



Office of the Auditor General / Bureau du vérificateur général

FOLLOW-UP TO THE 2008 AUDIT OF THE 2006 SEWAGE SPILL

2010

SUIVI DE LA VÉRIFICATION DE 2008 DU DÉVERSEMENT D'EAUX

USÉES SURVENU EN 2006

Table of Contents

EXECUTIVE SUMMARY	i
RÉSUMÉ.....	v
1 INTRODUCTION	1
2 KEY FINDINGS OF THE ORIGINAL 2008 AUDIT OF 2006 SEWAGE SPILL	1
3 STATUS OF IMPLEMENTATION OF 2008 AUDIT RECOMMENDATIONS	12
4 SUMMARY OF THE LEVEL OF COMPLETION	21
5 CONCLUSION.....	21
6 ACKNOWLEDGEMENT.....	23

EXECUTIVE SUMMARY

Introduction

The Follow-up to the 2008 Audit of the 2006 Sewage Spill was included in the Auditor General's Audit Plan.

The key findings of the original 2008 audit included:

- The 764 million litre sewage spill into the Ottawa River was mainly the result of incompetent management of the City's sewer system. The spill was brought about by inadequate preventative maintenance and a lack of proactive equipment management.
- Once the event had occurred, a culture of either not understanding, or disregarding, the significance of sewage spills took over and the event was never viewed as noteworthy. The audit found that legislative requirements were ignored and the managers responsible, all of them professional engineers, failed to perform the duties required of their positions.
- A number of other professional staff at the City failed to recognize the significance of the spill or the responsibility for ensuring these incidents were given proper attention.
- An additional four unreported sewage spills have occurred since 1998 bringing the total to 16. Management has already reported two of these spills to the Ministry of the Environment (MOE), representing a minimum of 18 million litres. Of the two other spills, one represents approximately 165,000 litres of sewage while the other cannot be estimated, as data was not made available to the Auditor General.
- The report recommended a complete overhaul of the maintenance and safety procedures and the process for monitoring of sewage flows and that the City consider pursuing a complaint with the Professional Engineers of Ontario concerning the professional engineering staff identified in the audit.
- The audit also recommended that the City re-examine and improve its communication and reporting protocols regarding legislative compliance issues across all departments to ensure that senior managers, Council and regulatory bodies are informed in a timely manner.

Summary of the Level of Completion

1. The table below outlines our assessment of the level of completion of each recommendation as of December 2009.

CATEGORY	% COMPLETE	RECOMMENDATIONS	NUMBER OF RECOMMENDATIONS	PERCENTAGE OF TOTAL RECOMMENDATIONS
LITTLE OR NO ACTION	0 – 24	-	-	-
ACTION INITIATED	25 – 49	4	1	17%
PARTIALLY COMPLETE	50 – 74	-	-	-
SUBSTANTIALLY COMPLETE	75 – 99	2, 5	2	33%
COMPLETE	100	1, 3, 6	3	50%
TOTAL			6	100%

2. The table below outlines management's assessment of the level of completion of each recommendation as of Summer 2010 in response to the OAG's assessment. These assessments have not been audited.

CATEGORY	% COMPLETE	RECOMMENDATIONS	NUMBER OF RECOMMENDATIONS	PERCENTAGE OF TOTAL RECOMMENDATIONS
LITTLE OR NO ACTION	0 – 24	-	-	-
ACTION INITIATED	25 – 49	-	-	-
PARTIALLY COMPLETE	50 – 74	-	-	-
SUBSTANTIALLY COMPLETE	75 – 99	4	1	17%
COMPLETE	100	1, 2, 3, 5, 6	5	83%
TOTAL			6	100%

Conclusion

City of Ottawa staff has done a good job in addressing the recommendations of the 2008 Audit of the 2006 Sewage Spill. A number of recommendations are complete or substantially complete and only one has limited action.

A number of maintenance policies and standard operating procedures (SOPs) have been developed for regulators that help bring the City into compliance with legislation as well as the American Water Works Association (AWWA) guidelines. The regulators are now being inspected on a 'not to exceed a seven day frequency' and include a visual inspection of the overflow pipe and the orifice downstream of the regulator gate. The regulators are also being inspected after heavy rainfall to ensure that the regulator gate has returned to its proper position. A Spill Reporting Protocol has been created that outlines the process for reporting Combined Sewer Overflows (CSOs) and Sanitary Sewer Overflows (SSOs) which includes the notification of the MOE Spills Action Centre. This Protocol also gives a list of important contacts that includes downstream water treatment plants, Ottawa Public Health Department, Emergency and Protective Services, and a list of selected City of Ottawa staff. It will be important to ensure that these contact lists are updated periodically as people change position and leave the organization.

A Condition and Safety Assessment of the regulators was completed in 2008. In general, the regulators and float systems were seen to be in very rusty condition. Other maintenance issues found include: floats that are missing the vertical float guides, poor condition of pillow blocks, seized gates, gates blocked open and poor condition of sprockets. Some of these maintenance issues were corrected between the initial and follow-up inspections, however, some remain uncorrected. There were a number of safety concerns that apply to most of the regulators. There were no fixed and permanent lighting in place; the air quality was poor because of the lack of any ventilation; the sites were very noisy due to the flow through them; and there was no platform to perform work on equipment. Although some work has been completed there is no evidence that all of the maintenance and safety concerns have been addressed. It is understood that with the implementation of the Real Time Control project that the regulators are being reconstructed. Once this project is completed the regulators should be re-inspected to ensure that all of the maintenance and safety concerns have been addressed during the reconstruction.

A Standard Operating Procedure that describes the process to ensure the effective monitoring of flow data to identify anomalies and undertake investigations and require remediation in a timely manner has been implemented. This procedure also outlines the list of people to contact in the event of a CSO, SSO, or failure of monitoring equipment. It will be important to continuously monitor and update, as required, the contact information as people may change position or leave the organization.

An Environmental Quality Management System is currently being designed and implemented. The goal of this project is to bring Wastewater Services in compliance with the ISO14001 standard. The project is scheduled for completion at the end of 2010.

The City of Ottawa has implemented a number of SOPs with regards to spill reporting and communications protocols. The three SOPs reviewed for this follow-up audit were the Spill Reporting Protocol, the "No Surprises" Policy, and the Operator Notification of Reportable and Significant Operational Events. These policies form an adequate communication framework, however, they do not include information about notifying the public in the event of an emergency nor do they discuss how to get relevant information to the media and other City departments. These policies should be updated to include this information.

Legal Services has reviewed the findings contained in the Auditor General's 2008 Audit of the 2006 Sewage Spill report and has recommended that the City not pursue a professional misconduct complaint against the individuals identified in this report.

Acknowledgement

We wish to express our appreciation for the cooperation and assistance afforded the audit team by management.

RÉSUMÉ

Introduction

Le Suivi de la vérification de 2008 du déversement d'eaux usées survenu en 2006 était prévu dans le Plan de vérification du vérificateur général.

Les principales constatations de la vérification de 2008 sont les suivantes :

- Le déversement d'eaux usées, qui a vu 764 millions de litres d'eaux d'égout brutes se répandre dans la rivière des Outaouais, a été causé principalement par une gestion incompétente du système d'égouts de la Ville.
- Une fois l'incident survenu, une mauvaise compréhension de l'importance du déversement d'eau d'égout, ou une indifférence vis-à-vis du phénomène, a pris le dessus et celui-ci n'a jamais été considéré comme digne de mention. Selon la vérification, les prescriptions législatives n'ont pas été suivies et les gestionnaires responsables, tous des ingénieurs, ont failli aux devoirs dictés par leur poste.
- Un certain nombre d'employés professionnels de la Ville n'ont pas reconnu l'importance du déversement d'égout ou n'ont pas fait le nécessaire pour assurer que ces incidents reçoivent l'attention nécessaire.
- La vérification a mis à jour quatre autres déversements d'eau d'égout ayant eu lieu depuis 1998, portant ainsi le nombre total d'incidents à 16. La direction a déjà communiqué deux de ces déversements au ministère de l'Environnement de l'Ontario (MEO) ce qui équivaut à une décharge minimale de 18 millions de litres. Des deux autres déversements, l'un représente approximativement 165 mille litres d'eaux usées et la magnitude de l'autre ne peut être estimée puisque les données n'ont pas été rendues disponibles au vérificateur général.
- Le rapport recommande une révision complète des consignes en matière d'entretien et de sécurité et des processus de surveillance des débits d'égout. Il recommande aussi que la Ville envisage de déposer une plainte auprès de l'Ordre des ingénieurs de l'Ontario concernant les ingénieurs identifiés dans la vérification.
- Enfin, la vérification recommande que la Ville réexamine et améliore ses protocoles de communication et de rapport ayant trait aux questions de conformité législatives, et ce, dans tous les services, afin de s'assurer que les cadres supérieurs, le Conseil et les organismes de réglementation sont informés en temps opportun.

Sommaire du degré d'achèvement

1. Le tableau ci-dessous présente notre évaluation du degré d'achèvement de chaque recommandation au mois de décembre 2009 :

CATÉGORIE	POURCENTAGE COMPLÉTÉ	RECOMMANDATIONS	NOMBRE DE RECOMMANDATIONS	POURCENTAGE DU TOTAL DES RECOMMANDATIONS
PEU OU PAS DE MESURES PRISES	0 – 24	-	-	-
ACTION AMORCÉE	25 – 49	4	1	17 %
COMPLÉTÉE EN PARTIE	50 – 74	-	-	-
PRATIQUEMENT COMPLÉTÉE	75 – 99	2, 5	2	33 %
COMPLÉTÉE	100	1, 3, 6	3	50 %
TOTAL			6	100 %

2. Le tableau ci-dessous présente l'évaluation de la direction concernant le degré de réalisation de chaque recommandation à l'été 2010 en réponse à l'évaluation du Bureau du vérificateur général. Ces évaluations n'ont pas fait l'objet d'une vérification.

CATÉGORIE	POURCENTAGE COMPLÉTÉ	RECOMMANDATIONS	NOMBRE DE RECOMMANDATIONS	POURCENTAGE DU TOTAL DES RECOMMANDATIONS
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COMPLÉTÉE	100	1, 2, 3, 5, 6	5	83 %
TOTAL				100 %

Conclusion

Le personnel de la Ville d'Ottawa a fait efficacement son travail en ce qui concerne l'application des recommandations de la vérification de 2008 du déversement d'eaux usées survenue en 2006. Bon nombre de recommandations sont complétées ou pratiquement complétées, et dans un cas seulement, l'action n'est qu'amorcée.

Des politiques d'entretien et des procédures opérationnelles normalisées (PON) ont été rédigées relativement aux régulateurs qui aident la Ville à se conformer aux lois en vigueur de même qu'aux directives de l'association Américaine d'adduction d'eau (American Water Works Association ou AWWA). À l'heure actuelle, l'inspection des régulateurs se fait à une fréquence qui ne doit pas dépasser sept jours et comprend une inspection visuelle de l'égout de débordement et de l'orifice en aval de la vanne du régulateur. Les régulateurs sont également inspectés après des précipitations abondantes pour s'assurer que la vanne du régulateur est revenue à sa position initiale. On a créé un Protocole de signalement des déversements qui décrit le processus de rapports de débordement d'égout unitaire (DEU) et de débordement d'égout sanitaire (DES), et qui comprend un avis au

Centre d'intervention en cas de déversement du MEO. Ce Protocole fournit aussi la liste des personnes-ressources principales, des installations de traitement de l'eau en aval, du Service de Santé publique d'Ottawa, du Service de protection et d'urgence ainsi qu'une liste d'employés de la Ville choisis. Il sera important de s'assurer que ces listes de personnes-ressources sont mises à jour régulièrement de manière à refléter le roulement et le départ du personnel.

Une évaluation de l'état et de la sécurité des régulateurs a été réalisée en 2008. En général, on a constaté que les régulateurs et les systèmes de flotteurs étaient très rouillés. D'autres problèmes d'entretien ont été décelés, par exemple : des poteaux verticaux de flottaison manquants, des paliers de battement en mauvais état, des vannes coincées, des vannes coincées en position ouverte et le mauvais état des pignons. Certains de ces problèmes d'entretien ont été corrigés entre l'inspection initiale et l'inspection de suivi, toutefois, d'autres n'ont toujours pas été corrigés. Un certain nombre de problèmes de sécurité touchent la plupart des régulateurs. Il n'y a aucun éclairage fixe et permanent en place; la qualité de l'air est médiocre en raison de l'absence de ventilation; les lieux sont très bruyants en raison du débit qui les traverse; et il n'y a pas de plateforme pour effectuer le travail sur l'équipement. Bien que certains travaux aient été terminés, rien ne permet d'affirmer que tous les problèmes d'entretien et de sécurité ont été réglés. Il est entendu qu'avec la mise en œuvre du projet de commande en temps réel, les régulateurs seront reconstruits. Une fois ce projet achevé, les régulateurs devraient être inspectés de nouveau pour s'assurer qu'on a remédié à tous les problèmes d'entretien et de sécurité pendant la reconstruction.

Une procédure opérationnelle normalisée qui décrit le processus visant à assurer la surveillance efficace des données relatives à l'écoulement pour déceler des anomalies, déclencher des investigations et exiger des corrections en temps utile a été mise en œuvre. Cette procédure précise également la liste de personnes à communiquer en cas de DEU, de DES ou d'autre défektivité de l'équipement de surveillance. Il sera important de surveiller constamment et de mettre à jour, au besoin, les coordonnées du personnel afin de tenir compte du roulement et du départ du personnel.

On est en train de concevoir et de mettre en œuvre un Système de gestion de la qualité environnementale. L'objectif de ce projet est de rendre les Services d'épuration des eaux usées conformes à la norme ISO14001. L'achèvement du projet est prévu pour la fin de 2010.

La Ville d'Ottawa a mis en œuvre un certain nombre de PON concernant le protocole de communication et de rapports sur les déversements. Les trois PON passées en revue pour la présente vérification de suivi étaient le Protocole de signalement des déversements, la Politique du « sans surprise » et l'Avis à l'opérateur des incidents de fonctionnement critiques à signaler. Ces politiques forment un cadre de communication adéquat. Toutefois, elles ne comprennent pas

de renseignements sur l'information au public en cas d'urgence ni sur le mode de transmission des informations pertinentes aux médias et aux autres services municipaux. Ces politiques devraient être mises à jour de manière à inclure cette information.

Les Services juridiques ont passé en revue les résultats contenus dans le rapport 2008 du vérificateur général sur le déversement d'eaux usées survenu en 2006 et ont recommandé que la Ville ne dépose pas de plainte concernant un manquement professionnel à l'endroit des personnes identifiées dans ce rapport.

Remerciements

Nous tenons à remercier la direction pour la coopération et l'assistance accordées à l'équipe de vérification.

1 INTRODUCTION

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- Once the event had occurred, a culture of either not understanding, or disregarding, the significance of sewage spills took over and the event was never viewed as noteworthy. The audit found that legislative requirements were ignored and the managers responsible, all of them professional engineers, failed to perform the duties required of their positions.
- A number of other professional staff at the City failed to recognize the significance of the spill or the responsibility for ensuring these incidents were given proper attention.
- An additional four unreported sewage spills have occurred since 1998 bringing the total to 16. Management has already reported two of these spills to the MOE, representing a minimum of 18 million litres. Of the two other spills, one represents approximately 165,000 litres of sewage while the other cannot be estimated, as data was not made available to the Auditor General.
- The report recommended a complete overhaul of the maintenance and safety procedures and the process for monitoring of sewage flows and that the City consider pursuing a complaint with the Professional Engineers of Ontario concerning the professional engineering staff identified in the audit.
- The audit also recommended that the City re-examine and improve its communication and reporting protocols regarding legislative compliance issues across all departments to ensure that senior managers, Council and regulatory bodies are informed in a timely manner.

2 KEY FINDINGS OF THE ORIGINAL 2008 AUDIT OF 2006 SEWAGE SPILL

2.1 *Chronology of Events*

The following table briefly summarizes the key events in the chronology of the August 2006 sewage spill at the Keefer regulator site:

Date	Key Events
July 31st 2006	<ul style="list-style-type: none"> ▪ Rainfall event started late in the evening.
August 3rd 2006	<ul style="list-style-type: none"> ▪ Rainfall ended but the Keefer regulator failed to return to pre-storm condition allowing flows to continue into river.
August 15th 2006	<ul style="list-style-type: none"> ▪ A staff technician noticed an anomaly in the flow monitoring data and went to the site to verify that there was flow in the pipe leading to the river. ▪ The technician contacted his Supervisor, two other Supervisors and the Section Manager by e-mail informing them of the malfunction. ▪ The Operations Supervisor dispatched a crew to the site to repair the regulator and the flow to the river ended.
Mid-March 2007	<ul style="list-style-type: none"> ▪ A Senior Engineer in Infrastructure Services Branch (ISB) noticed a discrepancy in the flow data from August 2006. ▪ The Engineer contacted Operations and received confirmation of closed regulator that was cleared on Aug. 15th 2006. ▪ The Engineer contacted the Manager, Wastewater and Drainage Services Division (WDSO) and the WDSO Program Manager by email and advised them of the issue.
April 23rd 2007	<ul style="list-style-type: none"> ▪ Discussion between City Engineer and MOE Engineer. ▪ The Engineer advised the MOE that the event would be documented in the upcoming 2006 annual report on CSOs. ▪ The Engineer estimated magnitude of the spill event to be approximately 1 billion litres.
May 1st, 2007	<ul style="list-style-type: none"> ▪ Detailed information from which the Keefer Regular report can be prepared is provided from Infrastructure Services Branch (ISB) to WDSO.
May 2nd 2007	<ul style="list-style-type: none"> ▪ The WDSO Manager directed his Program Manager to prepare a report to MOE describing the event in 2006. This would be done independently of the CSOs report being prepared by ISB.
May 16th 2007	<ul style="list-style-type: none"> ▪ A letter is sent to MOE from WDSO Program Manager

Date	Key Events
	<p>with copies to the Manager WDSO and Manager Infrastructure Management regarding the malfunction of the Keefer regulator and stating that incident was never formally reported to MOE.</p>
<p>April 2nd 2008</p>	<ul style="list-style-type: none"> ▪ The Senior Engineer in ISB becomes aware of a Public Health (PH) report on beaches. ▪ The Engineer calls the PH analyst regarding the possible correlation of beach closures to overflows and the August 2006 event spill. ▪ The Director of Water & Wastewater (W&W) is copied on an e-mail from the Senior Engineer to WDSO management regarding the link between overflows and beach closures, and informing him of the request by PH to be notified of spills. ▪ Director W&WS requests Manager WDSO provide a report on the events of the spill that same day. ▪ The Manager WDSO directs his Program Manager to add PH to the spills reporting protocol.
<p>April 3rd 2008</p>	<ul style="list-style-type: none"> ▪ The Director W&W attends a Committee discussion on the PH 2007 beach report. Great deal of discussion around: <ul style="list-style-type: none"> ○ Impact of CSOs; and, ○ Untreated Stormwater. ▪ Environment Canada Study (Presence of E. Coli, as detected by EC is not indicative of poor performance at ROPEC during storm events. In fact presence of EC does not distinguish between viable and non-viable bacteria.) ▪ Director clarifies that delays in commissioning Digester at ROPEC and Waste Management Facilities at Lemieux and Britannia are not adversely impacting Petrie Island. ▪ No mention is made of the link between the August 2006 event, CSOs and beach closures.
<p>April 23rd 2008</p>	<ul style="list-style-type: none"> ▪ The 2007 PH report on beaches is presented to Council. ▪ No mention is made of the link between the August 2006 event, CSOs and beach closures.

Date	Key Events
May 7th 2008	<ul style="list-style-type: none"> ▪ During a tour of the treatment facility, the Manager WSDS informed Councillor Monette that the problems at Petrie Island during 2006 were likely the result of the August 2006 event at the Keefer regulator.
May 13th 2008	<ul style="list-style-type: none"> ▪ The Deputy City Manager (DCM) of Public Works and Services first becomes aware of the August 2006 spill from the Director W&W.
May 20th 2008	<ul style="list-style-type: none"> ▪ The DCM issues a statement to Council to explain the event in 2006 and indicates that it was reported to MOE “shortly after the overflow is discovered...”
May 22, 2008	<ul style="list-style-type: none"> ▪ The DCM issues “Sequence of Events Regarding August 2006 Combined Sewer Overflows from Keefer Regulator” memo complete with attachments of May 2007 Keefer Regulator report and first annual CSO report. In this memo, DCM reports that MOE verbally informed in August 2006 of spill.
May 27th 2008	<ul style="list-style-type: none"> ▪ The DCM issues a new statement to Council retracting the statement of reporting the spill to MOE when it occurred in August 2006.

The occurrence of the August 2006 sewage spill at the Keefer regulator site was the result of an almost complete lack of proper preventative maintenance and proactive management of this equipment. Once the event had occurred and been corrected, a culture of not understanding the significance of sewage spills took over and the 2006 event was never viewed as noteworthy. It is our opinion that this represents incompetence on the part of the managers involved. Knowledge of the event was never escalated from Managers to their Directors and onto to executive management, as one would expect given the magnitude of the spill. Furthermore, the event was never reported to the MOE - as required by law - until 8 to 9 months later. Only the front-line staff deployed to repair the malfunctioning regulator can be said to have performed their duties effectively in this case by repairing it within hours of being informed. Similarly, the Senior Engineer who reported the spill to MOE in April 2007 fulfilled his duties and responsibilities.

2.2 Maintenance

In July 1970, the American Public Works Association (APWA) reported that float-operated gate regulators require a continuous preventive maintenance program in order to function properly. Nearly forty years ago, the APWA was recommending inspections once per week and after each storm, and in no case less frequent than twice per month and after each storm. It further recommended that, during each inspection, the gate be operated through a complete cycle of closing and opening; that the float will be cleaned to remove sand or sludge and debris; that chains and gears be lubricated; and that any parts that are excessively worn or corroded be replaced.

A condition assessment of the Keefer regulator dating back to 1992 indicated:

- It is the largest gate and float system;
- A railing system was required at the bottom;
- The pulley and axle system were corroded;
- The chains, gate and float were in good condition;
- The vertical post for the float needed to be replaced;
- The landings were in good condition but safety to be addressed;
- The grate was too loose at bottom of the ladder; and,
- The concrete was in good condition.

The next complete condition assessment of these regulators was not carried out until June 2008, 16 year later. It indicated:

- In most cases the chain is the wrong size so it does not sit properly on the wheel sprockets;
- The steel I-beam supports are in very bad condition;
- Pillow blocks are either in bad condition or are seized;
- Chain bolts are in the wrong location, causing the bolts to support the chain (not designed for this);
- Regulator gates and floats are very rusty;
- Float guide posts are missing in some cases (Keefer regulator is one); and,
- In all cases, access to the chambers is tight, particularly considering the amount of safety equipment that needs to be worn by the operators.

On May 20, 2008, Management had indicated to Council that, after the 2006 spill was reported to the MOE in May 2007, corrective action began. In fact, no corrective action was ever taken at that time, as noted in the May 22, 2008 memo to Council. Had such action been taken, it is unlikely that the Keefer regulator would have failed again later in the summer of 2008.

2.3 Safety

As a result of the lack of effective maintenance of this equipment, a number of safety concerns remained unresolved, including:

- Poor lighting;
- Poor air quality;
- High noise levels;
- No platform to permit inspection of the float and gate lift mechanisms;
- Water infiltration; and,
- Unprotected electrical wiring.

This information was provided to the City Manager in August 2008 after it was raised to the attention of the Auditor General.

2.4 Inspections

Shortly after amalgamation, the frequency of inspections of the regulators was reduced to only once per month and not after rain events, as opposed to the APWA recommended once per week and after each rainfall. The rationale given for the reduction in inspections was a lack of resources, however, the Collections Unit of WDSO had a budget surplus of approximately \$563,000 in 2005, \$1.88 million in 2006 and \$667,000 in 2007. The budget surplus at the Division level was even greater with \$1.9 million in 2005, \$4 million in 2006 and \$3.6 million in 2007 left unspent. We estimate that the cost of increasing inspections to the level recommended by the APWA would be approximately \$110,000 per year which, given these surpluses, could have been easily absorbed within the existing budget.

This frequency of inspection is woefully inadequate and is even more of a concern given that the regulators had not received suitable maintenance since they were installed, even though 1995 reports noted that they had reached their expected design life and required renewal. In addition to the inadequate inspection frequency, the work done during the inspections was the bare minimum and included only application of grease to joints and chain, cleaning of all components, cleaning of float and float chamber, and tightening of bolts.

The low frequency of inspections prevented anyone from discovering the August 2006 gate malfunction for more than 10 days. If the procedure had been to inspect the regulators after every rainstorm, as is the industry standard, the malfunction would have been discovered in less than 24 hours after the rainfall stopped. As such, the volume of the sewage spill would have been less than one-tenth of the amount spilled.

2.5 Alarms

The former Regional Municipality of Ottawa-Carleton (RMOC) had a system of alarms on these regulators. The alarms were connected to the pagers of the program

managers and supervisors in the sewer maintenance system. The alarms would go off frequently and a number of false alarms occurred. Shortly after amalgamation, the alarm system was allowed to fail and was never repaired. During interviews for the audit, the Manager, WSDS and Program Manager, Sewer Maintenance acknowledged responsibility for the decision to reduce the frequency of inspections and to not replace the alarm system.

2.6 Reasons for Sewage Spill

In general, it is clear that this equipment has not been inspected and maintained in an adequate manner. The maintenance program was not based on any regular inspections, planned condition assessments, risk-based setting of priorities for renewal or life-cycle costing of renewal options. As evidenced by the lack of maintenance that the Keefer regulator had received, the fact that the gate became stuck in the closed position during the July 31 to August 2, 2006 rain storms was not an extraordinary event. In fact, the staff mechanic who conducted the June 2008 condition inspection expressed that he “wasn’t surprised” that this regulator had failed given its current condition.

2.7 Real Time Control

The “Real Time Control” project, as presented by management, is intended to reduce the volume of combined sewer overflow to the Ottawa River and enhance the City’s ability to monitor and regulate flows in the combined sewer system on a real-time basis. The objective is that, once operational, sewage spills will be prevented and combined sewer overflows will be significantly reduced.

Real-time control, and upgrades to regulators have been identified as a priority for nearly a decade. The project first received funding in 1999.

In the inaugural capital budget for the newly amalgamated City of Ottawa (2001), regulator upgrades were identified as a priority (11th) in the Sanitary Sewer Program. At that time, the project was described as “Upgrade / replacement, completion of design, construction of the structures and implementation of a real time control strategy to ensure an integrated approach to system operation”. It was expected to be complete by 2003 at a total estimated cost of \$9.7 million. Council approved a total of over \$1.0 million before the project was closed in 2003, at which time none of the approved funds had been expended.

In 2005, the Regulator Upgrade & Real Time Control project resurfaced again in the Capital Budget. In 2006, this project was identified as the number 1 priority within the Combined Sewer Area Management Program. The 2007 Capital Budget specifically identified 6 locations where “Real-Time Control of combined sewer overflows” would be implemented. These locations are: Booth – Wellington; Lloyd – Booth; Lloyd – Preston; Keefer; Rideau Canal; and Cathcart regulators. To date, this project has an approved budget of \$20.45 million, with \$3.7 million spent and \$13.8 million committed. The majority of the commitments (90%) were for 2

contracts in 2008 & 2009. Management now estimates that the project will be completed by 2010.

2.8 Legislative Requirements

Among the many pieces of federal and provincial legislation governing the operation of a sewer system is the Licensing of Sewage Works Operators, Ont. Reg. 129/04. It requires that:

1. The owner shall designate an Overall Responsible Operator (ORO), who must have a license applicable to the type of facility;
2. If the ORO is absent, an Operator In Charge (OIC) with licence equal or one level higher than the facility must be designated;
3. The owner must ensure that logs or other record-keeping mechanisms are provided and that entries be chronological;
4. Only the OIC can make an entry into log;
5. Specific information for each shift shall be entered into log, including:
 - i. Any departures from normal operating procedures that occurred during the shift and the time they occurred.
 - ii. Any special instructions given during the shift to depart from normal operating procedures and the person who gave the instructions.
 - iii. Any unusual or abnormal conditions that were observed in the facility during the shift, any action that was taken and any conclusions drawn from the observations.
 - iv. Any equipment that was taken out of service or ceased to operate during the shift and any action taken to maintain or repair equipment during the shift.
6. Logs shall be kept for two years; and,
7. The owner of a facility shall ensure that operators and maintenance personnel in the facility have ready access to comprehensive operations and maintenance manuals that contain plans, drawings and process descriptions sufficient for the safe and efficient operation of the facility.

At the City of Ottawa, in August 2006:

1. The ORO had never been designated; rather, the operators made assumptions with respect to who this was at the time;
2. The OIC for each shift was never clearly designated;
3. No log was kept in the Sewer Maintenance section;

4. No comprehensive operations and maintenance manuals, including plans, drawings, and process descriptions had been developed;
5. No safety procedures had been developed for access to the regulator chambers;
6. The Environmental Services and Technical Support Division had no role in monitoring compliance to legislation and no policies, procedures or protocols for maintenance management of the wastewater collection system emanated from this Division;
7. No written procedures existed in the Operations and Maintenance (O&M) Manual for the maintenance of the regulators; and,
8. The protocol for spill notification was the one prepared by the RMOC prior to amalgamation and was found to be very unclear, in particular with relation to the definition of a spill and when it should be reported.

This situation was not changed until June 2008.

2.9 Key Management Responsibilities

The organizational structure of WDSO with respect to wastewater collection includes three management positions in addition to the operations supervisor. These positions are all staffed with Professional Engineers:

- Manager, Wastewater and Drainage Services (Professional Engineer required);
- Program Manager, Wastewater Collection (Professional Engineer required); and,
- Section Manager, Sewer Maintenance.

The position descriptions make it quite clear that these positions are responsible among other duties for:

- Developing and maintaining a proactive approach to loss control (i.e., reduction of risk, liability, safety, etc.);
- Ensuring maintenance management systems are in place and functioning effectively to maintain compliance with applicable legislation, including:
- Reviewing all pertinent legislation, regulations, and regulatory process;
- Ensuring that staff are knowledgeable in pertinent legislation, changes to legislation and regulations, responsibilities within legislation, and consequences of non-compliance;
- Overseeing the management of the wastewater collection system; and,
- Ensuring that employees are provided with and use appropriate equipment, material, and/or procedures required to perform the assigned duties.

In our view, as the professional position closest to the front line staff and the only one having a “Level 4” MOE certification, the key responsibility for ensuring that adequate operational and maintenance procedures are in place rests with the Section Manager, Sewer Maintenance. Management from both Water & Wastewater and Infrastructure Management identified this position as having the primary responsibility for the maintenance of this equipment. However, this manager did not develop maintenance methods or operating procedures; he did not develop appropriate operating policies and work programs to adequately maintain and inspect the regulators; he did not ensure that the employees are provided with and use appropriate equipment, material and procedures required to perform their assigned duties; and, he did not follow the City of Ottawa corporate and departmental policies and procedures.

Overall, it can be concluded that neither the Manager, WSDS, nor the Program Manager, Wastewater Collection, nor the Section Manager, Sewer Maintenance delivered the duties required of their positions as they relate to the sewer collection system. It is our opinion that their failure to correctly and completely deliver these duties was responsible for the malfunction in August 2006, the length of time of the malfunction, and the failure to notify the MOE about the sewage spill. It is our opinion that these professional engineers may have failed to fulfill their duties as required under the Professional Engineers Act. Under regulations made pursuant to the Act, professional misconduct includes “failure to make responsible provision for complying with applicable statutes, regulations, standards, codes, by-laws and rules in connection with work being undertaken by or under the responsibility of the practitioner.”¹

Finally, the linear structure of this area, with three levels of management between the Branch Manager and front-line supervisors, was a contributing factor in the disconnect regarding the events of August 2006 and the lack of proper operating procedures. This structure should be re-visited in order to streamline communication and enhance managerial oversight.

2.10 Additional Sewage Spills

Since the acknowledgement of the August 2006 sewage spill in May 2008, two additional spills have occurred at different locations, one in June 2008 and another in July 2008. There was a delay in reporting the June 15, 2008 spill to Council. It was not reported to Council until July 23, 2008. Management has since undertaken a review of historical flow monitoring data from 1998 to 2008 and has identified another nine spills at various regulator locations.

¹ Definition of Professional Misconduct: Section 72 (2)(c) of Ontario Regulation 941, made under the Professional Engineers Act, R.S.O. 1990, C28

As part of this audit, the Auditor General also examined this flow monitoring data as well as work orders produced by the Collections Unit. Our assessment of the data indicates that, in addition to the spills identified by management, four other spills occurred during the period of 1998-2008. In total therefore it would appear that since 1998, 16 separate sewage spills of various magnitudes have taken place at these sites.

Management has agreed with one of these four additional spills and it was reported to the MOE on October 17, 2008 as a result of the audit. Throughout the audit, management disagreed that the other three incidents identified by the Auditor General were spills. However, on October 17, 2008, management discovered and provided to the Auditor General an MOE Incident Report dated April 4, 2005 concerning one of these incidents. It had in fact been deemed a spill at that time and was reported to the MOE by the Supervisor, Sewer Maintenance and Operations. Management maintains that the other two incidents are not spills.

The flow data discussed above is generated by sensors located in the regulator chambers. These sensors allow flows to be monitored on a daily basis so that any anomalies in the sewage flows can be quickly identified and investigated to prevent spills from occurring. In fact, the sensors are functional at only two of the five sites and the data generated was either never generated or never used to conduct daily flow monitoring for sewage spills. The identification of the unusual flows in August 2006 resulted from the technician at the time essentially noticing the abnormal data by chance and alerting operations to a potential issue.

2.11 Communications and Reporting of Sewage Spills

In our opinion, the operations staff did not receive clear instruction regarding the circumstances in which a CSO becomes a sewage spill. Furthermore, there is no requirement in the outdated protocol for the operator to record the incident number provided by the MOE. We conclude that the responsibility for reporting spills had been given in an informal manner to the Supervisor, Sewer Maintenance but in such a way that he considered his duty to report only in cases where he initiated the spill, such as when he opened the gate at the Wellington-Booth Street structure to relieve flooding pressure in the West Nepean Collector. The way in which the instructions for reporting were provided did not clearly include an event such as a sewage spill due to a closed or partially closed regulator gate as a reportable incident.

It is apparent that, prior to May 2008, a sewage spill from a malfunctioning regulator was not perceived by staff or management to be a sewage spill but a CSO. This is indicative of an organizational culture that, in our view, fails to regard these events as significant but as merely a normal course of operations.

The existing attitude and culture and the associated lack of effective reporting and communication protocols not only resulted in the August 2006 event not being reported to the MOE but also in it not being communicated properly to more senior levels in the organization. It is interesting to note that attendees at the March 25, 2008 meeting of the Fallingbrook Community Association were told of the event and its likely connection to the Petrie Island beach closures by a City Engineer (and also a member of the community association). In other words, the attendees at this meeting knew of the event and its likely consequences before the Director Water and Wastewater Services, the Director of Infrastructure Services, the Deputy City Manager, the City Manager or Council were ever informed.

3 STATUS OF IMPLEMENTATION OF 2008 AUDIT RECOMMENDATIONS

2008 Recommendation 1

That the City immediately implement the maintenance standards and procedures for regulators as recommended by the APWA and required by legislation.

2008 Management Response

Management agrees with this recommendation.

Over the last six months, the City of Ottawa has taken aggressive steps to improve the operations, monitoring, regulatory compliance and maintenance standards for the regulators.

Since May 2008, City staff have implemented more frequent maintenance inspections of the regulators. Current regulator inspection frequency is weekly and post a rainfall event consistent with the APWA maintenance standards and procedures. This has resulted in more than 320 site and regulator inspections and prompt identification and response to malfunctioning regulators.

As detailed in the management response to Recommendation 4 the City will be implementing a Quality Management System that will take an environmental risk based approach. An important element to this system is to develop appropriate risk mitigation strategies, including maintenance and asset renewal strategies. For the regulators, the overall asset investment/renewal strategy will take into consideration the fact that many of the largest regulators (Rideau Canal, Keefer/John Street and Cathcart) are scheduled to be decommissioned within 6-8 months.

OAG's Follow-up Audit Findings regarding Recommendation 1

The City of Ottawa has implemented a number of maintenance policies and standard operating procedures (SOPs) for regulators that help bring the City into compliance with legislation as well as the AWWA guidelines. The policies that have been implemented or drafted are:

- Description of Computerized Maintenance Management System Inspection and Maintenance Activities for Regulators (3 September 09);
- CSO Reporting Protocol for 15 November 2008 to 15 April 2009 (19 December 2008);
- CSO Reporting Protocol for 15 April 2009 to 15 November 2009 (24 April 2009);
- Annual CSO report for 2008 (26 May 2009);
- SOP Designation of Overall Responsible Operator and Operator In Charge (15 April 2009);
- SOP Maintenance of Logbooks and Permanent Records (Draft 19 May 2009); and,
- SOP Spill Reporting Protocol (29 April 2009).

The regulators are now being inspected on a 'not to exceed a seven day frequency' and include a visual inspection of the overflow pipe and the orifice downstream of the regulator gate. The regulators are also being inspected after heavy rainfall to ensure that the regulator gate has returned to its proper position.

The CSO reporting protocols and the annual CSO report for 2008 were sent to the Ministry of the Environment, Ottawa District Office, for their information.

The Spill Reporting Protocol outlines the process for reporting CSOs and SSOs which includes the notification of the MOE Spills Action Centre.

A list of important contacts is given that includes downstream water treatment plants, Ottawa Public Health Department, Emergency and Protective Services, and a list of selected City of Ottawa staff. It will be important to ensure that these contact lists and email addresses are updated as employees may change positions and/or may leave the organization.

OAG: % complete

100%

2008 Recommendation 2

That the City address all safety issues related to the regulators.

2008 Management Response

Management agrees with this recommendation.

Existing protocols/procedures ensure that any identified problems are promptly repaired and hazards are eliminated. Providing a safe work environment through a combination of hazard removal, appropriate safety equipment, policies, procedures and training is an essential management responsibility.

Operations and maintenance manuals will be reviewed, on a risk assessment basis, to prioritize the review and strengthen current practices.

Once approved in the 2009 Budget, management will develop and implement an Environmental Quality Management System as a first order priority. One of the advantages of implementing an ISO-based (International Organization for Standardization) management system is its relatively easy expansion to incorporate other management systems, including safety. During the development and implementation of the Environmental Quality Management System, management will consider developing an associated Quality Management System specifically directed at safety issues.

OAG's Follow-up Audit Findings regarding Recommendation 2

A note to file issued September 2009 discusses the Condition and Safety Assessment completed in June and August 2008, with a follow-up inspection in October 2008. The regulators that have been assessed are the Lloyd-Booth, Lloyd-Preston, Kent Street, Rideau Canal, Cathcart, and Keefer Street Chambers. The June and August commentary describes maintenance and safety issues while the October commentary describes the status of maintenance or clarification of items noted previously.

In general, the regulators and float systems were seen to be in very rusty condition. Other maintenance issues include: floats missing the vertical float guides, poor condition of pillow blocks, seized gates, gates blocked open and poor condition of sprockets. Some of these maintenance issues were corrected between the initial and follow-up inspections, however, some remain uncorrected.

There were a number of safety concerns that apply to most of the regulators. There was no fixed and permanent lighting in place; the air quality was poor because of the lack of any ventilation; the sites were very noisy due to the flow through them; and there was no platform to perform work on equipment.

Although some work has been completed, there is no evidence that all of the maintenance and safety concerns have been addressed. It is understood that with the implementation of the Real Time Control project that the regulators are being reconstructed. Once this project is completed the regulators should be re-inspected to ensure that all of the maintenance and safety concerns have been addressed during the reconstruction.

OAG: % complete

80%

Management Representation of Status of Implementation of Recommendation 2 as of Summer 2010

Management disagrees with the OAG's follow-up audit finding that implementation of this recommendation is not complete.

All identified safety issues have been addressed. The nature of many of the work sites in the wastewater collection system are by their nature noisy, dark and odorous. However, access and egress protocols exist and are followed by staff to ensure that all required work can be carried out safely.

Should any unsafe conditions be identified through ongoing operations or maintenance, they are rectified immediately.

Management considers implementation of this recommendation to be complete.

Management: % complete **100%**

2008 Recommendation 3

That the City ensure the effective monitoring of flow data to identify anomalies and undertake investigations and required remediation in a timely manner.

2008 Management Response

Management agrees with this recommendation.

The City has implemented a number of changes to improve upon the previous flow monitoring strategy. Regulator and/or outfall sewer operational information is available to operational staff ensuring 24/7 post rainfall event monitoring of the five monitored sites and, if necessary, appropriate response. This work included the installation of an interim status monitoring system. This will be supplanted with a permanent Real Time Status Upgrade on the three most significant outfalls by mid-2009.

As mentioned previously, management is proposing an Environmental Quality Management System that will cover all wastewater services. A key component of this work will be to identify all sites with a significant risk of environmental impacts. Combined sewer overflows and their associated regulators will be among those sites. Continuous site monitoring will be an important means of enabling staff to minimize the risk of future occurrences.

As a part of the 2009 Rate Budget, staff have requested \$5 million in authority to assess the current monitoring strategy and undertake the identified infrastructure improvements for the remaining outfall and overflow sites in addition to those sites, which will receive priority asset reinvestment as part of the Real Time Control Project. A risk-based assessment of these sites will be undertaken in accordance with the development and implementation of the Environmental Quality Management System described in Recommendation 4. If approved, this assessment is expected to be completed by Q2 2009.

OAG's Follow-up Audit Findings regarding Recommendation 3

An SOP entitled Secondary Assessment of CSO Regulator Performance was issued by the Wastewater Services on April 20, 2009. The purpose of this SOP is to describe to the reader how to conduct daily secondary assessments of CSO performance using flow monitoring data via the Flowmetrix monitoring system, and to review the operational condition and response of the flow monitoring equipment and report any CSO activity to the Sewer Maintenance group. The examination period for the review consists of calendar day before the date this review is performed. The flow monitoring equipment is installed at John Street (Keefer), Cathcart, Rideau Canal, Kent Street, and Booth Street.

It will be important to continuously monitor and update, as required, the contact information for the Sewer Maintenance group and external contractors as individuals may change positions and/or contact information change.

OAG: % complete

100 %

2008 Recommendation 4

That the City review the organizational structure of the WSDS to ensure adequate communication and operational oversight is maintained.

2008 Management Response

Management agrees with this recommendation.

A number of steps have already occurred to ensure that the previous operational oversight and communication concerns have been fully addressed. In addition, management have retained the services of SP3 Consultants to conduct a branch-wide assessment. This assessment will provide the management team with a thorough understanding of current strengths of the organizational design and will identify any remaining areas that require adjustment. This work is currently underway with a projected completion date of Q2 2009.

Management is proposing to implement an Environmental Management System for all wastewater services. The benefits of the proposed Environmental Management System (which is modeled on the ISO 14000 standard) include:

- Reassuring customers of our commitment to demonstrable environmental management;
- Reducing and avoiding incidents that could result in liability;
- Facilitating compliance with all regulations, permits and authorizations;
- Helping improve public and community relations;
- Strengthening cost control;
- Conserving input material and energy;
- Fostering the development and sharing of environmental solutions; and,
- Improving relations with regulatory bodies.

These goals are attained through a Quality Management System model, which is centred around strategies to -- Plan, Do, Check and Improve. These improvements are similar to those recently implemented for the Drinking Water Quality Management System.

Key elements of the Quality Management System model include:

Plan:

Risk-based environmental impact assessment of all ongoing operations;

Development of a comprehensive and rigorous risk identification process looking at all services provided in wastewater collection and treatment. This includes risk identification and the establishment of clear objectives and targets for all identified environmental impacts.

Do:

Strategies for risk avoidance including a thorough review of internal system planning, policies and procedures, organizational structure and responsibility, internal and external communications, operations and maintenance control activities, staff training, awareness and competence and emergency preparedness and response.

Check:

Improved internal audit and reporting functions that can include external third party auditing and reporting; and,

Improve:

A commitment from management to continually improve. This commitment includes an annual review of the results of operations, and an annual update on internal and external audits. There will also be a renewed commitment to service improvement strategies and an ongoing plan will be developed, implemented, and refreshed annually.

The Environmental Management System will be developed incrementally with the first comprehensive internal audit complete by Q4 2010.

OAG's Follow-up Audit Findings regarding Recommendation 4

The City is proceeding with a Quality Management System for Wastewater Services. A core project team has been established that includes the Manager, Wastewater Services; Program Manager, Wastewater Collection Unit; and Program Manager, Wastewater Treatment Unit and Stormwater and Municipal Drainage Unit. The implementation of the ISO14001 standard will be achieved in four conceptual phases:

- Phase 1: System Design and Core System Start-up
- Phase 2: Identification and Management of Risk

- Phase 3: System Evaluation
- Phase 4: System Approval

At the time of this report, staff are working on Phase 2. The project is scheduled for completion at the end of 2010.

OAG: % complete **40%**

Management Representation of Status of Implementation of Recommendation 4 as of Summer 2010

Management agrees with the OAG’s follow-up audit finding as of September 2009. Further progress has now been made with respect to the implementation of this recommendation.

A Department-wide Strategic Alignment Initiative has been completed that includes a review of operational oversight and communication concerns. Departmental management staff, with the engagement of staff across the department, have identified necessary organizational changes to address these concerns. Implementation of the recommended organizational changes will occur in Q4 2010.

The core project team is continuing to design and implement an Environmental Quality Management System (EQMS). Delays were encountered as a result of providing staff resources to support the corporate H1N1 response in 2009 and from widespread staff participation in the Departmental Strategic Alignment Initiative in 2010. Staff will bring a report to Planning and Environment Committee seeking endorsement of an Environmental Policy applicable to all wastewater and drainage services. Endorsement of the EQMS will apply directly to Wastewater Services. It is anticipated that implementation of the EQMS will carry on into 2011 when the first internal audit will be scheduled.

Management considers implementation of this recommendation to be substantially complete.

Management: % complete **90%**

2008 Recommendation 5

That the City review the reporting and communications protocols across all Departments to ensure proper and appropriate dissemination of information to executive management, Council and all regulatory bodies.

2008 Management Response

Management agrees with this recommendation.

As has been previously reported to Council, significant improvement to communication protocols and training have already been developed and implemented within the branch. These protocols ensure that all interested parties, including the Public Health Branch, the Ministry of the Environment, downstream drinking water suppliers, senior management and Council, are promptly informed of any combined sewer overflows and sanitary sewage spills.

The communication protocol will be reviewed and included in the branch's, department's and, the Corporate Incident Escalation and Response plans. The branch will explore opportunities with the Corporate Emergency Management group to test this protocol using simulated exercises.

The development and implementation of a 360-degree communication strategy is a very important element of the Environmental Quality Management System as noted in the management response to Recommendation 4, and if approved, will be implemented within the branch and across departments. It is expected that this will be completed by Q2 2009.

OAG's Follow-up Audit Findings regarding Recommendation 5

The City of Ottawa has implemented a number of SOPs with regards to spill reporting and communications protocols. The three SOPs reviewed for this follow-up audit were the Spill Reporting Protocol, the "No Surprises" Policy, and the Operator Notification of Reportable and Significant Operational Events.

The Spill Reporting Protocol outlines different procedures for reporting CSOs and Spills based on the time of year, type of precipitation, and temperature. This procedure discusses the timeline for contacting the Ontario Ministry of Environment Spills Action Centre, and outlines a number of other contacts that must be made both within and outside of the City of Ottawa.

The "No Surprises" Policy provides the Infrastructure Services and Community Sustainability (ISCS) Department with a framework with which it can anticipate, mitigate, and communicate in a strategic manner.

The Operational Notification of Reportable and Significant Operational Events SOP outlines how and to whom spills, CSOs, and other significant operational events are to be reported. An easy to follow table outlines when to contact the Ministry of the Environment, the Ministry of Health, Downstream Water Treatment Facilities, senior officials, and management.

It will be important to continuously monitor and update, as required, the contact information within these SOPs as individuals may change positions and/or contact information change.

These policies form an adequate communication framework, however, they do not include much information about notifying the public in the event of an emergency

nor do they discuss how to get relevant information to the media and other City departments. These policies should be updated to include this information.

OAG: % complete *80%*

Management Representation of Status of Implementation of Recommendation 5 as of Summer 2010

Management agrees with the OAG's follow-up audit finding as of September 2009. Further progress has been made with respect to the implementation of this recommendation.

As noted by the AG's follow-up audit findings, the necessary emergency incident escalation policies and procedures have been developed within Wastewater Services.

Corporately, the City has implemented new emergency response policies and procedures that have provided necessary protocols to ensure appropriate incident escalation and dissemination of information to Executive Management, Council and regulatory boards. The City's new emergency response policies include procedures to get relevant information to the media and public, as was demonstrated during the earthquake on June 23, 2010.

Management considers implementation of this recommendation to be complete.

Management: % complete *100%*

2008 Recommendation 6

That the City consider pursuing a complaint with the appropriate professional engineering association regarding the professional engineering staff identified in this report.

2008 Management Response

Management agrees with this recommendation.

The City Solicitor will review the findings contained in the report, along with the provisions of the *Professional Engineers Act* and regulations and the associated definition of "professional misconduct", as well as all other relevant factors, and will provide a legal opinion to the City Manager in this regard.

OAG's Follow-up Audit Findings regarding Recommendation 6

Legal Services has reviewed the findings contained in the Auditor General's 2008 audit of the 2006 Sewage Spill and has recommended that the City not pursue a professional misconduct complaint against the individuals identified in this report.

The review by the Solicitor stated that the Manager of Wastewater Services and Program Manager, Wastewater Collection, were terminated from their respective positions with the City and that this disciplinary action was based on the conclusion

that both had failed to fulfill their statutory and managerial responsibilities to ensure that the necessary internal procedures and protocols were in place to allow the City to meet its regulatory obligations. It was also stated that although the Manager and Program Manager had failed as managers of the City’s wastewater collection system, there was no evidence that either had failed in their professional obligations as engineers and as members of the Professional engineers of Ontario (PEO). The Solicitor further stated that their failure did not give rise to any risk to the life or safety of members of the public.

OAG: % complete **100%**

4 SUMMARY OF THE LEVEL OF COMPLETION

1. The table below outlines our assessment of the level of completion of each recommendation as of December 2009.

CATEGORY	% COMPLETE	RECOMMENDATIONS	NUMBER OF RECOMMENDATIONS	PERCENTAGE OF TOTAL RECOMMENDATIONS
LITTLE OR NO ACTION	0 – 24	-	-	-
ACTION INITIATED	25 – 49	4	1	17%
PARTIALLY COMPLETE	50 – 74	-	-	-
SUBSTANTIALLY COMPLETE	75 – 99	2, 5	2	33%
COMPLETE	100	1, 3, 6	3	50%
TOTAL			6	100%

2. The table below outlines management’s assessment of the level of completion of each recommendation as of Summer 2010 in response to the OAG’s assessment. These assessments have not been audited.

CATEGORY	% COMPLETE	RECOMMENDATIONS	NUMBER OF RECOMMENDATIONS	PERCENTAGE OF TOTAL RECOMMENDATIONS
LITTLE OR NO ACTION	0 – 24	-	-	-
ACTION INITIATED	25 – 49	-	-	-
PARTIALLY COMPLETE	50 – 74	-	-	-
SUBSTANTIALLY COMPLETE	75 – 99	4	1	17%
COMPLETE	100	1, 2, 3, 5, 6	5	83%
TOTAL			6	100%

5 CONCLUSION

City of Ottawa staff has done a good job in addressing the recommendations of the 2008 Audit of the 2006 Sewage Spill. A number of recommendations are complete or substantially complete and only one has limited action.

A number of maintenance policies and standard operating procedures (SOPs) have been developed for regulators that help bring the City into compliance with legislation as well as the American Water Works Association (AWWA) guidelines. The regulators are now being inspected on a 'not to exceed a seven day frequency' and include a visual inspection of the overflow pipe and the orifice downstream of the regulator gate. The regulators are also being inspected after heavy rainfall to ensure that the regulator gate has returned to its proper position. A Spill Reporting Protocol has been created that outlines the process for reporting Combined Sewer Overflows (CSOs) and Sanitary Sewer Overflows (SSOs) which includes the notification of the MOE Spills Action Centre. This Protocol also gives a list of important contacts that includes downstream water treatment plants, Ottawa Public Health Department, Emergency and Protective Services, and a list of selected City of Ottawa staff. It will be important to ensure that these contact lists are updated periodically as people change position and leave the organization.

A Condition and Safety Assessment of the regulators was completed in 2008. In general, the regulators and float systems were seen to be in very rusty condition. Other maintenance issues found include: floats that are missing the vertical float guides, poor condition of pillow blocks, seized gates, gates blocked open and poor condition of sprockets. Some of these maintenance issues were corrected between the initial and follow-up inspections, however, some remain uncorrected. There were a number of safety concerns that apply to most of the regulators. There was no fixed and permanent lighting in place; the air quality was poor because of the lack of any ventilation; the sites were very noisy due to the flow through them; and there was no platform to perform work on equipment. Although some work has been completed there is no evidence that all of the maintenance and safety concerns have been addressed. It is understood that with the implementation of the Real Time Control project that the regulators are being reconstructed. Once this project is completed the regulators should be re-inspected to ensure that all of the maintenance and safety concerns have been addressed during the reconstruction.

A Standard Operating Procedure that describes the process to ensure the effective monitoring of flow data to identify anomalies and undertake investigations and require remediation in a timely manner has been implemented. This procedure also outlines the list of people to contact in the event of a CSO, SSO, or failure of monitoring equipment. It will be important to continuously monitor and update, as required, the contact information as people may change position or leave the organization.

An Environmental Quality Management System is currently being designed and implemented. The goal of this project is to bring Wastewater Services in compliance with the ISO14001 standard. The project is scheduled for completion at the end of 2010.

The City of Ottawa has implemented a number of SOPs with regards to spill reporting and communications protocols. The three SOPs reviewed for this follow-up audit were the Spill Reporting Protocol, the “No Surprises” Policy, and the Operator Notification of Reportable and Significant Operational Events. These policies form an adequate communication framework, however, they do not include information about notifying the public in the event of an emergency nor do they discuss how to get relevant information to the media and other City departments. These policies should be updated to include this information.

Legal Services has reviewed the findings contained in the Auditor General’s 2008 Audit of the 2006 Sewage Spill report and has recommended that the City not pursue a professional misconduct complaint against the individuals identified in this report.

6 ACKNOWLEDGEMENT

We wish to express our appreciation for the cooperation and assistance afforded the audit team by management.