SPECIAL MEETING AGENDA SUMMER VILLAGE OF SUNBREAKER COVE APRIL 6, 2021 @ 1:00 P.M.

A. CALL TO ORDER

- **B. AGENDA** additions/deletions adoption
- **C. REQUESTS FOR DECISION**
 - 1) Wastewater Construction Tender
 - 2) Municipal Wastewater Collection Bylaw
- D. ADJOURNMENT

Summer Village of Sunbreaker Cove April 6, 2021

Request for Decision

Agenda Item: Wastewater Construction Tender

Background:

Administration has prepared the attached information package containing:

- Recommendation
- Summary of Tender Process and Results
- Shared Main Line
- April 6, 2021 Joint Agreement Letter (with referenced Dec 17, 2020 Letter from Stantec to Lacombe County)

Options for Consideration:

1) That Council review and discuss the information package

Administrative Recommendations:

1) That Council award the Wastewater Construction Tender to Pidherney's

Authorities:

Summer Village of Sunbreaker Cove April 6, 2021

Request for Decision

Agenda Item: Municipal Wastewater Collection Bylaw Background:

It has become apparent that several revisions should be made to the current Wastewater Collection Bylaw 147-20 insofar as the bylaw currently uses estimates from the 2017 Business Plan and ratepayers will be asked to make decisions by June 25 as to their desire to pay in full their share of costs that would otherwise be financed by borrowing.

Administration is considering the need to revise:

- The name used in Section 6.2.1 and Schedule B for municipal borrowing costs allocated to each service connection. It is recommended the term "connection fee" be changed to "collection fee" to minimize confusion with costs to install the owner service connection.
- The amount to be borrowed from the Province on a 25-yr term. This amount will be set before construction has progressed materially so ratepayers the ability to pay their share in full. Once this amount is fixed, any differences between the actual and estimated project costs will affect SBC's accumulated surplus positively or negatively as all other sources of finance will be fixed. The capital budget approved in March assumed \$1,165,007 would be borrowed.
- The 25-yr interest rate. While rates of about 2.79% are currently available, they have been rising (see chart). Loans from the Province are issued once every three months, with April 30 being the next application deadline and June 15 being the next loan issue date. Annual payments would be \$57.14 and total interest payments would be \$428.51 per \$1,000 of debt at a 3.00% interest rate.
- The number of serviced connections. There are 266 parcels. Administration is contacting
 owners of five parcels that each have two lots to ensure the realize they will need to pay
 for two service connections unless they preclude the potential for future subdivision.
- The address list.

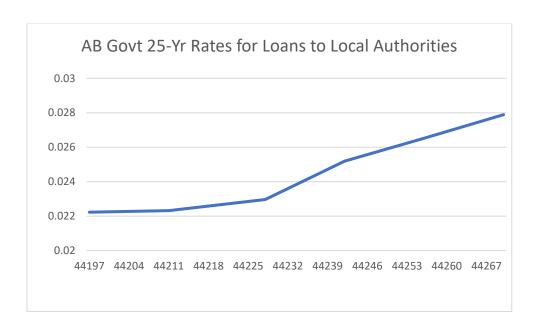
Options for Consideration:

1) That Council review and discuss the background information

Administrative Recommendations:

2) That Council give direction to administration as to when and how it would like to revise the borrowing bylaw.

Authorities:







To: Keith Boras From: Johnny Ke

Lacombe County Stantec Consulting

File: 116239626 Date: December 17, 2020

Reference: Lacombe County Sewer Servicing - Sylvan Lake North Developments - Hydraulic Analysis

INTRODUCTION

The following memo is an analysis of the Lacombe County sewer servicing at the north west end of Sylvan Lake. The hydraulic modeling considered a common mainline through the Summer Village of Sunbreaker Cove for both future Lacombe County flows as well as Summer Village flows. The sewer would ultimately flow to the proposed Blissful Beach Lift Station which is currently being designed with a capacity of 20 l/s at 90 m TDH.

DESIGN BASIS

The Summer Village of Sunbreaker Cove is designed to be serviced with a Lower Pressure Sewer (LPS) system for all the lots in the Summer Village. The Sunbreaker Cove LPS system is designed to have a maximum of 13 pumps running at any given time, which is a standard hydraulic calculation methodology in a LPS system design. The design basis utilized the Liberty Grinder Pump LSGX202 to be installed in each residential lot septic tank.

The hydraulic modeling completed for this assignment considered the Liberty pump along with the Summer Village lot elevations to ensure the Lacombe County north flows would not impact the LPS pumping from Sunbreaker Cove.

The planned population in the Lacombe County developments north of the Summer Village of Sunbreaker Cove is 835 people. This includes the Palm Bay, Palm Cove and Sky Country developments and possibly others in close vicinity. At this stage, it is proposed that the Lacombe County developments will also be serviced by LPS systems. The LPS systems will convey the sanitary sewage from all the County developments into a central lift station located near the Palm Cove subdivision. The Palm Cove lift station will then meter all County flows at the future lift station when pumping to the Blissful Beach Lift Station to allow for an accurate measurement of the County north flows. The Sunbreaker Cove flows would be derived by the total pumped by the one Blissful Beach LS pump less the total pumped by the Palm Cove LS, both having accurate magnetic flow meter readings.

The design flows coming into the Palm Cove lift station are as follows:

Average day flow rate per capita: 228 Lcpd

Maximum day flow rate per capita: 340 Lcpd

Total maximum day flow rate: 284 m³/d or 3.3 l/s

• Estimated peak flow: 9.9 l/s using a peak flow to daily flow ratio of 3.

The ultimate peak flows from Sunbreaker Cove utilized in the design are 7.8 l/s. When adding the proposed 9.9 l/s for the Lacombe County developments the total peak flow through the mainline is 17.7 l/s, therefore resulting in Lacombe County having 56% of the overall total peak flows.

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Reference: Lacombe County Sewer Servicing - Sylvan Lake North Developments - Hydraulic Analysis

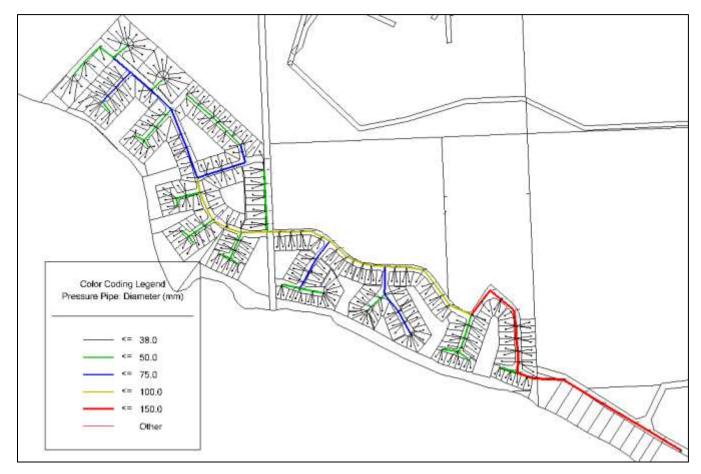
ANALYSIS

The hydraulic analysis of the combined flows through the Sunbreaker Cove mainline is as follows.

Mainline Sizing

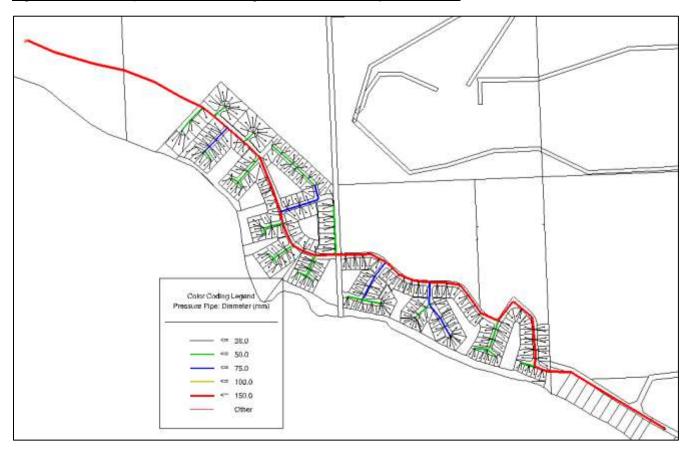
The mainline sizing through the Summer Village of Sunbreaker Cove would be required to be upsized to a 150mm dia. HDPE DR 11 through the entire alignment. The following two figures present the proposed pipe sizes Sunbreaker Cove LPS system in the original design and the upsized LPS system to accommodate the flow from the North Developments.

Figure 1. Current Pipe Sizing Design for Sunbreaker Cove Mainline:



Reference: Lacombe County Sewer Servicing - Sylvan Lake North Developments - Hydraulic Analysis

Figure 2. Mainline Pipe Size when Adding the Lacombe County North Flows



Palm Cove Lift Station Design

The proposed pump for the Palm Cove Lift Station (PCLS) is as follows:

- Rated for 10 l/s at 35 m TDH
- Selected Pump: Flygt NP3127SH3-248 155 mm IMP, 11 HP

Hydraulic Performance of the Overall Sewer System

- Only the PCLS pumping (none of the Sunbreaker Cove LPS pumps running):
 - Peak pumping flow is 9.6 l/s, which meets the peak flow from the North County developments
 - Velocity in the 150 mm forcemain is 0.67 m/s, which meets the minimum acceptable velocity of 0.6 m/s.

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Reference: Lacombe County Sewer Servicing - Sylvan Lake North Developments - Hydraulic Analysis

- The PCLS pumping with an additional 13 Sunbreaker Cove lots pumping at the same time:
 - Note: The Sunbreaker Cove LPS system was designed to have a maximum of 13 pumps running at any given time, so this is based on the maximum pumps running.
 - Peak pumping flow from PCLS is 3.0 l/s, which is significantly lower than the 9.6 l/s design capacity, resulting in inefficient pumping (high energy use) from the PCLS.
 - Sunbreaker Cove LPS pumping flow rate is 0.7-1.85 l/s, which is well within the acceptable flow limit.
 - When running together, the Sunbreaker Cove LPS pumps will not be impacted and will take priority over the PCLS pump. The Palm Cove LS flows would be impacted / reduced, and inefficient pumping would occur.

To summarize, the hydraulic performance of the Sunbreaker Cove LPS system pumping from the residential septic tanks into the mainline will not be compromised by the proposed Palm Cove Lift Station pumped flows with the proposed Flygt NP3127SH3-248, 155 mm IMP, 11 HP pump. At ultimate build out peak flows, the Sunbreaker Cove LPS septic tank pumped flows would not be impacted but rather would be stronger and take priority over the Palm Cove LS flows which would be impacted / reduced and result in inefficient pumping.

Tank Storage

As the PCLS pumping will be impacted, consideration should be given to installing tank storage be installed at the Palm Cove Lift Station site to store the sewer flows allowing for off peak pumping, should it be desired by the County. This will avoid inefficient pumping times. It is recommended that the County install storage to accommodate 10 hours of peak flows, and this can start with one tank and others can be added as development occurs. At the peak flow rate of 9.9 l/s for the ultimate build out of 835 people, a total tank storage of 71 m³ is required to hold the sewer for a period of 10 hours. This timeframe will allow for off-peak pumping through the combined mainline through the Summer Village of Sunbreaker Cove. With the selected pump, it will take approximately 2 - 2.5 hours to pump out the 71 m³ of volume when the systems' flows are low.

Operations and Maintenance

The operations and maintenance in the initial years of operation will need to be increased. The mainline will require additional maintenance to flush it more frequently to avoid buildup of solids in the pipe from the lower velocities in the larger diameter mainline.

It is recommended to add a flushing connection at the North West end of the Sunbreaker Cove system at the corner of Breakers Way and Juniper Road, as well as 2-3 additional flush points through the Summer Village. The flushing may be able to be reduced when Lacombe County Palm Cove lift station is constructed.

Mainline velocities will be achieved when all (100%) of the Sunbreaker Cove lots are connected and a year round (not seasonal) and the Lacombe County Palm Cove LS is constructed as this should be designed to pump above scouring velocities on each pump cycle. It is recommended to have a minimum of 30 year round residents connected when the pump station is constructed. When this occurs, the flushing activities can be reduced to an as required basis.

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Reference: Lacombe County Sewer Servicing - Sylvan Lake North Developments - Hydraulic Analysis

It is also recommended to modify the design of the flushing ports at the start, middle and end of the mainline through Sunbreaker Cove to be full diameter long radius bends to allow the three flushing ports to be used as pig launcher and receiver locations.

Based on the analysis preformed, the following flushing activities are recommended:

- a. Velocity Required: A minimum velocity of 0.6 m/s is required to achieve scouring velocities, however, to displace settled solids, it is recommended to achieve a flushing velocity of 1.5 2.0 m/s.
- b. Total volume of the 150mm dia. mainline through SBC (2.5km): 36 m3
- c. Total volume of water recommended for each flushing cycle: 72 108 m3.
 - i. It is recommended to move the full 36 m3 through the pipe two (2) to three (3) times to breakup and displace the solids. Therefore, it is anticipated that 72 108m3 is used for each flush, which will take about 40 to 60 minutes to move through the line at 2.0m/s.
 - ii. The flush water can be monitored at the Blissful Beach lift station to verify the cleanliness of the water being discharged.
 - iii. Flushing Locations: It is recommended to flush with the above noted volume at the upstream end at the corner of Breakers Way and Juniper Road at the minimum, and the operations team should flush at a mid-point for the first few times while monitoring the discharge water at the lift station to verify if this displaces any additional solids.
- d. Flushing Frequency:
 - Although this is not an operational analysis, it is recommended to flush the mainline quarterly
 every 3 months for a total of 4 times per year.
 - ii. The flushing frequency can be adjusted based on the amount of solids/debris seen at the Blissful Beach lift station during each flush.
 - iii. Should the flushing not clean the pipe entirely, the operations team can consider pigging the line, and it is suggested to pig the line once a year for the first 2 or 3 years to verify what additional solids this displaces.

Odour Management

Odour management was not completed during this analysis. Due to the short forcemain length of under 1 km from the future Palm Cove LS to the NW corner of Sunbreaker Cove, the additional odours from the Lacombe County north flows are not anticipated to be noticeable, however the Palm Cove LS could provision for a bioxide chemical dosing system when it is desired.

During initial operations prior to the Lacombe County developments coming online, it is anticipated that odours will be somewhat higher during the operational flushing times as the solids that have settled will be stirred up and moved down the line. The flushing will only be periodic (a few times per year), however this is something that should be considered by the County, including provisioning for odour treatment such as a basket of carbon or potassium permanganate media to filter the air at the six (6) mainline air release valves. The media can then be installed easily in the future should odour become a concern.

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OPINION OF PROBABLE COST

A high level opinion of probable cost for the mainline through Sunbreaker Cove, based on the pre-tender opinion of probable costs for Sunbreaker Cove sewer servicing, is approximately \$650k (+/- 20%), which is an approximate increase of \$50k - \$100k for the upsized line. The mainline cost represents approximately 20-25% of the overall project cost.

Other items that should be considered for cost sharing are the common bid items such as mobilization / demobilization, traffic control, utility locates, tree clearing and increased mainline valve sizes. In addition, the engineering services during construction should be considered in the cost sharing. The common items together could amount to roughly \$600k (high level ballpark), and when multiplying by 25%, that totals ~\$150k.

With the flow split at 44% for Sunbreaker Cove and 56% for Lacombe County, the County's portion of the total ~\$800k cost to share, would be ~\$450k (+/- 20%).

Of the ~\$450k, about \$50k - \$100k would be for the mainline upsize, so the total savings for the Summer Village could be in the order of \$350k - \$400k.

CONCLUSIONS AND RECOMMENDATIONS

The Lacombe County Sylvan Lake North Developments are anticipated to have a peak flow of 9.9 l/s and the hydraulic analysis concludes that it is hydraulically viable to pump through a combined mainline through the Summer Village of Sunbreaker Cove with both Lacombe County and Summer Village flows pumping at the same time. The analysis shows that the Summer Village flows would take priority over the County flows and would not be impacted or reduced when the maximum number of pumps are running including the future County Palm Cove Lift Station pump. When Sunbreaker Cove pumps are running, the Palm Cove LS flows would be impacted, and inefficient pumping would occur. It is recommended that the County install tank storage to be able to pump at off-peak times to increase the pumping efficiency. Approximately 71 m3 of storage is required to provide 10 hours of storage at ultimate build out peak flows.

The mainline would need to be sized at 150mm dia. HDPE DR 11 for the entire length, which would require increased periodic flushing prior to the Lacombe County flows coming online. Odours are to be considered when flushing as they may be noticeable due to the solids being stirred up, and odour control may be required at the air release valves.

Stantec Consulting Ltd.

Johnny Ne AMSc., P.Eng. Process Engineer Phone: 403-356-3391

Email: johnny.ke@stantec.com



Special Meeting Agenda:

- 1. Recommendation
- 2. Summary of Tender Process and Results
 - Base design and upsizing components
- 3. Shared Main Line and Bid Differential
- 4. Private Service Connection Cost in Tender
- **5. Joint Agreement Letter**



Recommendation:

That SBC award the wastewater construction tender to Pidherney's with the main line being shared with Lacombe County (LC).

This enables a WIN-WIN-WIN situation whereby:

- Owner service connection costs are minimized
- SBC realizes a cost savings relative to a stand-alone project without being exposed to oversizing issues
- LC minimizes their costs



Recommendation (continued):

With Pidherney's being awarded the tender and with LC's participation under the terms of the signed joint agreement letter (attached), SBC's cost for the portion project within the road right-of-way (ROW) is estimated to be \$3,017k after including a 10% contingency.

This results in a capital cost savings to SBC of \$216k over the \$3,233k estimate if we were to proceed with a stand-alone project and award the project to Urban Dirtworks (UDW) who had the lowest price. The savings amount includes \$71.5k that LC agreed to pay SBC as a bid differential payment.

Participating with LC will also reduce our operating costs after they become substantially connected.



Recommendation (continued):

UDW's \$112.5/m costs to supply and install the service connection pipe from the road ROW to a location close to the owner's tank is significantly higher than Pidherney's \$30/m. At an average 20m service connection length, this difference could correspond to an average of \$1,650 per owner.

We don't yet know how many ratepayers will use SBC's contractor, nor do we know the average service connection length. Nevertheless, we believe that the savings available to ratepayers by using Pidherney's justifies the decision to award the tender to Pidherney's rather than UDW.



Summary of Tender Process and Results

Contractor Pre-Qualification

- Sunbreaker Cove ("SBC") ran a pre-qualification process in December 2020
- In total 4 proposals were received
 - Pidherney's ("PID")
 - Nu-Edge
 - Eng-Con
 - Urban Dirtworks ("UDW")
- Only Eng-Con was eliminated due to lack of prior experience with lowpressure collection systems and directional drilling projects



Tender Results – Closed January 28st, 2021 at 2:00pm

- Three proposals received from Pidherney's, Urban Dirtworks and Nu-Edge
- Contractual Terms:
 - Bids must remain open until April 28th, 2021 for acceptance
 - Proposals included provisions for:
 - A. Mobilization and Demobilization (COMMON)
 - B. Miscellaneous Items (COMMON)
 - C. Sanitary Sewer Main (COMMON)
 - i. SBC (Base Case) Sanitary Mains (no upsizing)
 - ii. Supply and Install Sanitary Main upsize (Incremental pricing)
 - D. SBC Service Connections (NOT COMMON)
 - E. Site Restoration (COMMON)



Original Tender Results

Considering the total municipal costs within the road ROW, the results <u>before</u> contingency were as follows:

Projected Costs (k\$)	Pidherney	Urban Dirtworks	NuEdge
SBC With No Upsizing	\$3,173	\$2,989	\$3,525
Joint Upsized Project	\$3,251	\$3,309	\$3,987

 While the Pidherney's has the lowest total cost for an upsized project, differences in the project component costs affected SBC's perspective as to which contractor to select for a Joint Upsized Project.



Capital Sharing Agreement Terms

- SBC proposed to share "COMMON" items for the purpose of allocating costs between SBC and LC
- Common costs to include categories A, B, and E from the tender proposals
- The following two components need to be accounted for in allocation of capital costs:
 - Ownership "capacity" of the forced main based on peak flow rates
 - Peak design capacity based on parameters from Stantec's December 17th, 2020 Tech memo
 - Pro-rata portion of costs related to the Joint forcemain
 - Propose allocating costs on the basis of total meters of forcemain to be installed within SBC ROW



Apparent Costs per Original Tender with Upsizing and 10% Contingency

Projected Costs (k\$)	Pidherney	Urban Dirtworks	UDW Savings
Sunbreaker Cove	\$3,100	\$3,000	\$100
Lacombe County	\$476	\$640	-(\$164)
Total Costs (incl. 10% Contingency)	\$3,576	\$3,640	-(\$64)

While Pidherney's has the lowest total cost:

- SBC saves \$100k by accepting UDW's proposal
- LC costs increase by \$164k under the UDW proposal

The difference in UDW savings lead to considerations as to a potential bid differential transfer.



REVISED Tender Costs with Upsizing and 10% Contingency

- SBC has asked for revised proposals from both PID and UDW to account for potential contract changes
 - Consideration to drop tracer wire throughout the municipal forcemain
 - Design change from plug to ball valves due to inventory/deliver delays for plug valves
- After adjusting both bids for the design changes, the PID and UDW bids are essentially equal in total costs, however the net costs to the joint partners were still not equal.



Bid Differential

SBC and LC negotiated a bid differential to accept the PID Bid

Projected Costs (k\$)	Case 1 PID Bid	Case 2 UDW Bid	Negotiated Case (PID Bid with LC Bid Differential Payment)
Sunbreaker Cove	\$3,088	\$2,957	\$3,016.5
Lacombe County	\$473	\$629	544.5
Total Costs (incl. 10% Contingency)	\$3,561	\$3,585	\$3,561

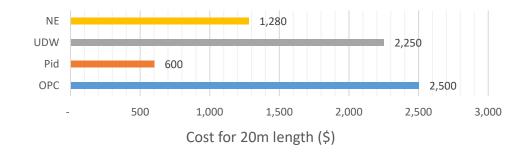
- The agreed upon bid differential transfer of \$71,500 leaves SBC costs \$59,500 higher than under UDW, however,
- The negotiated case is lowest from total Summer Village perspective if owners use SBC's contractor for more than 715m (equivalent to 36 lots at average 20m/lot) of private service connections. Owners may elect to use SBC's contractor for cost savings even if they chose to not connect to the system this year.



Private Service Connections - Tender Comparison

Key Takeaways are:

- PID costs are 27% of UDW costs
- UDW costs are less than Stantec's OPC



- "OPC" Opinion of Probable Costs
- Private service connections in tender are costs to supply and directionally drill 38mm HDPE DR11 pipe on private property to a location near lot owner's tank. These are private costs excluded from SBC municipal project financing considerations.
- The contractor costs do not include any administration/supervision costs, mob/demob costs or other owner connection costs such as assessing the condition of their current septic/holding tank, connecting the pipe to the tank & getting a grinder pump installed.

Lacombe County

RR3

Lacombe, Alberta T4L 2N3

Confidential

Attention:

Tim Timmons, County Manager

Re:

Sunbreaker Cove - Lacombe County Joint Wastewater Services Proposal

Dear Tim,

Thank you for your email of March 26th, 2021, with Lacombe County's ("LC") proposed terms regarding the proposed joint wastewater servicing with the Summer Village of Sunbreaker Cove ("SBC") and the opportunity for our Mayor and Deputy Mayor to speak at your March 25th Council meeting.

We acknowledge Lacombe County's revised proposal, and having discussed the terms, SBC Council is prepared to proceed with a joint upsized project subject to finalizing the major elements of the capital and operating cost allocations as follows:

- 1. Common cost allocations, and upsizing ownership are outlined in Attachment A.
- 2. Flushing frequency and operating parameters to be consistent with the operating procedures as outlined in the Stantec Consulting Ltd. tech memo of December 17th, 2020 initially. Stantec's flushing program including displacement volume and flushing rates may be reduced should SBC find that less would be sufficient based on an analysis of flushing program effectiveness. Prior to Lacombe County tying in substantial volumes, they shall pay any costs beyond what SBC would have spent to flush the non upsized system once a year.
- 3. Lacombe County would be responsible for the costs of the additional odor control and flush ports recommended by Stantec that are not currently reflected in the SBC design drawings. The extra items recommended by Stantec currently include the addition of 3 Combination-Air-Release valves, 2-3 additional flush points on the 150 mm force main and provision for replacement of 45 degree elbow connections to long-radius bends. Costs to design, scope and negotiate supply and install costs of these component would by Lacombe County's responsibility.

- 4. SBC agrees to walve the immediate requirement to add pigging facilities. However, future pigging capability can be added at Lacombe County's cost should SBC find that the flushing program proves to be ineffective. Upgrading to pigging capability could reduce flushing frequency and volumes.
- 5. SBC will request the contractors to propose a schedule of installment payments to be paid by Lacombe County's totalling the estimated \$473,000 capital contribution before including the bid differential. The schedule will reflect anticipated progress payments owed to the Contractor. SBC does not have the ability to carry Lacombe County's share of costs. Upon completion, a final adjustment will be made on actual costs incurred.
- 6. Further detail will be dealt with in formal capital sharing and joint operating agreements, with the legal and administrative costs associated with preparing these agreements to be shared between the two municipalities. The final agreements will reflect the terms as outlined above.
- 7. SBC requests the \$71,500 bid differential payment in consideration for awarding the contract to Pidherney's to be paid upfront.

SBC looks forward to getting together with you soon to award the project to Pidherney's and negotiating with them on the additional mainline facilities.

SBC requests Lacombe County's signed acceptance of the terms proposed herein by Tuesday April 6th, 2021, so that we can kick-off the project as soon as possible.

SUMMER VILLAGE OF SUNBREAKER COVE

Tarmer Evans, CAO, Sunbreaker Cove

LACOMBE COUNTY

Tim Jimmons, County Manager, Lacombe County

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Attachment A

Cost Allocation of Oversized Project before further design changes

It is our understanding that both parties have agreed upon the proposed capital sharing components and allocation of those costs as follows:

- 1. Common costs as outlined in tender documents to include:
 - A. Mobilization and Demobilization
 - B. Miscellaneous Items
 - i. Traffic accommodation
 - ii. Site occupancy, engineering supervision and construction inspection
 - iii. Utility locates
 - iv. Tree clearing
 - C. Site Restoration
- 2. Common costs agreed to be allocated based upon capacity and proration factor
 - Capacity of the joint forced main (150 mm line) based on peak load capacity design estimates as per Stantec Consulting Ltd's tech-memo dated December 17th, 2020
 - i. 56% Lacombe County
 - ii. 44% Sunbreaker Cove
 - B. Common costs to be allocated 26% based on total meters of joint force main as fraction of total force main to be built within the SBC road allowances.

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