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Project No. 1004463

January 5, 2006

Mr. Bruce Linton
President & CEO
Clearford Industries Inc.
515 Legget Drive, Suite 100
Ottawa ON, K2K 3G4

Dear Mr. Linton:

Re: Environmental Assessment-based Review of Your SBS™ Waste Water Collection System

You contracted with our firm to conduct an assessment of Clearford's SBS™ system. We have completed that evaluation. We understand that you are interested in obtaining a better understanding of how your waste water collection/treatment system may compare to historic sewer systems within the context of a municipal Class EA evaluation process.

1.0 ASSESSMENT PROCESS

We have assumed that the two systems represent alternative design concepts for the "preferred solution" selected at "Phase 2" of a Municipal Class EA. The evaluation of alternative designs takes place at "Phase 3" of the Class EA and usually entails the following steps:

- Identification of alternative design concepts.
- Inventory of the natural, social and economic environment.
- Identification of environmental impacts and mitigating measures.
- Evaluation of alternative designs and identification of a "recommended design".
- Consultation of the Phase 3 steps and results.
- Preliminary finalization of the "preferred design".

Our evaluation has partially covered the fourth step in "Phase 3" of the Municipal Class EA process. It is impossible to undertake a more complete evaluation and to cover all of the "Phase 3" steps outside of the context of a specific project. Within a project-specific context, the impact of each design alternative is inventoried based upon a detailed understanding of the "environment potentially affected" and possible mitigating measures that could be applied to reduce identified impacts. Since we are completing a generic evaluation of your system, this type of evaluation cannot be completed. For the purposes of this exercise, however, we have identified a number of items typically used to complete an evaluation of design alternatives at "Phase 3" of a Municipal Class EA. Your system represents one of the alternatives and a "conventional/historic" sewage collection/treatment system represents the other alternative.

2.0 ASSESSMENT OF ALTERNATIVE DESIGNS

The two design alternatives have been generally assessed on the basis of the items identified in Table 1. The assessment entails the assignment of either "0" or "1" with the higher overall "score" generally signifying a greater measure of environmental protection. An outline of the reasoning for the scoring of each system is provided in the sections following the table.

Table 1: Alternative Designs Assessment

Item	Historic Sewer System	SBS™
Technical Considerations		
Performance	0	1
Ease of Installation	0	0
Expansion Capabilities	0	1
Natural Environment		
Surface Water Quality and Aquatic Systems	0	0
Air Quality	1	1
Terrestrial Systems	0	0
Groundwater Resources	0	1
Social/Cultural Environment		
Visual – Aesthetics	1	1
Odour	1	1
Noise	0	0
Public Perception and Acceptability	1	1
Health and Safety		
Community Health and Safety	0	1
Occupational Health and Safety	0	0
Economic Considerations		
Capital Costs	0	1
Operating and Lifecycle Costs	0	1
Total	**4**	**10**

2.1 Technical Considerations

2.1.1 Performance

Historic sewage systems are based on proven technology that has been in use for years. These systems have a good track record, but are known to degrade over time. Infiltration of groundwater into the cracks and joints of historic systems is also a problem. It increases the flow of the system, possibly beyond its design capacity, which could have a negative impact on treatment effectiveness. For the historical application, wastewater treatment plants need to be designed to accommodate for groundwater infiltration and are therefore required to be larger in size than for a system that eliminates groundwater infiltration. Despite the added capacity, many historic sewers are subject to bypass events that allow untreated or only partially treated sewage to be discharged to the natural environment.

SBS™ is made of non-jointed high density polyethylene piping that is more resistant to leaks and eliminates groundwater infiltration. In addition, a clarifier unit is located upstream of the collection system to remove the solids and partially treat the effluent. As a result, a smaller centralized treatment facility is needed. Although high density polyethylene pipe material is new for the collection of wastewater, it has been used for years by the natural gas and cable installation industries with a capacity to be economical and environmentally acceptable.

2.1.2 Ease of Installation

The installation of a historic system is normally completed by excavating a linear trench in which the sewer piping is laid. This process generally causes disruption to the surrounding environment as well as to residents and local businesses. Minimal disruption is caused by the installation of the SBS™ sewer network because directional boring is used, although the clarifier unit, located upstream of the distribution system, requires a small area of land to be excavated. Clarifiers for each dwelling or building are installed in the boulevard areas, therefore access to the roads should not be disrupted.

2.1.3 Expansion Capabilities

Historic systems can be expanded when needed. Expansion can be costly and generally involves disruption to the surrounding environment. The SBS™ is a modular technology and therefore has generally better expansion capabilities. Expansion can be accomplished relatively easily with relatively less disruption to the surrounding environment.

2.2 Natural Environment

2.2.1 Surface Water Quality and Aquatic Systems

Historic systems generally require trenching for installation, which, in the absence of sufficient mitigating measures during construction, may cause sediment loading in nearby surface water sources. Sediment loading from erosion as a result of vegetation removal can potentially impact water quality/fish habitat of nearby streams and creeks. Once the system is installed, it is generally not anticipated to have a negative effect on surface water.

Since SBS™ uses directional boring to install the piping network, it generally limits the amount of open excavation and surface reinstatement that is required. It is assumed that the amount of sediment loading into nearby streams and creeks is reduced even without the application of mitigating measures during construction.

2.2.2 Air Quality

Neither historic systems nor SBS™ are anticipated to have adverse air quality effects associated with their technology.

2.2.3 Terrestrial Systems

The installation of historic systems generally requires the excavation of trenches along the entire route of the piping network. There could, therefore, be potential impacts associated with vegetation clearing, including erosion as well as potential loss of habitat in the absence of mitigating measures. SBS™ limits the amount of open excavation thereby reducing the impacts associated with vegetation clearing, including loss of habitat of the surrounding wildlife. Nonetheless, open excavation is still required for SBS™ for the installation of the clarifier units, which are sized to have a capacity of approximately 3,600 litres for a typical residential dwelling. The excavation of the clarifier unit will require vegetation clearing. This can be completed, however, on a more selective basis thereby avoiding areas containing significant environmental features.

2.2.4 Groundwater Resources

Due to infiltration and the potential for effluent leakage from a historic system, there is potential for groundwater in the area of the system to be affected. Infiltration of groundwater into the sewer system has the potential to lower the groundwater recharge rate of the area, which could effect nearby well systems and levels of nearby surface water sources. In addition, effluent leaking out of the sewer system could enter the groundwater table and possibly contaminate the water supply sources. The SBS™ connections are fused together creating a sealed, leak-free system which should eliminate effluent leakage into the environment and groundwater infiltration into the system.

2.3 Social/Cultural Environment

2.3.1 Visual - Aesthetics

Historic systems and SBS™ are not visually intrusive once installed. In both systems the only visibly noticeable aspect would be manhole covers either in the road or in the boulevards along the roads.

2.3.2 Odour

It is not anticipated that odour would be a problem with either system. However, it should be noted that if there is a back up in either system, an odour could be produced.

2.3.3 Noise

The only noise expected to be associated with either system is during construction and maintenance activities.

2.3.4 Public Perception and Acceptability

It is assumed that there is a slightly negative public perception with regard to historic systems based on their tendency to degrade over time, possibly resulting in effluent being discharged into the environment. Historic systems may also be costly and inconvenient to repair. SBS™ is a relatively new technology for wastewater applications and therefore is not widely known to the public. However, small boring technology has been used for years for natural gas and cable installation and is widely accepted as a proven technology.

2.4 Health and Safety

2.4.1 Community Health and Safety

There is a potential for the groundwater within the area to become contaminated due to effluent leaking into the environment from a historic system, thereby posing a potential health and safety risk to the community. SBS^{TM} has welded joints and is made out of high density polyethylene piping, and therefore it is generally leak free when properly installed.

2.4.2 Occupational Health and Safety

The piping network of a historic system is considered a confined space and therefore proper training is required for staff to work on the system. Whenever workers are dealing with a confined space, there is a potential for workers to be injured if proper training is not followed. No specialized training is required for the operation of the SBS^{TM}.

2.5 Economic Considerations

2.5.1 Capital Costs

Based on our review of available information, we have concluded that the cost to construct/install SBS^{TM} may be generally lower than for historic systems.

2.5.2 Lifecycle Costs

Lifecycle costs are generally greater for historic systems because they are known to degrade over time, whereas a SBS^{TM} system would not degrade as rapidly.

3.0 CONCLUSION

Where affordability and environmental protection are prime considerations, SBS^{TM} technology exhibits greater overall environmental protection in the absence of mitigating measures. The SBS^{TM}, when compared to historic systems in this analysis, exhibits lower environmental impacts, requires a smaller final treatment system and reduces both capital and lifecycle costs.

It is critical to note that this general assessment was undertaken within a generic context and does not replace or supersede a project-specific Class EA, including the consideration of mitigating measures. Further conclusions on the measure of environmental protection cannot be made until undertaken within the context of a project-specific Class EA.

We trust this assessment sufficiently responds to your request and would be happy to discuss our assessment and associated conclusions with you at your convenience.

Yours very truly,

COLE ENGINEERING LIMITED

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