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PROPOSED LAKE SIMCOE PHOSPHORUS REDUCTION STRATEGY

The Environmental Services Committee recommends:

- 1. Receipt of the presentation by Stephen Maude, Senior Policy Advisor, Strategic Analysis Section, Ministry of the Environment, Phil Brennan, Manager, Lake Simcoe Project, Ministry of the Environment and Ellen Schmarje, Senior Program Advisor, Lake Simcoe Project, Ministry of the Environment;**
- 2. Receipt of the communication from P. M. Madill, Regional Clerk, Durham Region, dated April 1, 2010, regarding Lake Simcoe Phosphorus Reduction Strategy and Feasibility Study for Water Quality Trading in the Lake Simcoe Watershed; and**
- 3. Adoption of the recommendations contained in the following report dated April 28, 2010, from the Commissioner of Environmental Services, subject to the addition of a new Recommendation 4:**
 - 4. Staff report back to a future Committee meeting with further information on the sources of phosphorus entering Lake Simcoe.**

1. RECOMMENDATIONS

It is recommended that:

- 1. Council endorse the attached staff comments on Environmental Bill of Rights (EBR) Registry Posting Number 010-8986 – Lake Simcoe’s Proposed Phosphorus Reduction Strategy and Amendments to the Lake Simcoe Protection Plan and EBR Registry Posting Number 010-8989 – Feasibility Study for Water Quality Trading in the Lake Simcoe Watershed as submitted on April 14, 2010.**
- 2. The Regional Clerk forward this report to the Minister of the Environment.**
- 3. The Regional Clerk circulate this report to the Township of King and the Towns of Aurora, East Gwillimbury, Georgina, Newmarket, Richmond Hill and Whitchurch-Stouffville.**

2. PURPOSE

The purpose of this report is to advise Council of the contents of the Draft Lake Simcoe Phosphorus Reduction Strategy and Water Quality Trading Feasibility Study Report; discuss implications to York Region and its local municipalities; and obtain Council endorsement of the submitted comments from York Region staff.

3. BACKGROUND

Province develops Strategy to continually reduce phosphorus loading in Lake Simcoe over time

In 2006, the Province of Ontario announced they would introduce legislation to protect Lake Simcoe. Bill 99 – the *Proposed Lake Simcoe Protection Act* was introduced into the Legislature on June 17, 2007. In December 2008, the *Lake Simcoe Protection Act, 2008* was passed and received Royal Assent.

In January 2009, the Province released a draft Lake Simcoe Protection Plan (the “Plan”). A previous report (April 23, 2009, Report No. 4 of the Transportation and Works Committee) provided comments to the Province on the EBR Registry posting related to the draft plan.

The Plan was established and came into effect on June 2, 2009 pursuant to the *Lake Simcoe Protection Act, 2008*. A previous report (October 22, 2009, Report No. 2 of the Environmental Services Committee) provided an outline of the implications of the Plan to York Region and its local municipalities from a servicing delivery and cost standpoint.

The Lake Simcoe Protection Plan committed the Province to develop a Phosphorus Reduction Strategy (the “Strategy”) as well as conduct a feasibility study for Water Quality Trading within one year of the Plan coming into effect. On February 17, 2010, the Province released the proposed Lake Simcoe Phosphorus Reduction strategy and Water Quality Trading Feasibility Study. These documents were posted on the EBR Registry (Posting #010-8986 and #010-8989, respectively) for a 45-day comment period ending April 3, 2010.

4. ANALYSIS AND OPTIONS

Staff submit detailed comments on the proposed Lake Simcoe Phosphorus Reduction Strategy

York Region staff submitted a response to the proposed Lake Simcoe Phosphorus Reduction Strategy on April 9, 2010. *Attachment 1* to this report contains detailed

comments forwarded to the Ministry of the Environment in response to the EBR Registry Posting. Key issues are outlined below.

Sewage treatment plants continue to be disproportionately targeted compared to other much larger and less regulated sources of phosphorus

York Region staff continues to advocate the position that the reduction of phosphorus to the Lake Simcoe watershed must be aggressively pursued through a variety of means, not just more stringent controls on sewage treatment plants, which account for very limited inputs. Targeting sewage treatment plants amounts to achieving a proportionately small reduction in phosphorous at extremely high costs. Not only does the proposed Strategy fail to address this position, it has implications to the ability of communities serviced by Lake Simcoe in York Region to meet their approved and planned growth anticipated by "The Growth Plan for the Greater Golden Horseshoe" made under the *Places to Grow Act, 2005*.

The Strategy proposes that sewage treatment plants reduce their current average loads of phosphorus from 7 tonnes per year by approximately 54 per cent to 3.2 tonnes per year by the year 2045. Proposed targets for York Region's sewage treatment plants are summarized in Table 1.

Table 1
Proposed Phosphorus Reduction Targets for Sewage Treatment Plants

STP	Proposed Baseline (kg/yr)	Proposed Target (kg/yr)
Schomberg WPCP	75	35
Sutton WPCP	187	87
Keswick WPCP	655	304
Mount Albert WPCP	75	35
Holland Landing Lagoons	124	58
All Lake Simcoe STPs (<i>Attachment 2</i>)	6,979	3,244

Strategy rightly recognizes that the phosphorus target of 3.2 tonnes per year cannot be realized even with best available technology

As an alternative, the Strategy proposes that implementation of a Water Quality Trading (WQT) program could help with phosphorus reductions in this sector. The program will require municipalities to first upgrade facilities to best available technology and then participate in the WQT program to achieve even lower 2045 targets for sewage treatment plants. As proposed, the WQT scheme will cause municipalities to expend millions of tax dollars in capital upgrades in addition to funding activities required in other sectors to achieve the majority of phosphorus reductions by the year 2045.

Proportional reductions do not recognize York Region's recent efforts to reduce phosphorus loads

The proposed proportional reduction approach does not recognize some sectors are closer to the "goal line" in minimizing phosphorus loading contributions to the Lake Simcoe watershed than other sectors. Proportional reductions and baselines proposed by the Strategy put York Region at a disadvantage and do not recognize recent efforts by York Region to reduce phosphorus loadings. The Strategy standardizes baseline criteria for all STPs discharging to Lake Simcoe for the year 2015, from which incremental reductions will be required to the year 2045. Since the proposed compliance limits specified for three of the five facilities in York Region are more stringent than the standardized baseline criteria, York Region is effectively being held to a higher standard than other sewage treatment plant owners in the watershed (Table 2).

Table 2
Proposed Phosphorus Concentration Limits for York Region's Sewage Treatment Plants

STP	2015 Baseline Criteria (mg/L)	Proposed York Region Compliance Limit (mg/L)
Schomberg WPCP	0.15	0.10
Sutton WPCP	0.15	0.15
Keswick WPCP	0.12	0.10
Mount Albert WPCP	0.15	0.10
Holland Landing Lagoons	0.25	0.25

Staff have recommended that Ministry staff revise the Strategy to incorporate equitable standards, which credit, not penalize, existing investments in achieving lower phosphorus limits.

Stringent phosphorus limits affect York Region's ability to provide certainty of future servicing

The expectation to implement technology as it becomes available to meet decreasing phosphorus loadings over time does not recognize the significant lead time municipalities require to plan infrastructure to ensure adequate servicing capacity is available at the right time. Further phosphorus reductions will have significant implications on the Region's ability to service populations in the Lake Simcoe watershed as planned and approved through growth projections and environmental assessments. Table 3 summarizes York Region's requests with respect to each sewage treatment plant to minimize the implications of further reductions.

Table 3
Summary of Implications on York Region's Sewage Treatment Plants

Facility	Implication to York Region
Schomberg WPCP	Baseline is calculated using the current Certificate of Approval limit, which is more stringent than the tiered compliance limit; recent efforts to reduce phosphorus concentrations are not recognized.
Sutton WPCP	Baseline compliance load is based on current rated capacity, which does not recognize planned population growth in this community.
Keswick WPCP	During the Class EA for the current Phase I expansion at Keswick WPCP, York Region and MOE agreed that the total phosphorus loading would take into account the future Phase II expansion; proposed baseline compliance load does not take into account future Phase II expansion
Mount Albert WPCP	Baseline is calculated using current Certificate of Approval limit, which is more stringent than the tiered compliance limit; recent efforts to reduce phosphorus concentrations are not recognized.
Holland Landing Lagoons	Current proposed limits will impact the viability of the Lake Simcoe Alternative and the assessment of innovative wastewater treatment technologies as directed by the Minister of the Environment in the approval of the Terms of Reference for the Upper York Servicing Solutions Individual Environmental Assessment.

Initiatives proposed in the Strategy are premature and cannot deliver maximum benefits to the watershed as presented

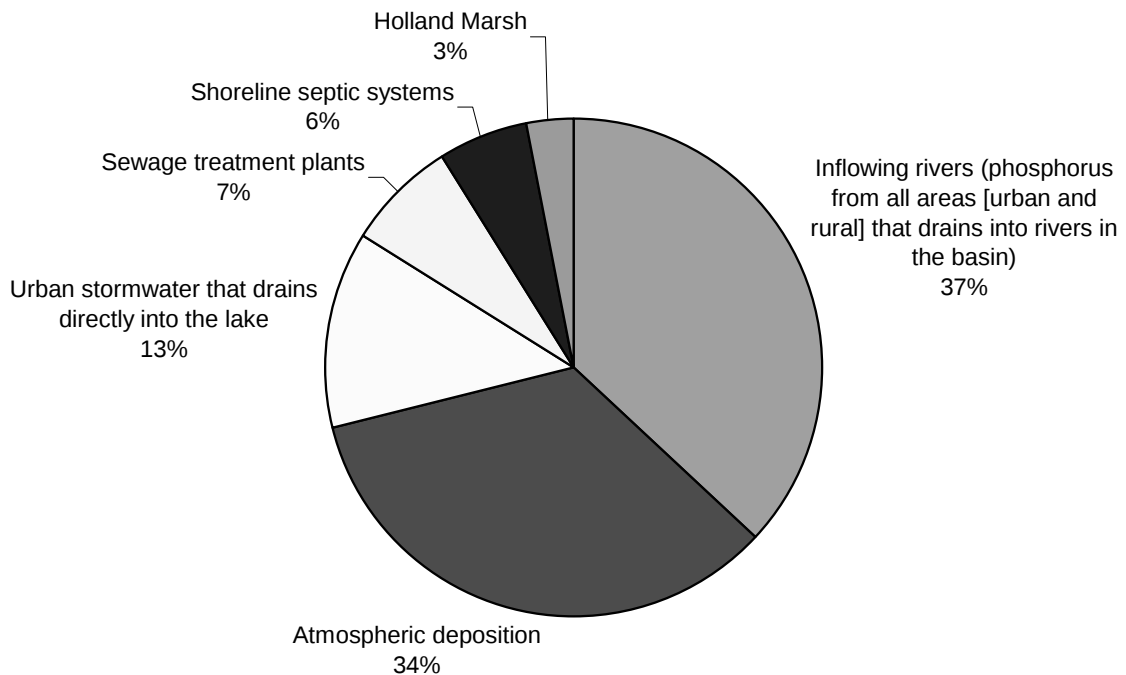
Of all the different sectors identified in the Lake Simcoe Protection Plan that contribute phosphorus to the Lake Simcoe watershed, the sewage treatment plant sector is the only sector the Strategy imposes clearly defined reduction targets out to the year 2045. Other sectors are referred to only in terms of possible reductions. This disparity is likely due to uncertainty associated with the exact sources of phosphorus and required management practices to explicitly define final loading targets. The ability of sewage treatment plants to meet the proposed step down targets and accommodate growth is equally uncertain. More effort is required to develop and implement rigorous approaches to reduce phosphorus from these other significant sources.

To achieve staged reduction targets, sewage treatment plants are expected to rely on yet-to-be developed technology of the future and the implementation of an underdeveloped WQT scheme. Under these circumstances, imposing specific targets for sewage treatment plants is premature – especially if proposed loadings are to be reflected in existing Certificates of Approval. Staff requested that the implementation of incrementally reduced targets be deferred until such time as proven approaches exist to achieve proposed phosphorus limits.

Province needs a more coordinated approach that holds all phosphorus contributors to an equitable standard to cost-effectively achieve the overall target

Of the various contributors of phosphorus to the Lake Simcoe watershed, sewage treatment plants represent only 7 per cent of total phosphorus contributions (Figure 1). However, the Strategy proposes to impose regulated limits for phosphorus only on sewage treatment plants. York Region staff have recommended that similar regulatory control be placed on larger phosphorus contributors in the Lake Simcoe watershed.

Figure 1
Lake Simcoe Phosphorus Sources
(Source: MOE Backgrounder)



Capital costs required to meet proposed targets in addition to recently imposed phosphorus limits at sewage treatment plants are not fiscally sound. These costs are disproportionate to environmental benefits and contradict the Plan's guiding principle on cost-effectiveness.

By mandating phosphorus reductions through sewage treatment plants as the main focus for phosphorus reduction, the Strategy effectively ignores opportunities to achieve more significant phosphorus reduction. Practices in other sectors known to achieve sizeable reductions in phosphorus loadings are only recommended as best management practices.

This approach needs to be strengthened to ensure necessary targets are developed to protect Lake Simcoe and achieve the ambitious phosphorus reduction targets.

The Lake Simcoe Protection Plan and, consequently, the Strategy need to be better aligned with other Provincial water management initiatives. Special consideration needs to be given to wellhead protection areas to ensure enhanced infiltration which may result from efforts to reduce phosphorus inputs from urban runoff, does not impair groundwater quality resulting in drinking water issues contrary to source protection planning under the *Clean Water Act, 2006*.

Regional staff member appointed to Lake Simcoe Coordinating Committee

The *Lake Simcoe Protection Act, 2008* establishes two advisory committees: the Lake Simcoe Science Committee and the Lake Simcoe Coordinating Committee. Membership is comprised of representatives from across the watershed, including persons representing municipalities. Members are appointed by the Lieutenant Governor in Council after considering recommendations by the Minister. York Region's Water Resources Manager has recently been appointed to the Lake Simcoe Coordinating Committee.

The Lake Simcoe Coordinating Committee will:

- Provide advice on implementation of the Plan
- Advise on issues and problems related to the implementation of the Plan
- Advise alternative measures that could be undertaken
- Monitor the progress on the implementation of the Plan

Through participation on this Committee, the local municipal context will be considered to capture the Region's interest and ensure the successful protection of Lake Simcoe.

5. FINANCIAL IMPLICATIONS

Ratepayers and municipalities will bear cost burden to reduce phosphorus loadings in Lake Simcoe

York Region must ensure a sustainable approach to servicing our communities, balancing a strong commitment to environmental protection with responsibly managing taxpayer dollars.

A previous report (October 22, 2009, Report No. 2 of the Environmental Services Committee) indicated estimated costs based on capital expenditures to meet recently imposed phosphorus limits (Table 4). These figures are based on capital costs estimates at the time and do not include annual operating costs.

Table 4
Capital Costs to Meet Recently Imposed Phosphorus Criteria

Project	Phosphorus Reduction¹ (kg/year)	Cost (\$/kg)	Annualized Cost (\$/kg)²
Schomberg WPCP	150	\$17,000	\$680
Keswick WPCP	446	\$45,000	\$1,800
Sutton WPCP	43 (proposed)	\$233,000	\$9,320

¹Phosphorus reduction figures derived from difference between permitted loadings based on original CofAs and new CofAs or proposed limits through EAs

²Based on a 25-year life cycle

Significant capital costs will be required to meet the proposed phosphorus limits. A recently completed external study estimated costs to upgrade York Region WPCPs to membrane ultrafiltration technology ranging from approximately \$2600 to \$5000 per kilogram. These estimates are strictly the incremental costs associated with upgrades for phosphorus removal over a 25-year life cycle and also include annual operating and maintenance (O&M) expenditures. Capital costs required to expand plants to meet projected growth were not considered in this assessment. These estimated costs to remove phosphorus using membrane ultrafiltration technology represent 200 to 500 times current phosphorus removal costs.

As noted in the Strategy, implementation of the best available technology will not allow STPs to reach the proposed ultimate target for the year 2045. In this case, additional costs will be required to participate in and purchase credits from the Water Quality Trading Program once it is established.

With existing technologies in place at the Region's WPCPs in the watershed, the Region has approached a level of diminishing returns on investment in the area of sewage treatment technology for the specific removal of phosphorus. At this point, very little can be done at York Region WPCPs to contribute significantly to phosphorus reduction within the Strategy at reasonable costs.

Sewage treatment plants are built to service communities for decades and take into account planned growth over the life of the facility. The phosphorus limits described in the Strategy do not consider the lifespan of sewage treatment plants, growth in the communities serviced, limits of existing technology to reduce phosphorus, or the costs associated with operating and maintaining this infrastructure. The proposed Strategy places an unreasonable burden on taxpayers to continuously implement additional technology to reduce phosphorus for a sector that is only contributing to a 7 per cent share of the problem. These costs will have to be funded through Regional and local water rates and have not been contemplated in current rate studies. Unless a successful water quality trading program is implemented that can alleviate the need for additional costly technology upgrades at York Region treatment plants, costs for the incremental

reduction of phosphorus loading will result in an increase in forecasted local and Regional user rates.

6. LOCAL MUNICIPAL IMPACT

The Strategy proposes that stormwater retrofits for existing development will reduce phosphorus loads from existing urban areas. It is further noted that approximately 160 retrofit opportunities have been identified with an estimated cost of \$63 million. However, funding for these projects is not discussed and it is not clear who will be responsible for the cost of implementing these projects. With a well-executed phosphorus trading program, stormwater retrofit opportunities may offer phosphorus credits at a much lower cost than capital upgrades at sewage treatment plants.

7. CONCLUSION

Staff have been closely following developments on the protection of the Lake Simcoe watershed through the *Lake Simcoe Protection Act, 2008* and its associated initiatives. Given the financial and servicing implications of the proposed Strategy on York Region, additional consultation is required. The strategy can be significantly strengthened with additional consultation, further refinement of achievable phosphorus targets for sewage treatment plants and the inclusion of hard targets for other contributing sectors.

The proposed Strategy fails to take a tough position on other sources of phosphorus and required measurable reduction targets. The Strategy stresses that “tough decisions and choices must be made today”, however, as presented, this position is not apparent in the Strategy.

The Strategy recognizes the need for an adaptive approach that adjusts plans as science and knowledge advances to move towards stringent and specific goals. Again, this approach is not apparent as premature targets for sewage treatment plants have been identified ahead of a known methodology to achieve them. As presented, staff believe the Strategy has been designed to fail by setting unachievable targets for one sector, while relying on voluntary participation from those sectors that have the most to deliver to the ultimate phosphorus loading target of 44 tonnes.

Furthermore, the proposed financial responsibility on the part of municipalities is unacceptable as it places an undue burden on taxpayers while possibly subsidizing the activities of other sectors.

Through participation on the Lake Simcoe Protection Committee, the Region’s interests and concerns will be captured to provide local context and ensure the successful protection of this vital water source.

Report No. 5 of the Environmental Services Committee
Regional Council Meeting of May 20, 2010

For more information on this report, please contact Laura McDowell, Director, Environmental Promotion and Protection at (905) 830-4444 Ext. 5077.

The Senior Management Group has reviewed this report.

(The two attachments referred to in this clause are attached to this report.)



Environmental Services

April 16, 2010

VIA EMAIL (mary.hennessy@ontario.ca)

Ms. Mary Hennessy
Director (Acting), Lake Simcoe Project
Environmental Programs Division
Ministry of the Environment
55 St. Clair Avenue West, 7th Floor
Toronto, Ontario M4V 2Y7

Dear Ms. Hennessy:

**Re: EBR Registry Number 010-8986 – Lake Simcoe’s Proposed Phosphorus Reduction Strategy and Amendments to the Lake Simcoe Protection Plan
EBR Registry Number 010-8989 – Feasibility Study for Water Quality Trading in the Lake Simcoe Watershed**

York Region staff have reviewed the draft Lake Simcoe Phosphorus Reduction Strategy (“the Strategy”) dated February 2010 and appreciates the opportunity to provide feedback to the Province on this important initiative. This letter details implications of the current framework as per our previous letter to Minister Gerretsen, dated November 18, 2009 as well as provides specific comments on elements of the Strategy.

The Lake Simcoe Protection Plan supports the strong tradition York Region has demonstrated in support of programs protecting the health of Lake Simcoe. Through close partnerships with local municipalities, the Lake Simcoe Region Conservation Authority and by working with the Provincial and Federal governments, York Region has consistently demonstrated a commitment to protecting Lake Simcoe.

The Province and York Region share the same goal of protecting the health of Lake Simcoe. Based on the Region’s review of the Strategy, we believe that by continuing to require Water Pollution Control Plants (WPCPs) to bear a disproportionate financial burden of limited phosphorus reduction, the mutual goal of both the Region and the Province through the Plan cannot be realized. In fact, the continued focus on WPCPs, contradicts the guiding principles of the Plan, including the following:

The Plan must be implemented in a cost-effective manner which delivers the maximum benefits to the watershed, while recognizing the fiscal realities of those who may share in the task of implementation.

After discussion with the Ministry of the Environment (MOE) regarding implementation of the Lake Simcoe Protection Plan, York Region continues to have concerns with the draft Strategy. Specifically, it is apparent that:

1. Sewage treatment plants continue to be disproportionately targeted for reduction compared to other much larger and less regulated sources of phosphorus;
2. Initiatives proposed in the Strategy are premature and cannot deliver maximum benefits to the watershed as presented;
3. Municipalities will be forced to bear the majority of the financial burden associated with phosphorus reduction throughout the watershed; and
4. A tougher and more coordinated approach is needed to reach the Province's aggressive target for phosphorus loadings in Lake Simcoe.

Each of these points is discussed in further detail in the following sections.

1. The Strategy disproportionately targets sewage treatment plants

York Region staff continues to advocate the position that reduction of phosphorus to the Lake Simcoe watershed must be aggressively pursued through a variety of means, not just more stringent controls on sewage treatment plants. Targeting sewage treatment plants amounts to achieving a proportionately small reduction in phosphorous at extremely high costs. Not only does the proposed Strategy fail to address this position, but it also has implications to the ability of communities serviced by Lake Simcoe in York Region to meet their approved and planned growth anticipated by "The Growth Plan for the Greater Golden Horseshoe" made under the *Places to Grow Act, 2005*.

Targeted reductions from sewage treatment plants cannot be achieved with best available technology

The Strategy proposes that sewage treatment plants reduce their current average loads of phosphorus from 7 tonnes per year by approximately 54 per cent to 3.2 tonnes per year by the year 2045. The Strategy rightly recognizes that this target cannot be realized even with best available technology.¹

As an alternative, the Strategy proposes that implementation of a Water Quality Trading (WQT) program could help with phosphorus reductions in this sector. However, the WQT scheme, as proposed, does not recognize the true value of such a program. The program will require municipalities to first upgrade facilities to best available technology **and** then participate in the WQT program to achieve even lower 2045 targets for sewage treatment plants. This WQT scheme will cause municipalities to expend millions of tax dollars in capital upgrades in addition to funding activities required in other sectors to achieve the loading target of 44 tonnes by the year 2045.

¹ pg. 16 of the Strategy.

Proportional reductions do not recognize recent efforts to reduce phosphorus loads

The proposed proportional reduction approach does not recognize some sectors are closer to the “goal line” in minimizing phosphorus loading contributions to the Lake Simcoe watershed than other sectors. By insisting on total proportions remaining the same in 2045 as they are now, the Strategy limits its ability to maximize reductions in all sectors. Sectors currently with high loadings, which have not implemented measures to reduce phosphorus loadings, benefit from a proportionate reduction scheme.

The proportional reductions and baselines proposed by the Strategy put York Region at a disadvantage and do not recognize recent efforts by York Region and other municipalities to reduce phosphorus loadings. York Region has implemented changes to its facilities through recent expansions to further lower effluent phosphorus concentrations. Since the effluent limits used under the Strategy to calculate baselines for three of the five facilities in York Region are more stringent than the tiered phosphorus compliance limits, York Region is being held to a higher standard than other sewage treatment plant owners in the watershed. The Region recommends that the Strategy be revised to incorporate equitable standards, which credit, not penalize, existing investments in achieving lower phosphorus limits.

Further reductions on stringent phosphorus limits affects the Region's ability to provide certainty of future servicing

The MOE has applied new phosphorus limits for effluent criteria on several recent York Region projects including Keswick WPCP, Sutton WPCP and Kleinburg WPCP. Further reductions to already improved phosphorus concentrations in treated effluent have significant negative implications on the ability of each of York Region's sewage treatment plants in the Lake Simcoe watershed to service populations as planned and approved through growth projections and environmental assessments. Furthermore, the expectation to implement technology as it becomes available to meet decreasing phosphorus loadings over time does not recognize the significant lead time municipalities require to plan infrastructure to ensure adequate servicing capacity is available at the right time. Without certainty of York Region's serviceable population and without known technology to achieve these levels, it is impossible to plan communities and determine the appropriate level of development charges and user rates that must be applied.

Schomberg WPCP – The Strategy proposes that a baseline compliance loading of 75 kilograms be allowed for Schomberg WPCP. While this facility falls within Tier 3 of the proposed tiered baseline loading limit with a corresponding compliance limit of 0.15 milligrams per litre, the baseline is calculated using the current Certificate of Approval (CofA) limit of 0.10 milligrams per litre which is more stringent, thereby reducing the baseline. York Region requests that the Tier 3 phosphorus compliance limit of 0.15 milligrams per litre be applied to the baseline compliance load for Schomberg WPCP.

Sutton WPCP – In the class environmental assessment ("Class EA") for the Sutton WPCP expansion, a service population of 13,500, which had been reduced from the original plan of 16,500, was targeted. The proposed baseline phosphorus compliance load of 187 kilograms per year is adequate to service a population of 13,500 using best available technology recommended in the Class EA. This membrane treatment can consistently achieve a compliance total

phosphorus limit of 0.08 milligrams per litre. With the additional requirement to meet the staged reductions in total phosphorus loading as stated in the Strategy and population growth in the plant service area, the plant total phosphorus loading will exceed the compliance limit over time despite the low total phosphorus limit. York Region requests the MOE ensure the baseline compliance load for Sutton WPCP recognize planned population growth in this community.

Keswick WPCP – During the Class EA for the current Phase I expansion at Keswick WPCP, York Region and MOE agreed that the total phosphorus loading would take into account the future Phase II expansion and would be reduced from 1,322 to 876 kilograms per year. York Region requests that the baseline compliance load for Keswick WPCP be adjusted to 876 kilograms per year.

Mount Albert WPCP – The existing Mount Albert WPCP has the capacity to service a population, as outlined in the approved Mount Albert Community Plan, of about 6,000. Since the Strategy proposes to calculate the baseline for Mount Albert using a relatively stringent compliance limit of 0.10 milligrams per litre, any future Official Plan Amendments for the community of Mount Albert to increase its population any further will not be economically feasible. York Region requests that the Tier 3 compliance limit of 0.15 milligrams per litre be applied to the baseline compliance load for Mount Albert WPCP.

Holland Landing Lagoons – In a letter dated February 17, 1992, the MOE capped the maximum phosphorus loading for the Holland Landing Lagoon at 199 kilograms per year. While the 2009 amended Certificate of Approval set an objective concentration of 0.3 milligrams per litre which equates to 149 kilograms per year, the Strategy is proposing further reductions to 124 kilograms per year. The current proposed limits will impact the viability of the Lake Simcoe Alternative and the assessment of innovative wastewater treatment technologies as directed by the Minister of the Environment in the approval of the Terms of Reference for the Upper York Servicing Solutions Individual Environmental Assessment. Assessment of innovative alternatives for upper York Region servicing requires that a baseline compliance load of 149 kilograms per year be used for the Holland Landing Lagoons.

2. Specific targets for all sectors need to be defined in the Strategy

Of all the different sectors identified in the Lake Simcoe Protection Plan that contribute phosphorus loading to the Lake Simcoe watershed, the sewage treatment plant sector at a 7 per cent contribution is the only sector on which the Strategy imposes clearly defined reduction targets out to the year 2045. Other sectors are referred to only in terms of possible reductions. This disparity is likely due to uncertainty associated with the exact sources of phosphorus and required management practices to explicitly define final loading targets. The ability of sewage treatment plants to meet the proposed step down targets and accommodate growth is equally uncertain. More effort is required to develop and implement rigorous approaches to reduce phosphorus from these other significant sources.

There is no certainty that future technology will materialize to achieve cost-effective, incrementally reduced phosphorus targets

The Strategy states that municipalities must continue to invest in technology upgrades at existing sewage treatment plants to meet decreased phosphorus loadings over time. It recognizes that this will rely partly on development of technologies that do not currently exist. York Region supports the Province’s direction to encourage development of water expertise through the *Water Opportunities Act*, however, the lack of technology to support proposed phosphorus targets necessitates some form of mid-term targets for accessing best available technology. It is further noted that incorporating all currently available technology will not enable sewage treatment plants to meet targeted loads for the year 2031. York Region requests that the application of incrementally reduced targets be deferred until such time proven approaches exist to achieve proposed phosphorus limits.

Potential for water quality trading in the Lake Simcoe watershed is too uncertain to rely on as an option to reduce phosphorus

The Strategy does not commit to implementation of a WQT program, so the planning implications for municipalities as outlined above are not alleviated. Furthermore, we note the following challenges with the proposed WQT scheme:

- The market would consist of municipalities as the only buyers of credits since no other sector is regulated to reduce phosphorus loadings and their participation as proposed would be, at best, voluntary. The feasibility study suggests that over-paying for these credits could be used as an incentive to other sectors to generate an adequate supply of credits. This would result in municipalities indirectly subsidizing these sectors. Unless other sectors are regulated to reduce their loadings, this effect may be inevitable.
- The time, costs, and risk management activities required to implement such a program may limit the ability for it to be of use in time to meet proposed targets.
- Details of a WQT program, specifically related to participation fees and costs of trading credits will increase challenges associated with appropriately planning communities and required infrastructure.
- The technical methodology for counting credits needs to be further refined. Any credits purchased by sewage treatment plants would have to be double counted since actual loadings from sewage treatment plants will not decrease. As presented in the Strategy, results will be unclear and the ultimate goal of 44 tonnes may never be realized.

To achieve the staged reduction targets, sewage treatment plants are expected to rely on possible future development of technology and potential implementation of a WQT scheme, which is in the very early stages of development. Under these circumstances, stating specific targets for sewage treatment plants is premature – especially if these incrementally reduced loadings are proposed to be reflected in existing Certificates of Approval.

3. Rate payers and municipalities will bear cost burden to reduce phosphorus loadings in Lake Simcoe

The Strategy proposes that stormwater retrofits for existing development will reduce phosphorus loads from existing urban areas. It is further noted that approximately 160 retrofit opportunities have been identified with an estimated cost of \$63 million. However, funding for these projects is not discussed and it is not clear who will be responsible for costs required to implement these projects.

York Region must ensure a sustainable approach to servicing our communities, balancing a strong commitment to environmental protection with responsibly managing taxpayer dollars. Capital costs required to meet the proposed phosphorus limits are not fiscally sound. In addition to premiums associated with capital construction costs, it is estimated that increased operations and maintenance costs (including energy) are equal to or greater than improvement capital costs.

Sewage treatment plants are built to service communities for decades and take into account planned growth over the life of the facility. The phosphorus limits described in the Strategy do not consider the lifespan of sewage treatment plants, growth in the communities serviced, the limits of existing technology to reduce phosphorus, or the costs associated with operating and maintaining this infrastructure. York Region believes the Strategy, as currently written, places an unreasonable burden on our taxpayers to continuously implement additional technology to reduce phosphorus for a sector that is only contributing to a 7 per cent share of the problem.

4. The Province needs more coordinated approach that holds all phosphorus contributors to an equitable standard

Of the various contributors of phosphorus to the Lake Simcoe watershed, sewage treatment plants represent only 7 per cent of total phosphorus contributions. However, the Strategy proposes to impose the majority of the control and limits for phosphorus on sewage treatment plants. York Region recommends that similar regulatory controls be placed on larger phosphorus contributors in the Lake Simcoe watershed. While stewardship activities and best management practices are important, top-down approaches, such as regulated reductions in all sectors, will ensure all phosphorus contributors are held to an equitable standard.

The Lake Simcoe Protection Plan and, consequently, the Strategy need to be better aligned with other Provincial water management initiatives. Special consideration needs to be given in wellhead protection areas to ensure enhanced infiltration, resulting from efforts to reduce phosphorus inputs from urban runoff, does not impair groundwater quality resulting in drinking water issues contrary to source protection planning under the *Clean Water Act, 2006*.

Proposed Strategy fails to take tough position on significant sources needed to achieve phosphorus targets

The Strategy stresses that “tough decisions and choices must be made today,”² however, as presented, this position is not apparent in the Strategy. Practices in other sectors known to

² pg. 2 of the Strategy.

April 16, 2010

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E3R Registry Number 010-8986 – Lake Simcoe's Proposed Phosphorus Reduction Strategy and Amendments to the Lake Simcoe Protection Plan;

EBR Registry Number 010-8989 – Feasibility Study for Water Quality Trading in the Lake Simcoe Watershed

achieve sizeable reductions in phosphorus loadings are only recommended as best management practices. This approach needs to be strengthened to ensure the necessary targets are developed to protect Lake Simcoe and achieve the ambitious phosphorus reduction targets.

Further consultation is required to collaborate with Municipalities and achieve the goals of the Lake Simcoe Protection Plan.

Staff have been closely following developments on the protection of the Lake Simcoe watershed through the *Lake Simcoe Protection Act, 2008* and its associated initiatives. Given the financial and servicing implications of the proposed Strategy on York Region, additional consultation is required.

York Region supports the Province in it's efforts to protect Lake Simcoe. We request the Province engage in further consultation to consider and act on recommendations detailed in this letter. We believe the strategy can be significantly strengthened with additional consultation, further refinement of achievable phosphorus targets for sewage treatment plants and the inclusion of hard targets for other contributing sectors.

York Region looks forward to continuing to work with the Province to further develop this strategy to achieve the principles and objectives of the Lake Simcoe Protection Plan.

We trust these comments are of assistance to the Province. York Region staff would be pleased to discuss any issues that arise from these comments. Please contact Michele Maitre, Manager of Regulatory Compliance and Policy at (905) 830-4444, ext. 5097 should you require clarification.

Sincerely,

Erin Mahoney, M. Eng.
Commissioner, Environmental Services

EM/mm

Copy to: The Honourable John Gerretsen, Minister, Ministry of the Environment
Mr. Paul Evans, Assistant Deputy Minister, Environmental Programs Division, Ministry of the Environment
Ms. Jennie Weller, Senior Outreach and Consultation Coordinator, Environmental Programs Division, Ministry of the Environment
Mr. Stephen Maude, Senior Policy Adviser – Water Policy, Integrated Environmental Policy Division, Ministry of the Environment

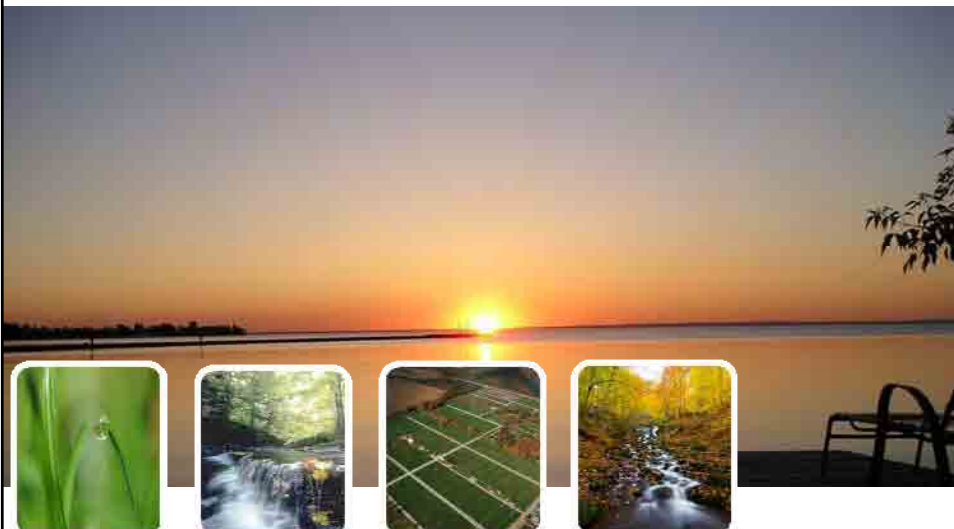
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Proposed Lake Simcoe Phosphorus Reduction Strategy
Proposed Phosphorus Reduction Targets for Sewage Treatment Plants

STP	Proposed Baseline (kg/yr)	Proposed Target (kg/yr)
The Regional Municipality of Durham		
Uxbridge Brook WPCP	286	133
Beaver River # 1 WPCP (Sunderland)	58	27
Lake Simcoe (Beaverton) WPCP	190	88
Beaver River # 2 WPCP (Cannington)	97	45
The Regional Municipality of York		
Schomberg WPCP	75	35
Sutton WPCP	187	87
Keswick WPCP	655	304
Mount Albert WPCP	75	35
Holland Landing Lagoons	124	58
The Corporation of the City of Barrie		
Barrie WPCP	2,774	1,289
The Corporation of the Town of Bradford West Gwillimbury		
Bradford WPCP	698	324
The Corporation of the Town of Innisfil		
Innisfil WPCP	629	292
The Corporation of the City of Orillia		
Orillia WTCC	996	463
The Corporation of the Township of Ramara		
Lagoon City STP	124	58
Silani Sweet Cheese Ltd.		
Silani Cheese STP	11	5
TOTAL	6,979	3,244

Implementing key elements of the
Lake Simcoe Protection Plan

May, 2010




Context



- December 2008, the *Lake Simcoe Protection Act* became law.
 - This is the first legislation of its kind in Canada
- June 2, 2009 the Lake Simcoe Protection Plan (LSPP) came into effect
- The objectives of the LSPP are to:
 - Protect, improve or restore the elements that contribute to the ecological health of the Lake Simcoe Watershed;
 - Restore a self-sustaining coldwater fish community;
 - Reduce loadings of phosphorus and other nutrients of concern; and
 - Reduce the discharge of pollutants
 - Provide ongoing scientific research and monitoring related to the ecological health of the Lake Simcoe watershed
- Utilize an **adaptive management** approach – incorporate new knowledge and innovative design, practices and technology from ongoing science
- **Cost effective** implementation that recognizes the realities of those who may share in implementation
- **Allow the Plan to evolve and improve over time** based on new science and implementation experience

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2

Timelines and Implementation



- There are 119 Policies set out in the LSPP with specific commitments and actions to be implemented in each year of the Plan
- 88 of the 119 Policies have specific commitments and actions to be delivered within one year of the date the LSPP comes into effect (by June 1/10), including:
 - Develop a Phosphorus Reduction Strategy (PRS) to achieve the ambitious goal of reducing phosphorous loadings from 72 tonnes/year to 44 tonnes per year.
 - long term view
 - phased, coordinated
 - Conduct a Water Quality Trading (WQT) Feasibility Study
 - Release for consultation a proposed draft shoreline regulation
- In order to meet the June 2, 2010 Year 1 deadline public consultation was undertaken in the winter of 2010 to seek feedback on the recommendations, timelines and potential costs that may be incurred.

How PRS and WQT may work together...



2. Water Quality Trading (WQT)

(WQT) could be a short- to medium-term PRS tool

- Provide flexibility for municipalities to choose when to make investments in hard infrastructure upgrades
- Provide incentives for non-point source contributors to become involved
- Allow time for best available technology to become economically viable

1. Phosphorus Reduction Strategy (PRS)

(PRS) lays out the steps needed to reduce "P" load to Lake Simcoe

- Long-term strategy
- Accommodates approved growth
- Adaptive management approach
- Looks at all sectors of potential loading, including:

Agriculture: BMPs and stewardship. Over 2000 farms.

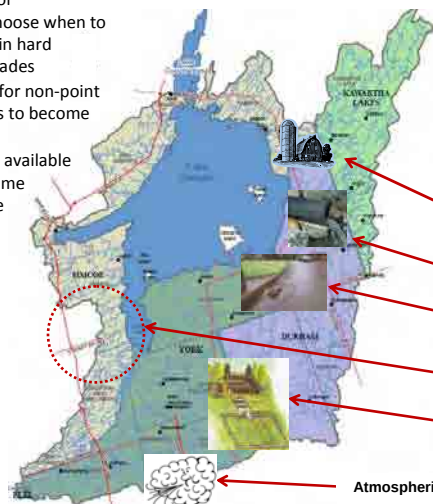
STPs: Limits, upgrades and technology

Urban stormwater: LID, green development

Holland Marsh and Polders: BMPs and study

Septics: Reinspections and technology

Atmospheric deposition: BMPs



Phosphorus Reduction Strategy



- Develop a Phosphorous Reduction Strategy (PRS) in Year 1
 - **Long-term Goal:** Reduce phosphorus loadings to achieve a Dissolved Oxygen target of 7 mg/L
Translates to an aggressive phosphorus loading goal of 44 T/yr
 - Take an Adaptive Management approach, which is phased and coordinated
 - Determine Phosphorus Targets and Reduction Options
 - Focus on agricultural, rural and urban stewardship
 - Research and Innovative Technologies
- A multi-agency team has developed the Strategy based on the parameters set by the Science Advisory Committee
- Critical Assumptions:
 - The “Interim Regulation” (O.Reg. 60/08) capping STP loadings expired on March 31/10
 - Approved municipal growth will create an increase in loading over the next several years
 - Phosphorous caps will be performance targets to be achieved, but technology and timing decisions will be a municipal responsibility
 - Initial loading reductions from contributing sectors will be proportional to their current contribution

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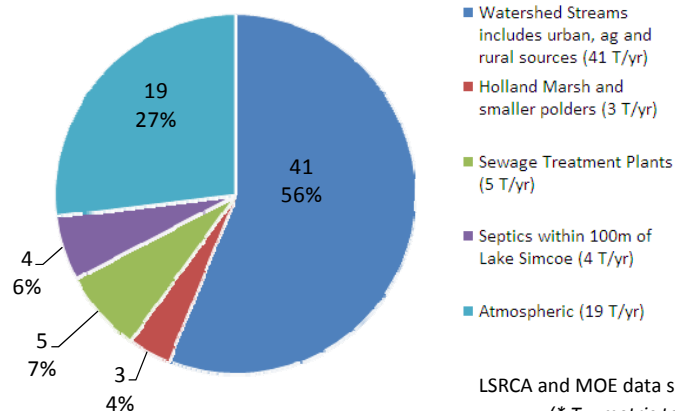


5

Phosphorus Load Contributions



Total annual load averaged 72 T*/year



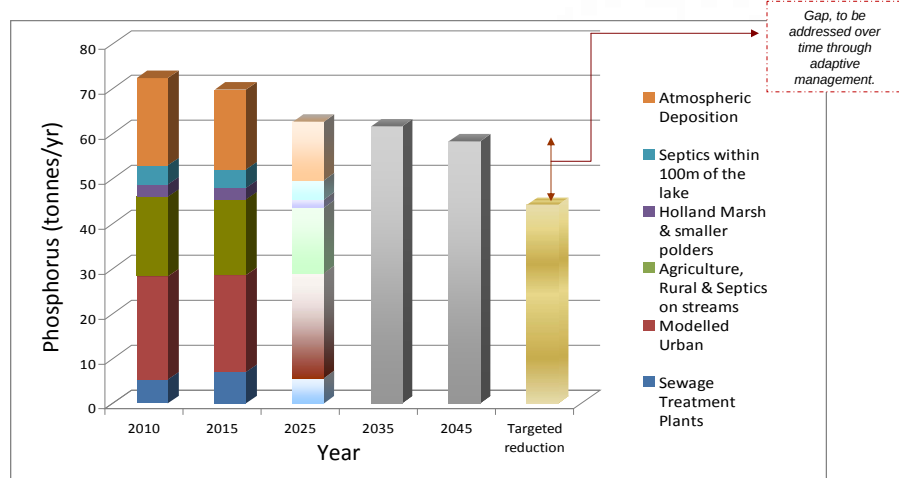
LSRCA and MOE data sets, 2002 – 2007
(* T = metric tonnes or 1000 kg)

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6

Projected Load Reductions



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7

PRS: Stakeholder Feedback



Consultation Key Comments

- Broad support for phosphorus reduction
- Funding should be provided for infrastructure upgrades and stewardship
- Need for clarity around “no net phosphorus from new development” and how that would be implemented
- Proportional load and its long-term applicability
- Uncertainty around the atmospheric load and specific sources
- Uncertainty around WQT and how that would be incorporated into PRS

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8

WQT: Consultation Feedback



Support

- Cost-effective phosphorus reduction
- Other environmental benefits
- Certainty for Environmental Assessment process

Evaluate further

- WQT has potential to spur innovation
- Need certainty regarding long-term infrastructure costs
- Need local delivery and buy-in
- Need to complement stewardship programs
- Need more rigorous evaluation of potential agricultural credits
- Recommend further evaluating prior to deciding on regulation

Opposed

- Difficult to implement and administer
- Lets polluters sidestep responsibility
- Alternative solutions, e.g., direct funding for infrastructure upgrades, are more direct, fair, and effective

WQT: Options for Moving Forward



- 1. Do not proceed with a WQT regulation.**
 - Potentially less flexibility for various sectors in achieving their PRS targets.
- 2. Proceed with developing a WQT regulation.**
 - Potentially provides innovative tool for cost-effectively reducing phosphorus.
 - Need to address stakeholder concerns through process of developing regulation and program.
 - Options for design and phasing-in of regulation (e.g., detailed versus enabling regulation).
- 3. Further evaluate WQT prior to making a decision on whether or not to proceed with a regulation.**
 - Provides opportunity to address stakeholder questions regarding details of WQT program (e.g., How would phosphorus reduction credits be established? How would trades and associated water quality benefits be verified?).
 - Potential pilot project.
 - Potentially incorporate WQT into PRS in 2015 (start of baseline compliance for STPs and coincident with proposed 5-year review of PRS).

Key Considerations



1. Adaptive Management - The Phosphorous Reduction Strategy and the Lake Simcoe Protection Plan will be amended as new science, technology and policy decisions come forward.
2. Even with a 30 year window from 2015 to 2045, current technology is not going to get us to our target. Development of new technology critical for:
 1. Sewage Treatment
 2. Stormwater management/treatment
3. Science related to the atmospheric load to Lake Simcoe is still in process, targeting 2011 for completion. Sector specific actions and possible regulatory controls for the source sectors will be considered at that time.
4. Determine future of WQT.



The Regional
Municipality
of Durham

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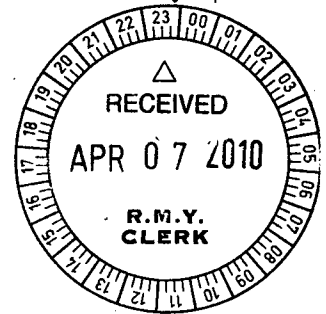
Pat M. Madill, A.M.C.T., CMM III
Regional Clerk

COMMUNICATION
REGION OF YORK
CLERK'S OFFICE

April 1, 2010

FILE No. - P42

The Honourable John Gerretsen
Minister of the Environment
11th Floor, Ferguson Block
77 Wellesley Street West
Toronto ON M7A 2T5



**RE: LAKE SIMCOE PHOSPHORUS REDUCTION STRATEGY
(EBR # 010-8986) AND FEASIBILITY STUDY FOR WATER
QUALITY TRADING IN THE LAKE SIMCOE WATERSHED
(EBR # 010-8989) (2010-J-8)
(Our File No. C12)**

Honourable Minister, please be advised the Joint Finance & Administration, Planning and Works Committee of Regional Council considered the above matter and at a meeting held on March 31, 2010 Council adopted the following recommendations of the Joint Committee:

- "a) THAT the comments, questions and concerns outlined in Joint Report #2010-J-8 be submitted to the Ministry of Environment by April 3, 2010, as the Region's response to the Environmental Bill of Rights (EBR) postings of the proposed Phosphorus Reduction Strategy (EBR #010-8986) and the Feasibility Study for Water Quality Trading in the Lake Simcoe Watershed (EBR # 010-8989); and
- b) THAT a copy of Joint Report #2010-J-8 be forwarded to the Minister of Municipal Affairs and Housing, the Minister of Energy and Infrastructure; the Townships of Brock, Scugog and Uxbridge; Region of York; City of Barrie; County of Simcoe; and the Lake Simcoe Region Conservation Authority."

.../2



April 1, 2010

As directed, please find enclosed at copy of Report No. 2010-J-8 of the
Commissioners of Finance, Planning and Works.



Pat M. Madill, AMCT, CMM III
Regional Clerk

PMM/ct

Enclosure

- c: The Honourable J. Bradley, Minister of Municipal Affairs & Housing
 The Honourable B. Duguid, Ontario Minister of Energy and
 Infrastructure
 Jennie Weller, Senior Outreach and Consultation Coordinator
 Ministry of the Environment
✓ D. Kelly, Regional Clerk, York Region
 D. McAlpine, City Clerk, City of Barrie
 G. Knox, County Clerk, County of Simcoe
 T. Gettinby, Clerk, Township of Brock
 K. Coates, Clerk, Township of Scugog
 D. Leroux, Clerk, Township of Uxbridge
 D. Gayle Wood, CAO - Secretary/Treasurer, Lake Simcoe Region
 Conservation Authority
 J. Clapp, Commissioner of Finance
 C. Curtis, Commissioner of Works
 A.L. Georgieff, Commissioner of Planning
 C. Drimmie, Policy & Research Advisor, Office of the Chief
 Administrative Officer



The Regional Municipality of Durham

To: The Finance and Administration, Planning and Works
Committees

From: R. J. Clapp, Commissioner of Finance
A.L. Georgieff, Commissioner of Planning
C.R. Curtis, Commissioner of Works

Report No.: 2010-J-8

Date: March 23, 2010

SUBJECT:

Lake Simcoe Phosphorus Reduction Strategy (EBR # 010-8986) and
Feasibility Study for Water Quality Trading in the Lake Simcoe Watershed (EBR # 010-
8989)

RECOMMENDATIONS:

THAT the Finance and Administration, Planning and Works Committees recommend to
Regional Council that:

- a) The comments, questions and concerns outlined in this report be submitted to
the Ministry of the Environment by April 3, 2010, as the Region's response to
the Environmental Bill of Rights (EBR) postings of the proposed Phosphorus
Reduction Strategy (EBR #010-8986) and the Feasibility Study for Water
Quality Trading in the Lake Simcoe Watershed (EBR # 010-8989); and
- b) A copy be forwarded to the Minister of Municipal Affairs and Housing, the
Minister of Energy and Infrastructure, the Townships of Brock, Scugog and
Uxbridge; and the Lake Simcoe Conservation Authority.

REPORT:

1. PURPOSE

- 1.1 On June 2, 2009, the Province approved the Lake Simcoe Protection Plan
(LSPP). A critical component of the LSPP is the development of a
phosphorus reduction strategy for the watershed. In the Plan, the Province

committed to developing the reduction strategy and to studying the potential of water quality trading as phosphorus reduction mechanism by June 2010. The two postings of these two papers is an early step in fulfilling those commitments.

1.2 The Proposed Lake Simcoe Phosphorus Reduction Strategy and amendments to the LSPP are posted on the Environmental Bill of Rights Registry as posting 010-8986 (at www.ebr.gov.on.ca). The Feasibility Study for Water Quality Trading in the Lake Simcoe Watershed, a lengthy technical document, is also available under EBR posting 010-8989. Paper copies of the two EBR postings and the related documents are available for viewing at the Regional Clerk's Office.

1.3 The purpose of this report is to:

- outline the proposed phosphorus reduction strategy
- summarize key points of the feasibility study
- provide high level regional comments on both documents for submission to the EBR process
- identify the anticipated impacts of the Phosphorus Reduction Strategy on the Region
- note the Province's next steps in finalizing the elements of the phosphorus reduction strategy.

2. BACKGROUND

2.1 About one third of the Regional Municipality of Durham's (Region) geographic area lies within the Lake Simcoe watershed and is affected by the LSPP. Over the past two decades, the Region has actively participated in efforts to protect the Lake Simcoe watershed:

- as an active member of the Lake Simcoe Environmental Management Strategy (LSEMS)
- by investment in upgrades at the Beaverton and Uxbridge water pollution control plants to help protect the lake
- as a member and funder of the Lake Simcoe Region Conservation Authority

- as a member of the Lake Simcoe Stakeholder Advisory Committee

2.2 The Region has four water pollution control plants (WPCPs) in the Lake Simcoe watershed:

- Uxbridge Brook WPCP which provides tertiary treatment and produces a very high standard of effluent
- Beaver River #1 WPCP (Sunderland) which is a lagoon system
- Lake Simcoe (Beaverton) WPCP which provides tertiary treatment and produces a very high standard of effluent
- Beaver River #2 WPCP (Cannington) which is a lagoon system.

2.3 In March 2008, the Province introduced an interim regulation (O. Reg.60/08) to limit phosphorus loading from the existing water pollution control plants in the Lake Simcoe basin. This regulation expires on March 31, 2010.

3. **LAKE SIMCOE PROTECTION PLAN POLICIES ON PHOSPHORUS**

3.1 The goal of restoring a **self-sustaining coldwater fish community in Lake Simcoe** drives most of the policies in the LSPP. Reaching this goal largely depends on achieving a dissolved oxygen level of 7 mg/L in the deep waters of the lake in late summer. This will require a **significant sustained reduction in the level of phosphorus** in the lake.

3.2 The Plan sets a long term phosphorus loading target of approximately 44 tonnes per year, about a 1/3 reduction from the current level of 72 tonnes per year. Several policies are included in the protection plan to support achievement of this target but some may have to be amended to match the final phosphorus reduction strategy.

3.3 The Region and its northern municipalities must conform to **designated policies** in the LSPP that address sources of phosphorus and their effects on the lake and **have regard to** other policies.

3.4 Designated policies which support phosphorus reduction require:

- environmental assessments prior to approving expansion to settlement areas
- additional requirements and conditions for approval of sewage treatment plants
- prohibition of approvals for new municipal sewage treatment plants unless they replace an existing municipal system, a failing system or serve an existing development on partial services
- inclusion of policies in official plans to reduce stormwater runoff volumes and pollutant loadings from major development
- prohibition of new on-site sewage systems within 100 metres of the shoreline or any permanent stream with some exceptions
- review and amendment of Certificates of Approval for existing sewage works.

3.5 The LSPP also includes strategic actions to improve water quality in the Lake. Two of these actions direct that research on phosphorus sources and evaluation of a water quality trading program be completed as a basis for developing programs and mechanisms to reduce phosphorus loadings.

Other strategic actions include:

- establishment of stormwater master plans, stormwater management plans and indicators by municipalities
- amendment of the Ontario Building Code within a year to require on-site sewage maintenance re-inspections within 100 metres of the Lake Simcoe shoreline, other lakes or permanent streams in the watershed
- completion of a study on atmospheric deposition of phosphorus to the Lake within two years
- creation of additional standards for site development and mineral aggregate resource activities within three years
- an ongoing program of scientific research and water quality monitoring for the watershed that builds on the previous LSEMS work.

- 3.6 The Ministry of the Environment (MOE) interim regulation on phosphorus loadings from sewage treatment plants expires on March 31, 2010. MOE staff met with Regional staff in January 2010 in regard to the next steps with respect to sewage treatment plants and the setting of new baseline limits that will govern the plants until 2015 or until plants are rebuilt or expanded. The Phosphorus (P) Reduction Strategy, when adopted later in 2010, will outline future limits on phosphorus loadings from all sources, including sewage treatment plants. In the meantime, the Region will comply with the phosphorus output limits identified in the existing certificates of approval for our water pollution control plants in the Lake Simcoe watershed.

4. **PROPOSED PHOSPHORUS REDUCTION STRATEGY**

- 4.1 The proposed strategy takes the approach of using 44 tonnes total phosphorus (P) loading per year as the target for 2045. Targets for each source of phosphorus are then set in proportion to their current estimated contribution to the total loading as illustrated in the chart below.

Source	% of P Load	2010 P Contribution	2045 Target P Contribution	Reduction Required
Sewage Treatment Plants	7%	5 T	3.5	1.5 to 3 T
Septic Systems	6%	4 T	2.4	1.6
Urban Runoff & Stormwater	31%	23 T**	14.0	18 to 24T
Agricultural/Rural Runoff	25%	17 T	10.3	6.4 T
Atmospheric Deposition	27%	19	11.6	7.4 T
Polders, Holland Marsh	4%	3T	1.8	1.2 T
Total	100	72 T	Approx. 44 T	36 to 44T

- 4.2 5T is the 2009 loading level for sewage treatment plant, but the rated capacity of the Certificates of Approval for the 14 STPs in the watershed is presently 11.7 T/year. The interim P regulation restricted loadings to 7.3 T/year. The proposed 2015 target is 6.9 T/year. After 2015, according to the proposed strategy P loadings would be reduced to meet interim targets with the goal of reaching the ultimate reduction by 2045.
- 4.3 The forecast urban growth for the watershed is estimated to create about 17,000 ha more of urbanized land and add 250,000 to 300,000 people. This would add 9 to 15 T of phosphorus per year even with stormwater retrofits and urban design measures to reduce runoff so the overall reduction (or avoidance of P creation) required from this sector is very large.
- 4.4 In addition to the targets and reduction measures proposed for each source of phosphorus, the strategy proposes a variety of other approaches, activities and mechanisms for reducing phosphorus. These are elaborations of policies and provisions found in the LSPP and include:
- **Adaptive management** which aims to improve policies and actions over time as more research is done and results of actions are evaluated.
 - **Watershed approach** through which the Province and implementation partners will develop sub-watershed phosphorus loading targets that add up to the 44 tonne/year goal.
 - **Source-specific targets** (as noted in the chart) above and actions such as water quality trading or stormwater retrofits to meet those targets
 - **Stewardship and community action** with programs, incentives, education and outreach to change household behaviours
 - **Monitoring and compliance** mainly using existing legislative tools and mechanisms (like the *Clean Water Act*, the *Ontario Water Resources Act* and the *Ontario Building Code*) to support shared responsibility and accountability for actions
 - **Research, modelling and innovation** to evaluate the 44 tonne target, to better understand the non-point sources of phosphorus, and improve or develop technology to reduce loadings

5. FEASIBILITY STUDY ON WATER QUALITY TRADING IN THE LAKE SIMCOE WATERSHED

5.1 The water quality trading feasibility study is over 150 pages in length. It outlines:

- the history of trading systems, a description of common approaches, challenges and benefits of water quality trading, and examples of trading programs and experiences in Canada and elsewhere
- the elements required for a successful trading system such as establishing drivers for trading, credit values, trading ratios, trading rules and managing the administrative costs
- profiles of the potential trading sectors in the Lake Simcoe watershed
- program options and operational considerations
- a proposed trading program design for the Lake Simcoe watershed.

The feasibility study presents two scenarios based on different expectations of sewage treatment plant (STP) performance.

5.2 Scenario 1 would require STPs to achieve 0.1mg/litre average annual effluent concentrations. Under this scenario the lagoon systems at Sunderland and Cannington would have to be replaced with a mechanical plant. Additional filtration capacity would have to be added at the Beaverton Water Pollution Control Plant. Upgrades would not be required at the Uxbridge Brook WPCP as the effluent discharged at this plant currently meets this standard. Total Regional capital costs are estimated at \$15.5 million (2009 \$).

5.3 Scenario 2 sets the target at .05 mg/litre would require installation of membrane filtration technology at 13 existing STPs on Lake Simcoe. (The Keswick plant currently undergoing redevelopment will include this technology). Under this standard, all four of Durham Region's WPCP's in the Lake Simcoe watershed would have to be either replaced or upgraded at an estimated cost of \$25.8 million (2009 \$) which includes a conservative estimate of \$8.6 million for the Cannington WPCP.

There are many tables and appendices that present supporting data including projected costs to upgrade sewage treatment plants.

6. REGIONAL RESPONSE TO THE PROPOSED PHOSPHORUS REDUCTION STRATEGY

General Comments

- 6.1 The Region is **extremely disappointed** that the overwhelming focus in the Strategy is on achieving further P reductions from water pollution control plants, given that the water pollution control plants account for an estimated 7% of the phosphorous levels in Lake Simcoe. Older plants servicing sizable communities on the Lake should be upgraded to best available technology at the earliest economic opportunity. This is a reasonable step to optimize the reductions in phosphorus loadings from sewage treatment plants. However, where the P contribution is small, further upgrades may be a very expensive approach that produces only marginal P reductions. Account should be taken of the physical constraints on the plants (such as seasonal flows in receiving streams) or previously-completed upgrades.
- 6.2 One of the principles of the strategy is to consider the relative costs and benefits of various P reduction options (principle iv on p.5). However, this type of analysis seems to be applied only in the context of phosphorus trading to develop trading ratios. Even there, in the absence of solid data, some of the cost estimates are quite speculative.
- 6.3 However, the principle of weighing costs and benefits is essentially irrelevant in the context of the 44 tonne target. The paper basically states that **all available strategies** must be fully employed to have any chance of reaching the 44 T target. **As the paper acknowledges on page 16, the target cannot be reached using currently available technology.** Success depends on technological improvements occurring over the next few decades to assist. While this expectation may be a reasonable assumption, when other unknown factors such as the effect of climate change are added to the equation, the ability to reach 44 T/year remains questionable.

- 6.4 Scenario 1 of the Water Quality Trading strategy would be insufficient to produce the required reductions to reach the 44 T target. Thus the final P reduction strategy would likely adopt Scenario 2 if the WQT program is adopted.
- 6.5 By far the biggest contributor to phosphorus levels in Lake Simcoe, both in the past, and projected into the future, is urban development. **Urban runoff and stormwater comprise 31% of the P loading.** Sewage treatment plants contribute 7%. **The Strategy projects that an additional 9 to 15 tonnes per year of phosphorus will be added to the lake by the urban growth projected to 2031.** No doubt, a portion of the atmospheric deposition also is related to urban uses and growth such as site development and road building and maintenance.
- 6.6 From a purely mathematical perspective, if the Province wishes to reduce phosphorus loading to Lake Simcoe, they could simply reduce or stop urban expansion in the watershed. However, this would conflict with the Province's Simcoe Plan, Growth Plan population targets for the western half of the watershed, and aspirations of the local communities. **While intensification and infill development may reduce the spatial extent of the expanded urban area, it will not reduce the phosphorus output of each additional human being in the watershed.** The strategy suggests that, even with mitigating urban design measures, "significant phosphorus loadings from development will occur and must be offset in some way". The paper suggests that a water quality trading mechanism could support the proposed goal of no net increase in phosphorus from development ("*phosphorus neutral development*").
- 6.7 Watershed-wide, the effect of the strict phosphorus limits on sewage treatment plants and stormwater will result in higher costs to accommodate growth as well as retrofitting existing uses. The higher costs associated with adding sewage treatment capacity that meets the stringent phosphorus levels will result in a higher development charge and given that development charges will not fund 100% of the costs, user rate funding will be required to fund a share of these capital costs. As well, the costs of retrofitting existing treatment plants and stormwater systems will be borne solely by existing

ratepayers. Development charge funding will not apply since these capital works will not add capacity to the system. Given that the Region has uniform water and sewer user rates, this will impact all ratepayers across the Region. These costs could also put a financial strain on the Region's ability to finance necessary infrastructure replacements

- 6.8 The critical question for municipalities will be **whether the benefits of future growth will outweigh the costs that a municipality and its rate payers would bear to meet aggressive phosphorus targets**, in addition to the **increased burden on ratepayers to ensure operating compliance of existing systems.**
- 6.9 Beyond the large capital investments to upgrade sewage treatment plants that would be required under the strategy simply to maintain service to current population levels, there will also be increased operating, maintenance and possibly unintended environmental costs.
- 6.10 Theoretically, membrane technology produces effluent **in the range of .05 to .07 mg/litre**. The discussion in the water quality trading (WQT) feasibility study proposes a scenario that sets a uniform effluent requirement of .05 mg/litre which **realistically would not be attainable 100% of the time, putting even the upgraded plants at risk of non-compliance.**
- 6.11 To achieve the .05 limit would "involve upgrade of lagoons to mechanical plants and the universal application of membrane effluent filtration at all the STPs". The 25 year lifecycle cost associated with this change at 13 sewage treatment plants within the Lake Simcoe watershed is \$185 million dollars to eliminate 3.2 tonnes per year.
- 6.12 The narrow focus on reducing the phosphorus loading from sewage treatment ignores the overall ecological footprint of the sewage treatment plants. In Durham, moving from a lagoon system to a mechanical plant with membrane technology at a facility such as Cannington would **dramatically increase the energy requirements associated with sewage treatment.**

- 6.13 The Province should focus the strategy on the major sources of phosphorous into Lake Simcoe (i.e. stormwater and agricultural/rural runoff) and consider the capital and operating cost impact on reducing phosphorus levels from the different sources. As stated previously, substantial capital requirements (potentially in excess of \$25.0 million) required at the Durham Region WPCP's will result in a marginal improvement in phosphorus levels discharged into Lake Simcoe. A larger decrease in phosphorous levels may be realized with lower costs by focussing resources on stormwater and rural runoff.

Impact on Capital Costs for Durham Plants

- 6.14 In Durham, **to meet the proposed phosphorus loading targets for 2045, operational changes and/or capital upgrades will be required on all four existing water pollution control plants** within the Lake Simcoe watershed.
- 6.15 **Immediate action would be needed in relation to the Cannington WPCP (lagoons).** Although recent operational changes have decreased Cannington's effluent phosphorus loadings, the system operated at levels above the proposed 2015 baseline compliance loading (97 kg/yr) for the previous four years. To consistently achieve the 2015 compliance limit and the annual reductions proposed beyond 2015, the plant will require immediate upgrading to a full mechanical plant, ultimately to include membrane filtration as the phosphorus limits are further reduced. This project is not in the Region's capital forecast as there was never any intention to change this lagoon system to a mechanical plant. ***In order to complete the Environmental Assessment, design and construction of the new facility and to be operational by 2015, funding to commence the EA process would need to be included in the Region's 2011 budget at an estimated cost of \$500,000.***
- 6.16 The estimated capital cost for the Cannington upgrade to meet the P target of .05 mg/litre is \$8.6 million by 2015 (estimate provided in the WQT feasibility study) with ongoing operating and maintenance costs projected at \$340,000 annually. These cost estimates are conceptual in nature and do not include any allowance for increased capacity. Site specific investigation was not

conducted and Regional staff note that the estimated cost at Cannington could double to \$17.2 million. These costs will be 100% funded by user rates.

- 6.17 For the other three plants, current design parameters should allow Durham to remain in compliance with the new P limits, when they come into effect in 2015. However, **long range capital plans would need to be adjusted to accommodate the upgrades necessary to meet the P limits as they decrease over time or as the plants require renewal.**
- 6.18 To meet the P target of .05 mg/litre at four plants in Durham, the WQT feasibility study estimates capital costs (\$2009) of \$25.8 million **just to maintain current treatment capacity** (i.e. includes little or no capacity to support population growth).

Water Quality Trading System

- 6.19 Participation in the water quality trading system would enable the Region to **delay some of these capital costs by purchasing phosphorus credits** to offset non-compliant operations at some plants in future. However, this action merely delays the inevitable upgrades. It would likely add to overall costs in a way that the Region could not control, since the trading ratios will be set by the Province or trading agency and the cost of P credits will rise over time.
- 6.20 Municipalities cannot properly plan for the financial and technical impacts of a WQT system when cost estimates for upgrades are suspect, the value of P credits is unknown and most importantly the technology does not yet exist to consistently achieve the limits proposed.
- 6.21 The time, effort and cost to set up and administer the trading system are not included in the cost estimates provided in the feasibility study. Such a system is based on the assumption that there are a variety of options with different costs that allow you to reach the final target. But in the case of Lake Simcoe, all known options must be fully used and may still not achieve the target.
- 6.22 The relevant question is not "will a water quality trading system work in the Lake Simcoe watershed to reduce phosphorus?" The critical question is "will

the use of resources to create and operate the WQT system produce **more benefits in a timely way than equivalent investment in other more direct phosphorus reduction measures?**"

- 6.23 The proposed system seems to depend on the agricultural sector being eager to do the projects that will produce sufficient phosphorus credits each year to meet the demand from purchasers such as municipalities and developers. The WQT study (p.123) suggests over-paying for these credits as an incentive to farmers and rural property owners to generate an adequate supply. Over-payment to farmers and rural property owners would impose an indirect subsidy payment into the costs of the municipality purchasing the credits.
- 6.24 It will take time to establish the trading system. There will be no real market for the credits until 2015 and its success will depend on active participation by the unregulated sectors, mainly agriculture. Could we be applying those resources in a different way with a more reliable outcome to produce immediate and ongoing P reductions?
- 6.25 In establishing a trading system that is workable, some of the guiding principles should include a transparent and auditable process that establishes real value and credibility for the credits.

Other Components of the Phosphorus Reduction Strategy

- 6.26 On page 9, the reduction strategy states that, under the watershed approach, the Province and its partners will develop "**subwatershed phosphorus loading targets** that add up to the whole-lake goal of 44T/yr." How will these targets be integrated with the sectoral targets? How will these targets be allocated among the subwatersheds? Will subwatersheds with the most urban development be expected to contribute more to the overall target? Would these targets give any credit for significant reductions made through past efforts within that subwatershed?

- 6.27 How will the concept of *phosphorus neutral development* be applied in redevelopment, infill and intensification scenarios which, under the Growth Plan, are intended to represent 40% of urban growth by 2015?
- 6.28 The **stewardship and community action** portion of the strategy outlines some fairly significant P reduction potential at the household level. Phosphate-free dishwasher detergent and other household cleaners would relieve a bit of pressure for reductions on the wastewater treatment plants. Even more promising is the estimated 8 kg per year per household that could be reduced by eliminating cosmetic use of fertilizers containing phosphorus. This option should be developed and pursued.
- 6.29 The strategy contains no similar analysis of potential reductions from industrial, commercial, recreational or institutional activities. These areas should be explored as well.

7. IMPLICATIONS FOR DURHAM REGION

- 7.1 The Province's commitment to protect and restore the Lake Simcoe watershed is commendable, however the downloading to municipalities of the costs to achieve the phosphorus reduction targets and implement the strategy is unacceptable.
- 7.2 The **key implications for the Region and area municipalities** of the phosphorus reduction strategy are:
- a virtual **freeze on development** in the parts of Durham within the Lake Simcoe watershed
 - significant **financial impact** to upgrade the Cannington Water Pollution Control Plant (lagoon) to a mechanical plant (current capital cost of \$8.6 million is estimated in the WQT feasibility study)
 - longer term **capital costs** to upgrade all other Durham WPCPs within the Lake Simcoe watershed to meet the P targets (current capital cost of \$17.2 million is estimated in the WQT feasibility study)
 - **higher ongoing operating costs** associated with energy requirements for membrane filtration systems in upgraded plants

- **capital costs to retrofit existing stormwater management systems** to a much higher standard in order to meet P reduction targets
- potential **costs to participate in the water quality trading system** in order to achieve compliance with certificate of approval limits (e.g. 0.05 mg/l of P) that will be **very difficult to achieve on a consistent basis** given the limitations of the current technology
- potential **indirect subsidy** if trading credits include incentive payments to farmers and others.

Any capital upgrades and associated operating costs will affect Durham's water and sewer ratepayers as these costs will have to be recovered from user rates (no development charge funding is applicable for replacement / retrofit unless capacity is added to the system). These costs could potentially divert funding from other replacement / rehabilitation capital projects in the rest of the Region, given the limited financial resources of the Region.

7.3 Taken together, the proposed **phosphorus reduction strategy** and the proposed **shoreline protection regulation** will place significant limitations on future development in the Region's northern townships especially in shoreline and stream bank areas. The Greenbelt Plan and Oak Ridges Moraine Plan already contain many of the planning limitations included in the LSPP. However, with additional restrictive policies likely to be enacted in future through the **source protection plans** for the watershed, **development potential in these communities is increasingly limited.**

7.4 **Impacts on agricultural operations** are also anticipated and the proposed strategy raises a variety of questions. For example, how will the strategy affect the use of tile drainage on farms in the watershed? Will farmers participate in a trading system that adds another administrative burden? Agricultural operations **may** undertake stewardship programs or projects to reduce their P output that would enable them to sell phosphorus credits to municipalities and developers. The water quality trading options seem to shift many of the costs for agricultural stewardship programs, needed to implement the LSPP, onto the municipal ratepayer. Will farmers who for several years have been following a best practice to reduce P be able to be able to sell

credits for this long-standing practice? Or will only those who delayed making the change benefit financially?

7.5 The agricultural community already has played a major role in reducing the sector's impact on Lake Simcoe by adopting best management practices. The Province should consider investing in the existing Environment Farm Plan program to deliver additional improvements in the watershed.

7.6 The CAO's Office, Finance, Planning and Works Departments participated in the preparation of this report. Unfortunately, staff has not had time to comprehensively review the Feasibility Study on Water Quality Trading. Regional staff may submit additional technical comments directly to the MOE if time permits.

8. CONCLUSION

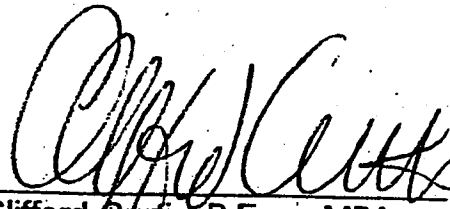
8.1 A variety of new responsibilities and costs will accrue to the Region as a result of the anticipated phosphorus reduction strategy. If the proposed phosphorus reduction strategy is approved by the Province, funding must be included in the Region's 2011 water and sewer servicing and financing budget to begin the process of developing a new WPCP to service Cannington. Plans for upgrades to achieve compliance with the P reduction strategy at the other three WPCPs in the Lake Simcoe watershed also will need to be brought forward in the longer range capital forecast. Despite these investments in upgrades, development in the Durham portion of the watershed will essentially be frozen. The plant upgrades outlined for Durham in the WQT study do not include an allowance for much growth in the communities. Thus, almost the entire cost would be funded through water and sewer user rates. As well, if a trading system is adopted, the Region may be required to provide an indirect subsidy if the P trading credits include incentive payments to farmers and others.

9. NEXT STEPS

- 9.1 Regional staff will continue to track implementation of the Lake Simcoe Phosphorus Reduction Strategy and report back to Council.



R. J. Clapp, CA,
Commissioner of Finance

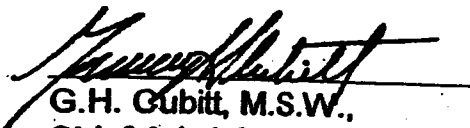


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Commissioner of Planning

RECOMMENDED FOR PRESENTATION TO COMMITTEE



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