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REPORT RE: COW March 7, 2011
REPORT NO: PW20-2011

SUBJECT: STORMWATER MANAGEMENT

RECOMMENDATION: THAT Council provide direction to the Manager of Public Works.

BACKGROUND: Council Resolution Number R-034-2011 directed the Manager of Public Works to investigate various options available to reroute or upgrade storm drains to reduce the impact of discharge directly into our waterways and bodies of water.

The Manager of Public Works has contacted the London Regional Office of the Ministry of the Environment (MOE) and staff of the Grey Sauble Conservation Authority (GSCA). Both organizations would need to approve any rerouting or upgrades to storm water flows.

The MOE advised that in all likelihood a Certificate of Approval would be required. A Certificate of Approval would spell out how the system(s) would operate and the Town would be obligated to meet the objectives defined within the Certificate of Approval. The Manager of Public Works was also told that an Environmental Assessment may be required.

The Manager of Public Works has identified the following areas for storm water management consideration: Berford Lake, Chesley Lake, Hepworth, Oliphant, Sauble Beach and Warton.

Berford Lake, Oliphant and Sauble Beach have all, in the past, been posted by Public Health as unsafe for bathing (swimming).

Hepworth presents an issue because of flat terrain and farming. In this area, the underlying rock formations are fissured allowing surface water to enter the aquifer.

Chesley Lake is shallow and has a geese population.

Warton has an extensive storm sewer and catch basin system which outlets into Colpoys Bay.

Some of the areas identified control storm water by means of open ditches while others are managed by catch basins and underground piping systems.

Storm water runoff in areas with open ditches could be improved by the simple installation of square bales of straw or hay, which are secured to the ground with two inch by two inch stakes. Council may have observed this technique while driving through road construction projects. The Manager of Public Works expects they would have to be changed out every three (3) to four (4) weeks to be effective. This technique would remove solids and possibly some oils. It may have little effect on bacteria though.

In the areas serviced by catch basin systems, a method that may be employed is to drill out the floor of the catch basins. This would allow water to seep naturally into the sand/soil. The MOE has advised that if this method is to be used, a preliminary monitoring well would have to be installed as there is a space differential requirement between the floor of the catch basin and the water table. The space differential would be determined by the type and grain size of the sand/soil. Again, this method would not remove bacteria.

Detention tanks, tunnels and pipes have been installed in some of the larger communities in Ontario. These systems generally slow down the velocity of the run off storm water for release at a later time. These systems are expensive to install (\$100,000.00 to millions) and provide no effective treatment unless coupled with ultra violet (UV) disinfection. Problems with treatment have been encountered with these systems because the turbidity (cloudiness) of the held water reduces the effectiveness of the UV treatment. As these systems are mechanical, they are prone to significant maintenance costs. The Manager of Public Works does not recommend this method as a solution.

There are opportunities to reduce the impact of storm water collection by the municipal systems that property owners can employ. While no significant reductions can be achieved, it does help to raise awareness. Rain water barrels can collect water from roof runoff and can be used to water vegetation. Porous surfaces on properties including driveways allow storm water to naturally recharge the aquifer.

Settling ponds have been used in many communities to remove suspended solids prior to entering the municipal system. They are generally required in new subdivisions and once constructed become the responsibility of the municipality. As an end-of-pipe solution within the Town of South Bruce Peninsula, it may have application where the Town already owns sufficient property to construct one. These ponds have to be signed to warn people not to enter the area, swim or skate on the ponds.

Oil and grit separators improve the quality of storm water prior to release to the environment. They are generally used in systems where catch basins and underground pipes are employed. These units can replace an existing catch basin, reducing the amount of disruption in the area. A consulting engineer would be required to determine the number of structures and their locations for the system to work properly.

In all instances where storm water is to be managed, engagement of the aboriginal communities should take place. While this may not initially be a mandated requirement, it is possible that their rights may be impacted. In addition, a Natural Heritage Study and an Archaeological Study should be undertaken in the areas noted in this report prior to any work being undertaken.

Lastly, bacteria can only be controlled and removed by treatment. This can effectively be done through a treatment facility, which would definitely require an Environmental Assessment.

BUDGET IMPLICATIONS:

Straw or Hay Solution -

The Town owns a field at the Warton works yard which could be cut and used to place bales in ditches. The Manager of Public Works estimates the annual cost to be \$580.00 for wages, equipment and materials for each location. The number of locations where this solution could be implemented is unknown.

Drilling Bottom of Catch Basins -

This method would require installing a monitoring well. The cost of this is estimated be \$500.00. A contractor would be required to drill out the bottom of the catch basin. It is estimated that the cost of this work would be \$125.00 per catch basin.

Rain Barrel -

There is no budget implication with this solution as the barrels would be purchased by the home owner.

Oil and Grit Separator -

To remove the catch basins and install an oil and grit separator, the Manager of Public Works estimates the cost at \$20,000.00 per location. To have a consulting engineer design the system would be at minimum \$10,000.00 per area and could possibly be much higher.

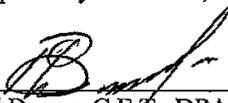
If a Certificate of Approval was required, a consulting engineer would be required to design and submit the application to the MOE. The cost of this would be in the \$10,000 to \$15,000 range per area.

If an Environmental Assessment was required, the cost could be in the \$75,000 to \$150,000 range.

A Natural Heritage Study would cost between \$15,000 and \$20,000 per area.

Depending on the degree of complexity (number of Stages required from 1 to 4) for an Archaeological Study, the cost could range from \$3,500.00 to an unknown amount for a Stage 4 Study.

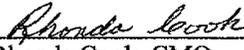
Respectfully submitted,



Phil Dwyer, C.E.T., DPA
Manager of Public Works

Date: March 2, 2011

Approved by,



Rhonda Cook, CMO
CAO

Date: March 2 2011