

# **INTERNAL AUDIT REPORT**

**Department of Public Works – Environmental Services  
Division**

**Compliance Review of Permit to Operate a Class 4 Water  
Distribution System**

**Assignment # 19-01**

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ST. JOHN'S

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**TABLE OF CONTENTS**

<b>INTRODUCTION.....</b>	<b>1</b>
<b>OBJECTIVE.....</b>	<b>1</b>
<b>BACKGROUND.....</b>	<b>1</b>
<b>METHODOLOGY &amp; SCOPE.....</b>	<b>2</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>4</b>
<b>DETAILED ANALYSIS .....</b>	<b>6</b>
Issue 1.1 – Pressure Reducing Valves (Section 10) .....	6
Issue 1.2 – Hydrant Flushing, Hydrant Pressure and Maintenance and Valve Exercising (Section 10).....	8
Issue 1.3 Regular Inspection Routine (Section 10) .....	10
Issue 1.4 Training (Section 13) .....	11
Issue 1.5 Contractors (Section 14) .....	12
Issue 1.6 Cross Connection Control Program (Section 17) .....	13
Issue 1.7 Eye Wash Stations (Section 22) .....	14
Issue 1.8 Asbestos Abatement (Section 26) .....	15

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To: Chair & Committee Members, City of St. John's Audit Committee

Area Responsible: Deputy City Manager, Public Works  
Director, Environmental Services  
Manager, Infrastructure

Copy to: City Manager

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## INTRODUCTION

### **OBJECTIVE**

The objective of the audit was to determine if the City of St. John's is in compliance with the provisions set forth in its permit to operate a class 4 water distribution system as it relates to the Water Distribution Division.

### **BACKGROUND**

The City of St. John's ("City") operates and maintains numerous water distribution systems including surface water supplies from Windsor Lake, Bay Bulls Big Pond, Petty Harbor-Long Pond and Little Powers Pond. Additionally, the City also operates and maintains various disinfection facilities, water storage reservoirs and booster pumping stations.

The operation of these water distribution systems is pursuant to the Water Resources Act ("Act") of Newfoundland and Labrador. This legislation covers the control and management of water resources in the province. Section 37 of the Act states that a municipality, corporation or individual must first obtain a permit before work can begin on new waterworks or alterations to existing works. Permits are issued under the discretion of the Minister of Municipal Affairs and Environment ("Minister") in accordance with the Act.

Permits specify various obligations that must be met in order to operate a water distribution system. The City's permit to operate its water distribution system was issued on March 1, 2004. The permit provides guidance on various aspects of water distribution systems including operations, monitoring, emergency situations, record keeping and operator education, training and certification.

Failure to comply with the terms and conditions of the permit would render the permit null and void and place the City in violation of the Act. Consequently, the City would no longer be able to operate any water distribution system and would also be responsible for taking any remedial measures prescribed by the Minister. Given the importance of the City's water distribution system to the residents of St. John's, it is critical that the City fully complies with the provisions of its permit.

The City's Environmental Services Division is responsible for the operation and maintenance of the water distribution systems and related permit to operate. While meeting the obligations of the permit is a shared responsibility among various employees, the Infrastructure Manager plays an important role in ensuring compliance.

## **METHODOLOGY & SCOPE**

To meet the audit objective, Internal Audit reviewed the Water Resources Act to gain an understanding of its various provisions and overall purpose. Additionally, the Guide to the Water Resources Act, as prepared by the Government of Newfoundland and Labrador, was reviewed to further our understanding of the Act.

Interviews were held with management and staff to gather relevant background information for the audit. The City's permit to operate a class 4 water distribution system was also obtained and reviewed by Internal Audit to determine the requirements for compliance. Audit procedures included observing the City's

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water distribution related practices and reviewing supporting documentation including reports, logs and manuals.

The scope of the audit was limited to the City's compliance with its permit to operate a class 4 water distribution system. Other City public drinking water permits, such as the permit to operate a water treatment plant, were outside the scope of the audit.

Furthermore, only sections of the permit directly under the control of the Infrastructure Manager were reviewed for compliance. Other activities, such as water quality testing, are conducted at the City's individual water plants and were scoped out of the audit.

## EXECUTIVE SUMMARY

Internal Audit's compliance review of the permit to operate a class 4 water distribution system was undertaken in accordance with the approved three-year audit plan.

The operation of the City's water distribution system is within the purview of the Water Resources Act of Newfoundland and Labrador. Per the Act, those responsible for new water works or alterations to existing works must first obtain a permit before proceeding. The City's permit to operate its water distribution system was issued on March 1, 2004.

The objective of the audit was to determine if the City of St. John's is in compliance with the provisions set forth in its permit to operate as it relates to the Water Distribution Division only. The permit includes requirements that fall under the responsibility of other divisions such as the water treatment plants and as such they were not included in the scope of this review.

The audit noted numerous positive controls such as the use of maintenance schedules to help ensure equipment is in good operation and management review. However, the audit also identified areas for improvement. These include:

- Ensuring audit trails are properly documented to help ensure proper management due diligence can be proven. This includes:
  - Preparing Mechanical Maintenance Record Forms for all required maintenance,
  - Recording service call numbers on the appropriate maintenance schedules and/or logbooks,
  - Recording management sign-off, with dates, on the appropriate maintenance schedules and/or logbooks, etc.

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- Recording the number of hours of training that each foreperson and supervisor receive each year in the training spreadsheet so that compliance with the required 24 hours of annual training can be more easily proven.
  - Ensuring that tenders for work on the City's water distribution system include a term requiring that bidders must have training in relation to the particular aspect of the operation and maintenance that they have been contracted to perform as outlined in Section 14 of the permit to operate.
  - Ensuring all requests for asbestos related work such as tenders, proposals and low value purchase orders include the requirement that the work must be carried out according to the Asbestos Abatement Regulations.

Additional recommendations of a less significant nature can be found in the body of the report. It should be noted that management have agreed to implement all recommendations.



## DETAILED ANALYSIS

### Issue 1.1 – Pressure Reducing Valves (Section 10)

Section 10 of the permit pertains to maintenance schedules for task specific items such as pressure reducing valves. It states that maintenance schedules must be maintained for task specific items that are completed on a daily, weekly, monthly, or other periodic basis.

Pressure reducing valves (“PRV”) are designed to reduce incoming water or steam pressure to a safer constant predetermined downstream level. Maintenance on these valves must be documented in a formulized maintenance schedule.

A Mechanical Maintenance Record Form (“Record Form”) is used by the Water Distribution Division, which outlines the PRV maintenance to be performed and captures the related service call number. When the PRV maintenance is performed, the valve pressure readings and other information is documented in a logbook. Internal Audit reviewed the logbook along with a sample of Records Forms. Our review disclosed the following:

- i) PRVs are tested monthly (approximately) and readings are recorded in the logbook. While entries in the logbook are initialed by the employee performing the test, they are not signed and dated by the Water and Wastewater Foreperson to indicate review and approval.
- ii) Service call numbers on the Record Form are not recorded in the logbooks. This omission impedes the audit trail making it difficult to trace entries in the logbook to the corresponding Record Form.

As a result, although the Water Distribution Division appears to be maintaining a maintenance schedule for PRV's in-line with Section 10 of the permit to operate, lack of proper audit trails makes it difficult to determine if any required maintenance is performed and reviewed in a timely manner.

### **Recommendation 1.1**

To ensure that the maintenance is performed and reviewed in a timely manner, accountability is established, and a proper audit trail exists; management should:

- i) ensure the service call number from the Record Form is recorded in the logbook next to the issue noted.
- ii) have a foreperson sign and date each reading in the logbook to indicate the work was completed as required and in a timely manner.
- iii) review, sign and date each page of the logbook to ensure the readings are signed and dated by the foreperson and service call numbers are recorded next to the issue noted.

### **Management Response and Action Plan 1.1**

We agree with the above noted recommendations.

### **Conclusion 1.1**

The recommendation will be implemented as stated above.

**Action By:** Manager, Infrastructure

**Action Date:** Dec 2020

**Information Only:** DCM, Public Works  
Director, Environmental Services

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**Issue 1.2 – Hydrant Flushing, Hydrant Pressure and Maintenance and Valve Exercising (Section 10)**

Section 10 of the permit also pertains to maintenance schedules for items such as hydrant flushing, hydrant pressure and maintenance and valve exercising. It states that maintenance schedules must be maintained for task specific items that are completed on a daily, weekly, monthly or other periodic basis.

To test for compliance with this section Internal Audit obtained and reviewed maintenance schedules for the following processes:

- **Hydrant flushing**, which is a method of cleaning water mains through a network of flushing sequences with the water being discharged from a fire hydrant. This type of flushing increases the speed of the water flow in the water main, which produces a scouring action to remove sediment deposits.
- **Hydrant pressure readings and maintenance** involves testing hydrant water pressure and ensuring the hydrants are in good working condition. This involves checking if the hydrant needs to be painted, if the hydrant caps are adequate and greased and if the gaskets need to be replaced.
- **Valve exercising**, which is a systematic program to locate and exercise water valves to ensure they function properly. Valve exercising involves operating a valve through its full cycle and returning it to its normal position to prevent buildup of deposits that could render the valve inoperable.

If a problem is noted with one of the above processes it is documented in the respective schedule. Examples of issues noted in the schedules include inoperable valves, inadequate gaskets and hydrants requiring new paint. However, Mechanical Maintenance Record Forms are not prepared for the work

that needs to be completed, the schedules do not reference a related service call number to indicate that the problem was addressed, nor do they capture the date the issue was resolved.

As a result, although the Water Distribution Division appears to be keeping maintenance schedules for the above noted tasks, in-line with Section 10 of the permit to operate, lack of proper audit trails makes it difficult to determine if any required maintenance is performed and reviewed in a timely manner.

### **Recommendation 1.2**

To ensure that the maintenance is performed and reviewed in a timely manner, issues are followed-up and a proper audit trail exists; management should:

- i) have a Mechanical Maintenance Record Form prepared and approved for the work to be done.
- ii) record the Service Call number from the Mechanical Maintenance Record Form on the schedule.

### **Management Response and Action Plan 1.2**

We agree with the above noted recommendations.

### **Conclusion 1.2**

The recommendations will be implemented as stated above.

**Action By:** Manager, Infrastructure

**Action Date:** Apr 2021

**Information Only:** DCM, Public Works  
Director, Environmental Services

**Issue 1.3 Regular Inspection Routine (Section 10)**

An inspection of the water distribution equipment in Kilbride was performed by an outside contractor on December 11, 2018. The details of the inspection were captured in a “maintenance check list” document prepared by the contractor. Internal Audit obtained a copy of this document and noted that the contractor indicated the “engine is wet stacked and requires a load test”. However, there was no reference to a service call number on the document to indicate if the test had been done and who performed the work. Additionally, there was no evidence of management review on the document as it was not signed and dated.

**Recommendation 1.3**

To ensure that the maintenance inspections are reviewed in a timely manner, issues are followed-up and a proper audit trail exists; management should:

- i) sign and date the inspection document.
- ii) have a Mechanical Maintenance Record Form prepared and approved for the work to be done.
- iii) record the Service Call number from the Mechanical Maintenance Record Form on the inspection document.

**Management Response and Action Plan 1.3**

We agree with the above noted recommendations.

**Conclusion 1.3**

The recommendations will be implemented as stated above.

**Action By:** Manager, Infrastructure

**Action Date:** Feb 2021

**Information Only:** DCM, Public Works  
Director, Environmental Services

**Issue 1.4 Training (Section 13)**

Section 13 of the permit stipulates that foremen and supervisors must receive a minimum of 24 hours of related training per year. Such training is documented by Environmental Services in a spreadsheet. Internal Audit obtained a copy of this spreadsheet and reviewed it for compliance.

The spreadsheet contained the name of the employee, the topic of the training and the date the training was completed. However, the number of hours attributable to each training session was not recorded. Therefore, Internal Audit could not determine if the required training hours per year were met.

**Recommendation 1.4**

For each employee, management should record the number of hours for each training session and ensure that the required 24 hours of training per year is met.

**Management Response and Action Plan 1.4**

We agree with the above noted recommendations.

**Conclusion 1.4**

The recommendations will be implemented as stated above.

**Action By:** Manager, Infrastructure

**Action Date:** Jun 2021

**Information Only:** DCM, Public Works  
Director, Environmental Services

**Issue 1.5 Contractors (Section 14)**

Section 14 of the permit requires Contractors who do work on the distribution system on behalf of the City to be trained in the particular aspect of the operation and maintenance that they have been contracted to perform.

Internal Audit discussed this requirement with management, and they indicated the majority of work on the water distribution system is tendered out. However, the tenders do not specify that the contractors must be trained as stipulated in Section 14. Such a term should be added to water distribution system related tenders going forward.

**Recommendation 1.5**

Management should ensure that tenders for work on the City's water distribution system include a term requiring that bidders must have training in relation to the particular aspect of the operation and maintenance that they have been contracted to perform as outlined in Section 14 of the permit to operate.

**Management Response and Action Plan 1.5**

We have contacted the Provincial Government and they have clarified the intent of Section 14 – this section is intended for contractors that would operate the water distribution system for the City. The City does not contract out the operation or management of the water distribution system, all operations are completed by City staff. However, they did state that contractors completing work on the water distribution system must submit documentation such as as-built drawings and testing results for any work completed.

**Conclusion 1.5**

Management have indicated that they will ensure the division operates in accordance with Section 14 of the permit to operate.

**Action By:** Manager, Infrastructure

**Action Date:** Jun 2021

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**Information Only:** DCM, Public Works  
Director, Environmental Services

### **Issue 1.6 Cross Connection Control Program (Section 17)**

Cross-connections are present in every drinking water supply system and, depending on the size of the system, hundreds or thousands of potential cross-connections can exist. Cross-connections that are not protected against backflow are potentially a dangerous source of contamination. When backflow occurs through an unprotected cross-connection, pollutants and contaminants can enter the system and be delivered to residents.

Section 17 of the permit to operate attempts to minimize this risk by mandating a cross connection control program. The permit states that the program should include ongoing backflow prevention testing and maintenance of cross connection control equipment.

The City uses contractors to perform the backflow prevention testing. Prior to performing the testing, a contractor must obtain a license from the City by completing an Application for Backflow Prevention Device Tester License ("Application"). Once approved, the contractor conducts the testing and documents the results in a City standardized form called Premises Isolation Testing and Inspection Report ("Inspection Report"). The Inspection Report is submitted to the Cross-Connection Control Technician to review.

Internal Audit obtained samples of both the Applications and Inspection Reports and found that three of the Applications reviewed did not have the application approval section (section 5) completed. The form states that this section should be completed by the City's Inspector. Additionally, the Inspection Report does not include a section for the Cross-Connection Control Technician to sign and date to indicate evidence of review and approval.



**Recommendation 1.6**

To ensure a proper audit trail exists so that the City can demonstrate due diligence in its compliance with Section 17 of the Permit to Operate management should:

- i) ensure that section 5 of the Application for Backflow Prevention Device Tester License is completed on all applications.
- ii) revise the Premises Isolation Testing and Inspection Report to include a section for the Cross-Connection Control Technician to sign and date.

**Management Response and Action Plan 1.6**

We agree with the above noted recommendations.

**Conclusion 1.6**

The recommendations will be implemented as stated above.

**Action By:** Manager, Infrastructure

**Action Date:** Mar 2021

**Information Only:** DCM, Public Works  
Director, Environmental Services

**Issue 1.7 Eye Wash Stations (Section 22)**

Section 22 of the permit requires the City to adequately maintain its eye wash stations. This includes that they be checked and flushed regularly. To determine compliance, Internal Audit inspected two eye wash stations located in the City Depot. Both stations had dust on them and there was no log kept documenting the last time the stations had been inspected and flushed. As a result, it was difficult to determine if the eye wash stations are being maintained as required.

**Recommendation 1.7**

Management should ensure that eye wash stations are maintained through regular inspections and a log is kept recording who performed the inspections and when they were performed. Furthermore, although Internal Audit only inspected the two stations at the City Depot, this recommendation is applicable to all the City's eye wash stations that are subject to the permit to operate.

**Management Response and Action Plan 1.7**

We agree with the above noted recommendations.

**Conclusion 1.7**

The recommendations will be implemented as stated above.

**Action By:** Manager, Infrastructure

**Action Date:** Oct 2020

**Information Only:** DCM, Public Works  
Director, Environmental Services

**Issue 1.8 Asbestos Abatement (Section 26)**

The Government of Newfoundland and Labrador's Asbestos Abatement Regulations 1998 ("Regulations") provides safe handling procedures to minimize exposure to airborne asbestos fibre released from asbestos containing material. Section 26 of the permit to operate indicates that when dealing with asbestos cement pipe, any removal, handling or transport and disposal of asbestos must be done pursuant to these Regulations.

Discussions were held with management to determine Section 26 compliance. Management indicated that there was a single occurrence over the last two years when they had to deal with asbestos and that work was contracted out. The work

involved cutting and disposing of asbestos pipe and was contracted through a low value purchase order (“LVPO”). Internal Audit obtained a copy of the LVPO and noted that there was no reference that the work had to be done according to the Regulations. As a result, it was difficult to determine if management performed the necessary due diligence to be in compliance with Section 26 of the permit.

### **Recommendation 1.8**

When dealing with asbestos, management should ensure that requests for work (LVPO, tenders, etc.) include the requirement that the work must be carried out according to the Asbestos Abatement Regulations.

### **Management Response and Action Plan 1.8**

The handling of asbestos pipe material is a very infrequent activity (average once per year), we typically engage a contractor to complete the work. We will ensure that the contractor provides documentation that the work is completed in accordance with the Regulations.

### **Conclusion 1.8**

The recommendation will be implemented as stated above.

**Action By:** Manager, Infrastructure

**Action Date:** Jun 2021

**Information Only:** DCM, Public Works  
Director, Environmental Services