



Onsite Wastewater Cluster System Uses Infiltrator® Chambers

A cottage rental development on Prince Edward Island requires a low maintenance, cost-effective sewage system to support future expansion on its environmentally sensitive site.

Project

A septic tank effluent gravity (STEG) sewer discharging to an onsite sewage treatment and dispersal system serving 14 cottages utilizing 288 Standard Infiltrator chambers.

Installation Date

August 2001

Designer

Kelly Galloway, P. Eng.
Engineering Technologies Canada Ltd.
Stratford, PEI, Canada

Contractor/Installer

Cardigan Excavators Ltd.
Cardigan, PEI, Canada

Permitting Agency

The PEI Department of Community and Cultural Affairs

The PEI Dept. of Fisheries, Aquaculture and Environment

Owner

Marwood Properties
Georgetown, PEI, Canada

Design Flow Specifications

Dense, fine sandy loam glacial till with an average design flow of 2130 GPD and a peak design flow of 4250 GPD.

The Brudenell Fairway Chalets is located in Roseneath, Prince Edward Island (PEI), and is comprised of 14 country-style chalets situated on 6-acres. Designing a sewage system for a rural development with high tourist traffic in the summer months called for a practical, low maintenance and cost-effective solution.

The Owner wanted to be able to defer capital costs by phasing sewage treatment and effluent dispersal system capacity until it was actually needed, therefore, a “build as you go” type of solution was required. A direct discharge system was considered, however, the capital and operational costs would have been prohibitive. The septic tank effluent gravity (STEG) sewer was selected because of its shallow burial depth, reduced overall gradient, and reduced infiltration and inflow when compared to conventional gravity sewers. Infiltrator chambers were chosen for their ease of installation and reduced footprint which would leave as much room as possible for additional chalets and recreational land uses.

Primary pretreatment is provided in six septic tanks upstream of each connection to the effluent sewer main. Two to four chalets are clustered together into shared tanks. Filtered effluent flows from the tanks into a 4-inch effluent collection sewer main. The collection sewer drains into a wet-well effluent pumping station. The combined flow is pumped through a force main to a central, pressurized Infiltrator leaching chamber disposal field constructed in a raised bed of sandy fill. The disposal field consists of three separate zones each having four lines at 150 feet long. Each zone has 600 linear feet of Standard Infiltrator Chambers for a total of 1800 linear feet of chambers. Each zone is dosed intermittently and sequentially using a K-Rain® mechanical indexing valve, which makes it easy to expand the disposal field by installing additional zones without having to increase pump or force main capacity.

The system was designed with several features to facilitate monitoring and maintenance. The pump control panel can detect high and low effluent levels and pump failure, while a monitor provides early warning of unequal distribution among disposal field zones. The leaching chamber trenches were fitted with maintenance ports for periodic flushing of the pressure distribution laterals and to check the residual pressure at the end of the laterals. Most routine maintenance is easily carried out by the Chalet's maintenance foreman or the installing contractor. Today, the Owner reports that the system has been reliable and economical to operate and maintain.



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