



THE CORPORATION OF THE TOWN OF
SAUGEEN SHORES

INFORMATION REPORT

Prepared By: David Burnside, Director of Engineering Services

Date: July 6, 2009

Subject: Southampton Sanitary Sewer Expansion

BACKGROUND

The Project Team for the Environmental Assessment for Southampton Sanitary Sewer Expansion north of the Saugeen River had initially planned to respond or address the various questions and/or comments resulting from the Public Sessions in late July prior to completing the Project File. However due to lack of proper information that appears to be wide spread, staff would like to make the following comments:

Environmental Assessment Planning Process

Environmental Assessment Planning Process currently underway is intended to review various aspects of related potential impacts of the Project. Public consultation is one part of this Process. This Process is not complete until Council authorizes the publication of Notice of Completion.

Road Improvements

Staff have stated that curb & gutter and sidewalks will not be placed on every street within this Study area.

Water and Sanitary Sewer Extension

The expansion of the sanitary sewer system in Southampton north of the Saugeen River, if approved would be completed as per the Town of Saugeen Shores Water and Sanitary Sewer Extension of Services-Policies and Procedures. This Resolution #203-2000 outlines the policies and procedures that form the framework for all water and sewer extension in the Town of Saugeen Shores.

Septic Systems General Operation

The operation of a system tank consists of a water tight underground tank to receive the waste. The solids settle to the bottom of the tank by gravity and becomes sludge, while debris, oils and other light material float to the surface, forming a floating scum layer. In the tank, anaerobic bacteria (bacteria that do not require oxygen) break down and partially decompose the solid wastes. When the septic system is operating properly the bacteria can reduce the solids by 50 to 60 per cent. The liquid under the scum layer flows out to the septic bed where it is dispersed into the surrounding soil.

Septic Systems Treatment

Although the anaerobic bacteria break down the solid wastes, the largest part of the treatment of septic waste actually takes place in the soil beneath the tile bed. Naturally occurring bacteria and the filtering action of the sand in the septic bed, reduces but does not eliminate the pollutants and levels of potentially harmful bacteria and viruses. Decomposition continues in the underlying soils by soil micro organisms.

The septic waste is further diluted by mixing with the underlying groundwater.

Theoretically the finer the sand in the filter bed the better filtration of the effluent however finer sand carries the greater risk of premature clogging. The coarser the sand corresponds to less filtration of the septic tank effluent.

Potential Issues with Septic Systems

1. Many owners do not know where their septic systems components are and consider their systems to be working as long as the toilets continue to flush and the sinks drain. However the wastewater contents can adversely impact the local groundwater quality.
2. The septic systems have an operational life, without nitrate and phosphorus testing the owner of a septic system may not know when the septic system requires replacement thus this could create problems with repetitive and cumulative losses of effluent to the environment.
3. Untreated sewage that leaks into the water table increases the concentration of nitrates and phosphorus. The rise in phosphorus increases the growth of algae, which depletes the amount of oxygen in the water. With less oxygen available fish and other aquatic organisms can be impacted.
4. The underlying soils beneath a septic tile bed can only filter so much effluent and in time the native soils can be overwhelmed by the quantity of waste water thus diminishing the natural filtering action. Over time all filter tile beds will fail as the capacity of the soil to adsorb effluent has been exceeded.

Provincial Policies and Directives Regarding Municipal Sewage System

1. The health units are mandated by provincial legislation to ensure safe water supplies, prevent disease and eliminate health hazards. The Grey Bruce Health Unit has stated that” Extending municipal sewage services into residential area currently serviced by private onsite sewage disposal systems will have long term benefits in the protection of both ground water and surface water in the area.”
2. The province is of the opinion that to protect community health, municipal water and wastewater treatment systems should be provided whenever possible for developed areas lacking these municipal services. This approach is science based on risk management to minimize the risk of health and environmental issues. In Ontario, the Ministry of Municipal Affairs and Housing 2005 Provincial Policy Statement (PPS) directs departments toward building strong and healthy communities.
3. The Ministry of Health and Long-Term Care new Ontario Public Health Standards and Protocols 2008, (OPHS) which came in effect January 1, 2009, directs programs and services towards evidence-informed practices that responds to the needs and emerging issues of health utilizing the best available evidence to address them.
4. The intent of the Clean Water Act, 2006 is to ensure communities are able to protect their municipal drinking water supplies.

5. The septage characteristics from septic tanks are 30 to 60 times stronger than normal sewage.
6. The Ministry of the Environment has indicated that it is committed to a complete phase out of land application of all untreated septage. Municipalities will be required to, if land application is phased out, to upgrade their STP to receive septage generated from within their borders. These costs may need to be allocated to those users.
7. The upper levels of government have funded this project as the extension of municipal sanitary sewer systems meet the criteria for the Infrastructure Stimulus Fund.

Southampton Sewage Treatment Plant

It is the mandate of the Ministry of the Environment (MOE) to ensure that the Southampton Sewage Treatment Plant is operating in compliance with the Certificate of Approval (CofA). The CofA provides the conditions, testing and reporting for operation of the plant. To measure compliance the MOE requires the reporting of key parameters depending on the parameters the reporting is daily, bi-weekly or monthly. The operators of the plant the Ontario Clean Water Agency also compile an Annual Operating Report to the MOE as a condition of the CofA.

The Southampton sewage treatment plant has the following:

1. Continuous phosphorus removal resulting in a Total Phosphorus removal efficiency rate of 87.56%.
2. Biochemical Oxygen Demand removal resulting in a removal efficiency of 96.64%
3. Total Suspended Solids removal resulting in a removal efficiency of 94.73%
4. Ultra violet (UV) disinfection treatment

In 2008, the average daily flow of 1,930m³ per day was 63.4% of the design capacity.

Effluent

The last process before the effluent leaves the sewage treatment plant is disinfected by ultra violet (UV) treatment. This process is similar to other systems that are used to disinfect potable municipal water systems.

Effluent is treated, monitored and tested bi-weekly by an accredited independent laboratory (SGS Lakefield Research Laboratory) to confirm that that the effluent is not a detriment to the receiving water body or the environment of that water body.

As per the CofA the average density of E. coli in the effluent shall not exceed 150 E.coli per 100ml. In 2008 the average density of E. coli in the effluent was 13.00cfu per 100ml.

Plant operators or Provincial Agencies have neither the capabilities nor the resources to test for the presence of every possible pathogen, so E.coli is tested as an indicator for the possible presence of pathogens.

As a comparison the Health Guidelines for Recreational Water Quality in Ontario is the Provincial Water Quality Objectives (PWQO) is 100 E. coli per 100mL of water.