The Regional Municipality of York

Odour Management and Mitigation (Condition 9) and Ambient Air Monitoring and Reporting (Condition 11) Annual Report (EA File No. 02-04-03)

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Executive Summary

The Southeast Collector (SEC) Trunk Sewer system conveys municipal wastewater 15 kilometres from the intersection of Ninth Line and Rouge Bank Drive in Markham, Ontario, to the intersection of Finch Avenue and Valley Farm Road in Pickering, Ontario. The operation of the system accommodates future growth in York Region and provides additional capacity for peak and extraneous flows. Furthermore, it increases redundancy to the existing York Durham Sewage System (YDSS) that is co-owned and co-managed by the Regional Municipalities of York and Durham (the Regions).

The system was commissioned on January 27, 2015 and has since been in operation.

The SEC Trunk Sewer Individual Environmental Assessment (IEA) was approved on March 31, 2010 allowing the Regions to proceed with the undertaking subject to 13 Conditions (74 sub-conditions) introduced by the Minister of the Environment's Notice of Approval to Proceed with the Undertaking (Approval).

To address Condition 9 of the Approval, the Odour Management and Mitigation Plan (OMMP) was prepared and submitted to the Ministry of the Environment, Conservation and Parks (MOECP) on September 24, 2010. Subsequently, on December 5, 2014, an updated OMMP was provided to include the Operation Manuals for each of the four main components of the odour control system prior to commissioning. On March 24, 2015, the MOECP provided comments on the updated OMMP. These comments and outcomes from the annual meeting held on May 19, 2015 including all other subsequent MOECP comments have been fully addressed in the Revised Addendum to the updated OMMP dated June, 2016.

To address *Condition 11* of the Approval, an Ambient Air Monitoring and Reporting Plan (AAMRP) was submitted to the MOECP on September 2010. The objective of the AAMRP is to confirm the operation of the SEC, and its odour control system and meet the designed performance in respect of emissions as set out in the SEC IEA.

The sampling programs for both *Conditions 9 and 11* include sampling for odour, hydrogen sulphide (H_2S), ammonia (NH_3), and total reduced sulphur (TRS) compounds at the same sensitive receptors with the same sampling criteria. In addition, the two programs are to follow the same schedule and sampling frequency, and it was agreed at the May 2015 annual meeting with the MOECP that the annual reports required under each *Condition (9 and 11)* are to be consolidated into one Annual Report.

This report is the fifth annual report to satisfy *Conditions 9.5, 9.6, and 11.5 of the Approval* and it will be posted on the york.ca website as per *Conditions 9.7 and 11.7* and covers the period July 2018 to June 2019.

As per *Condition 9.3 (e)* annual meetings with the MOECP Director progressed at the project specific level until 2017 where the decision was made to move the *Condition 9* discussion items into the Agenda of regular quarterly liaison meetings between York Region and MOECP at the senior management level.

Conditions 9 and 11 sampling programs are being conducted concurrently in two phases:

- **Phase 1:**
    a) Pre-Operation - Ambient Monitoring
    b) Start-up of Operations Ambient Air Monitoring and Air Emission Testing
- **Phase 2:** Post Operation Ambient Air Monitoring and Air Emission Testing

The schedules of sampling are shown on the table below.

Phase	Description	Year	Total Number of Sampling Campaigns	Sampling Seasons	Status
1A	Pre-Operation – Ambient Air Monitoring	2012	3	Spring, Summer, Fall	Complete
		2013	3	Winter, Spring, Summer	Complete
1B	Start-up Operations – Ambient Air Monitoring and Air Emissions Testing	One	3	Spring, Summer, Fall (2015)	Complete
2	Post Operation – Ambient Air Monitoring and Air Emissions Testing	One	3	Spring, Summer, Fall (2015)	Complete
		Two	3	Spring, Summer, Fall (2016)	Complete
		Three	2	Early Spring, Summer (2017)	Complete
		Four	1	Summer (2018)	Complete
		Five	1	Summer (2019)	Ongoing

Odour Management and Mitigation (Conditions 9.5 and 9.6) and Ambient Air Monitoring and Reporting (Condition 11.5)

The sampling program covers the requirements for both Conditions 9 and 11.

Phase 1a, and Phase 1b/Phase 2 Year One:

Conducted between 2012 and 2015 with the results of the campaigns discussed in previous reports.

Phase 2 Year Two:

Conducted in 2016 with the results of the campaigns discussed in previous reports.

Phase 2 Year Three:

Conducted in 2017 with the results of the campaigns discussed in previous reports.

Phase 2 Year Four:

Conducted in 2018 with the results of the campaigns discussed in previous reports.

Phase 2 Year Four:

The Phase 2 Year Five sampling is ongoing, with field sampling for Summer 2019 underway.

OCF Technology Performance:

Performance testing of the odour control facility was conducted on March 11, 2019 by the equipment supplier BIOREM Technologies Inc. The results of the testing showed that the media and the system are performing well with no major adjustments required.

Performance testing was also planned for June 10, 2019, but was rescheduled to the following month due to a scheduling conflict. The results of this performance test will be presented in the next report.

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1. Introduction

The Southeast Collector (SEC) Trunk Sewer system conveys municipal wastewater 15 kilometres from the intersection of the Ninth Line and Rouge Bank Drive in Markham, Ontario, to the intersection of Finch Avenue and Valley Farm Road in Pickering, Ontario. The operation of the system accommodates the future growth in York Region, and provides additional capacity for peak and extraneous flows. Furthermore, it increases redundancy to the existing York Durham Sewage System (YDSS) that is co-owned and co-managed by the Regional Municipalities of York and Durham (the Regions).

The system is equipped with an odour control system to reduce the creation of odour-containing compounds inside the trunk sewer, limit the corrosion of the sewer headspace/shafts, maintain the trunk sewer headspace under negative pressure, and collect and treat odour emissions before release to the natural environment. The four main components of the odour control system are the Corrosion Control Facility (CCF) at Shaft 13, the Odour Control Facility (OCF) at York-Durham Line, and the Air Handling Facilities (AHF) at Shaft 4 and at Shaft 6/7.

The system was commissioned on January 27, 2015 and has since been in operation.

1.1 Summary of Condition 9 and 11 Requirements and Updates

The SEC Trunk Sewer Individual Environmental Assessment (IEA) was approved on March 31, 2010 allowing the Regions to proceed with the undertaking, subject to 13 Conditions (74 sub-conditions) under the Minister of the Environment's Notice of Approval to Proceed with the Undertaking (Approval).

To address Condition 9 of the Approval, an Odour Management and Mitigation Plan (OMMP) was prepared and submitted to the Ministry of the Environment, Conservation and Parks (MOECP) on September 24, 2010. Subsequently, on December 5, 2014, an updated OMMP was submitted to include the respective Operation Manual for each of the four main components (CCF, OCF, Shaft 4 AHF and Shaft 6/7 AHF) of the odour control system prior to commissioning. On March 24, 2015, the MOECP provided comments on the updated OMMP. These comments and outcomes from the annual meeting held on May 19, 2015 including all other subsequent MOECP comments have been fully addressed in the Revised Addendum to the updated OMMP dated June, 2016.

In addition, to address *Condition 11* of the Approval, an Ambient Air Monitoring and Reporting Plan (AAMRP) was submitted to the MOECP in September 2010 with the objective of confirming the operation of the SEC, and its odour control system meet the designed performance in respect of air emissions as set out in the SEC IEA.

The sampling programs for both *Conditions 9 and 11* include sampling for odour, hydrogen sulphide (H_2S), ammonia (NH_3), and total reduced sulphur (TRS) compounds at the same sensitive receptors with the same sampling criteria. In addition, the two programs are to follow the same schedule and sampling frequency. The sampling is conducted at the same six sensitive receptor locations previously identified.

Condition 9 and 11 sampling programs include the following Phases and are being conducted as per the Schedule shown in Table 1:

- **Phase 1:**
  a) Pre-Operation – Ambient Monitoring
  b) Start-up of Operations Ambient Air Monitoring and Air Emission Testing
- **Phase 2:** Post Operation Ambient Air Monitoring and Air Emission Testing

Table 1: Odour Testing Schedule

Phase	Description	Year	Total Number of Sampling Campaigns	Sampling Seasons	Status
1A	Pre-Operation – Ambient Air Monitoring	2012	3	Spring, Summer, Fall	Complete
		2013	3	Winter, Spring, Summer	Complete
1B	Start-up Operations – Ambient Air Monitoring and Air Emissions Testing	One	3	Spring, Summer, Fall (2015)	Complete
2	Post Operation – Ambient Air Monitoring and Air Emissions Testing	One	3	Spring, Summer, Fall (2015)	Complete
		Two	3	Spring, Summer, Fall (2016)	Complete
		Three	2	Early Spring, Summer (2017)	Complete
		Four	1	Summer (2018)	Compete
		Five	1	Summer (2019)	Ongoing

1.2 Purpose and Objective

This report is prepared in accordance with *Conditions 9.5, 9.6 and 11.5* of the Approval.

Specifically, *Conditions 9.5, and 9.6* state:

9.5 The proponent shall prepare and submit twice annually to the Director, Regional Director and SeCAC (if applicable), Odour Management and Mitigation Monitoring Reports beginning six months following the commencement of operation of the undertaking.

9.6 The proponent shall include in each of the Odour Management and Mitigation Monitoring Reports submitted in accordance with Condition 9.5, a report on the performance of the technology used for odour control at the Odour Control Facility.

Condition 11.5 states:

11.5 The proponent shall report the results of the ambient air monitoring program to the Regional Director and SeCAC (if applicable) in accordance with the Ambient Air Monitoring and Reporting Plan.

The structure of the Report is set-up to follow the above conditions. In addition, the Annual Report will be posted on the york.ca website as per *Conditions 9.7 and 11.7*.

2. Odour Management and Mitigation (Conditions 9.5 and 9.6) and Ambient Air Monitoring and Reporting (Condition 11.5)

2.1 Phase 1b / Phase 2 Year One Sampling

The Phase 1b/Phase 2 Year One Sampling was conducted in Spring, Summer and Fall 2015 and results were provided in the "Odour Management and Mitigation (Condition 9) and Ambient Air Monitoring and Report (*Condition 11*) Annual Report" submitted on July, 2016 (Second Annual Report).

2.2 Phase 2 Year Two Sampling

The Phase 2 Year Two Sampling was conducted in Spring, Summer and Fall 2016. The results of the Spring 2016 sampling was provided in the *"Odour Management and Mitigation (Condition 9)* and *Ambient Air Monitoring and Report (Condition 11) Annual Report*" submitted on July 2016 (Second Annual Report) and the results of the Summer and Fall 2016 sampling were provided in the "*Odour Management and Mitigation (Condition 9*) and Ambient Air Monitoring and Report (Condition 11) Annual Report" submitted on July 2017 (Third Annual Report).

2.3 Phase 2 Year Three Sampling

The Phase 2 Year Three sampling was conducted in Early Spring and Summer 2017. The results for both the Spring and Summer sampling were provided in the "*Odour Management and Mitigation (Condition 9*) Semi-Annual Report" dated January 31, 2018.

2.4 Phase 2 Year Four Sampling

The Phase 2 Year Four sampling was conducted in Summer 2018. The results for the Summer sampling were provided in the "Odour Management and Mitigation (*Condition 9*) Semi-Annual Report" dated January 31, 2019.

2.5 Phase 2 Year Five Sampling

The Phase 2 Year Five sampling is ongoing, with field sampling for Summer 2019 underway.

2.6 OCF Technology Performance

Performance testing of the odour control facility was conducted on March 11, 2019 by the equipment supplier BIOREM Technologies Inc. (BIOREM). Performance testing was also planned for June 10, 2019, but was rescheduled to the following month due to a scheduling conflict. The results of this performance test will be presented in the next report.

The results of the March 11, 2019 visit showed that the moisture level of the biofilter media was slightly above the desired range. However, BIOREM noted that no immediate action is required at this time because the moisture levels are not in the range of concern and with the approach of warmer weather the moisture levels are expected to smooth out. BIOREM will continue to monitor the media moisture levels in subsequent visits and provide further recommendations to the Region as required.

Overall, the results of the testing are showing that the media and the system are in good shape and performing well without issues.

Table 2 below shows the average results of the samples taken during the date of testing.

Table 2: Summary of the SEC OCF Media Testing

Parameters	Desired Range	March 11, 2019
Moisture of Biofilter (%)	20 – 30	36.2 – 41.4
Moisture of Biotrickling Filter (%)	50 – 150	122.1 – 153.2
pH of Biofilter	5 – 9	8.68 – 8.75
pH of Biotrickling Filter	1 – 4	2.13 – 2.76
NO_3 (ppm)	-	<0.5
Phosphorus (ppm)	-	<1 – 9.3

2.7 Statement of Accommodation

Accessible formats or communication supports for this report are available upon request. Please contact Environmental Services Reception Desk at 1-877-464-9675 ext. 73000.