Minute No. 542
Report – Standing Policy Committee on Water and Waste, Riverbank Management and the Environment – September 8, 2016

Item No. 1 Winnipeg Sewage Treatment Program 2015 Annual Report Program Agreement between The City of Winnipeg and VWNA WINNIPEG INC. (Veolia)

COUNCIL DECISION:

Council concurred in the recommendation of the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment and adopted the following:

1. That the report be received as information.

Report – Standing Policy Committee on Water and Waste, Riverbank Management and the Environment – September 8, 2016

DECISION MAKING HISTORY:

Moved by Councillor Mayes,

That the recommendation of the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment be adopted.

Carried

EXECUTIVE POLICY COMMITTEE RECOMMENDATION:

On September 14, 2016, the Executive Policy Committee concurred in the recommendation of the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment and submitted the matter to Council.

STANDING COMMITTEE RECOMMENDATION:

On September 8, 2016, the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment concurred in the recommendation of the Winnipeg Public Service and submitted the matter to the Executive Policy Committee and Council.

ADMINISTRATIVE REPORT

Title: **WINNIPEG SEWAGE TREATMENT PROGRAM 2015 ANNUAL REPORT PROGRAM AGREEMENT BETWEEN THE CITY OF WINNIPEG AND VWNA WINNIPEG INC. (VEOLIA)**

Critical Path: **Standing Policy Committee on Water and Waste, Riverbank Management and the Environment - Executive Policy Committee – Council**

AUTHORIZATION

Author	Department Head	CFO	CAO/COO
L. Szkwarek, CPA, CGA Acting Manager of Finance and Administration	M. L. Geer, CPA, CA Acting Director, Water and Waste Department	M. Ruta	M. Jack COO

RECOMMENDATIONS

That Council receive this report as information.

REASON FOR THE REPORT

A 30 year consulting services agreement with VWNA WINNIPEG INC. was executed on April 20, 2011, which included advice on operations and capital upgrades at the City's three sewage treatment plants. This agreement requires the City to report on results of the Program to City Council on an annual basis.

EXECUTIVE SUMMARY

This Annual Report to Council summarizes the accomplishments and financial results that were realized in 2015, the fifth year of the 30 year program, as well as the plans and objectives that have been set for 2016.

Veolia continues to deliver value to the City of Winnipeg and 2015 was another positive year for the program. This report summarizes:

- 2015 accomplishments and progress on capital program
- Achievement of 2015 deliverables
- 2015 financial results
- Achievement of 2015 key performance indicators
- 2016 deliverables and key performance indicators

In 2011, the inaugural year for the Program, the focus was to set up a foundation of policies and procedures that would facilitate day to day activities, communication, and reporting relationships. There was also a need to define an end-to-end process to deliver capital projects, develop a detailed user manual and establish management information systems and procedures that would carefully measure Program results and manage Program risks. In 2012 to 2014, the WSTP focused on advancing the large capital projects, identifying and implementing operational improvements, and improving capital planning, operations, reporting and process control.

The Winnipeg Sewage Treatment Program (WSTP) day-to-day operations are governed by the Management Team (MT). The MT provides advice and recommendations on the WSTP activities to the Director and on the administration of the WSTP to the Leadership Team (LT). The City retains full ownership and control of the sewage treatment plant facilities.

Each year the Director of Water and Waste approves the Program's performance goals, and key performance indicators (KPI) as outlined in an Annual Program Plan (APP).

2015 provided opportunities for the WSTP to adapt and innovate program activities. Some of the more notable achievements were delivery of a comprehensive training package for wastewater project managers, development of design checklists, start-up of a composting pilot project at the Brady Road Resource facility, full operational compliance at the SEWPCC during the Upgrade and Expansion Project activity in 2015, and completion of a favourable procurement contract related to Biosolids activities. A detailed list of accomplishments and progress can be found in the History section of this report.

For 2016, the APP has entered an intensive project execution phase for the two major capital projects; the NEWPPC Design-Build capital project and the SEWPCC Design-Bid-Build capital project. The APP will provide a long term program strategy and strategic direction to create specific plans in the form of roadmaps which will be used to identify gaps, issues and solutions.

2015 Financial Results
The financial results for 2015 are summarized in the table below. Details can be found in the History section of the report.

Financial Summary ($millions)	**December 31, 2015**	December 31, 2014
Reimbursement of Veolia direct costs	**$ 2.8**	$ 3.9
Earnings At Risk Account (EARA)	**$ 5.5**	$ 4.3
At Risk Amount (ARA)	**$38.5**	$43.9
Performance Security posted by Veolia	**$50.0**	$50.0

IMPLICATIONS OF THE RECOMMENDATIONS

There are no implications.

HISTORY / DISCUSSION

On April 20, 2011, the City entered into a consulting services agreement with Veolia. The scope of the agreement includes advice on operations and capital upgrades at the City's three sewage treatment plants for the duration of the 30 year agreement.

The City retains full ownership and control of the sewage treatment plant facilities. The City-Veolia contractual relationship abides by the following Program principles:

- City employees are managing and operating the facilities
- Decisions are being made on the basis of whole-life costs
- Best for job and best for Program decisions are being made
- Open book accounting and audit of direct costs is occurring
- The City and Veolia work collaboratively, openly and honestly within a no fault/no blame culture
- Compensation is based upon performance

The contract has been implemented by key participants from the Department's Engineering, Wastewater Services and Finance and Administration Divisions who, along with dedicated on-site Veolia staff members, form the Winnipeg Sewage Treatment Program (WSTP).

The WSTP day-to-day operations are governed by the Management Team (MT). The MT provides advice and recommendations on the WSTP activities to the Director and on the administration of the WSTP to the Leadership Team (LT).

The LT meets monthly and is comprised of senior leaders from Veolia North America as well as Divisional Managers from the Water and Waste Department. The LT makes recommendations to the Director of the Water and Waste Department on matters including WSTP activities, objectives, budgets and compliance with Environment Act licences. Within City delegated authority, it is the Director who approves all final decisions related to the WSTP.

(See Appendix 1 for the current composition of the MT and LT)

PROGRAM ACCOMPLISHMENTS – 2015

1. OPERATIONAL OBJECTIVES:

(a) Support for Operational Compliance

NEWPCC - Fecal and E-Coli Compliance
Periodic fecal and E-coli non-compliance issues have been experienced at the NEWPCC. The most probable cause of non-compliance was contamination of disinfected effluent due to the arrangement of underground sewage tunnels leading to

the effluent point. A mitigation plan was developed and implemented and continued evaluation of its level of success will be made through to the spring of 2016.

NEWPCC Total Suspended Solids (TSS)
An investigation was conducted into winter TSS non-compliance events. This has resulted in a modification to the NEWPCC winter operating strategy with continued testing through the spring of 2016.

Process Control Management Plan (PCMP)
PCMP was implemented in all three sewage treatment plants 2013 and is a key business process for quality assurance of treatment compliance.

The PCMP business processes are effective only if they are followed. Using the principles of ISO 9001 an audit of the PCMP will be conducted in early 2016.

NEWPCC Digester Risk Mitigation Strategy
Reduced digestion capacity due to failure of digester #11 has increased operational risk. Further stress is anticipated to be put on the system from additional sludge loads when the new SEWPCC treatment process is commissioned. The risks were evaluated in 2015 with mitigations planned to be developed at the beginning of 2016.

Wastewater Information Management System (WIMS)
WIMS is a structured, automated data collection and analysis tool used to monitor process control. In 2015 a business case for WIMS, was submitted into the City Asset management process for funding. Confirmation of funding approval will be provided in 2016.

(b) <u>Procurement Improvements</u>

Opportunities to improve contracts for methanol supply and digested sludge cake hauling were identified through a review of operational procurement contracts, and applicable recommendations were implemented in re-bidding of the contracts in 2015.

Digested Sludge Cake Hauling
Development of the Biosolids Master Plan and analysis of procurement opportunities lead to a long term procurement strategy which would transition from current landfill disposal to biosolids reuse. Sludge cake hauling contracts were re-bid. The revised contract provides the City with new hauling equipment, price predictability and flexibility to deal with the transition from landfill operations to support the wider Biosolids Master plan.

Methanol Supply
Although methanol prices have been competitive, opportunities were identified to reduce methanol costs by changing the structure of the contract, with a specific focus on transportation costs. The contract was re-bid in 2015 utilizing the internationally traded Methanex Index, resulting in a favourable price for methanol supply.

Polymer
Recommendations for improvement in Polymer supply contracts through re-bidding will continue into 2016.

Ultra violet (UV) Lamp Pilot Project
A pilot study has begun to determine the acceptability of third party/alternate lamp suppliers for the existing UV treatment facilities and is planned to run throughout 2016. Opportunities to improve competition in the supply of UV lamps were identified in the 2014 procurement review.

Centrifuge Service Contract
Current refurbishments and repair contracts are created for each centrifuge as required, with inherent inefficiencies in procurement and planning. A RFP to develop a multi-year centrifuge service contract to reduce the associated administration costs has been completed and is expected to be awarded in spring 2016.

(c) Maintenance Improvement

The following areas were targeted with respect to maintenance improvement in 2015:

Maintenance Strategy Project Support
Improvement in maintenance management systems are required to allow the City to realize full value of its investment in new assets. The City is embarking on a process of changing its maintenance practices through a Maintenance Strategy Project. This planning work aims to prepare the City for maintenance of future upgraded wastewater facilities as well as harmonization of the maintenance department. The first year of this multiyear initiative encompassed discovery and documentation of current maintenance practices at the three City sewage treatment facilities in combination with determining best practices. Results of the discovery phase will shape the maintenance strategy going forward. The project will continue in 2016.

Asset Management Manual
A Wastewater Treatment Asset Manual was created to consolidate operational asset management processes and procedures currently held in multiple documents into a single manual. It describes how the City's asset management strategy is implemented within wastewater treatment and defines the methodology for identification of critical spare parts for wastewater treatment.

Sludge Auto-Loading System Upgrade
Automation and control systems for the automatic loading of biosolids into trucks at the NEWPCC is unreliable and out of date. An RFP was created for the procurement of a System Integrator to perform the design, installation, testing and commissioning of a new automation control system. The contract is expected to be awarded in January 2016 for completion in that year.

(d) Operations and Maintenance Support

Operations Manual Specifications
Specifications for operations manuals need to be ready for issue for the NEWPCC Design-Build (as well as other future projects). The Program Team has developed a specification to improve the delivery of operations manual for the facilities. The operations manual specifications defines their requirements in sufficient detail to provide quality assurance of the product. Requirements integrate the provision of information into the City work flow for population of the Computerized Work Management System (CWMS).

Operational Stakeholders - Capital Projects
Operations are a major stakeholder in the WSTP Capital Program. Design review check lists were created for the technical disciplines of electrical, mechanical and operations. These documents provide operations and maintenance staff with a practical tool to use during the reviews of design documents. The program will evolve into the long-term objective of operational readiness.

Operational Cost Control
The City's budgeting control processes are well established and provide services to meet the City's overall requirements. Operational costs by their very nature tend to be dynamic and variable. The monitoring and management of these costs requires a responsive feedback/control system to enable the Program to monitor and manage them in a timely fashion. This activity has not been prioritized for progress in 2016.

(e) Process Optimization Initiatives

Sludge Optimization – WEWPCC
Optimization opportunities relating to the operation of sludge thickening processes at the WEWPCC were identified and evaluated. The business case for the improvements proved to be unattractive at this time. No further development has been undertaken regarding this item.

Sludge Optimization – NEWPCC
A modern microwave solids density meter has been installed which enabled automatic flow paced polymer control to be reinstated.

Work continues to finalize installation of a system which will provide additional process data on the effective use of polymer. Training of operations personnel will be completed in 2016.

2. ENGINEEERING OBJECTIVES

(a) Capital Project Support

SEWPCC - BNR Upgrade and Expansion
SEWPCC Upgrade and Expansion project is required to meet the new regulatory licence requirements and to increase the plant capacity to meet the growing demand. The

project is being delivered as a Design-Bid-Build project with the build component phased in accordance with the following four major construction contracts.

Contract C-1:
Site preparation, sheeting and shoring and installation of piles for the foundation.

The contract was awarded in September 2014 and is over 95% complete at the end of 2015.

Contract C-2:
Installation of concrete structures for the grit removal and wet weather treatment facilities.

Design was completed in 2015 and awarded in October, with the contractor initiating work in November 2015.

Contract C-3:
Concrete installation of the biological nutrient removal (BNR) structures and secondary clarifiers. It is scheduled to be tendered for construction in January 2016.

Contract C-4:
Mechanical and electrical and instrumentation and control work for the facility along with the remaining structural/architectural/process components.

(b) Standardization

Electrical Instrumentation and Controls (E&IC) Standardization
E and IC standardization will improve the efficiency of delivering capital projects and provide consistency of design across all wastewater treatment facilities and is critical for the DB delivery model. The following standards and guidelines have been developed in 2015 to support a fully integrated control system:

1. WSTP Automation Design Guide
2. WSTP Historical Data Retention Standard
3. WSTP Tag Naming Standard
4. WSTP HMI Animation and Layout Standard

An RFQ to pre-qualify system integrators closes January 2016 with evaluation and selection of a short list to be completed in quarter one of 2016. System integrators will play a key role in delivering the SEWPCC and the NEWPCC Upgrade Projects and ensure automation is implemented consistently across all wastewater facilities. Eight design guides and three associated standards, created in 2015, were communicated to the Engineering project teams and Wastewater services.

(c) Biosolids Master Plan Implementation

Land Application

Reuse of nutrients is a requirement of the NEWPCC licence. A Request for Information (RFI) regarding land application was developed in 2015. The City will determine by mid-2017 if land application prior to the NEWPCC BNR Upgrade is viable.

Thermal Hydrolysis
Pre-selection of the thermal hydrolysis equipment, together with the associated preliminary design, has been included as part of the Owner's Advocate (OA) scope of work for the NEWPCC Upgrade project.

Struvite Contract
An RFP for the pre-selection of equipment and service provider for recovery of Struvite (a mineral high in phosphorus) was completed and awarded in 2015.

(d) Project Manager Development

Training
A targeted training program was developed for Program Team project managers on wastewater treatment processes and was made available to all Program Team project managers and to key Operations personnel.

(e) Program Administrative Objectives

Communications
Two internal newsletters were published.

The WSTP presented a technical paper at the 2015 Western Canada Water conference in Winnipeg.

Capital Project and Operational Target Cost Development
SEWPCC construction cost estimate has been received and is currently under review.

Long Range Program Planning – the 2016 APP will include a strategy focused on the two major capital projects, SEWPCC and NEWPCC.

(f) Program Management

Task Group Organization
A review of the existing program organizational structure (Task Groups) was undertaken with the objective of revising this structure in 2016. The primary focus will be on the strategic areas of SEWPCC Delivery, NEWPCC Delivery and Program Management and Operational Readiness.

Program Team Organization and Structure
Wastewater Planning and Project Delivery Branch recruited two project engineers, one Senior Project Engineer and one Project Coordinator.

Wastewater Services Division appointed one Senior Project Engineer and one Project Coordinator.

Veolia Staffing – Veolia recruited a Project Management Office Analyst. The program leader was replaced in September 2015. Identified Veolia vacancies will be addressed in 2016.

2015 FINANCIAL RESULTS

Veolia earns its compensation in three ways: 1) margins applied to direct costs; 2) gain sharing (or pain sharing) on operations and capital target costs, and 3) meeting key performance indicators. The earnings of Veolia in any given year are credited to the Earnings At Risk Account (EARA). The EARA is compared to the At Risk Amount (ARA) to determine if Veolia is entitled to withdraw any of those earnings. Veolia can only withdraw funds from the EARA at such time as the EARA balance exceeds the ARA balance. Veolia also earns an interest rate on the funds being held that are not eligible for withdrawal.

The financial results for 2015 are summarized in the following table:

Financial Summary ($millions)	**December 31, 2015**	December 31, 2014
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At Risk Amount (ARA)	**$ 38.5**	$ 43.9
Performance Security posted by Veolia	**$ 50.0**	$ 50.0

The Earnings at Risk Account categories are further itemized in the following table:

Earnings At Risk Account Summary ($thousands)	**December 31, 2015**		December 31, 2014	
Balance, beginning of year		**$4,372**		$2,940
Compensation earned				
Margin	**$ 672**		$ 572	
Share of gain/(pain) on operations	**(161)**		43	
Key performance indicators	**500**		714	
Interest on funds held	**152**	**1,163**	103	1,432
Balance, end of year		**$5,535**		$4,372

As at December 31, 2015, the ARA balance was $38.5 million ($43.9 million, 2014) and the EARA balance was $5.5 million ($4.3 million, 2014). Veolia is not currently eligible to draw compensation from the EARA account.

As required by the agreement, Veolia has posted $50 million security ($25 million letter of credit and $25 million performance bond). There is also a Parental Guarantee in place to protect the City whereby Veolia North America guarantees all of Veolia's obligations under the agreement.

Veolia earnings remain at risk for the entire duration of the agreement.

2015 PROGRAM KPI SUMMARY

1. PROGRAM ADMINISTRATION KPI

(a) Program Newsletter
Issued two newsletters in 2015, communicating status and progress of Program initiatives.

(b) Projects Dashboard
Completed project charter for a resource planning tool that will provide information related to operations resource requirements.

2. OPERATIONS KPI

(a) Operational Involvement in Capital Projects

Design Checklists
Design Checklists were created for operations and training sessions were provided to operations personnel. The SEWPCC Upgrade and Expansion Project is the first to use the design checklist.

Asset Management Manual
A Wastewater Treatment Asset Management Manual has been created which consolidates operational asset management processes and procedures into a single manual for wastewater treatment.

Operation Manual Specifications
An Operations Manual Specification has been developed that defines operational requirements in sufficient detail to provide quality assurance of the product and can be integrated into the Computerized Work Management system (CWMS). Processes for change control of operations manuals will be finalized in 2016.

Digester Risk Mitigation Strategy
Digester risk was evaluated with risks identified for development of mitigations in 2016.

NEWPCC TSS Compliance Investigation
Analysis of historical data and an evaluation of the current winter operating strategy has led to recommendations for modification of the winter operating strategy. Recommendations were implemented and will continue to be monitored into 2016.

3. CAPITAL PROJECTS KPI

(a) Sewage Treatment Training – Project Managers
Specific targeted training was provided to Project managers to enhance their awareness and understanding of sewage treatment processes.

2016 ANNUAL PLAN PROGRAM DELIVERABLES

APP Objectives
The objective of the Program is to operate, upgrade and improve the City of Winnipeg sewage treatment facilities. The priorities of the Program for 2016 are:

- the NEWPCC major Design-Build capital project
- the SEWPCC major Design–Bid-Build capital project and
- Operational readiness to support and eventually receive the new works

The APP provides long term Program strategy and will enable annual measurement of progress.

1. Program Management Initiatives

(a) Roadmaps
The Program will create “Roadmaps” as a management tool to steer the major objectives towards their goals. The Roadmaps will identify the current and future states, gaps, issues and solutions.

(b) Program Readiness
An operational readiness strategy specific to each project will be established.

(c) Benefit Register
A benefit register will be created to report on value and benefit realization. It will be used as the key source of agreed benefits, targets and attainment data.

(d) Financial Reporting
Additional financial reporting will be required in 2016. The MT and the various stakeholders will establish the reporting requirements.

2. Compliance
Wastewater treatment compliance continues as a priority for the Program. In addition to supporting compliance in day to day operations, operational readiness initiatives will include activities to minimize compliance risk throughout the construction of the major projects.

3. Maintenance Strategy

The WSTP will continue to support the Wastewater Services Division (WWS) in the development and implementation of its strategic maintenance plan.

4. Asset Refurbishment and Replacement Program (ARR)
The WSTP will continue to support the ARR, a strategic initiative aimed at managing asset risk through identification and delivery of small to medium capital projects.

5. Restructuring - Project and Program Support Teams
Project and program support teams will replace the previous Task Group structure with the intent to improve management of the WSTP.

6. Veolia Resource Requirements
Four existing key resources are in the process of replacement and three new additional positions are anticipated. The new positions are Operations Support Engineer, Maintenance Support Engineer and a Maintenance Oversight Planner. The Program will assess office space requirements as a result of the proposed augmentation.

7. Risk Management
The Program has successfully integrated risk management into the project lifecycle and will continue with a focus on mitigation actions and communication of project risks within the project teams.

8. NEWPCC
The NEWPCC Upgrade project will progress through the conceptual design phase in 2016. The NEWPCC Power Supply upgrade project is in Preliminary Design and the Owner Advocate (OA) will be preparing the procurement documents.

9. SEWPCC
Upgrade and expansion of the SEWPCC to meet regulatory requirements is progressing through construction of the civil works for the major structures:

- Contract 1 - preparation, excavation and piling to be completed in 2016.
- Contract 2 - concrete work for the new grit facilities and high rate clarifiers was awarded in 2015 with anticipated completion by end of 2016.
- Contract 3 - bioreactors, blower building and secondary clarifiers structural concrete to be tendered in 2016.

10. Operational and Maintenance Activities

(a) Compliance
Improvement projects for NEWPCC TSS and NEWPCC Fecal and E-coli compliance will continue in 2016. Recommendations will be evaluated as data becomes available.

(b) Process Control Management Plan Audit
An audit of the PCMP will be completed in 2016.

(c) Digester Risk Mitigation Strategy
The final report with recommendations for this project will be completed in 2016.

(d) Wastewater Information Management System (WIMS)
The business case for WIMS is moving forward and has received 2016 Capital Budget approval.

(e) UV Lamp Pilot Study
Study initiated in 2015 and will continue in 2016.

(f) NEWPCC Centrifuge Service Contract
Procurement of a centrifuge service provider was drafted in 2015 and will be tendered in 2016.

(g) NEWPCC Sludge Auto-Loading System Upgrade
Contract to be awarded and completed 2016.

(h) Operations Manual Specifications
Remainder of the scope of the project charter will be progressed in 2016.

(i) Operational Assistance Tool (OAT)
This operations resource planning decision tool to be completed and implemented in 2016.

2016 PROGRAM KPI SUMMARY

1. **Program Roadmaps**
   A KPI will be developed for each roadmap. Continuous use, analysis and update of the roadmaps will be measured with the intent that this measurement process will support continuous improvement into the future. Operational readiness will be integrated unto the NEWPCC and SEWPCVC Roadmaps.

2. **Maintenance Strategy**
   Development of a maintenance model is a key element to the maintenance strategy. The objective is to develop a decision matrix that will allow the appropriate maintenance model for a particular asset class to be chosen (the maintenance model).

3. **Communications Plans**
   The objective is to create a communication plan to manage communications related to the NEWPCC, SEWPCC and the overall Program as an aspect of change management in anticipation of the various audiences and their perspectives.

4. **Benefit Register**
   The creation and management of a benefit register.

FINANCIAL IMPACT

Financial Impact Statement Date: June 1, 2016

Project Name:

WINNIPEG SEWAGE TREATMENT PROGRAM 2015 ANNUAL REPORT PROGRAM AGREEMENT BETWEEN THE CITY OF WINNIPEG AND VWNA WINNIPEG INC. (VEOLIA).

COMMENTS:

There is no financial impact associated with the recommendation of this report. Financial implications are discussed in the Financial Results section of the report.

"Original signed by L. Szkwarek, CPA, CGA"
Lucy Skwarek, CPA, CGA
Acting Manager of Finance and Administration

CONSULTATION

In preparing this report there was consultation with:

WSTP Leadership Team

OURWINNIPEG POLICY ALIGNMENT

This report is in accordance with the OurWinnipeg policies through

OurWinnipeg Reference: Sustainable Water and Waste Direction Strategy, Environment

SUBMITTED BY

Department: Water and Waste Department
Division: Finance and Administration
Prepared by: Don Blain, CPA, CMA
Date: June 10, 2016
File No.: 020-17-06-10-01

APPENDIX 1 Leadership and Management Team Membership

LEADERSHIP AND MANAGEMENT TEAM MEMBERSHIP **APPENDIX 1**

