

CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018

Item 2, Report No. 12, of the Committee of the Whole (Working Session), which was adopted without amendment by the Council of the City of Vaughan on March 20, 2018.

2 2017 DRINKING WATER DISTRIBUTION SYSTEM REPORT

The Committee of the Whole (Working Session) recommends approval of the recommendation contained in the following report of the Deputy City Manager, Public Works, dated March 7, 2018:

Purpose

This report helps Council meet its Standard of Care requirements in the *Safe Drinking Water Act, 2002* and updates Council on key drinking water programs and services undertaken by Environmental Services and Infrastructure Delivery and Development Engineering in 2017.

Recommendations

1. That approval be given for an administrative update to the DWQMS (Drinking Water Quality Management System) Operational Plan to designate the Director of Environmental Services as the Owner's Representative of the Drinking Water System.

Report Highlights

- The DWQMS annual top management review was held on September 25, 2017
- Environmental Services infrastructure maintenance activities support enhanced service delivery
- Water projects have been undertaken that support corporate asset management
- Initiatives that support water conservation programs have occurred

Background

Top Management is required to communicate to the City of Vaughan Drinking Water Owner the minutes from the annual Top Management Review

Element 20 of the DWQMS Operational Plan requires that a top management review be held yearly and that notable findings from this meeting be reported to Council. Top Management is comprised of the Deputy City Manager of Public Works, Director of Environmental Services, Manager of Water Services, Supervisor('s) of Water Operations, and the Supervisor of Compliance and Business Services. This group ensures that the City is meeting the requirements of the Operational Plan. The annual review that was held on September 25, 2017 identified the following actions which were

CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018

Item 2, CW (WS) Report No. 12 – Page 2

assigned for completion or have already been completed:

- The comprehensive 3-year risk assessment review was completed and adjustments were made to control points, operating procedures, and sampling parameters
- A new contract to hire an external auditor will be required in 2018
- The water distribution emergency plan has been updated
- The backflow prevention bylaw will be approved by Council in 2018
- Top Management roles were adjusted and approved by Council (*Report 35, Item 6 – October 24, 2017*)
- The MOECC “Vaughan Distribution System Inspection Report” was performed on February 22, 2017 and shared in a memo to Council (March 30, 2017)

The MOECC recently performed an unscheduled inspection on January 11, 2018 and the City of Vaughan received a 100% inspection rating for the period February 1, 2017 to December 31, 2017.

The City owns, operates and maintains the local water distribution system in order to continually provide safe drinking water to citizens and businesses

Vaughan’s water distribution system is a component of the larger York Region system and is comprised of 988 kilometers of watermain, 84,207 service connections and 9,536 hydrants.

The City operates one booster pumping station and one pressure elevating station which ensure effective transportation of water to the higher elevations of the municipality.

In the last year, the Environmental Services Department has undertaken and completed a number of initiatives and projects to enhance service delivery, manage and extend the life of water infrastructure, protect the environment and public health, exhibit fiscal responsibility and increase education and promotion. This report highlights some of these initiatives and projects that were completed or are underway.

Previous Reports/Authority

https://www.vaughan.ca/council/minutes_agendas/AgendaItems/CW1003_17_6.pdf

https://www.vaughan.ca/council/minutes_agendas/AgendaItems/CW0207_17_1.pdf

CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018

Item 2, CW (WS) Report No. 12 – Page 3

Analysis and Options

An administrative adjustment to the DWQMS is required to designate the Director of Environmental Services as the Owner's Representative of the Drinking Water System

Prior to the departmental re-organization in 2015, the Director of Public Works was the Owner's Representative. In reviewing documents as part of a continuous improvement activity, it was discovered that the DWQMS needed to clarify the Director of Environmental Services as the Owner's Representative of the Drinking Water System. Identifying and addressing process gaps such as this, supports Element 21 of the DWQMS Operational Plan requirement for the water operating authority to search for opportunities related to continuous improvement.

This report seeks approval from Council to formally designate the Director of Environmental Services as the Owner's Representative in relation to providing signing authority. The Owner of the drinking water system is the City of Vaughan, which is represented by the Mayor and Members of Council.

Just over \$11 million in operating expenses and approximately \$8 million for capital projects was budgeted by Environmental Services in 2017 to achieve enhanced service delivery and to extend the life of water related infrastructure

The Environmental Services Department continues to be committed to providing excellence in the provision of water distribution system related services. This has been demonstrated through the development of programs and undertaking of several operational activities.

Some of these operational activities include:

- an expanded area of the City was included in watermain flushing and swabbing
- a strategic valve exercising program was coordinated with capital projects

The Department realizes the benefit in fully understanding the condition of the water distribution system and the role that plays in enhancing the City's corporate asset management program. The information that has been achieved by undertaking these activities has enhanced the data available to other teams in Public Works and supports the planning for future departmental programs.

Supervisory Control and Data Acquisition (SCADA) is the use of a modern computerized monitoring and control system which is common in the operation of municipal water systems

The City of Vaughan previously had an alarm dialer system which had the capability to provide notification when pump or generator failures occurred at these critical locations

CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018

Item 2, CW (WS) Report No. 12 – Page 4

so that on-call staff can respond immediately. The incorporation of SCADA technology provides the ability to remotely monitor and control critical infrastructure related to water operations. This capability provides an increased awareness of issues that may arise at our booster and pressure elevating station. In addition, it allows for the development of a series of standards that will ensure consistency of enhancements as they are made at these locations.

Water booster station condition assessment was completed and provided recommendations to improve effectiveness and efficiency

The condition assessment was completed in the fall of 2017. The assessment was completed through visual inspection of components, review of background information, and performance tests of the pumps. Various asset categories including building envelope, site works, process mechanical equipment, process piping, electrical and instrumentation, were assessed, risk ranked and prioritized. Based upon the recommendations, works to be undertaken include an upgrade of controls to improve pump pressure control, starts and stops, eliminate water hammer and reduce energy consumption.

Environmental Services successfully initiated federal and provincial financially supported Clean Water and Wastewater Fund (CWWF) projects

With the announcement of available funding from the CWWF program made in July 2017 of \$20 million Environmental Services was able to respond by undertaking the following water related projects:

- a pressure district assessment strategy to assist in addressing non-revenue water
- automated payment system retrofit at our bulk water filling stations
- watermain distribution system condition assessment of metallic pipe
- station control upgrades to the Maplewood Booster Station
- replacement of out of calibration water meters
- implementation strategy for smart meters
- corrosion control of metallic watermain and fittings
- an update to the hydraulic water model to enhance capacity analysis

Infrastructure Delivery was allocated funds from the CWWF and was able to fund watermain replacement projects and advance several projects.

CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018

Item 2, CW (WS) Report No. 12 – Page 5

Communication with citizens has been increased by an enhanced education and outreach program in support of new initiatives

Recognizing the importance of educating the citizens of Vaughan about water conservation choices, Environmental Services supports related initiatives. These include: water wise fusion gardening; studies that identify leaks in the distribution system; and a mobile water trailer to promote drinking municipal tap water. The departmental education and outreach program includes participation at community events and continues to investigate other promotional venues.

The replacement of outdated and inefficient water meters with Automated Metering Infrastructure (AMI) compatible water meters is an ambitious project due to its complexity and the volume of customers. The implementation of an AMI system benefits the consumer by allowing the real-time tracking of water usage. This is a dynamic tool in support of water efficiency and conservation, and supports the vision of Vaughan to be a “Smart City.”

Capital Projects and Studies

Capital projects, with a 2017 budget of \$4.8 million, were undertaken in conjunction with Infrastructure Delivery and Development Engineering to invest, renew and manage infrastructure and assets

In 2017, a total of 2,755 metres of metallic watermain was replaced as part of the following projects:

1. Centre Street (Dufferin Street to New Westminster Drive) – 1,455m
2. Basaltic Road - 440m
3. Planchet Road - 415m
4. McKenzie Street - 235m
5. Villagewood Court - 230m

In addition, Infrastructure Delivery is currently working on “Cross-Asset Optimization”, a risk based approach to determine water infrastructure needs through preventative maintenance and replacement requirements.

Last year, through the assumption process, the City added to its municipal assets, 27,163 metres of watermain related infrastructure.

Financial Impact

There are no economic impacts resulting from the adoption of this report.

CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018

Item 2, CW (WS) Report No. 12 – Page 6

Broader Regional Impacts/Considerations

Environmental Services staff work with the Region to share knowledge and partner on water conservation programs.

Conclusion

The past year saw several notable water related programs, activities and initiatives undertaken by Environmental Services, Infrastructure Delivery and Development Engineering. These support drinking water regulatory requirements, such as the DWQMS annual management review, success was shown in enhanced service delivery, support to other City stakeholders such as corporate asset management, and water conservation.

In recognition of the vision of Environmental Services to be “Leaders for a Greener Future”, programs and projects related to water services will continue to be improved through innovation and enhancements.

For more information, please contact: Jennifer Rose, Director of Environmental Services ext. 6116

Attachments

None

Prepared by

Deepak Panjwani, Manager, Program and System Planning, ext. 6110

Don Ross, Manager, Water Services, ext. 6310

Carol Warner, Supervisor of Compliance and Business Services, ext. 6197

Item:



Committee of the Whole (Working Session)

DATE: Wednesday, March 07, 2018

WARD(S): ALL

TITLE: 2017 Drinking Water Distribution System Report

FROM:

Stephen Collins, Deputy City Manager, Public Works

ACTION: DECISION

Purpose

This report helps Council meet its Standard of Care requirements in the *Safe Drinking Water Act, 2002* and updates Council on key drinking water programs and services undertaken by Environmental Services and Infrastructure Delivery and Development Engineering in 2017.

Recommendations

1. That approval be given for an administrative update to the DWQMS (Drinking Water Quality Management System) Operational Plan to designate the Director of Environmental Services as the Owner's Representative of the Drinking Water System.

Report Highlights

- The DWQMS annual top management review was held on September 25, 2017
- Environmental Services infrastructure maintenance activities support enhanced service delivery
- Water projects have been undertaken that support corporate asset management
- Initiatives that support water conservation programs have occurred

Background

Top Management is required to communicate to the City of Vaughan Drinking Water Owner the minutes from the annual Top Management Review

Element 20 of the DWQMS Operational Plan requires that a top management review be held yearly and that notable findings from this meeting be reported to Council. Top Management is comprised of the Deputy City Manager of Public Works, Director of Environmental Services, Manager of Water Services, Supervisor(s) of Water Operations, and the Supervisor of Compliance and Business Services. This group ensures that the City is meeting the requirements of the Operational Plan. The annual review that was held on September 25, 2017 identified the following actions which were assigned for completion or have already been completed:

- The comprehensive 3-year risk assessment review was completed and adjustments were made to control points, operating procedures, and sampling parameters
- A new contract to hire an external auditor will be required in 2018
- The water distribution emergency plan has been updated
- The backflow prevention bylaw will be approved by Council in 2018
- Top Management roles were adjusted and approved by Council (*Report 35, Item 6 – October 24, 2017*)
- The MOECC “Vaughan Distribution System Inspection Report” was performed on February 22, 2017 and shared in a memo to Council (March 30, 2017)

The MOECC recently performed an unscheduled inspection on January 11, 2018 and the City of Vaughan received a 100% inspection rating for the period February 1, 2017 to December 31, 2017.

The City owns, operates and maintains the local water distribution system in order to continually provide safe drinking water to citizens and businesses

Vaughan’s water distribution system is a component of the larger York Region system and is comprised of 988 kilometers of watermain, 84,207 service connections and 9,536 hydrants.

The City operates one booster pumping station and one pressure elevating station which ensure effective transportation of water to the higher elevations of the municipality.

In the last year, the Environmental Services Department has undertaken and completed a number of initiatives and projects to enhance service delivery, manage and extend the life of water infrastructure, protect the environment and public health, exhibit fiscal responsibility and increase education and promotion. This report highlights some of these initiatives and projects that were completed or are underway.

Previous Reports/Authority

https://www.vaughan.ca/council/minutes_agendas/AgendaItems/CW1003_17_6.pdf

https://www.vaughan.ca/council/minutes_agendas/AgendaItems/CW0207_17_1.pdf

Analysis and Options

An administrative adjustment to the DWQMS is required to designate the Director of Environmental Services as the Owner's Representative of the Drinking Water System

Prior to the departmental re-organization in 2015, the Director of Public Works was the Owner's Representative. In reviewing documents as part of a continuous improvement activity, it was discovered that the DWQMS needed to clarify the Director of Environmental Services as the Owner's Representative of the Drinking Water System. Identifying and addressing process gaps such as this, supports Element 21 of the DWQMS Operational Plan requirement for the water operating authority to search for opportunities related to continuous improvement.

This report seeks approval from Council to formally designate the Director of Environmental Services as the Owner's Representative in relation to providing signing authority. The Owner of the drinking water system is the City of Vaughan, which is represented by the Mayor and Members of Council.

Just over \$11 million in operating expenses and approximately \$8 million for capital projects was budgeted by Environmental Services in 2017 to achieve enhanced service delivery and to extend the life of water related infrastructure

The Environmental Services Department continues to be committed to providing excellence in the provision of water distribution system related services. This has been demonstrated through the development of programs and undertaking of several operational activities.

Some of these operational activities include:

- an expanded area of the City was included in watermain flushing and swabbing
- a strategic valve exercising program was coordinated with capital projects

The Department realizes the benefit in fully understanding the condition of the water distribution system and the role that plays in enhancing the City's corporate asset management program. The information that has been achieved by undertaking these activities has enhanced the data available to other teams in Public Works and supports the planning for future departmental programs.

Supervisory Control and Data Acquisition (SCADA) is the use of a modern computerized monitoring and control system which is common in the operation of municipal water systems

The City of Vaughan previously had an alarm dialer system which had the capability to provide notification when pump or generator failures occurred at these critical locations so that on-call staff can respond immediately. The incorporation of SCADA technology provides the ability to remotely monitor and control critical infrastructure related to water operations. This capability provides an increased awareness of issues that may arise at our booster and pressure elevating station. In addition, it allows for the development of a series of standards that will ensure consistency of enhancements as they are made at these locations.

Water booster station condition assessment was completed and provided recommendations to improve effectiveness and efficiency

The condition assessment was completed in the fall of 2017. The assessment was completed through visual inspection of components, review of background information, and performance tests of the pumps. Various asset categories including building envelope, site works, process mechanical equipment, process piping, electrical and instrumentation, were assessed, risk ranked and prioritized. Based upon the recommendations, works to be undertaken include an upgrade of controls to improve pump pressure control, starts and stops, eliminate water hammer and reduce energy consumption.

Environmental Services successfully initiated federal and provincial financially supported Clean Water and Wastewater Fund (CWWF) projects

With the announcement of available funding from the CWWF program made in July 2017 of \$20 million Environmental Services was able to respond by undertaking the following water related projects:

- a pressure district assessment strategy to assist in addressing non-revenue water
- automated payment system retrofit at our bulk water filling stations
- watermain distribution system condition assessment of metallic pipe
- station control upgrades to the Maplewood Booster Station
- replacement of out of calibration water meters
- implementation strategy for smart meters
- corrosion control of metallic watermain and fittings
- an update to the hydraulic water model to enhance capacity analysis

Infrastructure Delivery was allocated funds from the CWWF and was able to fund watermain replacement projects and advance several projects.

Communication with citizens has been increased by an enhanced education and outreach program in support of new initiatives

Recognizing the importance of educating the citizens of Vaughan about water conservation choices, Environmental Services supports related initiatives. These include:

water wise fusion gardening; studies that identify leaks in the distribution system; and a mobile water trailer to promote drinking municipal tap water. The departmental education and outreach program includes participation at community events and continues to investigate other promotional venues.

The replacement of outdated and inefficient water meters with Automated Metering Infrastructure (AMI) compatible water meters is an ambitious project due to its complexity and the volume of customers. The implementation of an AMI system benefits the consumer by allowing the real-time tracking of water usage. This is a dynamic tool in support of water efficiency and conservation, and supports the vision of Vaughan to be a “Smart City.”

Capital Projects and Studies

Capital projects, with a 2017 budget of \$4.8 million, were undertaken in conjunction with Infrastructure Delivery and Development Engineering to invest, renew and manage infrastructure and assets

In 2017, a total of 2,755 metres of metallic watermain was replaced as part of the following projects:

1. Centre Street (Dufferin Street to New Westminster Drive) – 1,455m
2. Basaltic Road - 440m
3. Planchet Road - 415m
4. McKenzie Street - 235m
5. Villagewood Court - 230m

In addition, Infrastructure Delivery is currently working on “Cross-Asset Optimization”, a risk based approach to determine water infrastructure needs through preventative maintenance and replacement requirements.

Last year, through the assumption process, the City added to its municipal assets, 27,163 metres of watermain related infrastructure.

Financial Impact

There are no economic impacts resulting from the adoption of this report.

Broader Regional Impacts/Considerations

Environmental Services staff work with the Region to share knowledge and partner on water conservation programs.

Conclusion

The past year saw several notable water related programs, activities and initiatives undertaken by Environmental Services, Infrastructure Delivery and Development Engineering. These support drinking water regulatory requirements, such as the

DWQMS annual management review, success was shown in enhanced service delivery, support to other City stakeholders such as corporate asset management, and water conservation.

In recognition of the vision of Environmental Services to be “Leaders for a Greener Future”, programs and projects related to water services will continue to be improved through innovation and enhancements.

For more information, please contact: Jennifer Rose, Director of Environmental Services ext. 6116

Attachments

None

Prepared by

Deepak Panjwani, Manager, Program and System Planning, ext. 6110

Don Ross, Manager, Water Services, ext. 6310

Carol Warner, Supervisor of Compliance and Business Services, ext. 6197