

From: Graeme Langford [<mailto:Graeme.Langford@shaw.ca>]
Sent: January-02-16 3:42 PM
To: Gail Coleman
Subject: Sewer Reports

Hi Gail,

Hope your Christmas and New Year have been enjoyable and a good break.

I have reviewed the email concerns forwarded with respect to the differences noted between the MPE and AE analysis and comparison of the gravity vs low pressure sewer options.

As noted in my previous emails both companies have provided a comprehensive review of the two different systems, and although there were noted differences in the price estimates, the conclusion of each are the same.

I believe the intent of requesting two separate engineering opinions was to determine the relative merit of each of the gravity and the low pressure systems and to identify which system was the most economical from both an initial construction and a long term operation perspective. The concern with the review done by the residents is that they are taking a literal interpretation of the two reports relative to specific costs within each of the reports which they then compare between the reports. Unfortunately we do not know what the individual companies have included in each of those costs, what assumptions they have made and on what project experience they are basing their estimates. Also, the reports were intended to provide a comparison of two types of construction, not to be used for estimating the cost to residents of construction. Yes, it can be argued that two well experienced engineering firms should come up with similar estimates of cost; however it does depend on what specific question they are answering. Without knowing all of the information that went into each of their reports I can't speculate further on how they arrived at or published their information, other than that the final conclusion on the recommended system is consistent with every study that has been done previously.

With respect to the comparison between gravity vs low pressure, I am aware of six different engineering studies over the years that have been completed for the south side Summer Villages and all have provided the same conclusion that low pressure was the preferred alternative, from both an initial construction and a long term operational perspectives.

There was a comment that the MPE and AE reports should have provided costs that included the two regional system phases as well as the impact of grant funding on the project. It is my understanding that this was not the intent of their assignment and therefore should not have been expected.

With respect to the anticipated (estimated) cost of the low pressure system that is recommended (and I understand accepted by Council) the cost information that is being used at this point should be the most recent preliminary design report entitled "South Side Pigeon Lake Wastewater Collection Systems, dated January 15, 2015, by MPE Engineering Ltd". This report was specifically commissioned to examine alignments, identify requirements and estimate costs for the construction of a system in the Summer Village. This is also the source document for the information that was published as a communication document to residents and it was the source document that formed the basis for the recent grant applications and approvals from both senior levels of government.

Viola Beach is not constructing a gravity sewer, the intent is the low pressure alternative, similar to the balance of the south side communities.

I am aware that MPE have very recent experience on several large low pressure systems, with several being lake communities. I also have recent experience with five low pressure system installations along the south side of Lac La Biche. In each of these cases the choice has been low pressure over gravity.

Following are some additional considerations that I had presented in my December 3rd note that reflect on the choice between the two types of systems:

With respect to offsite considerations following are some additional thoughts:

- The impact on adjacent municipalities with either option is minimal, largely because the numbers of lots represented by those municipalities upstream are few and capacity is not at issue.
- From a governance perspective, the Regional system can be adapted to either system; however there would need to be some additional clauses relative to a gravity system if that is chosen that are specific to Crystal Springs. If the collection systems are ultimately operated, maintained and potentially owned by a regional authority, then Crystal Springs would require a number of specific clauses that differentiate the type of service provision and quite likely set out separate rates (the operation of lift stations in particular are more expensive and the maintenance of a gravity system require a different set of skills and tools than a low pressure system).
- The construction and operation of the lift stations for a gravity system will require 3 phase power (which if it is not readily available in the summer village currently will be an additional expense), and the lift stations may require odour control dependant on where they are located relative to residences.
- With the deep trench requirements of the gravity sewer, the existing road ROW will be consumed with the trench for pipe installation (particularly if ground conditions are poor) and this will require the contractor to potential do a number of things to facilitate his operations:
 - The material excavated from the trench has to be placed somewhere and with deep trenches in restricted ROW's the common practice is to load it into trucks and haul it away to storage and then to reload it and haul it back after the pipe is installed.
 - If there is ground water encountered in the trenches it will need to be pumped out; but it cannot be pumped into a ditch and allowed to run into a natural watercourse (or the lake) without appropriate settlement, silt and contaminant management.
 - If you recall the recent construction of the gravity sewer on Westeros Acreage Road at the east end adjacent to the Lift Station, this was a shallow (3m deep) sewer in wet conditions that consumed the whole ROW, the excavated material was hauled to storage and traffic was disrupted for weeks. Also, the difficulty and time to get the road back to original condition has been excessive.

A final thought is that, with the gravity option and certainly with the hybrid systems, there will still be some low pressure sewer requirement for some homes, effectively developing a "two-class" system within the summer village. That may or may not be a challenge for those paying the additional cost of the pumping systems.

Let me know if you need further discussion.

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