

SUMMER VILLAGE OF NORRIS BEACH

WASTEWATER COLLECTION SYSTEM CONCEPT DESIGN STUDY CONDUCTED BY ASSOCIATED ENGINEERING

January, 2009

The entire Concept Design Study conducted for the Summer Village of Norris Beach has been placed on the Summer Village's Web Site.

The following is a management summary.

PROJECT OBJECTIVES

The Summer Village of Norris Beach retained Associated Engineering Alberta Ltd. (AE) to complete a future local wastewater collection system conceptual design study. The Summer Village study objective was to provide a high-level collection system design to help guide installation of new holding tanks throughout the community. This study includes analysis, design basis and cost estimates for feasible combinations of gravity and low pressure sewer systems.

SCOPE OF WORK

The study's scope of work included:

1. Identify all existing holding tanks, disposal fields and other related systems;
2. Propose location of new holding tanks;
3. Develop a conceptual design of a future local wastewater system; and
4. Prepare a concept engineering report that includes:
 - (a) Description of alternative systems considered;
 - (b) System alignments; and
 - (c) Cost estimates of alternative systems.

CONCLUSIONS OF THE REPORT

Conclusions derived from the conceptual design of the Summer Village Local Collection System are as follows:

- The layout of the community and existing tanks is generally more conducive to a low pressure sewer collection system.
- The peak design population is 116 lots, or 348 people.
- A gravity sewer system could not service the entire area based on the area topography, approximately 25% of lots would have to pump to the system.
- The reserve parcels provide a favorable main alignment based on the existing tank locations. Future pipe construction within the reserves would minimize road disturbance and restoration requirements; however, interim truck access to holding tanks and future maintenance will require ongoing equipment access to the reserves.
- Future main alignment within the road or reserve parcels does not provide any distinct advantage for tie-in to existing tanks.
- Tanks can be installed in the front or back of lots, as future pressure sewer services can be drilled around homes to access tanks, however, greater distance from mainline will increase the cost of service. Tanks should be placed in an accessible area with a 3-4 m buffer around for future excavation, tank retrofit, pipe and electrical installations.
- The Summer Village may wish to tailor options for interim holding tanks based on preference of the future collection system pumps (i.e. STEP or grinder).
- The current cost estimate **to the Municipality** to install a municipal gravity (Option 1) or pressure sewer (Option 2) system is \$2,400,000 or \$1,100,000, respectively.
- The current cost estimate **for lot owners** to retrofit private systems for Option 1 and Option 2 is \$925,000 to \$1,500,000, respectively. (Note: there are 116 lots in Norris Beach.)
- Long term (50 years) financing, operations and maintenance cost are estimated to be lower for Option 2.

RECOMMENDATIONS

Based on preceding conclusions, the following are recommended:

- Adopt the design criteria as outlined for future detailed design.
- Adopt a low pressure sewer local collection system for the purpose of planning and future detail design and construction.
- The Summer Village review if long-term maintenance access can be provided to the reserve parcels and if so, adopt proposed force mains alignment to assist ongoing tank installations.
- Prior to development of the collection system, develop a Municipal Standard and Guideline (or By-Law) for installation of tanks, pumps, pipe and electrical systems on private property to facilitate orderly development and consistency.