

**TERRAIN ANALYSIS AND  
HYDROGEOLOGICAL STUDY**

**Part of Lots 10 and 11, Part of the Road Allowance  
between Lots 10 and 11, Part of the Road Allowance  
on Buckshot Lake shoreline. Concession I,  
Township of Miller, Municipality of the Township**



**WATER AND EARTH SCIENCE ASSOCIATES LTD.**

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## 7.0 SUMMARY AND CONCLUSIONS

A terrain analysis and hydrogeological investigation was completed for the proposed Buckshot Lake Cottage Development, located on Part of Lots 10 and 11, Part of the Road Allowance between Lots 10 and 11, Part of the Road Allowance along the shoreline of Buckshot Lake, Concession I, Township of Miller, Municipality of the Township of Clarendon & Miller, County of Frontenac. The purpose of this study was to assess the suitability of the 24 hectare property for development of 45 privately serviced cottage lots. Information was gathered through a combination of background research and on-site investigations.

The stratigraphy of the top 1.5 m of overburden was examined and mapped according to terrain units. Three tile bed designs are recommended with respect to terrain unit characteristics. These recommendations should be followed in order to ensure maximum septic system efficiency.

Bedrock in the area consists of Precambrian felsic plutonic rocks, mafic to felsic metavolcanic rocks, and carbonate metasedimentary rocks. The overburden on the site consists of a silty sand over bedrock terrain unit (SM/R) and a gravelly sand terrain unit (SW). Large boulders having diameters up to 1.5 m were encountered in the silty sand over bedrock terrain unit.

Seven test wells drilled on the property were used to assess the quantity and quality of the groundwater derived from the underlying aquifer. A 6-hour constant discharge aquifer test was conducted on each well. Analysis of the drawdown and recovery data indicates that a suitable supply of groundwater is available from the bedrock aquifer for domestic use. Chemical analyses of the groundwater taken from the test wells indicate that the quality of the groundwater is suitable for domestic water supply if the manganese, colour, and hardness levels are monitored and treated if necessary by each individual well owner.

An impact assessment of the proposed development was performed based on the MOEE technical guideline for assessing the potential for groundwater impact from individual sub-surface sewage systems in a non-designated area. The geology and hydrogeology of the area has been investigated and Class 4 Sewage Systems may be constructed in accordance with Ontario Regulation 358. No impacts to adjacent landowners are predicted provided sewage systems are installed according to Ontario Regulation 358 and according to the recommendations provided in this report. Optimum locations for leaching beds, which will minimize impacts, have been provided in this report. There are no existing sources of groundwater contamination evident outside the proposed development and the background nitrate levels have been found to be below 10 mg/L. The septic effluent migration paths are isolated from the groundwater supply source. Results from a surface water impact assessment conducted by Hay (1995) concluded that *no* adverse impacts to Buckshot Lake are predicted as a result of the septic systems required by the proposed development.