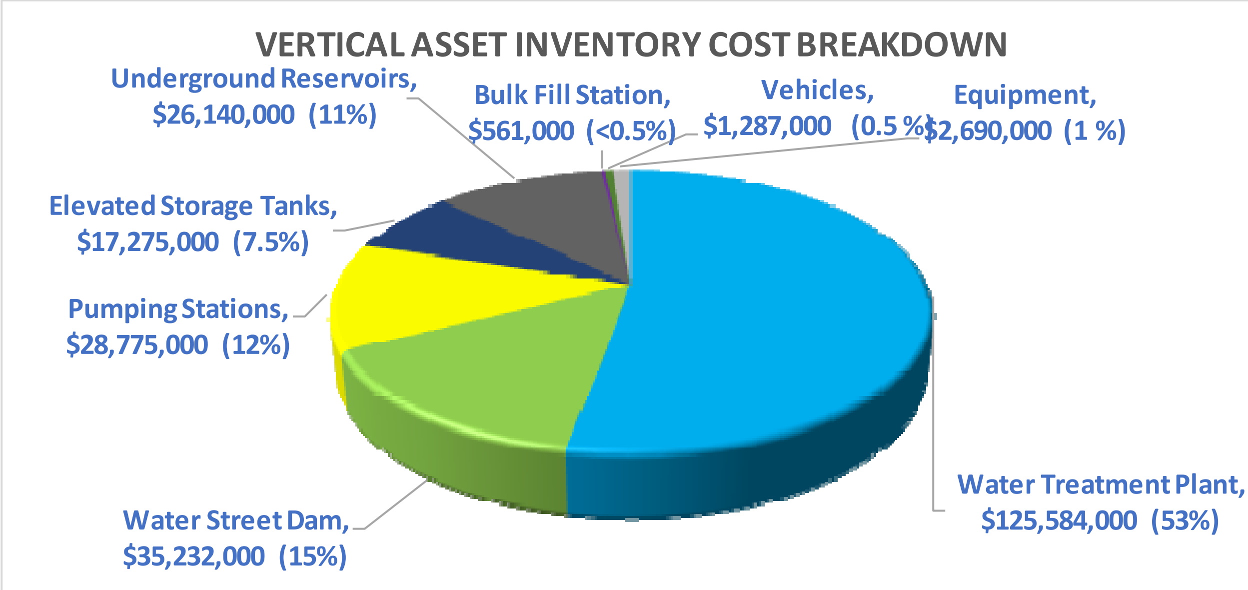


Table 7: Vertical Asset Inventory Replacement Cost Breakdown

Vertical Asset Class	Components	2025 Cost Breakdown
Water Treatment Plant	Filtration/Treatment Building	$ 100,013,000
	Waste Process Building	$ 14,206,000
	Generator Building	$ 11,365,000
Water Street Dam		$ 35,232,000
Pumping Stations	Water Street Pumphouse	$ 16,479,000
	Clonsilla Reservoir	$ 6,137,000
	Clonsilla (Zone 2)	$ 511,000
	Cumberland	$ 1,250,000
	Greencrest	$ 1,023,000
	Lansdowne	$ 739,000
	Chemong	$ 852,000
	Fairmount	$ 1,307,000
	Scollard	$ 477,000
Elevated Storage Tanks	High	$ 6,819,000
	Sherbrooke	$ 6,251,000
	Milroy	$ 4,205,000
Underground Reservoirs	Clonsilla	$ 13,638,000
	Towerhill	$ 12,502,000
Bulk Fill Station		$ 561,000
Vehicles	Light Duty Truck/Van	$ 952,000
	Heavy Duty Truck/Van	$ 335,000
Equipment	Heavy Equipment/Machinery	$ 2,169,000
	Miscellaneous Equipment	$ 521,000
TOTAL		**$237,544,000**

See Table 8 below for a summary of the vertical asset inventory and associated useful life.

Table 8: Vertical Asset Inventory Useful Life Breakdown

Vertical Asset Class	Component	Expected Useful Life (Years)	Construction Date	Average Remaininig Useful Life (Years)	Percent of Useful Life Remaining (Years)
Water Treatment Plant	Filtration/ Treatment Building	130	1921	26	20%
	Waste Process Building	60	2003	38	63%
	Generator Building	60	2000	35	58%
Dam	Water Street	100	1910	0	0%
Pumping Stations	Water Street Pumphouse	60	1910	0	0%
	Clonsilla Reservoir	60	1965	0	0%
	Clonsilla (Zone 2)	60	1965	0	0%
	Cumberland	60	2008	43	72%
	Greencrest	60	2017	52	87%
	Lansdowne	60	1974	9	15%
	Chemong	60	1981	16	27%
	Fairmount	60	1997	32	53%
	Scollard	60	1996	31	52%
Elevated Storage Tanks	High	100	1957	32	32%
	Sherbrooke	85	1972	32	38%
	Milroy	60	1987	22	37%
Underground Reservoirs	Clonsilla	60	1965	0	0%
	Towerhill	60	1986	21	35%
Bulk Fill Station	Milroy	60	2020	55	92%
Vehicles	Light Duty Truck/Van	12	2015	2	17%
	Heavy Duty Truck/Van	12	2016	3	25%
Equipment	Heavy Equipment	25	2012	12	48%

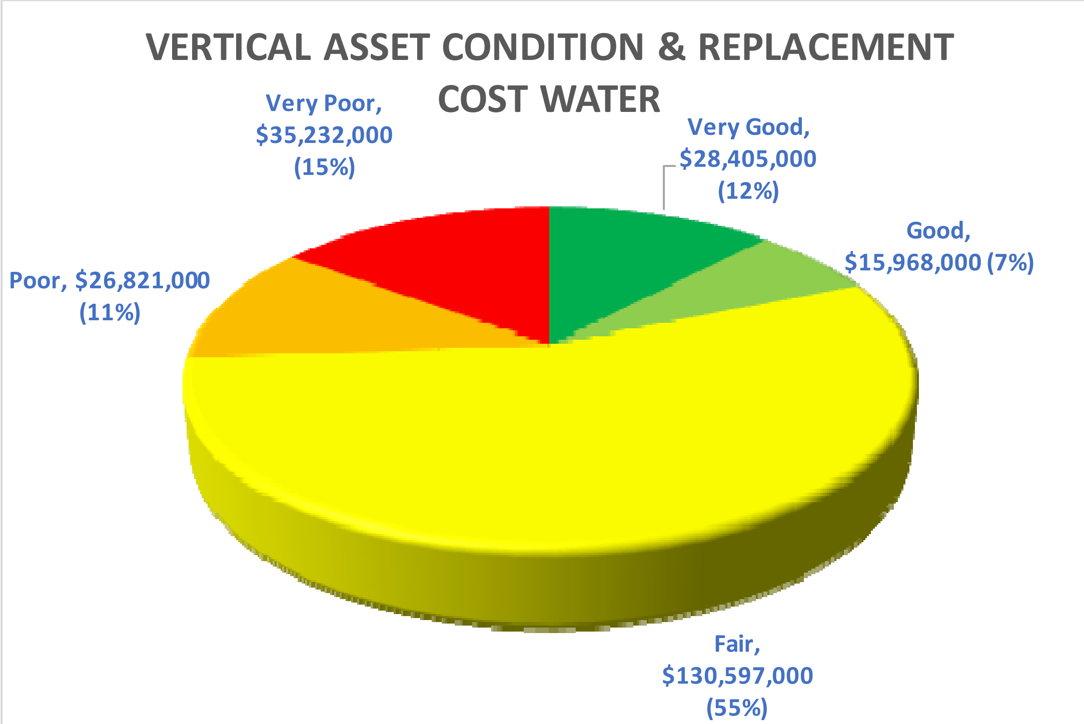
The condition of vertical assets has been verified in detail based on Condition Assessments performed by the City of Peterborough Water Services Engineering Department, included in Appendix A. The Condition Assessments will be updated, at minimum, every five (5) years.

See Table 9 for a summary of the asset condition breakdown and Figure 4 for the asset condition and associated replacement cost below, respectively, for all vertical assets.

Table 9: Vertical Asset Inventory Condition Breakdown

Vertical Asset Class	Component	2025 Condition Rating
Water Treatment Plant	Filtration/Treatment Building	Fair
	Waste Process Building	Very Good
	Generator Building	Very Good
Water Street Dam		Very Poor
Pumping Stations	Water Street Pumphouse	Poor
	Clonsilla Reservoir	Poor
	Clonsilla (Zone 2)	Fair
	Cumberland	Very Good
	Greencrest	Very Good
	Lansdowne	Good
	Chemong	Good
	Fairmount	Good
	Scollard	Fair
Elevated Storage Tanks	High	Good
	Sherbrooke	Good
	Milroy	Poor
Underground Reservoirs	Clonsilla	Fair
	Towerhill	Fair
Bulk Fill Station		Very Good
Vehicles	Light Duty Truck/Van	Fair
	Heavy Duty Truck/Van	Fair
Equipment	Heavy Equipment/Machinery	Fair

Figure 4: Vertical Asset Condition and Replacement Cost



The majority of vertical assets are in fair condition (55%) with 26% in poor or very poor condition. The percentage of assets in poor to very poor condition are primarily due to the age of two (2) relatively high value vertical assets: the Water Street dam and associated pumphouse. A structural assessment of these two (2) facilities was completed in 2024 by Kleinschmidt and a detailed condition assessment (2025) for each facility is included in Appendix A. Rehabilitation work for the Water Street Dam is planned for 2025 to continue to offer the current level of service.

2.6 LINEAR ASSETS – DETAILED INVENTORY, REPLACEMENT COST, USEFUL LIFE AND CONDITION

Linear assets include all underground infrastructure and associated items such as pipes, valves, chambers, water services as well as water meters and fire hydrants.

See Figure 5 and Table 10 below for a summary of the detailed linear asset inventory and associated replacement value.

Figure 5: Detailed Linear Asset Inventory and Replacement Value

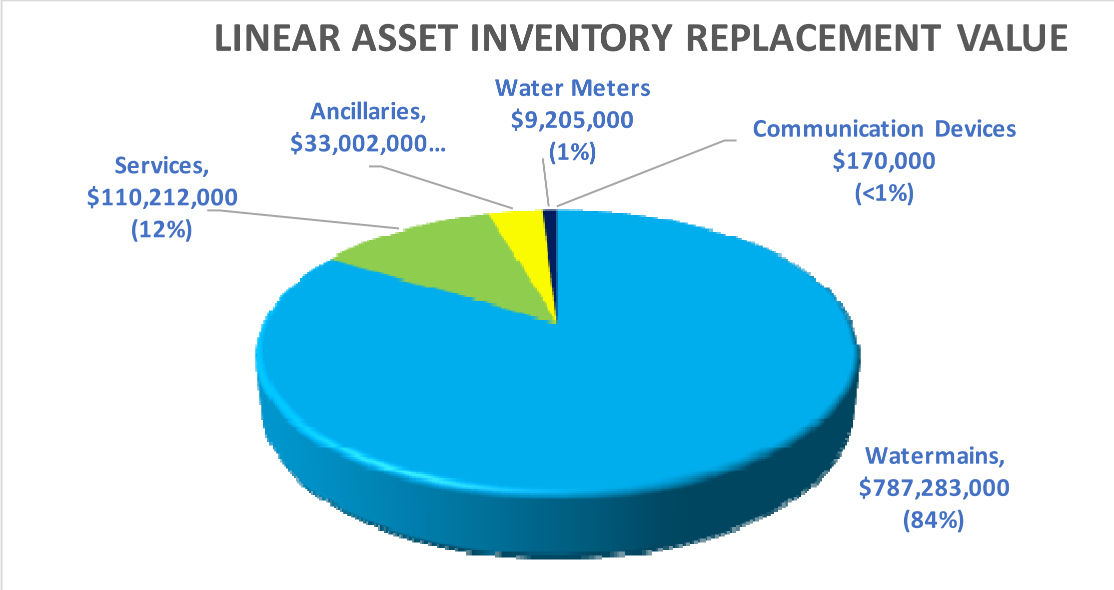


Table 10: Detailed Linear Asset Inventory and Cost Breakdown

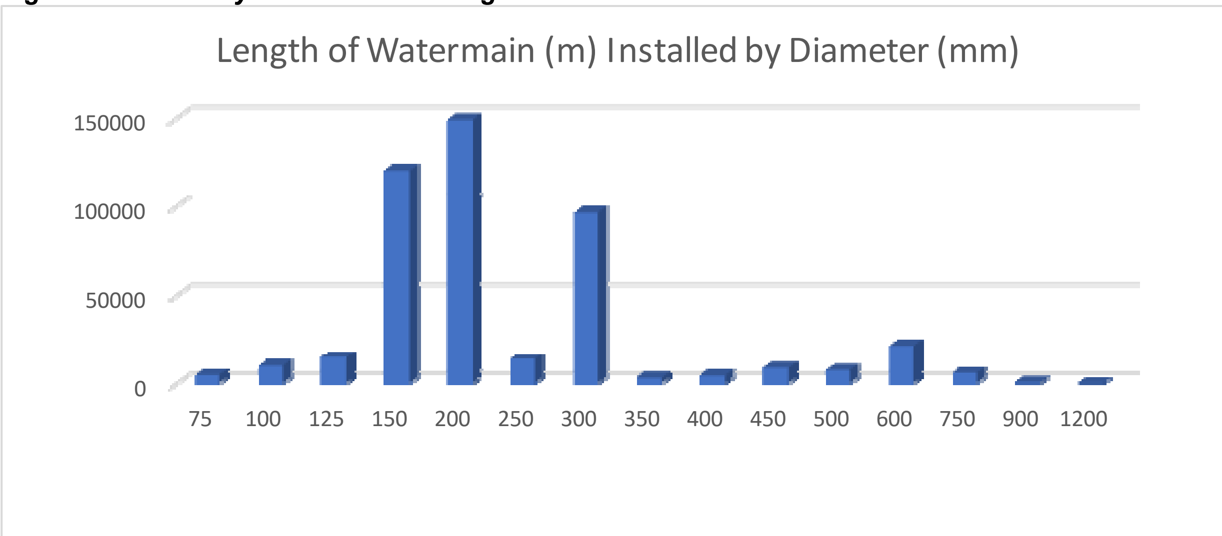
Linear Asset Class	Asset Sub-Class	Size/Diameter (mm)	Quantity	2025 Cost Breakdown
Watermains	Distibution	300 / 250	110 km	$161,932,000
		200/150	269.1 km	$434,993,000
		<150	34.6 km	$53,977,000
	Trunk	>300	51.3 km	$136,381,000
Services	Residential & ICI	All Sizes	28348	$110,212,000
Ancillaries	Valves [1]	<300	7111	$10,177,000
	Valve Including Chambers	>300	162	$3,779,000
	Hydrants	n/a	2501	$19,046,000
Water Meters	Residential	< 50	28554	$7,230,000
	ICI	> 50	552	$1,975,000
Communication Devices	Repeaters	n/a	11	$11,000
	Gate Keepers	n/a	33	$159,000
Linear Asset Total				**$939,872,000**

[1] Valve records without size/age data were assumed to be less than 300mm

As summarized above and in Figure 1 in Section 2.2, watermains account for a significant portion of the total linear water asset value at approximately 84%. As such, significant effort is put into comprehensive rehabilitation and maintenance of watermains in the distribution system. For detail of the various activities that are undertaken for watermain rehabilitation and maintenance, refer to Section 4.0.

For a detailed breakdown of the total length of watermain based on size (diameter), see Figure 6 below. The greatest length of watermain by diameter is 200 mm, followed by 150 mm in the distribution system, as these two sizes provide water service to most residential areas as well as provide looping.

Figure 6: Summary of Watermain Length and Diameter



The expected useful life of linear assets has been developed using industry standards such as those published by the American Water Works Association (AWWA) and Ontario Water Works Associated (OWWA), in conjunction with staff experience and historical trends.

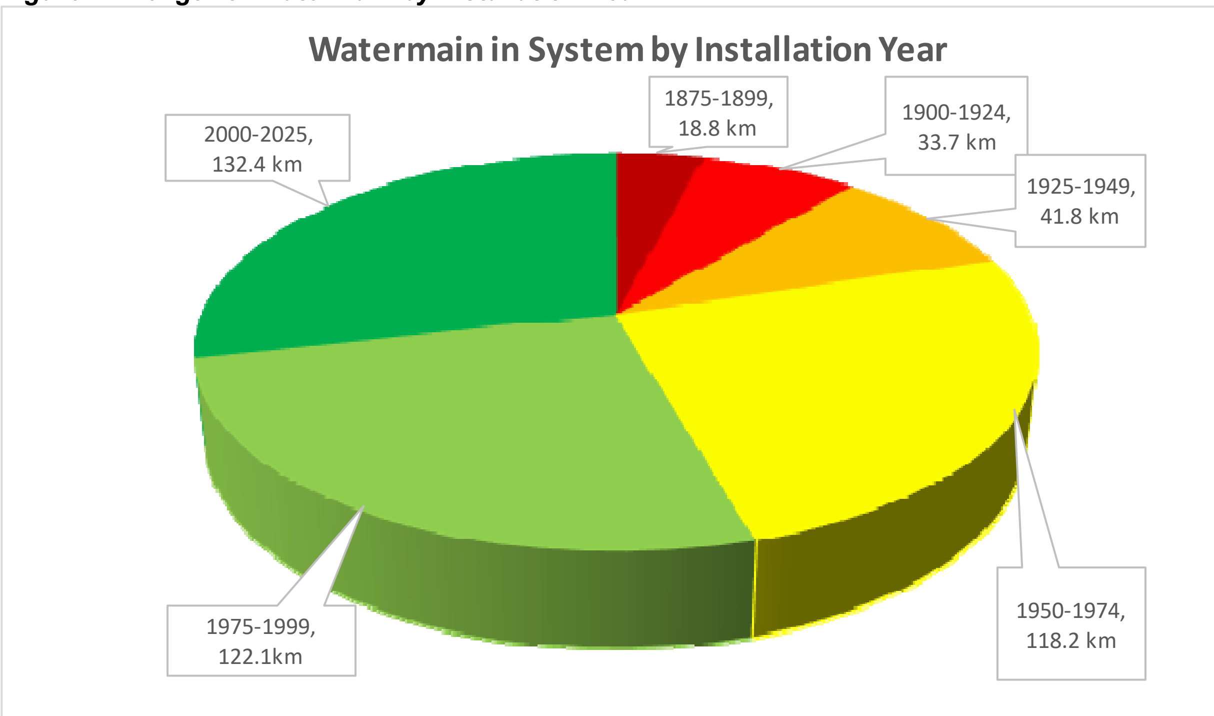
See Table 11 below for a summary of the linear asset inventory and associated average useful life.

Table 11: Linear Asset Inventory Useful Life Breakdown

Linear Asset Class	Asset Sub-Class	Size / Diameter (mm)	Expected Useful Life (Years)	Average Age (Years)	Average Remaininig Useful Life (Years)	Percent of Useful Life Remaining (Years)
Watermains	Distribution	300/250	100	34	66	66%
		200/150	100	47	53	53%
		<150	100	81	19	19%
	Trunk	>300	100	55	45	45%
Services	Residential	<50	75	51	24	32%
	ICI	>50	75	44	31	42%
Ancillaries	Valves	<300	60	26	34	56%
	Valves Including Chambers	>300	60	51	9	15%
	Hydrants	N/A	60	28	32	54%
Water Meters	Residential	<50	20	12	8	40%
	ICI	>50	20	10	10	51%
Communication Devices	Repeater	n/a	30	6	24	80%
	Gate Keepers	n/a	30	5	25	83%

See Figure 7 below for a detailed summary of the length of watermain in the distribution system as a function of installation year. As Figure 7 shows, 53km (11%) of the total watermain length has been installed from 1875-1924. This watermain is currently exceeding its expected useful life (100 years) and is in very poor condition.

Figure 7: Length of Watermain by Installation Year



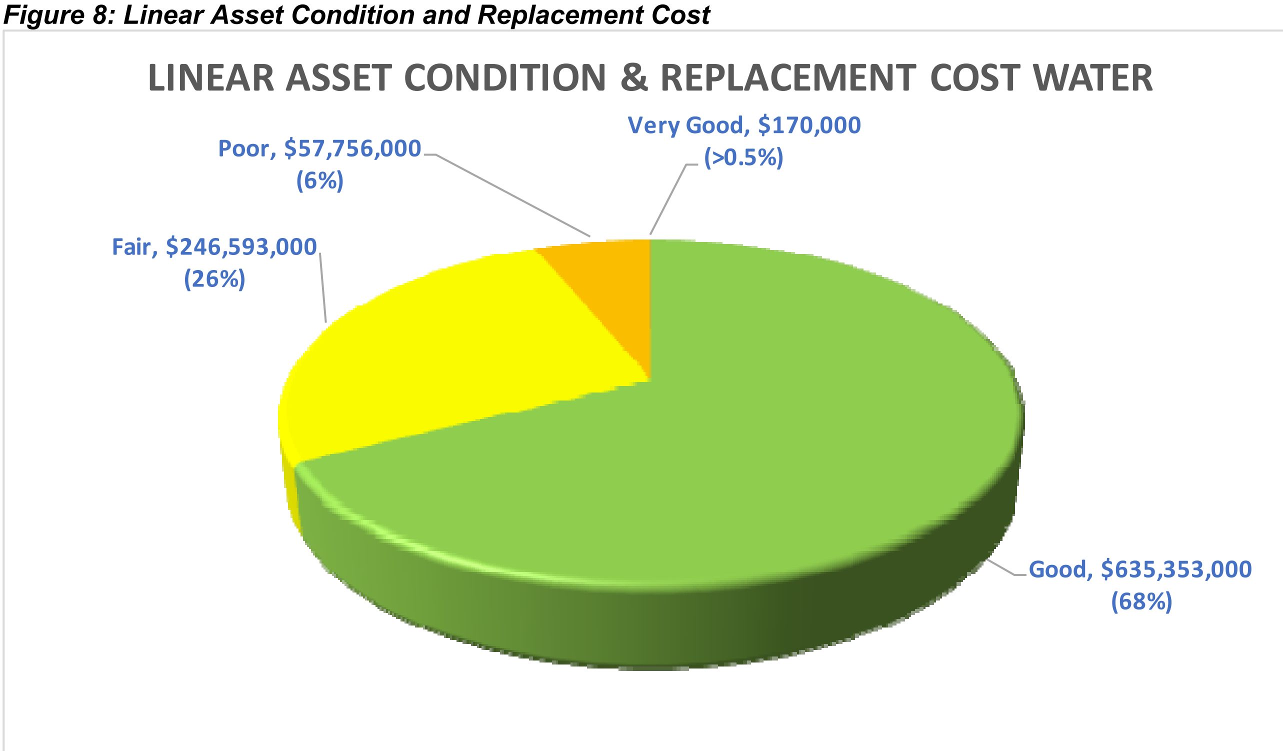
The condition of linear assets is difficult to physically verify due to location, as most of the assets in this category, such as watermains and services, are buried. The condition of linear assets has been estimated using a combination of industry standards, physical inspections where possible, age, repair history (as applicable) and material.

See Table 12 for a summary of the asset condition breakdown and Figure 8 for the asset condition and associated replacement cost below, respectively, for all linear assets.

Table 12: Linear Asset Inventory Condition Breakdown

Asset Class Linear (Distribution)	Asset Sub-Class	Size (Diameter)	2025 Condition
Watermains	Distribution	300mm / 250mm	**Good**
		200mm / 150mm	**Good**
		<150mm	**Poor**
	Trunk	>300mm	**Fair**
Services	Residential & ICI	All Sizes	**Fair**
Ancillaries	Valves	<300mm	**Good**
	Valves Including Chambers	>300mm	**Poor**
	Hydrants	n/a	**Good**
Water Meters	Residential	< 50mm dia.	**Good**
	ICI	>50mm dia.	**Good**
Communication Devices	Repeater	n/a	**Very Good**
	Gate Keepers	n/a	**Very Good**

Figure 8: Linear Asset Condition and Replacement Cost



The majority of linear assets are estimated to be in good condition, and this aligns with the number of annual watermain breaks per kilometer and water service repairs outlined in Table 13 in Section 3.0.

3.0 LEVELS OF SERVICE

This section presents levels of service as they are currently being provided by the City.

Key performance indicators, current measures, and targets for the water service area, are outlined in Table 13 below. Comparing the measures to the targets indicates how well the water utility is performing and helps confirm the effectiveness of the overall asset management program. Targets have been set based on industry standards as well as staff experience and statistics specific to the Peterborough water system.

Table 13: Key Performance Indicators, Current Measures and Targets

Key Performance Indicator	2021	2022	2023	2024	2025 to 2035	Target
Annual number of adverse drinking water quality notifications	1 [1]	1 [1]	2	1	1	0
Annual number of water quality complaints (colour/taste, etc.)	20	16	16	18	17	<50
Number of days a boil water advisory issued by Medical Officer of Health – Annual	0	0	0	0	0	0
Ministry of Environment Drinking Water Inspection Report Rating (most recent)	100%	100%	100%	100%	100%	100%
Number of watermain breaks per 100km of watermain per year	5.5	2.9	2.6	3	3.6	<8
Number of water service failures per year	70	69	54	53	61	<75
Water Utility Master Plan - Maturity[2]	4 years	3 years	2 years	1 years	<5years	<5 years
Condition Assessment of Treatment Plant – Maturity[2]	N/A	5 years	4 years	3 years	<5years	<5 years
Condition Assessment of Pumping Stations – Maturity[2]	N/A	5 years	4 years	3 years	<5years	<5 years
Condition Assessment of Water Storage Facilities – Maturity[2]	N/A	5 years	4 years	3 years	<5years	<5 years

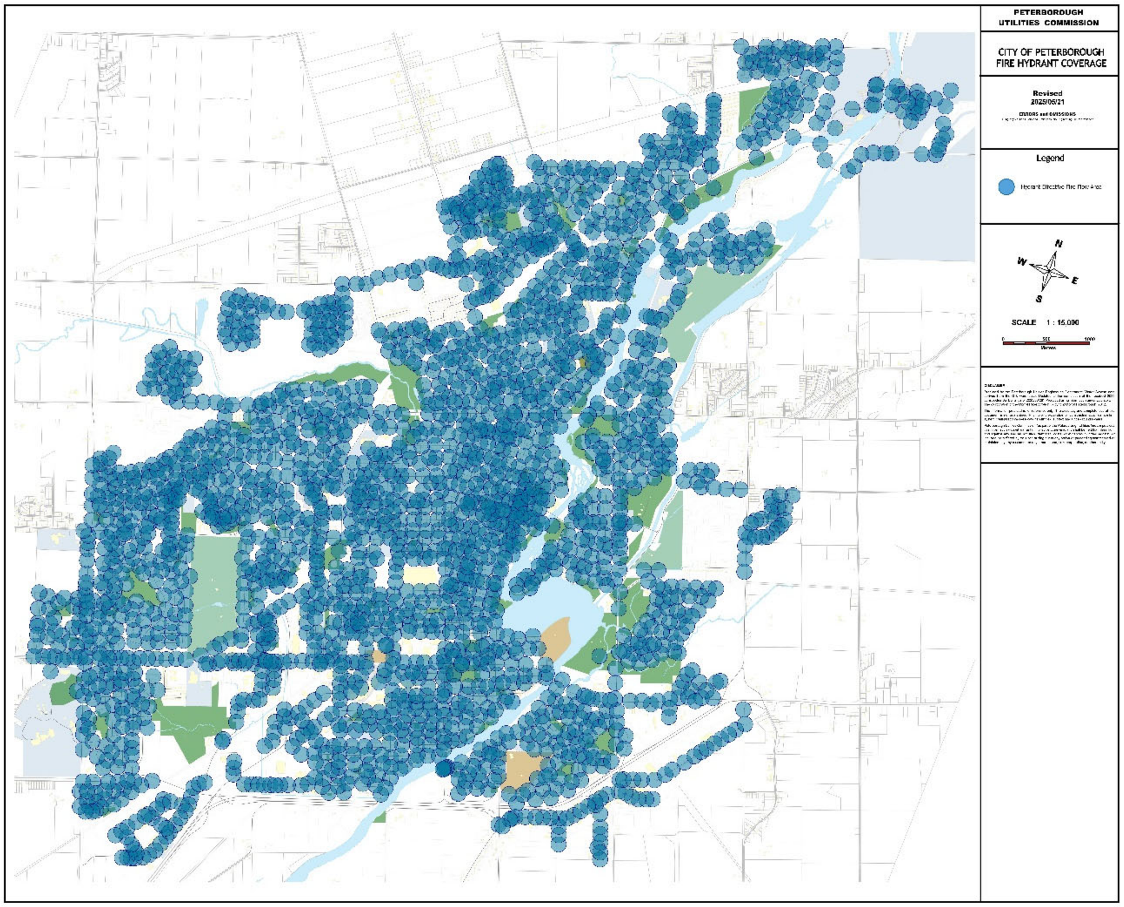
[1] Upon secondary sampling, adverse result was attributed to sampling error
[2] Maturity = time until completion

Table 5 of O. Reg. 588/17 provides technical levels of service that are required to be reported on in order to meet the provincial level of service requirement. These metrics for the Peterborough water system are summarized below in Table 14.

Table 14: Mandatory Technical Levels of Service

Service Attribute	Technical Levels of Service	2024	2025 to 2035
Scope	Percentage of properties connected to the municipal water system	93.3%	93.5%
	Percentage of properties where fire flow is available	92.9%	93%
Reliability	The number of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	0 connection-days of 28,348 connected properties	0 connection-days of 28,348 connected properties
	The number of connection-days per year due to watermain breaks compared to the total number of properties connected to the municipal water system	3.25 connection-days of 28,348 connected properties	3 connection-days of 28,348 connected properties

Figure 9: City of Peterborough – Fire Hydrant Coverage (90m radius)



:

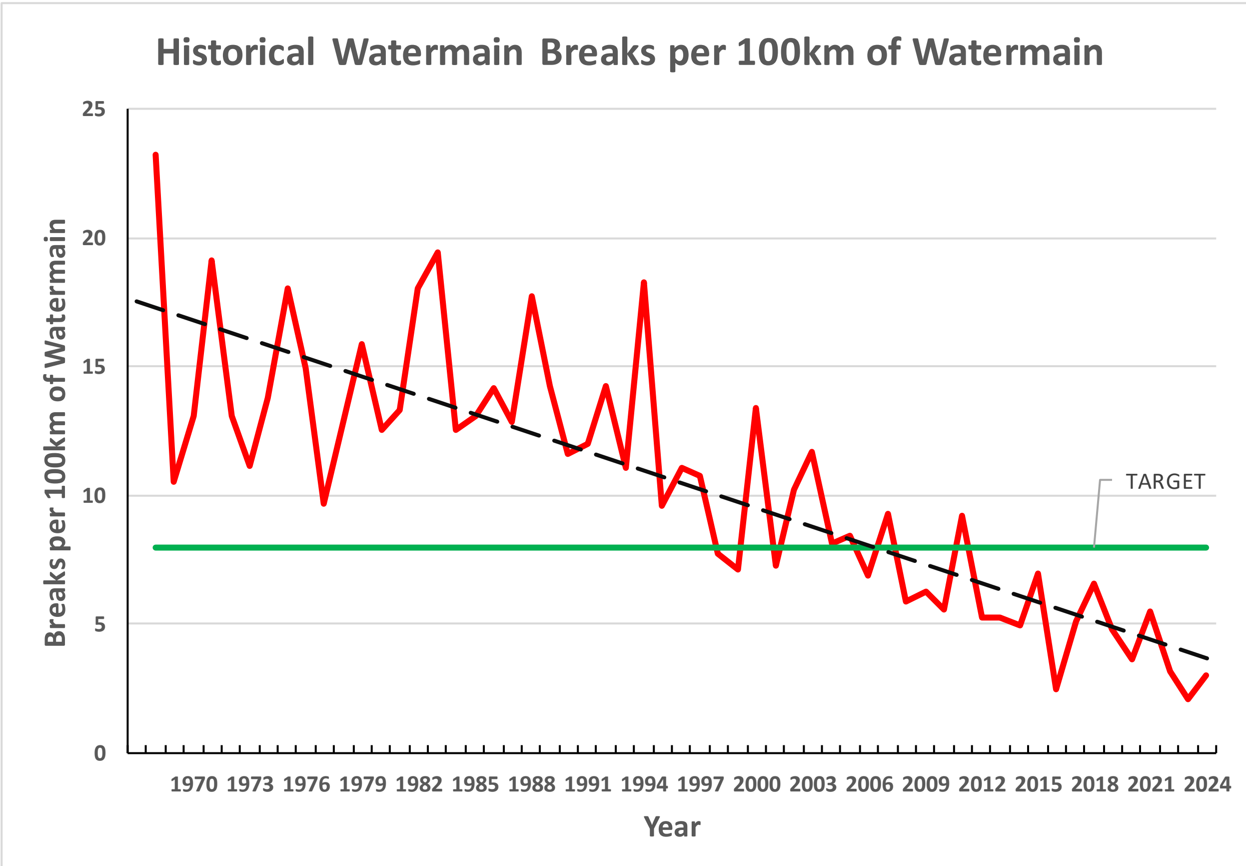
The above noted levels of service and key performance indicators are strong when compared with other municipalities of this size. It is believed that the metrics can be sustained over the next decade. The largest risk of not sustaining our levels of service is the lack of future capital and operational funding. With the costs of construction and maintenance rapidly increasing from year to year it will be a challenge to ensure our budgets can stay on pace. Funding applications will be relied upon to make up any shortfalls.

One of the most important performance indicators in a water system is the number of watermain breaks, which is commonly measured yearly per 100 km of watermain in the distribution system. The most recent measure of yearly watermain breaks per 100 km is 3 (2024) as shown in Table 13, however due to the variability of winter temperatures and fluctuations it is important to track historical watermain breaks to identify trending.

Based on an analysis of watermain breaks per 100 km of watermain from 1968, the overall trend is reducing. This can be partially attributed to effective asset management; however other factors also impact this performance indicator including how much new watermain is constructed over time as well as advances in material technology.

See Figure 10 below for a summary of the historical watermain breaks per 100 km of watermain since 1968, showing the overall trend in the black line. The target of 8 breaks per 100 km of watermain is included in Figure 10 for reference, which is considered below industry average and is somewhat aggressive given the age of the Peterborough water distribution system.

Figure 10: Historical Watermain Breaks per 100km of Watermain



4.0 ASSET MANAGEMENT STRATEGIES

4.1 ASSET MANAGEMENT LIFECYCLE STRATEGIES

The City carries out various strategies and activities to maintain current levels of service and maintain/extend the useful life of water assets. This section describes the preferred current asset management strategies as well as a brief description of cement mortar lining of watermains and the internal Condition Rating Analysis Tool program.

Assessment and evaluation of which major lifecycle activities that could be undertaken, considering associated risks, benefits and costs, are explored and analyzed through various studies and reports including the Water Services Master Plan.

Where studies have not been completed to access lifecycle strategy options, an analysis is carried out on a case-by-case basis by staff when developing water utility spending strategy and budget forecasts.

Table 15 below shows a summary of the current asset management strategies, activities, and practices that are in place. These consider the useful life of the assets and assumes the investment costs over the lifecycle of the assets including capital, operating and other relevant costs.

Table 15: Asset Management Lifecycle Strategies

Strategy Type	Current Practice
Non-infrastructure Solutions Actions or policies that can lower costs or extend asset life	• Use of water modeling software to optimize relationship between water distribution system capacity and pipe size • Water engineering design standards available to developers and other stakeholders, updated regularly • Internally developed scoring system for watermains to prioritize replacement considering age, break history and material • Annual hydrant flow testing program to confirm available water flow rates and pressures • Pilot testing facility at water treatment plant to optimize existing processes and investigate options to improve water quality and reduce costs • Adherence to Water Services Master Plan which provides overall road map for future water system needs and upgrades • Annual training and education for key staff to keep up-to-date on industry best practices and further develop skills

<table>
<tr><th>Strategy Type</th><th>Current Practice</th></tr>
<tr><td></td><td>Metered water required for all water system users to encourage water conservation and allow water balanced calculations to determine non-revenue water
Equipment calibrations (flow meters, analyzers) conducted at various intervals
SCADA monitoring of equipment hour runtime and data input into maintenance software
Identification of critical control points through Drinking Water Quality Management system
Redundancy built into various equipment and processes that lessens the frequency and impact of failure</td></tr>
<tr><td>Maintenance Activities
Activities include regularly scheduled inspection and maintenance, or more significant repair and activities associated with unexpected events</td><td>Annual valve operating program to exercise valves, promoting longevity and ensuring function
Annual hydrant sand blasting and painting program
Annual hydrant inspection and repair
Annual flushing program of dead ends to promote water quality
Annual air release valve maintenance
Installation of new sacrificial anode on iron watermains during repair activities
Various records at water treatment plant are maintained in Data Stream MP2 maintenance program
Work orders are created for reactive and preventative maintenance activities
Run hours of pumps are maintained and identify certain actions required
Defective equipment document is created when a maintenance issue arises. Document is reviewed and work orders are created to address the issue and work orders are logged in the MP2 program.
Annual inspections of intake structures
Preventative annual maintenance on chemical feed systems
Semi-annual inspections of underground pumping stations and reservoirs
As per best practices, every effort is made to enter and inspect reservoirs and elevated tanks every five (5) years
Annual filter maintenance program that inspects filter media, gravel, sand, including annual rate of flow, loss of head, meters and operating cylinders and valves</td></tr>
<tr><td>Rehabilitation</td><td>Cement mortar lining program to extend lifespan of cast iron watermains</td></tr>
</table>

Strategy Type	Current Practice
Activities that extend the useful life of an existing asset	• Structural lining program to extend lifespan of watermain in challenging locations for excavation • Water service repairs to valves at property line • Process pipe painting at various facilities to prevent corrosion • Through maintenance programs and visual inspections/history of equipment failures, rehabilitation projects are identified at water treatment plant • Use of external experts, when required, to review rehabilitation requirements of various facilities as needed
Replacement Activities that occur once an asset has reached the end of its useful life and cannot be rehabilitated	• Replacement of existing watermain and water services at end of lifespan • Replacement projects are prioritized that combine with other projects or utilities to reduce costs and impacts to the public • Through maintenance programs and visual inspections/history of equipment failures, replacement projects are identified at water treatment plant

4.2 RISKS ASSOCIATED WITH STRATEGIES

Potential risks associated with the ability to effectively deliver established service levels are:

- Insufficient funding levels
- Insufficient staffing and resources to responsibly implement lifecycle strategies
- Asset deterioration assessments/models are underestimated/miscalculated
- External/environmental factors such as climate change effects (more severe weather instances, increased demands due to growth)

Impacts associated with above risks include:

- Further/accelerated asset deterioration
- Increased backlog of work
- Increased treatment costs
- Level of treatment changes requiring increased resources/costs (maintenance now needing replacement)
- Planned budget/needs forecast not reflective of actual asset needs

- Additional assets/expansion of services required
- Reputation/image negatively affected

Risks relating to asset failure are mitigated through inspection and maintenance programs, predictive failure modeling, climate change adaptation and mitigation strategies and investment planning to achieve the levels of service that have been established.

Strategies implemented are primarily at the lowest cost in order to reduce the burden on the water rate payers in order to maintain the current levels of service at the lowest risk.

4.3 CEMENT MORTAR LINING OF WATERMAINS

As the cast iron and unlined ductile iron pipe in the water distribution system age, the interior of the pipe develops significant corrosion which results in pitting, tuberculation, and roughness inside the pipe. See Figure 11 below for an example of a highly tuberculated cast iron pipe.

Figure 11: Cast Iron Pipe Tuberculation

When pressure and flow fluctuate, particulates due to corrosion can break away from the wall of the pipe and into the flow, causing discolouration and other aesthetic issues within the water. Internal corrosion also significantly contributes to pipe failure. Cement Mortar Lining (CML) of iron watermains provides a smooth inner lining which eliminates the roughness, reduces future corrosion potential, and helps minimize associated water quality issues.

Additional benefits of CML are improved hydraulic properties of the pipes (better water flow, lower pumping costs), and internal pipe corrosion is inhibited by the CML which adds considerably to the life of the pipe. Depending on the age, condition, and physical properties of the pipe, CML can add an estimated 30 years to the useful life of watermain. An important advantage of the CML program is improved customer satisfaction and fewer subsequent customer complaints.

Figure 12 below illustrates the final internal pipe condition following cement mortar lining.

Figure 12: Cement Mortar Lined Watermain

4.4 CONDITION ASSESSMENT RATING TOOL

The Condition Rating Analysis Tool (CART) program is an internal scoring system and methodology developed by the Water Services Engineering department. The CART program uses data which is continuously collected and updated by City staff and can be accessed in either graphical or tabular form. The CART program greatly aids in identifying candidate locations for watermain replacement or rehabilitation. The overall process is shown graphically as a flow chart in Appendix B for reference.

The program uses the GIS database to evaluate a series of criteria to establish whether a pipe is a candidate for replacement or rehabilitation. Staff then review the candidate pipes data, the graphical break history data, and make a determination of the most favourable candidate pipes. The detailed process of the program is described below:

Replaced VS Lining Candidacy Criteria

The Condition Rating Analysis Tool first determines whether a section of pipe is a candidate for replacement. A section of pipe is a candidate for replacement if it meets any of the following three (3) flags:

1. If the pipe ('link') is older than the expected service life (100 years generally);
2. If the link failure rate indicates an increasing breakage rate per year; or
3. If the pipe material is composed of non-ferrous material: hypertech, fibre reinforced cement, or asbestos-cement.

Failing to meet any of the above criteria, it is then assessed to see if it is a candidate for cement-mortar lining to address water quality and flow characteristics. The pipe link is assessed as a candidate for lining if:

1. It is unlined cast iron or unlined ductile iron, and
2. the pipe diameter is greater than 125 mm (5”) (in most situations, note that lining of 125 mm and 100 mm watermain is possible but more difficult).

Link Replacement Prioritization

The priority of a pipe link destined for replacement is established based on a numerical rating system based on five (5) factors. Those factors are pipe age, material type, link failure trend, whether the pipe has corrosion protection, and the number of customers who would be interrupted by a pipe failure.

Link Lining Prioritization

A pipe that is a candidate for internal lining is currently prioritized based on a numerical rating system that considers the following factors:

1. Age of the pipe,
2. Diameter of the pipe, and
3. Unlined pipe.

5.0 LIFECYCLE STRATEGIES COSTS

Previously, capital and operating costs for the water utility were reviewed and approved yearly through the Water Utility Commission, which is typically comprised of the mayor of the City of Peterborough as Chair and various city councilors as members. Since the amalgamation, Water Services Division presents these costs directly to City Council.

A copy of the Financial Plan (2025) is included in Appendix C. The 10-year approved (2025) annual cost forecasts associated with the lifecycle strategies presented in Section 4.1, the Water Utility Master Plan, the City's adopted Official Plan, and the Growth Plan for the Greater Golden Horseshoe are summarized below in Table 16.

Table 16: 10-Year Lifecycle Strategies Cost

Year	Lifecycle Strategies Costs	
	Operating Costs [1,3]	Capital Costs [2]
2022	$8,939,000	$9,602,500
2023	$9,208,000	$10,440,000
2024	$9,484,000	$7,160,500
2025	$9,768,000	$8,071,000
2026	$10,061,000	$11,239,500
2027	$10,363,000	$9,446,500
2028	$10,674,000	$9,835,000
2029	$10,994,000	$10,087,000
2030	$11,349,000	$11,963,000
2031	$11,690,000	$10,152,000
2032	$11,930,200	$9,485,000
2033	$12,235,145	$7,645,000
2034	$12,540,091	$7,785,000
2035	$12,845,036	$7,315,000

[1] Water System Financial Plan, May 15, 2025 (Appendix C)
[2] 10 Year Water Capital Program
[3] 2032 to 2035 values have been extrapolated from previously budgeted operating costs

6.0 ASSET MANAGEMENT – RISKS AND CLIMATE CHANGE

The impacts of climate change highly influence the overall asset management strategy and associated decision making, and directly correlate with many risks faced by all water utilities. Generally, climate change has led to an increased demand for operational resources due to items such as chlorine residual management and increased raw water monitoring. At this point in time, levels of service have not been affected, however, it is believed that more operational staff will be required should the demands persist at the same rate in the future. If required, contingency funding in the event of an unforeseen disaster would come from our water services reserve fund.

A risk assessment analysis for the Peterborough water system has been developed under the City Water Services Drinking Water Quality Management System (DWQMS) and includes risks associated with or impacted by climate change. Previously, the risk assessment was reviewed by the Peterborough Utilities leadership team. Moving forward, the risk assessment will be reviewed annually by City of Peterborough Senior Leadership Team. A copy of the 2022 risk assessment is included in Appendix D for reference.

Risks have been identified and rated based on three (3) criteria - likelihood, impact, and level of risk, respectively. For a description of the three (3) risk assessment criteria used, see Tables 17, 18, and 19 below respectively.

Table 17: Summary of Likelihood Criteria

Level	Descriptor	Example Description
A	Almost certain	Is expected to occur in most circumstances
B	Likely	Will probably occur in most circumstances
C	Possible	Might occur at some time/the event should occur at some time
D	Unlikely	Could occur at some time
E	Rare	May occur only in exceptional circumstances

Table 18: Summary of Impact Criteria

Descriptor	Example Description
Insignificant	Insignificant impact, little disruption to normal operation, low increase in normal operation costs
Minor	Minor impact for small population, some manageable operation disruption, some increase in operating costs
Moderate	Minor impact for large population, significant modification to normal operation but manageable, operation costs increased, increased monitoring
Major	Major impact for small population, systems significantly compromised and abnormal operation if at all, high level of monitoring required
Catastrophic	Major impact for large population, complete failure of systems

Table 19: Summary of Level of Risk Criteria

Likelihood	Consequences				
	1 Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic
A – Almost Certain	Moderate	High	Very High	Very High	Very High
B – Likely	Moderate	High	High	Very High	Very High
C – Possible	Low	Moderate	High	Very High	Very High
D – Unlikely	Low	Low	Moderate	High	Very High
E - Rare	Low	Low	Moderate	High	High

7.0 SUMMARY

The Plan provides detailed information on the framework for managing all water assets in the City of Peterborough, as well as key metrics to measure effectiveness and long-term sustainability. The Plan will be reviewed and updated in future iterations, incorporating new best practices, strategies, and recommendations over time as well as tracking new assets, conditions, and rehabilitation/replacement efforts.

The majority of water infrastructure (69%) is in good condition, as described in Figure 2 in Section 2.4. Even though the overall asset condition is considered to be good, there are several assets that are in poor to very poor condition that require rehabilitation or replacement prioritization in the coming years. Diligence and continued use of asset management planning is required to ensure that the financial allocation of resources continues to keep the water assets in overall good condition while reducing risks and minimizing operating costs.

8.0 APPENDICES

Appendix A: Water Distribution System Map & Inspection Reports
Appendix B: Water Distribution Condition Assessment Rating Tool Flowchart
Appendix C: 2025 Water System Financial Plan
Appendix D: 2022 DWQMS Risk Assessment

9.0 AMENDMENTS/REVIEWS

Date *(yyyy-mm-dd)*	Section Amended	Comments	Author
2023-03-24	1.5 4.1 4.2	New paragraph inserted New paragraphs inserted New section inserted	M. Meyers
2024-03-20	2.1 2.2 2.3 2.4 2.6	Table 3 - Asset Added Figure 1 – Asset Added Table 4 – Asset Added Table 5 – Asset Added Table 6 – Asset Added Figure 2 – Asset Added Table 10 – Asset Added Table 11 – Asset Added Table 12 – Asset Added	J. Sayles
2025-05-16	1.0 2.0 3.0 4.0 5.0 6.0 7.0	Updated Peterborough Utilities Commission (PUC) references to City of Peterborough (COP) Updated AMP Key Staff Updated to 2025 data Updated PUC references to COP Updated to 2025 data Updated PUC references to COP Updated to 2025 data Table 13 – Updated with 10 yr forecast Table 14 – Update with 10 yr forecast Updated PUC references to COP Updated to 2025 data Updated PUC references to COP Updated to 2025 data Updated PUC references to COP Updated to 2025 data Updated PUC references to COP Updated to 2025 data	E. Doyle K. Conlin

The Corporation of The City of Peterborough

1867 Ashburnham Drive, Peterborough, Ontario

2025 ASSET MANAGEMENT INSPECTION REPORTS

THE CITY OF PETERBOROUGH – WATER SERVICES

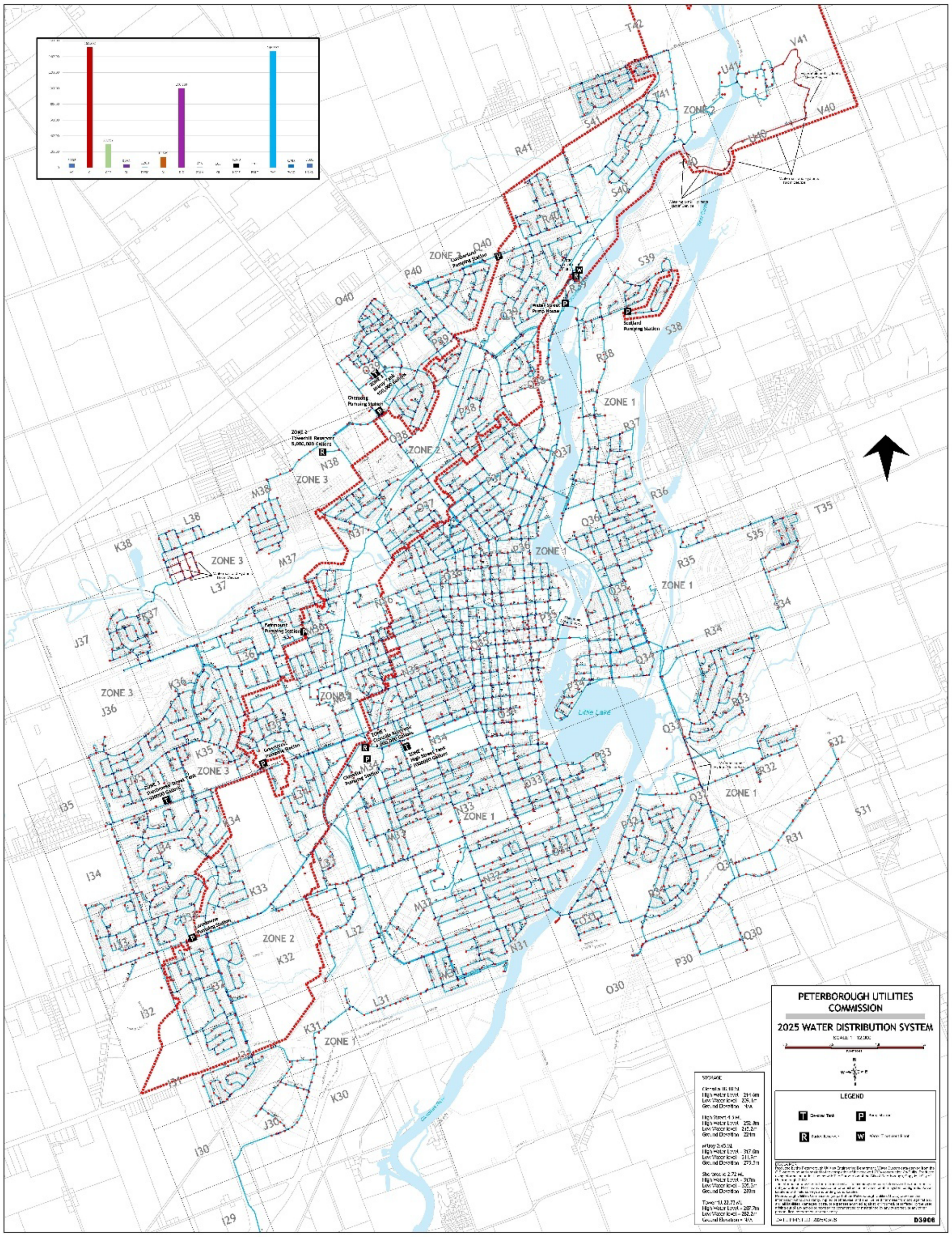


Table of Contents

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION SUMMARY

Peterborough Water Treatment Plant

1230 Water Street North, Peterborough ON

THE CITY OF PETERBOROUGH

March 2025

Asset Management Inspection Results – 2025

BUILDING: Peterborough Water Treatment Plant **ADDRESS**: 1230 Water St N.

BUILT: 1922, Additions in 1952, 1967, 1997, 2000, 2003 and 2017

LATITUDE: 44.339905° **LONGITUDE:** 78.311691°

GENERAL OVERVIEW

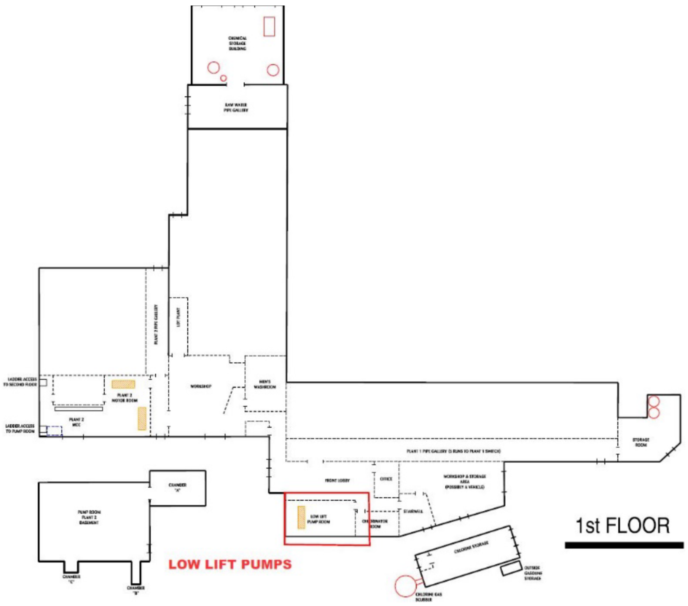
The Peterborough Water Treatment Plant is located at 1230 Water Street North in the City of Peterborough. The treatment plant shares its property with the Riverview Park and Zoo (RPZ).

The main building contains the bulk of the treatment process and is separated into two (2) distinct 'plants', based on the year of construction. It also has a fully equipped laboratory for onsite sampling and testing. The Water Treatment Plant employs lab technicians to gather samples, city wide, and complete the required testing. A fully furnished machine shop is also on the premises with staff to complete routine maintenance and repairs on the WTP, reservoirs, pumping stations and elevated tanks. The manager, two operation support managers and an administrative assistant each have offices at the treatment plant.

A major expansion occurred in 1952, consisting of the addition of filter beds #7, 8 and 9 and an expansion to the laboratory and Operator Control Room. In 1967, Plant #2 filter beds were constructed, and the flocculation tanks were added to plant #1. In 1997, the flocculation tanks and sedimentation basins for Plant #2 were added, along with chlorine contact tank #1, and the conversion of the original reservoir to clearwell #1. The generator house was constructed in 2000 and is located on the south side of the main plant. A process waste plant was constructed in 2003 and is located on the west side of the main plant. The chlorine contact tank and clearwell underwent a major rehabilitation and expansion in 2017.

SUMMARY TABLE

SPECIFIC AREA	**CONDITION**
Blower Building	Good
Chlorine Contact Tank and Clearwells	Fair
Chlorine Storage and Injector Room	Good
Coagulant Injection and Chemical Storage	Good
Filtration Piping Gallery	Fair
Filtration Beds	Fair
Flocculation Tanks and Sedimentation Basins	Fair
High Lift Pumps / Back-up Generator	Fair
Generator House	Very Good
Low Lift Pumps	Very Poor
Overall Building and Office Space	Fair
Pilot Plant	Good
Process Waste Building	Very Good
OVERALL	**Fair**



ASSET MANAGEMENT INSPECTION SUMMARY

Low Lift Pumps

Peterborough Water Treatment Plant

1230 Water Street North, Peterborough ON

THE CITY OF PETERBOROUGH

March 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

BUILDING: Low Lift Pumps, Water Treatment Plant

ADDRESS: 1230 Water St N.

BUILT: 1922

SERVICE: Water Treatment Plant

LATITUDE: 44.340028°

LONGITUDE: 78.311452°

PUMPS: 131.5L/s @ 21.3TDH,

438.1 L/s @ 18.3TDH,

525.75 L/s @ 18.9TDH,

613.4 L/s @ 18.9TDH

CONTROLS: SCADA

OVERALL CONDITION: POOR

BUILDING AND PROCESS STRUCTURAL – VERY POOR CONDITION

The intake pipe, wet well and low lift pumps are located on the east side of the original Water Treatment Plant that was constructed in 1922. There have been some upgrades to piping and pumps. The wet well access room underwent major concrete repair in 2019 but requires sandblasting and painting. There have been several renovations completed to the facility to accommodate changes in health and safety policies, with many handrails and platforms installed and updated. No structural changes have been made to the facility, and it appears to be in fair condition. There are several visual issues with the facility that are consistent with other facilities of this age (100+ years).

BUILDING ARCHITECTURAL – POOR CONDITION

The low lift pump area is a multilevel facility with a diesel motor on the 1st floor ground level. The generator platform is below the ground level and above the intake pipe and wet wells. The wet wells are below grade and are at the same elevation as the Otonabee River. The intake is gravity fed and does not require pumping to the wet wells.

BUILDING SERVICES – FAIR CONDITION

The low lift pump area is heated and overhead fluorescent lighting throughout. The main door to the area is secured with a keycard and keyed doorknob set. Access to this area is restricted to the public. A raw water sample pump and the Pilot Plant raw water supply pump are also located at the wet well access.

PROCESS PIPING – VERY POOR CONDITION

The intake piping from the Otonabee River is original from 1922. The intake piping for Pump 1 is very poor and it is recommended to be replaced. The piping between the wet well and the low lift pumps has been replaced. At time of inspection Pump 2 is being rebuilt, and Pump 3 is planning to be rebuilt.

PROCESS MECHANICAL – FAIR CONDITION

The pumps, check valves, and piping are all in fair condition.

Figure 1: Intake Pipe Pump #1

Figure 2: Wet Well Access Room Paint

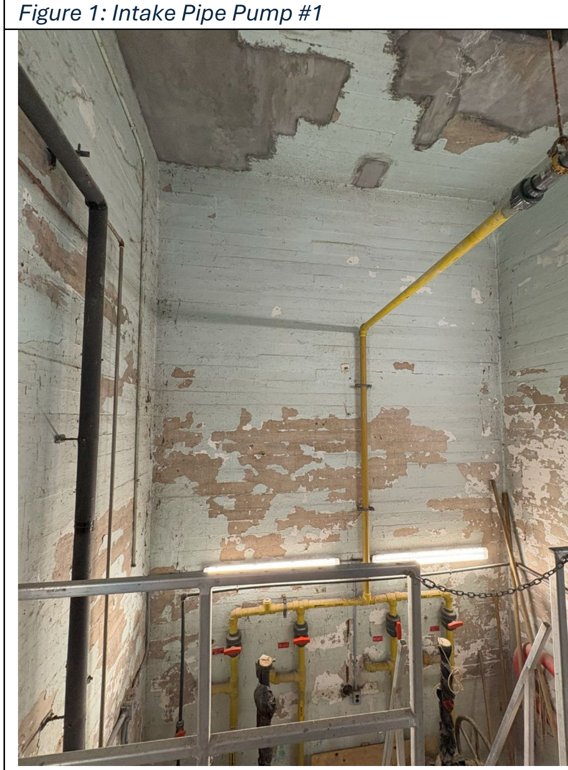
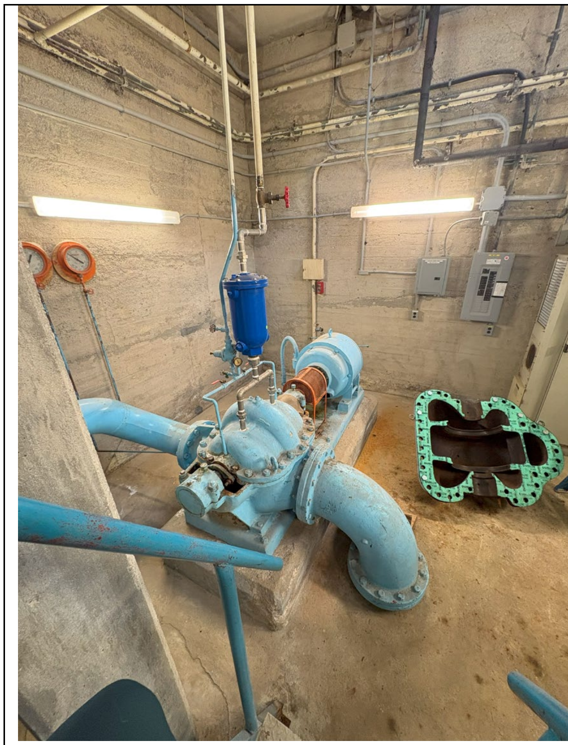


Figure 3: Intake Wet Well

Figure 4: Piping Between Wet Well and Low Lift Pumps

 Figure 5: Electric Low Lift Pump #1	 Figure 6: Electric Pump #2 Being Repaired
 Figure 7: Electric Low Lift Pump #3	 Figure 8: Electric Low Lift Pump # 4

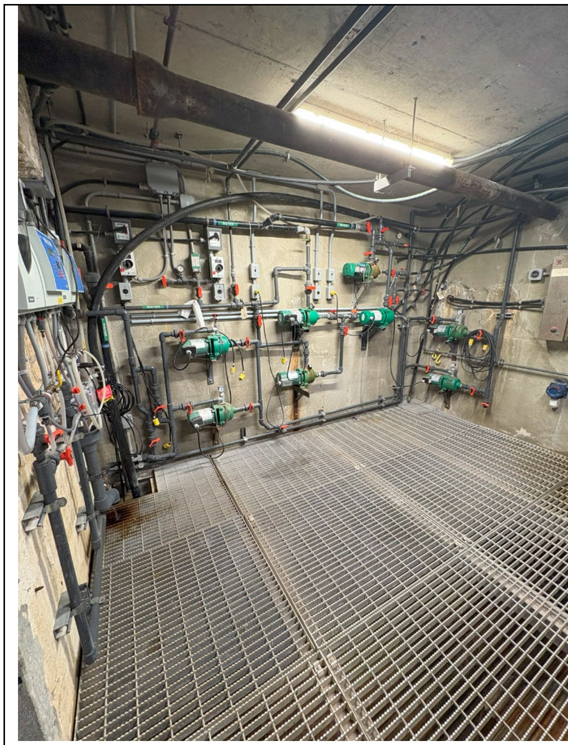


Figure 9: Sample Pump Room


Figure 10: Vacuum Pumps


Figure 11: Generator


Figure 12: Low Lift Pump MC

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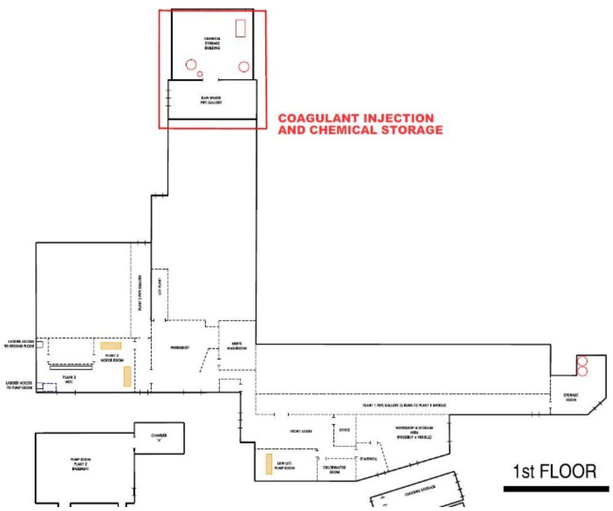
1867 Ashburnham Drive, Peterborough, Ontario



ASSET MANAGEMENT INSPECTION SUMMARY

Coagulation Injection and Chemical Storage

Peterborough Water Treatment Plant

1230 Water Street North, Peterborough
ON

THE CITY OF PETERBOROUGH

March 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

BUILDING: Coagulant Injection and Chemical Storage, WTP **ADDRESS**: 1230 Water St N.

BUILT: 2000

SERVICE: Water Treatment Plant

LATITUDE: 44.340188°

LONGITUDE: 78.312388°

TANKS: Sodium Hydroxide - 30,000L

Fluoride – 25,000L

Coagulant – 3 x 18,000L

CONTROLS: SCADA

OVERALL CONDITION: GOOD

BUILDING AND PROCESS STRUCTURAL – VERY GOOD CONDITION

The coagulant injection raw water piping gallery and the chemical storage was constructed in 2000. Prior to the addition, the coagulant was injected post the low lift pumps and wet well area. The building is in excellent condition with no concerns identified at the time of the inspection.

BUILDING ARCHITECTURAL – FAIR CONDITION

The coagulant injection area is located below grade, the Fluoride and Sodium Hydroxide storage is at grade and the coagulant storage is on the second floor. No deficiencies were identified at the time of inspection.

BUILDING SERVICES – GOOD CONDITION

No deficiencies in lighting or heating were observed in the station. Access is through a locked smart key doorknob set or a keycard. The refilling dock is immediately to the east of the building in a fenced area. At the time of inspection, all services related to the building appeared to be in good condition. Spill kits and washing stations are clean and readily available.

PROCESS PIPING – GOOD CONDITION

Piping in the coagulant injection gallery is stainless steel. All piping is original from 2000. All piping and bends are in good condition. No deficiencies were observed at the time of the inspection.

PROCESS MECHANICAL – GOOD CONDITION

The chemical pumps are in good condition. Standby pumps are available for redundancy purposes. Duty and standby mixers are both in good condition.

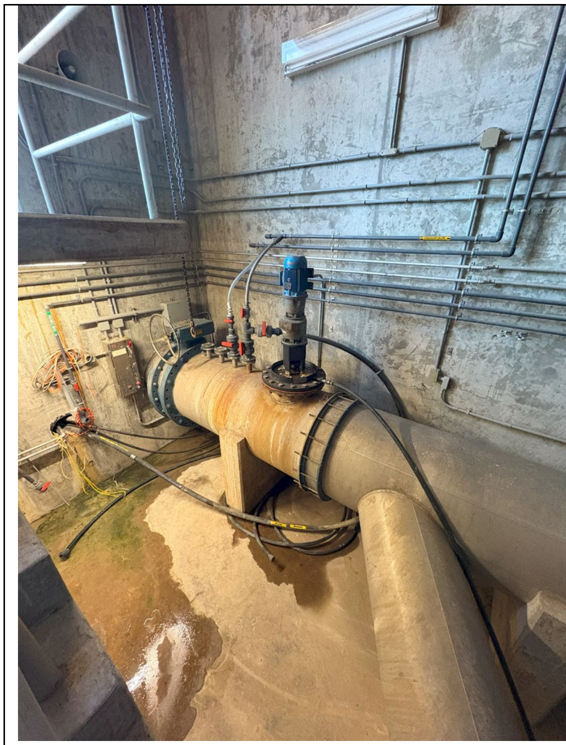


Figure 13: Raw Water Piping, Coagulation Injection Point

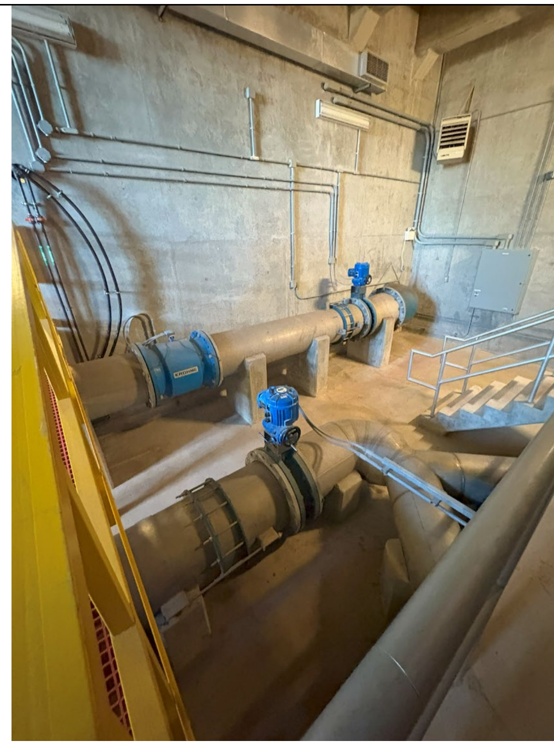


Figure 14: Post Coagulation Injection Mixers

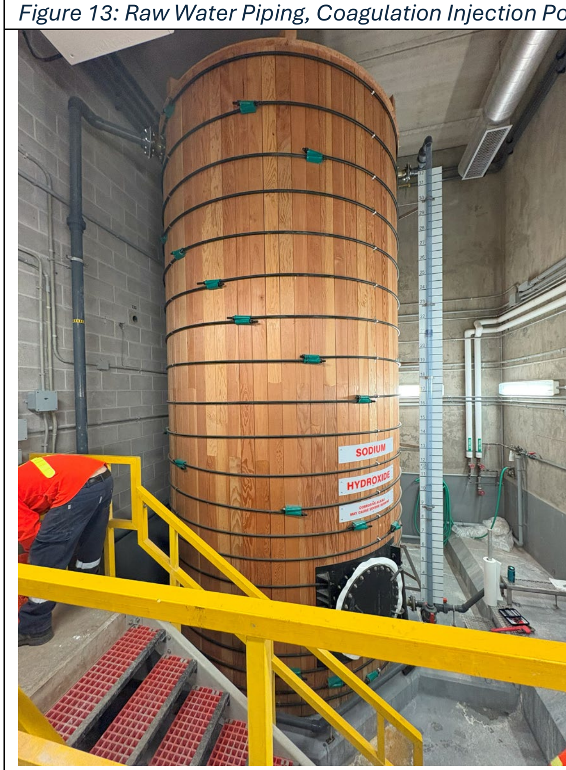


Figure15: 30,000L Sodium Hydroxide Storage Tank

Figure 16: Sodium Hydroxide Pumps, Piping & Controls

Figure 17: 25,000L Fluoride Storage Tank

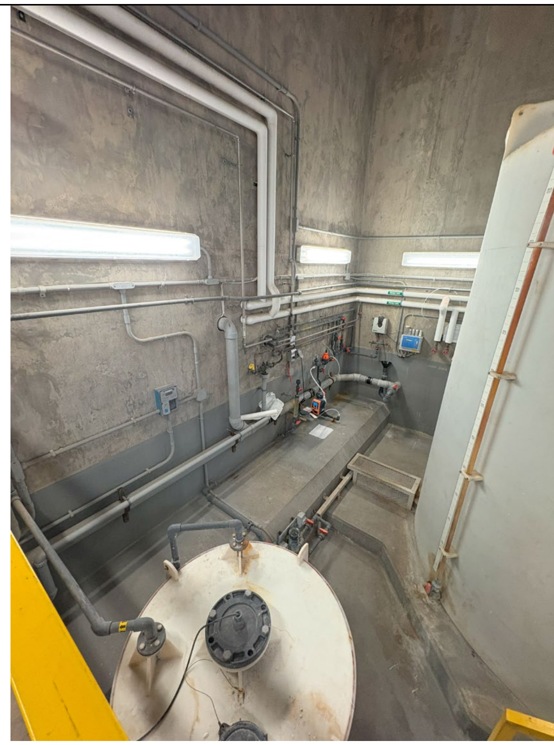
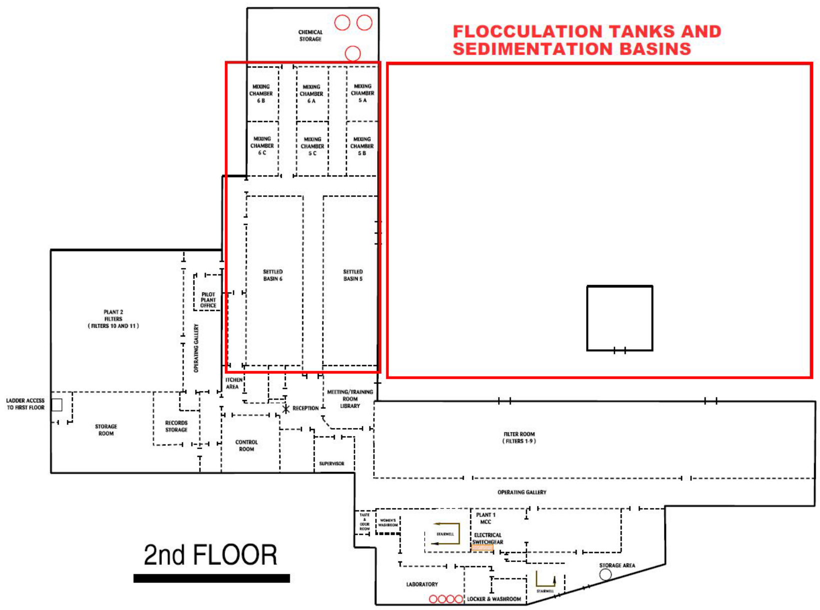


Figure 18: Fluoride Pumps, Piping & Controls

Figure 19: 3x 18,000L Coagulation Tank


Figure 20: Coagulation Pumps Piping & Controls



ASSET MANAGEMENT INSPECTION SUMMARY

Flocculation Tanks and Sedimentation Basins

Peterborough Water Treatment Plant

1230 Water Street North,
Peterborough ON

THE CITY OF PETERBOROUGH

March 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

BUILDING: Flocculation Tanks and Sedimentation Basins, WTP

ADDRESS: 1230 Water St N.

BUILT: 1922 and 1997 **SERVICE**: Water Treatment Plant

LATITUDE: 44.340232° **LONGITUDE:** 78.311910°

FLOCCULATION TANKS: One System of four (4) tanks with a total rated capacity of 50,000 m^3/day (below grade)

One System of two (2) tanks with a total rated capacity of 54,000 m^3/day

SEDIMENTATION BASINS: One System rated at 50,000 m^3/day (below grade)

One System rated at 54,000 m^3/day

OVERALL CONDITION: FAIR

BUILDING AND PROCESS STRUCTURAL – POOR CONDITION

The flocculation tanks and sedimentation basins are divided into two distinct systems based on the year of installation. There are 6 flocculation tanks below grade and are in the northwest corner, outside of the treatment plant. The associated sediment basins (1-4) are east of the flocculation tanks. This system was constructed in 1922 and 1967 and feed Plant #1. Flocculation tanks 5 and 6 are inside of the treatment plant and were constructed in 1997 and feed Plant #2. In recent years the earth above sedimentation basins 1 and 2 has been removed to reduce the dead load on the underground tanks. No structural changes have been made to the below grade tanks, and they appear to be in poor condition based on routine inspections. No concerns were identified on the surface surrounding the below ground tanks. There are several access hatches to enter the below grade tanks.

BUILDING ARCHITECTURAL – FAIR CONDITION

The below grade flocculation tanks and sedimentation basins were installed in 1922. A condition survey was completed in 1990. The report indicated that the top slab was showing signs of stress. The earth above the tank was removed to lessen the dead load on the tank. The addition that houses the Flocculation tanks and sedimentation basins 5 and 6 was constructed in 1997 and is in good condition. No deficiencies were identified during the inspection.

BUILDING SERVICES – FAIR CONDITION

No deficiencies in power supply, lighting, or heating were observed in the flocculation tanks and sedimentation basin areas. The below grade tanks are accessible through hatches above grade. The underground facility was not inspected at this time. At the time of inspection, all services related to the building appeared to be in fair condition.

SITE WORKS – GOOD CONDITION

The surface of the underground facility is graded to allow surface runoff to be directed to a localized storm system. The sodded area above the underground facility was maintained and appeared to be in good condition.

PROCESS PIPING – UNKNOWN CONDITION

All piping associated with the flocculation tanks and sedimentation basins is buried and inaccessible for inspection. The underground sedimentation basins were not inspected during this inspection; however they are known to be in poor shape and it is recommended to be repaired.

PROCESS MECHANICAL – FAIR CONDITION

No concerns were identified or observed with the mechanical components of the flocculation tanks and sedimentation basins at the time of the inspection.

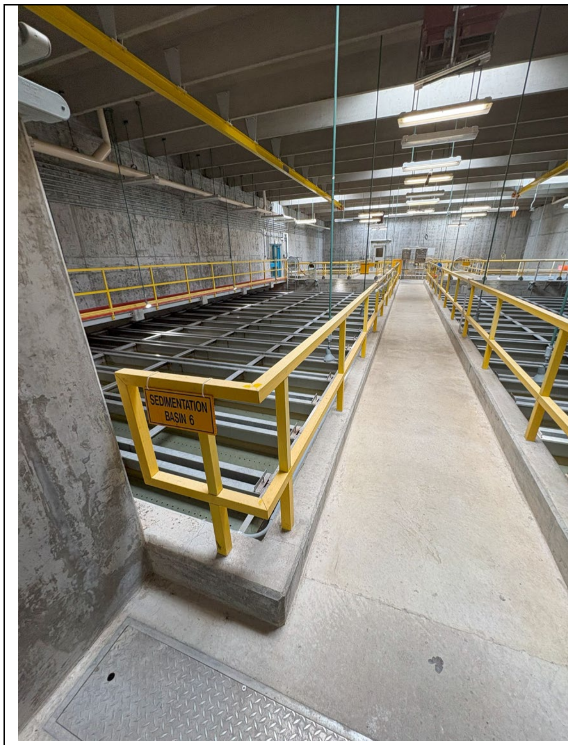


Figure 21: Sedimentation Basin 6

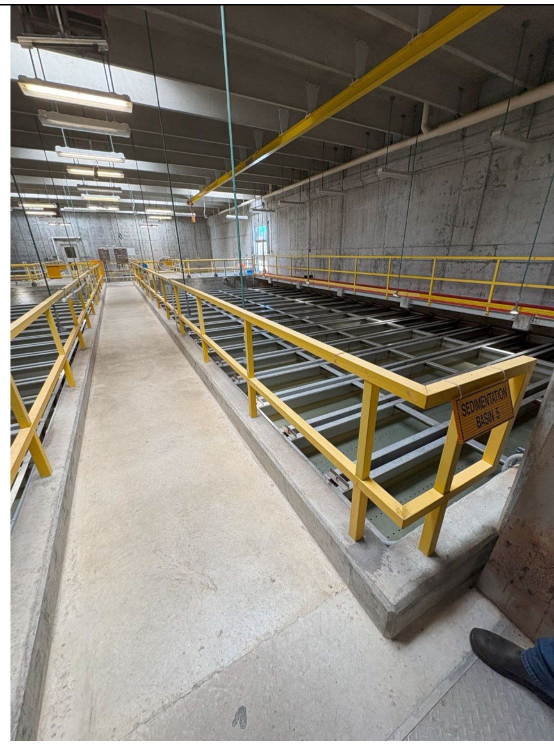


Figure 22: Sedimentation Basin 5

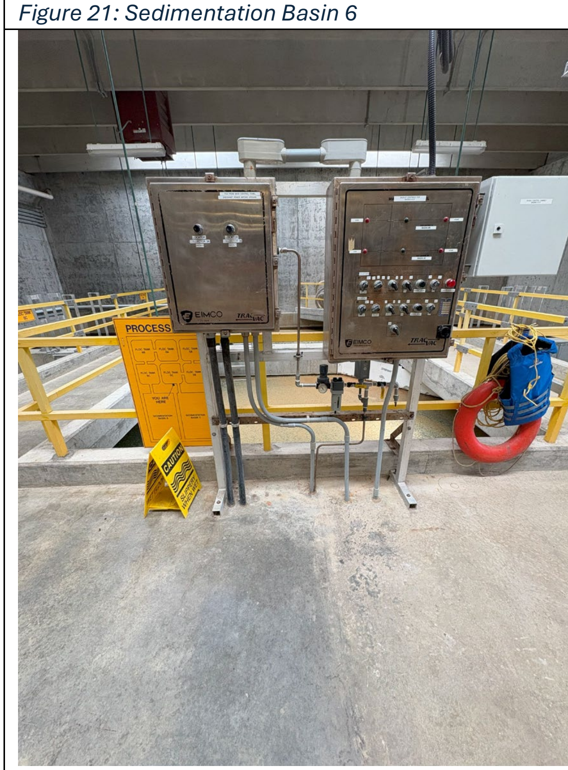


Figure 23: Sedimentation Basin 5 & 6 Controls

Figure 24: Flocculation Tank 6B

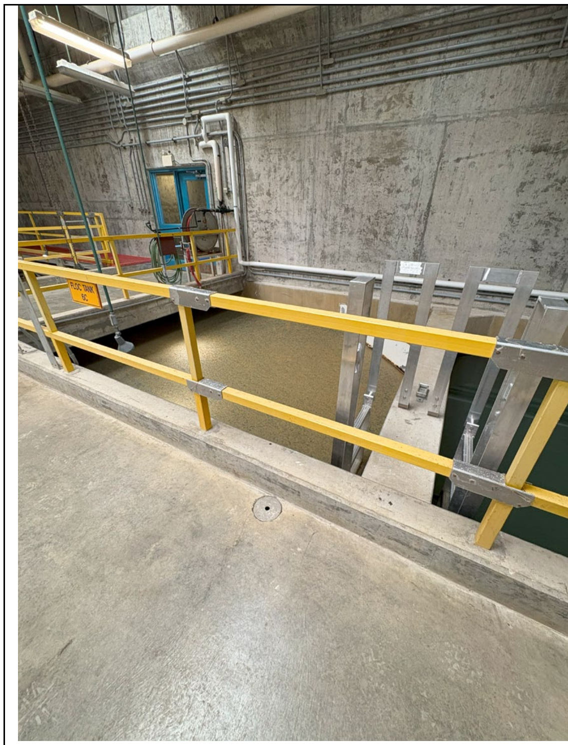


Figure 25: Flocculation Tank 6C

Figure 26: Flocculation Tank 6A


Figure 27: Underground Floc Tanks & Sed Basins

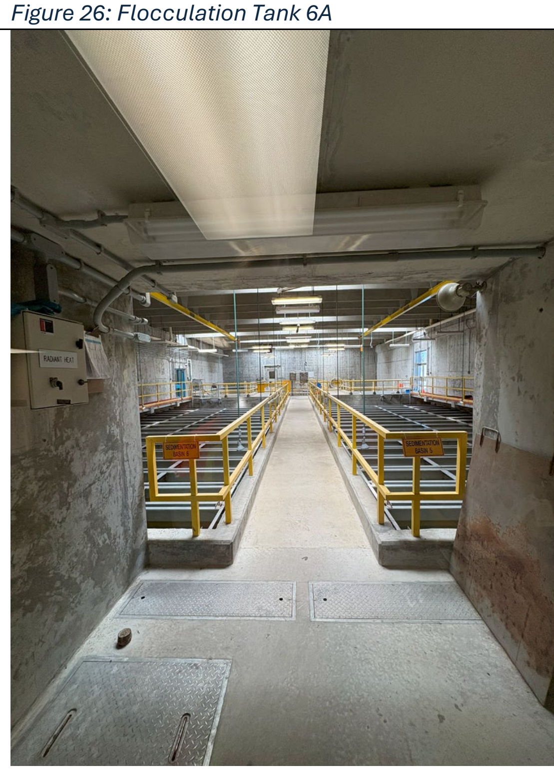
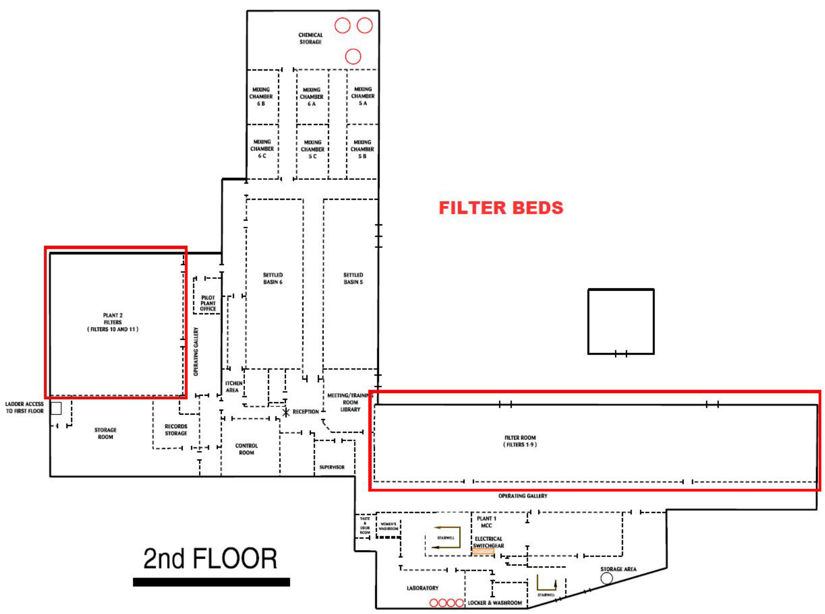


Figure 28: Flocculation & Sedimentation Basins



ASSET MANAGEMENT INSPECTION SUMMARY

Filter Beds

Peterborough Water Treatment Plant

1230 Water Street North,
Peterborough ON

THE CITY OF PETERBOROUGH

March 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

BUILDING: Filter Beds, WTP

ADDRESS: 1230 Water St N.

BUILT: 1922 and 1967

SERVICE: Water Treatment Plant

LATITUDE: 44.340268° (1922)
44.339825° (1967)

LONGITUDE: 78.311532° (1922)
78.312188° (1967)

FILTERS: Plant #1 - Nine (9) Small filters with a combined capacity of 50,000m^3/day

Six (6) dual media (anthracite) gravity filter

Three (3) granulated activated carbon (GAC) gravity filter

Plant #2 - Two (2) Large filters with a combined capacity of 51,000m^3/day

Two (2) dual media gravity filter

CONTROLS: SCADA

OVERALL CONDITION: FAIR

BUILDING AND PROCESS STRUCTURAL – FAIR CONDITION

The filter beds are divided into two distinct areas of the treatment plant based on the year of installation. The six (6) small filter beds are in the north gallery of the original building constructed in 1922, and in 1999 filter beds 7, 8 and 9 were added as an extension to Filter Plant #1. These filter beds are downstream of the below grade flocculation tanks and sediment basins located directly west of the filter beds. The two (2) large filter beds are in the south addition constructed in 1967 and are commonly referred to as Plant #2. They are fed from the flocculation tanks and sedimentation basins 5 and 6 located north and east of the filter beds. At the time of inspection these components were observed to be in fair condition.

BUILDING ARCHITECTURAL – FAIR CONDITION

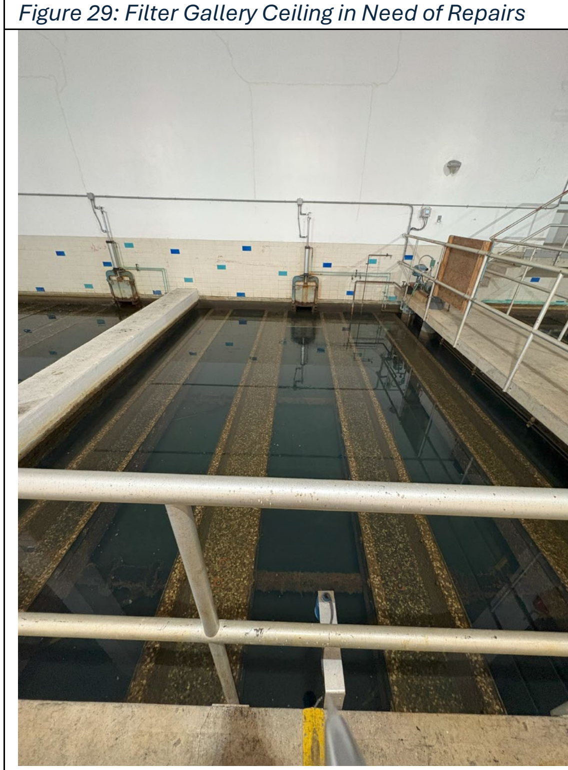
The Filter Bed Area in Plant #1 is very dated, with little upgrades to the filter bed area since its construction. At the time of inspection, the paint on the ceiling was peeling. It is recommended that the ceiling be repaired. The Filter Bed area in Plant #1 is in fair condition. The Filter Bed area in Plant #2 is in good condition and no deficiencies were observed at the time of the inspection.

BUILDING SERVICES – FAIR CONDITION

No deficiencies in power supply, lighting, or heating were observed in the filter bed areas. Lighting is provided by overhead fluorescent lights. Heating is provided by electric heaters to filters 7- 11, filters 1 – 6 are not heated. Generally, the building services are in fair condition.

PROCESS MECHANICAL AND MEDIA – FAIR CONDITION

The filter beds are back washed on a regular basis to ensure the media continues to perform as designed. The dual media gravity filters are a long life-cycle system. The GAC gravity filter media is removed and replaced routinely at the end of its life cycle and is in fair to good condition. In 2015, new discharge actuators were installed on filters 7-10. Most of the mechanical items were not able to be physically inspected and are assumed to be in fair condition.

 *Figure 29: Filter Gallery Ceiling in Need of Repairs*	 *Figure 30: Filter Bed #1*
 *Figure 31: Filter Bed #2*	 *Figure 32: Filter Bed #3*

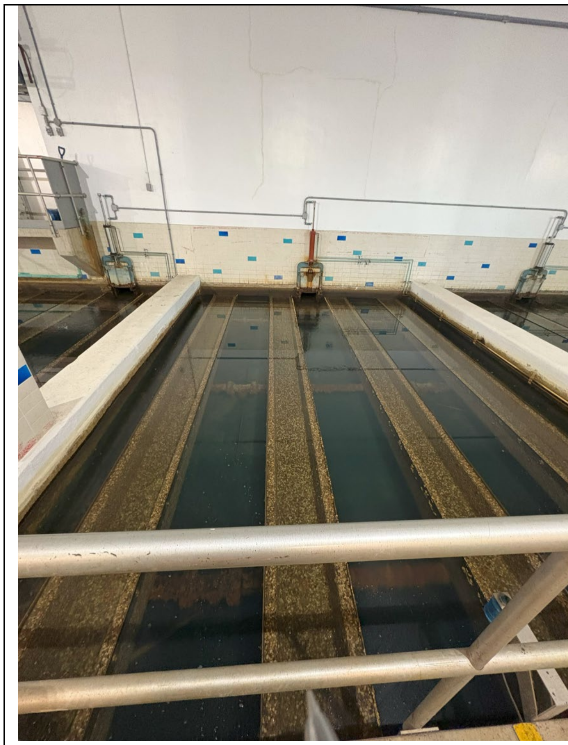


Figure 33: Filter Bed #4

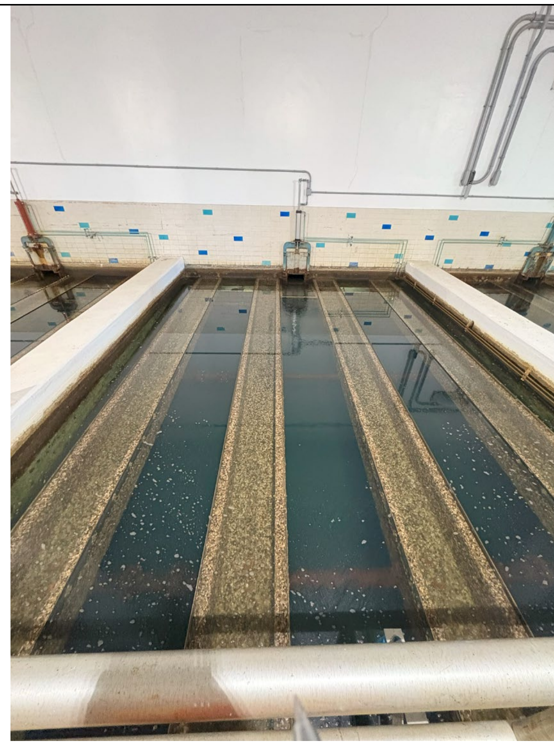


Figure 34: Filter Bed #5

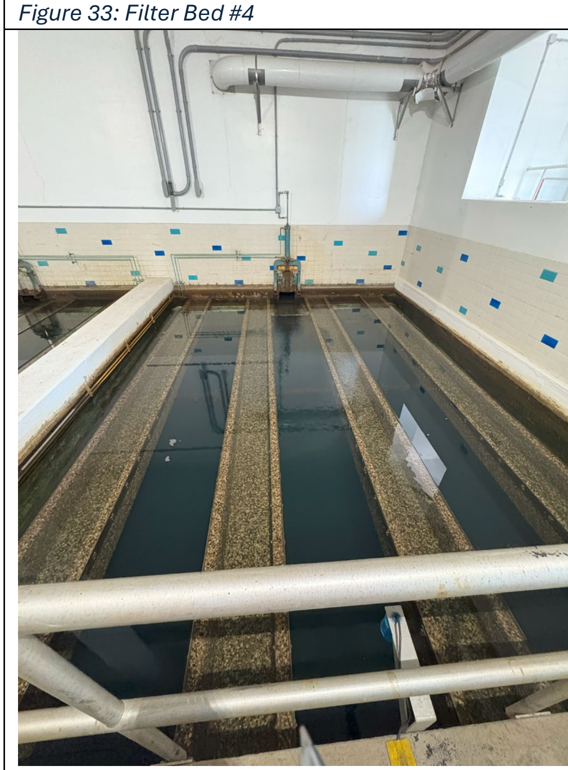


Figure 35: Filter Bed #6


Figure 36: Filter Gallery

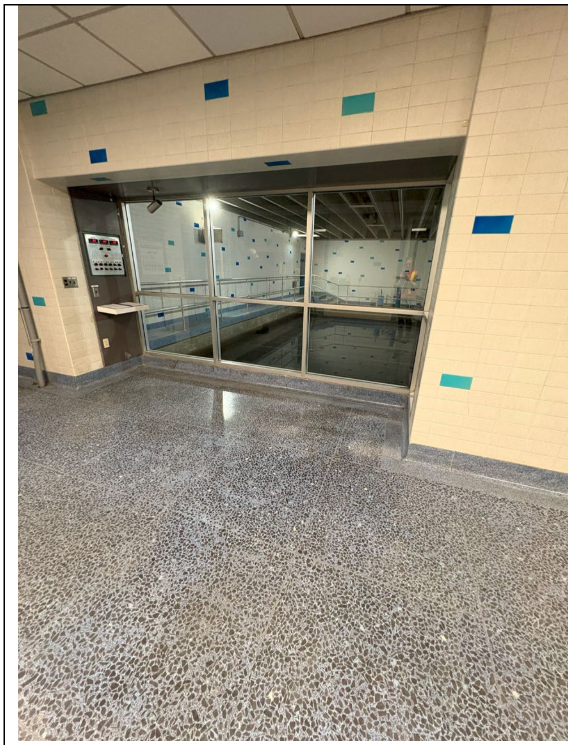


Figure 37: Filter Bed 10 & 11 Control Area


Figure 38: Filter Gallery Controls

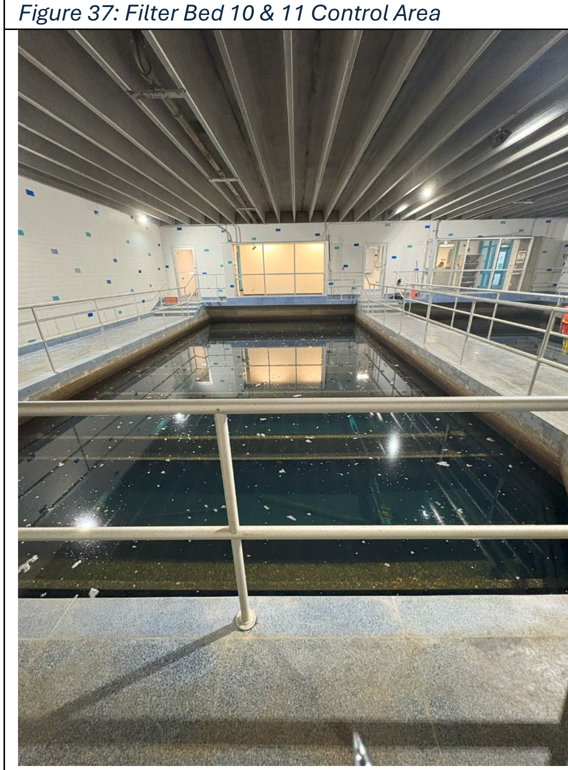
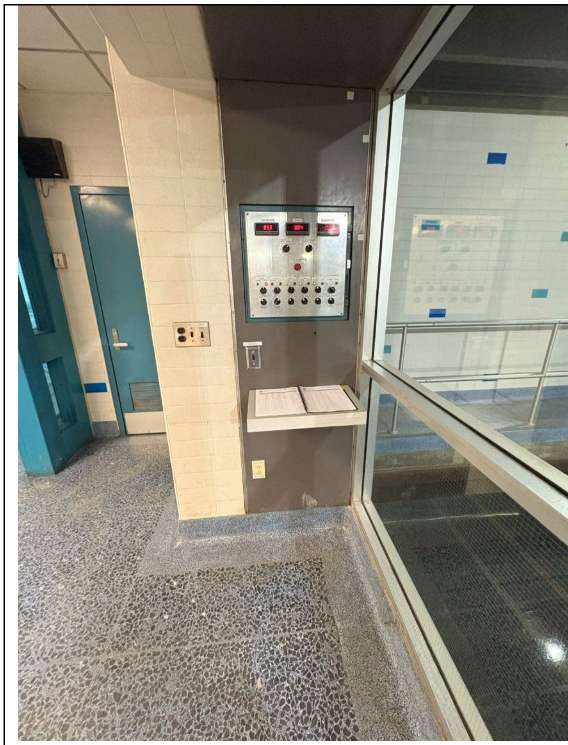
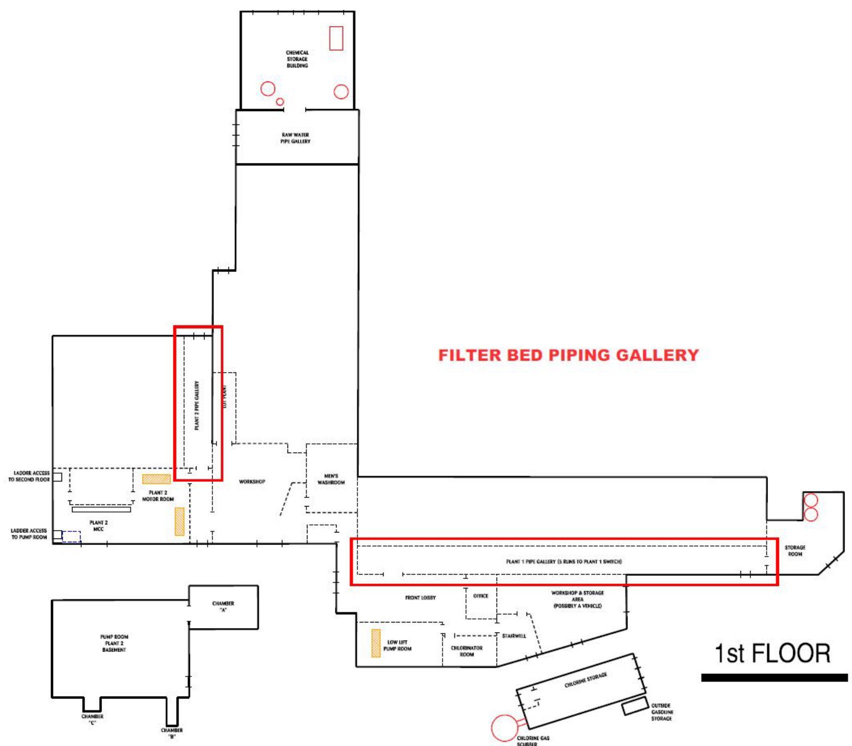


Figure 39: Filter Bed #10


Figure 40: Filter Bed #11

 Figure 41: Filter Bed #10 Controls	 Figure 42: Filter Bed #11 Controls



ASSET MANAGEMENT INSPECTION SUMMARY

Filter Bed Piping Gallery

Peterborough Water Treatment Plant

1230 Water Street North, Peterborough ON

THE CITY OF PETERBOROUGH

March 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

BUILDING: Filter Bed Piping Gallery, WTP

ADDRESS: 1230 Water St N.

BUILT: 1922 and 1967

SERVICE: Water Treatment Plant

LATITUDE: 44.340156° (1922)
44.339920° (1967)

LONGITUDE: 78.311526° (1922)
78.312130° (1967)

CONTROLS: SCADA

OVERALL CONDITION: FAIR

BUILDING AND PROCESS STRUCTURAL – FAIR CONDITION

The associated piping for each filter bed is located directly beneath the filter beds, on the 1st floor of the Water Treatment Plant. There are two pipe galleries, one for each Plant. The pipe gallery for Plant #1 was constructed in 1922 and underwent rehabilitation in 2010. The pipe gallery for Plant #2 was constructed in 1967. No concerns were identified within each pipe gallery and generally it is in fair condition.

BUILDING SERVICES – FAIR CONDITION

No deficiencies in power supply, lighting, or heating were observed in either pipe gallery. The lighting is provided by overhead fluorescent lighting. Heating is by hot water radiant heat in the Plant #1 pipe gallery, and by overhead electric heaters in the Plant #2 pipe gallery. Plant #2 pipe gallery has significant amounts of peeling paint on the wall, which is affecting the turbidity meter, and it is recommended that this be repaired. At the time of inspection, all services related to the building appeared to be in fair condition.

PROCESS PIPING – FAIR CONDITION

The piping for Plant #1 was retrofitted to stainless steel in 2000. The piping for Plant #2 is the original ductile iron and is in fair condition. All pipes and bends are generally in good condition. The piping is functioning as designed. New actuator drains were installed on Filters 7-9 in 2015, and Filters 10 and 11 in 2025. No deficiencies were observed at the time of the inspection.

PROCESS MECHANICAL – GOOD CONDITION

All valves are fully automated, SCADA controlled and are in good condition. Turbidity monitors on each filter bed are in excellent condition.

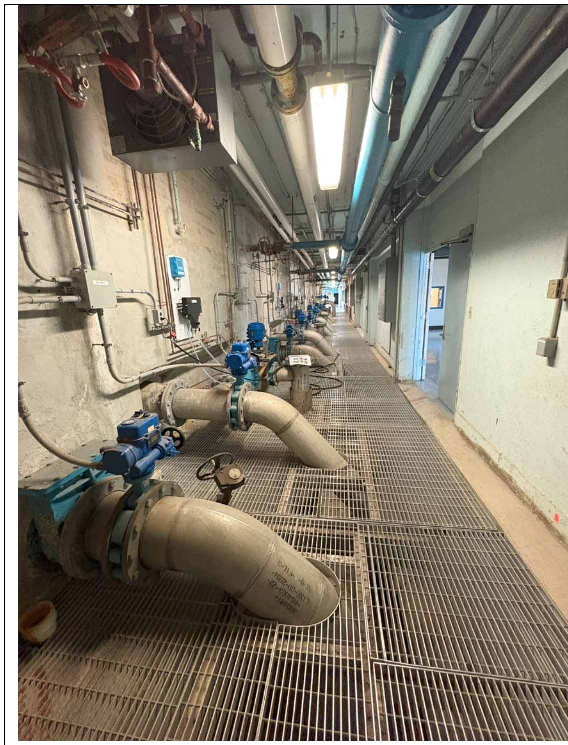


Figure 43: Plant #1 Pipe Gallery Looking North

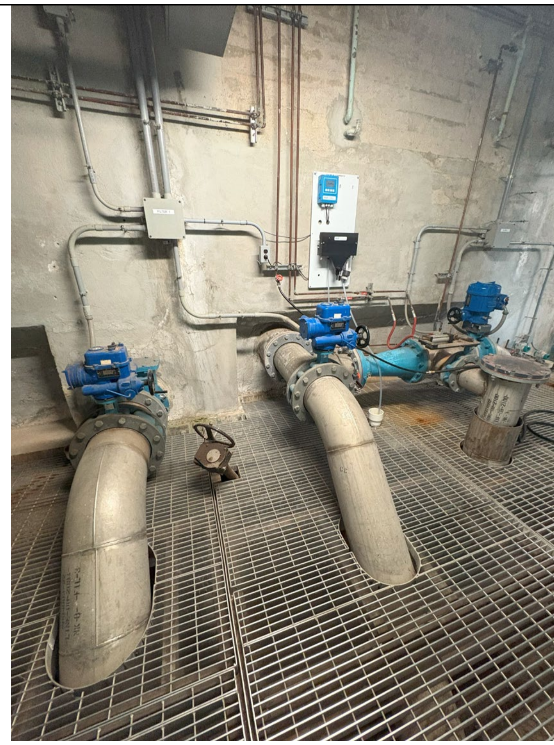


Figure 44: Filter Bed #1 Piping

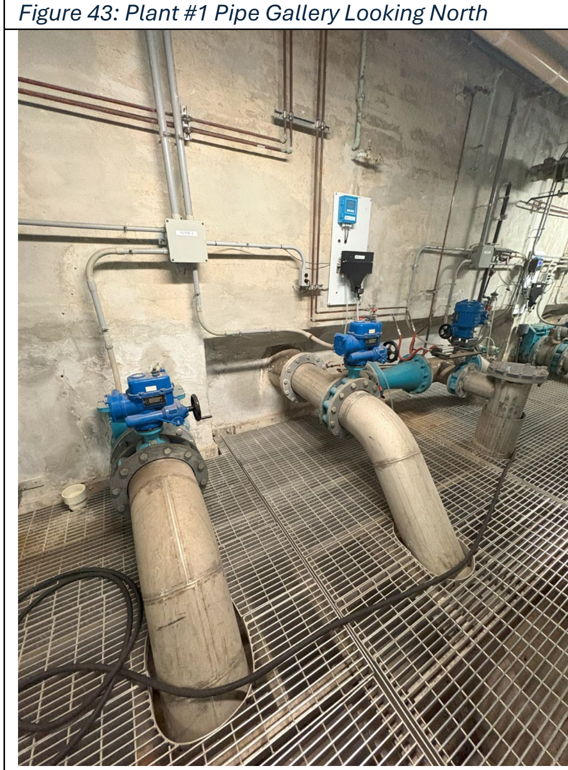


Figure 45: Filter Bed #2 Piping

Figure 46: Filter Bed #3 Piping

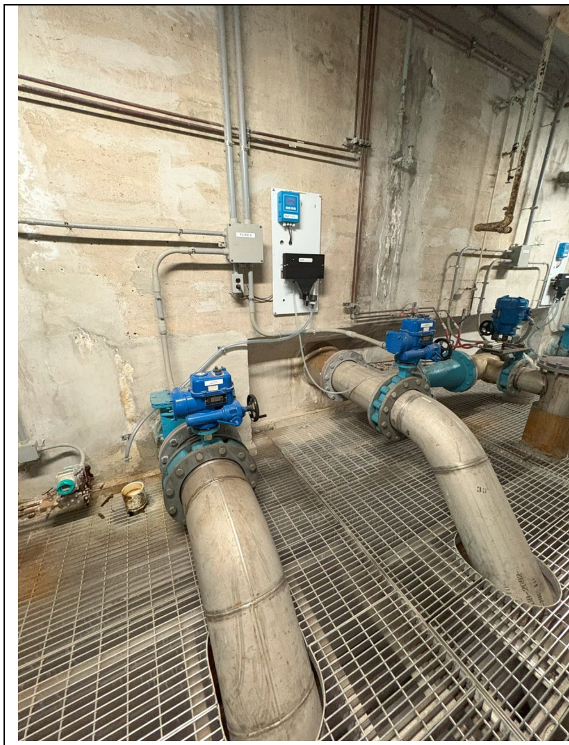


Figure 47: Filter Bed #4 Piping

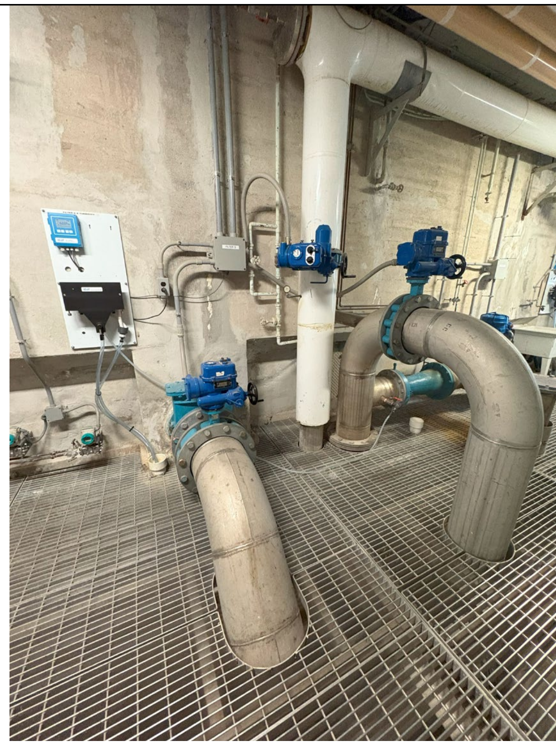


Figure 48: Filter Bed #5 Piping

Figure 49: Filter Bed #6 Piping

Figure 50: Filter Bed #7 Piping

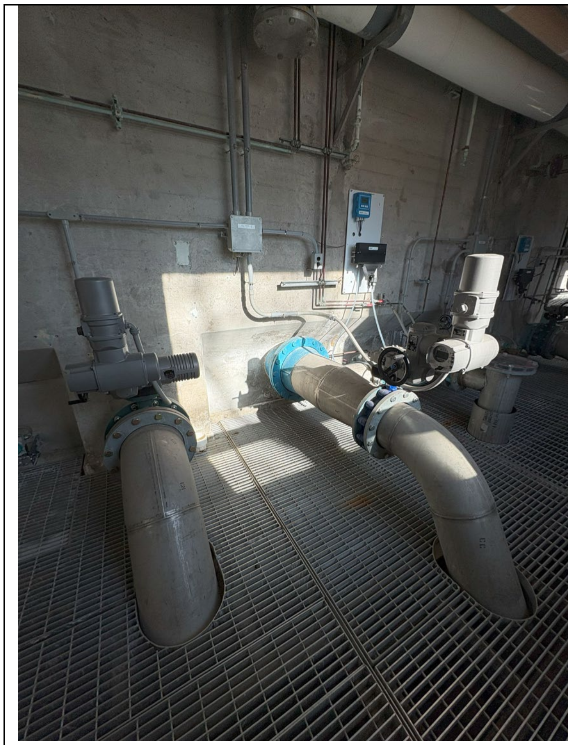


Figure 51: Filter Bed #8 Piping


Figure 52: Filter Bed #9 Piping

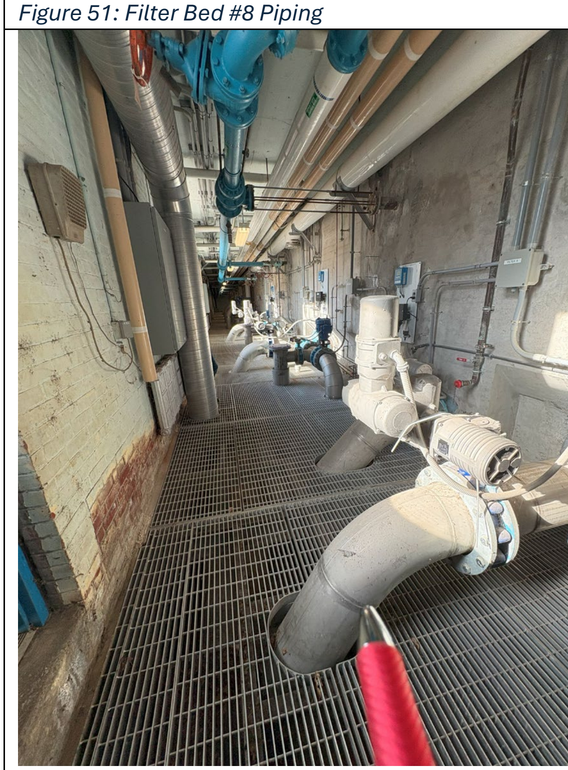


Figure 53: Plant #1 Piping Gallery Looking South


Figure 54: Drain Actuator Installed on Filter #9

Figure 55: Drain Actuator on Filters 7, 8 &9

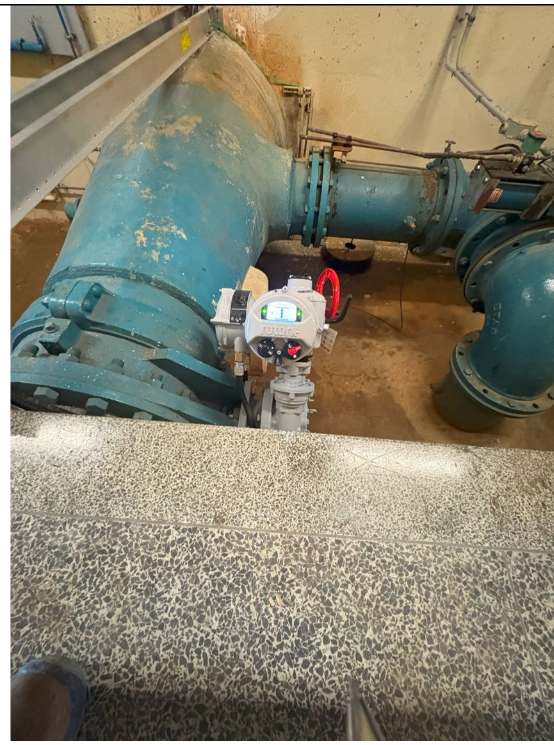


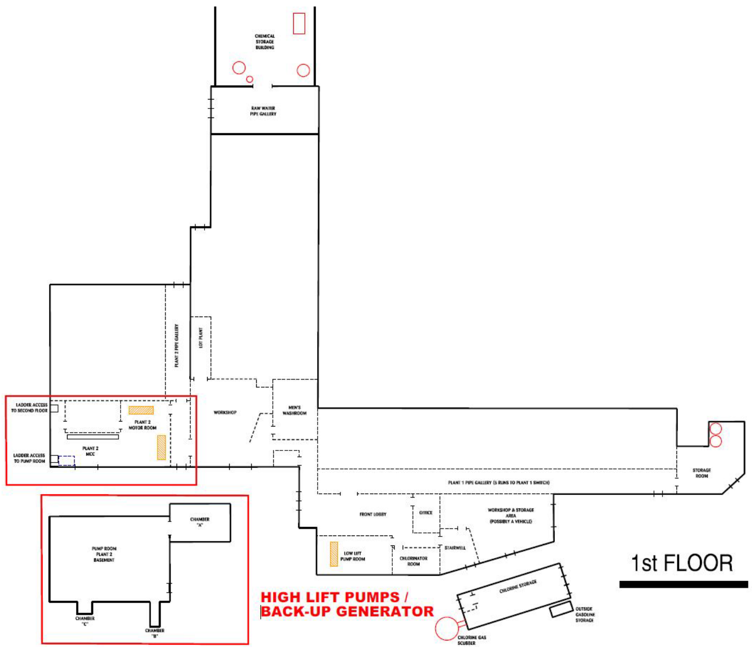
Figure 56: Filter Bed #10 Piping, New Actuator Installed

Figure 57: Plant #2 Pipe Gallery Looking West

Figure 58: Plant #2 Pipe Gallery Paint Peeling


Figure 59: Plant #2 Pipe Gallery Looking East


Figure 60: Filter Bed #11 Piping, New Actuator Installed



ASSET MANAGEMENT INSPECTION SUMMARY

High Lift Pumps / Back-Up Generator

Peterborough Water Treatment Plant

1230 Water Street North, Peterborough, ON

THE CITY OF PETERBOROUGH

March 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

BUILDING: High Lift Pumps / Back-up Generator, WTP **ADDRESS**: 1230 Water St N.

BUILT: 1922 **SERVICE**: Water Treatment Plant

LATITUDE: 44.339762° **LONGITUDE:** 78.312026°

PUMPS: Zone 2 Distribution Pump #1 (Diesel) – 157.4 L/s at 79m TDH

Zone 2 Distribution Pump #2 – 262.7 L/s at 79m TDH

Zone 2 Distribution Pump #3 – 210.6 L/s at 79m TDH

Backwash Pump #1

Backwash Pump #2

GENERATOR: Russel-Hipwell Gen Set w/ Cummins Motor

CONTROLS: SCADA

OVERALL CONDITION: FAIR

BUILDING AND PROCESS STRUCTURAL – FAIR CONDITION

The high lift pumps and associated piping is located in the southeast portion of the water treatment plant on the lower level. The motors are located on the main floor. Vertical shafts connect the motors to the pumps. The high lift pumps were installed in 1922. At the time of the construction of Plant #2, this area was retrofitted to include the piping required to supply Plant #2 with backwash water. No structural changes have been made to the high lift area, and it appears to be in fair to good condition.

BUILDING ARCHITECTURAL – FAIR CONDITION

The high lift pumps are housed in the original 1922 building's basement. The motors and generator are located above the pumps. There is a large east facing window providing daytime lighting. There is an overhead door for maintenance access purposes. All items appear to be in fair condition.

BUILDING SERVICES – FAIR CONDITION

No deficiencies in power supply, lighting, or heating were observed in this area. Lighting is provided by overhead fluorescent lights. Heating is provided by overhead electric heaters. The exhaust for the diesel pump is vented to the exterior. The fuel tank is located outside of the building. At the time of inspection, the plant service water piping system is observed to be in poor condition with extreme corrosion occurring. It is recommended to be replaced throughout the water treatment plant. At the time of inspection, all services related to the building appeared to be in fair condition.

PROCESS PIPING – FAIR CONDITION

The piping is generally cast iron and in fair condition. Where replacement piping has been installed, stainless steel pipe was chosen. All pipes and bends are in good condition. The high lift pumps are functioning satisfactorily, and it is not recommended that the pipes be replaced. No deficiencies were observed at the time of the inspection.

PROCESS MECHANICAL – GOOD CONDITION

All gate valves, butterfly valves and check valves appear to be in good condition. The back-up generator was removed as the equipment was aging and maintenance was costly.

SCADA – GOOD CONDITION

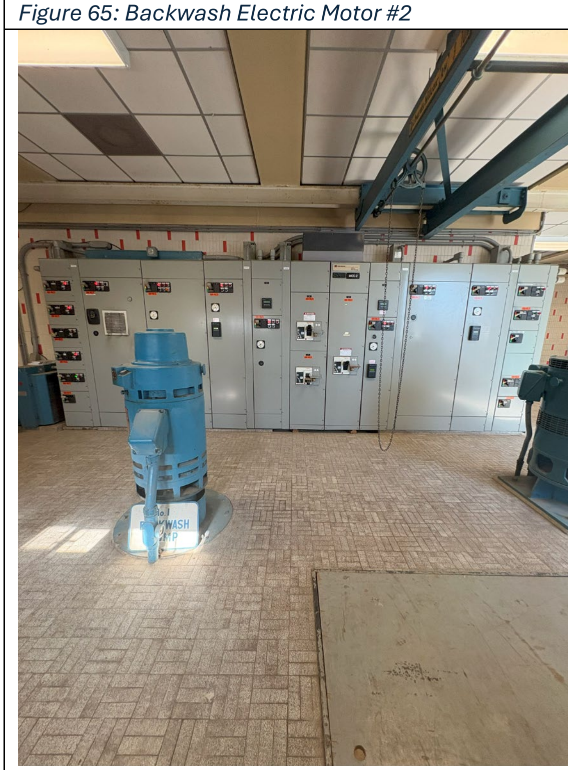
All SCADA components are in good condition and do not need to be replaced.


Figure 61: Pump #1 Diesel Motor

Figure 62: High Light Electric Motor #2

Figure 63: High Light Electric Motor #3


Figure 64: Backwash Electric Motor #1

 *Figure 65: Backwash Electric Motor #2*	 *Figure 66: Backwash Electric Motor #1*
 *Figure 67: Electrical Panel and MCC*	 *Figure 68: Pump #1 Diesel Motor*

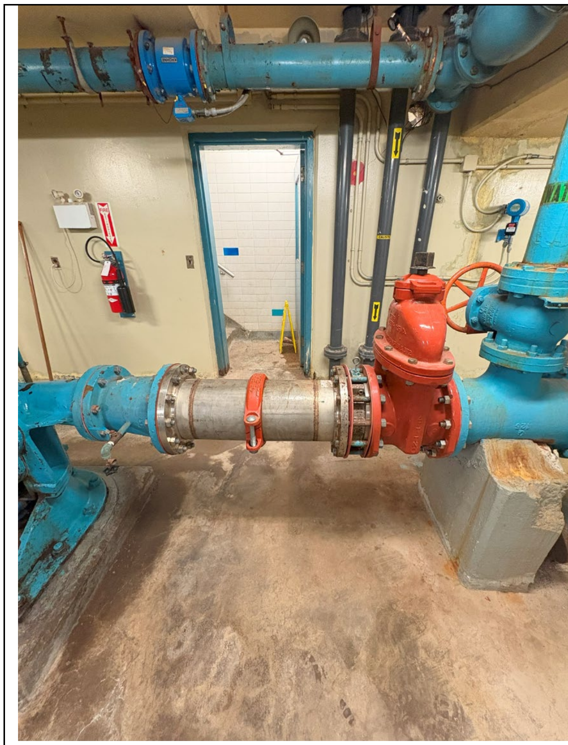


Figure 69: Gate Valve High Lift Pump #1

Figure 70: High Lift Pump #1

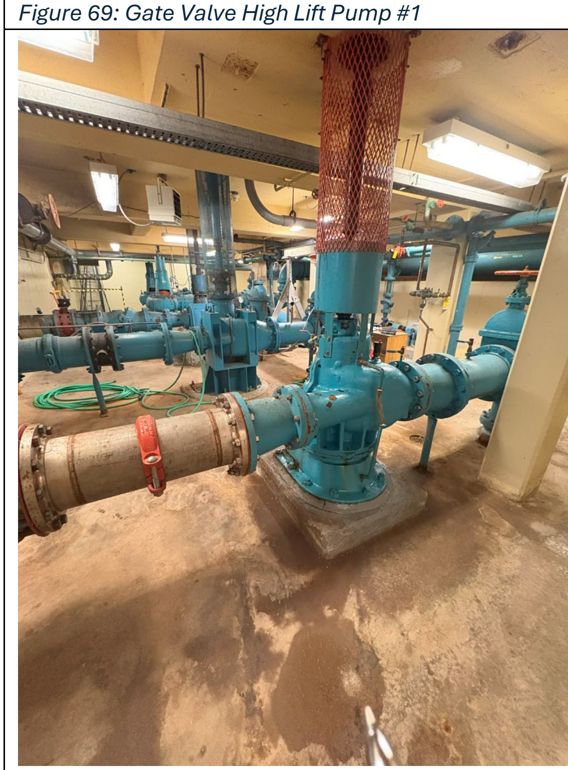


Figure 71: Hight Lift Pumps at Water Treatment Plant

Figure 72: Backwash Piping

Figure 73: High Lift Pump #2

Figure 74: High Lift Pump Pipe Gallery

Figure 75: High Lift Pump #3

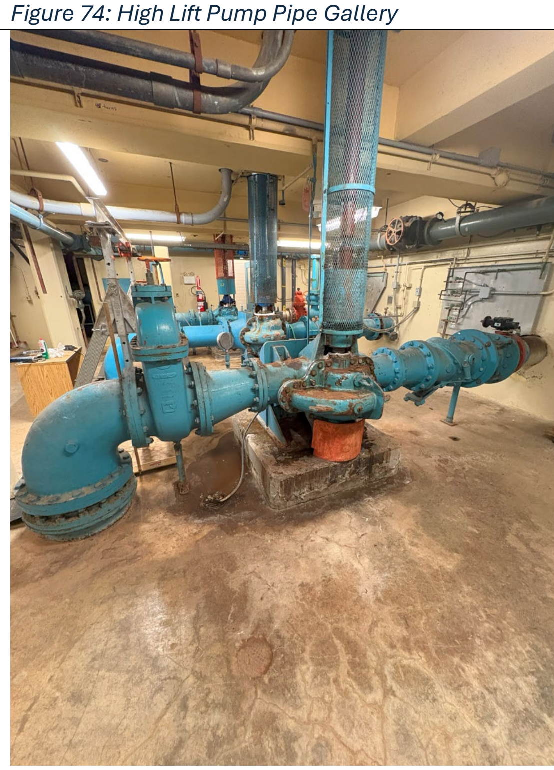
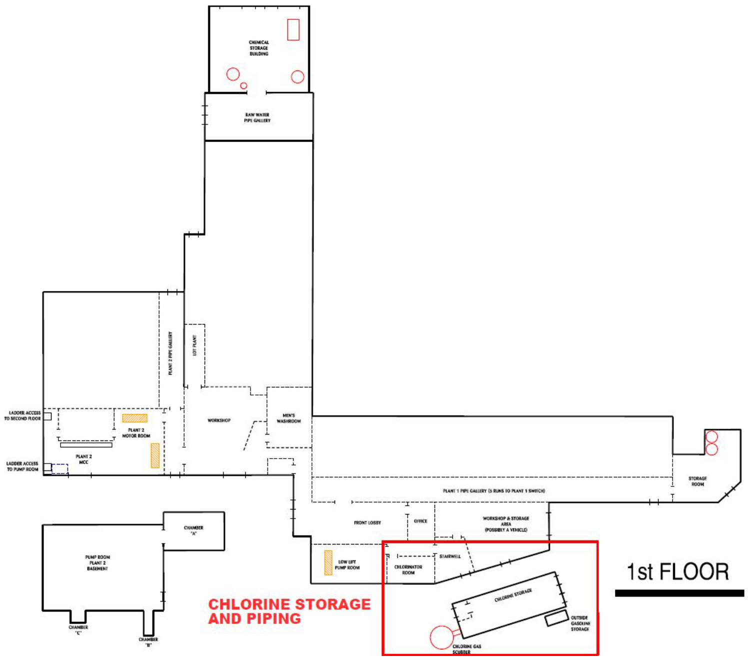


Figure 76: High Lift Pump #3

 *Figure 77: High Lift Pump #1 & #2*	 *Figure 78: High Lift Pump Piping*
 *Figure 79: Plant Service Water Piping Corrosion*	 *Figure 80: High Lift Pump Piping Corrosion*

The Corporation of The City of Peterborough

1867 Ashburnham Drive, Peterborough, Ontario



ASSET MANAGEMENT INSPECTION SUMMARY

Chlorine Storage and Injector Room

Peterborough Water Treatment Plant

1230 Water Street North, Peterborough ON

THE CITY OF PETERBOROUGH

March 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

BUILDING: Chlorine Storage and Injector Room, WTP

ADDRESS: 1230 Water St N.

BUILT: 1967

SERVICE: Water Treatment Plant

LATITUDE: 44.340119°

LONGITUDE: 78.311345°

CONTROLS: SCADA

OVERALL CONDITION: GOOD

BUILDING AND PROCESS STRUCTURAL – GOOD CONDITION

The Chlorine Storage Building is adjacent to the water treatment plant. It is a brick, one story building on the East side of the main building. The Chlorine Storage Building can house up to 18 - 1 ton chlorine gas cylinders. The chlorine gas scrubber is located immediately to the south. No concerns were identified with the chlorine storage building or the chlorine injector room and are both in good condition.

BUILDING ARCHITECTURAL – GOOD CONDITION

There are three doors for access to the chlorine storage building. An employee entrance is on the south side of the building. Immediately inside this door is the foyer with the explosion proof light switches and air quality gauges for the building. An overhead door for delivery and maintenance of the building is on the north side of the building. The building is equipped with an overhead hoist for delivery and movement of the chlorine cylinders. Employee entrance is also on the north side. At the time of the inspection, no issues were noted, and the general condition is good. The chlorine injector room is located inside the water treatment plant on the east side of the building in proximity to the chlorine storage building.

BUILDING SERVICES – GOOD CONDITION

The chlorine storage building is accessible through an access key card and smart key doorknob set. Access is strictly for City of Peterborough employees of the water treatment plant. Lighting is provided by wall mounted fluorescent lights. Heating is provided by ceiling hung electric heaters. No deficiencies in power supply, lighting, or heating were observed in the building. At the time of inspection, all services related to the building appeared to be in good condition.

SITE WORKS – GOOD CONDITION

The asphalt area around the chlorine storage building is in good condition. The building is in a low-vehicular traffic area and is inaccessible by Riverview Park and Zoo visitors.

PROCESS PIPING – GOOD CONDITION

The chlorine piping is in good condition between the chlorine storage building and the injector room in the treatment plant. No deficiencies were observed at the time of the inspection. The piping between the injector room and the intake zebra-mussel control is functioning as intended. The piping between the injector room, the pre-contact tank, and the post treatment is functioning as intended with no known deficiencies at the time of the inspection. The process piping appears to generally be in good condition.

PROCESS MECHANICAL – GOOD CONDITION

There are four (4) chlorinators located in the chlorine injector room. The chlorinators are for disinfection, back-up, post feed, and zebra-mussel control. The associated valves and injectors are in good condition.

SCADA – GOOD CONDITION

All SCADA components are in good condition and do not need to be replaced.

Figure 81: Chlorine Storage Building


Figure 82: Chlorine Gas Cylinders


Figure 83: Gas Cylinders Safety System


Figure 84: Chlorine Scrubber

Figure 85: Primary and Secondary Disinfection Chlorination

Figure 86: Post Chlorine Swan Disinfection Monitor

Figure 87: Halogen Valve System

Figure 88: Chlorine Zebra Mussel Control

ASSET MANAGEMENT INSPECTION SUMMARY

Blower Building

Peterborough Water Treatment Plant

1230 Water Street North,
Peterborough ON

THE CITY OF PETERBOROUGH

March 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

BUILDING: Blower Building, WTP **ADDRESS**: 1230 Water St N.

SERVICE: Water Treatment Plant

LATITUDE: 44.34029° **LONGITUDE:** 78.31168°

CONTROLS: SCADA

OVERALL CONDITION: GOOD

BUILDING AND PROCESS STRUCTURAL – GOOD CONDITION

The Blower Building is adjacent to the water treatment plant Filter Gallery. It is a brick, one story building. The Blower Building houses air compressors and air scour filters. No concerns were identified with the blower building and it is in good condition.

BUILDING ARCHITECTURAL – GOOD CONDITION

An employee door is on the east side of the building with duct work protruding out the east side into the water treatment plant filter gallery. The brick facade of the building is in good condition and the roof was recently replaced. At the time of the inspection, no issues were noted, and the general condition is good.

BUILDING SERVICES – GOOD CONDITION

The blower building is accessible through an access key card and smart key doorknob set. Access is strictly for City of Peterborough employees of the water treatment plant. Lighting is provided by overhead fluorescent lights. Heating is provided by ceiling hung electric heaters. No deficiencies in power supply, lighting, or heating were observed in the building. At the time of inspection, all services related to the building appeared to be in good condition.

SITE WORKS – GOOD CONDITION

The asphalt area around the chlorine storage building is in good condition. The building is in a low-vehicular traffic area and is not accessible by Riverview Park and Zoo visitors.

PROCESS PIPING – GOOD CONDITION

The chlorine piping is in good condition between the chlorine storage building and the injector room in the treatment plant. No deficiencies were observed at the time of the inspection. The piping between the injector room and the intake zebra-mussel control is functioning as intended. The piping between the injector room, the pre-contact tank, and the post treatment is functioning as intended with no known deficiencies at the time of the inspection. The process piping appears to generally be in good condition.

PROCESS MECHANICAL – GOOD CONDITION

There are four (4) chlorinators located in the chlorine injector room. The chlorinators are for disinfection, back-up, post feed, and zebra-mussel control. The associated valves and injectors are in good condition.

SCADA – GOOD CONDITION

All SCADA components are in good condition and do not need to be replaced.

Figure 89: Blower Building Exterior

Figure 90: Air Scour Filters

Figure 91: Air Compressor

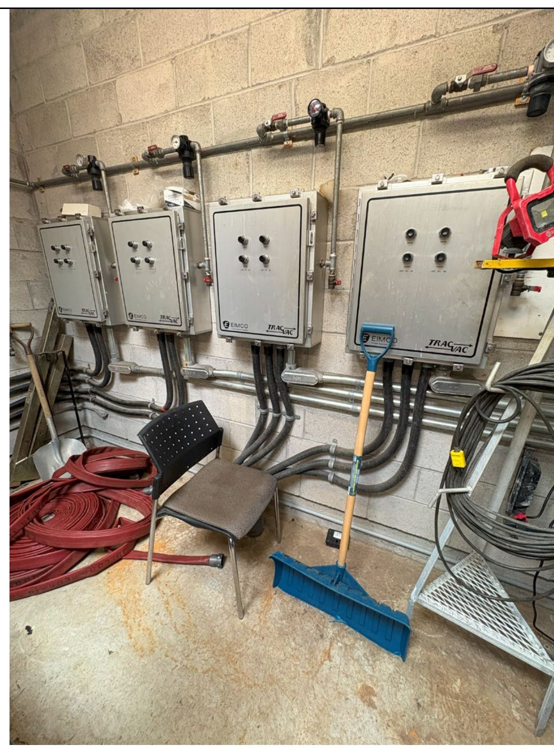


Figure 92: Blower Controls

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION SUMMARY

Chlorine Contact Tanks and Clear Wells

Peterborough Water Treatment Plant

1230 Water Street North, Peterborough ON

THE CITY OF PETERBOROUGH

March 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

BUILDING: Chlorine Contact Tanks and Clear Wells, WTP **ADDRESS**:1230 Water St N.

BUILT: 1922, 1967, 2017 **SERVICE**: Water Treatment Plant

LATITUDE: 44.339297° **LONGITUDE:** 78.312598°

CAPACITY: Clearwell #2 – from Filters 1-9, 600m^3

Clearwell #3 – from the Chlorine Contact Tank, 6,100m^3

Clearwell #4 – from Clearwell #3, 900m^3

Total Chlorine Contact Tank – 5,000m^3

CONTROLS: SCADA

OVERALL CONDITION: FAIR

BUILDING AND PROCESS STRUCTURAL – GOOD CONDITION

Clearwell (CW) #2 is located beneath the southeast corner of the Water Treatment Plant, directly beneath Plant #2 and was constructed in 1967. Chlorine Contact Tank (CCT) #1 and CW #3 were constructed in 1922, with upgrades completed in 1997. CW #4 and CCT #2 were constructed in 2017. No concerns were identified on the surface surrounding the clearwells and chlorine contact tank, and all building and process structural items are in overall good condition.

BUILDING SERVICES – GOOD CONDITION

No deficiencies in power supply, lighting, or heating were observed in each structure. At the time of inspection, all services related to the facility appeared to be in good condition.

SITE WORKS – GOOD CONDITION

The sodded area above CCT #1, CCT #2, CW #3 and CW #4 appears to drain surface water well. The area is accessible by the Riverview Park and Zoo visitors. The weir wall electric motors and controls are protected by a black vinyl chain-link fence complete with a padlock for entry. The area around the station is sodded, with regular lawn cutting being completed by RPZ staff. Siteworks are in good condition.

PROCESS PIPING – UNKNOWN CONDITION

All process piping is below grade for the chlorine contact tanks and clearwells. No deficiencies were noted or observed, however most of the piping was not available for a physical inspection. CW#4 is currently not in use due to poor condition, it is recommended to have this fixed and cleaned prior to returning its use.

PROCESS MECHANICAL – POOR CONDITION

The weir wall electric motors and controls require repairs as 2 of the 4 are not in working condition. Regular maintenance is completed on all mechanical components of the system.

SCADA – GOOD CONDITION

All SCADA components are in good condition and do not need to be replaced.

Figure 93: Chlorine Diffuser

Figure 94: Hatch to Chlorine Contact Tank #1

Figure 95: CCT #1 Controls

Figure 96: CCT #1, CCT #2 & CW #4


Figure 97: Chlorine Diffuser Building, New Roof


Figure 98: Clear Well #4 and Weir Wall Controls Above Grade


Figure 99: Looking North, CCT #1 &CW#3


Figure 100: Access Hatch Clear Well #4

ASSET MANAGEMENT INSPECTION SUMMARY

Overall Building and Office Space

Peterborough Water Treatment Plant

1230 Water Street North, Peterborough ON

THE CITY OF PETERBOROUGH

March 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

BUILDING: Peterborough Water Treatment Plant **ADDRESS**: 1230 Water St N.

BUILT: 1922, Additions in 1952, 1967, 1997, 2000, 2003 and 2017

LATITUDE: 44.339905° **LONGITUDE:** 78.311691°

OVERALL CONDITION: FAIR

SITE WORKS – GOOD CONDITION

The Peterborough Water Treatment Plant is located at 1230 Water Street North in the City of Peterborough. The treatment plant shares its property with Riverview Park and Zoo (RPZ). The RPZ is owned and operated by City of Peterborough as of April 1, 2025. The driveway access to the treatment plant is also the main pedestrian corridor for the RPZ and one of its main attractions, the Miniature Train Ride. The site's lawns and flowerbeds are maintained by RPZ staff and kept in good condition. The RPZ visitors can access the outside of the treatment plant, however, all entrances are controlled by access key cards and smart key doorknob sets.

BUILDING ARCHITECTURAL (EXTERIOR) – FAIR CONDITION

The Water Treatment Plant receives its water from the Otonabee River to the east. The original building was constructed in 1922 and has undergone several additions and upgrades since. The complex is comprised of three (3) buildings, several below grade valve chambers, clear wells, chlorine contact tanks, flocculation tanks, sedimentation basins, and associated piping. The exterior of the building is kept clean and maintained by maintenance and RPZ staff. The brick veneer is in fair condition with no deficiencies noted at the time of the inspection. The non-structural components of the roof of the 1967 and 1997 expansions were replaced in 2016.

OFFICE SPACE AND BUILDING SERVICES – FAIR CONDITION

All Water Treatment process areas are only accessible by Water Treatment Plant staff through a key card or smart key doorknob set. The office area and common staff areas are accessible to all staff and visitors. At the time of the inspection, no deficiencies were identified with the office space, common areas, or meeting rooms, and are all generally in fair condition.

The lighting throughout is provided by overhead fluorescent light fixtures. Heating and cooling are provided by a centralized HVAC system. At the time of inspection, all services related to the building appeared to be in fair condition.

Figure 101: Main Entrance, Employee Parking

Figure 102: Main Entrance

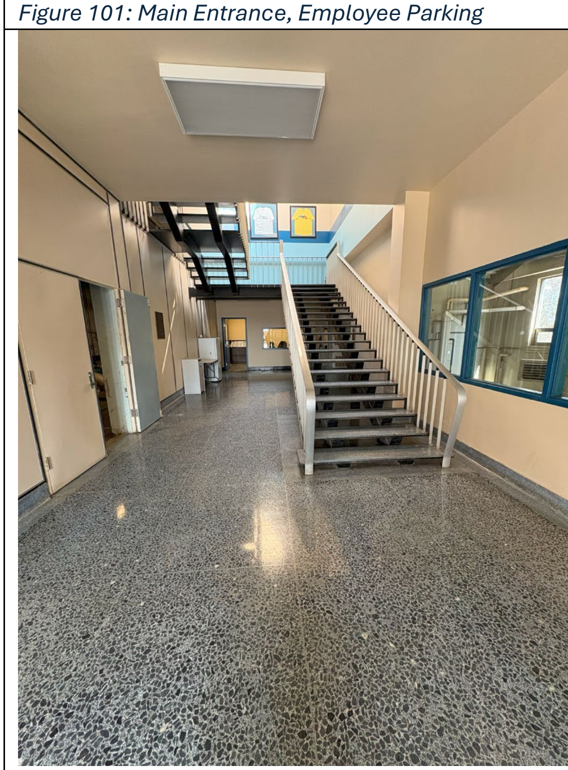


Figure 103: Main Foyer

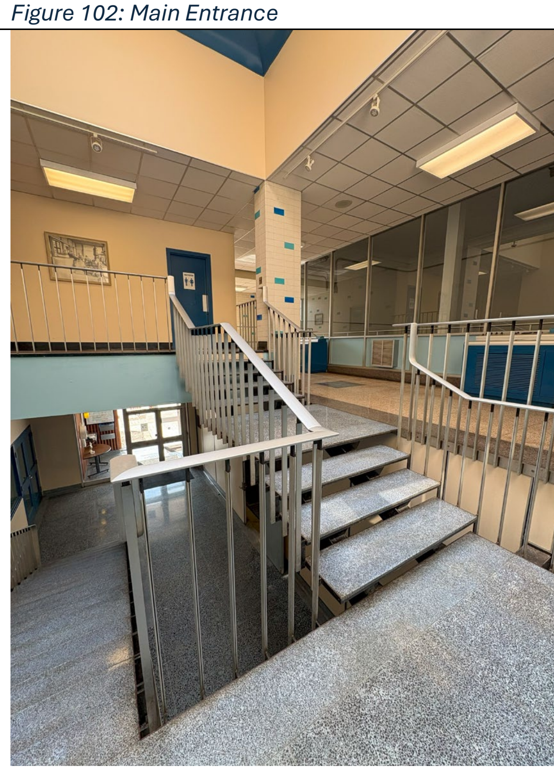


Figure 104: Second Floor, Filter Gallery (background)

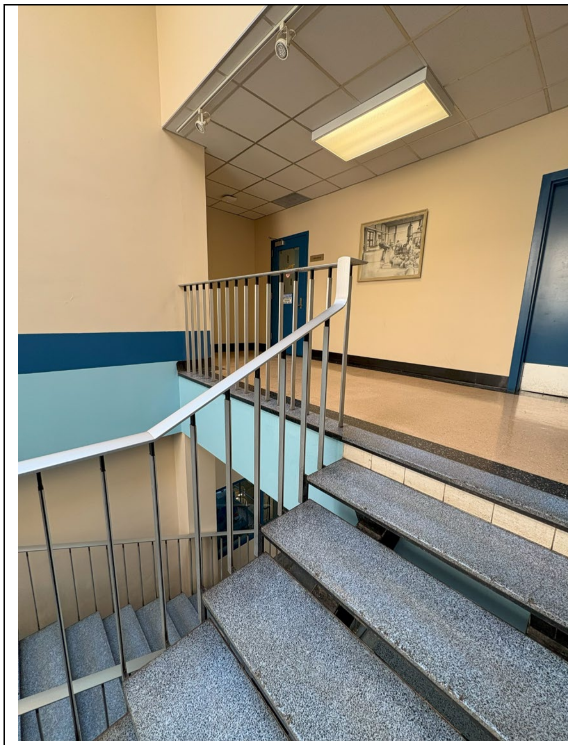


Figure 105: Second Floor, Laboratory (background)


Figure 106: Laboratory

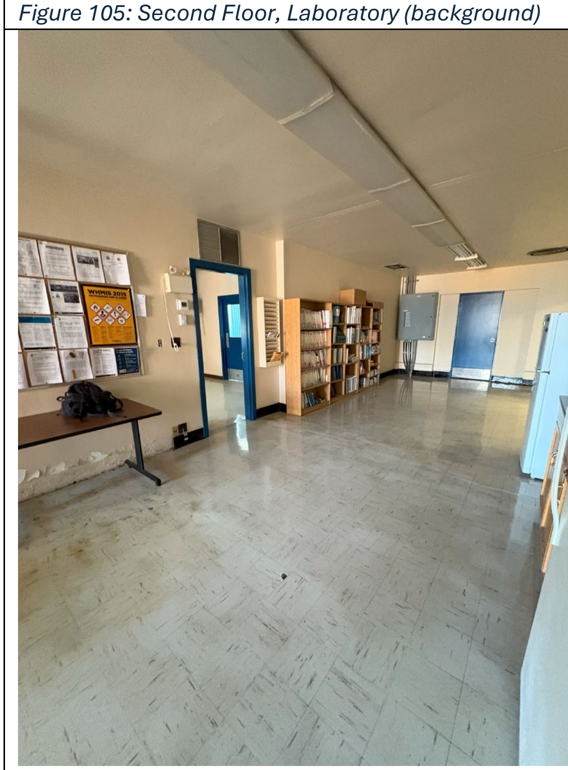


Figure 107: Employee Break Room


Figure 108: Employee Break Room, Peeling Paint

Figure 109: HVAC for Plant

Figure 110: Plant Electrical Panel

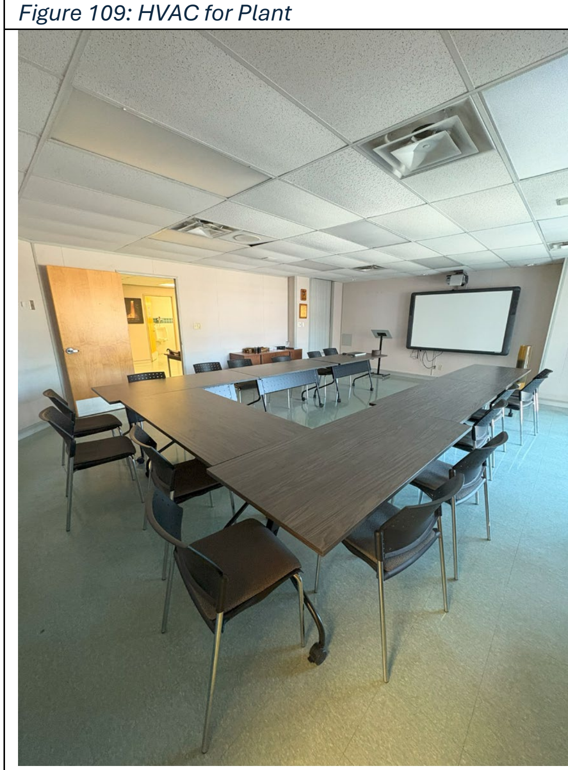


Figure 111: Boardroom, Training Room

Figure 112: Office Corridor

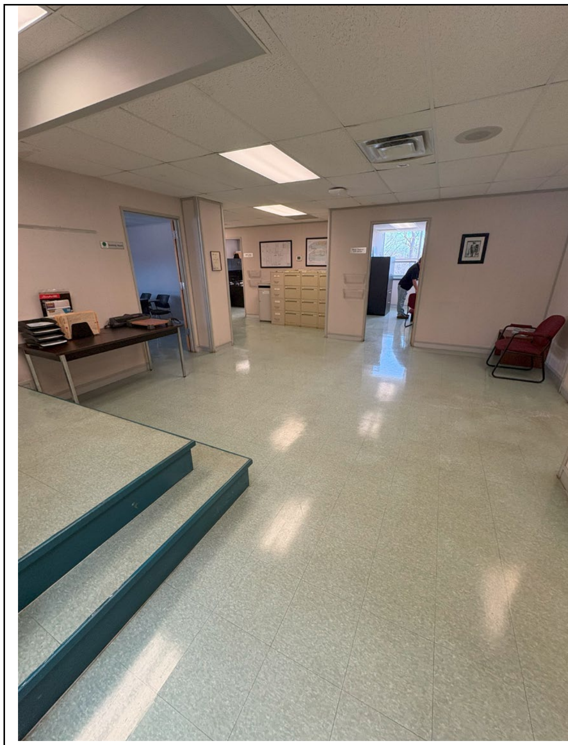


Figure 113: Staff Offices

Figure 114: Plant Operator Control Office

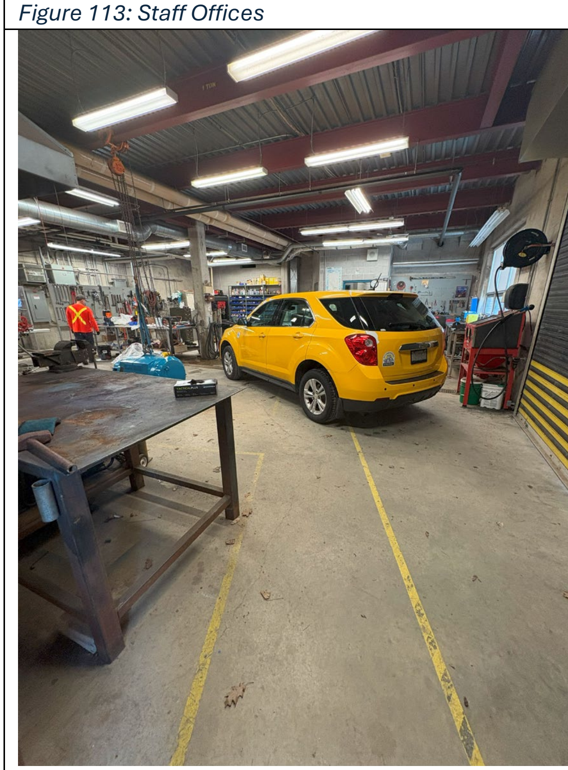


Figure 115: Machine Shop

Figure 116: Staff Office

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION SUMMARY

Pilot Plant

Peterborough Water Treatment Plant

1230 Water Street North, Peterborough ON

THE CITY OF PETERBOROUGH

March 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

BUILDING: Pilot Plant, WTP

ADDRESS: 1230 Water St N.

BUILT: 2010

SERVICE: Water Treatment Plant

LATITUDE: 44.340302°

LONGITUDE: 78.312755°

OVERALL CONDITION: GOOD

OVERVIEW

The Pilot Plant was constructed and incorporated into the Water Treatment Plant in 2010. The Peterborough Water Treatment Plant has conducted pilot-scale studies to improve water quality, optimize production, and investigate next-generation treatment technologies for the citizens of Peterborough.

A 5000:1 scale-model version of the main treatment facility, the pilot plant includes processes such as coagulation, tapered mixing, flocculation, settling and filtration. In addition to conventional water treatment studies, ozone and advanced oxidation equipment were incorporated into the pilot plant design in 2015 but removed in 2025.

The conventional pilot plant structure is currently in excellent condition. No concerns were identified with the structure or electrical components of the pilot plant.

BUILDING PROCESS – GOOD CONDITION

The pilot plant is a multi-level process with the raw water header, flocculation, and sedimentation basins installed on the second level of the WTP. The main floor area of the pilot plant has gravity fed dual-media filter columns that replicate the depth and head-pressure associated with the full-scale filter design. The main floor of the pilot plant also contains online analytical equipment, the control panel, and the contact tank and clearwell. The basement level has gravity-fed automated solenoid systems to sequence full and pilot-scale water to advanced online analytical equipment, including total organic carbon analyzers, UV_{254}, particle counters, and DO/ORP. The basement level also contains lead/copper pipe loops and pumps associated with the corrosion control program.

BUILDING SERVICES - VERY GOOD CONDITION

The pilot plant area is located within the water treatment plant and is fully serviced with all amenities. There are no deficiencies in power supply, lighting, communications, heating, ventilation, or electrical power. Access to the pilot plant is through an access key card and smart key doorknob set. Access is strictly for City of Peterborough employees of the water treatment plant. At the time of the inspection, all services related to the building appeared to be in excellent condition.

PROCESS PIPING – GOOD CONDITION

No deficiencies were noted with the process piping at the time of the inspection. Regular maintenance is completed on the facility and given the age of the facility no deficiencies were expected.

PROCESS MECHANICAL – GOOD CONDITION

No deficiencies were noted with the pumps, valves or controls at the time of the inspection. Regular maintenance is completed on the facility.

PROCESS ANALYTICAL – GOOD CONDITION

Analytical equipment is regularly maintained and replaced as required. Deficiency in analytical equipment is not currently in use due to calibration and required replacement components. Not all online analytical equipment is required to complete each objective of pilot plant testing.

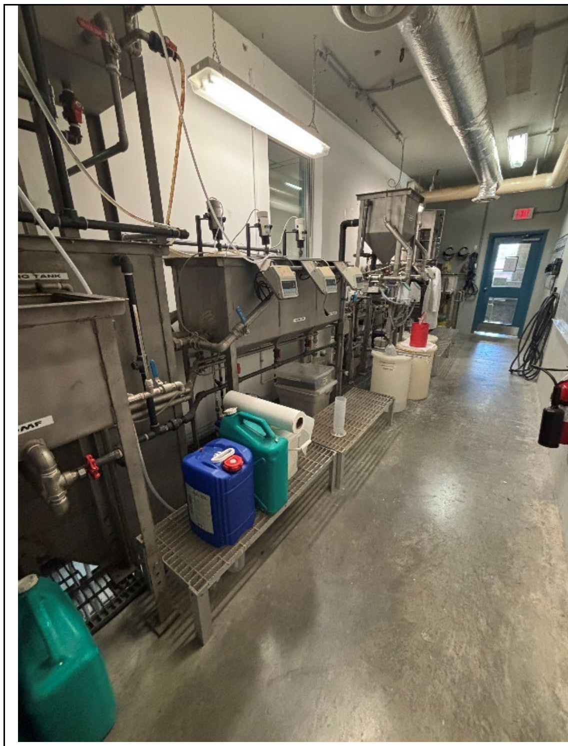
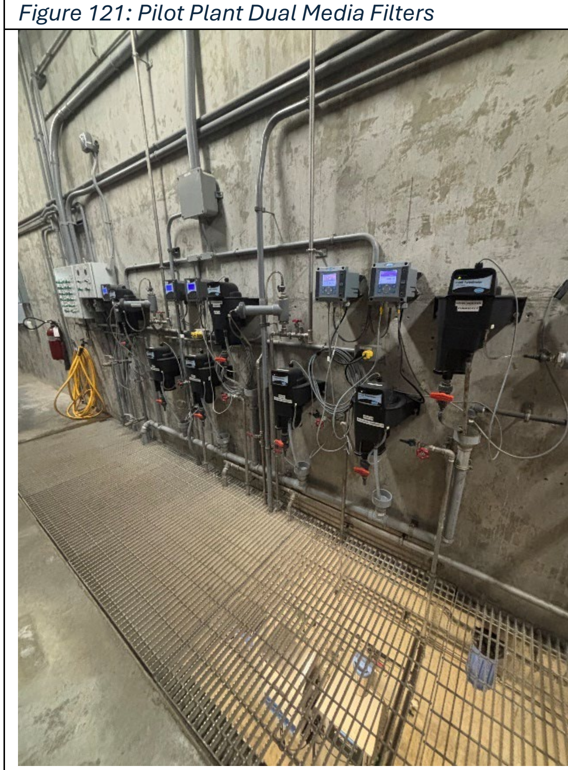


Figure 117: Pilot Plant Upper Floor Treatment Train

Figure 118: Water Treatment Conventional Train

Figure 119: Constant Head Tank

Figure 120: Pilot Plant Upper Floor Treatment Train

 *Figure 121: Pilot Plant Dual Media Filters*	 *Figure 122: Main Floor of Pilot Plant*
 *Figure 123: Pilot Plant Controls*	 *Figure 124: Pilot Plant Turbidity Meter*

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION SUMMARY

Process Waste Building

Peterborough Water Treatment Plant

1230 Water Street North, Peterborough ON

THE CITY OF PETERBOROUGH

March 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

BUILDING: Process Waste Building, WTP

ADDRESS: 1230 Water St N.

BUILT: 2003

SERVICE: Water Treatment Plant

LATITUDE: 44.340302°

LONGITUDE: 78.312755°

OVERALL CONDITION: VERY GOOD

BUILDING AND PROCESS STRUCTURAL – VERY GOOD CONDITION

The Process Waste Building was constructed in 2003 to satisfy the City of Peterborough Wastewater Treatment Plant's requirement for solid waste in the sanitary system. No structural changes have been made to the facility, and it appears to be in excellent condition. No concerns were identified in the building or immediately outside of the building.

BUILDING ARCHITECTURAL – GOOD CONDITION

The building is a multi-level process plant with the large Sludge Tank and Decant tanks below grade accepting the filter bed's backwash water and sludge from the sedimentation tank in the Water Treatment Plant. The Thickening tanks are elevated on the second floor. The Centrifuge is also on the second floor and the loading of the dewatered cake is by gravity to a truck below for transport to the landfill. The second floor has a control room and office space along with a two-piece washroom. Public washrooms for the Riverview Park and Zoo guests are accessible from the east side of the building. All architectural components were observed to be in good condition.

BUILDING SERVICES – GOOD CONDITION

The building is fully serviced with all amenities. No deficiencies in power supply, lighting, or heating were observed in the building. Access to the building is through an access key card and smart key doorknob set. Access is strictly for City of Peterborough employees of the water treatment plant. At the time of the inspection, all services related to the building appeared to be in good condition.

SITE WORKS – VERY GOOD CONDITION

The Process Waste Building shares the property with the Water Treatment Plant and the Riverview Park and Zoo. The outside of the building is maintained by RPZ staff. RPZ guests can access the public washrooms on the east side of the building. The site works are in excellent condition.

PROCESS PIPING – GOOD CONDITION

No deficiencies were noted with the process piping at the time of the inspection. Regular maintenance is completed on the facility and given the age of the facility no deficiencies were expected. The process piping is in excellent condition.

PROCESS MECHANICAL – GOOD CONDITION

No deficiencies were noted with the pumps, valves or controls at the time of the inspection. Regular maintenance is completed on the facility. The process mechanical components are in excellent condition.

Figure 125: Exterior Eavestrough Bent

Figure 126: Sludge Tank Piping

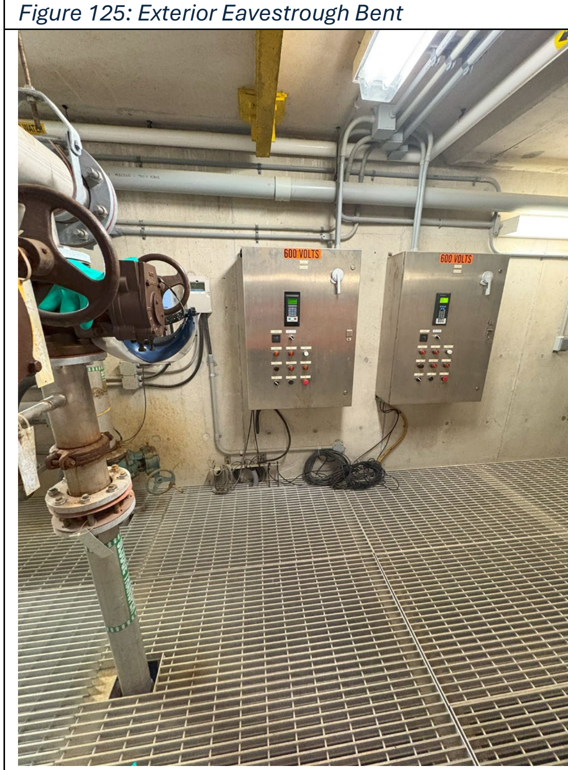


Figure 127: Sludge Tank Controls

Figure 128: Decant Tank Controls

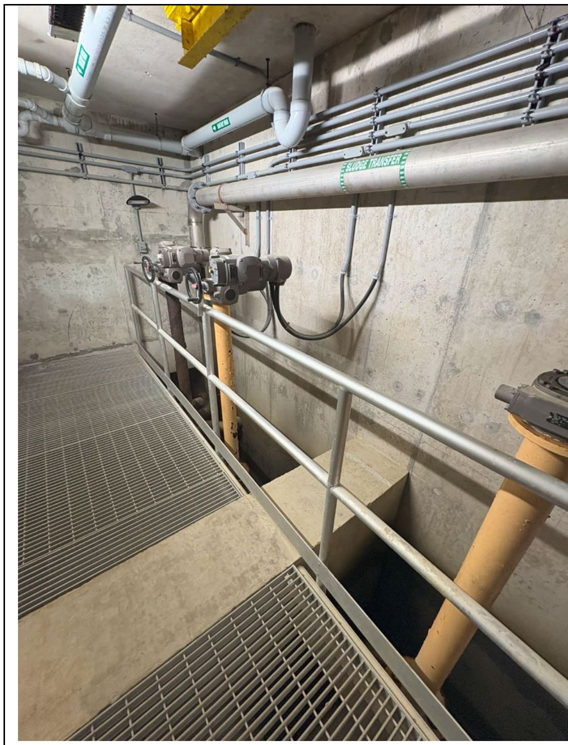


Figure 129: Decant Tanks


Figure 130: Decant Tank Inlet Piping

Figure 131: Thickening Tank Controls

Figure 132: Dewatered Cake Loading Bay


Figure 133: Dewatered Cake Loading Bay


Figure 134: Dechlorination Station


Figure 135: Dechlorination Controls


Figure 136: Thickening Tank #2

Figure 137: Thickening Tank #2 Controls

Figure 138: Thickening Tank #1

Figure 139: Thickening Tank #1 Controls

Figure 140: Centrifuge MCC

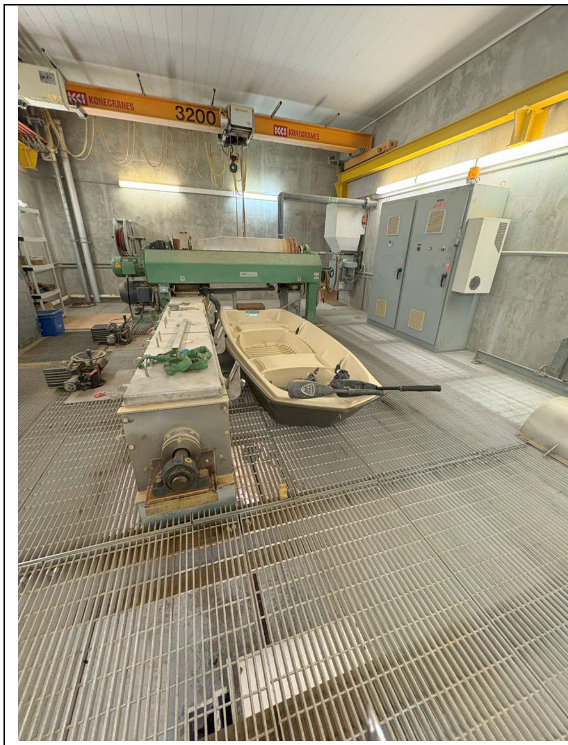


Figure 141: Centrifuge	*Figure 142: Electrical Switch Gear*

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION SUMMARY

Generator House

Peterborough Water Treatment Plant

1230 Water Street North, Peterborough ON

THE CITY OF PETERBOROUGH

March 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

BUILDING: Generator House, Water Treatment Plant

ADDRESS: 1230 Water St N.

BUILT: 2000

SERVICE: Water Treatment Plant

LATITUDE: 44.339573°

LONGITUDE: 78.312187°

ENGINE: Caterpillar G3516B, Natural Gas

GENERATOR: Caterpillar G3516B Gen Set (max 1040kW)

CONTROLS: SCADA

OVERALL CONDITION: VERY GOOD

BUILDING AND PROCESS STRUCTURAL – VERY GOOD CONDITION

The Generator House located at the Peterborough Water Treatment Facility was constructed in 2000. The building houses a CAT G3516B, Natural Gas Fuel Generator Set. The generator operates at 990kW and is designed to provide emergency power to the Water Treatment Plant. The Generator House is located south of the main building and on the north side of the treatment plant's chlorine contact tank and clear wells. All building and process structural items were noted to be in excellent condition.

BUILDING ARCHITECTURAL – VERY GOOD CONDITION

The building is a single-story facility comprising of two rooms. The front, main entrance is immediately off the driveway/parking lot to the Water Treatment Plant. This room houses the switch gear, SCADA, and controls for the generator. The generator room houses the generator and diesel engine, along with the associated cooling system and exhaust. The manual generator controls are also located in this room. A lower level includes the electrical chase and is accessible through an access hatch in the control room. All architectural building items were noted to be in excellent condition.

BUILDING SERVICES – GOOD CONDITION

No deficiencies in power supply, lighting, or heating were observed in the building. A fire extinguisher is located immediately inside of the main entrance door. Access to the building is through an access key card and smart key doorknob set. At the time of inspection, all services related to the building appeared to be in good condition.

SITE WORKS – VERY GOOD CONDITION

The Generator House shares the property with the Water Treatment Plant and the Riverview Park and Zoo. Outside of the building it is kept clean and maintained by RPZ staff. RPZ guests can access the areas outside of the building. Siteworks are in excellent condition.

ELECTRICAL – GOOD CONDITION

No deficiencies were noted with the electrical components at the time of the inspection, and all items were observed to be in good condition. Regular maintenance is completed on the facility and given the age of the facility no deficiencies were expected.

MECHANICAL – VERY GOOD CONDITION

No deficiencies were noted at the time of the inspection, all mechanical items are in excellent condition. Regular maintenance is completed on the facility.


Figure 143: Caterpillar Motor with Generator Set

Figure 144: Generator Label

Figure 145: Generator Maintenance Inspection


Figure 146: Electrical Switch Gear & SCADA

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION REPORT

Chemong Road Booster Pumping Station

1110 Chemong Rd, Peterborough ON

THE CITY OF PETERBOROUGH

April 2025

Inspectors: Elysha Doyle

Asset Management Inspection Results – 2025

STATION: Chemong Booster Pumping Station

ADDRESS: 1110 Chemong Rd

BUILT: 1981

SERVICE: Zone 2 to Zone 3N

LATITUDE: 44.327010 degrees

LONGITUDE: 78.338880 degrees

PUMP 1: Pleuger L-120-1, 78.9 L/s @ 36.6 m head

PUMP 2: Armstrong-HP0504FKB, 61.3 L/s @ 36.6 m head

PUMP 3: Flowserve-Pleuger 113-450, 37.9 L/s @ 36.6 m head

CONTROLS: SCADA

ELEVATION: 251.8 m

OVERALL CONDITION: GOOD

BUILDING AND PROCESS STRUCTURAL – FAIR CONDITION

The Chemong Booster Pumping Station is one (1) of five (5) below grade pumping stations in the City of Peterborough. Since its construction in 1981, no changes have been made to the facility or infrastructure other than routine maintenance. The equipment in the station is below grade except for the electrical and SCADA equipment and appears to be in fair condition. No concerns were identified on the surface surrounding the station or below grade in the station.

BUILDING ARCHITECTURAL – FAIR CONDITION

Above grade there are two (2) concrete slabs each with an access to the below grade station. The main access hatch is accessible using fall-arrest equipment for entry into the station. The second access is through a concrete lid for maintenance purposes. There are two (2) above grade cabinets for electrical and SCADA equipment. The cabinets are in good condition with some visible rust on the inside. There are hedges on the north and west sides of the station acting as a visual barrier between the station and the intersection. A wooden border/retaining wall separates the station from the adjacent driveway on the east and south sides. Between the hatches and cabinets, there is a stone pathway which is partially overgrown. Below grade, the internal pipes and pumps are in a concrete chamber, with no architectural features. The concrete chamber is in good condition. Some of the piping, bends, pumps and valves have some discolouration and corrosion due to age.

BUILDING SERVICES - GOOD CONDITION

No deficiencies in power supply, lighting, or heating were observed in the station. There is an exhaust fan complete with duct work for ventilation. The hatch is locked with a padlock for safety. At the time of inspection, all services related to the building appeared to be in good repair.

SITE WORKS – GOOD CONDITION

The Chemong Booster Pumping Station is located on the southeast corner at the intersection of Towerhill Road and Chemong Road. The station does not have its own driveway, but a small parking lot in front of the station at the Kawartha-Haliburton Children’s Foundation is available for use. There are no fences surrounding the station as it is in a commercial area. The area around the station is sodded with regular lawn cutting being completed by a third-party vendor.

PROCESS PIPING – FAIR CONDITION

All the flanged pipes in the station are ductile iron. Where a pump or valve has been replaced, stainless steel spool pieces have been fabricated. All piping and fittings are in fair condition. The station is functioning satisfactorily. Some of the piping, bends, pumps, and valves have some discolouration and corrosion due to age. No deficiencies were observed at the time of the inspection.

PROCESS MECHANICAL – GOOD CONDITION

There is no generator in the station, and all gate valves, butterfly valves, check valves and air release valves are in good condition. Pump one (1) was replaced in 1991 and pump two (2) was replaced in 2009.

SCADA – GOOD CONDITION

The SCADA monitoring system includes the following:

One (1) Access Hatch Alarm

One (1) Inlet Pressure Monitor

One (1) Outlet Pressure Monitor

One (1) Motor Control Centre

One (1) Flood Water Alarm

One (1) Heat/Fire Alarm

One (1) Commercial Power Alarm

One (1) Low Building Temperature Alarm

All SCADA components are in good condition and do not need to be replaced.

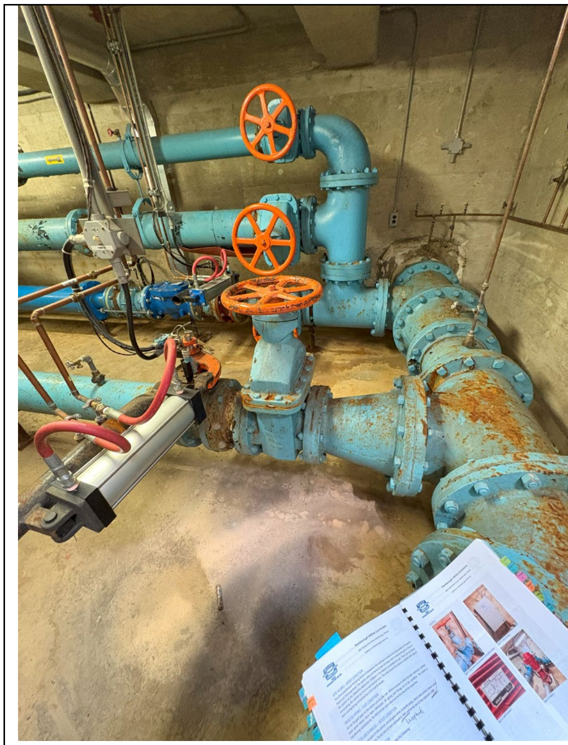
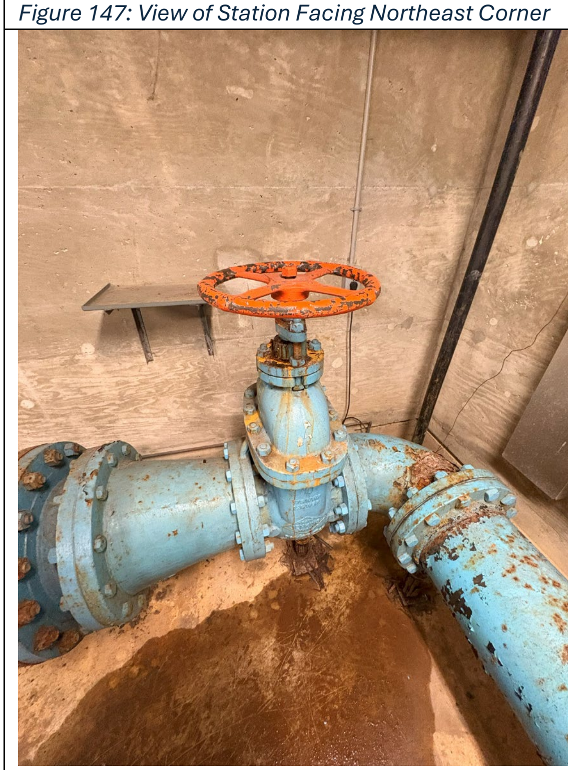
 *Figure 147: View of Station Facing Northeast Corner*	 *Figure 148: View of Station Facing West Wall*
 *Figure 149: Gate Valve in Southwest Corner of Station*	 *Figure 150: Electrical Box*

Figure 151: Gate Valve Adjacent to Pump #2

Figure 152: Pump #2

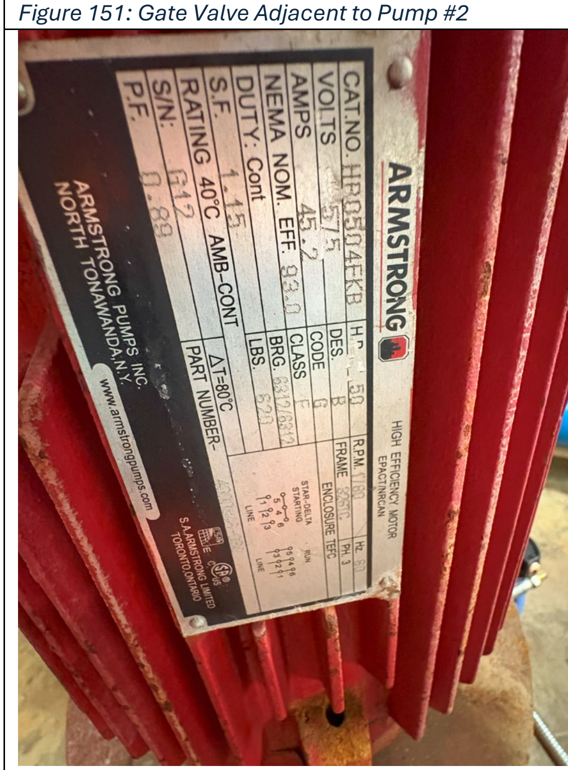


Figure 153: Label on Pump #2

Figure 154: Swing Check Valve on Pump #2


Figure 155: Butterfly Valve on Pump #2


Figure 156: Butterfly Valve on Pump #1

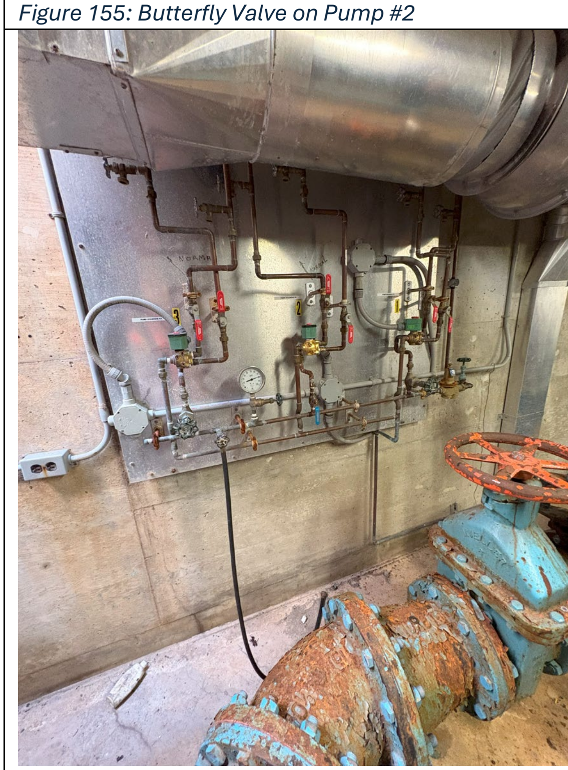


Figure 157: Automatic Valve Controls


Figure 158: Swing Check Valve on Pump #3

Figure 159: Label on Swing Check Valve


Figure 160: Gate Valve in Southwest Corner of Station

Figure 161: Inlet Pressure Pump #2


Figure 162: Gate Valve

Figure 163: Gate Valve on By-Pass

Figure 164: Gate Valve on Pressure Reducing Valve

Figure 165: Pressure Reducing Valve

Figure 166: Check Valve

Figure 167: Butterfly Valve

Figure 168: Gate Valves

Figure 169: Discharge Pressure Gauge Zone 2

Figure 170: View of Station Facing North

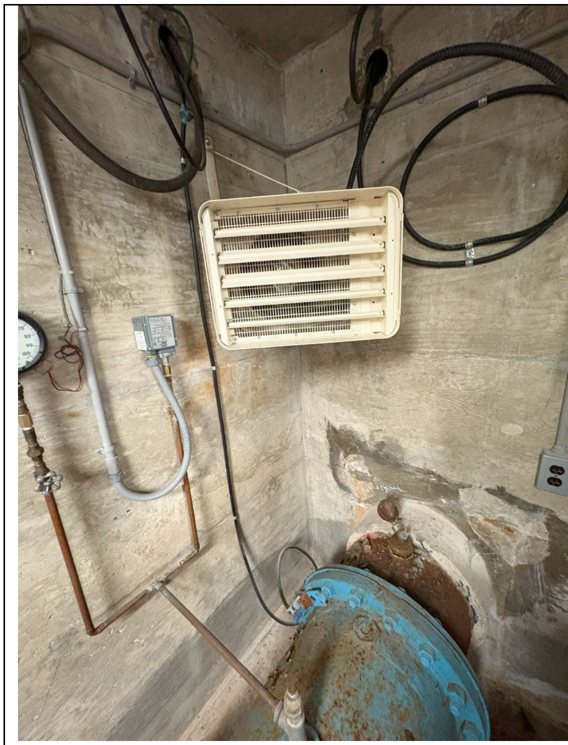


Figure 171: Electric Heater

Figure 172: Ventilation

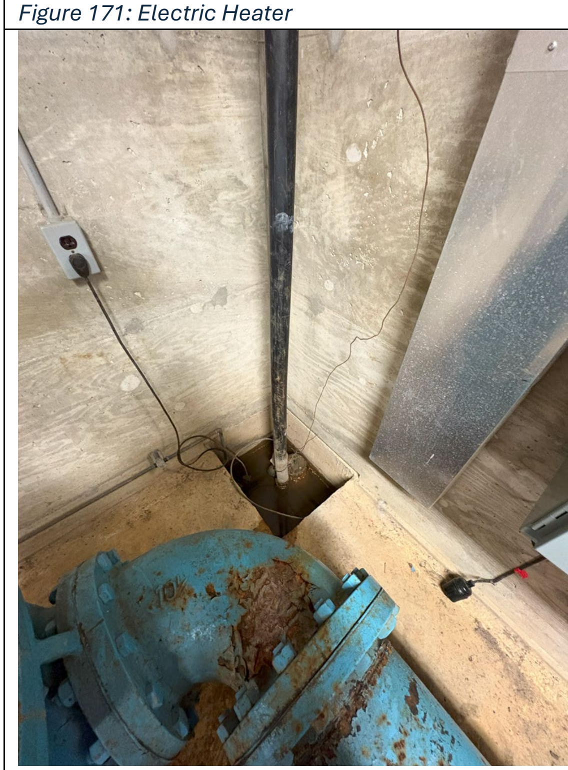


Figure 173: Sump Pit and Pump

Figure 174: View of Station Northwest

Figure 175: West Electrical Cabinet

Figure 176: North Electrical Cabinet

Figure 177: Access Hatch

Figure 178: Electrical Cabinets

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

Asset Inventory List						
Station ID	**Equipment**	**Description**	**Year Installed**	**Manufacturer**	**Model Number**	**Serial Number**
Chemong Pumping Station	Pump 1	No Label - Inline Pump	1991	-	-	-
	Pump 2	Armstrong-HP0504FKB 61.3 L/s @ 36.6m	2009	Armstrong	4000346-068	G12
	Pump 3	Flowserve-Pleuger 113-450 37.9 L/s @ 36.6 m	1982	Pleuger	M6-460-2	1802MPS00958-1M
	Pressure Gauge	N/A	-	BII	N/A	N/A
	Pressure Gauge	N/A	-	Ashcroft	N/A	N/A
	Pressure Gauge	N/A	-	Ashcroft	N/A	N/A
	Gate Valve	6"	-	Mueller	N/A	N/A
	Gate Valve	6"	-	Mueller	N/A	N/A
	Gate Valve	10"	-	Mueller	N/A	N/A
	Gate Valve	10"	-	Mueller	N/A	N/A
	Gate Valve	8"	-	Mueller	N/A	N/A
	Gate Valve	8"	-	Mueller	N/A	N/A
	Gate Valve	8"	-	Mueller	N/A	N/A
	Gate Valve	8"	-	Mueller	N/A	N/A
	Gate Valve	12"	-	Mueller	N/A	N/A
	Gate Valve	10"	-	Jenkins	N/A	N/A
	Butterfly Valve	8" Controlled with hydraulic cylinder	-		N/A	N/A
	Butterfly Valve	8" Controlled with hydraulic cylinder	-		N/A	N/A
	Butterfly Valve	8" Controlled with hydraulic cylinder	-		N/A	N/A
	Check Valve	6" 250 PSI MAX	-	Valmatic	7206	N/A
	Check Valve	8" 250 PSI MAX	-	Valmatic	7208	M364480
	Check Valve	8" 250 PSI MAX	-	Valmatic	7208	M557050
	Check Valve	10"	-	Darling		
	Pressure Reducing Valve	6"	-	Singer	106-RPS	1081-97
	Exhaust Fan	-	-	Loren Cook CO.	12 CVD	138096-00

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION REPORT

Clonsilla Booster Pumping Station

775 Sherbrooke St, Peterborough ON

THE CITY OF PETERBOROUGH

April 2025

Inspectors: Elysha Doyle

Asset Management Inspection Results – 2025

STATION: Clonsilla Booster Pumping Station **ADDRESS**: 775 Sherbrooke St

BUILT: 1963 **SERVICE**: Zone 1 to Zone 2

LATITUDE: 44.294830 degrees **LONGITUDE:** 78.342650 degrees

PUMP 1: Ingersol-Dresser 10M41-1, 63.1 L/s @ 45.7 m head (peak pump)

PUMP 2: Flowserve-Pleuger-MS560-2, 94.6 L/s @ 45.7 m head (Installed in 2017, duty pump)

PUMP 3: Armstrong-Inline Vertical Pump, 94.6 L/s @ 45.7 m head (duty pump)

CONTROLS: SCADA **ELEVATION:** 211 m

OVERALL CONDITION: FAIR

BUILDING AND PROCESS STRUCTURAL – FAIR CONDITION

The Clonsilla Booster Pumping Station is one (1) of five (5) below grade pumping stations in the City of Peterborough. The pump station was constructed in 1963, the pumps were replaced in 1999. No structural changes have been made to the station, and it appears to be in fair condition. No concerns were identified on the surface surrounding the station or below ground in the station.

BUILDING ARCHITECTURAL – FAIR CONDITION

Above grade there are two (2) concrete slabs each with an access to the below grade station. The main access hatch is accessible using fall-arrest equipment for entry into the station. The second access is through a concrete lid for maintenance purposes. Along the north edge of the hatches is a gravel driveway from Kinsmen Way which can fit at least three (3) cars. Below grade, the internal pipes and pumps are in a concrete chamber, with no architectural features. There are water stains on the floor and the pipes have some discolouration due to age.

BUILDING SERVICES – FAIR CONDITION

No deficiencies in power supply, lighting, or heating were observed in the station. The duct work for the ventilation system was found to be in poor condition due to severe corrosion and section loss, it is recommended this is repaired. There were puddles of water below the pumps due to leaking, which could be improved with better drainage. The hatch is locked with a padlock. At the time of inspection, all services related to the building appeared to be in fair condition.

SITE WORKS – GOOD CONDITION

The Clonsilla Booster Pumping Station is located on Kinsmen Way on the east side of the Clonsilla Reservoir, in front of the reservoir entrance. The area around the station is sodded, with regular lawn cutting being completed by a third-party vendor.

PROCESS PIPING – FAIR CONDITION

All the original flanged pipes in the station are ductile iron, thickness class 53 complete with cement mortar lining. All Victaulic grooved pipes are ductile iron thickness class 54 complete with cement mortar lining, and all flanged fittings are ductile iron cement lined. Where replacement equipment was installed, stainless steel piping has been retrofitted to suit the application. All pipes and bends are in fair condition. The station is functioning satisfactorily, and it is not recommended that the pipes be replaced. At the time of the inspection, Pump #3 had been removed for repairs. No deficiencies were observed at the time of the inspection.

PROCESS MECHANICAL – GOOD CONDITION

There is no generator in the station, and all gate valves, butterfly valves, check valves, and air release valves are in good condition.

SCADA – GOOD CONDITION

The SCADA monitoring system includes the following:

One (1) Access Hatch Alarm

One (1) Inlet Pressure Monitor

One (1) Outlet Pressure Monitor

One (1) Motor Control Centre

One (1) Flood Alarm

All SCADA components are in good condition and do not need to be replaced.

Figure 179: Discharge Pressure Gauge

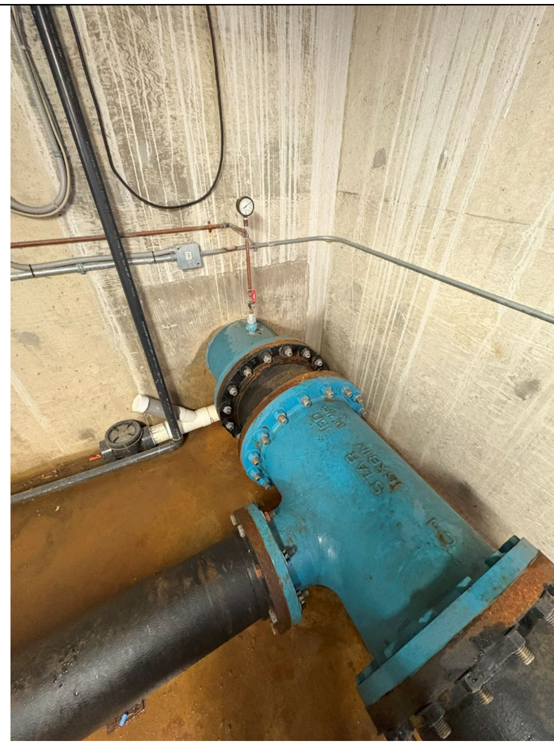


Figure 180: Northeast Corner of Station

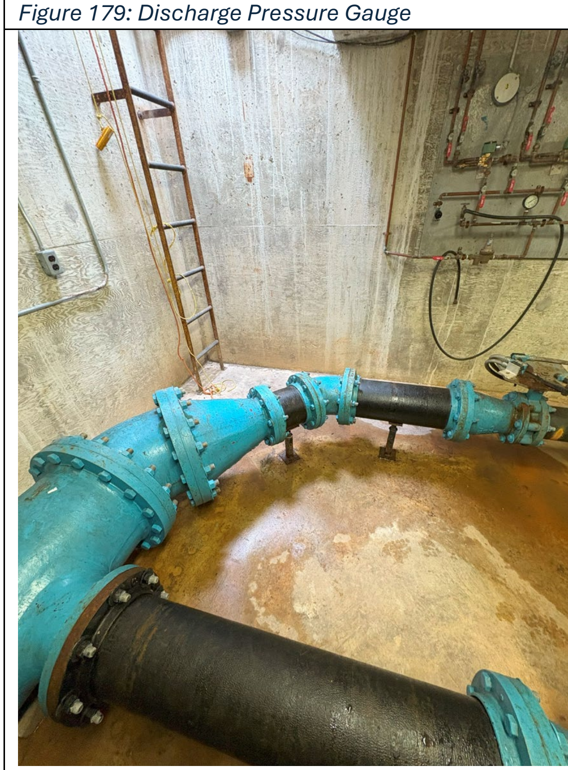


Figure 181: Southeast Corner of Station

Figure 182: East Wall

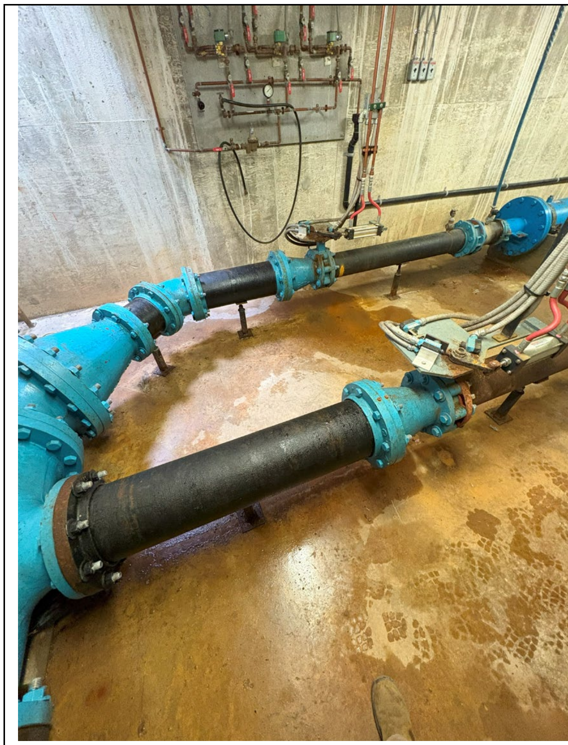


Figure 183: South Wall

Figure 184: Check Valve & Reducer

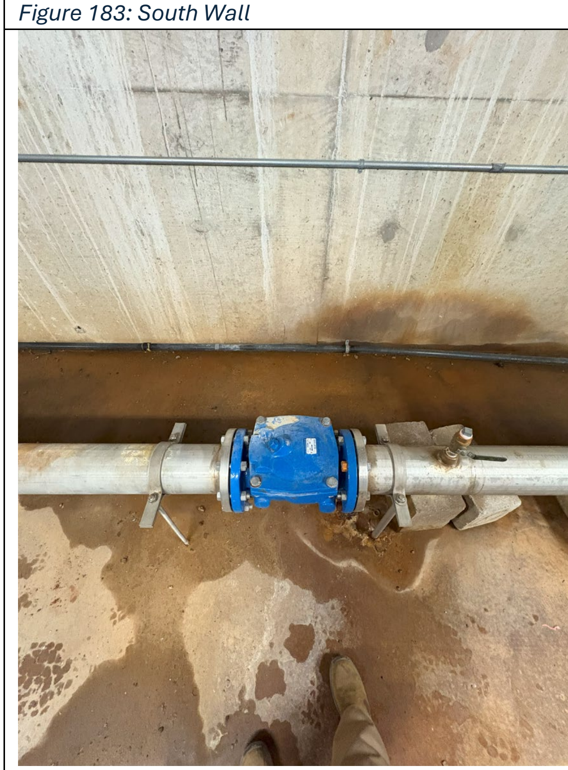


Figure 185: Check Valve

Figure 186: Pump #1


Figure 187: Butterfly Valve on Pump #1

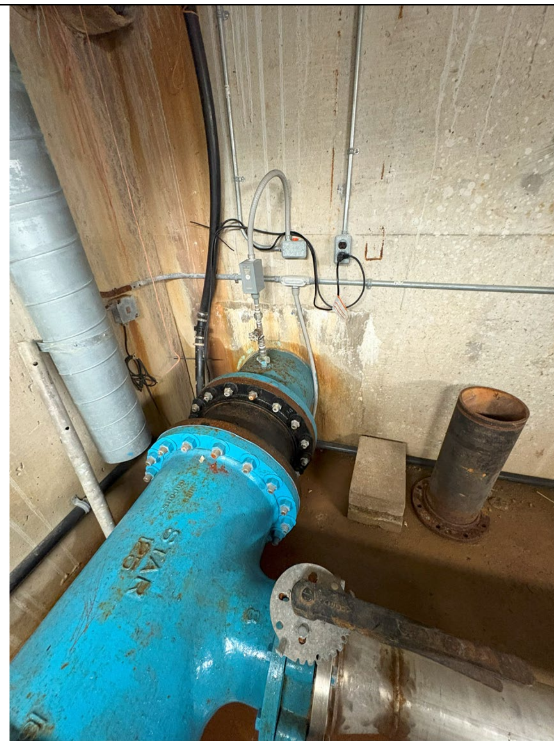


Figure 188: Piping Tee


Figure 189: Southwest Corner of Station


Figure 190: Butterfly Valve on Pump #2

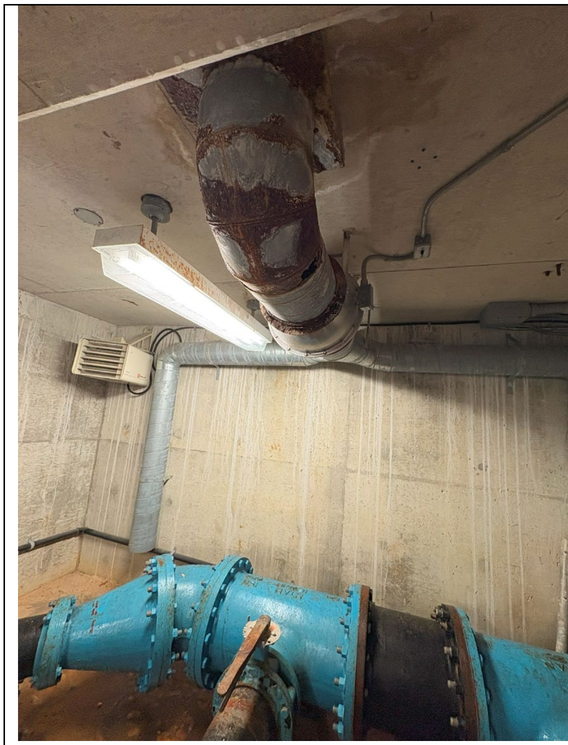


Figure 191: Ventilation Corrosion, Needs Repairs

Figure 192: Inline Pumps

Figure 193: Label on Pump #2

Figure 194: Coupling


Figure 195: Reducer on Pump #2

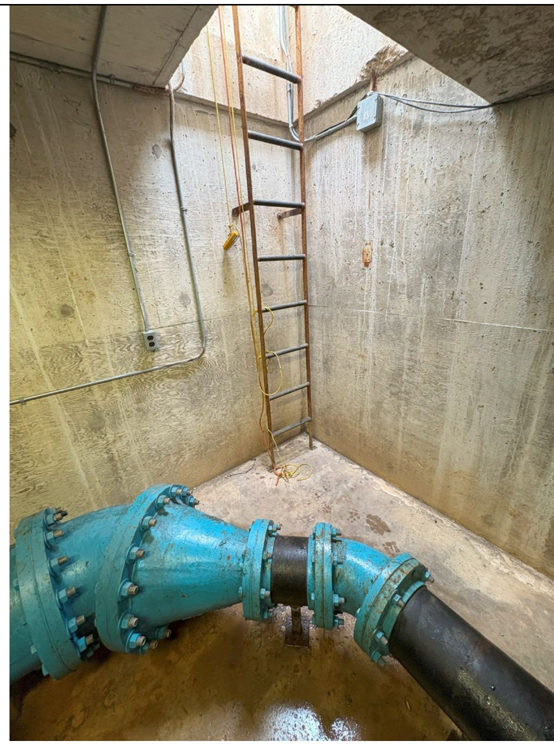


Figure 196: Southeast Corner


Figure 197: Reducer on Pump #3


Figure 198: Pump Controls

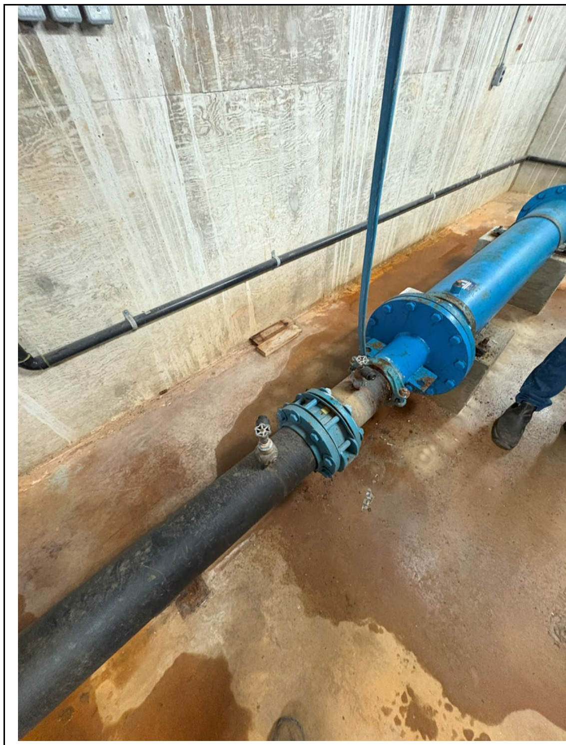
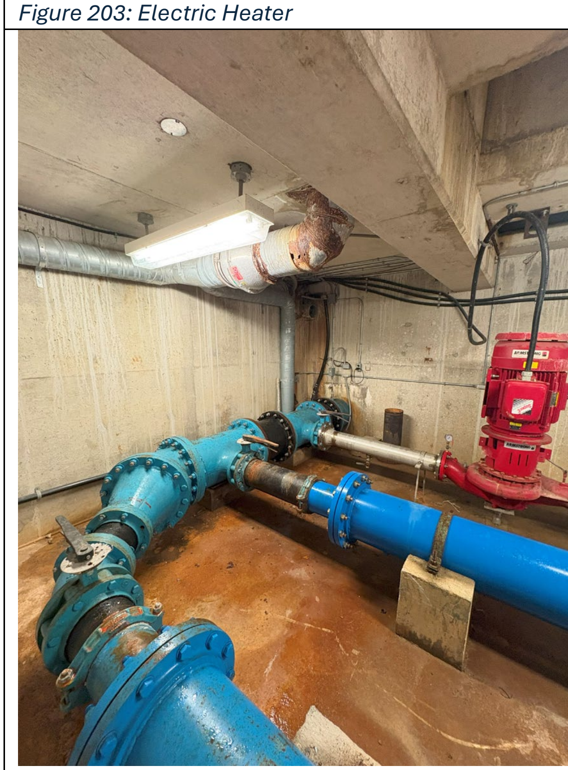


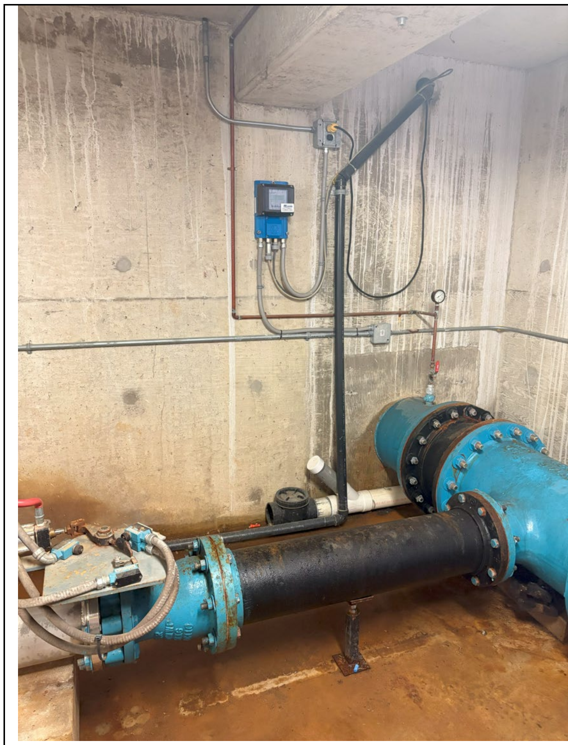
Figure 199: Coupling on Pump #3

Figure 200: Inline Pump #3

Figure 201: Label on Pump #3

Figure 202: Piping Network

 *Figure 203: Electric Heater*	 *Figure 204: Southwest Corner*
 *Figure 205: Northwest Corner, Ventilation Needs*	 *Figure 206: Pump #2*

 Figure 207: Northeast Corner	 Figure 208: Pump #2 Label
 Figure 209: Access Hatch	 Figure 210: Clonsilla Pumping Station & Reservoir

Asset Inventory List					
Station ID	**Equipment**	**Description**	**Manufacturer**	**Model Number**	**Serial Number**
Closilla Pumping Station	Pump 1	Baldor Reliance 10M41-1 63.1 L/s @ 45.7 m	Baldor Reliance	P36G3428	X1111
	Pump 2	Flowserve-Pleuger-MS560-2 94.6 L/s @ 45.7 m	Flowserve	M8-380-2	1807MPS00968-1M
	Pump 3	Ingersol-Dresser 10M41-1 63.1 L/s @ 45.7 m	Ingersol Dresser	MO-72-2	3336746802
	Pressure Gauge	N/A	USG	N/A	N/A
	Pressure Gauge	N/A	BII	N/A	N/A
	Butterfly Valve	6" Controlled with hydraulic cylinder	Jenkins	N/A	N/A
	Butterfly Valve	6" Controlled with hydraulic cylinder	Jenkins	N/A	N/A
	Butterfly Valve	6" Controlled with hydraulic cylinder	Jenkins	N/A	N/A
	Butterfly Valve	8" Controlled with hydraulic cylinder	Jenkins	N/A	N/A
	Butterfly Valve	8" Controlled with hydraulic cylinder	Jenkins	N/A	N/A
	Butterfly Valve	8" Controlled with hydraulic cylinder	Jenkins	N/A	N/A
	Check Valve	6" 250 PSI MAX	Valmatic	7206	N/A
	Check Valve	-	-	-	N/A
	Check Valve	-	-	-	N/A
	Flow Meter	-	Franklin Empire	-	N/A
	Exhaust Fan	-	Loren Cook CO.	12CV17D	N/A

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION REPORT

Cumberland Booster Pumping Station

717 Cumberland Ave, Peterborough ON

THE CITY OF PETERBOROUGH

April 2025

Inspectors: Elysha Doyle

Asset Management Inspection Results – 2025

STATION: Cumberland Booster Pumping Station

ADDRESS: 717 Cumberland Ave

BUILT: 2008

SERVICE: Zone 2 to Zone 3N

LATITUDE: 44.34199 degrees

LONGITUDE: 78.32238 degrees

PUMP 1+2: Duty Plad 310_REI, 50 L/s @ 37.5 m head

PUMP 3: Duty Plad 310_REI, 125 L/s @ 51 m head

CONTROLS: SCADA

ELEVATION: 251.80 m

OVERALL CONDITION: VERY GOOD

BUILDING AND PROCESS STRUCTURAL – VERY GOOD CONDITION

The Cumberland Booster Pumping Station is one of the newer stations in Peterborough as it was built in 2008, replacing an aging facility. Since its construction, no changes have been made to the building or infrastructure other than routine maintenance. All equipment in the station is above grade except for the 300mm inflow pipe. The building is in good condition and no major building or process structural concerns were identified.

BUILDING ARCHITECTURAL – VERY GOOD CONDITION

The station is a one-story building made of concrete blocks, with a decorative finish on the exterior. It has a low peaking roof, finished with shingles and a communication antenna. The building borders a tree line to the west, and the Parkway Trail to the south and to the east. To the north of the building, there is a parking lot adjacent to Cumberland Ave that can accommodate three (3) cars comfortably. The station has three (3) exhaust vents which are not blocked or covered by any obstacles. All walls, interior, exterior, and floors are clean and do not need cleaning, painting or replacement.

BUILDING SERVICES – GOOD CONDITION

Due to the age of the building, no deficiencies in power supply, lighting, heating, or drainage were expected or observed. The building is well ventilated with exhaust fans, complete with automatic louvers. Exterior lights are controlled by a photocell sensor and the main access door is secured with a smart key doorknob set. A fire extinguisher is accessible immediately inside of the access door. A wall mounted service sink with hot water is on site. At the time of inspection, all services related to the building appeared to be in good repair.

SITE WORKS – GOOD CONDITION

This site is located at the east/west midpoint of Cumberland Ave, at the north entrance of the Parkway Trail. There is no fence surrounding the property for security purposes as it is in a residential neighbourhood. The site generally drains away from the building to the north, east and south. A cutoff swale along the west side directs surface runoff away from the building. There are a few mature trees on the site. The asphalt driveway and parking lot are in good condition. The remainder of the site is sodded with regular lawn cutting being completed by a third-party vendor. The fuel filling station for the generator is quite high and is recommended to install concrete steps to make fueling for Upper Canada easier.

PROCESS PIPING – VERY GOOD CONDITION

All the piping in the station is 304 stainless steel and is in very good condition as the station is relatively new. The station is functioning satisfactorily, and it is not recommended that the pipes be replaced. No deficiencies were observed at the time of the inspection. It was noted that the distribution inlet to this pumping station is only 8” and is not sufficient for the flow.

PROCESS MECHANICAL – GOOD CONDITION

The station has a diesel generator and fuel tank, which are used to supply power to the pumps in the event of a power outage. The generator is inspected annually by a third-party vendor. The generator is in good condition and does not need to be replaced. A safety guard has also been installed. All gate valves, butterfly valves, check valves, and air release valves are in good condition.

SCADA – VERY GOOD CONDITION

The SCADA monitoring system includes the following:

One (1) Door Alarm

One (1) Inlet Pressure Monitor

One (1) Outlet Pressure Monitor

One (1) Motor Control Centre

One (1) Flow Monitor

One (1) Generator Battery Low Alarm

One (1) Generator Transfer Switch

One (1) Generator Fuel Tank Alarm

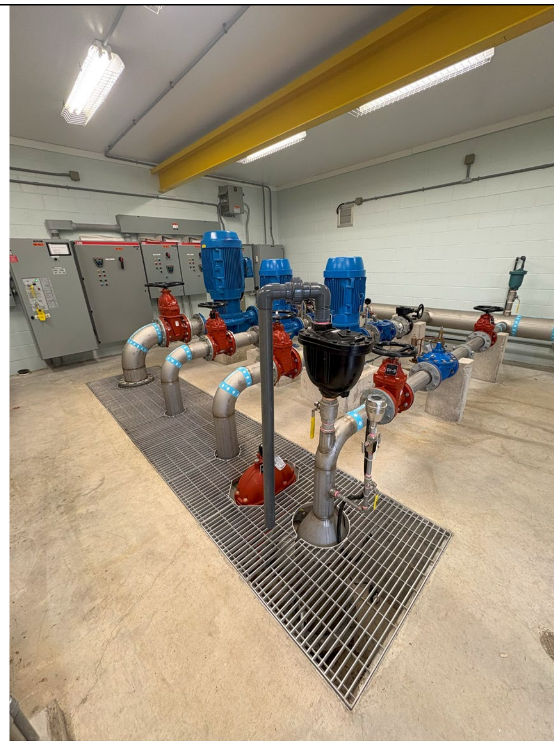
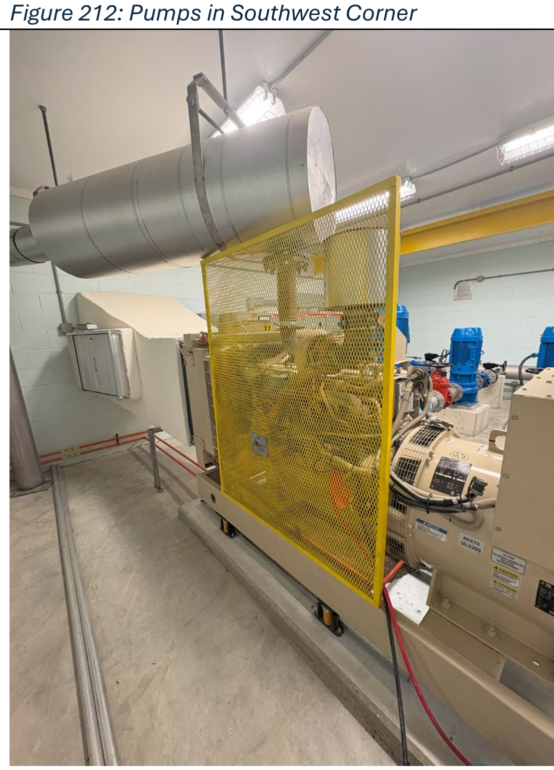
One (1) Flood Alarm

One (1) Low Building Temperature Alarm

One (1) Heat/Fire Alarm

One (1) AC Power Alarm

All SCADA components are in very good condition and do not need to be replaced.

 *Figure 211: Generator Fueling Station*	 *Figure 212: Pumps in Southwest Corner*
 *Figure 213: Generator in Southeast Corner*	 *Figure 214: Generator Safety Guard*

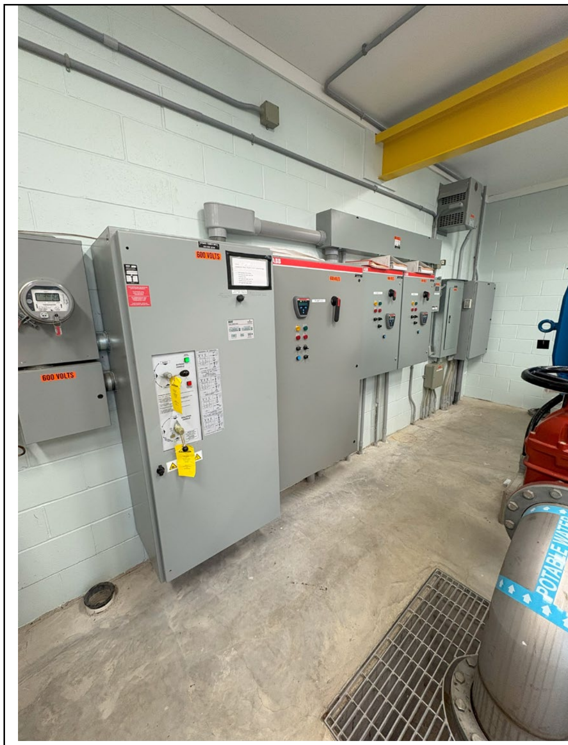


Figure 215: SCADA and Electrical Equipment

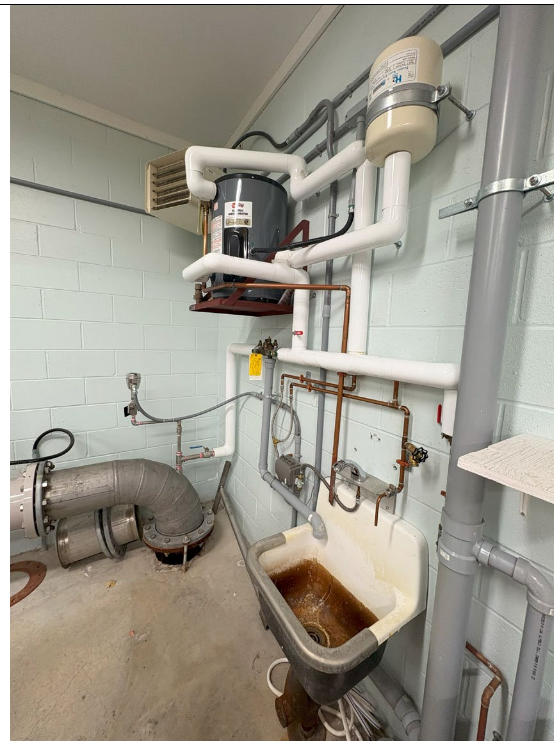


Figure 216: Hot Water Heater & Service Sink

Figure 217: Fuel Tank in Northeast Corner

Figure 218: Label on Pump 1

Figure 219: Label on Pump 2

Figure 220: Label on Pump 3

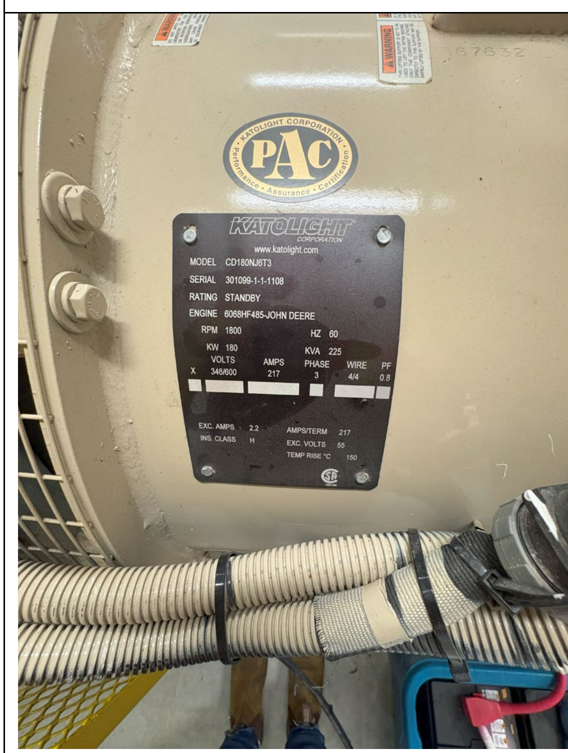


Figure 221: Engine Nameplate on Generator

Figure 222: Generator Nameplate

Figure 223: Siemens Flow Meter

Figure 224: Gate Valve #8


Figure 225: Pressure Relief Valve #1


Figure 226: Gate Valve #9

Figure 227: Air Release Valve #1

Figure 228: Pressure Gauge #1

Figure 229: Gate Valve #1

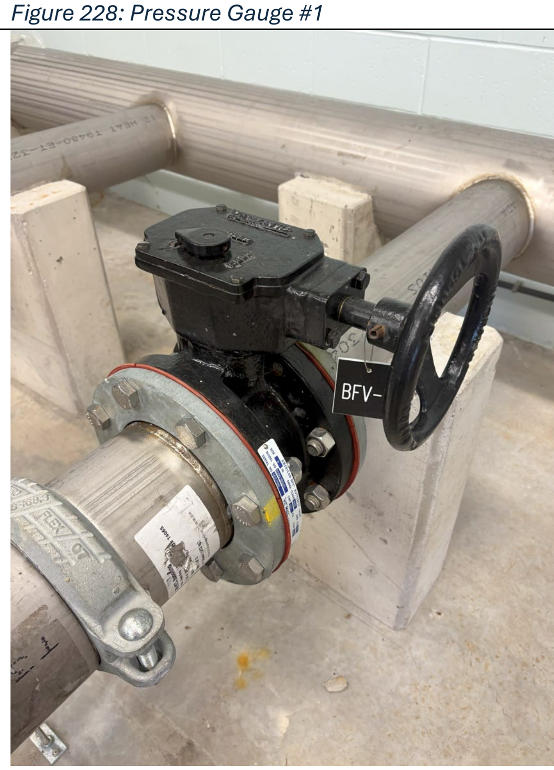


Figure 230: Butterfly Valve #7

Figure 231: Check Valve #1

Figure 232: Pump #1

Figure 233: Butterfly Valve #6

Figure 234: Check Valve #2


Figure 235: Pump #2

Figure 236: Gate Valve #3

Figure 237: Check Valve #3

Figure 238: Pump #3

Figure 239: Gate Valve #4


Figure 240: Exterior North Wall


Figure 241: Exterior Northeast Corner

peterborough

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

Asset Inventory List						
Station ID	**Equipment**	**Description**	**Label**	**Manufacturer**	**Model Number**	**Serial Number**
Cumberland Pumping Station	Duty Pump	Duty Plad 310_REI 50 L/s @ 37.5 m head	P1	Duty Plad	5x5x13 REI	08-87384-A
	Duty Pump	Duty Plad 310_REI 50 L/s @ 37.5 m head	P2	Duty Plad	5x5x13 REI	08-87384-B
	Fire Pump	Duty Plad 310_REI 125 L/s @ 51 m head	P3	Duty Plad	8x8x16 REI	0887384-C
	Fuel Tank	935 L		DTE Industries	ULC-5602	D 61005
	Exhaust Fan	Complete with Louver		Belimo	AF24-5	
	Generator	180 kW 60 Hz 217 A		Katolight	CD180NJ6T3	301099-1-1-1108
	Air Release Valve	2" 300 PSI	AVR-1	Valmatic	202C2P1N1	
	Air Release Valve	2" 150 PSI	AR-1	Valmatic	38.2	
	Prssure Gage		PT-1	Siemens	P300	7MF8023-1DA14-1M36-2
	Prssure Gage		PT-2	Siemens	P300	7MF8023-1DA14-1M36-2
	Gate Valve	AVR 4"	GV-8	AVR	N/A	N/A
	Gate Valve	AVR 4"	GV-9	AVR	N/A	N/A
	Gate Valve	AVR 6"	GV-3	AVR	N/A	N/A
	Gate Valve	AVR 6"	GV-2	AVR	N/A	N/A
	Gate Valve	AVR 10"	GV-4	AVR	N/A	N/A
	Gate Valve	AVR 12"	GV-1	AVR	N/A	N/A
	Butterfly Valve	10"	BFV-5	Valmatic	N/A	N/A
	Butterfly Valve	6"	BFV-6	Valmatic	N/A	N/A
	Butterfly Valve	6"	BFV-7	Valmatic	N/A	N/A
	Check Valve	SurgeBuster Swing Check Valve 6"		Valmatic	7206	N/A
	Check Valve	SurgeBuster Swing Check Valve 6"		Valmatic	7206	N/A
	Check Valve	SurgeBuster Swing Check Valve 10"		Valmatic	7210	N/A
	Pressure Reducing Valve		PSV-1	Singer	106-RPS	508-198
	Flow Meter	Sitrans F M Magflo	FM-1	Siemens	MAG500	N/A
	Electric Water Heater	Rheem Ruud Electric Water Heater		Rheem Ruud		N/A

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION REPORT

Fairmount Booster Pumping Station

1535 Fairmount Blvd, Peterborough ON

THE CITY OF PETERBOROUGH

July 2022

Inspectors: Elysha Doyle & John Ellison

Asset Management Inspection Results – 2025

STATION: Fairmount Booster Pumping Station

ADDRESS: 1535 Fairmount Blvd

BUILT: 1997

SERVICE: Zone 2 to Zone 3W

LATITUDE: 44.306010 degrees

LONGITUDE: 78.351090 degrees

PUMP 1: Worthington 10M41-1, 50.5 L/s @ 38.1 m head (Peaking)

PUMP 2: Worthington 10H75-1, 94.6 L/s @ 38.1 m head (Duty)

PUMP 3: Worthington 10H75-1, 94.6 L/s @ 38.1 m head (Duty)

CONTROLS: SCADA

ELEVATION: 243.6 m

OVERALL CONDITION: GOOD

BUILDING AND PROCESS STRUCTURAL – GOOD CONDITION

The Fairmount Booster Pumping Station is the only booster pumping station in Peterborough with a building and below grade pumps. The only equipment above grade are the generator, SCADA, and electrical equipment. The pumps and other equipment are accessible by stairs that lead below grade. Since its construction in 1997, no changes have been made to the building or infrastructure other than routine maintenance. The building is in good condition and no major building and process structural concerns were identified.

BUILDING ARCHITECTURAL – GOOD CONDITION

The station is a one-story building with a lower level. There is a decorative finish on the exterior. It has a flat roof, finished with a chain link fence around a radio antenna. There is a tree line to the north of the station that separates the station from a residential area. There are two (2) small retaining walls on either side of the front door made of stone blocks. To the south of the building, there is a parking lot adjacent to Fairmount Blvd and Westbrook Dr that can accommodate three (3) vehicles. The station has two (2) vents which are not blocked or covered by any obstacles. All walls, interior, exterior, and floors are clean and do not need cleaning, painting or replacement.

BUILDING SERVICES – GOOD CONDITION

No deficiencies in power supply, lighting, heating, or drainage were expected or observed. The building is well ventilated with exhaust fans, complete with automatic louvers. Exterior lights are controlled by a light switch from inside and the main access door is secured with a lock. A fire extinguisher is accessible immediately inside of the access door. At the time of inspection, all services related to the building appeared to be in good repair.

SITE WORKS – GOOD CONDITION

This site is located at the intersection of Fairmount Blvd and Westbrook Dr. There is no fence surrounding the property for security purposes as it is in a residential neighbourhood. There are a few mature trees behind the building. The asphalt driveway and parking lot are in good condition. The remainder of the site is sodded with regular lawn cutting being completed by a third-party vendor. The fuel supply was moved outside the building in 2021.

PROCESS PIPING – FAIR CONDITION

All the piping in the station is in fair to good condition. The station is functioning satisfactorily, and it is not recommended that the pipes be replaced. No deficiencies were observed at the time of the inspection however, some piping could use replacement due to its age.

PROCESS MECHANICAL – GOOD CONDITION

The station has a diesel generator, which is used to supply power to the pumps in the event of a power outage. The generator is in good condition and does not need to be replaced. All gate valves, butterfly valves, check valves, and air release valves are in good condition.

SCADA – GOOD CONDITION

The SCADA monitoring system includes the following:

One (1) Door Alarm

One (1) Inlet Pressure Monitor

One (1) Outlet Pressure Monitor

One (1) Motor Control Centre

One (1) Flood Water Alarm

One (1) Flow Monitor

One (1) Generator Control

One (1) Generator Battery Low Voltage

One (1) Generator Fault Alarm

One (1) Generator Transfer Switch

One (1) Generator Fuel Tank Alarm

One (1) Low Building Temperature

One (1) Heat/Fire Alarm

One (1) AC Power Alarm

One (1) Diesel Tank Leak Alarm

All SCADA components are in good condition and do not need to be replaced.

Figure 242: Generator

Figure 243: Label on Generator


Figure 244: Vent


Figure 245: SCADA and Electrical Equipment


Figure 246: Ventilation


Figure 247: View from Basement Facing Southeast


Figure 248: Butterfly Valve on Pump #1


Figure 249: Check Valve on Pump #1

Figure 250: Pump #1

Figure 251: Label on Pump #1

Figure 252: Butterfly Valve on Pump 1 & 2

Figure 253: Pump #2

Figure 254: Label on Pump #2

Figure 255: Check Valve and Gate Valve on Pump #2

Figure 256: Corrosion on Tee

Figure 257: Butterfly Valve on Pump #3

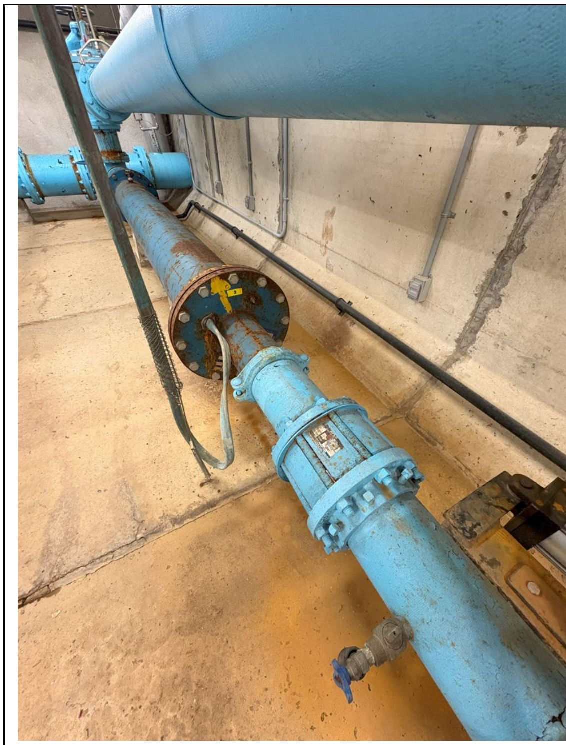


Figure 258: Pump #3

Figure 259: Label on Pump #3

Figure 260: Corrosion on Tee

Figure 261: Singer Pressure Relief Valve

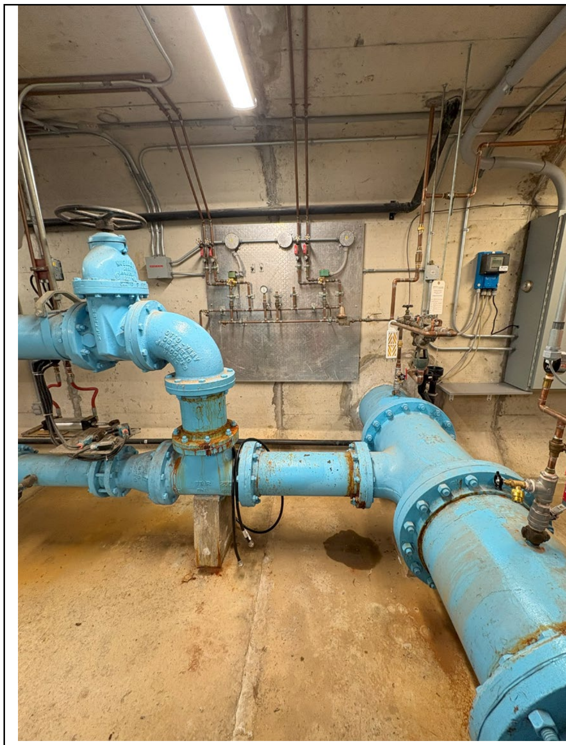


Figure 262: Pump Controls

Figure 263: SCADA Controller

Figure 264: Discharge Gate Valve on Pressure Relief

Figure 265: Ventilation

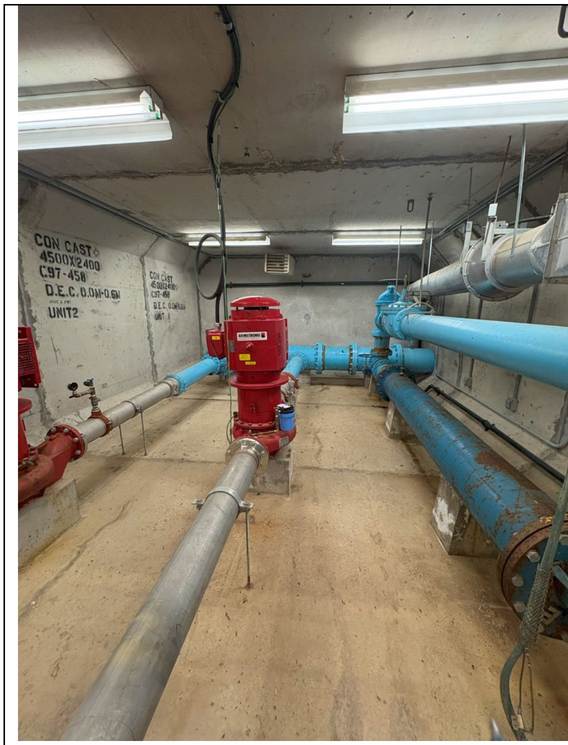


Figure 266: Northeast Corner

Figure 267: View of Station Facing South

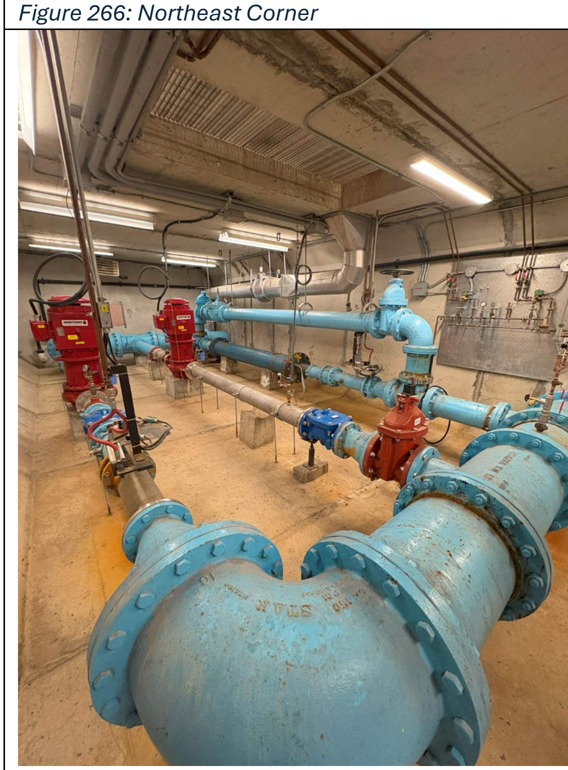


Figure 268: Southeast Corner

Figure 269: Exterior Fueling on North Side of Station

Figure 270: Label on Fuel Tank


Figure 271: East Exterior Wall

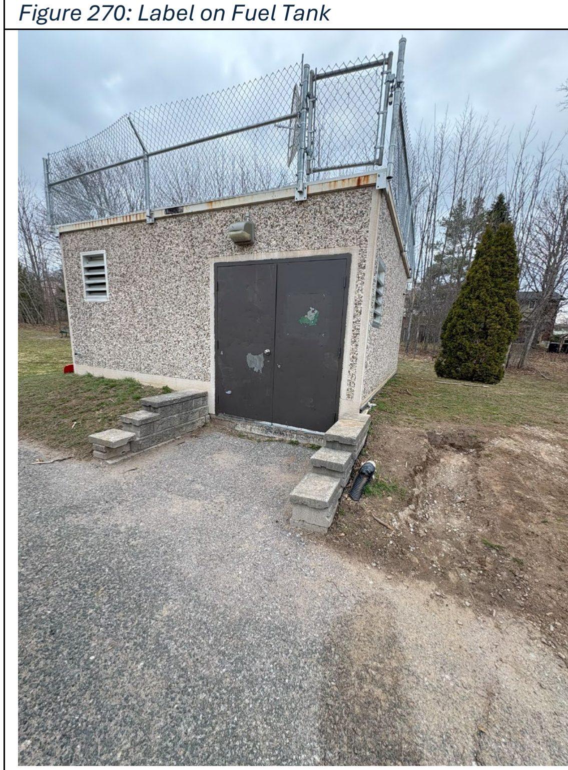


Figure 272: South Exterior Wall


Figure 273: Southwest Exterior Corner

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

Asset Inventory List					
Station ID	**Equipment**	**Description**	**Manufacturer**	**Model Number**	**Serial Number**
Fairmount Pumping Station	Pump 1	40HP / 30kW Pump	Armstrong	ASHH 404 575 TM	HU7098027009
	Pump 2	40HP / 30kW Pump	Armstrong	ASHH 404 575 TM	GU7097004003
	Pump 3	75HP / 56 kW Pump	Pleuger	M8-58-2	3346428403
	Generator	150 kW Simpower	Simpower	63981/1	883978
	Exhaust Fan	Complete with Louver	-	-	N/A
	Pressure Gauge	N/A	N/A	N/A	N/A
	Pressure Gauge	N/A	N/A	N/A	N/A
	Butterfly Valve	6"	N/A	N/A	N/A
	Butterfly Valve	6"	N/A	N/A	N/A
	Butterfly Valve	6"	N/A	N/A	N/A
	Butterfly Valve	8" Controlled with hydraulic cylinder	N/A	N/A	N/A
	Butterfly Valve	8" Controlled with hydraulic cylinder	N/A	N/A	N/A
	Gate Valve	8"	Mueller	N/A	N/A
	Gate Valve	8"	Mueller	N/A	N/A
	Gate Valve	8"	Mueller	N/A	N/A
	Check Valve	6" 250 MAX PSI	Valmatic	7206	N/A
	Check Valve	6" 250 MAX PSI	Valmatic	7206	N/A
	Pressure Reducing	8" 250 PSI MAX	Singer	L0-RPS	897-74
	Flow Meter	-	-	-	N/A

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION REPORT

Greencrest Booster Pumping Station

1221 Sherbrooke St, Peterborough ON

THE CITY OF PETERBOROUGH
April 2025

Inspectors: Elysha Doyle

Asset Management Inspection Results – 2025

STATION: Greencrest Booster Pumping Station **ADDRESS**: 1221 Sherbrooke St

BUILT: 2017 **SERVICE**: Zone 2 to Zone 3W

LATITUDE: 44.294247 degrees **LONGITUDE:** 78.352032 degrees

PUMP 1+2: G&L Pump Series – AC 8100, 60 L/s @ 40 m head

CONTROLS: SCADA **ELEVATION**: 249 m

OVERALL CONDITION: VERY GOOD

BUILDING AND PROCESS STRUCTURAL – VERY GOOD CONDITION

The Greencrest Booster Pumping Station is the newest station in Peterborough as it was built in 2017, replacing an aging below grade facility. Since its construction, no changes have been made to the building or infrastructure other than routine maintenance. All equipment in the station is above grade except for the 200 mm inflow pipe. The building is in very good condition and no major building and process structural concerns were identified.

BUILDING ARCHITECTURAL – VERY GOOD CONDITION

The station is a one-story building made of concrete blocks, finished with bricks on the exterior. On the north and south side of the building and above the front door there are faux architectural windows to help the station fit into its residential area. The industrial front door has a residential finish on the exterior, and it has a light above. On the east exterior wall of the station there is some pink graffiti. The roof is finished with shingles and has a communication antenna. The building borders a tree line to the east. To the south of the building, there is a driveway to Greencrest Dr that can accommodate two (2) cars. There are five (5) yellow bollards between the driveway and the building to provide protection against vehicular traffic. The station has two (2) exhaust vents which are not blocked or covered by any obstacles. All walls, interior and exterior, and floors are clean and do not need cleaning, painting or replacement.

BUILDING SERVICES – VERY GOOD CONDITION

Due to the age of the building, no deficiencies in power supply, lighting, heating, or drainage were expected or observed. The building is well ventilated with exhaust fans, complete with automatic louvers. Exterior lights are controlled by a photocell sensor and the main access door is secured with a smart key doorknob set. A fire extinguisher is accessible immediately inside of the access door. At the time of inspection, all services related to the building appeared to be in very good repair.

SITE WORKS – VERY GOOD CONDITION

This site is located at the intersection of Sherbrooke St and Greencrest Dr. There is no fence surrounding the property for security purposes as it is in a residential neighbourhood. The site generally drains away from the building to the north, west, and south. A cutoff swale along the east side directs surface runoff away from the building. There are a few mature trees on the site. The asphalt driveway and parking lot are in good condition. The remainder of the site is sodded with regular lawn cutting being completed by a third-party vendor.

PROCESS PIPING – VERY GOOD CONDITION

All the piping in the station is 316 stainless steel and is in very good condition as the station is newer. The station is functioning satisfactorily, and it is not recommended that the pipes be replaced. No deficiencies were observed at the time of the inspection.

PROCESS MECHANICAL – VERY GOOD CONDITION

The station does not have a generator, however it has 240 V external receptacle in which a portable genset can be connected in the case of an emergency. All gate valves, butterfly valves, check valves and air release valves are in very good condition.

SCADA – VERY GOOD CONDITION

The SCADA monitoring system includes the following:

One (1) Door Alarm

One (1) Inlet Pressure Monitor

One (1) Outlet Pressure Monitor

One (1) Motor Control Centre

One (1) Floor Sump Pump Flood Alarm

One (1) Low Building Temperature Alarm

One (1) Heat/Fire Alarm

One (1) Commercial Power Loss Alarm

All SCADA components are in very good condition and do not need to be replaced.

Figure 274: View of Station Facing East

Figure 275: View of Station Facing Northeast

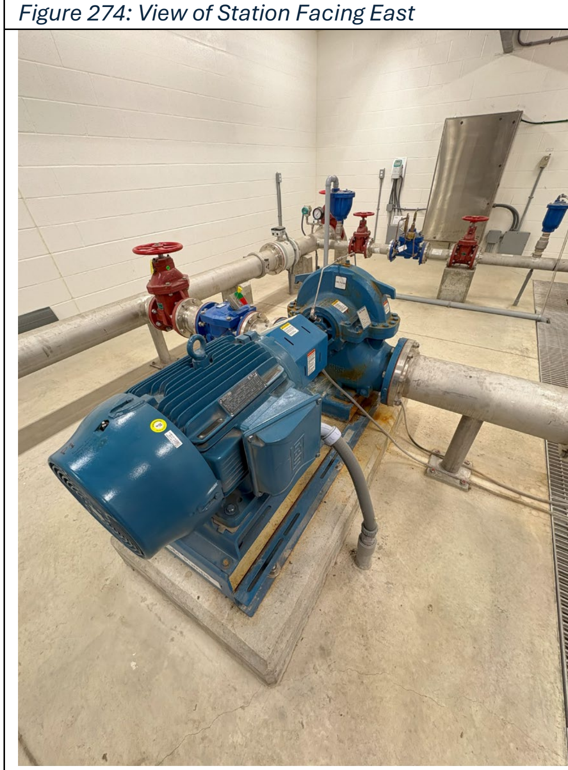


Figure 276: Pump #1

Figure 277: Label on Pump #1

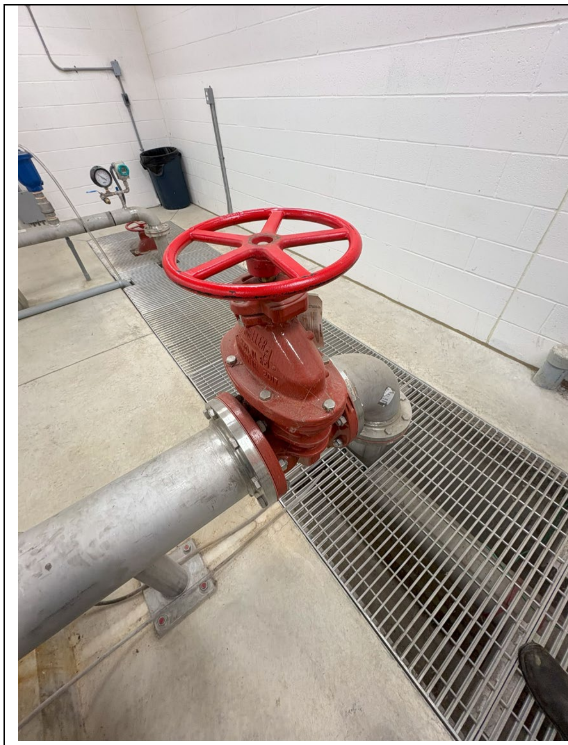


Figure 278: Suction Gate Valve on Pump #1


Figure 279: Check Valve & Gate Valve, Discharge of Pump #1

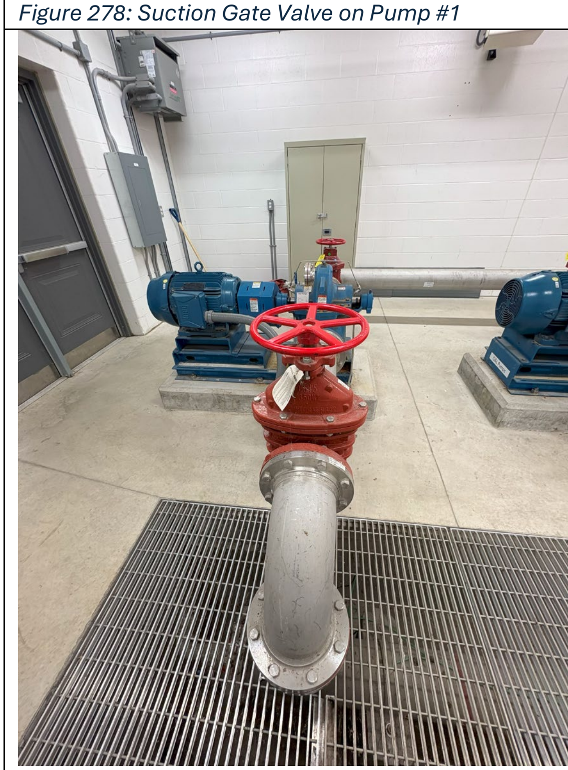
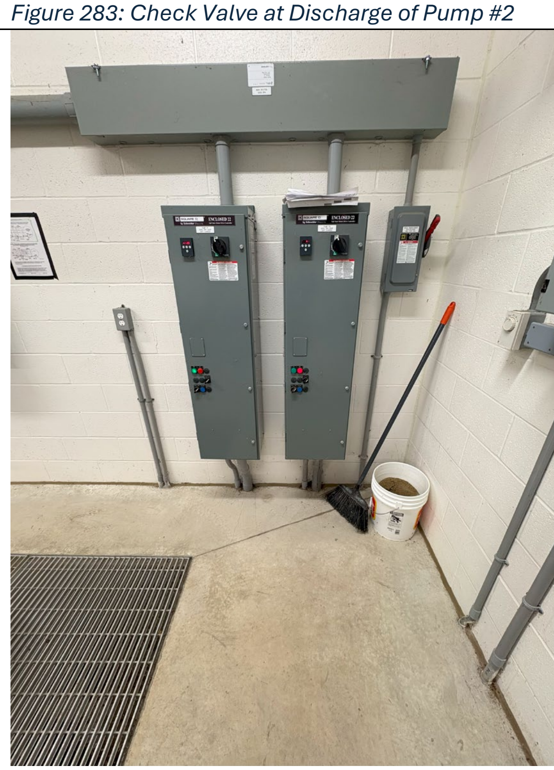


Figure 280: Suction Gate Valve on Pump #2


Figure 281: Pump #2

 *Figure 282: Label on Pump #2*	 *Figure 283: Check Valve at Discharge of Pump #2*
 *Figure 284: Discharge Gate Valve Pump #2*	 *Figure 285: Electrical Equipment on South Wall*

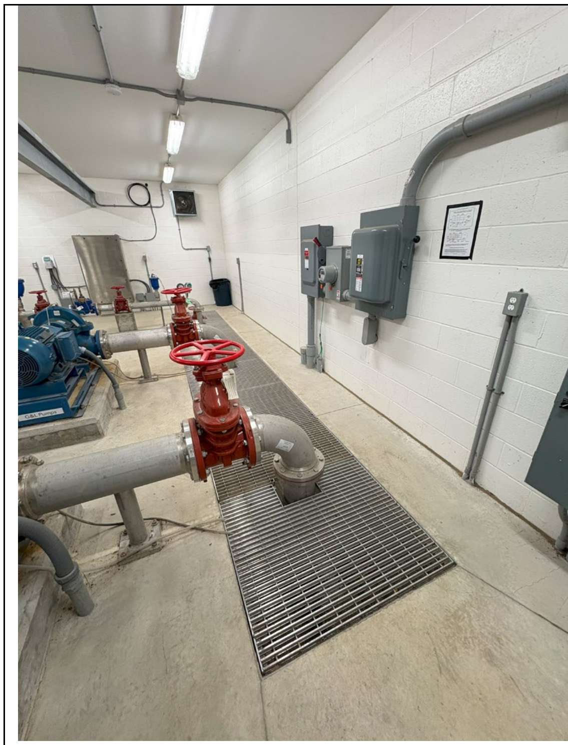


Figure 286: Southeast Corner of Station


Figure 287: Suction Pressure Gauge Zone 2


Figure 288: Air Release Valve


Figure 289: Discharge Gate Valve on PRV

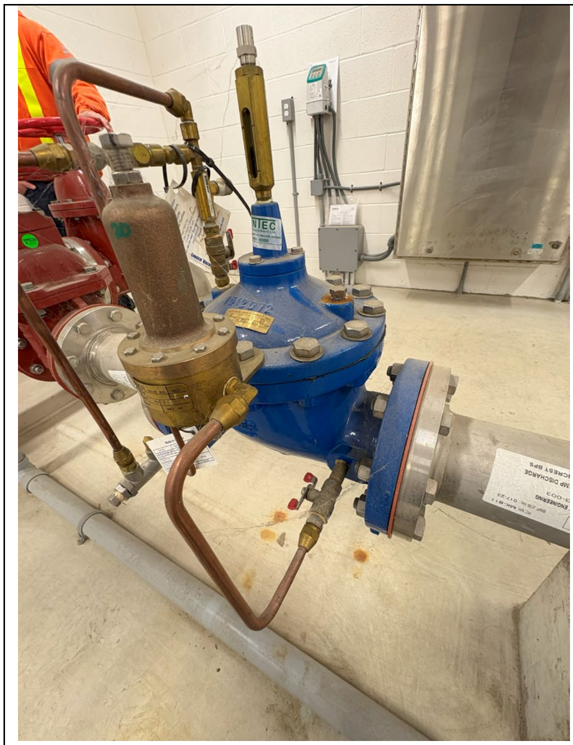


Figure 290: Pressure Reducing Valve

Figure 291: Suction Gate Valve on PRV

Figure 292: Air Release Valve

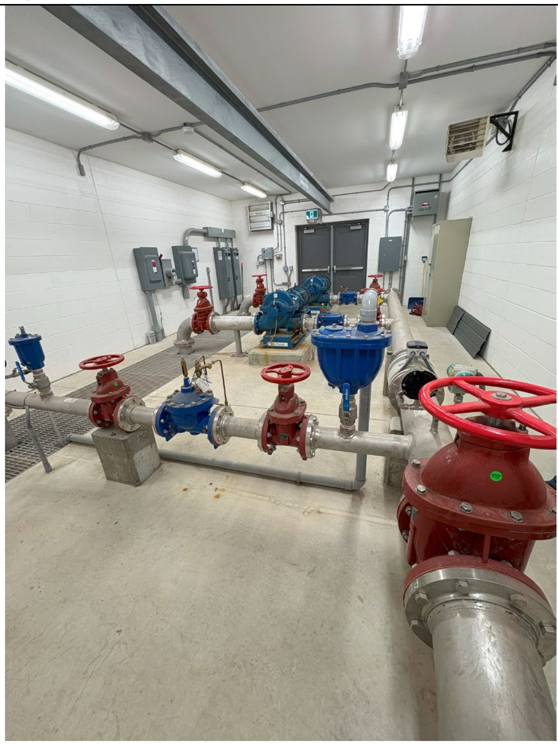


Figure 293: View of Station Looking West

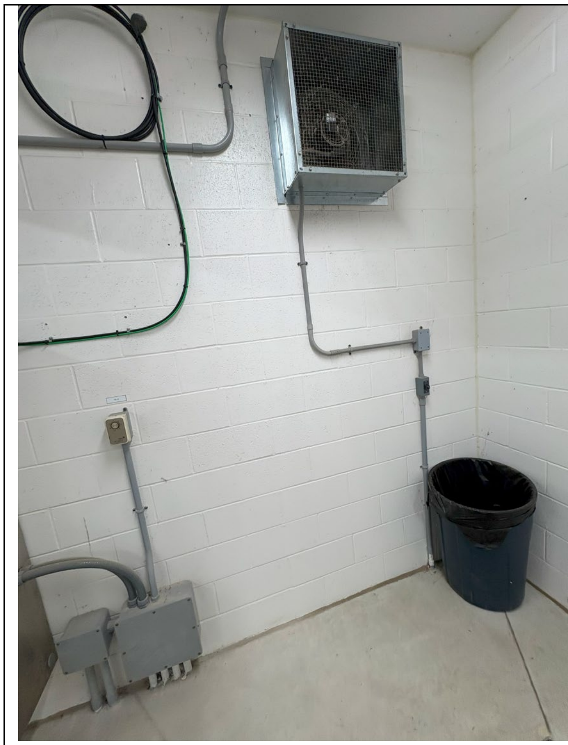


Figure 294: Exhaust Fan on East Wall

Figure 295: Siemens Flow Meter

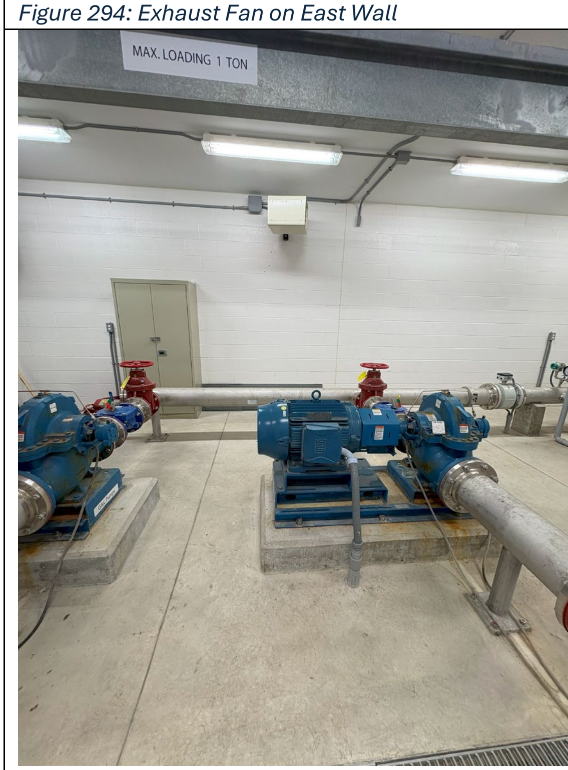


Figure 296: North Wall


Figure 297: Exterior West Wall

Asset Inventory List					
Station ID	**Equipment**	**Description**	**Manufacturer**	**Model Number**	**Serial Number**
Greencrest Pumping Station	Pump 1	G&L Pump Series - AC 8100, 60 L/s @ 40 m	G&L	150	QFG980-01
	Pump 2	G&L Pump Series - AC 8100, 60 L/s @ 40 m	G&L	150	QFG980-02
	Digital Pressure Gauge	Sitrans	Siemens	MAG 5000	N1J7100202
	Gate Valve	8"	Mueller	N/A	N/A
	Gate Valve	8"	Mueller	N/A	N/A
	Gate Valve	8"	J&S	N/A	N/A
	Gate Valve	6"	J&S	N/A	N/A
	Gate Valve	6"	J&S	N/A	N/A
	Gate Valve	4"	J&S	N/A	N/A
	Gate Valve	4"	J&S	N/A	N/A
	Check Valve	Surge Buster 250 MAX PSI	Valmatic	7206C	M665200
	Check Valve	Surge Buster 250 MAX PSI	Valmatic	7206C	M665200
	Pressure Reducing Valve	4"	Singer	106-RPS	06170160-1
	Air release valve	2"	Valmatic	202C.2DISU	N/A
	Air release valve	2"	Valmatic	38.2DISV	N/A
	Flowmeter	Sitrans F M	Valmatic	MAG 3100	114140H317
	Exhaust Fan	-	-	-	N/A
	Louver Ventilation	-	-	-	N/A
	Space Heater	-	-	-	N/A

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION REPORT

Lansdowne Booster Pumping Station

1360 Lansdowne St W, Peterborough ON

THE CITY OF PETERBOROUGH

April 2025

Inspectors: Elysha Doyle

Asset Management Inspection Results – 2025

STATION: Lansdowne Booster Pumping Station

ADDRESS: 1360 Lansdowne St W

BUILT: 1974

SERVICE: Zone 2 to Zone 3W

LATITUDE: 44.2902869 degrees

LONGITUDE: 78.3116769 degrees

PUMP 1+2: Armstrong 6x6x13, 50.5 L/s @ 38.7 m head

CONTROLS: SCADA

ELEVATION: 243.4 m

OVERALL CONDITION: GOOD

BUILDING AND PROCESS STRUCTURAL – GOOD CONDITION

The Lansdowne Booster Pumping Station is one (1) of five (5) below grade pumping stations in the City of Peterborough. Since its construction in 1974, no changes have been made to the building or infrastructure other than routine maintenance and pump replacement. All equipment in the station is below grade except for the electrical and SCADA equipment. It appears to be in fair condition. No concerns were identified on the surface surrounding the station or below grade in the station.

BUILDING ARCHITECTURAL – GOOD CONDITION

Above grade there is a concrete slab with two (2) hatches and two (2) metal cabinets. The electrical and SCADA equipment are housed in one cabinet. A sampling station is housed in the other. The slab also includes a small exhaust pipe. The main access hatch is accessible using fall-arrest equipment for entry into the station. The second access is through a concrete lid for maintenance purposes. Below grade, the internal pipes and pumps are in a small concrete chamber, with no architectural features. Some of the pipes, bends, pumps, and valves have some discolouration/corrosion due to age.

BUILDING SERVICES – FAIR CONDITION

No deficiencies in power supply, lighting, or heating were observed in the station. The only form of ventilation in the station is the hatch, which provides minimal airflow. It is recommended to install a ventilation system as the humidity is causing early corrosion of equipment. The hatch is locked with a padlock. At the time of inspection, all services related to the building appeared to be in fair to good repair.

SITE WORKS – GOOD CONDITION

The Lansdowne Booster Pumping Station is located on at 1360 Lansdowne St West, just east of Applewood Crescent. There is a locked, chain link fence surrounding the station as it is next to a school yard on an arterial road. There are small trees and hedges on the north and east sides of the station, which separates the station from the neighbouring school yard. The area around the station is sodded with regular lawn cutting being completed by a third-party vendor.

PROCESS PIPING – FAIR CONDITION

All the piping in the station is in fair to good condition. The station is functioning satisfactorily, and it is not recommended that the pipes be replaced at this time. No deficiencies were observed at the time of the inspection. The original configuration of the station included inline pumps. The replacement of the pumps required the fabrication of stainless steel spool pieces to complete the work.

PROCESS MECHANICAL – FAIR CONDITION

There is no generator in the station. All gate valves, butterfly valves, check valves, and air release valves are in fair to good condition. The original pumps were replaced in 2011.

SCADA – GOOD CONDITION

The SCADA monitoring system includes the following:

One (1) access hatch alarm

One (1) inlet pressure monitor

One (1) outlet pressure monitor

One (1) Motor Control Centre

One (1) Flood Water Alarm

One (1) Low Building Temperature

One (1) Heat/Fire Alarm

One (1) Commercial Power Alarm

All SCADA components are in good condition and do not need to be replaced.


Figure 298: Butterfly and Check Valve on Pump #2

Figure 299: Pump #2

Figure 300: Label on Pump #2


Figure 301: Discharge Pipe Pump #2

Figure 302: Northwest Corner of Station

Figure 303: Corrosion of Pipe

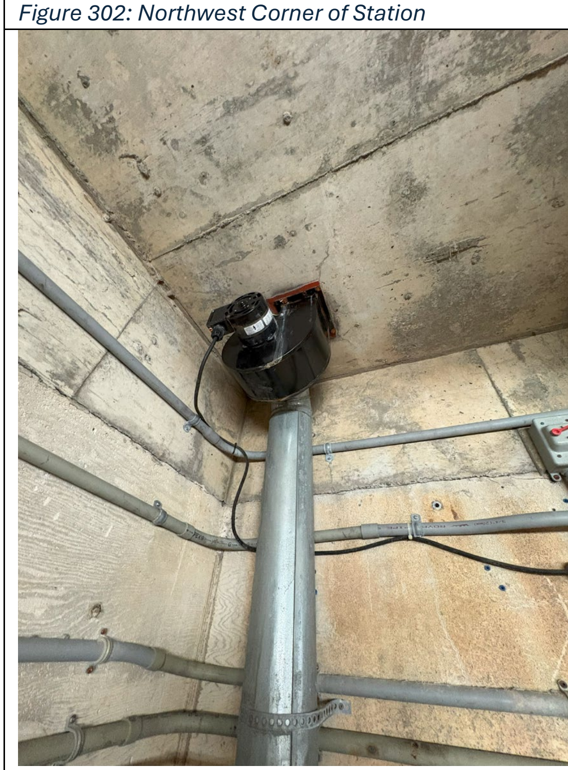


Figure 304: Ventilation

Figure 305: Dresser


Figure 306: Butterfly Valve and Check Valve Pump #1


Figure 307: North Wall

Figure 308: Pump #1

Figure 309: Label on Pump #1

Figure 310: Sump Pump

Figure 311: Ventilation

Figure 312: Suction Pressure Gauge

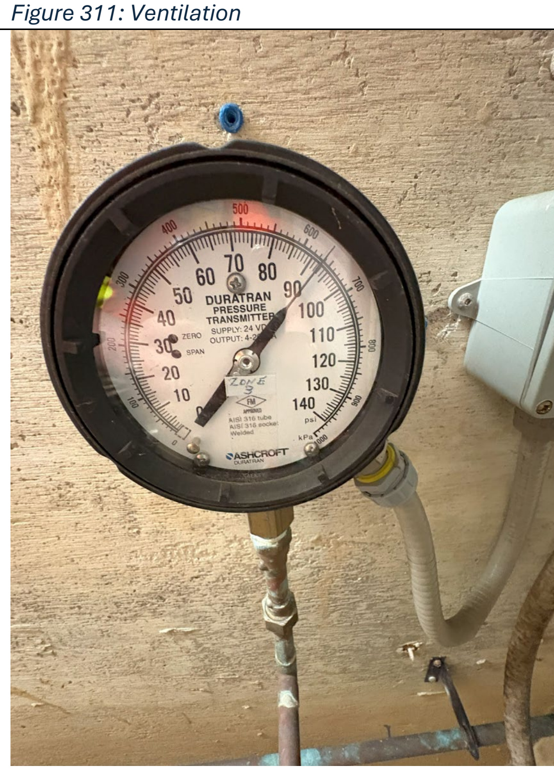


Figure 313: Discharge Pressure Gauge

Figure 314: Access Hatch and Fence


Figure 315: Access Hatch and Fence Facing West

peterborough

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

Asset Inventory List					
Station ID	**Equipment**	**Description**	**Manufacturer**	**Model Number**	**Serial Number**
Lansdowne Pumping Station	Pump 1	40 HP Super E Motor	Baldor Reliance	M00 103515899	X1111
	Pump 2	40 HP Super E Motor	Baldor Reliance	M00 103515899	-
	Pressure Gauge	-	Ashcroft	N/A	N/A
	Pressure Gauge	-	Ashcroft	N/A	N/A
	Butterfly Valve	8" Controlled with hydraulic cylinder	-	N/A	N/A
	Butterfly Valve	8" Controlled with hydraulic cylinder	-	N/A	N/A
	Gate Valve	-	-	N/A	N/A
	Check Valve	Surgebuster 6" 250 MAX PSI	Valmatic	7206	N/A
	Check Valve	Surgebuster 6" 250 MAX PSI	Valmatic	7206	N/A
	Pressure Reducing Valve	3" 250 PSI MAX	Singer	106-RPS	998-158-3

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION REPORT

Scollard Booster Pumping Station

1370 Scollard Dr, Peterborough ON

THE CITY OF PETERBOROUGH

April 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

STATION: Scollard Booster Pumping Station

ADDRESS: 1370 Scollard Dr

BUILT: 1996

SERVICE: Zone 1 to Zone 1B

LATITUDE: 44.3365775 degrees

LONGITUDE: 78.3051935 degrees

PUMP 1: Crown S6-75, 4.3 L/s @ 13.7 m head (Duty)

PUMP 2: Crown 6L-160, 9.5 L/s @ 13.7 m head (Peak)

CONTROLS: SCADA

ELEVATION: 210.5 m

OVERALL CONDITION: FAIR

BUILDING AND PROCESS STRUCTURAL – FAIR CONDITION

The Scollard Booster Pumping Station is one (1) of five (5) below grade pumping stations in the City of Peterborough. Since its construction in 1996, no changes have been made to the building or infrastructure other than routine maintenance. Pump #1 was replaced in 2009 and pump #2 was replaced in 2011. All equipment in the station is below grade except for the electrical and SCADA equipment and appears to be in fair condition. No concerns were identified on the surface surrounding the station or below grade in the station.

BUILDING ARCHITECTURAL – GOOD CONDITION

Above grade there is a metal hatch and cabinet. Beside the hatch, there are hedges following the property line that the station borders. There is no driveway as the station is located on a residential road adjacent to the roadway. Below grade, the internal pipes and pumps are in a concrete chamber, with no architectural features.

BUILDING SERVICES – FAIR CONDITION

No deficiencies in power supply, lighting, or heating were observed in the station. There is a ventilation system. The main access hatch is accessible using fall arrest equipment for entry into the station. The hatch is locked with a key. At the time of inspection, all services related to the building appeared to be in fair to good repair.

SITE WORKS – GOOD CONDITION

The Scollard Booster Pumping Station is located on Scollard Dr, just south of Frances Stewart Rd. There are no fences surrounding the station as it is in a residential area. The area around the station is sodded with regular lawn cutting being completed by City staff.

PROCESS PIPING – FAIR CONDITION

All pipes and bends are in fair condition. Where a pump or valve has been replaced, stainless steel spool pieces have been fabricated. The station is functioning satisfactorily, and it is not recommended that the pipes be replaced. No deficiencies were observed at the time of the inspection.

PROCESS MECHANICAL – FAIR CONDITION

There is no generator in the station, and all gate valves, butterfly valves, and check valves are in fair condition.

SCADA – GOOD CONDITION

The SCADA monitoring system includes the following:

- One (1) Access Hatch Alarm
- One (1) Inlet Pressure Monitor
- One (1) Outlet Pressure Monitor
- One (1) Flow Monitor
- One (1) Motor Control Centre
- One (1) Flood Water Alarm
- One (1) Heat/Fire Alarm
- One (1) Commercial Power Alarm

All SCADA components are in good condition and do not need to be replaced.

Figure 316: Electrical and SCADA Box Above Station

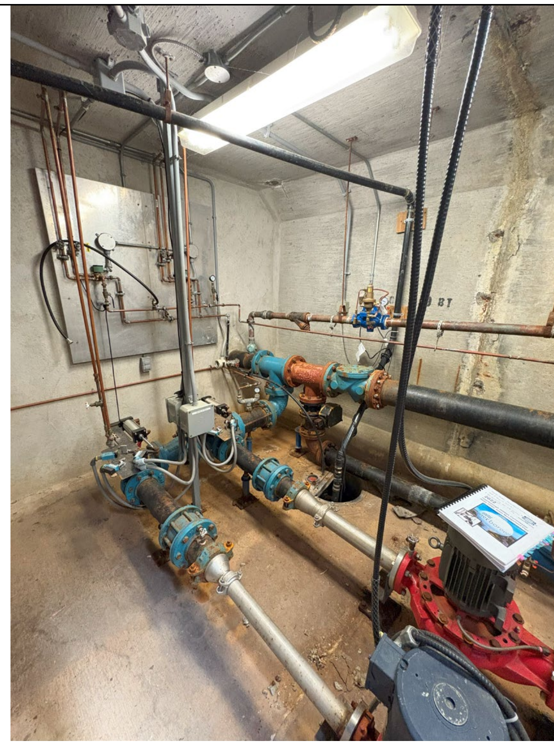


Figure 317: View of Station Facing Northeast

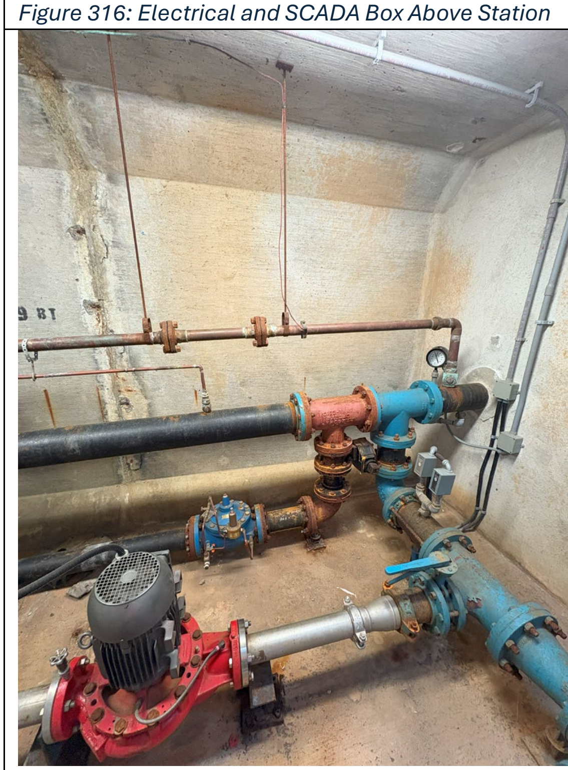


Figure 318: View of Station Facing Northwest

Figure 319: Inlet Pressure

Figure 320: Pressure Gauge


Figure 321: Pipe Along North Wall


Figure 322: 6" Pressure Reducing Valve

Figure 323: 2" Pressure Reducing Valve


Figure 324: Check Valve on By-Pass


Figure 325: Sump Pump

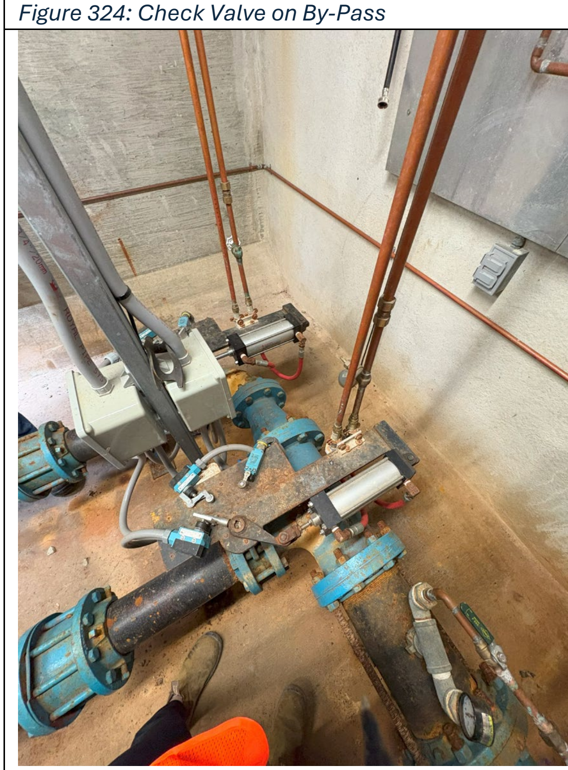


Figure 326: Butterfly Valve


Figure 327: Pump #1

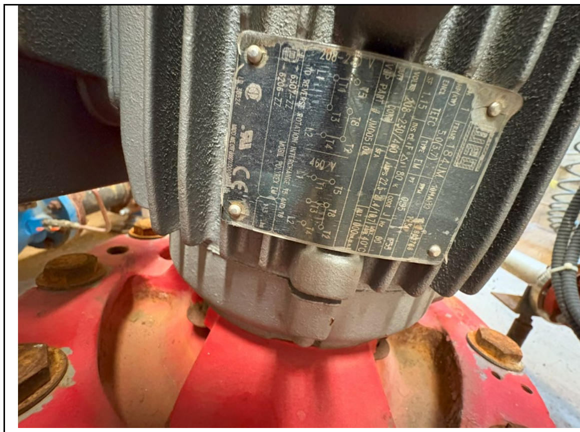


Figure 328: Label on Pump #1


Figure 329: Butterfly Valves on Pump 1 & 2


Figure 330: Pump #2

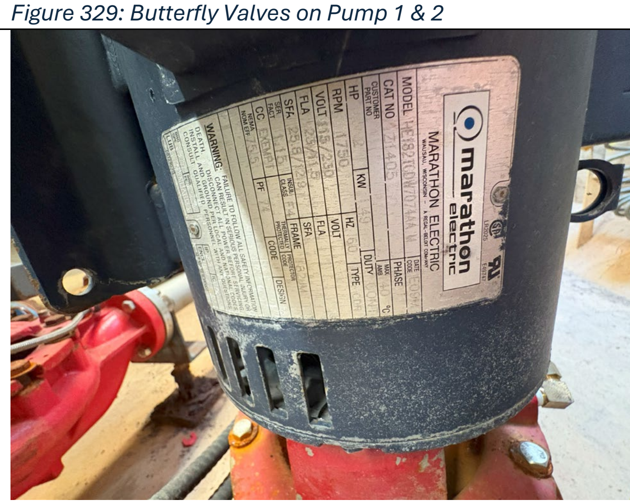


Figure 331: Label on Pump #2

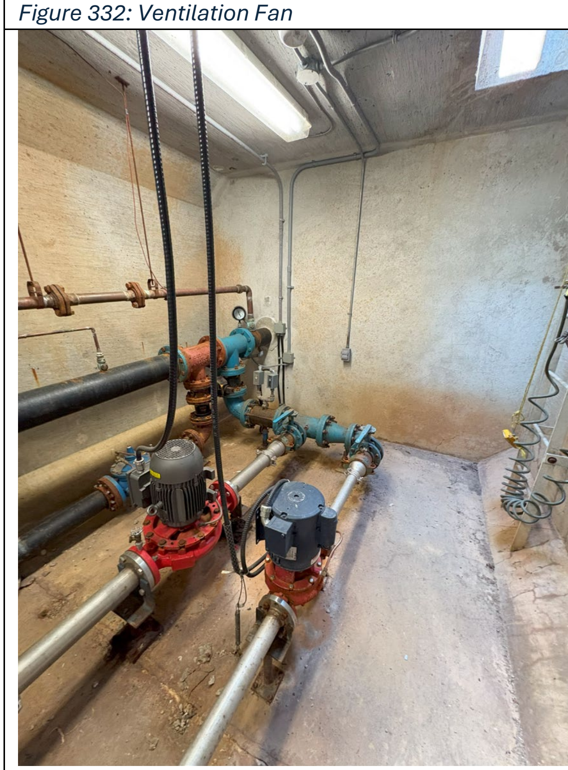
 *Figure 332: Ventilation Fan*	 *Figure 333: Reducer and Coupler Discharge from Pumps*
 *Figure 334: West Wall*	 *Figure 335: East Wall*

 *Figure 336: Automatic Control Valves*	 *Figure 337: Piping Along East Wall*
 *Figure 338: View of Northeast Corner*	 *Figure 339: Flow Meter*

	
Figure 340: Manhole with Flow Meter is Located	*Figure 341: Access Hatch and Electrical Panel*

Asset Inventory List					
Station ID	**Equipment**	**Description**	**Manufacturer**	**Model Number**	**Serial Number**
Scollard Pumping Station	Pump 1	Weg 5.0 HP 3.7 kW Pump	Weg	JM005104	1019602766
	Pump 2	Marathon Electric 2 HP 1.49 kW Pump	Marathon Electric	HEI82TCDW707 4AA.M	E09M
	Pressure Gauge	-	Ashcroft	N/A	N/A
	Pressure Gauge	-	BII	N/A	N/A
	Butterfly Valve	8" Controlled with hydraulic cylinder	N/A	N/A	N/A
	Butterfly Valve	8" Controlled with hydraulic cylinder	N/A	N/A	N/A
	Butterfly Valve	4" Wafer style	N/A	N/A	N/A
	Butterfly Valve	4" Wafer style	N/A	N/A	N/A
	Gate Valve	-	N/A	N/A	N/A
	Check Valve	6"	N/A	N/A	N/A
	Pressure Reducing Valve	4" 250 PSI MAX	Singer	106-RPS	400-96
	Pressure Reducing Valve	2" 400 PSI MAX	Singer	106-PR-C	03160041-1
	Flow Meter	-	Krohne	-	-

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION REPORT

Water St Booster Pumping Station

1180 Water St, Peterborough ON

THE CITY OF PETERBOROUGH

April 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

STATION: Water St Booster Pumping Station

ADDRESS: 1320 Water St

BUILT: 1909

SERVICE: Zone 1

LATITUDE: 44.345636 degrees

LONGITUDE: 78.3079214 degrees

PUMP 1: Dominion Engineering Type H Ser NO. 287 (#2710), 171 L/s @ 74.7 m head

PUMP 2: Dominion Engineering Type H Ser NO. 287 (#2710), 171 L/s @ 74.7 m head

PUMP 3: Cameron Centrifuge Ser NO. 4559K, 315.5 L/s @ 74.7 m head

PUMP 4: Dominion Engineering #3430, 197.2 L/s @ 74.7 m head

PUMP 5: De Laval P1210/10D, 210.7 L/s @ 74.7 m head

CONTROLS: SCADA

ELEVATION: 208 m

OVERALL CONDITION: POOR

BUILDING AND PROCESS STRUCTURAL – POOR CONDITION

The Water St. Pumphouse is the oldest pumping station in Peterborough. Since its construction, there have been several changes made to the pumps, valves, and generators. As changes have been made, the piping has been updated. All piping and valves are below grade. The generators and pumps are on the main floor with the waterwheels and turbines below grade. The exterior of the pumphouse underwent restoration in 2019 with concrete and brick/block repointing and painting. The overall condition of the pumphouse is poor to fair, with typical condition issues of a building its age.

BUILDING ARCHITECTURAL – FAIR CONDITION

The pumphouse was constructed as part of the dam on the Otonabee River. The restoration work completed in 2019 has improved the overall appearance. The waterproof membrane on the flat roof was replaced in 2016 and is in good condition. The building is a single story with a mezzanine in the east portion of the building that is exhibiting severe concrete deterioration. There are large windows to the north, west, and south. The pumphouse borders the Riverview Park and Zoo train ride, which travels across the dam on the north side of the station. On the west side of the building is a paved driveway that can accommodate two (2) vehicles. The lower level is damp. Lighting is adequate. Water damage from leaking pipes on the walls and floors is throughout.

BUILDING SERVICES – POOR CONDITION

Deficiencies in power supply, lighting, or heating are expected due to age. There is a pipe in the basement that is consistently leaking, which is staining the floor below it. The building is well ventilated with large doors at the west end and operable windows along the north and south walls. The pumps and generators are electric with no fossil fuel burning equipment on site. Lighting is provided by the south facing windows during the day and overhead lighting during the night. On the lower level, lighting is provided by overhead fluorescent lights. The main access door is locked with a smart key doorknob set. Earplugs are available upon entry. At the time of inspection, all services related to the building appeared to be in poor to fair repair.

SITE WORKS – GOOD CONDITION

The Water St. Pumphouse is located on Water St on the south side of the Riverview Park and Zoo. There is a fence surrounding the property as it is located on a dam. The asphalt driveway and parking lot are in good condition. The remainder of the site is sodded with regular lawn cutting being completed by the Zoo staff.

PROCESS PIPING – POOR CONDITION

Most of the piping in the lower level is the original ductile iron. Where valves have been removed or replaced, stainless steel and PVC pipe have been used. There is some discolouration and rust on the piping due to age and environmental factors. The facility is functioning satisfactorily, and it is not recommended that the pipes be replaced at this time. No major deficiencies were observed at the time of the inspection. The process piping is in poor to fair condition due to age.

PROCESS MECHANICAL – POOR CONDITION

The pumps, turbines, waterwheels, gear increasers, and gear decreasers are all in working condition, however they are at the end of their serviceable design life. Pump one (1) and two (2) were installed in 1945. Pump four was installed in 1935. The age of pumps three (3) and five (5) are unknown. The generators are in fair condition. The gate valves, butterfly valves, and check valves have some discolouration and surface rust due to age and environmental factors. The process mechanical equipment is in poor to fair condition.

SCADA EQUIPMENT – GOOD CONDITION

The SCADA monitoring system includes the following:

One (1) door alarm

One (1) flow monitor

One (1) pressure monitor

One (1) Heat/Fire Alarm

One (1) Pipe Gallery Flood Alarm

One (1) Commercial Power Alarm

One (1) River Level Loss of Echo Alarm

One (1) PH Inside Racks Loss of Echo Alarm

One (1) Tail Water Loss of Echo Alarm

One (1) Low Building Temperature Alarm

One (1) Raw Water Chamber Flood Alarm

All SCADA components are in good condition and do not need to be replaced.

Figure 342: Equipment Being Removed

Figure 343: North Wall Water Damage

Figure 344: Pump #1 Suction Gate Valve

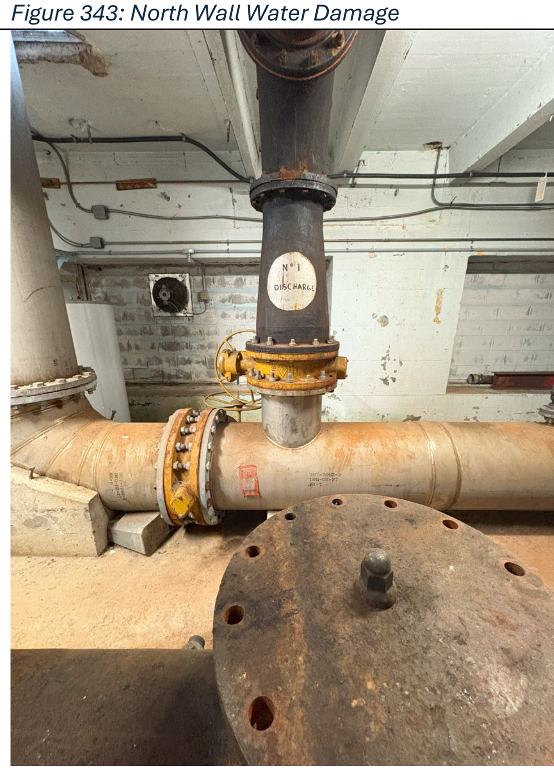


Figure 345: Pump #1 Discharge Butterfly Valve

 Figure 346: Pump #1 Butterfly Valve	 Figure 347: Pump #1 Discharge Check Valve
 Figure 348: 20" Gate Valve	 Figure 349: Pump #2 Suction Gate Valve

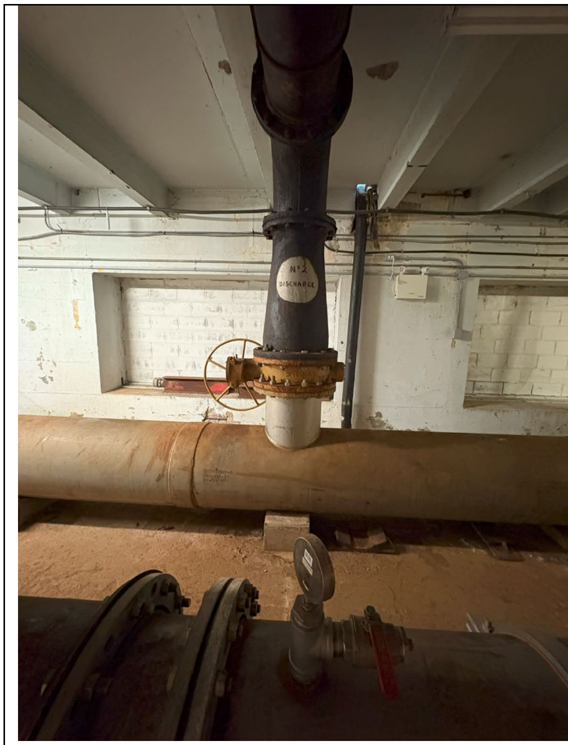


Figure 350: Pump #2 Discharge Butterfly Valve

Figure 351: Suction Pressure Gauge

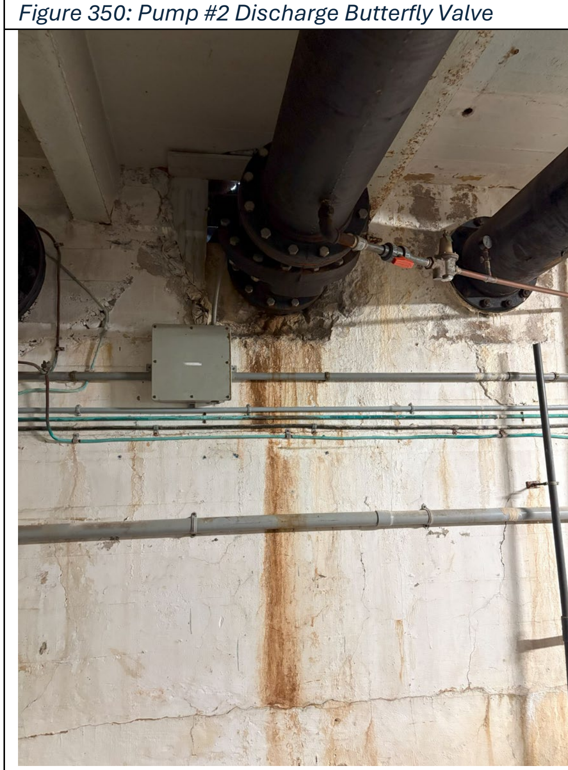


Figure 352: Pump #2 Discharge Check Valve

Figure 353: Pump#3 Suction Gate Valve (labelled incorrectly)

Figure 354: 20" Butterfly Valve

Figure 355: North Wall Historical Emergency Inlet Capped

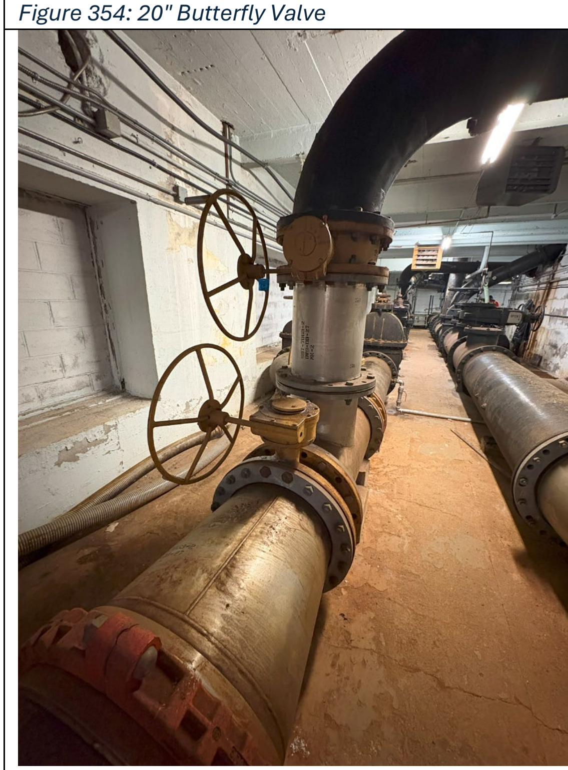


Figure 356: Butterfly Valves

Figure 357: Label on Butterfly Valve

Figure 358: Butterfly Valve

Figure 359: View of Station's Basement Facing West

Figure 360: View of Station's Basement Facing East

Figure 361: Zone 1 Discharge Gate Valve

Figure 362: 20" Gate Valve (D6)

Figure 363: Zone 1 Discharge

Figure 364: Gate Valve (D7)

Figure 365: Gate Valve (D8)

Figure 366: Pump #4 Discharge Gate Valve (D8)


Figure 367: Pump #4 Butterfly Valve


Figure 368: Zone 1 20" Discharge Gate Valve

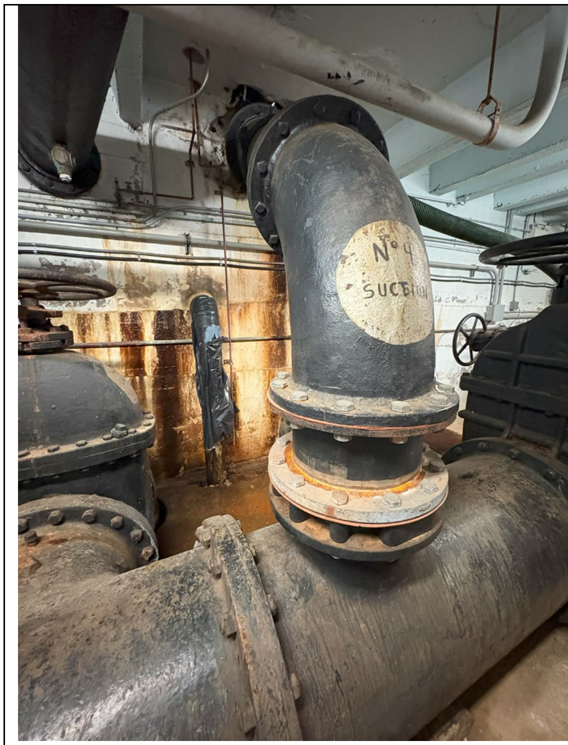


Figure 369: Pump #4 Suction

Figure 370: Pump #5 16" Discharge Gate Valve (D10)

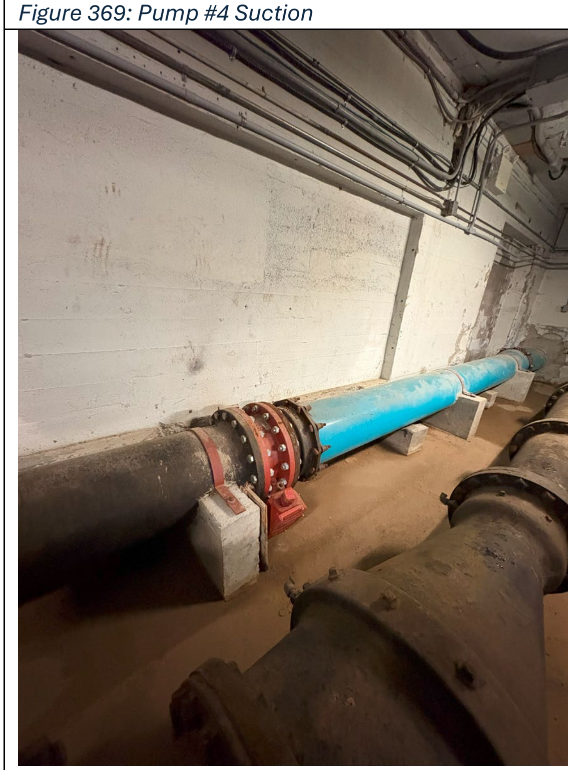


Figure 371: Zone 1 Discharge

Figure 372: Zone 1 Discharge

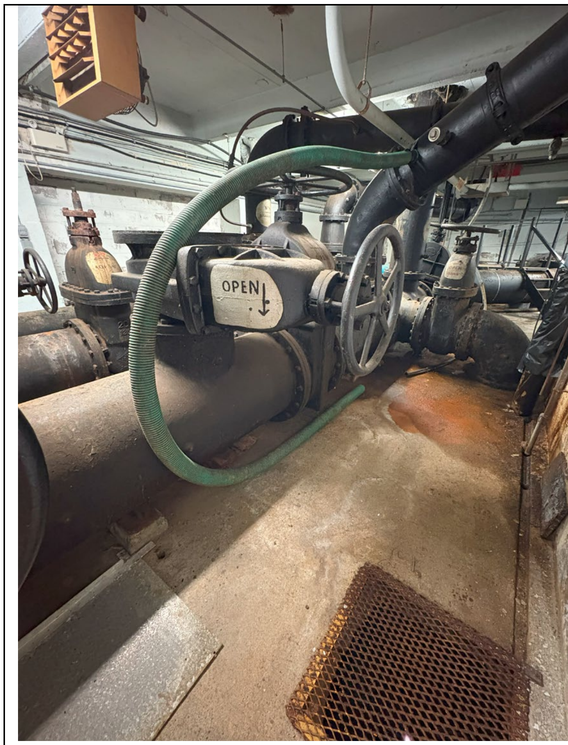
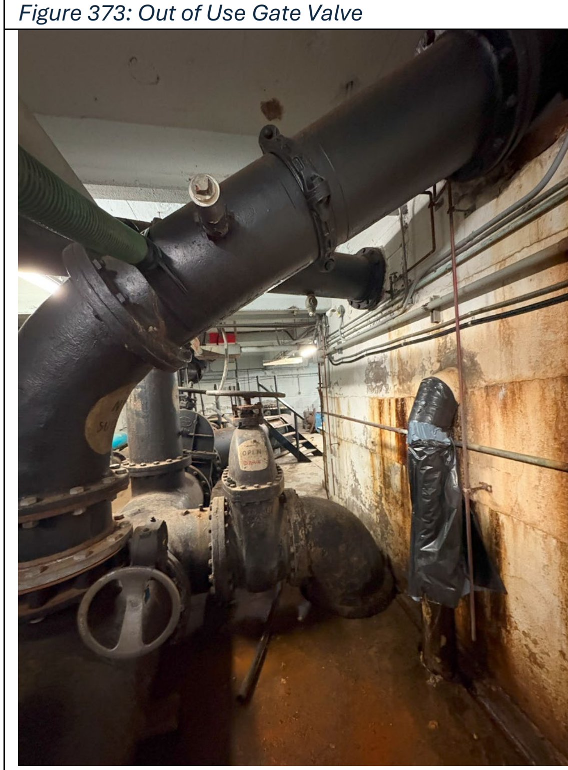
 Figure 373: Out of Use Gate Valve	 Figure 374: Pump 4 Suction Butterfly Valve
 Figure 375: Pump #4 Suction Pipe	 Figure 376: Darin 20" Gate Valve


Figure 377: 24" Butterfly Valve

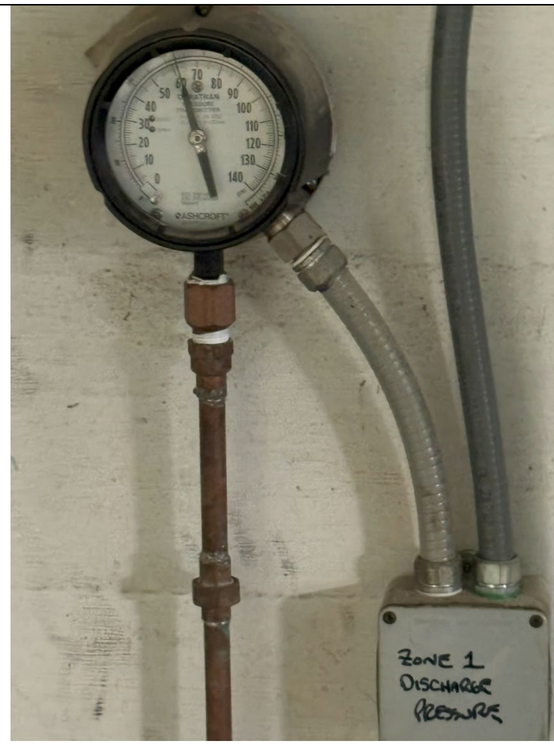


Figure 378: Zone 1 Discharge Pressure

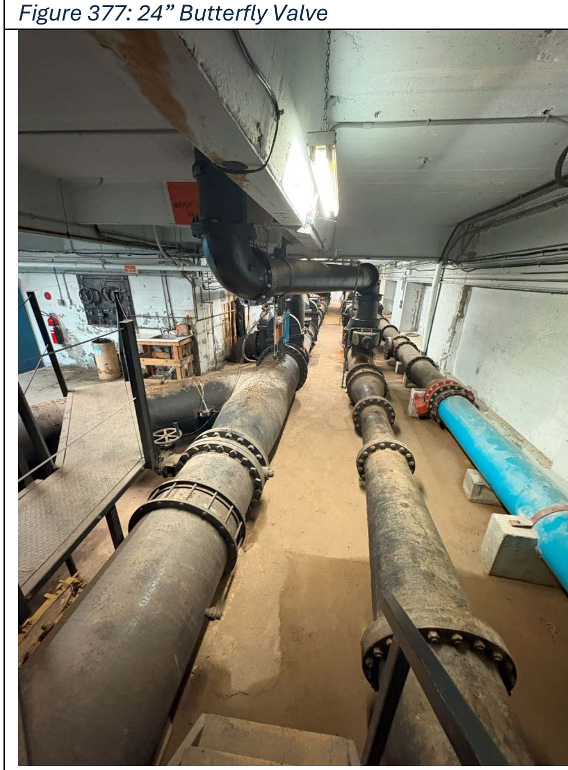


Figure 379: View of Basement Looking East


Figure 380: 30" Butterfly Valve

Figure 381: Suction from Water Treatment Plant

Figure 382: View of Basement Facing Southeast

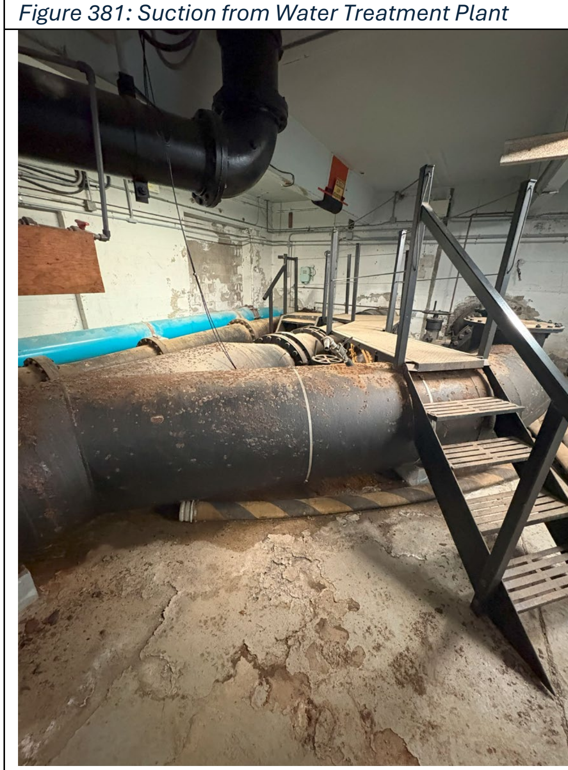


Figure 383: View of Basement Facing Southwest

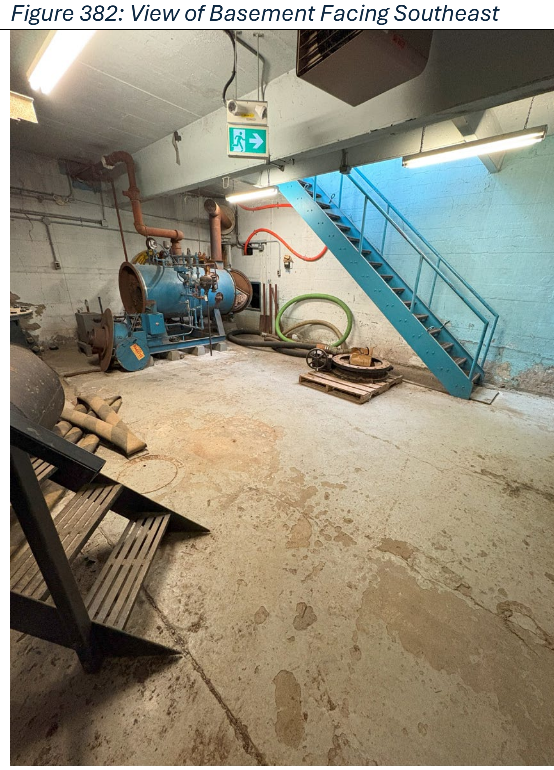


Figure 384: View of Basement Facing Northwest

Figure 385: Pump #5 Suction Pipe

Figure 386: Pump #5 Discharge Piped

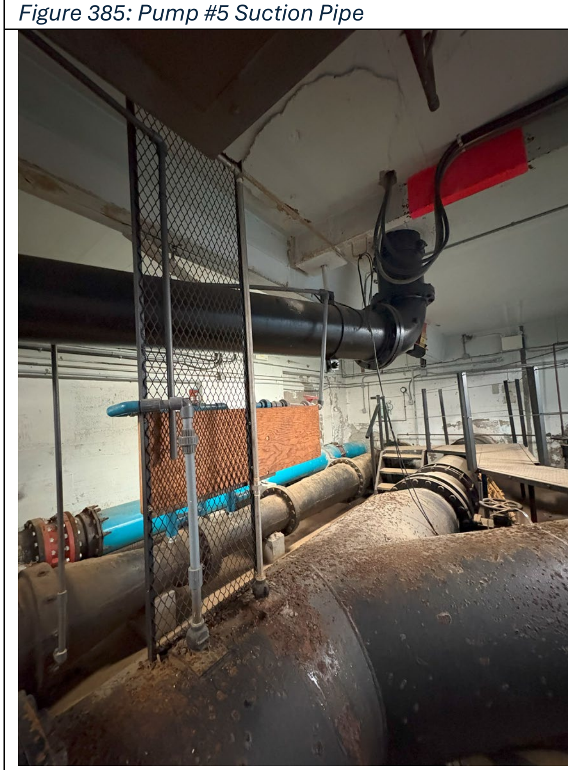


Figure 387: View of Basement Southwest Corner

Figure 388: Pump Controls

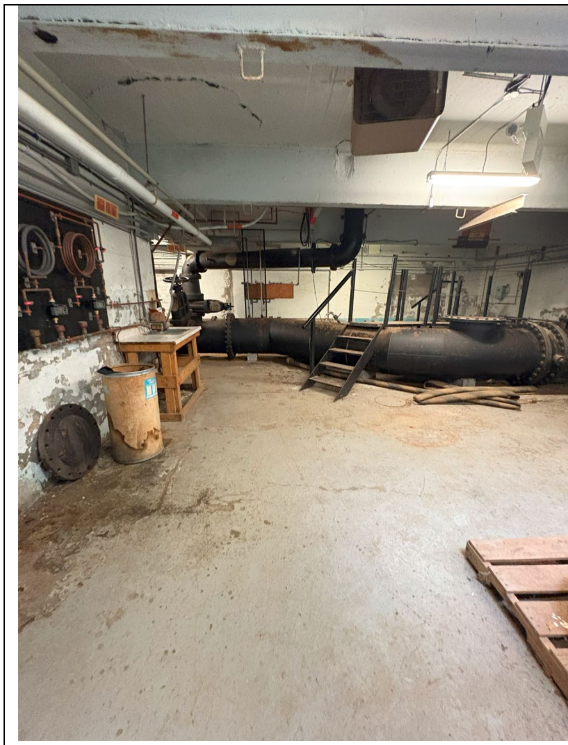


Figure 389: View of Basement Facing South

Figure 390: Pump #5 and Motor

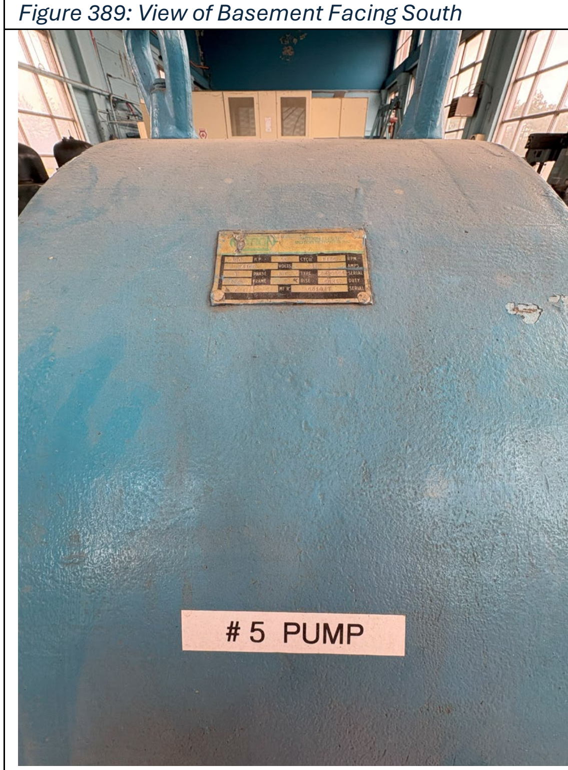


Figure 391: Pump #5

Figure 392: Butterfly Valve Upgraded Controls


Figure 393: 10" Butterfly Valve on Pump #5


Figure 394: Pump #5 10" Check Valve

Figure 395: Pump #5 Label


Figure 396: Pump #5 12" Gate Valve

 *Figure 397: Pump #4 Controls*	 *Figure 398: Pump #4 & Generator (can be setup as a motor)*
 *Figure 399: Pump #4*	 *Figure 400: Pressure Gauge on Pump #4*

Figure 401: Label on Pump #4

Figure 402:Pump #4 Check Valve

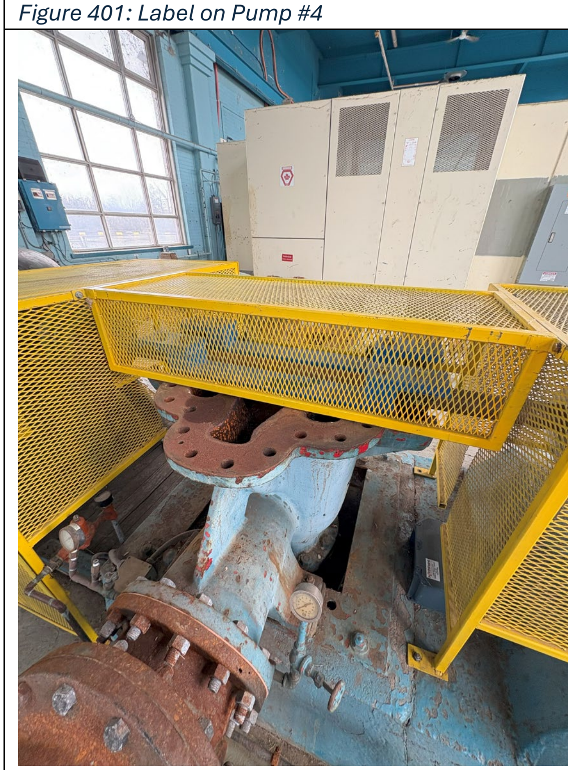


Figure 403: Generator /Motor Shaft Pump #4

Figure 404: Generator/Motor Pump #4

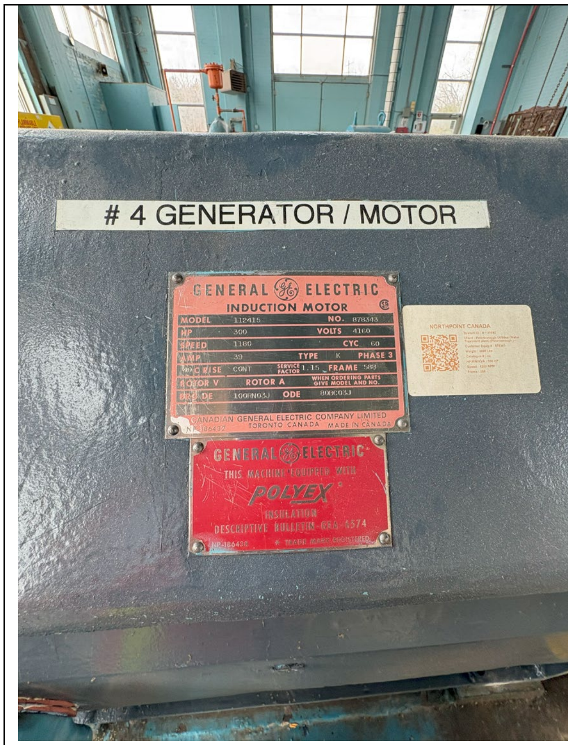


Figure 405: Label on Generator / Motor Pump #4

Figure 406: Generator & Gearbox #3

Figure 407: Generator #3 Gearbox, Recently Rebuilt

Figure 408: Generator Gearbox Label

Figure 409: Generator #3

Figure 410: Generator #3 Label

Figure 411: Pump #3 and Motor

Figure 412: 10" Check Valve on Pump #3

Figure 413: Pump #3

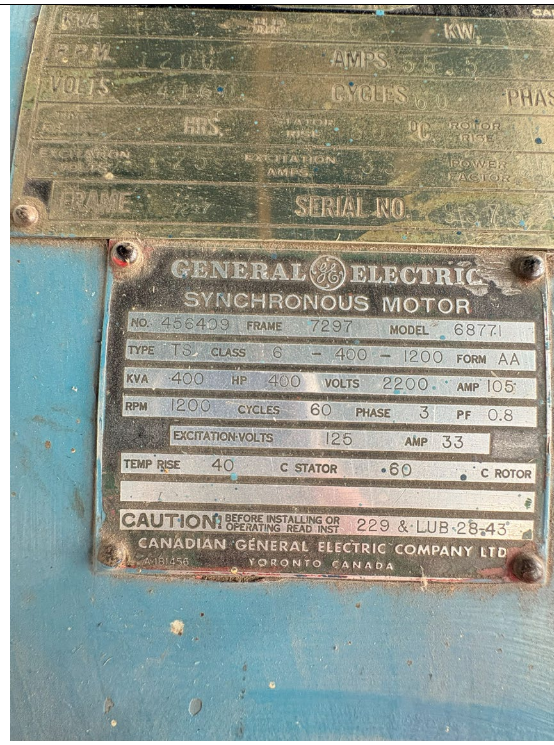


Figure 414: Label on Pump #3

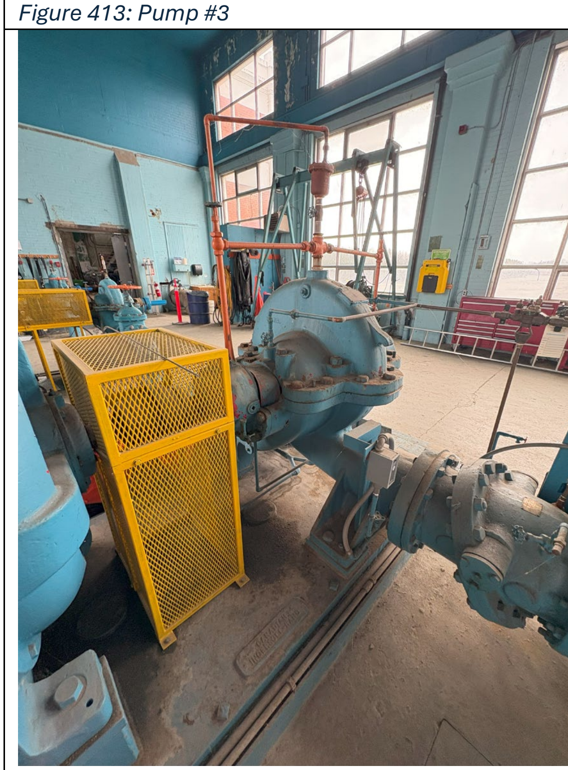


Figure 415: Pump #3


Figure 416: Pump #2 & Motor


Figure 417: Gear Increaser on Pump #2

Figure 418: Label on Gear Increaser


Figure 419: 8" Gate Valve on Pump #2

Figure 420: Label on Pump #2

Figure 421: Pump #1 and Motor

Figure 422: Gear Increaser on Pump #1

Figure 423: 8" Gate Valve on Pump #1

Figure 424: Pump #1

Figure 425: Label on Pump #1

Figure 426: Label on Pump #1 Gear Increaser

Figure 427: Generator #5

Figure 428: Label on Generator #5

Figure 429: Generator #1

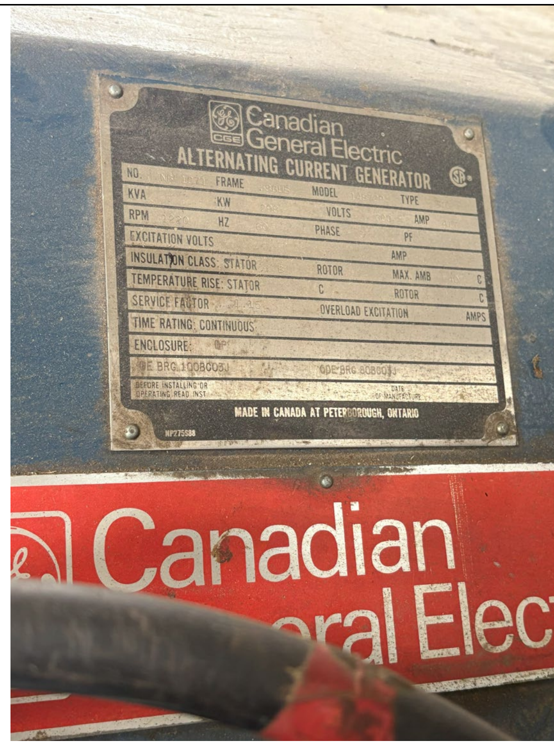


Figure 430: Label on Generator #1

Figure 431: Generator #2

Figure 432: Overhead Crane in Garage

**Missing inventory data to be collected during next scheduled inspection*

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION REPORT

High St Elevated Tank

1170 High St, Peterborough ON

THE CITY OF PETERBOROUGH

April 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

STATION: High St Elevated Tank

ADDRESS: 1170 High St

BUILT: 1957

SERVICE: Zone 1

LATITUDE: 44.29528 degrees

LONGITUDE: 78.3374 degrees

CAPACITY: 4.5 ML

CONTROLS: SCADA

HIGH WATER LEVEL: 252.8 m

LOW WATER LEVEL: 245.2 m

DIAMETER: 29.3 m

BASE ELEVATION: 224 m

OVERALL CONDITION: GOOD

BUILDING AND PROCESS STRUCTURAL – GOOD CONDITION

The High St. Elevated Tank is the oldest water tower in Peterborough. It was constructed in 1957. In 2021 a full rehabilitation was completed to extend the lifespan of the elevated tank. The rehabilitation consisted of interior and exterior coating replacement, interior steel repairs, as well as health and safety upgrades, process pipe replacement and miscellaneous upgrades. The distribution watermain feeding the tower is a 500mm cast iron pipe. Within the valve house, the main increases to 600mm. The structure appears to be in good condition and no concerns were identified.

BUILDING ARCHITECTURAL – GOOD CONDITION

The water tank is a radial cone bottom/multi leg water tower, constructed by Horton Steel Works. There are several similar water towers in Ontario and the American Midwest. The tank is supported by twelve columns. The City of Peterborough logo is painted in two (2) locations on the outside facing the southwest and northeast. Below the tower, there are three (3) buildings. The valve house contains electrical and SCADA equipment with access to the distribution main. This building has a brick exterior and a flat roof. The other two (2) buildings house the telecommunication equipment for the antennas attached to the tower and are concrete buildings. The valve house and one (1) of the concrete buildings are surrounded by a chain link fence complete with three (3) strand barbed wire. Immediately to the west is a Hydro One owned property with an electrical substation on it and enclosed in a chain link fence with three (3) strand barbed wire that is connected to a below grade grounding grid. A breaker station on the north side of the property is also owned by Hydro

One with the same enclosure arrangement. General Electric properties are immediately east and south. There is a tree line on all sides of the tower except for the west side. There is a gravel driveway leading to the fence that surrounds the tower.

BUILDING SERVICES – GOOD CONDITION

No deficiencies in power supply, heating, or drainage were observed inside the tower. There is sufficient lighting in the electrical room from overhead lights. The main door is locked with a smart key doorknob set. At the time of inspection, all services related to the building appeared to be in good repair.

SITE WORKS – GOOD CONDITION

The High St. water tower is located on High St, just south of Third Ave. There is a chain link fence surrounding the property which is locked with a chain and lock. The surrounding grounds are not sodded. Regular lawn cutting is completed by a third party semi-regularly. The ground below the tank is 19mm clear stone. The property is in good condition.

PROCESS PIPING – FAIR CONDITION

The tower is fed with a 500mm stainless steel pipe and is in good condition. A new 500mm gate valve was installed in 2021. There is a defect in the drainpipe, resulting in a consistent leak. The drainpipe requires repairs.

PROCESS MECHANICAL – VERY GOOD CONDITION

There are no pumps or motors in the station. The gate valve and process piping were replaced in 2021 and are in excellent condition.

SCADA GOOD CONDITION

The SCADA monitoring system includes the following:

One (1) Door Alarm

One (1) Aircraft Light Alarm

One (1) Water Elevation Monitor (Level Transducer)

One (1) Commercial Power Alarm

One (1) Cathodic Protection Alarm

One (1) Low Building Temperature Alarm

One (1) Heat/Fire Alarm

One (1) Ultrasonic Loss of Echo

One (1) Emergency Assist Alarm

One (1) Flood Alarm

All SCADA components are in good condition and do not need to be replaced.

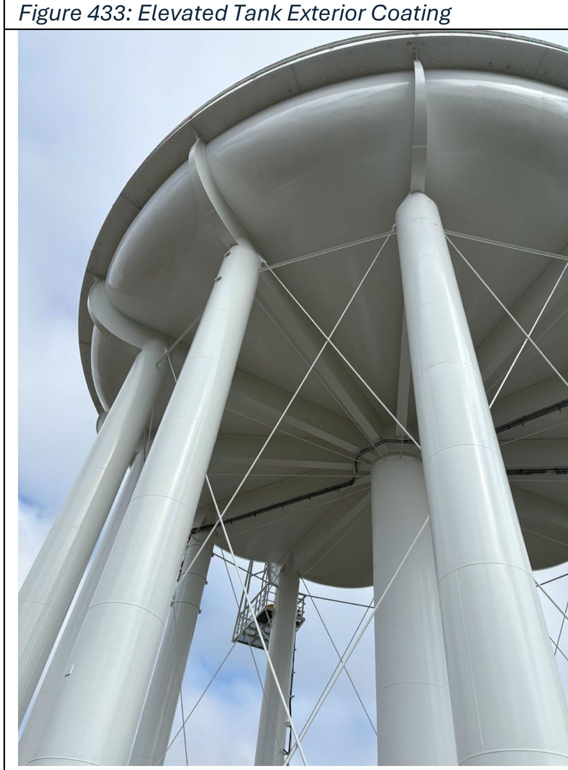
 *Figure 433: Elevated Tank Exterior Coating*	 *Figure 434: Elevated Tank Exterior Coating*
 *Figure 435: Elevated Tank Exterior Coating*	 *Figure 436: Elevated Tank Exterior Coating*

Figure 437: Electrical Building


Figure 438: Drainpipe


Figure 439: View of Bottom of Water Tower


Figure 440: Access Ladder to Process Piping

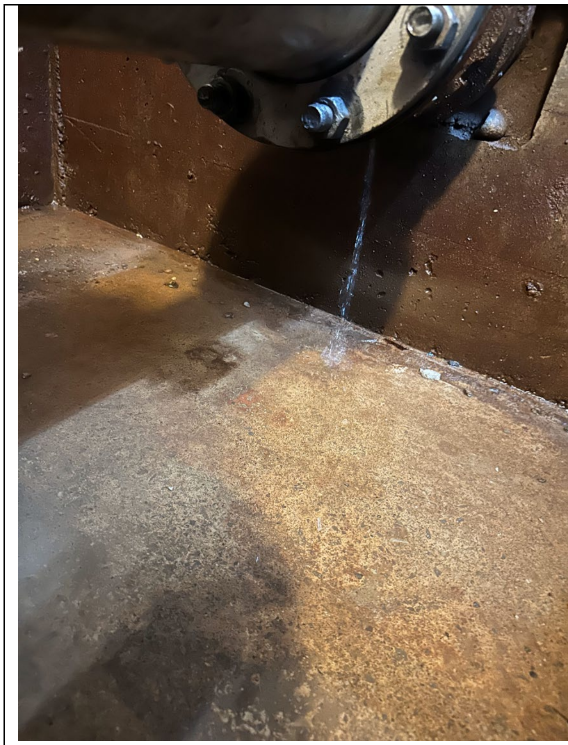
 *Figure 441: Defect in Drainpipe, Constantly Leaking*	 *Figure 442: Drainpipe*
 *Figure 443: Gate Valve on Drainpipe*	 *Figure 444: 500mm Stainless Steel Piping, Tower Intake*


Figure 445: 500mm Stainless Steel Pipe, Tower Intake


Figure 446: 500mm Gate Valve


Figure 447: Electrical Panel


Figure 448: Access Ladder


Figure 449: SCADA Cabinet

Figure 450: Electrical/SCADA Equipment

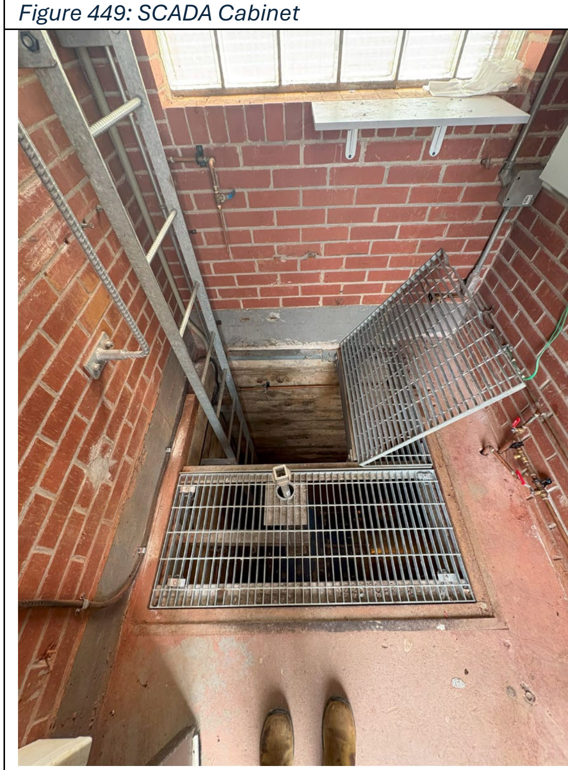


Figure 451: Access Ladder and Hatch


Figure 452: Electrical Building

Figure 453: Satellite

Figure 454: Ladder to Catwalk

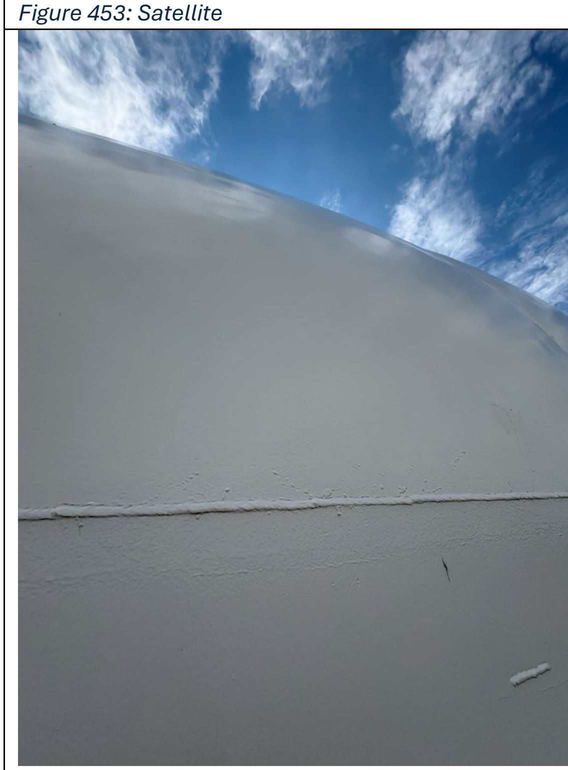


Figure 455: Exterior Coating

Figure 456: Satellite

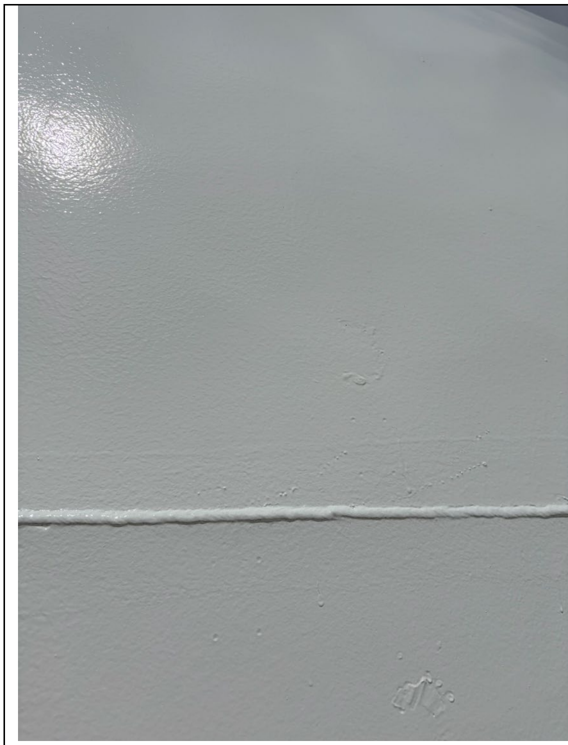


Figure 457: Exterior Coating

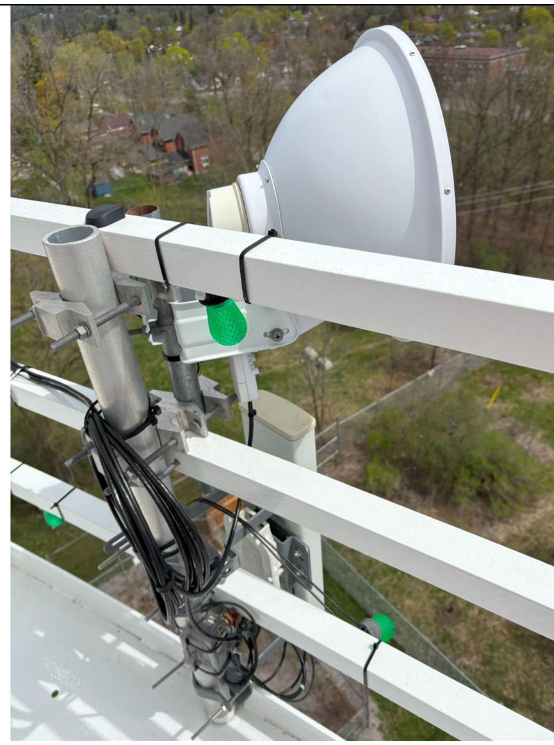


Figure 458: Satellite

Figure 459: Water Tower Hatch

Figure 460: Catwalk

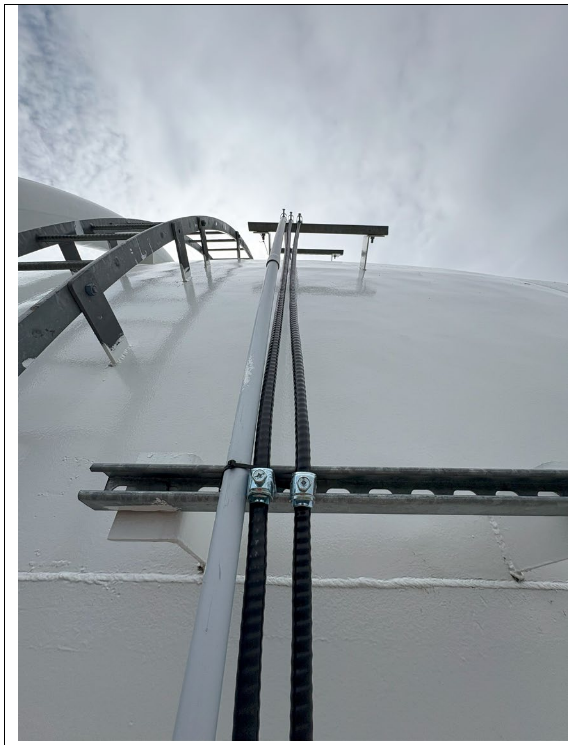


Figure 461: Ladder to Top of Water Tower


Figure 462: Ladder to Catwalk


Figure 463: Exterior Coating


Figure 464: Exterior Coating


Figure 465: Exterior Coating


Figure 466: Platform

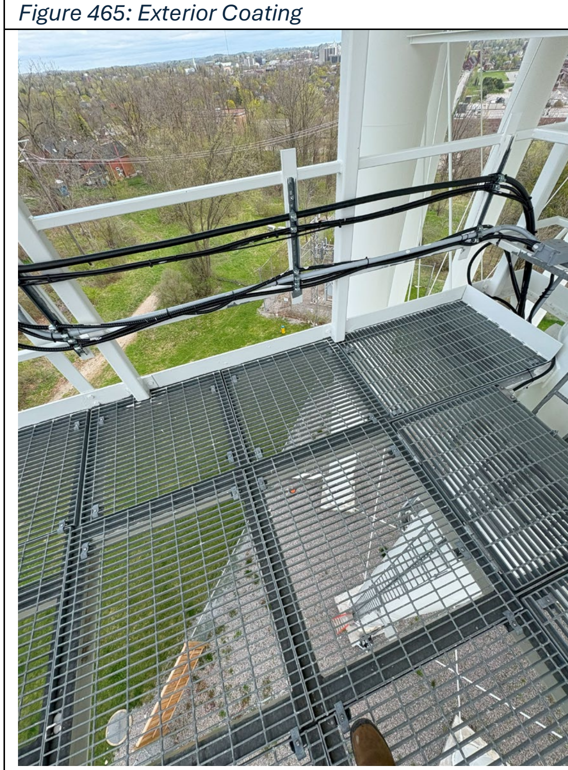


Figure 467: Platform


Figure 468: Ladder

Asset Inventory List			
RMOH ID	Equipment	Description	Manufacturer
ET1	Water Tank	4.5 ML	Horton 1957
	Gate Valve	20" Resilient Seat	American AVK
	Pressure Gauge	N/A	
	Pressure Gauge	N/A	

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION REPORT

Sherbrooke Elevated Tank

1560 Sherbrooke St,
Peterborough ON

THE CITY OF PETERBOROUGH

May 2025

Inspectors: Elysha Doyle and John Ellison

Asset Management Inspection Results – 2025

STATION: Sherbrooke Elevated Tank

ADDRESS: 1560 Sherbrooke St.

BUILT: 1984

SERVICE: Zone 3W

LATITUDE: 44.29039 degrees

LONGITUDE: 78.36943 degrees

CAPACITY: 2.72 ML

CONTROLS: SCADA

HIGH WATER LEVEL: 317 m

LOW WATER LEVEL: 304 m

DIAMETER: 17.9 m

BASE ELEVATION: 283 m

OVERALL CONDITION: GOOD

BUILDING AND PROCESS STRUCTURAL – GOOD CONDITION

The Sherbrooke Elevated Tank was constructed in 1984. It is spheroid style water tank. In 2019, a full rehabilitation project was completed including sanding and recoating of the interior and exterior with steel repairs, process piping and miscellaneous upgrades completed at the same time. All equipment is above grade at the base of the tower, and the main inlet/outlet pipe is a 450mm insulated stainless steel pipe replaced in 2019. The structure appears to be in good condition and no concerns were identified.

BUILDING ARCHITECTURAL – GOOD CONDITION

The tower is constructed of steel. At the top of the tower, the City of Peterborough logo is painted on the outside in two (2) locations. There is a tree line to the north of the tower which separates the neighbouring residential property from the tower. There is a gravel driveway leading to the base of the tower. On the northeast side of the tower, there is electrical equipment for Freedom Mobile’s Antenna’s (mounted on tower) including a transformer, which is enclosed in a chain link fence with barbed wire.

BUILDING SERVICES – GOOD CONDITION

No deficiencies in power supply, heating, or drainage were observed inside the tower. There is sufficient lighting in the valve room from overhead lights. The main door is secured with a smart key doorknob set. At the time of inspection, all services related to the building appeared to be in good repair.

SITE WORKS – GOOD CONDITION

The Sherbrooke St water tower is located on Sherbrooke St between Hywood Rd and Denure Dr. There are no fences surrounding the property for security purposes as it is in a residential area. The surrounding grounds were sodded with regular lawn cutting being completed by a third party. The site appeared to be in good condition. To the west of the site is a Hydro One owned building housing an electrical substation which shares a driveway to the site.

PROCESS PIPING – GOOD CONDITION

The tower is fed with a 450mm stainless steel pipe, which is insulated, and is in good condition. At the time of the inspection, the insulation appeared in good condition.

PROCESS MECHANICAL – GOOD CONDITION

Inside the valve room there is a sump pump, and it appears to be in good condition. The butterfly and gate valves are in good condition.

SCADA – GOOD CONDITION

The SCADA monitoring system includes the following:

One (1) Door Alarm

One (1) Aircraft Light Alarm

One (1) Elevation Monitor (Level Transducer)

One (1) Commercial Power Alarm

One (1) Cathodic Protection Alarm

One (1) Low Building Temperature Alarm

One (1) Flood Alarm

One (1) Heat/Fire Alarm

One (1) Ultrasonic Loss of Echo Alarm

One (1) Emergency Assist Alarm

All SCADA components are in good condition and do not need to be replaced.


Figure 469: Base of Tower


Figure 470: Exterior Coating on Tower

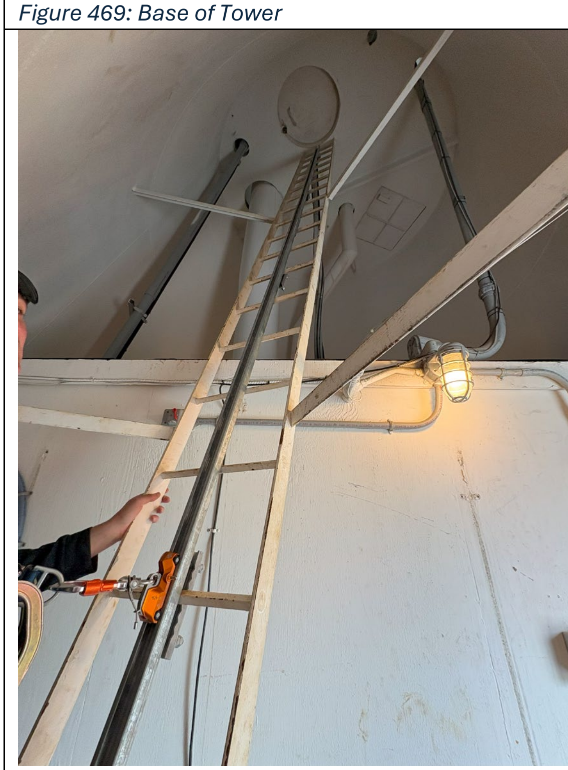


Figure 471: Inside Tower Looking Up at Ladder #1


Figure 472: Process Piping

Figure 473: Inside Tower Looking Up at Ladder #2

Figure 474: Water Tower Process Piping

Figure 475: Inside Tower Looking Down at Ladder #2

Figure 476: Looking out Access Hatch


Figure 477: Inside Tower Looking Up at Ladder #3


Figure 478: Ladder #3 Light


Figure 479: Process Piping Insulation


Figure 480: Exterior Coating

 Figure 481: Hatch at Top of Tower	 Figure 482: Satellite to Water Treatment Plant
 Figure 483: Exterior Lighting	 Figure 484: Ladder Access Hatch and Breather Vent

 Figure 485: Water Tank Hatch at Top of Tower	 Figure 486: Breather Vent at Top
 Figure 487: Exterior Coating	 Figure 488: Exterior Coating


Figure 489: Exterior Coating


Figure 490: Satellites


Figure 491: Exterior Coating


Figure 492: Exterior Coating

Figure 493: Breather Vent

Figure 494: Process Piping and Satellite Cables

Figure 495: Water Tower Door at Base

Figure 496: Drainpipe

Figure 497: Electrical Equipment

Figure 498: Chlorine Monitor

Figure 499: Process Piping

Figure 500: Pressure Gauge

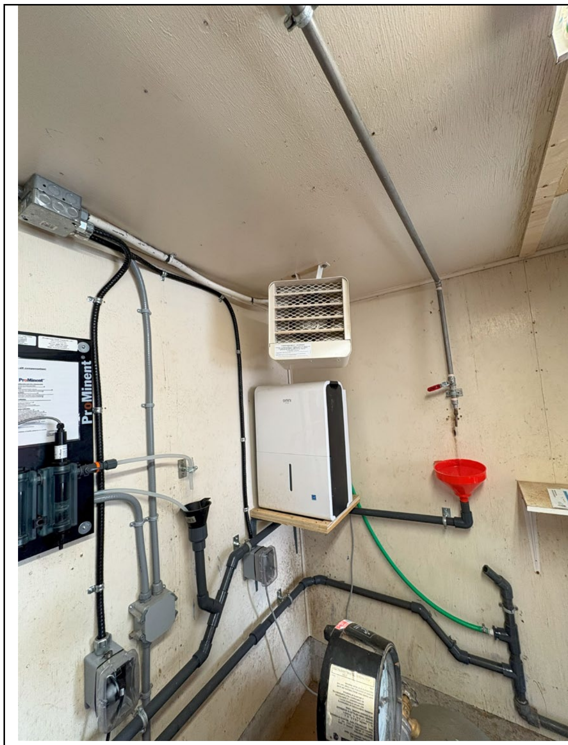


Figure 501: Electric Heater


Figure 502: SCADA Controls


Figure 503: Gate Valve

Figure 504: Siemens Flow Meter


Figure 505: Valve Room


Figure 506: Valve Room Chlorinator

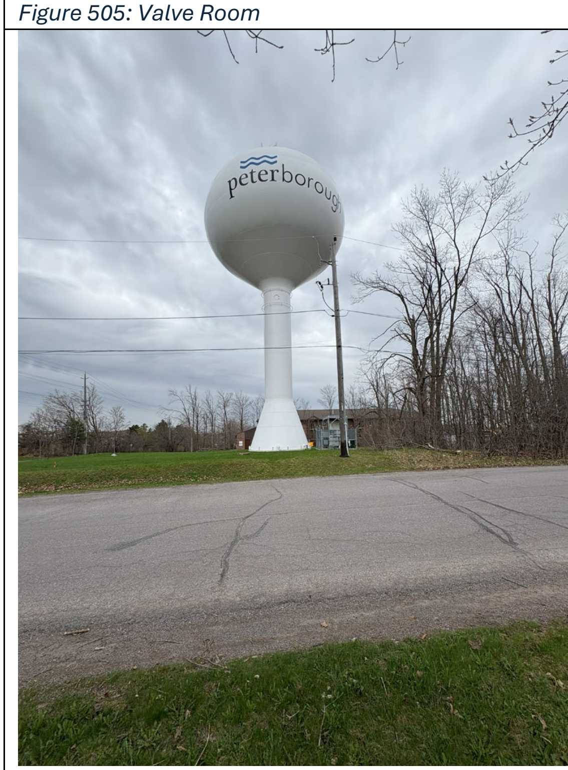


Figure 507: Water Tower Exterior

Asset Inventory List					
RMOH ID	**Equipment**	**Description**	**Manufacturer**	**Model Number**	**Serial Number**
ET3	Water Tank	2.72 ML			
	Gate Valve	4"	Mueller		
	Butterfly Valve	16" Hand Operated	Valmatic	2016/1D00AXF	M229270
	Pressure Gauge	N/A	Ashcroft		
	Pressure Gauge	N/A	Ashcroft		
	Space Heater	N/A			

**Missing inventory data will be collected at the next scheduled inspection*

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION REPORT

Milroy Elevated Tank

280 Milroy Dr, Peterborough ON

THE CITY OF PETERBOROUGH

April 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

STATION: Milroy Elevated Tank

ADDRESS: 280 Milroy Dr

BUILT: 1987

SERVICE: Zone 3N

LATITUDE: 44.33142 degrees

LONGITUDE: 78.34038 degrees

CAPACITY: 0.45 ML

CONTROLS: SCADA

HIGH WATER LEVEL: 317 m

LOW WATER LEVEL: 311.8 m

DIAMETER: 11.9 m

BASE ELEVATION: 275.3 m

OVERALL CONDITION: Poor

BUILDING AND PROCESS STRUCTURAL – POOR CONDITION

The Milroy Elevated Tank is a composite water tank and the newest water tower in Peterborough. Since its construction in 1987, no changes have been made to the tower or water tank other than routine maintenance and cleaning. All equipment is above grade at the base of the tower. The inlet/outlet pipe is a 300mm ductile iron watermain. The structure appears to be in fair to good condition and no concerns were identified, however it is known that the interior of the tank is exhibiting signs of corrosion. An internal inspection was performed by Loftin Enterprises in April 2024 to verify the tank condition. The findings from this inspection were complete removal and replacement of the coating / lining systems coupled with steel inspection and remediation is recommended.

BUILDING ARCHITECTURAL – FAIR CONDITION

The pedestal is constructed of cast in place concrete. Each ring is a meter tall and has a diameter of 6.1 meters. The exterior is an industrial finish. The tank (storage cell) is a steel structure. Upon inspection the tanks exterior coating was observed to be in poor condition with corrosion occurring. There is a tree line to the north and west of the tower, which does not interfere with the tower. There is a paved driveway leading to the base of the tower. On the north and east sides of the tower, there is electrical equipment, including transformers and communication equipment for the multiple cellular network antennas and satellite dishes (Rogers and Freedom Mobile). The communication antennas are attached to the top portion of the pedestal, below the tank.

BUILDING SERVICES – GOOD CONDITION

No deficiencies in power supply, heating, or drainage were observed inside the tower. There is sufficient lighting in the valve room from overhead lights. The main door is secured with a smart key doorknob set. At the time of inspection, all services related to the building appeared to be in good repair.

SITE WORKS – GOOD CONDITION

The Milroy Dr water tower is located on Milroy Dr between Chemong Rd and Rowberry Blvd. There is a chain link fence between the Tower property and the adjacent commercial property to the southeast. The public can access the site via a paved driveway to use the bulk water filling station. The property is landscaped and maintained by a third-party vendor.

PROCESS PIPING – GOOD CONDITION

The tower is fed with a 300mm inlet pipe and is in good condition. At the time of the inspection, the insulation around the pipe appeared adequate.

PROCESS MECHANICAL – FAIR CONDITION

Inside the valve room there is a sump pump, and it appears to be in good condition. The two (2) butterfly valves are wrapped in insulation. The valves are in fair condition with limited inspection due to insulation.

SCADA – GOOD CONDITION

The SCADA monitoring system includes the following:

One (1) Door Alarm

One (1) Water Elevation Monitor (Level Transducer)

One (1) Commercial Power Alarm

One (1) Cathodic Protection Alarm

One (1) Low Building Temperature Alarm

One (1) Flood Alarm

One (1) Heat/Fire Alarm

One (1) Ultrasonic Loss of Echo

One (1) Emergency Assist Alarm

One (1) Aircraft Light Alarm

One (1) Elevation Monitor

All SCADA components are in good condition and do not need to be replaced.

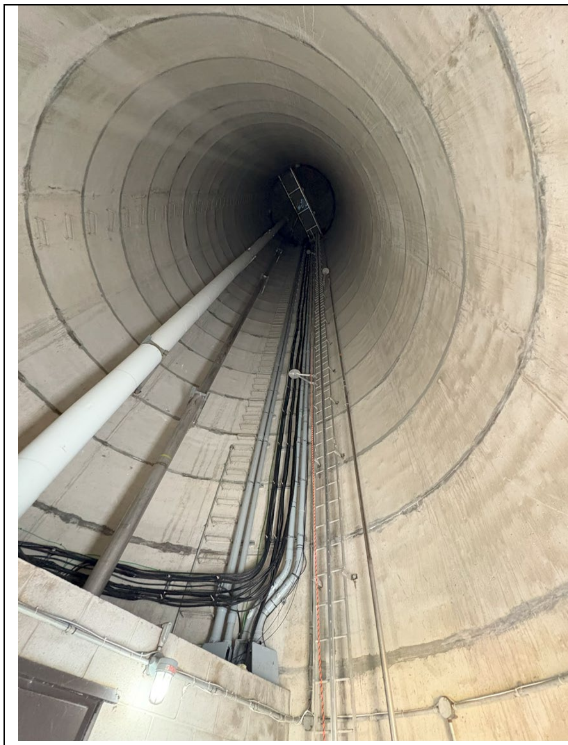


Figure 508: Looking up the Tower Inside, 12" Pipe Feed


Figure 509: Valve Room at Base of Tower

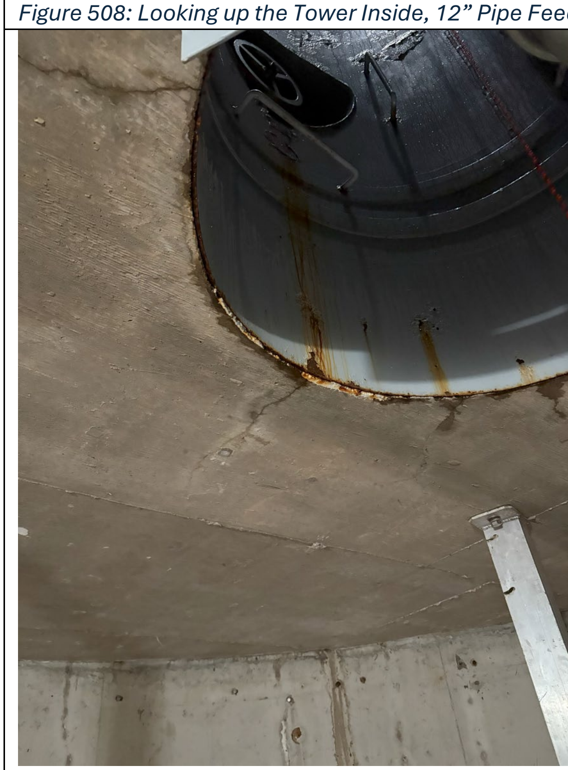


Figure 510: Water Tower Hatch


Figure 511: Water Tower Hatch and Ladder

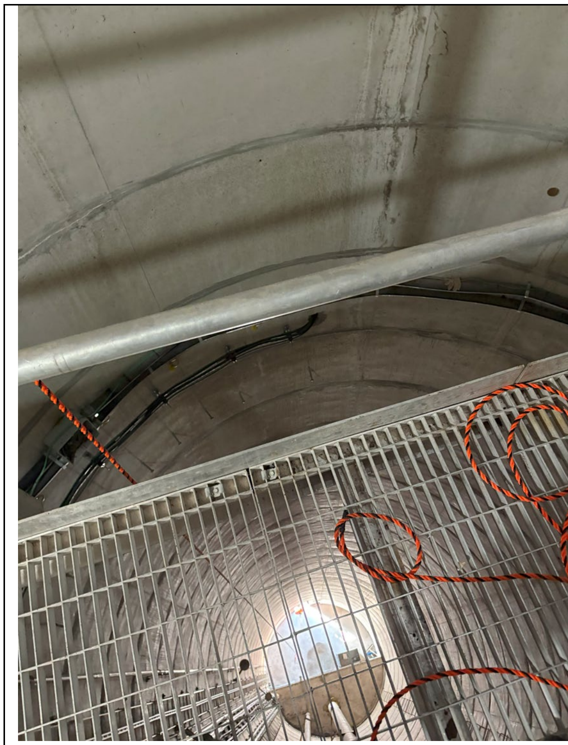


Figure 512: Platform Between Upper & Lower Ladder

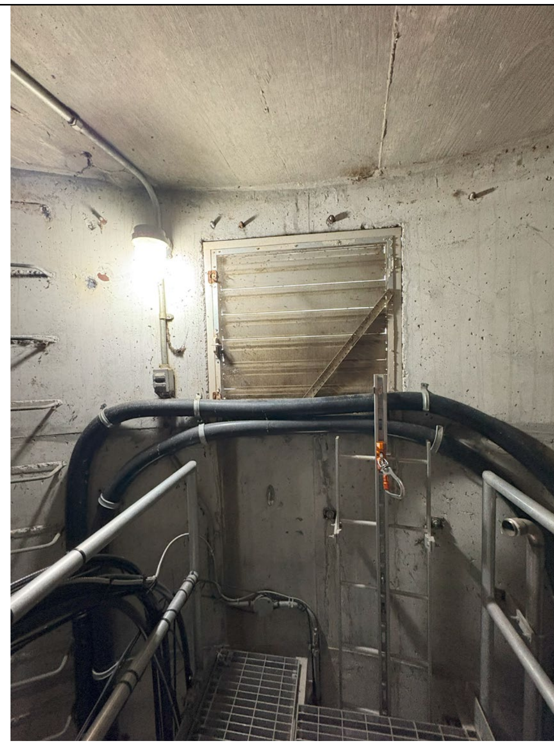


Figure 513: Water Tower Pedestal Interior

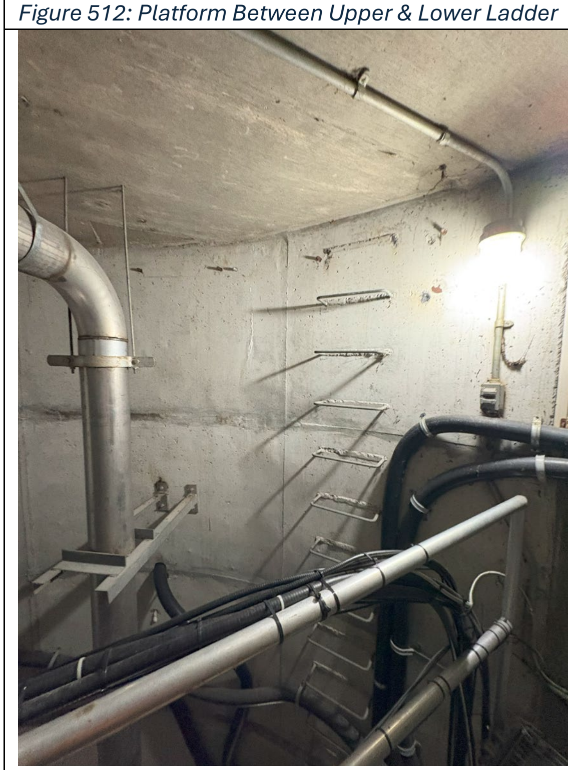


Figure 514: Water Tower Pedestal Interior

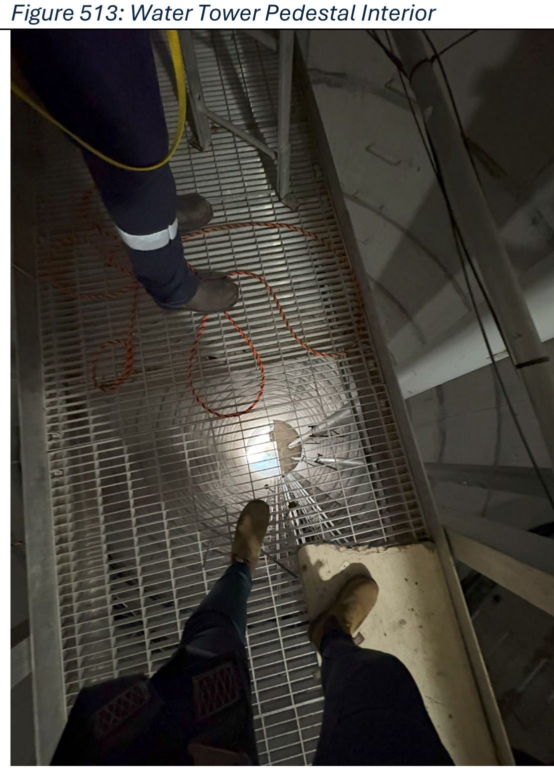


Figure 515: Platform Upper & Lower Ladder

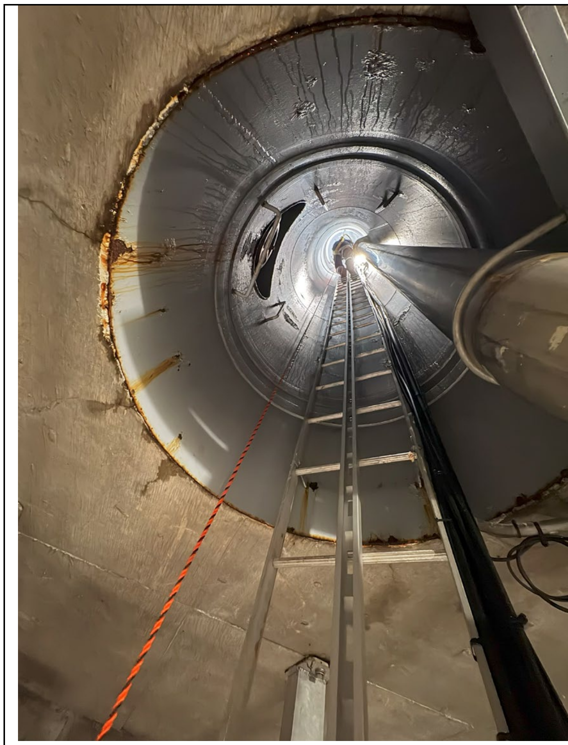
 Figure 516: Second Ladder with 12" Pipe Feed	 Figure 517: Exterior Coating
 Figure 518: Exterior Coating	 Figure 519: Ladder Hatch and Satalites

 *Figure 520: Exterior Lights*	 *Figure 521: Ladder Hatch and Satalites*
 *Figure 522: Exterior Coating*	 *Figure 523: Exterior Coating*

Figure 524: Exterior Coating

Figure 525: Exterior Coating

Figure 526: Breather Valve on Top of Water Tower

Figure 527: Breather Valve Inspection Sticker

Figure 528: Exterior Coating

Figure 529: Exterior Coating

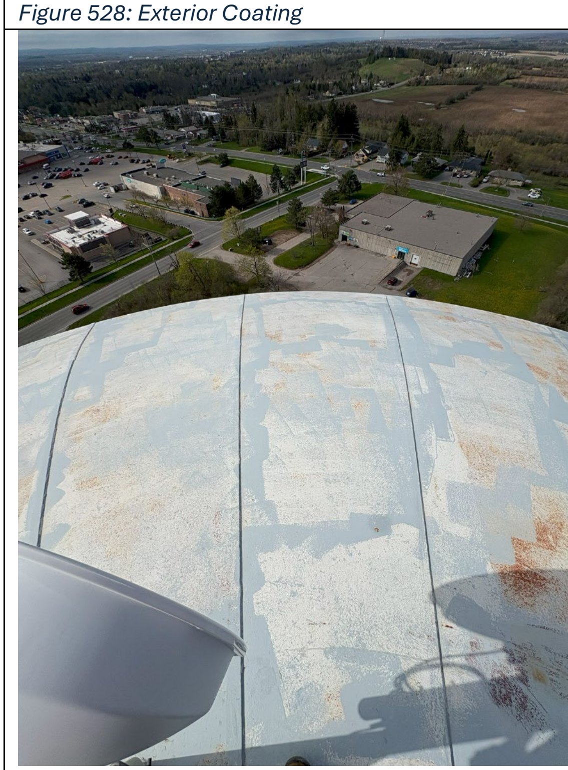


Figure 530: Exterior Coating

Figure 531: Control Panel in Valve Room

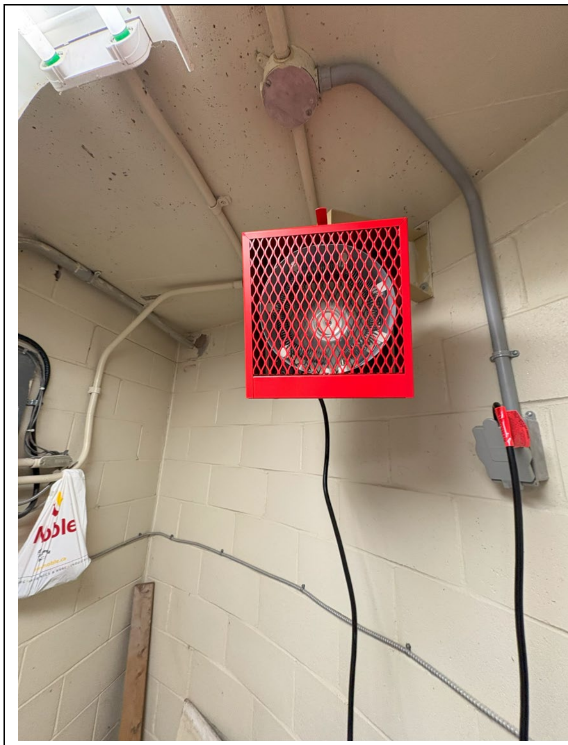


Figure 532: Heater in Valve Room

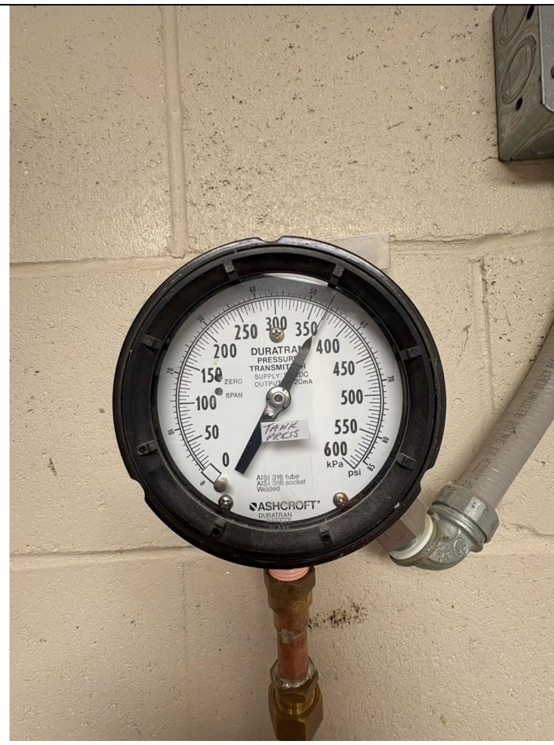


Figure 533: Pressure Gauge

Figure 534: Two Butterfly Valves on 12" Feed

Figure 535: Sump Pump

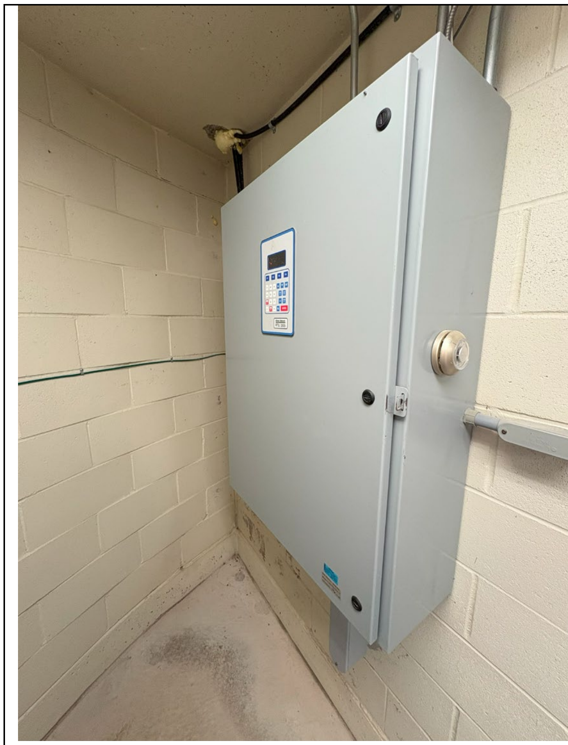


Figure 536: SCADA Control Box

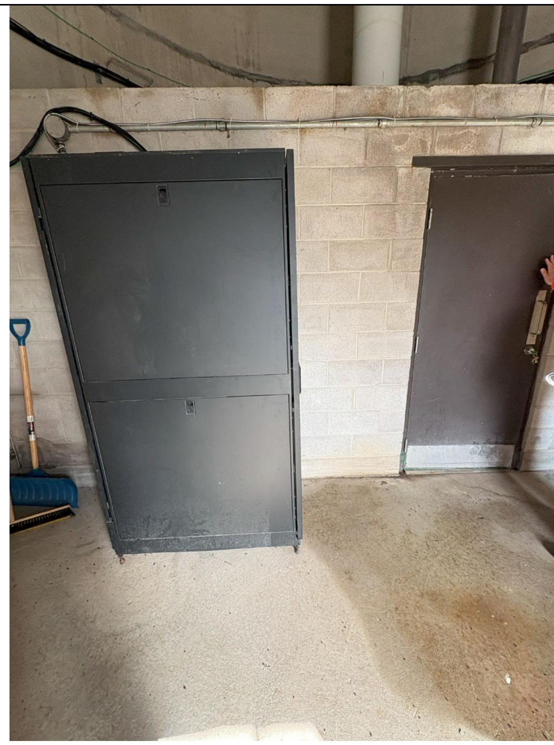


Figure 537: Valve Room


Figure 538: Water Tower Exterior

Asset Invintory List										
RMOH ID	Object Type	Equipment Category	Equipment	Description	Label	Function Location	Description	Manufacturer	Model Number	Serial Number
ET2			Water Tank	0.45 ML						
			Butterfly Valve	12"				Keystone		
			Butterfly Valve	6"				Keystone		
			Sump Pump							

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION REPORT

Clonsilla Reservoir

775 Sherbrooke St, Peterborough ON

THE CITY OF PETERBOROUGH

April 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

STATION: Clonsilla Reservoir

ADDRESS: 775 Sherbrooke St

BUILT: 1965

SERVICE: Zone 1

LATITUDE: 44.294830 degrees

LONGITUDE: 78.342650 degrees

CAPACITY: 18.18 ML

CONTROLS: SCADA

HIGH WATER LEVEL: 214.6 m

LOW WATER LEVEL: 208.8 m

DIMENSIONS: 56 x 56 x 5.9 m

ELEVATION: 208.8 m

PUMP 1+2: Allis-Chalmer SHN-V, 87.6 L/s @ 41.1 m head

PUMP 3: Allis-Chalmer SJ-V, 52.6 L/s @ 41.1 m head

PUMP 4: Allis-Chalmer SG-V, 219.1 L/s @ 41.1 m head

OVERALL CONDITION: POOR

BUILDING AND PROCESS STRUCTURAL – POOR CONDITION

The Clonsilla Reservoir is the oldest reservoir in Peterborough, constructed in 1965. Since its construction, no changes have been made to the building or infrastructure other than routine maintenance. All equipment in the station is below grade except for the diesel motor that powers pump #4, the chlorine booster station, a shower/eye wash station, and the electrical and SCADA equipment. The exterior of the building is showing signs of aging with the precast concrete panel roof deteriorating prematurely. The interior paint is peeling and needs removal and repaint. The building is in poor to fair condition.

BUILDING ARCHITECTURAL – POOR CONDITION

The bottom of the reservoir sits below grade and the top of the reservoir is landscaped and sodded. All equipment is accessible on the east side of the reservoir. The east face of the building is a decorative stone façade with signs of aging. All other aspects of the station are industrial with a utilitarian appearance. The reservoir has no trees around it, and it borders the Parkway trail and Kinsmen Arena. On the east side of the reservoir entrance, there is a gravel driveway that can accommodate three (3) vehicles. The station has an exhaust system for the diesel motor which is not blocked or covered by any obstacles. Some paint on the interior walls is peeling and revealing the concrete wall. Under the pumps, there are stains from leaking water while the pumps are running. The interior walls require general cleaning and fresh paint.

BUILDING SERVICES – POOR CONDITION

No deficiencies in power supply, lighting, or heating were expected or observed. Water from leaking pumps pools on the floor below. The building has one (1) louvered vent, above the front door. The exterior light is controlled by a switch and the main access door is secured with a smart key doorknob set. A fire extinguisher is accessible immediately inside of the access door. An emergency shower and eyewash station are available just inside the entrance of the building. At the time of inspection, all services related to the building appeared to be in fair to poor repair.

SITE WORKS – FAIR CONDITION

The Clonsilla Reservoir is located on Kinsmen Way on the north side of the parking lot for the Kinsmen Arena. The area around the reservoir and on top is sodded with regular lawn cutting being completed by a third-party vendor. Immediately east of the reservoir entrance is the Clonsilla Booster Pump Station.

PROCESS PIPING – POOR CONDITION

All the piping in the station is ductile iron and is in fair to poor condition. There is discolouration/corrosion and rust on some pipes and valves. The station is functioning but due to its age it is recommended that the pipes be replaced.

PROCESS MECHANICAL – FAIR CONDITION

The station had a diesel motor, which is being replaced with a pressure relief valve. All gate valves, butterfly valves, check valves, and air release valves are in poor to fair condition.

SCADA – GOOD CONDITION

The SCADA monitoring system includes the following:

One (1) Door Alarm

Two (2) Zone Pressure Monitors

One (1) Outlet Pressure Monitor

One (1) Flow Monitor

One (1) Building Flood Alarm

One (1) Diesel P4 Battery Low Voltage Alarm

One (1) Diesel P4 Panel Fault Alarm

One (1) Chlorine Residual Monitor

One (1) Commercial Power Alarm

One (1) Chlorine Gas Detector Alarm

One (1) Heat/Fire Alarm

One (1) Low Building Temperature Alarm

One (1) High Building Temperature Alarm

One (1) Fuel Tank Alarm

One (1) Eye Wash in Use Alarm

One (1) Metering Chamber Flood Alarm

One (1) Motor Control Centre

One (1) Flood Water Alarm

All SCADA components are in good condition and do not need to be replaced.


Figure 539: Deteriorated Concrete Roof

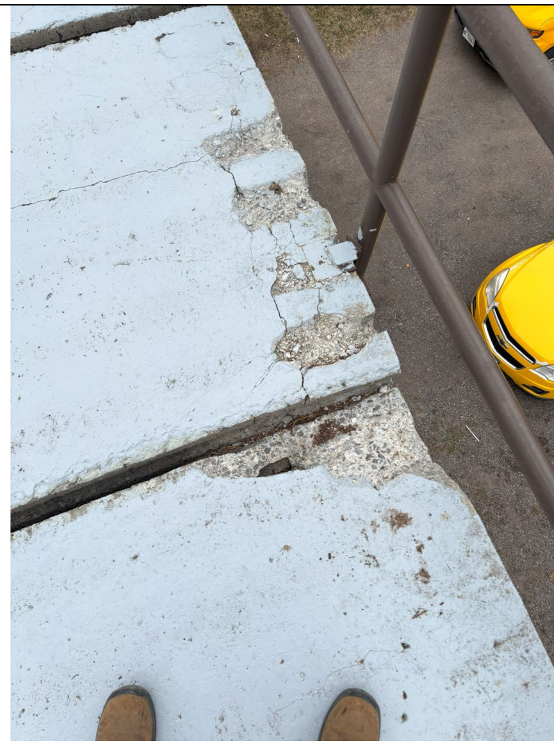


Figure 540: Deteriorated Concrete Roof

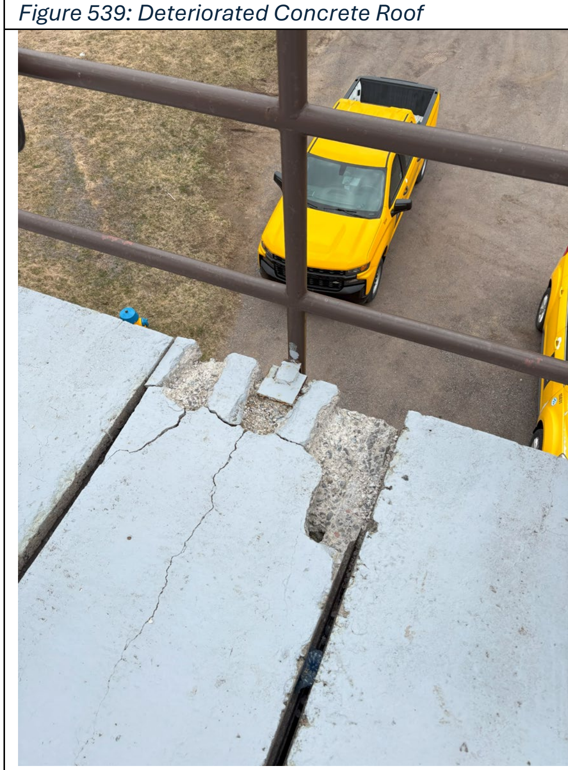


Figure 541: Deteriorated Concrete Roof


Figure 542: Deteriorated Concrete Roof

Figure 543: Electrical Cabinets

Figure 544: SCADA Control Box

Figure 545: Peeling Paint

Figure 546: View of Northwest Corner

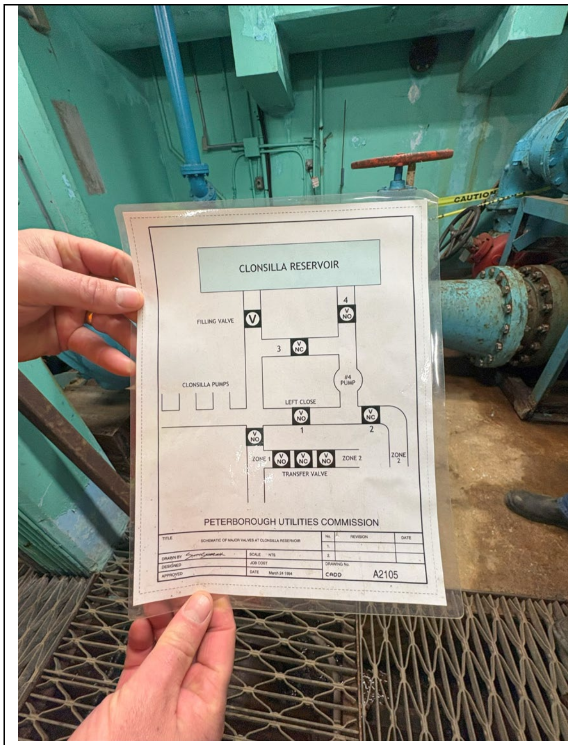


Figure 547: Station Schematic

Figure 548: Pump #1

Figure 549: Pump #1 and Butterfly Valve

Figure 550: Check Valve on Pump #1

Figure 551: Pump #1

Figure 552: Label on Pump #1

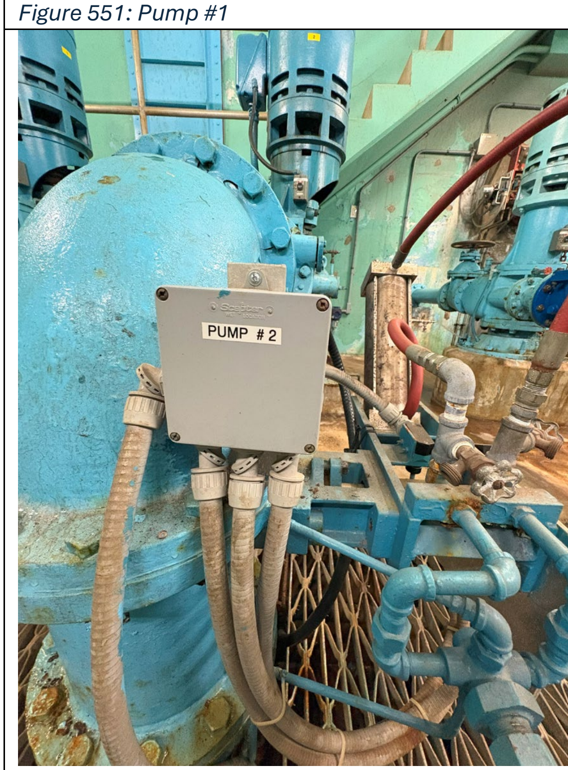


Figure 553: Pump #2

Figure 554: Hydraulic Butterfly Valve on Pump #2

Figure 555: Check Valve on Pump #2

Figure 556: Pump #2

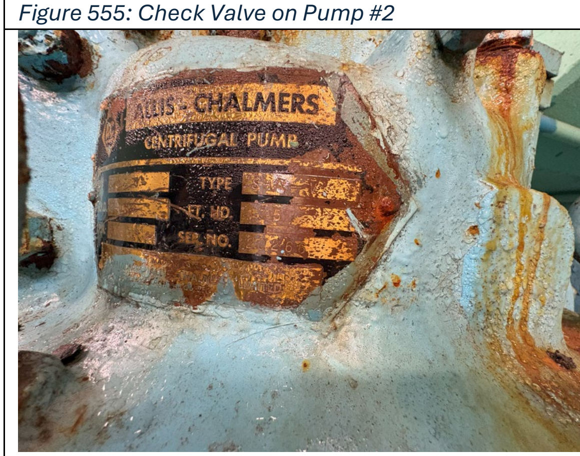


Figure 557: Label on Pump #2

Figure 558: Pump #3

Figure 559: Check Valve on Pump #3

Figure 560: Check Valve on Pump #4

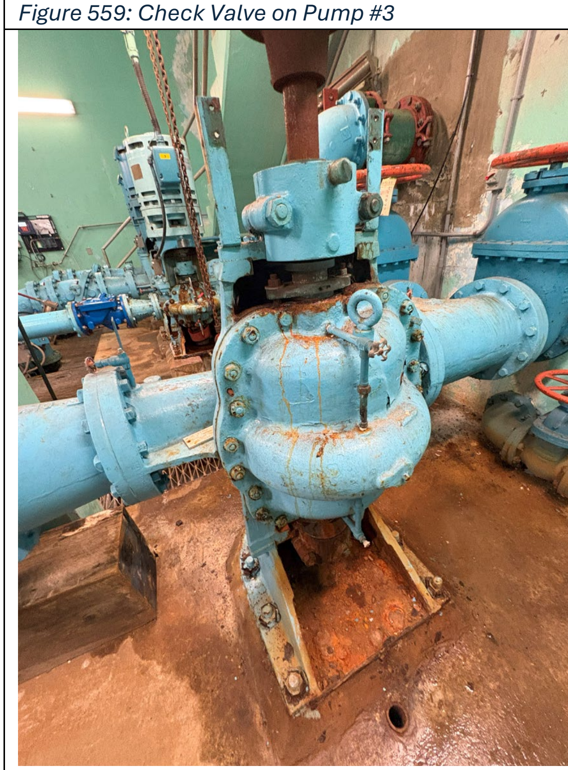


Figure 561: Pump #4, Planning to Be Removed

Figure 562: Label on Pump #4

Figure 563: Gate Valve Discharge of Pump #4

Figure 564: 4" Gate Valve

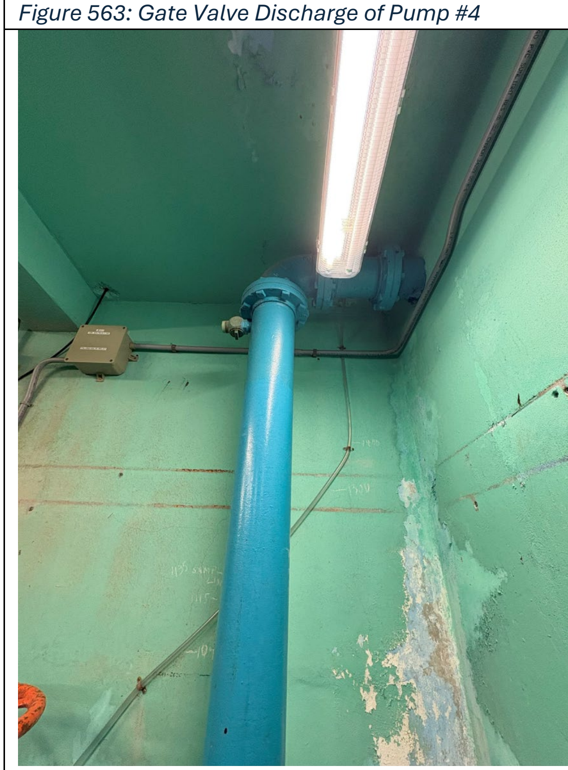


Figure 565: Gate Valve and Check Valve

Figure 566: Butterfly Valve

Figure 567: Zone 1 Feed Gate Valve

Figure 568: Zone 1 Pressure Gauge

Figure 569: Butterfly Valve and Feed to Booster Pumps

Figure 570: 8" Butterfly Valve Label

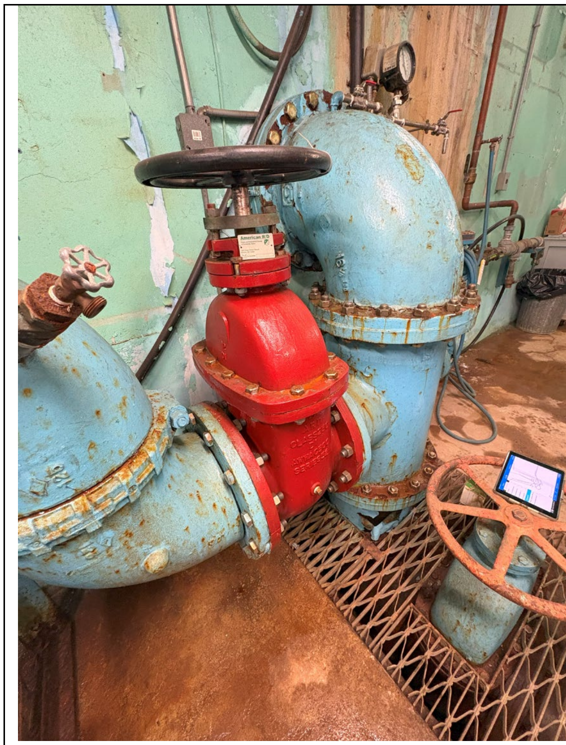


Figure 571: 12" Zone 1 Feed Gate Valve

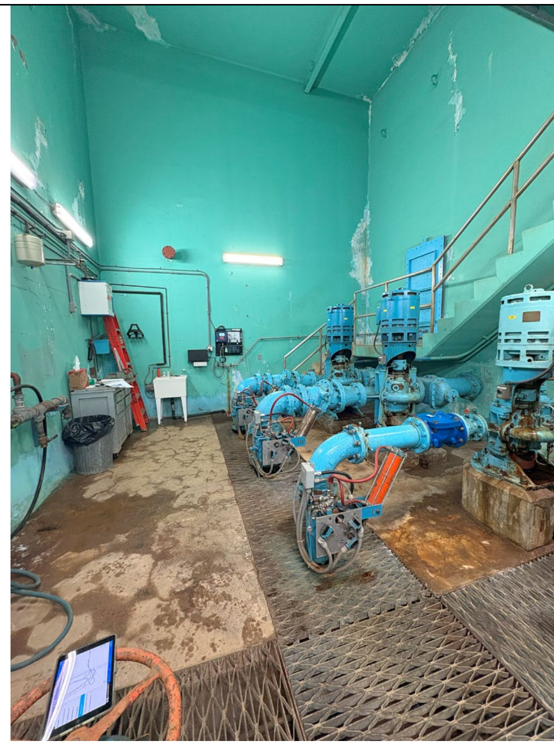


Figure 572: View of Station Looking South

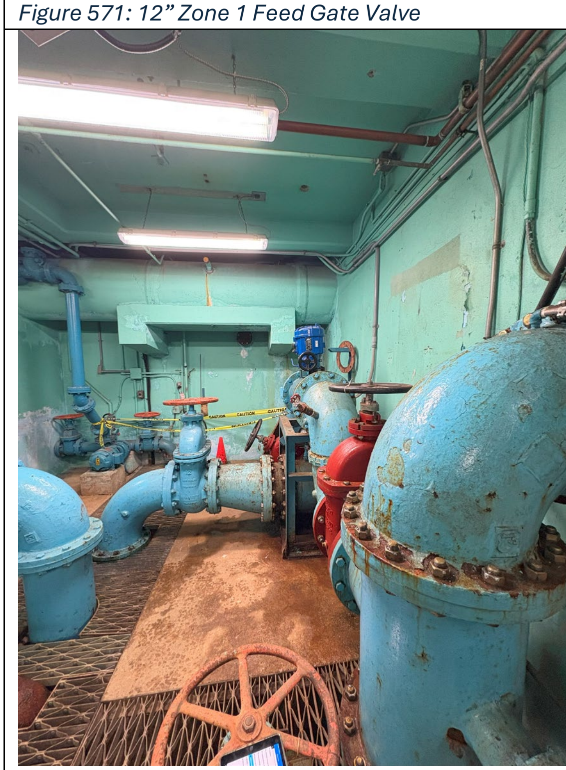


Figure 573: View of Station Northeast Corner

Figure 574: Gate Valve along North Wall

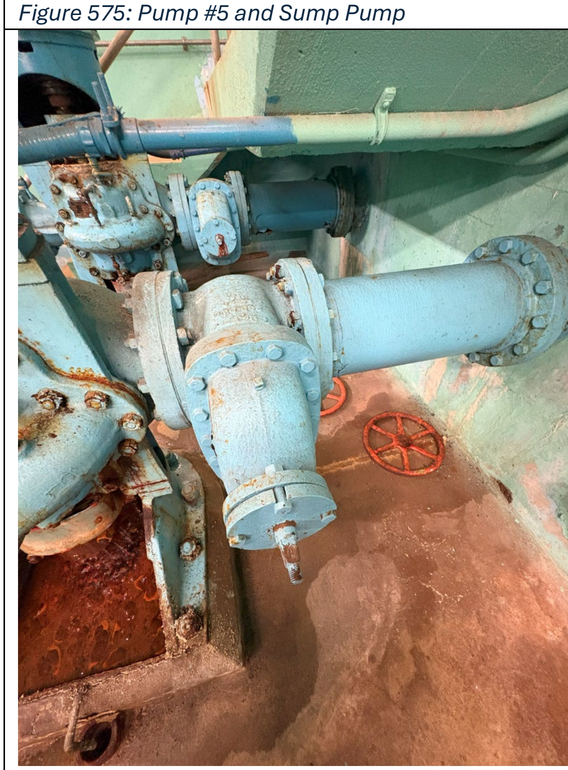
 Figure 575: Pump #5 and Sump Pump	 Figure 576: Check Valve Pump #1
 Figure 577: Check Valve Pump #2	 Figure 578: Zone 1 Pressure

Figure 579: 4" Gate Valve

Figure 580: 18" Gate Valve

Figure 581: 12" Gate Valve

Figure 582: Corrosion on Flange

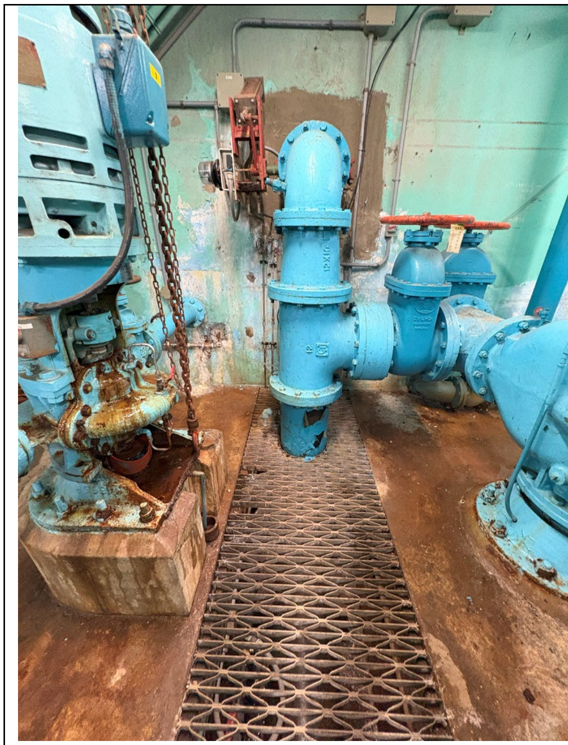


Figure 583: Gate Valve and Butterfly Valve

Figure 584: Pump #3

Figure 585: View of Station North Wall

Figure 586: View of Station Northwest Corner

Figure 587: Reservoir Hatch

Figure 588: Chlorine Monitor

Figure 589: Label on Chlorine Scale

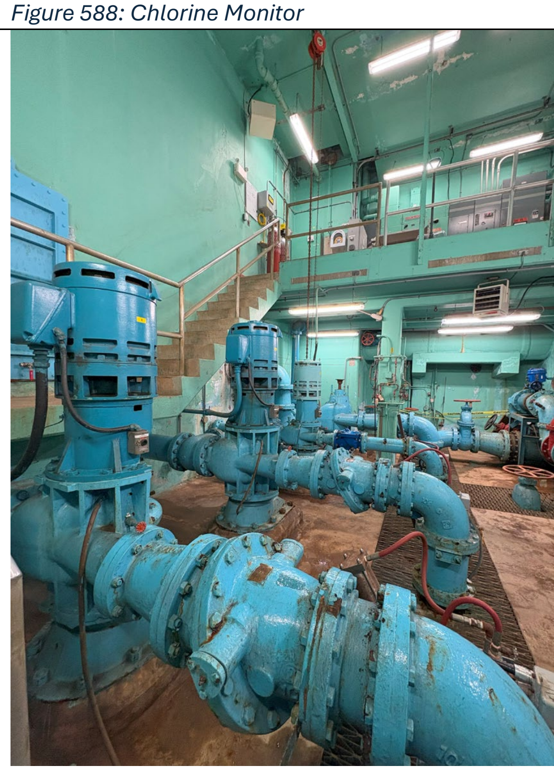


Figure 590: View of Stations Northwest Corner

Figure 591: Label on Chlorine Scale


Figure 592: Chlorine Injection System


Figure 593: Peeling Paint

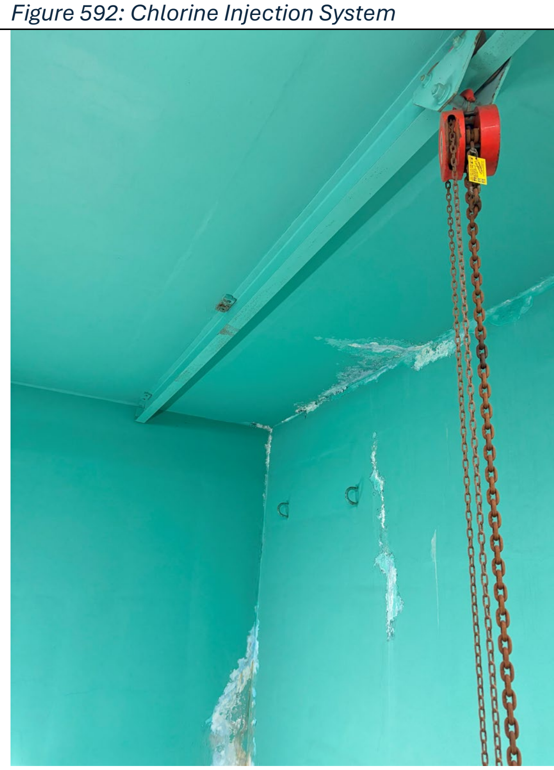


Figure 594: Peeling Paint

The Corporation of The City of Peterborough

1867 Ashburnham Drive, Peterborough, Ontario

Asset Inventory List					
RMOH ID	Equipment	Description	Manufacturer	Model Number	Serial Number
R1	Motor	Cummings Diesel Pump			
	Chlorinator	S10K	Wallace and Tiernan	W3T97930	EY18224
	Chlorine Scale	Solo 1000	Force Flow	SR-130-2	FF 24860
	Pump 1	8" SHN-V	Allis-Chalmer		20265
	Pump 2	8" SHN-V	Allis-Chalmer		20266
	Pump 3	No label			
	Pump 4	SG-V	Allis-Chalmer		20267
	Pump 5	TBD			
	Gate Valve	4"	Kennedy		
	Gate Valve	4"	Darling		
	Gate Valve	4"	Darling		
	Gate Valve	5"	Darling		
	Gate Valve	6"	Darling		
	Gate Valve	6"	Darling		
	Gate Valve	10"			
	Gate Valve	10"			
	Gate Valve	12"	Darling		
	Gate Valve	12'	Darling		
	Gate Valve	12"	Kennedy		
	Gate Valve	12"	Kennedy		
	Gate Valve	12"		MCABITOY	
	Gate Valve	12"			
	Gate Valve	18"			
	Check Valve	4"			
	Check Valve	6" Suregebuster	Valmatic		
	Check Valve	10"	Dominion		
	Check Valve	10"	Dominion		
	Check Valve	12"	Dominion		
	Butterfly Valve				
	Butterfly Valve	6" with Hydraulic Controls			
	Butterfly Valve	8" with Hydraulic Controls	Rotor		
	Butterfly Valve	10" with Hydraulic Controls			
	Butterfly Valve	10" with Hydraulic Controls			
	Butterfly Valve	10" with Hydraulic Controls			
	Pressure Gauge	N/A	Ashcroft		
	Pressure Gauge	N/A	Ashcroft		
	Pressure Gauge	N/A	Ashcroft		
	Space Heater	N/A			
	Sump Pump	N/A			
	Fuel Tank	680L			

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION REPORT

Towerhill Reservoir

679 Towerhill Rd, Peterborough ON

THE CITY OF PETERBOROUGH

April 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

STATION: Towerhill Reservoir

ADDRESS: 679 Towerhill Rd

BUILT: 1971 and 2001

SERVICE: Zone 2

LATITUDE: 44.29039 degrees

LONGITUDE: 78.36943 degrees

CAPACITY: 22.73 ML (Total)

CONTROLS: SCADA

HIGH WATER LEVEL: 288 m

LOW WATER LEVEL: 282 m

CELL 1 DIMENSIONS: 42 x 42 m (1971) (2001)

CELL 2 DIMENSIONS: 42 x 62 m

OVERALL CONDITION: FAIR

BUILDING AND PROCESS STRUCTURAL – GOOD CONDITION

The Towerhill Reservoir is the largest reservoir in Peterborough. It was constructed in 1971 and expanded in 2001. Both cells were built on top of the hill east of Fairbairn St and South of Towerhill Rd. The equipment for the reservoir is below grade. There are two buildings on the site for access to the reservoir and to house a chlorine tank. The buildings and reservoir are in good condition with no major building and process structural concerns identified.

BUILDING ARCHITECTURAL – GOOD CONDITION

The reservoir and process piping are entirely below grade. The ground above the reservoirs is flat and the sod is maintained. The only architectural feature is the brick finish on the building with the chlorine tank, and all other aspects of the facility are industrial. Around the top of the reservoir, there are eight access hatches located at the corners of the tanks. A large vent extends from the tank and is approximately 2m in height. The gravel driveway that leads to the top of the reservoir can accommodate two (2) vehicles for parking. The bricked building has one (1) vent and there is a large vent in the middle on top of the reservoir.

BUILDING SERVICES- FAIR CONDITION

No deficiencies in power supply, lighting, drainage, or heating were expected or observed. The reservoir and bricked building are well ventilated, while the building with access to the reservoir and process piping does not have any vents. It is recommended to add ventilation to the pumping station as it is quite humid and is causing premature corrosion to the process piping. Both buildings have exterior lights that are controlled with a switch, and the doors are secured with a smart key doorknob set. A fire extinguisher is accessible immediately inside of the door. During the inspection the reservoir was inaccessible. At the time of inspection, all services related to the building appeared to be in fair condition.

SITE WORKS – GOOD CONDITION

The Towerhill Reservoir is located on Towerhill Road, just west of Hillview Dr. The area around and on top of the station is sodded with regular lawn cutting being completed by a third-party vendor.

PROCESS PIPING – FAIR CONDITION

All the piping is located below the white building in the pipe room was inspected and is in fair condition. Some of the piping is experiencing corrosion due to the humid environment.

PROCESS MECHANICAL – FAIR CONDITION

The valves and internal piping were observed in fair condition at the time of the inspection.

SCADA – GOOD CONDITION

The SCADA monitoring system includes the following:

Two (2) door alarms

One (1) Elevation Monitor (Level Transducer)

One (1) Commercial Power Alarm

One (1) Low Building Temperature Alarm

One (1) Building Flood Alarm

One (1) Heat/Fire Alarm

One (1) Ultrasonic Loss of Echo Alarm

One (1) Chlorine Residual Monitor

One (1) Old Cell Hatch Alarm

One (1) New Cell Hatch Alarm

One (1) Loss of Phase Alarm

One (1) Emergency Assist Alarm

All SCADA components are in good condition and do not need to be replaced.


Figure 595: View of Station Looking Northwest


Figure 596: View of Station Looking South


Figure 597: View of Station Looking West


Figure 598: Chlorine Tank in Bricked Building

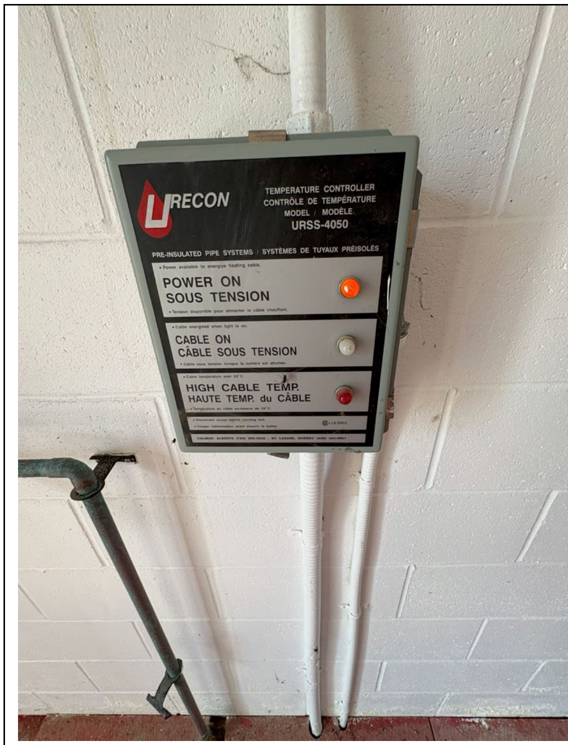


Figure 599: Power to Heat Tracer Wire


Figure 600: Chlorine Building


Figure 601: Butterfly Valve


Figure 602: Butterfly Valve

Figure 603: Myers Pumps

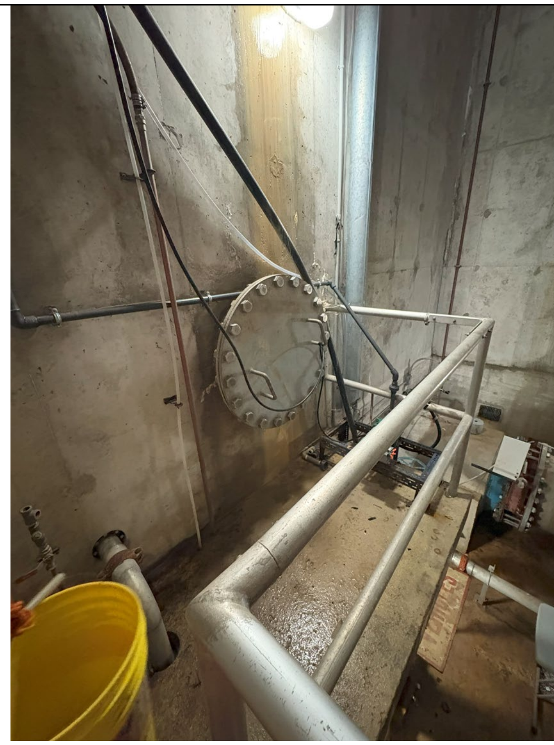


Figure 604: Hatch to Reservoir

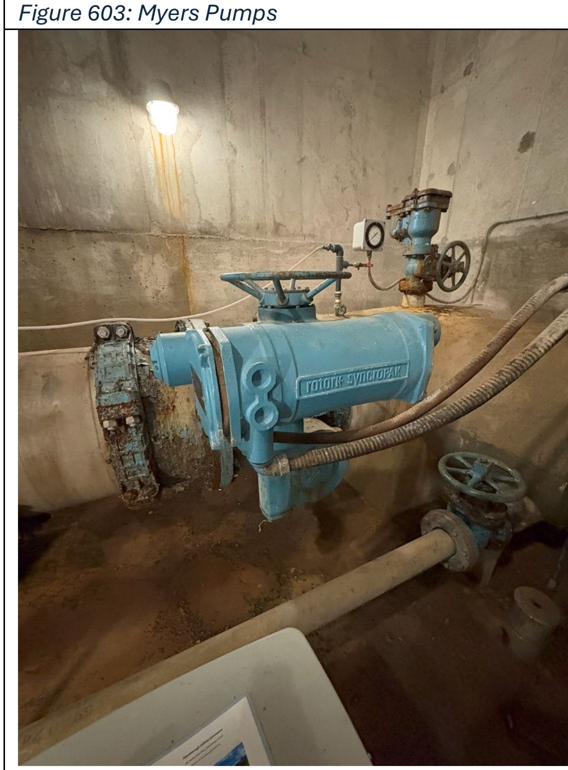


Figure 605: Actuator for Valve


Figure 606: Corrosion Occurring on Process Piping

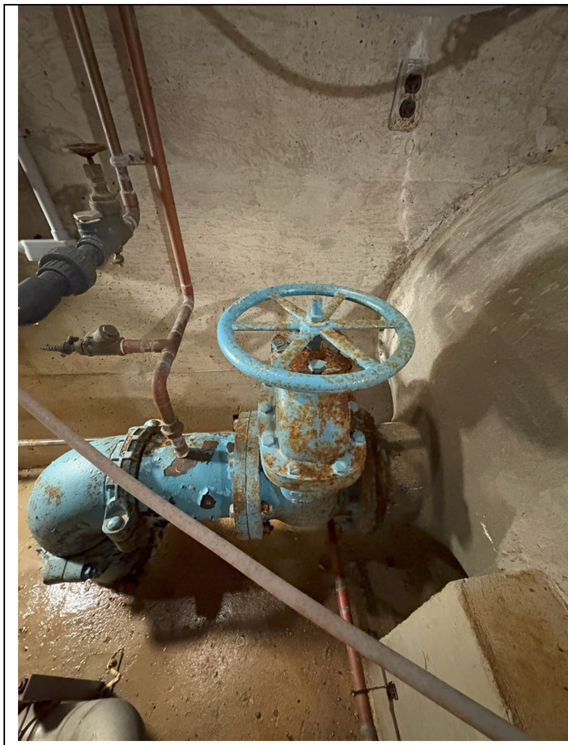


Figure 607: Gate Valve

Figure 608: Pressure Gauge

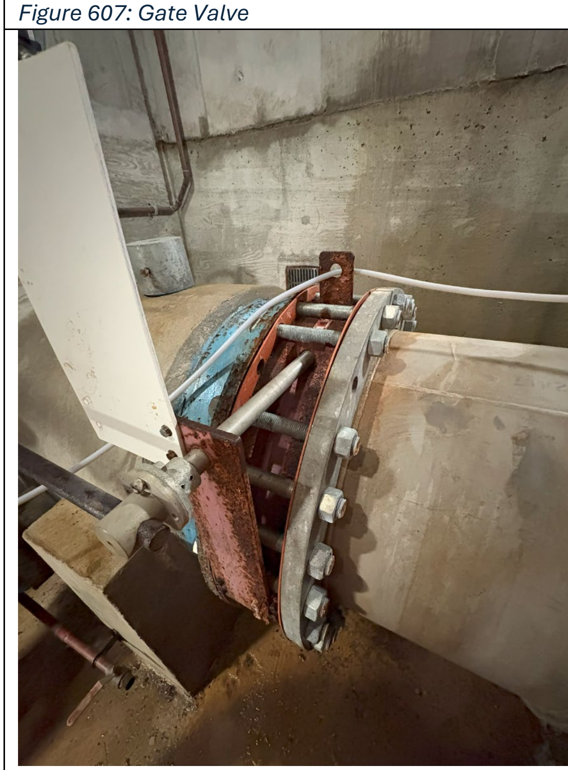


Figure 609: Butterfly Valve

Figure 610: Corrosion Occurring on Process Piping

Figure 611: Corrosion Occurring on Process Piping

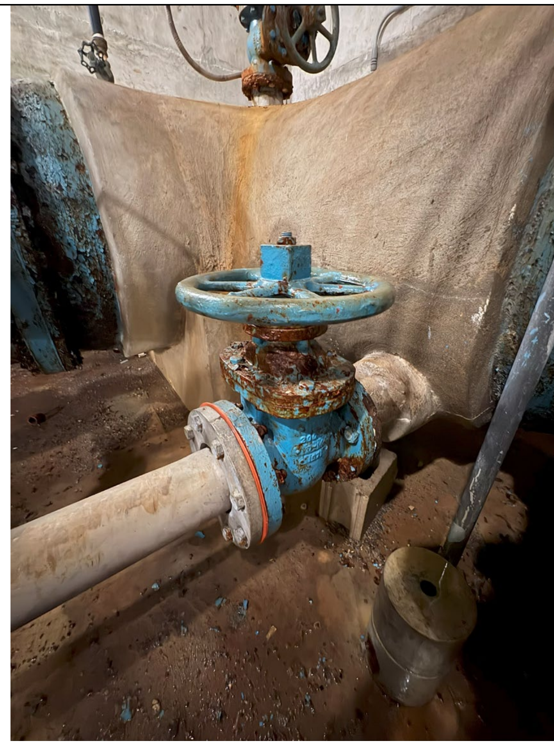


Figure 612: Gate Valve

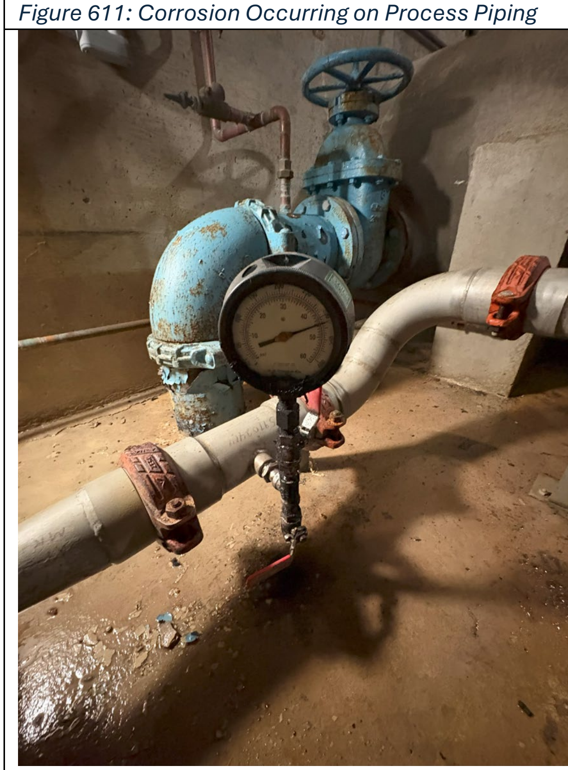


Figure 613: Pressure Gauge

Figure 614: Pump for Flushing the Reservoir

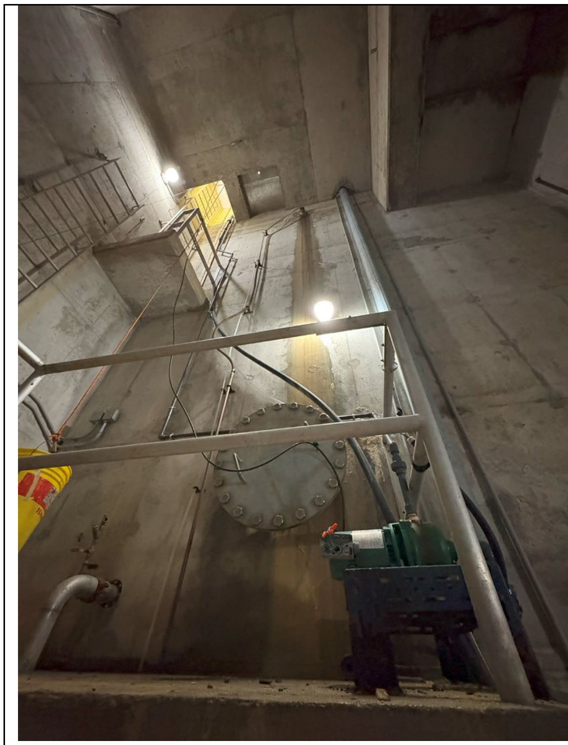


Figure 615: Looking up From Piping Room

Figure 616: Gate Valve and Sump Pump

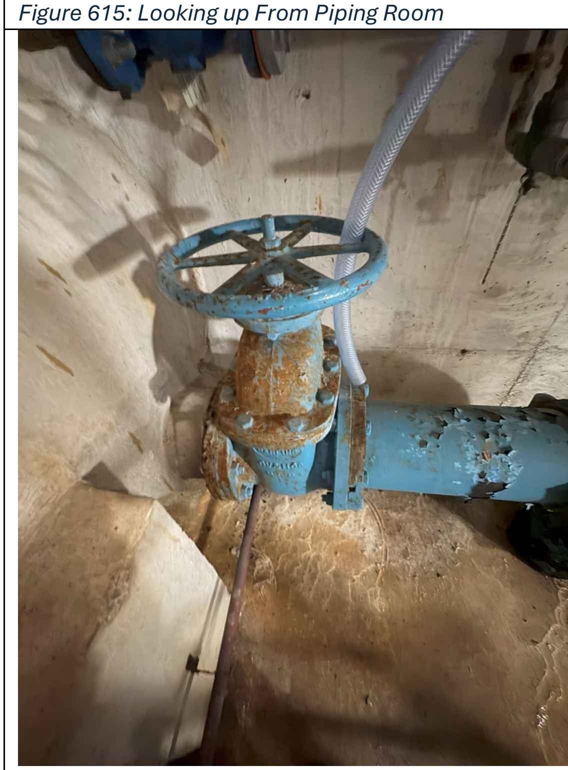


Figure 617: Gate Valve

Figure 618: Gate Valve


Figure 619: Process Piping

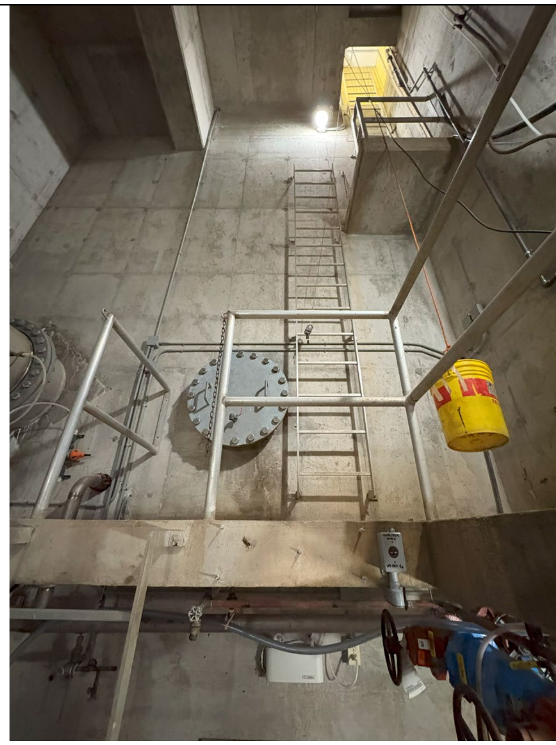


Figure 620: Ladder in Pipe Room and Hatch to Reservoir

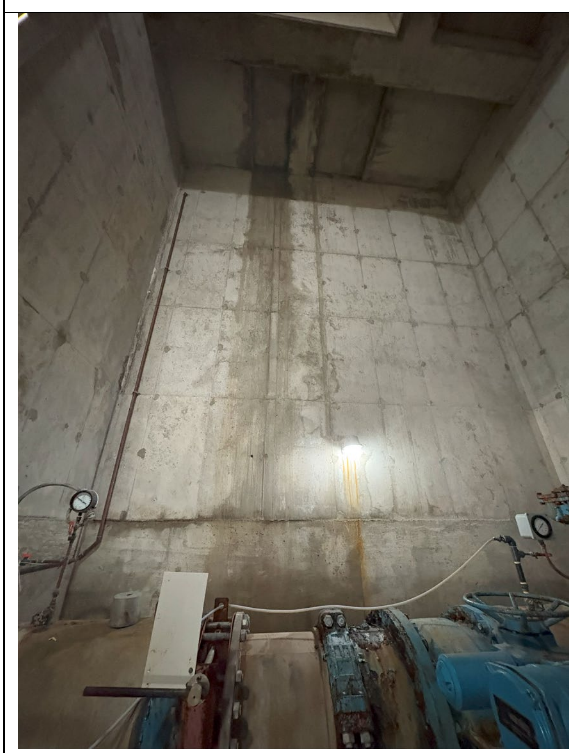


Figure 621: Pipe Room Ceiling, Surface Water Leaking


Figure 622: Process Piping

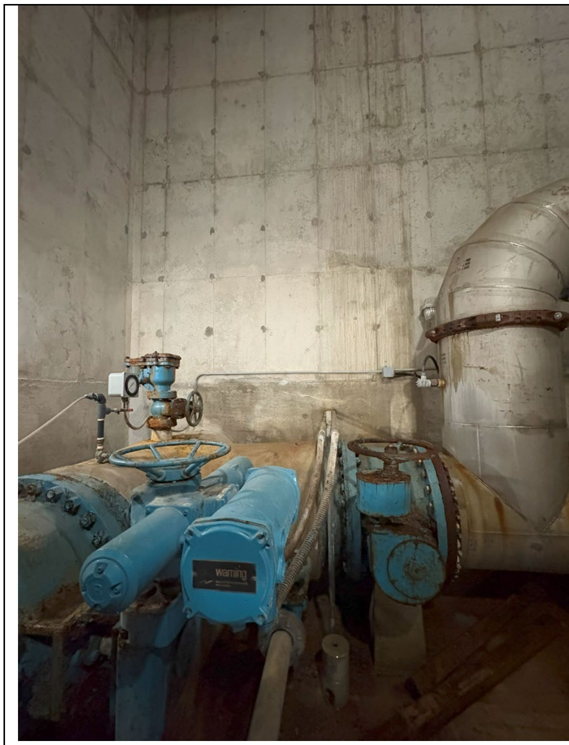


Figure 623: Process Piping


Figure 624: Pressure Relief Valve

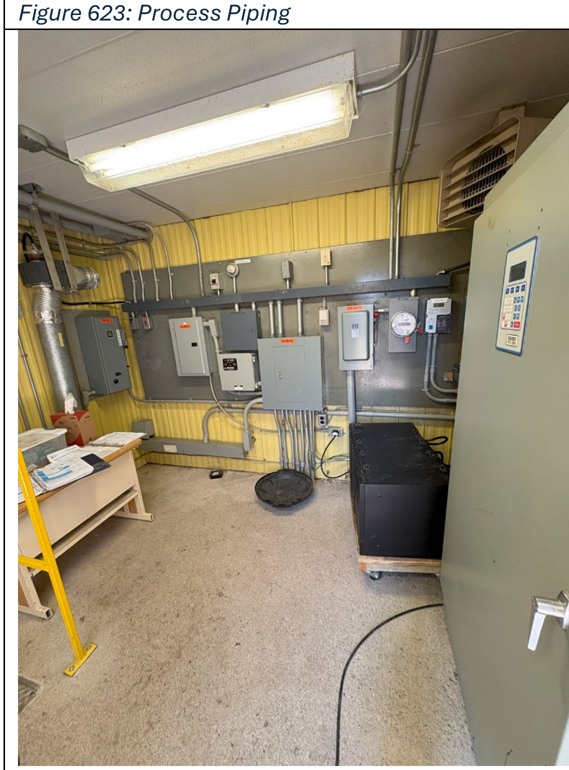


Figure 625: Electrical Equipment


Figure 626: Chlorine Monitor

Figure 627: Reservoir Building

Figure 628: Reservoir Building and Reservoir Vent

Figure 629: View from Station Looking North

Figure 630: Road into Station Facing East

The Corporation of The City of Peterborough
1867 Ashburnham Drive, Peterborough, Ontario

ASSET MANAGEMENT INSPECTION REPORT

Bulk Fill Station

280 Milroy Dr, Peterborough ON

THE CITY OF PETERBOROUGH

May 2025

Inspector: Elysha Doyle

Asset Management Inspection Results – 2025

STATION: Bulk Water Fill Station

ADDRESS: 280 Milroy Dr

BUILT: 2020

SERVICE: Zone 3N

LATITUDE: 44.33142 degrees

LONGITUDE: 78.34038 degrees

CONTROLS: SCADA

OVERALL CONDITION: VERY GOOD

BUILDING AND PROCESS STRUCTURAL – GOOD CONDITION

In 2020, a bulk water filling station was added to the property along with a paved entrance, which did not impact the structure of the Milroy Water Tower. The equipment for the bulk filling station is located inside an above grade building.

BUILDING ARCHITECTURAL – GOOD CONDITION

The Bulk Fill Station is a pre-engineered building, with steel cladding, a keypad and card reader on the south face of the building for customers. The structure is anchored to a concrete slab foundation.

BUILDING SERVICES – GOOD CONDITION

The Bulk Fill Station building is locked with a smart key doorknob set. An overhead fluorescent bulb provides lighting. A small wall mounted heater provides heat based on a set thermostat.

SITE WORKS – GOOD CONDITION

The Bulk Fill Station is located on Milroy Dr. between Chemong Rd. and Rowberry Blvd. There is a chain link fence between the Tower property and the adjacent commercial property to the southeast. The public can access the site via a paved driveway to use the bulk water filling station. The property is landscaped and maintained by a third-party vendor.

PROCESS PIPING – VERY GOOD CONDITION

The process piping for the bulk fill station is in excellent condition.

PROCESS MECHANICAL – FAIR CONDITION

All valves in the bulk fill station are in as new condition.

SCADA – GOOD CONDITION

The SCADA monitoring system includes the following:

One (1) Door Alarm

One (1) Low Building Temperature Alarm

One (1) Flood Alarm

One (1) Heat/Fire Alarm

All SCADA components are in good condition and do not need to be replaced.

Figure 631: Electrical Panel and Controls


Figure 632: Process Piping

Figure 633: Backflow Preventer

Figure 634: Backflow Preventer

Figure 635: Gate Valve on Backflow Preventer

Figure 636: Gate Valve on Backflow Preventer

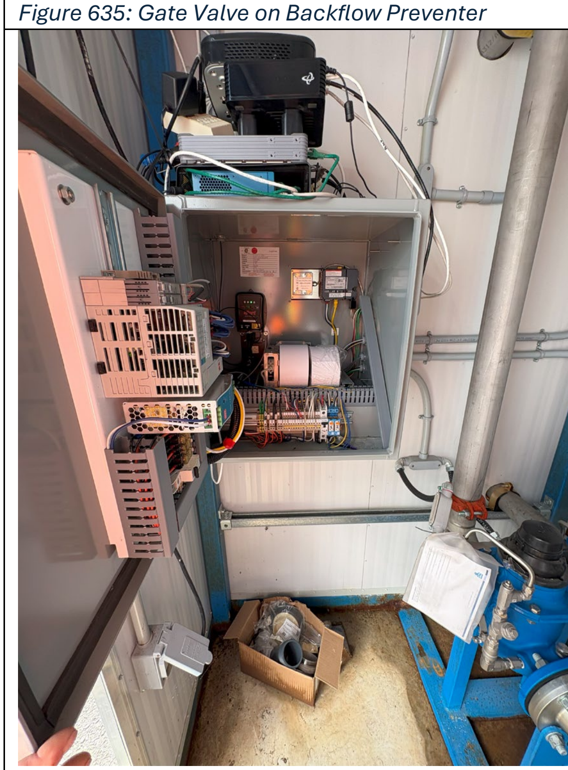
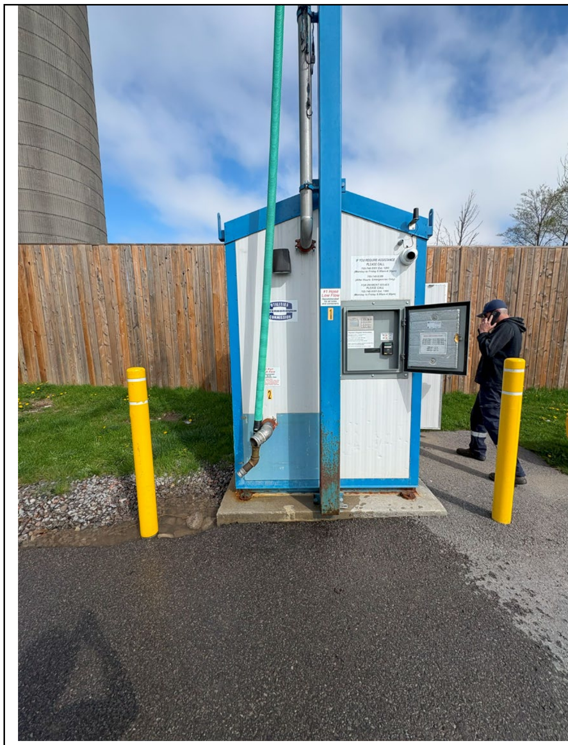
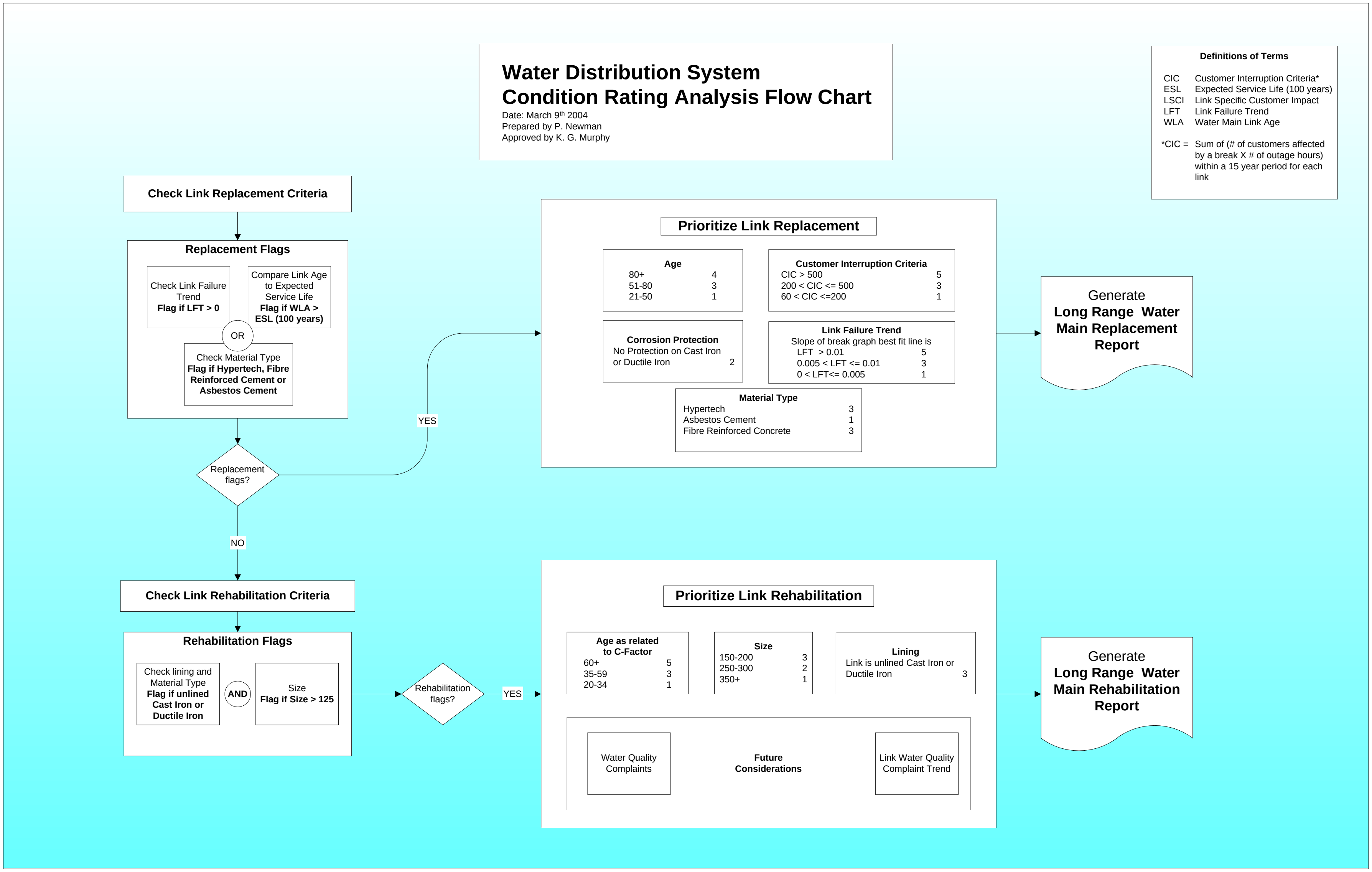


Figure 637: Inside the Electrical Cabinet

Figure 638: Electrical and Utilities Coming In

 *Figure 639: Bulk fill Station Hose*	



Water Distribution System
Condition Rating Analysis Flow Chart
Date: March 9th 2004
Prepared by P. Newman
Approved by K. G. Murphy
Definitions of Terms
CIC Customer Interruption Criteria*
ESL Expected Service Life (100 years)
LSCI Link Specific Customer Impact
LFT Link Failure Trend
WLA Water Main Link Age
*CIC = Sum of (# of customers affected by a break X # of outage hours) within a 15 year period for each link
Check Link Replacement Criteria
Replacement Flags
Check Link Failure Trend
Flag if LFT > 0
Compare Link Age to Expected Service Life
Flag if WLA > ESL (100 years)
OR
Check Material Type
Flag if Hypertech, Fibre Reinforced Cement or Asbestos Cement
Replacement flags?
YES
NO
Prioritize Link Replacement
Age
80+ 4
51-80 3
21-50 1
Customer Interruption Criteria
CIC > 500 5
200 < CIC <= 500 3
60 < CIC <=200 1
Corrosion Protection
No Protection on Cast Iron or Ductile Iron 2
Link Failure Trend
Slope of break graph best fit line is
LFT > 0.01 5
0.005 < LFT <= 0.01 3
0 < LFT<= 0.005 1
Material Type
Hypertech 3
Asbestos Cement 1
Fibre Reinforced Concrete 3
Generate Long Range Water Main Replacement Report
Check Link Rehabilitation Criteria
Rehabilitation Flags
Check lining and Material Type
Flag if unlined Cast Iron or Ductile Iron
AND
Size
Flag if Size > 125
Rehabilitation flags?
YES
Prioritize Link Rehabilitation
Age as related to C-Factor
60+ 5
35-59 3
20-34 1
Size
150-200 3
250-300 2
350+ 1
Lining
Link is unlined Cast Iron or Ductile Iron 3
Water Quality Complaints
Future Considerations
Link Water Quality Complaint Trend
Generate Long Range Water Main Rehabilitation Report

City of Peterborough

WATER SYSTEM FINANCIAL PLAN

Prepared in accordance with the Safe Drinking Water Act

And

Ontario Regulation 453/07

THE CITY OF PETERBOROUGH

DRINKING WATER SUPPLY SYSTEM

2025 – 2030 FINANCIAL PLAN

LICENCE # 145-101

The City of Peterborough endorsed and approved the Water Financial Plan for submission to the Ministry of Municipal Affairs and Housing on February 24, 2025.

OVERVIEW

The City of Peterborough (the City) is responsible for providing Peterborough residents and businesses with a safe, clean and reliable supply of water. Peterborough has a plentiful supply of source water from the Otonabee River. This water is treated in a government-inspected facility before being distributed throughout the City. Each year thousands of water samples are tested by both an internal operational lab and an external accredited laboratory to ensure that Peterborough's drinking water is safe and aesthetically pleasing. About twenty thousand tests are conducted each year to ensure the drinking water surpasses health-related standards.

The City must maintain and continually improve its infrastructure to ensure that its systems are capable of delivering safe, affordable and quality water to the residents of Peterborough for now and into the future and operates on a full cost recovery system.

BACKGROUND

The Ministry of the Environment Conservation and Parks introduced a new Municipal Drinking Water Licensing Program under the Safe Drinking Water Act (SDWA) 2002 as a result of a recommendation by Justice O'Connor's Part II Report of the Walkerton Inquiry. Having met all the necessary initial filing requirements, the City of Peterborough will apply for the Municipal Drinking Water License in March 2025. Once received, this license is valid for 5 years provided by the owner:

- Maintains its status as an accredited operating authority;
- Prepares a financial plan and has it approved by municipal council;
- Has a valid permit to take water; and
- Operates the drinking water system according to the conditions in the license.

As the PUC and Operating Authority are changing as of April 1, 2025, the current license will expire. An application will need to be submitted by the City of Peterborough, and the Director, MECP will issue The City of Peterborough a license if the Director is satisfied that the following criteria are all met:

1. The system will be operated by an accredited operating authority;
2. The Drinking Water Works Permit remains in force;
3. Operation plans for the system satisfy the requirements of the Directors' Directions for Operational Plans;
4. Financial plans have been prepared and approved;
5. The system has been and will continue to be operated in accordance with the requirements under the SDWA and the license; and
6. Any required permits to take water remain in force (if required).

This financial plan has been prepared to satisfy the above item number 4. Ontario Regulation 453/07 of the SDWA requires the owners of a drinking water system to submit their financial plans to the Ministry of Municipal Affairs and Housing for licensing. Per the regulations, the financial plan must;

- Be approved by Council resolution;
- Apply for a period of at least six years, the first of which must be the year in which the drinking water system's existing municipal drinking water license would otherwise expire;
- Provide projected financial statements including a statement of financial position, statement of financial operations and statement of cash flows;
- Be available to the public without charge and available on the City's website.

SUSTAINABLE FINANCIAL PLANNING

Achieving financial sustainability in Ontario's municipal water and wastewater sector is a long-term provincial goal. The overall guiding principle in the development of this Financial Plan is to ensure that both current operating needs and longer-term infrastructure renewal planning are addressed.

The SDWA requires a declaration of the financial plan's sustainability, but it does not give a clear definition of what would be considered sustainable. The Ministry of the Environment released a guideline entitled "Towards Financially Sustainable Drinking-Water and Wastewater Systems" that provides principles for achieving sustainability, to assist owners in preparing the Financial Plan. Listed below are nine principles developed by the Ministry which the City has reviewed in preparing its Water System Financial Plan.

Principle #1: Ongoing public engagement and transparency can build support for, and confidence in, financial plans and the system(s) to which they relate.

Principle #2: An integrated approach to planning among water, wastewater, and storm water systems is desirable given the inherent relationship among these services.

Principle #3: Revenues collected for the provision of water and wastewater services should ultimately be used to meet the needs of those services.

Principle #4: Lifecycle planning with mid-course corrections is preferable to planning over the short-term or not planning at all.

Principle #5: An asset management plan is a key input to the development of a financial plan.

Principle #6: A sustainable level of revenue allows for reliable service that meets or exceeds environmental protection standards, while providing sufficient resources for future rehabilitation and replacement needs.

Principle #7: Ensuring users pay for the services they are provided leads to equitable outcomes and can improve conservation. In general, metering and the use of rates can help ensure users pay for services received.

Principle #8: Financial Plans are “living” documents that require continuous improvement. Comparing the accuracy of financial projections with actual results can lead to improved planning in the future.

Principle #9: Financial plans benefit from the close collaboration of various groups, including engineers, accountants, auditors, utility staff, and municipal council.

FINANCIAL PLAN

In accordance with the Ministry of Environment, Conservation and Parks requirements, and the principles listed above, the City of Peterborough has prepared the required financial plan which is included in this report. The financial plan comprises 2023 actual results, 2024 projected results and 2025 to 2030 forecasted results.

The 2023 figures are a summarized version of the audited financial statements. The 2024 projected results are management’s best projection for the year end results which are yet to be finalized. The future year assumptions originate from the ten-year financial model prepared by water utility staff and management that integrates data from the water utility asset management plan to forecast capital and operating costs and identify sources of funding to ensure long-term financial viability. These financial plans are living documents that are continuously updated based on actual results and management's best estimates for the future.

The financial plan includes a statement of financial position, statement of operations and accumulated surplus, and statement of cash flow. The following summarizes key information from the forecasted financial plan presented.

Statement of Financial Position

The Statement of Financial Position describes the financial assets, liabilities, non-financial assets and accumulated surplus of the City of Peterborough’s Water Utility.

Net Financial Assets

The Statement of Financial Position indicates that the net financial assets are forecast to be $11.62 million on December 31, 2023, increasing to $11.87 million in 2030. Total cash is expected to decrease from $25.72 million on December 31, 2023, to $18.31 million on December 31, 2030. This decrease in cash includes a net repayment of $7.31 million in debenture financing over that period.

Total Non-Financial Assets

Total Non-Financial Assets are expected to increase by $24.84 million from $125.74 million as of December 31, 2023, to $150.59 million on December 31, 2030. The increase is primarily the result of the net additions in the Water Utility's tangible capital assets (TCA). The planned capital additions for the years 2024 to 2030 total $71.44 million which is reduced by projected amortization of $46.59 million resulting in the net increase in TCA of $25.85 million.

Accumulated Surplus

The water utility Accumulated Surplus is expected to increase by $25.4 million from the December 31, 2023, amount of $137.37 million to a December 31, 2030 forecast amount of $162.77 million

Statement of Operations and Accumulated Surplus

The Statement of Operations summarizes the revenues and expenses of the water utility for a specific period. The Annual Surplus measures whether the revenues generated were sufficient to cover operating expenses incurred, including the ability to fund the interest payments on debentures. The Annual Surplus is expected to fluctuate throughout the Financial Plan, starting at $2.94 million for the year ending December 31, 2024, and projected to be $2.35 million on December 31, 2030. It is important to note that the annual surplus is beneficial to ensure funding is available to non-operating costs, such as TCA additions and debt principal repayments.

Statement of Cash Flow

The Statement of Cash Flow summarizes changes in cash resulting from the operations of the water utility and indicates how those activities are financed. In simple terms it is a summary of how the water utility generates and uses its cash resources during a specific period.

Cash Provided by/ (Used in) Operations

The water utility is expected to generate cash from operations in the amount of $71.44 million from 2024 to 2030. The amount is comprised of cash generated from the annual surplus of $21.47 million net of amortization, a non-cash expenditure, of $52.82 million. These amounts are reduced by revenue maintained in reserve funds and changes in non-cash working capital of $2.85 million.

Investing Activity

During the period 2024 to 2030 the PUC has planned capital expenditures of $80.67 million. The capital program is driven by the water utility's asset management plan ("AMP") that is based upon a Linear Asset Management Plan ("LAMP") developed by water utility staff and a Long-Term Water Utility Master Plan provided by an outside consultant in 2019. This plan is reviewed and updated annually based on both current year's activity and projected future needs.

Financing Activities

During the 2024 to 2030 planning period the Financial Plan does not include any debenture financing, instead relying on reserve funds to finance capital projects in excess of current year revenues. The existing debentures will be repaid according to the required repayment schedules including interest.

Cash Position

Cash is anticipated to decrease from the December 31, 2024, projected balance of $23.22 million to $18.31 million at December 31, 2030. The December 31, 2030, balance provides a reasonable working capital reserve and therefore there are no cash flow concerns for the water utility with the City of Peterborough.

SUMMARY

The City of Peterborough's water utility is well prepared to be able to meet the challenges ahead and continue delivering safe, affordable and quality water to the residents of Peterborough for now and into the future. Operating under a full cost recovery system, the financial plan utilizes long-term planning in developing an understanding of the City of Peterborough's water utility infrastructure needs and creating a financial structure that ensures resources are used in an efficient and effective manner. The City of Peterborough recognizes that the integrity of its finances is critical to the successful operation of the water utility and to its reputation and trust by ratepayers.

The Financial Plan has been prepared using the most accurate financial and technical information available at the time of publication. Actual results could differ from these estimates, the materiality of which is undeterminable at this time.

DRAFT
Statement of Financial Position
($'s in thousands)

	2023 Actual	2024 Forecast	2025 Budget	2026 Budget	2027 Budget	2028 Budget	2029 Budget	2030 Budget
Financial Assets								
Cash	25,717	26,218	27,666	24,304	24,102	21,540	18,840	18,310
Accounts receivable	3,218	3,321	3,288	3,255	3,222	3,190	3,158	3,127
Unbilled water revenue	1,434	1,667	1,650	1,634	1,617	1,601	1,585	1,569
Unbilled sewer surcharge	1,482	1,749	1,732	1,714	1,697	1,680	1,663	1,647
	31,851	32,955	34,336	30,907	30,638	28,012	25,247	24,653
Liabilities								
Accounts payable, deposits & accrued charges	9,184	8,482	8,397	8,313	8,230	8,148	8,066	7,986
Debentures	11,044	9,957	8,855	7,736	6,601	6,001	5,401	4,801
	20,228	18,439	17,252	16,049	14,831	14,149	13,467	12,787
Net financial assets	11,623	14,516	17,084	14,858	15,807	13,863	11,780	11,866
Non-financial assets								
Tangible capital assets	124,809	124,851	128,826	136,534	139,998	143,280	146,604	149,656
Inventory	934	929	930	930	930	930	930	930
Prepaid expenses	0	0	0	0	0	0	0	0
	125,743	125,780	129,756	137,464	140,928	144,210	147,534	150,586
Accumulated Surplus	137,366	140,296	146,840	152,321	156,735	158,072	159,314	162,452

DRAFT
Statement of Operations and Accumulated Surplus
($'s in thousands)

	2023	2024	2025	2026	2027	2028	2029	2030
	Actual	Forecast	Budget	Budget	Budget	Budget	Budget	Budget
Revenues								
Sale of water	19,242	20,244	20,730	21,145	21,567	21,999	22,439	22,888
Other	3,939	3,673	3,579	3,651	3,724	3,798	3,874	3,952
Total revenues	23,181	23,917	24,309	24,795	25,291	25,797	26,313	26,839
Expenses								
Operating	8,870	9,664	10,170	10,475	10,789	11,113	11,446	11,790
Administrative	4,639	4,633	4,778	4,922	5,069	5,221	5,378	5,539
Interest	306	299	250	209	179	152	137	122
Amortization	6,231	6,375	6,375	6,503	6,633	6,765	6,901	7,039
Total expenses	20,046	20,971	21,573	22,108	22,670	23,251	23,862	24,490
Annual Surplus	3,135	2,946	2,736	2,687	2,621	2,545	2,451	2,350
Opening Accumulated Surplus	134,231	137,366	140,312	143,048	145,735	148,356	150,901	153,352
Closing Accumulated Surplus	137,366	140,312	143,048	145,735	148,356	150,901	153,352	155,702

DRAFT
Statement of Cash Flow
($'s in thousands)

	2023	2024	2025	2026	2027	2028	2029	2030
	Actual	Forecast	Budget	Budget	Budget	Budget	Budget	Budget
Cash provided by (used in) Operations								
Annual Surplus	3,134	2,946	2,736	2,687	2,621	2,545	2,451	2,350
Add: Non cash charges								
Amortization	6,230	6,375	6,375	6,503	6,633	6,765	6,901	7,039
Less: Reserve fund revenue in surplus	(131)	(20)	(170)	(172)	(173)	(175)	(177)	(179)
	9,233	9,301	8,941	9,018	9,080	9,135	9,175	9,209
Changes in non-cash working capital	256	(1,609)	(53)	(51)	(51)	(50)	(50)	(49)
	9,489	7,692	8,888	8,967	9,030	9,085	9,125	9,160
Investing Activity								
Net additions to tangible capital asset	(9,236)	(6,104)	(10,663)	(14,210)	(10,097)	(10,047)	(10,225)	(10,090)
Fiancing Activities								
Proceeds from debenture debt	0	0	0	0	0	0	0	0
Repayment of long term debt	(1,071)	(1,087)	(1,102)	(1,119)	(1,135)	(600)	(600)	(600)
Transfer from reserves	0		4,325	3,000	2,000	(1,000)	(1,000)	1,000
	(1,071)	(1,087)	3,223	1,881	865	(1,600)	(1,600)	400
Net change in cash for the year	(818)	501	1,448	(3,362)	(202)	(2,562)	(2,700)	(530)
Cash position, beginning of year	26,535	25,717	26,218	27,666	24,304	24,102	21,540	18,840
Cash position, end of year	25,717	26,218	27,666	24,304	24,102	21,540	18,840	18,310

Assessment of Drinking Water System (Quality Perspective)

					Risk Assessment				Control Measure			Consideratio	
	Category	Sub-Process (where applicable)	Potential Hazard (potential for causing harm)	Associated Water Quality Hazards	Likelihood	Impact	Level of Risk	Critical Control Point	Emergency (contingency)	Operational (Procedural)	CCP Measurable (Yes/No)	Considered Long Term Impact Climate Control	Comments
1	**Source Water**		Flood	High turbidity, physical impact on Water Street P/H and dam,	D	1	low		X		-	X	
2	**Source Water**		Severe changes in turbidity	Effects on treatment process of sedimentation and filtration	D	2	low			X	Y	X	75 NTU historical high
3	**Source Water**		Bacteria, viruses, etc.	Increased concentrations of bacteria, viruses etc. place more importance on the water treatment process (includes significant concentration of water fowl upstream of intake)	B	1	moderate			X	Y	X	Waterfowl Management
4	**Source Water**		Pesticides, herbicides (MCPP)	Chemical could impact treatment train, treatment not designed to remove chemicals and the chemical would be transferred to finished water and result in health concern	D	3	moderate			X	Y	X	Quarterly Testing, follow Adverse Water Results Procedure
5	**Source Water**		Aquacides (diaquat)	Chemical could impact treatment train, treatment not designed to remove chemicals and the chemical would be transferred to finished water and result in health concern	D	3	moderate			X		X	MOE to notify us if Permit has been issued
6	**Source Water**		Metals	Metals could impact treatment train, treatment not designed to remove metals and the metal would be transferred to finished water	E	3	moderate			X	Y	X	
7	**Source Water**		Chemical spill into river	Chemical could impact treatment train, treatment not designed to remove chemicals and the chemical would be transferred to finished water and result in health concern	D	3	moderate			X		X	
8	**Source Water**		Pharmaceutical Residuals	Chemical could impact treatment train, treatment not designed to remove chemicals and the chemical would be transferred to finished water and result in health concern	E	2	low					X	
9	**Source Water**		Sewage spill into river	Bacteriological effects on raw water could impact the water treatment effectiveness and result in a health concern	C	1	low		X			X	
10	**Source Water**		Cyanobacteria	Natural occurring formation of cyanotoxins in stagnant water could result in a health concern when Microcystin-LR concentrations reach 1.5 ug/L in the treated water. Microcystin-LR is a common algal toxin. that can be produced from decaying Cyanobacteria.	D	3	moderate					X	SOP-02-120 Harmful Algal Bloom Monitoring
11	**Source Water**		Failure of alarms and monitoring equipment	Loss of operator control at the facility	C	1	low			X		X	
12	**Source Water**		Zebra Mussels	Taste and odour can be found in the treated water due to the decomposition of the zebra mussels.	B	1	Moderate			X		X	pre-chlorination option
13	**Source Water**		Road salt	Reportable to Ministry of Health is above 200 mg/L	A	1	moderate			X		X	previous results do not show a increase in 5 year trend
14	**Treatment**	Finished water chemical addition	Fluoride overdose	Fluoride is a strong acid and an overdose could result in health concerns	E	3	moderate			X		X	
15	**Treatment**	Coagulation / Flocculation / Sedimentation	Loss of coagulant	Coagulant assists the sedimentation process which is a major barrier in the removal of giardia, cryptosporidium, etc.	D	4	**High**	CCP			Yes	X	SOP-02-112

					Risk Assessment				Control Measure			Consideratio	
	Category	Sub-Process (where applicable)	Potential Hazard (potential for causing harm)	Associated Water Quality Hazards	Likelihood	Impact	Level of Risk	Critical Control Point	Emergency (contingency)	Operational (Procedural)	CCP Measurable (Yes/No)	Considered Long Term Impact Climate Control	Comments
16	**Treatment**	Coagulation / Flocculation / Sedimentation	Inadequate Coagulation / flocculation	Coagulant and flocculation (slow mixing) assists the sedimentation process which is a major barrier in the removal of giardia, cryptosporidium, etc.	E	2	low			X		X	
17	**Treatment**	Coagulation / Flocculation / Sedimentation	Sedimentation failure	Sedimentation process which is a major barrier in the removal of giardia, cryptosporidium, etc.	E	2	low			X		X	
18	**Treatment**	Filtration	Filter breakthrough	Filter short-circuiting resulting in increased health concerns	D	2	low			X		X	
19	**Treatment**	Primary Disinfection	Primary disinfection failure	No disinfection of the drinking water resulting in an acute health concern	D	4	**high**	CCP			Yes	X	SOP-02-111
20	**Treatment**	Primary Disinfection	Primary disinfection overdose	Primarily an aesthetic concern unless overdose is severe, which could result in health concerns.	D	3	moderate			X		X	
21	**Treatment**	Secondary Disinfection	Secondary disinfection failure	Loss of a health-protection barrier for the distribution system which would result in an increased health concern	D	4	**high**	CCP			Yes	X	Pre-chlorination option SOP-02-109
22	**Treatment**	Secondary Disinfection	Secondary disinfection overdose	Primarily an aesthetic concern unless overdose is severe, which could result in health concerns.	D	3	moderate			X		X	
23	**Treatment**		Chemical supply contamination	Contaminated chemical could further contaminate the drinking water and create health concerns	E	4	**high**	CCP			Yes	X	SOP-02-113
24	**Treatment**		High filter turbidity	Indicates potential failure of filtration barrier, resulting in increased health concerns	D	4	**high**	CCP			Yes	X	SOP-02-110
25	**Treatment**		Vandalism / terrorism	Vandals could impact water quality in the facility, causing increased health concerns	E	5	high		X		No	X	
26	**Treatment**		Failure of SCADA alarms	Loss of operator control at the facility, potential to lose water quality data	C	2	moderate			X		X	
27	**Treatment**		Loss of monitoring equipment	increase turbidity	E	2	low			X		X	
28	**Chemical Storage**		leak of chemical storage, loss of supply of chemical	Loss of critical chemical use for water treatment	D	2	low		X			X	SOP-02-112 SOP-02-111
29	**Chemical Storage**		Secondary Chlorine containment @ Clonsilla	Loss of water storage capacity	D	3	moderate			X		X	
30	**Water Storage**		Vandalism / terrorism	Vandals could impact water quality in the facility, causing increased health concerns	E	4	high		X		No	X	Hatch and door alarms linked to SCADA
31	**Water Storage**		Pathogenic Contamination	decreased water quality from accidental animal waste or carcass	D	2	low					X	
32	**Water Storage**		Biofilm growth	Depletion of free chlorine residual	D	1	low			X		X	
33	**Water Storage**		Low chlorine residual	Secondary disinfection barrier absent	D	2	low			X		X	SCADA Monitored, see secondary disinfection SOP
34	**Water Storage**		Water residency time	Reduction in free chlorine residual	C	1	low			X		X	
35	**Water Storage**		Failure of alarms and monitoring equipment	Loss of operator control at the facility	C	1	low			X		X	Redundancy SCADA Monitored
36	**Pumping Facilities**		Power Failure	Extended power failures may result in lower distribution system pressures	C	1	low		X			X	Diesel Generators
37	**Pumping Facilities**		Vandalism / terrorism	Vandals could impact water quality in the facility, causing increased health concerns	E	1	low		X			X	Hatch and door alarms linked to SCADA

					Risk Assessment				Control Measure			Consideratio	
	Category	Sub-Process (where applicable)	Potential Hazard (potential for causing harm)	Associated Water Quality Hazards	Likelihood	Impact	Level of Risk	Critical Control Point	Emergency (contingency)	Operational (Procedural)	CCP Measurable (Yes/No)	Considered Long Term Impact Climate Control	Comments
38	**Pumping Facilities**		Failure of alarms and monitoring equipment	Loss of operator control at the facility	C	1	low			X		X	Redundancy SCADA Monitored
39	**Pumping Facilities**		Catastrophic pumping facility failure	Loss of station could impact overall system pressure	E	3	moderate			X		X	redundancy in system
40	**Chlorine Booster**		Vandalism / terrorism	Vandals could impact water quality in the facility, causing increased health concerns	E	2	low		X			X	
41	**Chlorine Booster**	Clonsilla Reservoir	Power failure	If generator fails, loss of booster chlorination possibly resulting in lower free chlorine residuals in the distribution system	C	1	low		X			X	diesel pump, ability to by pass solenoid to work around power outage
42	**Chlorine Booster**		Chlorination failure	Lower free chlorine residuals in the distribution system	C	2	moderate			X		X	
43	**Chlorine Booster**		Chlorine overdose	Primarily an aesthetic concern unless overdose is severe, which could result in health concerns.	C	2	moderate			X		X	SCADA Monitored
44	**Chlorine Booster**		Failure of alarms and monitoring equipment	Loss of operator control at the facility	C	1	low			X		X	Redundancy SCADA Monitored
45	**Distribution**		Water main break causing contamination		D	2	low			X		X	O & M Manual, no Cat 2(with notification) breaks in 2019 WD staff trained for new WM disifection procedure
46	**Distribution**		Backflow from private plumbing - major industry		D	3	moderate					X	Existing Cross Connection Control Program
47	**Distribution**		Vandalism / terrorism	Vandals could impact water quality in the distribution system, causing increased health concerns	E	4	high		X		No	X	
48	**Distribution**		Low pressure	Backflow conditions may occur resulting in potential health concerns	C	2	moderate			X		X	O & M Manual
49	**Distribution**		Rehabilitation, replacement and commissioning new new mains causing contamination	high dose of chlorine could result in skin and stomach irritation	E	2	low			X		X	SOP-09-002
50	**Distribution**		Aged pipes / infrastructure	Reduction of free chlorine residual, degradation of water quality and reliability of service	B	1	moderate			X		X	Capital 5 year plan
51	**Distribution**		Biofilms	Will reduce available secondary free chlorine and may harbour other bacteria and provide less effective disinfection	D	1	low			X		X	
52	**Distribution**		Formation of DBP's above MAC		D	3	moderate			X		X	Quarterly Testing Standard
53	**Distribution**		Failure of alarms and monitoring equipment	Loss of operator monitoring capability	D	1	low			X		X	Redundancy SCADA Monitored
54	**Distribution**		Long residency water	Lower free chlorine residuals in the distribution system		1	low			X		X	O & M Manual
55	**Distribution**		Contaminated water	Increased concentrations of bacteria, viruses etc. decreased water quality	D	3	moderate			X		X	O & M Manual
56	**Distribution**		Temporary overland by-pass	damage to by-pass could result in contamination of water	C	2	moderate			X		X	Operational Control, Back flow device testing required by Engineering
57	**Distribution**		Dead End	low free chlorine residual in system leading to increase adverse water quality	B	2	**high**	CCP		X		X	systems to include loop, install bleeders lines

					Risk Assessment				Control Measure			Consideratio	
	Category	Sub-Process (where applicable)	Potential Hazard (potential for causing harm)	Associated Water Quality Hazards	Likelihood	Impact	Level of Risk	Critical Control Point	Emergency (contingency)	Operational (Procedural)	CCP Measurable (Yes/No)	Considered Long Term Impact Climate Control	Comments
58	**Distribution**		Contaminated water from unauthorized hydrant use	high turbidity water quality complaints	C	2	moderate	no		X		X	Corporate procedure, customer complaint and Contractor education
59	**Distribution**	Reservoir and elevated tanks		Maintenance at facility, long term outage could increase vulnerability of system, in high use periods	D	2	Minor			X	no	X	Operational redundancy
60	**Additional MECP**		Extreme Weather events, (storms or ice storm)	power outage, communication issued, disruption to normal working conditions	D	2	Low	No	X		no	X	This is a quantity issue not quality
61	**Additional MECP**		Sustained extreme temperature (heat wave, deep freeze)	potential increase water main freeze/break loss of water						X	No	X	