CRD
Making a difference...together

GANGES SEWER LOCAL SERVICES COMMISSION
Notice of Special Meeting on **THURSDAY, January 8, 2015 at 1:00 pm**
Salt Spring Public Library, 129 McPhillips Avenue, Salt Spring Island, BC

Wayne McIntyre	John Sprague	Kevin Bell	Gary Utter	Rod Scotvold
Louis Pepin				

AGENDA

1. **Approval of Agenda**

2. **Reports**
   - **2.1 Sludge Disposal Options for Ganges Sewer Project**
   - **2.2 Ganges Sewer Infrastructure Replacement Project-Results of the Public Open House Meeting**

3. **New Business**

4. **Outstanding Business**

5. **Adjournment**

To ensure quorum, advise Tracey Shaver 250 537 4448 if you cannot attend.
1643427

CRD
Making a difference...together

REPORT TO GANGES SEWER LOCAL SERVICE COMMISSION
MEETING OF THURSDAY, JANUARY 8, 2015

SUBJECT SLUDGE DISPOSAL OPTIONS FOR GANGES SEWER PROJECT

ISSUE

To review alternative options for sludge disposal for the Ganges Sewer Project to determine the lowest cost option from a lifecycle perspective.

BACKGROUND

Currently, the wastewater entering the Ganges Wastewater Treatment Plant (WWTP) is screened to remove organic matter and grit larger than 3mm prior to entering the membrane bioreactor (MBR), which is where the influent is biologically treated. The sludge from the secondary treatment process is directed to the Kubota flat sheet membrane for thickening prior to disposal. The Kubota membranes dewater the sludge to approximate 2-3% solids content. The filtrate from the sludge thickening flows back to the MBR via gravity for further treatment. The current process for the Ganges WWTP is illustrated in Figure 1. The thickened sludge is then hauled to the Burgoyne septage receiving facility for disposal. Annually, the Ganges WWTP disposes of 1,599 m^3 of sludge (351,770 igal, approximately one 1,200 igal truck every 2 days)[1] costing an average of $137,190/year[2] for disposal. Currently, the Burgoyne septage receiving facility charges are $85.788/$m^3$ ($0.39/igal).

Recently, operations staff have noticed breakthrough of total suspended solids during sludge thickening indicating that the sludge thickening membrane is not functioning as designed and requires replacement.

As is standard practice, a thorough evaluation of the current technologies available and space requirements will be conducted prior to proceeding with detailed design. In addition, a lifecycle cost analysis will be used to determine the most economic and effective process, based upon: operation, maintenance and capital costs.

In 2011, Stantec was retained and produced an Asset Condition Evaluation and Engineering Study report. The report had made the following statement:

"Next to labour cost, the most expensive item is sludge hauling and disposal with an annual cost of $128,000. The flat plate membrane system used for sludge thickening produces sludge with a solids content of 2% to 3%. Any improvement in the efficiency of sludge thickening could have a significant impact on reducing the cost of sludge hauling and disposing. In light of the high cost of sludge thickening, this should only be considered when the plant reaches capacity and is expanded in 2022. If carried out, this would reduce the sludge disposal cost by 50%."

In discussions with Stantec regarding clarification to the above statement, Stantec has reinforced that considerable capital costs would be required to incorporate another sludge

[1] Average of 2012 & 2013 operational information
[2] Average disposal cost at Burgoyne Bay.

thickening technology, and as such, the Burgoyne facility will experience a corresponding reduction in revenue due to the reduced sludge volume.

The Commission has raised concerns that there may be other more cost effective methods for sludge thickening considering the high costs of disposal at Burgoyne and on Stantec's comment in their report. This report will conduct a preliminary lifecycle analysis of two options for sludge disposal.

Current - Membrane Sludge Thickening Capital & Waste Disposal Costs:

To replace the current membrane sludge thickening process a new membrane and a new tank is required. The Class D cost estimate for both is **$500,000**[3].

The current average annual operating costs for sludge hauling and disposal are comprised of the following:

Annual Average Sludge Disposal	$137,190
Budgeted Sludge Hauling[4]	$ 30,000
Total	$167,190

The tipping fee at Burgoyne or negotiated hauling rate is subject to change.

The total operation costs are estimated to be **$167,190**, excluding BC Hydro costs.

Proposed - Fournier Filter Press Thickening Capital & Waste Disposal Costs:

Typically, a pilot study of the proposed process technology is carried out to determine the process efficiency, chemical dosing rate, evaluate overall process performance, and determine order of magnitude operating and maintenance costs. A pilot study is usually a scaled down operation of the proposed process. Since a pilot has not been conducted, the Saanich Peninsula Wastewater Treatment Plant (SPWWTP) operational data for its Fournier Filter Press is used for the basis of comparison. Operational costs are pro-rated based on the volume or weight of sludge produced, the SPWWTP's filter press efficiency for dewatering are assumed to be the same as the sludge produced at Ganges. Past operational experience with GE membrane bioreactor's (MBR), and confirmed through discussions with GE ZENON representatives have indicated that most filter presses require fiber supplicants and/or additional polymer as MBR sludge is typically low in fibre and hard to retain on the filter.

As part of the Fournier filter process a chemical polymer is added to the wastewater sludge, which increases the solids retention on the filter element to avoid solids breakthrough into the effluent. The end products from the sludge are a biosolid, which is discharged into a bin for disposal, and an filtrate which is recycled back into the wastewater stream for UV disinfection prior to discharge via the outfall. The Fournier filter process is illustrated in Figure 2.

[3] 2015 Schedule G for the Ganges Sewer Local Service
[4] 2014 Ganges Sewer Local Service Operating Budget, subject to hauling contract renewal

To accommodate a Fournier Filter Press at Ganges, infrastructure is required for the following facilities and equipment:

- Building an enclosure for the filter press, disposal bin and chemical dosing room,
- Odour control, for the purposes of this evaluation a carbon filter with grease filter will be assumed to be sufficient, and
- Chemical polymer dosing pump, mechanical piping, mixer, etc.

A building is required for the new mechanical equipment, chemical storage, odour containment and treatment, and dry storage of biosolids. It is advantageous to construct a single building to house the entire process as it will simplify odour control and satisfy all the above requirements. We received the enclosure option presented by Waste 'n Watertech, but it does not address odour control for the biosolids, does not house the biosolid bin(s) to ensure rainwater does not re-wet the biosolids and does not house the separate polymer chemical room. For these reasons a building was chosen to house the Fournier Filter Press and associated equipment.

The estimated capital cost (Class D) of this option is $1,420,000. The breakdown of the estimated capital costs is in Appendix A. The cost of electricity has not been included and is not required for this type of evaluation, but will be more than the current sludge thickening process.

To determine the operational costs for a filter press, the following annual costs are required:

- Sludge volume & weight,
- Polymer requirement,
- Carbon requirement,
- Tipping fee at Hartland Landfill,
- Hauling of cake, and
- Additional operations and maintenance for additional equipment.

The methodology for determining the costs and the operational cost estimate are in Appendix B. The Class D estimate for the Sludge Filter Press is **$220,000**, excluding BC Hydro costs. A summary breakdown comprises of the following:

Annual Average Sludge Disposal	$79,000
Annual Average Sludge Hauling	$78,000
Production Costs	$63,000
Total	$220,000

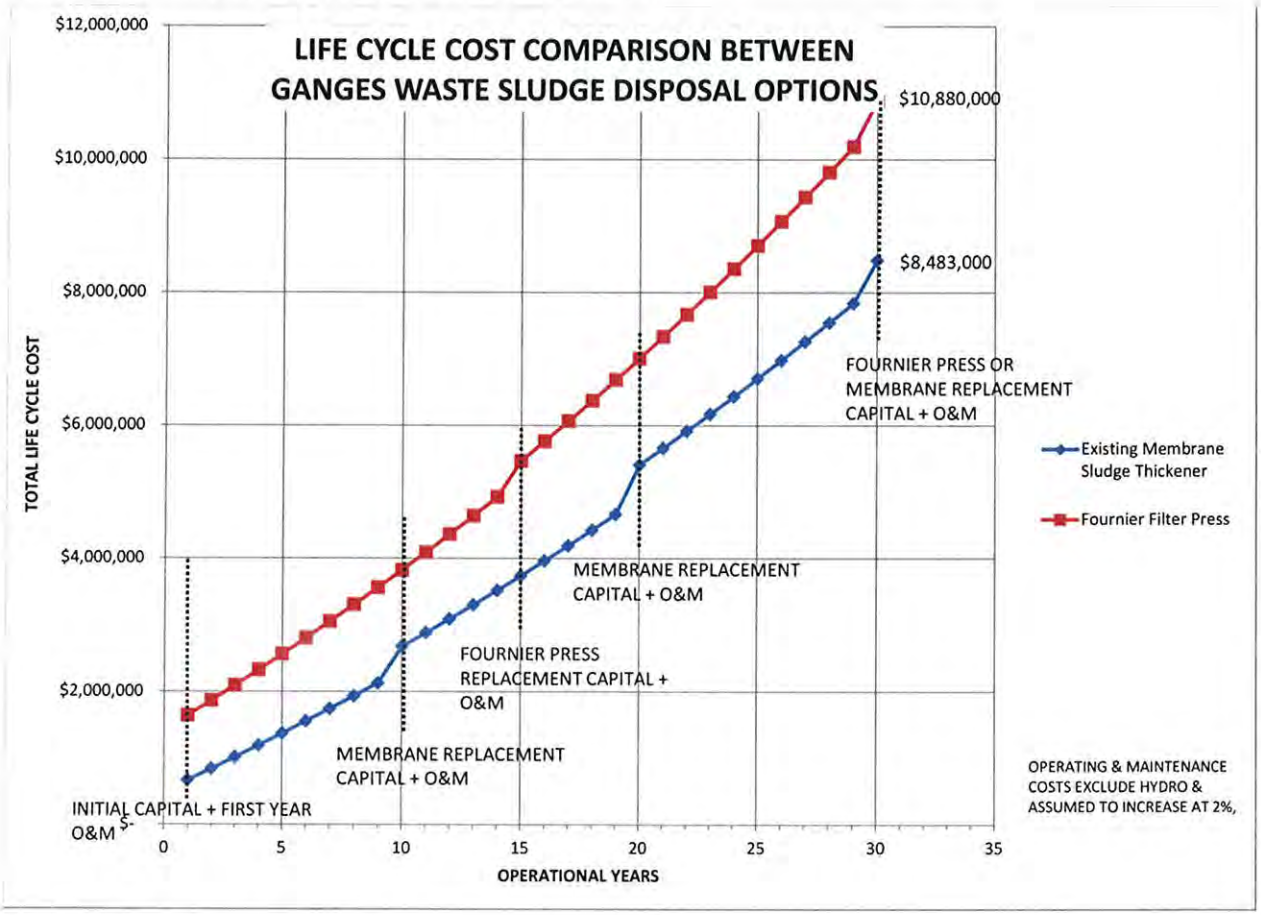
In addition to the costs associated with the addition of a Fournier Filter Press, the location of the Fournier Filter Press building may be difficult to site. The zoning has not been investigated, but conceptual massing of the most likely location is in Figure 3. Issues with the location are its proximity to the influent pump station and ensuring truck access to the screen and MBR.

15 Year Lifecycle Cost Comparison

To properly compare the two options, the total lifecycle cost of each technology is considered for the Fournier Filter Press, which has the longer life expectancy of 15 years, and the membrane sludge thickening which has a life expectancy of 10 years. Operational costs for both scenarios are assumed to increase at a rate of 2% annually. Capital costs for both the

membranes and filter press are incurred at the beginning of the analysis and at their expected replacement year. The 15-year lifecycle costs are illustrated in Figure 4 below:

Figure 4 15 year Lifecycle Cost Comparison



Raw data can be found in Appendix C.

This comparison is only order of magnitude and likely does not capture all costs. An in depth investigation is required to capture majority of the costs and address issues such as total lifecycle operation and maintenance costs such as building maintenance, heating and ventilation requirements and electrical costs.

In addition to the lifecycle cost comparison, a net present value comparison over 30 years was conducted to determine the total investment required for both options. A 30 year period was chosen as it resulted ended on a year in which both option's equipment would need to be replaced, and a discount rate of 5% based on the an estimated average loan interest rate was utilized. The net present values calculated over 30 years are:

Option	Net Present Value (2014)
Existing Membrane Sludge Thickening	(-)$4,934,000
Fournier Filter Press	(-)$6,703,000

From the net present value comparison, it is apparent that the existing membrane sludge thickening option incurs the least amount of cost.

The improvement of the water removal from the sludge will have undesired impact decrease in the capacity of the MBR, with an increased filtrate volume returned to the MBR in the order of 3 m^3/d. The increase in filtrate from the dewatered sludge is returned back to the MBR tank so that it is properly filtered and passes through the UV equipment. Disinfection is currently a requirement of discharge so this process will remain. The amount of filtrate returned has a direct impact on the capacity of the Ganges WWTP, effectively reducing it by the amount of filtrate returned to the MBR. This will need to be accounted for when evaluating the processes, but is not part of this report.

Additionally, the sludge produced from the Fournier filter presses cannot currently be handled by the Burgoyne septage receiving facility. Sludge produced with this method will have to be hauled to the Hartland Landfill for disposal. This will result in higher hauling costs and reduced revenue for the Burgoyne facility.

ALTERNATIVES

That the Ganges Sewer Local Service Commission:

1. Receive this staff report for information and review options at the preliminary design stage as initially envisioned for this project.

2. a) Receive this staff report for information and direct CRD staff to evaluate sludge thickening technologies before proceeding with replacing the sludge thickening membranes.

   b) Approve a budget of $35,000, funded from the capital reserves, for the evaluation work.

IMPLICATIONS

Alternative 1 – By proceeding as originally intended the project will not be delayed. The staff will select the lowest capital, operating, maintenance and lifecycle cost for the project.

Alternative 2 – By proceeding with the review the overall project will be delayed, potentially resulting in compliancy issues and/or equipment repairs or failures.

CONCLUSION

The existing sludge thickening membrane has provided 10 years of reliable and effective operation but it is at its end of serviceable life. The cost comparison between the current technology and a Fournier Filter Press is more complicated than just comparing disposal and hauling costs, a holistic approach for comparison is required. An in depth evaluation of available options will be carried out as part of preliminary design, as is standard engineering practice. The lowest capital, maintenance, operating and lifecycle option will be presented to the commission for consideration.

RECOMMENDATION

That the Ganges Sewer Local Service Commission receive this staff report for information and review options at the preliminary design stage as initially envisioned for this project.

Dale Puskas, P.Eng.
Project Engineer
Infrastructure Engineering and Operations

Craig Gottfred, P.Eng.
Manager, Wastewater Engineering and Planning
Infrastructure Engineering and Operations

Peter Sparanese, P.Eng.
Senior Manager, Infrastructure Engineering and Operations
Concurrence

Ted Robbins, BSc, C.Tech.
General Manager, Integrated Water Services
Concurrence

Attachments:

Figures 1, 2 and 3
Appendix A – Fournier Filter Press Capital Estimate
Appendix B – Ganges Fournier Filter Press Operational Cost Methodology and Estimate
Appendix C – Lifecycle Cost Raw Data

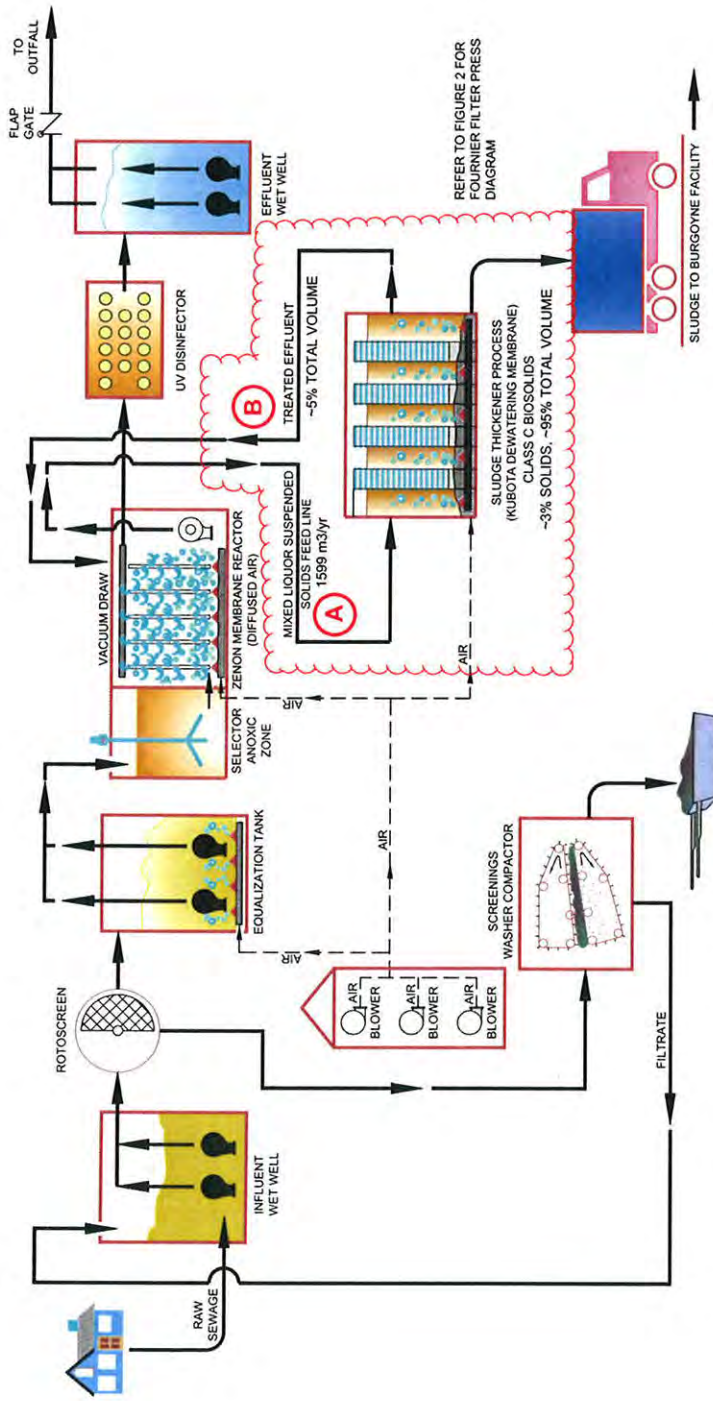


Figure 1:
Simplified Ganges Wastewater Treatment Plant Process

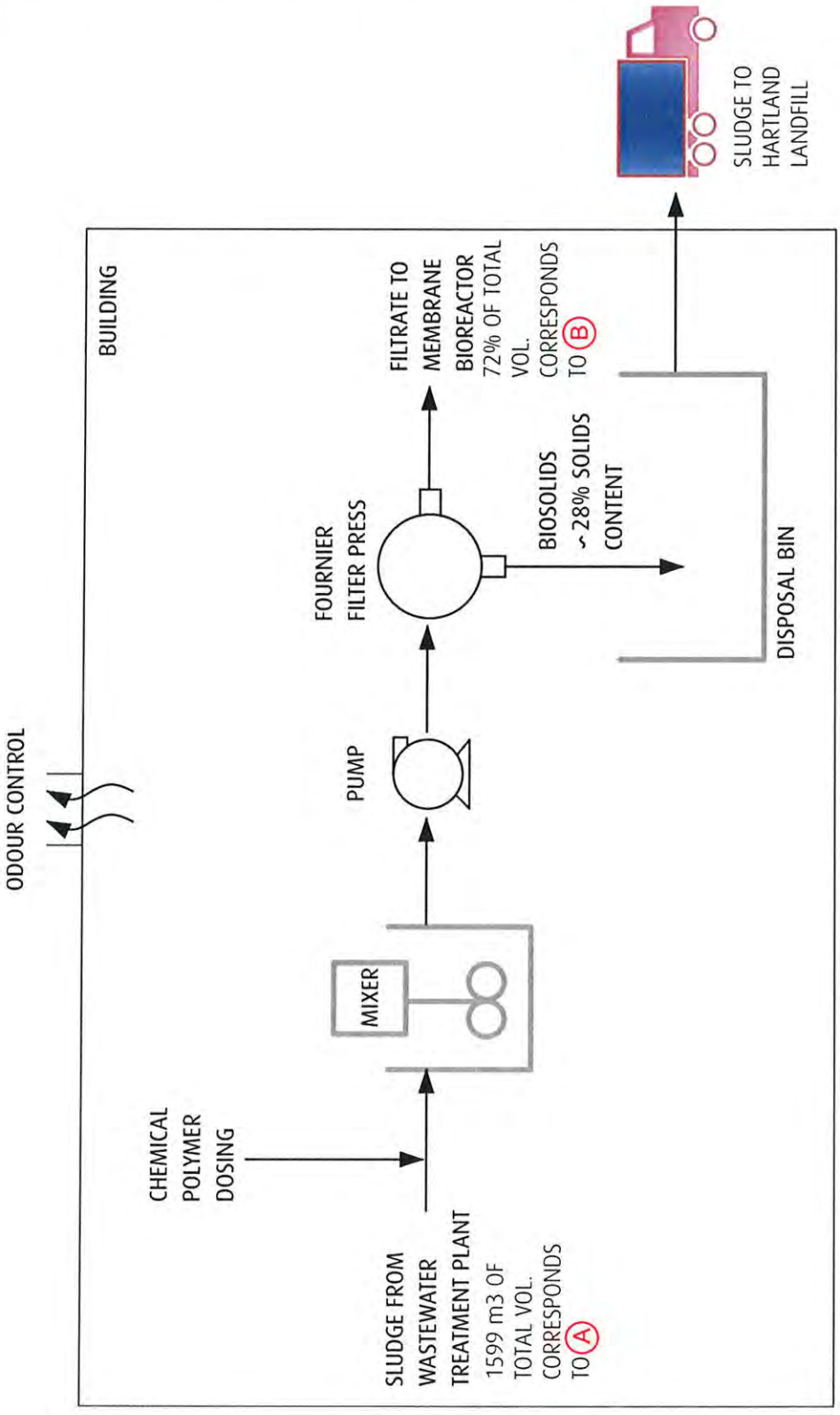


Figure 2:
Typical Fournier Filter Press Process

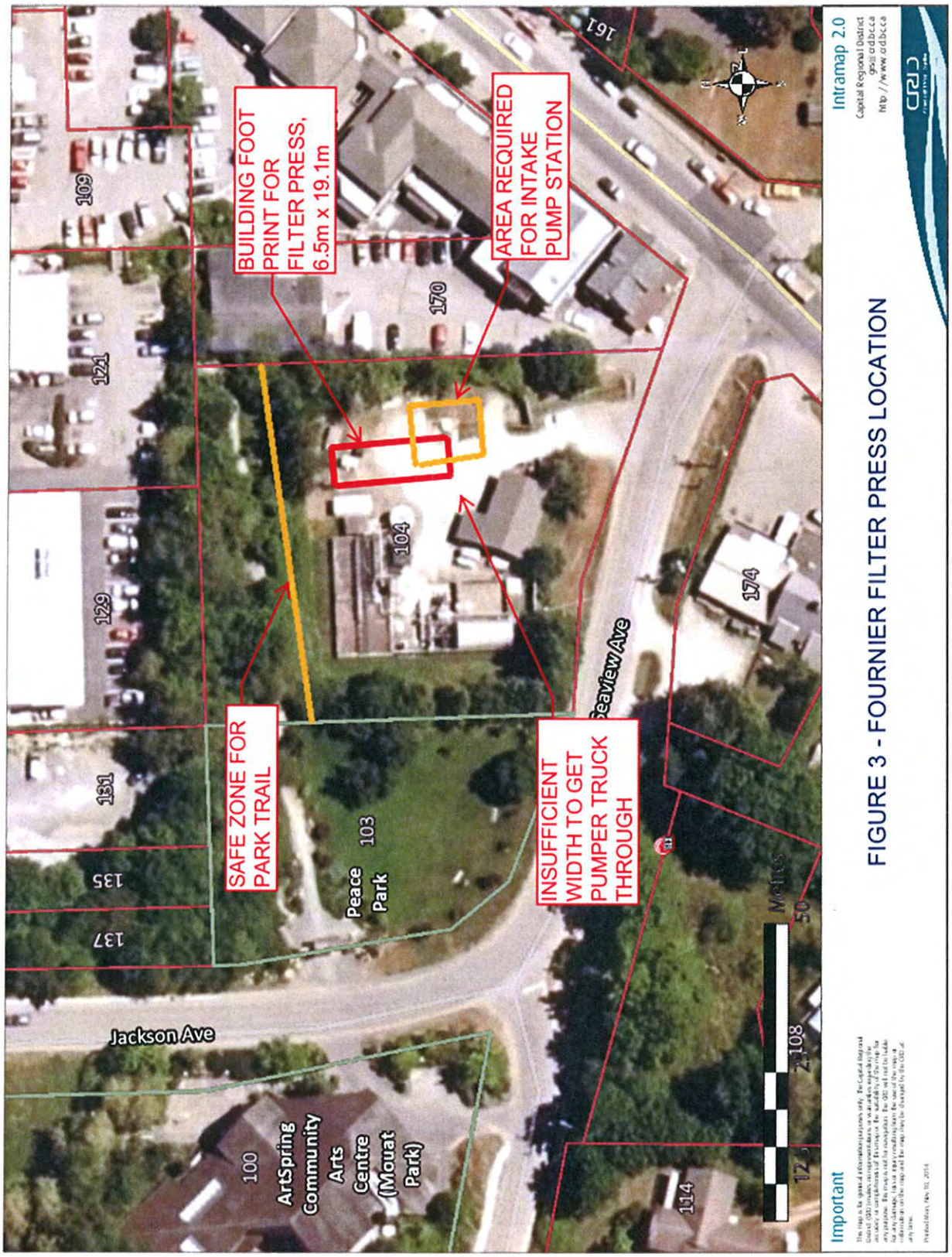


FIGURE 3 - FOURNIER FILTER PRESS LOCATION

APPENDIX A

Making a difference...together

GANGES SEWER LOCAL SERVICE
FILTER PRESS CAPITAL ESTIMATE

Date: November 24, 2014
Prepared by: Dale Puskas, P.Eng.

Description	Details	Funding Source	Estimated Construction 2015	Contingency (%)	Contingency	Subtotal	Engineering (%)	Engineering	Admin (%)	Admin	Operations (%)	Operation Staff	TOTAL
CAPITAL REQUIREMENTS													
Building	Construct a wood framed building to house the filter press and disposal bin.	Captial	402,000	50	201,000	603,000	20	120,600	5	30,150	10	60,300	$ 810,000
Filter Press	Supply and install a filter press and minor associated mechanical.	Capital	300,000	50	150,000	450,000	20	90,000	5	22,500	10	45,000	$ 610,000
Mechanical Work including piping	Supply and construct mechanical piping associated with filter press	Capital	20,000	50	10,000	30,000	20	6,000	5	1,500	10	3,000	$ 40,000
Carbon Filter	Supply and install carbon filter, including grease filter, for odour control	Capital	30,000	50	15,000	45,000	20	9,000	5	2,250	10	4,500	$ 60,000
TOTAL COST OF ESTIMATED CAPITAL REQUIREMENTS													**$ 1,420,000**

APPENDIX B

GANGES FILTER PRESS OPERATION COST METHODOLOGY

Use Saanich Peninsula Wastewater Treatment Plant (SPWWTP) information for determination of sludge solids content, efficiency of Fournier Press and polymer usage:

- Average polymer addition ~ 0.54% kg polymer per kg sludge
- Blend Tank solids average ~ 28% of total sludge volume
- Sludge solids content (m^3/m^3) ~ 3.5%, close to the 2-3% at Ganges WWTP
- Hauling cost for a 10 tonne/truck ~ $118/truck excluding trucking hours & ferry
- 22' bin for disposal, truck and bin ~ 30'

**Relationships are derived imperically.

BC Ferries Fare for Hauling:
$3.65/ft commercial rate + 3.4% fuel surcharge = 30' x $3.65/ft x 1.034 = $113/truck

Estimated Trucking Hours:
Approximately 6 hours round trip, therefore 6hrs x $135/hr = $810/truck

Total Hauling Cost/truck:
$118 + $113 + $810 = $1,041/truck

Ganges Sludge Estimation:
Current annual average sludge generation ~ 351,770 igal (1,599.2 m^3) based on volumes billed to Ganges from Burgoyne for 2013 and 2012.

Cake Solids Volume ~ 1,599.2 m^3 x 28% = 447.8 m^3
Assuming density still close to water therefore weight = 447.8 m^3 x 1,000 kg/m^3 = 447,800 kg

Polymer required 1,599.2 m^3 x 3.5% = 55,972 kg sludge x 0.54% = 302 kg
Polymer cost $7.75/kg therefore **$2,340**

Hartland disposal costs $117/tonne, therefore [447,800 kg + 302 kg] x $117/tonne = **$52,427**

Number of trucks/year ~ [447,800 kg + 302 kg] / 10 tonne/truck = 45 pick-ups/year, add 10% due to pick-ups falling on long weekend or weekend, therefore ~ 50 trucks/year

Hauling Cost = $1,041/truck x 50 trucks = **$52,050**

Additional operations and maintenance labour required for additional equipment ~ 4 hrs per week at $100/hr = **$20,800/year**

Assume granular activated carbon needs to be replaced 1/year; approximate cost is $165/$ft^3$ ($5,826/$m^3$). Similar facility use a 114 ft^3 (3.23 m^3) filter therefore carbon cost is **$18,800**

1624786

CRD
Making a difference...together

GANGES SEWER UTILITY
FILTER PRESS OPERATING ESTIMATE

Date: November 24, 2014
Prepared by: Dale Puskas, P.Eng.

Description	Details	Funding Source	Estimated Construction 2015	Contingency (%)	Contingency	Subtotal	Engineering (%)	Engineering	Admin (%)	Admin	Operations (%)	Operation Staff	TOTAL
SLUDGE DISPOSAL													
Disposal	Disposal cost of biosolids at Hartland	Operation	52,427	50	26,214	78,641	0	0	0	0	0	0	$ 78,641
SLUDGE HAULING													
Hauling	Haul biosolids from Ganges to Hartland	Operation	52,052	50	26,026	78,078	0	0	0	0	0	0	$ 78,078
SLUDGE PRODUCTION													
Granular Activated Carbon	Annual supply of activated carbon	Operation	18,800	50	9,400	28,200	0	0	0	0	0	0	$ 28,200
Polymer Supply	Polymer supply to achieve dewatering with a filter press	Operation	2,340	50	1,170	3,510	0	0	0	0	0	0	$ 3,510
Additional Labour for Equipment	Estimated cost for additional labour with the operations of the filter press and odour control	Operation	20,800	50	10,400	31,200	0	0	0	0	0	0	$ 31,200
TOTAL COST OF ESTIMATED ANNUAL OPERATIONS & MAINTENANCE													**$ 219,629**

APPENDIX C

Year	Existing Membrane Sludge Thickener			Fournier Filter Press		
	Expenditures	Cost	Cumulative Costs	Expenditure	Cost	Cumulative Costs
1	New Capital & Annual Disposal Costs	$ 663,670	$ 663,670	New Capital & Annual Disposal Costs	$ 1,639,629	$ 1,639,629
2	Annual Disposal Cost	$ 166,943	$ 830,613	Hauling	$ 224,021	$ 1,863,650
3	Annual Disposal Cost	$ 170,282	$ 1,000,896	Annual Disposal Cost	$ 228,501	$ 2,092,151
4	Annual Disposal Cost	$ 173,688	$ 1,174,584	Annual Disposal Cost	$ 233,072	$ 2,325,223
5	Annual Disposal Cost	$ 177,162	$ 1,351,745	Annual Disposal Cost	$ 237,733	$ 2,562,956
6	Annual Disposal Cost	$ 180,705	$ 1,532,450	Annual Disposal Cost	$ 242,488	$ 2,805,443
7	Annual Disposal Cost	$ 184,319	$ 1,716,769	Annual Disposal Cost	$ 247,337	$ 3,052,781
8	Annual Disposal Cost	$ 188,005	$ 1,904,775	Annual Disposal Cost	$ 252,284	$ 3,305,065
9	Annual Disposal Cost	$ 191,765	$ 2,096,540	Annual Disposal Cost	$ 257,330	$ 3,562,394
10	Annual Disposal Cost & Capit	$ 545,601	$ 2,642,141	Annual Disposal Cost & C	$ 262,476	$ 3,824,871
11	Annual Disposal Cost	$ 199,513	$ 2,841,654	Annual Disposal Cost	$ 267,726	$ 4,092,597
12	Annual Disposal Cost	$ 203,503	$ 3,045,157	Annual Disposal Cost	$ 273,080	$ 4,365,677
13	Annual Disposal Cost	$ 207,573	$ 3,252,730	Annual Disposal Cost	$ 278,542	$ 4,644,219
14	Annual Disposal Cost	$ 211,725	$ 3,464,454	Annual Disposal Cost	$ 284,113	$ 4,928,332
15	Annual Disposal Cost	$ 215,959	$ 3,680,414	Annual Disposal Cost & Capital Replacement	$ 539,795	$ 5,468,127
16	Annual Disposal Cost	$ 220,278	$ 3,900,692	Annual Disposal Cost	$ 295,591	$ 5,763,718
17	Annual Disposal Cost	$ 224,684	$ 4,125,376	Annual Disposal Cost	$ 301,503	$ 6,065,221
18	Annual Disposal Cost	$ 229,178	$ 4,354,553	Annual Disposal Cost	$ 307,533	$ 6,372,754
19	Annual Disposal Cost	$ 233,761	$ 4,588,314	Annual Disposal Cost	$ 313,684	$ 6,686,438
20	Annual Disposal Cost & Capital Replacement	$ 738,436	$ 5,326,751	Annual Disposal Cost	$ 319,957	$ 7,006,395
21	Annual Disposal Cost	$ 243,205	$ 5,569,956	Annual Disposal Cost	$ 326,356	$ 7,332,751
22	Annual Disposal Cost	$ 248,069	$ 5,818,025	Annual Disposal Cost	$ 332,884	$ 7,665,635
23	Annual Disposal Cost	$ 253,030	$ 6,071,055	Annual Disposal Cost	$ 339,541	$ 8,005,176
24	Annual Disposal Cost	$ 258,091	$ 6,329,146	Annual Disposal Cost	$ 346,332	$ 8,351,508
25	Annual Disposal Cost	$ 263,253	$ 6,592,399	Annual Disposal Cost	$ 353,259	$ 8,704,767
26	Annual Disposal Cost	$ 268,518	$ 6,860,917	Annual Disposal Cost	$ 360,324	$ 9,065,091
27	Annual Disposal Cost	$ 273,888	$ 7,134,805	Annual Disposal Cost	$ 367,530	$ 9,432,621
28	Annual Disposal Cost	$ 279,366	$ 7,414,172	Annual Disposal Cost	$ 374,881	$ 9,807,502
29	Annual Disposal Cost	$ 284,953	$ 7,699,125	Annual Disposal Cost	$ 382,379	$ 10,189,880
30	Annual Disposal Cost & Capital Replacement	$ 640,653	$ 8,339,778	Annual Disposal Cost & Capital Replacement	$ 690,026	$ 10,879,906

Making a difference...together

REPORT TO GANGES SEWER LOCAL SERVICE COMMISSION
MEETING OF THURSDAY, JANUARY 8, 2015

SUBJECT **GANGES SEWER INFRASTRUCTURE REPLACEMENT PROJECT-RESULTS OF THE PUBLIC OPEN HOUSE MEETING**

ISSUE

The purpose of this report is to summarize the results of the Public Open House meeting on December 2, 2014 and the feedback received to inform the Ganges Sewer Local Services Commission, as well as identify the next steps in the sewer infrastructure replacement project.

BACKGROUND

At a meeting on October 23, 2014, the Ganges Sewer Local Service Commission approved the following recommendation:

b) funding the Public Engagement Strategy in the amount of $4,000 from the capital reserve.

The purpose of the Public Open House was to:

1. To consult with Ganges Sewer Local Service Area residents who are on the Ganges sewer system about the proposed infrastructure upgrades.

2. To inform Ganges Sewer Local Service Area residents and stakeholders who are on the Ganges sewer system about the scope, implications and cost of the planned infrastructure upgrades. The open house presentation material will cover background information on the upgrades, preparing the public for a referendum vote on whether to undertake the improvement project.

As a result, on Tuesday, December 2, 2014, the Capital Regional District (CRD) staff and the commission held a Public Open House meeting between 1–3 pm and 4–6 pm at the Salt Spring Island Public Library, 129 McPhillips Avenue, Ganges for the Ganges Sewer System Infrastructure Replacement project. CRD staff presented, in a story board format, the various options (3) and the option (1) recommended by CRD staff.

The Public Open House had approximately 30 attendees. CRD staff and various commission members were in attendance at the meeting to answer any questions. Feedback from residents of the service area regarding the Public Open House was received until December 14, 2014. The number of feedback forms received, both by mail, hand and electronically, totalled 9. While this level of participation is not statistically relevant, the responses to certain questions does provide insight as to which direction the Commission may wish to explore.

The summary of the Public Open House feedback is as follows:

Q1. Do you feel that you have received enough information and have a good understanding of the issues and challenges associated with the Ganges wastewater system?

A1. Yes 5
No 4
If you answered no, what additional information do you need?
This information is in the attached feedback forms – Appendix A

Q2. Which of the three options presented do you prefer and why?

A2. Option 1 (CRD recommendation) 6
Option 2 0
Option 3 0
None selected 3
Reasons:
This information is in the attached feedback forms – Appendix A

Q4. If Option1 is chosen, would you prefer a 15-year or 25-year period for the loan amortization?

A4. 15 year 4
25 year 3
Other 2

Further comments regarding the proposed works and the Ganges wastewater system have been summarized in the Appendix A.

ALTERNATIVES

Alternative 1

That the Ganges Sewer Local Service Commission:

1. Receive the Public Open House results for information purposes;
2. Approve Option1 in the amount of $3,900,000 as recommended by CRD staff;
3. Approve preparation of New Building Canada Fund – Small Communities grant request based on scope as identified in Option 1; and
4. Approve funding for the Referendum process in the amount of $10,000 from capital reserves.

Alternative 2

That the Ganges Sewer Local Service Commission:

1. Receive the Public Open House results for information purposes; and
2. Approve funding a Community Hall meeting to present the results of the open house meeting to the public in the amount of $2,500 from capital reserves.

IMPLICATIONS

Alternative 1 – By selecting a preferred option (1), the Commission is able to advance the project and direct CRD staff to prepare a New Building Canada Fund grant request. The deadline for the grant submission is February 18, 2015. However, both the CRD Board and/or Electoral Area Standing Committee would also have to agree with the grant request. The EASC meeting is January 21, 2015. The CRD Board meeting is February 4, 2015.

Alternative 2 – With the receipt of the Public Open House feedback, the Commission would share the results with the community and provide another opportunity for the public to ask additional questions and to provide information from staff regarding the various options presented as outlined in Appendix B. By hosting another public meeting, this will hopefully allow the community to gain further understanding of the issues, options, implications, and next steps.

This alternative will delay implementation of the recommended option and applying for grant funding for the project.

CONCLUSION

The results from the Public Open House, although limited, indicate support for Option 1 based on the options presented at the open house meeting.

If supported by the Commission, the next steps would be to apply for a New Building Canada Fund grant request. The deadline for the grant submission is February 18, 2015.

In addition, CRD staff would prepare for a referendum in the late Spring/early Summer of 2015.

RECOMMENDATION

That the Ganges Sewer Local Services Commission:

That the Ganges Sewer Local Service Commission:

1. Receive the Public Open House results for information purposes;
2. Approve Option1 in the amount of $3,900,000 as recommended by CRD staff;
3. Approve preparation of New Building Canada Fund – Small Communities grant request based on scope as identified in Option 1; and
4. Approve funding for the Referendum process in the amount of $10,000 from capital reserves.

Craig Gottfred, P.Eng.
Manager, Wastewater Engineering and Planning

Karla Campbell
Senior Manager, Salt Spring Island

Peter Sparanese, P.Eng.
Senior Manager, Infrastructure Engineering and Operations
Concurrence

Ted Robbins, B.Sc., C.Tech.
General Manager, Integrated Water Services
Concurrence

CG/PS:ls

1641065

Attachments:

Appendix A – Public Feedback Summary Report – Wastewater Infrastructure Replacement Program
Appendix B – Community Hall Meeting in Support of Public Engagement Strategy for Ganges Sewer System Infrastructure Replacement project

Making a difference...together

GANGES SEWER LOCAL SERVICE COMMISSION

January 8, 2015

Agenda item 2.2
Results of Public Open House Meeting Appendix A

Ganges Sewer System

Public Feedback Summary Report

Wastewater Infrastructure Replacement Project

Making a difference...together

January 8, 2015

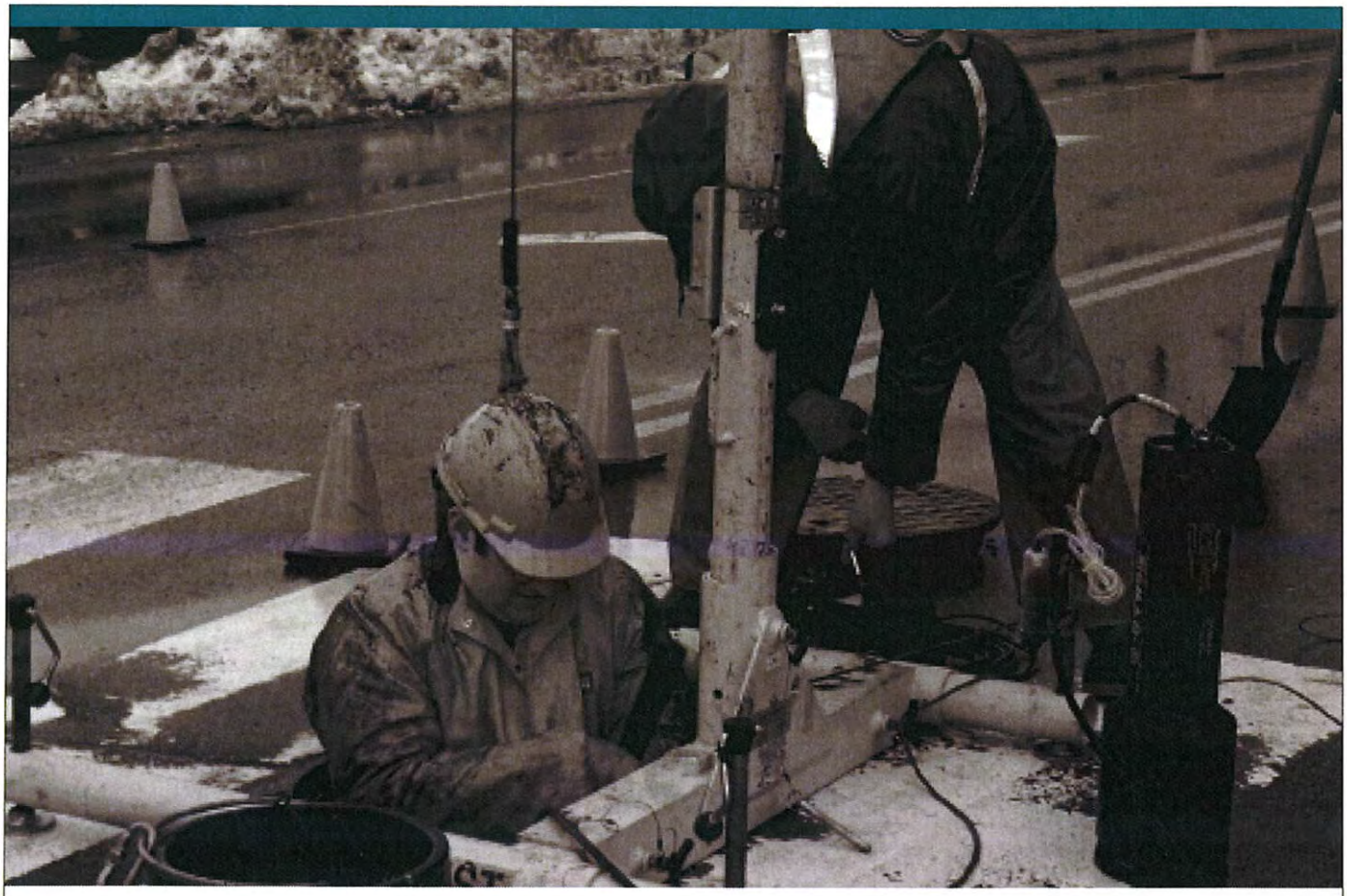


Table of Contents

Feedback Summary

Total Ganges Sewer System Feedback Forms submitted

Paper Feedback Form: **6** Online Feedback Form: **3**

Percentages of total responses indicating whether respondent felt they had received enough information about the project

Enough Information: **56%** Not Enough Information: **44%**

Percentages of total responses identifying a replacement project option

Option 1: **67%** Option 2: **0%** Option 3: **0%**

None Selected: **33%**

Percentages of total responses identifying a loan type option

15-Year: **45%** 25-Year: **33%** Other**: **22%**

Top Ranking Criteria Influencing Preferences

Other**
Cost to Property Owner
Environmental Impacts

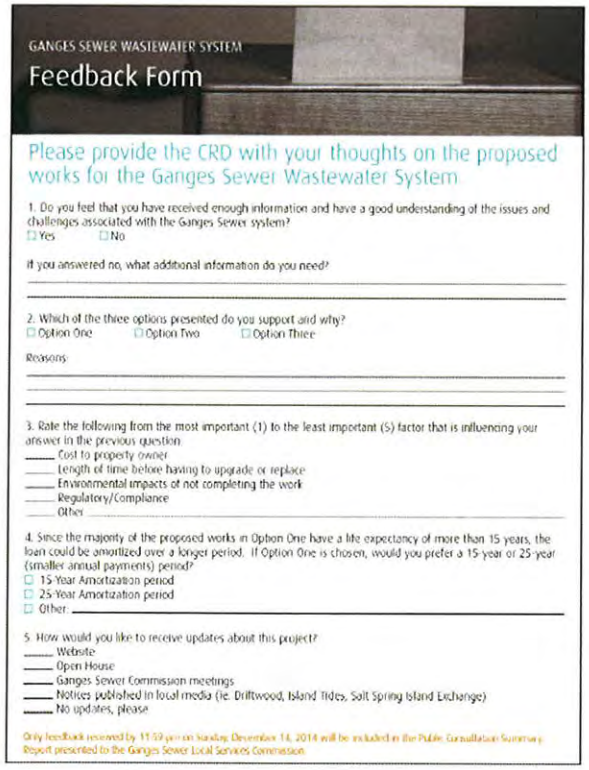
*Feedback numbers do not necessarily represent one response per person. Response was not required for all questions. Numbers are rounded up.

**See the Written Answers (page 10-12) for further information.

Consultation

4

Feedback Form



GANGES SEWER WASTEWATER SYSTEM

Feedback Form

Please provide the CRD with your thoughts on the proposed works for the Ganges Sewer Wastewater System

1. Do you feel that you have received enough information and have a good understanding of the issues and challenges associated with the Ganges Sewer system?
☐ Yes ☐ No

If you answered no, what additional information do you need?

2. Which of the three options presented do you support and why?
☐ Option One ☐ Option Two ☐ Option Three

Reasons:

3. Rate the following from the most important (1) to the least important (5) factor that is influencing your answer in the previous question
_____ Cost to property owner
_____ Length of time before having to upgrade or replace
_____ Environmental impacts of not completing the work
_____ Regulatory/Compliance
_____ Other _____

4. Since the majority of the proposed works in Option One have a life expectancy of more than 15 years, the loan could be amortized over a longer period. If Option One is chosen, would you prefer a 15-year or 25-year (smaller annual payments) period?
☐ 15-Year Amortization period
☐ 25-Year Amortization period
☐ Other: _____

5. How would you like to receive updates about this project?
_____ Website
_____ Open House
_____ Ganges Sewer Commission meetings
_____ Notices published in local media (ie. Driftwood, Island Tides, Salt Spring Island Exchange)
_____ No updates, please

Only feedback received by 11:59 pm on Sunday, December 14, 2014 will be included in the Public Consultation Summary Report presented to the Ganges Sewer Local Services Commission.

Please provide any further comments you have on the proposed works and Ganges Sewer system

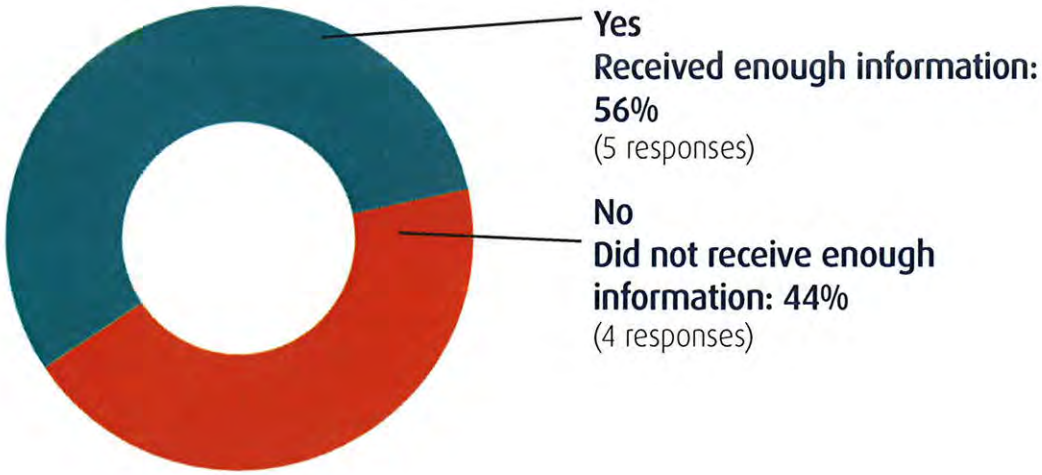
Only feedback received by 11:59 pm on Sunday, December 14, 2014 will be included in the Public Consultation Summary Report presented to the Ganges Sewer Local Services Commission.

Feedback Data

Overall Feedback Summary

Question 1: Do you feel that you have received enough information and have a good understanding of the issues and challenges associated with the Ganges Sewer system?

In-Person and Online Feedback
(9*)

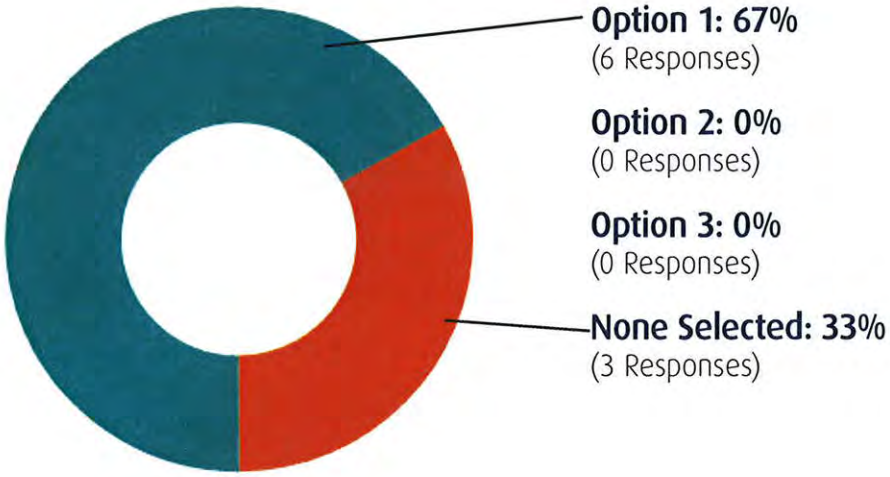


*Feedback numbers do not necessarily represent one response per person. Response was not required for all questions. Percentages have been rounded to the nearest whole number.

Overall Feedback Summary

Question 2: Which of the three options presented do you prefer and why?

In-Person and Online Feedback
(9*)



*Feedback numbers do not necessarily represent one response per person. Response was not required for all questions. Percentages have been rounded to the nearest whole number. Numbers have been rounded up.

Overall Feedback Summary

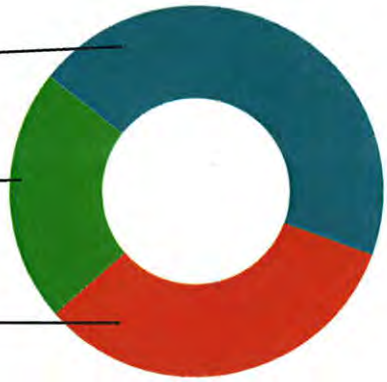
Question 4: Since the majority of the proposed works in Option One have a life expectancy of more than 15 years, the loan could be amortized over a longer period. If Option One is chosen, would you prefer a 15-year or 25-year (smaller annual payments) period?

In-Person and Online Feedback
(9*

15-year: 45%
(4 Responses)

25-year: 33%
(3 Responses)

Other: 22%
(2 Responses)



Question 6: How would you like to receive updates about this project?

In-Person and Online Responses
(12*)

Website: 2

Open House: 4

Ganges Sewer Commission Meeting: 1

Notices in local media: 4

No updates: 1

*Feedback numbers do not necessarily represent one response per person. Response was not required for all questions. Percentages have been rounded to the nearest whole number. Numbers have been rounded up.

Written Answers

Written Feedback Summary

Question 1: Do you feel that you have received enough information and have a good understanding of the issues and challenges associated with the Ganges Sewer system?

Need broader context especially in relation to plan location to sea level, climate change

Best information was within Stantec Report – Open house only summarizes.

This is a complicated project. I couldn't really begin to know what is needed.

See back of sheet.

The SAMP is a CRD process that appears not to have been used to generate the proposed project(s). If there is a SAMP I would like to see it. Further I would like to see a SAMP which includes the expected maintenance costs of the three options.

Need breakdown of line item budget costs, project management choice & subcontracting process.

Question 2: Which of the three options presented do you support and why?

(Option 1) This isn't a luxury item, it must be done. We're paying for the sins of the past, when money wasn't put aside for this. Let's put a stop to any further financial neglect.

(Option 1) Short and long term needs met.

(Option 1) Get the sewer system fixed before any more fails.

(Option 1) I'd like to see this facility healthy.

(Option 1) Why procrastinate? The costs are a major concern but we'll have to do the work sooner or later and there doesn't seem to be a reasonable alternative to the overall upgrade.
(Option 1) Good balance between engineering needs, cost and time.

(None) I support none of the options. Option 3 is not an option. Items in 1 could be included in 2 and vice versa. There is insufficient agreement between the commissioners and the CRD staff on priorities. There have been too many failed CRD project on Salt Spring. I would need to know more about the project plan and especially the oversight of the budget spending. We need to know the impact on the Ganges business community. With only 417 parcels, option 1 is unsustainable without significant subsidy.

(None) None. The presentation seems to be steering current parcel tax payers to option two. I certainly cannot vote to spend $1.6M without more detail.

Question 3: Rate the following from the most important (1) to the least important (5) factor that is influencing your answer in the previous question.

Need to focus on big long term picture, not quick fix.

It's the right thing to do – this isn't an "optional" project.

Commissioner/CRD agreement on priorities.

Confidence that the CRD has the optimum solution for this system.

Question 4: Since the majority of the proposed works in Option One have a life expectancy of more than 15 years, the loan could be amortized over a longer period. If Option One is chosen, would you prefer a 15-year or 25-year (smaller annual payments) period?

Would we end up paying a lot more over 25 years? This would be easier on me because I'm not planning to live till 100 yrs old.

The life span of each major sub-project of option 1 should be amortized to either 15 years or 25 years as appropriate.

The list of items short term – 15 year the list of items long term – 25 year

Please provide any further comments you have on the proposed works and Ganges Sewer system.

1) Relation of plant location to sea level, climate change. 2) Need some longer term perspective - What long term pop to be serviced. Longer terms technology implications. Relation cap. to operating costs. 3) I understand new technology is available that would reduce amount sent to Burgoyne and overall operating costs significantly. Why isn't this an option?

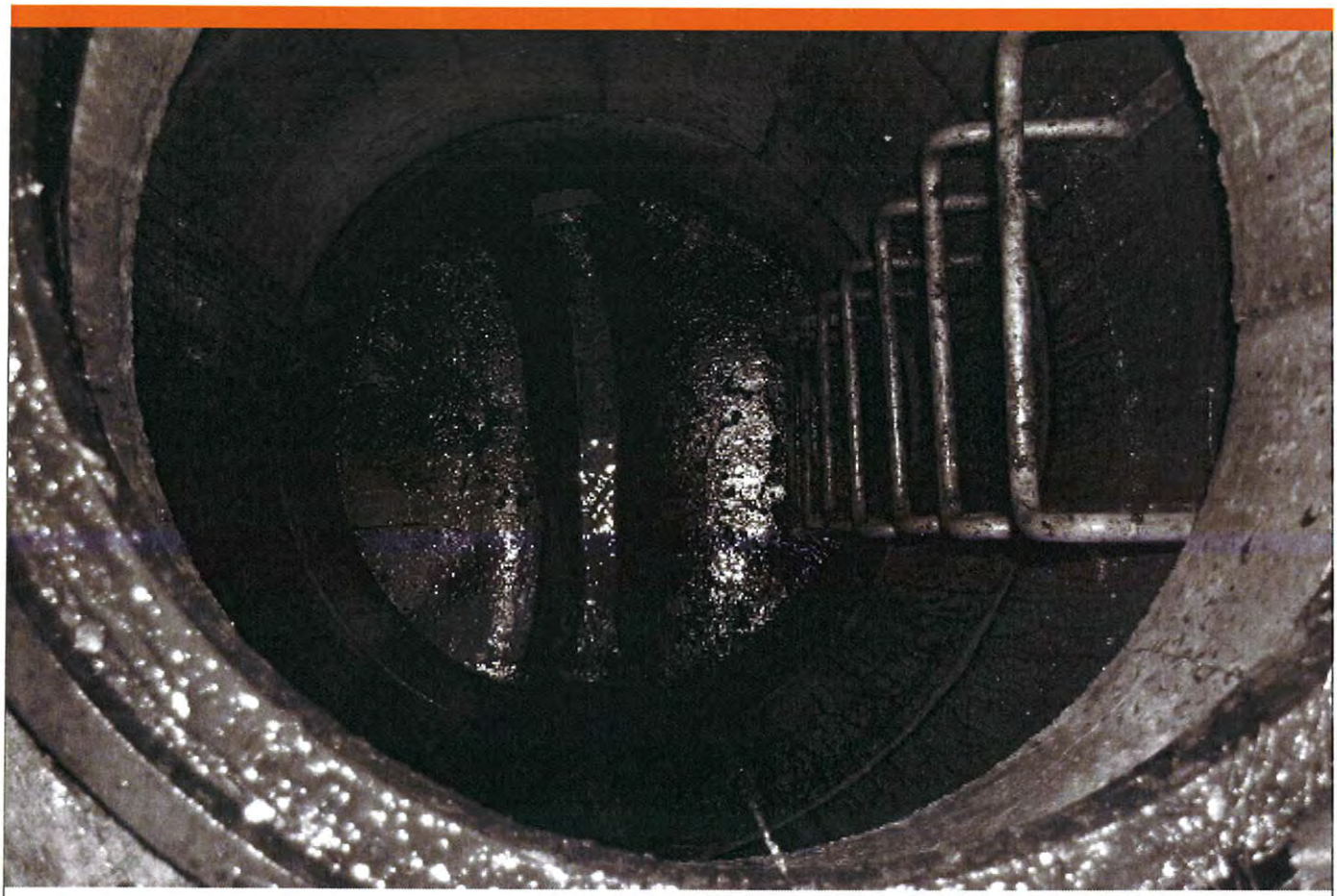
I'm surprised that this facility is in such poor health. I hope we can improve the situation and keep it maintained.

1) What is the condition of the wastewater outfall pipes out of the harbour? Have they been assessed along with the effluent piping?
2) Is the parcel tax the same for each of the 419 taxable folios – regardless of property size or value?
3) Interest rates on loans are bound to go up over the long run. The sooner we lock into the initial 10 yr. loan @ 5% - the better.

I would like to receive information by regular mail also. I am very concerned that is the first widespread public communication on the state of the sewer system. Had I been aware of the Stantec report or a SAMP I could have given this more thought and perhaps been in a better position to agree with the decisions as proposed. The CRD director, the Provincial MLA and our Federal MP all need to be involved in finding some infrastructure grant to help fund either Option 1 & 2.

Appendices

13



Appendices

A | Public Open Houses - Direct Mail Out

B | Public Open House - Print Ad

C | Public Open House Handout - Frequently Asked Questions

D | Public Open Houses - Display Boards

E | Sign-In Forms

Appendix A
Public Open Houses - Direct Mail-Out

Capital Regional District

Notice of Open House
Ganges Sewer Wastewater System

The Capital Regional District (CRD) is working with the Ganges Sewer Local Services Commission to explore the options for addressing the issues facing the aging and failing sewer infrastructure in Ganges. The three options identified all have significant financial impact on the Ganges Sewer ratepayers, social or environmental impacts on the community.

Before bringing one of the options forward through referendum, the CRD will be collecting and evaluating public input on the alternatives.

The CRD and Ganges Sewer Commission invite all residents and business owners on the Ganges wastewater system to an Open House to fill out the survey, obtain information on issues, options, recommendations, costing and implications, and to provide their feedback.

Date: Tuesday, December 2, 2014
Time: 1pm to 3pm and 4pm to 6pm (Drop-In)
Location: Salt Spring Island Public Library, 129 McPhillips Avenue, Salt Spring Island

If you are unable to attend the open house or would like to view updates, please visit the project website at **www.crd.bc.ca/ganges sewer.** The feedback survey from the open house will also be available on the project website from December 2 to December 14, 2014 for those who would like additional time or for those who are unable to attend the open house.

For more information, please contact:
Keith Wahlstrom, P.Eng
Manager, Engineering
Salt Spring Island Electoral Area
Tel 250.537.4448
Email kwahlstrom@crd.bc.ca

Exploring the alternatives:
Ganges Sewer Wastewater System

Many components of the Ganges Sewer wastewater treatment plant, the sewer collection system, as well as the two pump stations are at or near their end of life. The plant was originally constructed in the early 1980s, and has only received minor upgrades and repairs/replacements since construction.

Each of the three following options, developed and investigated by the CRD and Ganges Sewer Commission, have significant financial impact on the Ganges Sewer ratepayers, and social or environmental impacts on the community. These alternatives are outlined as follows:

Option One

Option One addresses the needs of the system over the next five years. The proposed work would replace the infrastructure requiring immediate attention to ensure the system continues to work in compliance with regulations, as well as address additional infrastructure that will require replacement due to age and condition. Proposed works will include, but not be limited to:

- Replacement of fine screens, membranes, cleaning tank heater, recirculation piping and pumps
- Installation of new effluent piping and pumps
- Installation of new sludge thickening tank and membranes
- Refurbishment of the Harbour House and Manson pump stations
- Inflow and Infiltration Inspection Program, and collection system repairs
- Upgrade of the Influent Pump Station
- Replacement the Motor Control Centre

Option Two

Option two addresses the immediate needs of the system over the next two years. Proposed works will include, but not be limited to:

- Replacement of fine screens, membranes, cleaning tank heater, recirculation piping and pumps
- Installing new effluent piping and pumps
- Installing new sludge thickening tank and membranes

Within 2 years, another referendum will be required to fund the additional works, as outlined in Alternative One.

Option Three

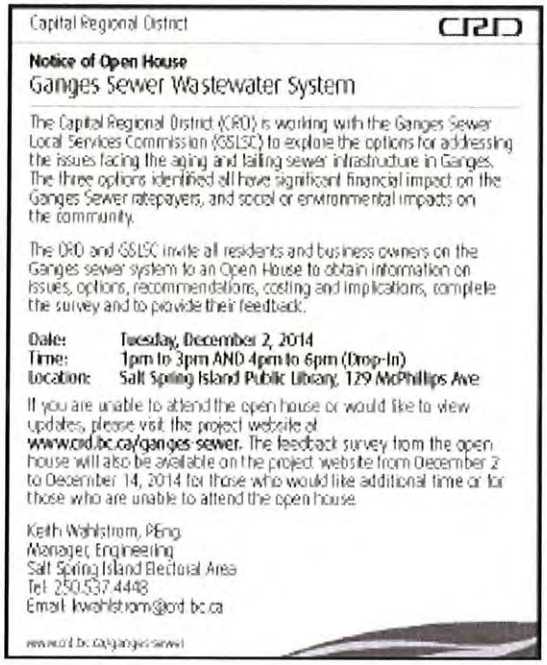
Option three is the do nothing option with staff responding to a failure or an order from the Ministry of the Environment (MOE). This type of emergency response can be very costly and may involve the hauling of sewage until repaired. MOE may also issue fines based on the impact to the environment.

Please come to the Salt Spring Island Public Library on December 2, 2014 between 1pm to 3pm or 4pm to 6pm. the open house will provide an opportunity for the community to obtain information, ask questions and provide feedback on the proposed options.

www.crd.bc.ca/ganges-sewer

15

Appendix B
Public Open Houses - Print Ad



Capital Regional District

CRD

Notice of Open House

Ganges Sewer Wastewater System

The Capital Regional District (CRD) is working with the Ganges Sewer Local Services Commission (GSLSC) to explore the options for addressing the issues facing the aging and failing sewer infrastructure in Ganges. The three options identified all have significant financial impact on the Ganges Sewer ratepayers, and social or environmental impacts on the community.

The CRD and GSLSC invite all residents and business owners on the Ganges sewer system to an Open House to obtain information on issues, options, recommendations, costing and implications, complete the survey and to provide their feedback.

Date: **Tuesday, December 2, 2014**
Time: **1pm to 3pm AND 4pm to 6pm (Drop-In)**
Location: **Salt Spring Island Public Library, 129 McPhillips Ave**

If you are unable to attend the open house or would like to view updates, please visit the project website at **www.crd.bc.ca/ganges-sewer.** The feedback survey from the open house will also be available on the project website from December 2 to December 14, 2014 for those who would like additional time or for those who are unable to attend the open house.

Keith Wahlstrom, PEng
Manager, Engineering
Salt Spring Island Electoral Area
Tel: 250.537.4448
Email: kwahlstrom@crd.bc.ca

www.crd.bc.ca/ganges-sewer

16

Appendix C
Frequently Asked Questions

Ganges Sewer System
Infrastructure Replacement Project
Frequently Asked Questions

Capital Regional District | **2014**

About the project

Why is Option One recommended?

Option One is recommended because it addresses the immediate and foreseeable needs of the Ganges Sewer System required over the next five years.

What does the recommended option include?

Option One includes upgrades to the Ganges wastewater treatment plant, effluent piping and pumps, collection system upgrades to reduce inflow and infiltration (I&I), and relocation of the pump station.

Why is this project necessary?

Many of the components of the wastewater treatment plant and sewer collection system are at or near their end of life. Infrastructure replacement is required to avoid possible increasing operating, maintenance and emergency repair costs, as well as potential non-compliance issues. If the replacement and repairs are conducted on an emergency basis higher costs can be expected over the long term.

When will construction on the project begin? And when will it be finished?

Depending on a successful referendum, the project will likely begin in late 2015 and be completed in 2019.

How will this project affect me?

The works proposed in Option One should result in little to no service interruptions during construction activities. Option One will result in ongoing system improvements for environmental, health and safety by ensuring continued compliance and possibly reducing sewage flow volumes. Additionally, operating and maintenance costs should be lower, due to improved equipment performance and fewer emergency call outs.

Cost

How much is this project going to cost?

Option One is estimated to cost $3,900,000 for design and construction of the proposed works, including contingencies.

How much will the project cost the individual taxpayer?

Based on the 419 taxable folios, the individual taxpayer will pay an estimated additional $979 per year over the next 15 years or an estimated additional $725 over 25 years for Option One. These estimates are for illustrative purposes only and will be finalized once the referendum is successful and borrowing secured. The interest rate will also vary each time we refinance over the amortization period.

How will we pay for the project?

There are currently insufficient funds in the Capital Reserve ($108,000 as of November 30, 2014) to fund these proposed works, therefore it is recommended to fund the project through a new loan requiring a new loan authorization bylaw.

Public Input

How is the CRD consulting with the community about this project (or decision)?

The CRD is collecting and evaluating feedback through an online and paper survey. The results of the survey will be presented to the Ganges Sewer Local Services Commission to inform their decision on how to proceed with the sewer infrastructure replacement project. The CRD is holding a public information session with the customers of the Ganges Sewer system. Once the Commission has approved a plan of action, a question of whether or not to borrow the amount of money required for the project will be put to the Ganges Local Services Area in a public referendum.

How can I provide my input?

Paper surveys will be available at the public open house to be held on December 2, 2014. Copies are also available at CRD locations. Or you can access the survey online at **www.crd.bc.ca/ganges-sewer**. Feedback will be accepted until December 14, 2014. Feedback will be compiled and presented to the Ganges Sewer Local Services Commission shortly thereafter.

How do I keep informed about this project?

Details on the project are available online at www.crd.bc.ca/ganges-sewer or you can contact Craig Gurbhaj, Manager of Wastewater Engineering and Planning by email (cgurbhaj@crd.bc.ca) or phone 250.474.9620.

What will happen if the referendum fails?

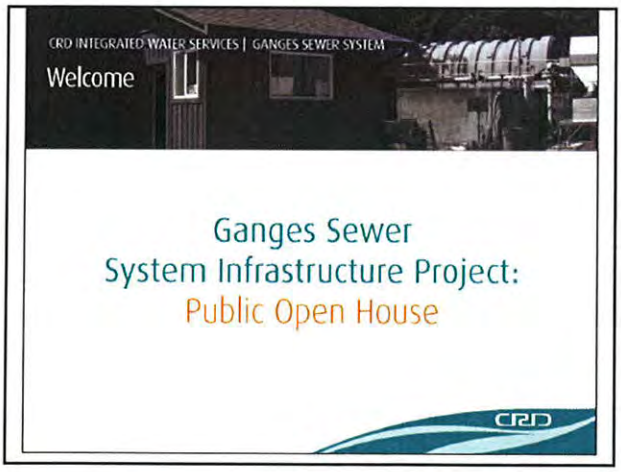
The CRD and Commission will review the results and determine whether the CRD Board shall be requested to authorize borrowing for the work based on the level of risk/liability due to non-compliance when failure occurs and an illegal discharge occurs.

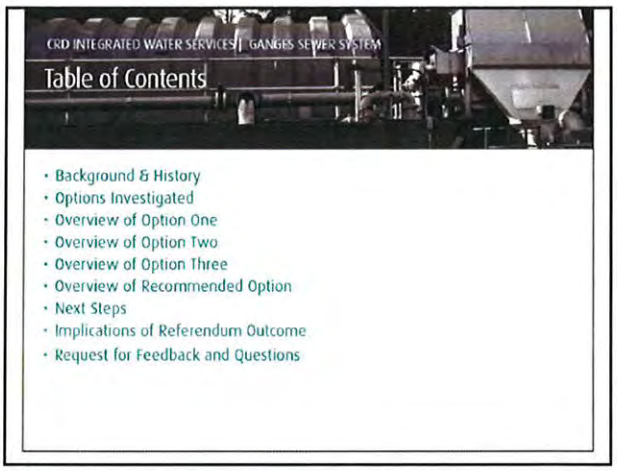
The costs of doing nothing end up being much more expensive than proactively dealing with existing and imminent problems. As many facilities and the collection system are at or near end of life, the equipment will soon fail resulting in non-compliance issues that will necessitate repair or emergency work immediately. Emergency repair costs, as well as operation and maintenance costs, will increase as the infrastructure fails.

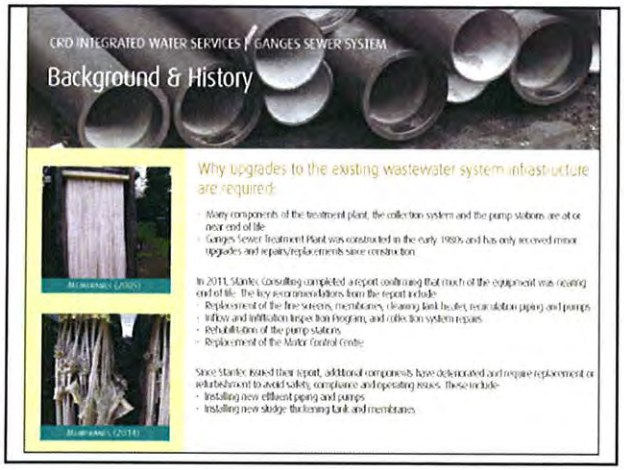
Capital Regional District
479 Island Highway, Victoria BC, V9B 1H7
250.474.9651
www.crd.bc.ca

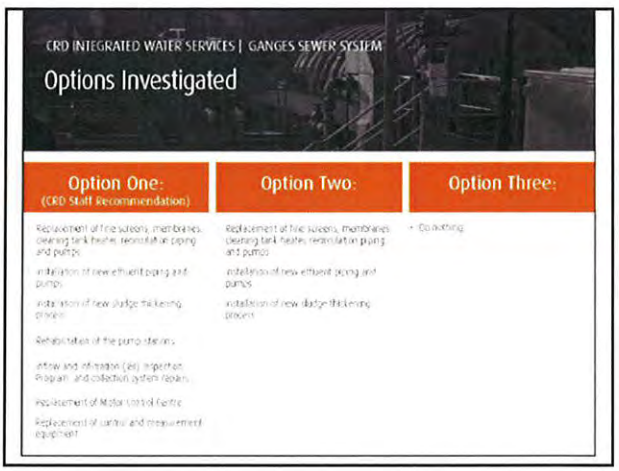
17

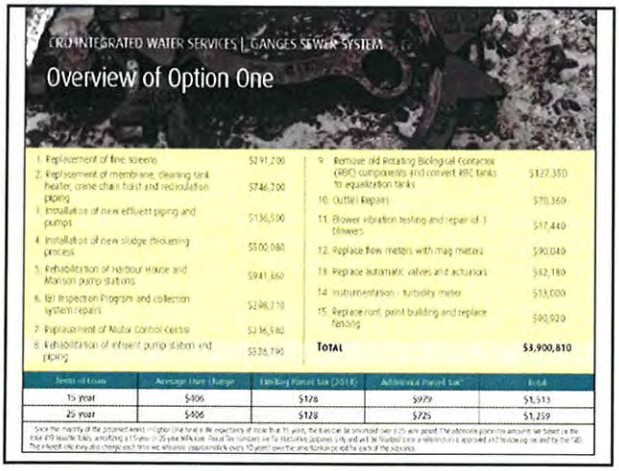
Appendix D
Public Open House - Displays

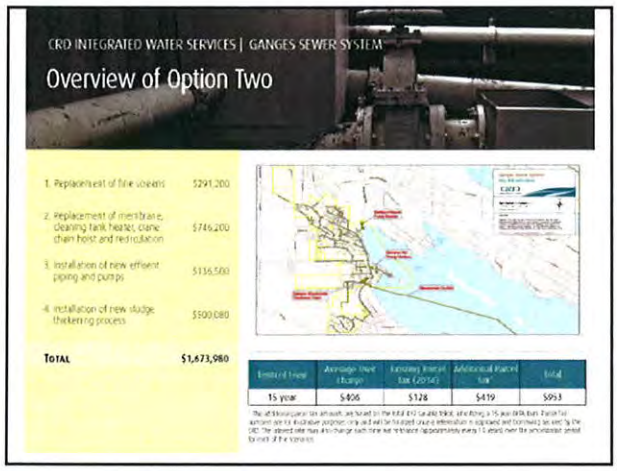


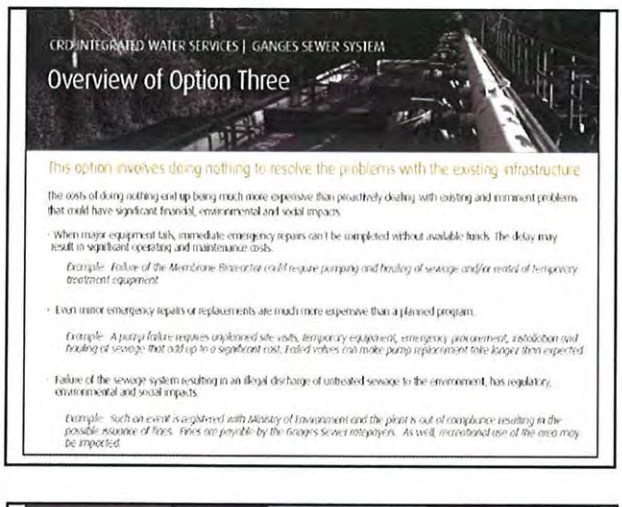


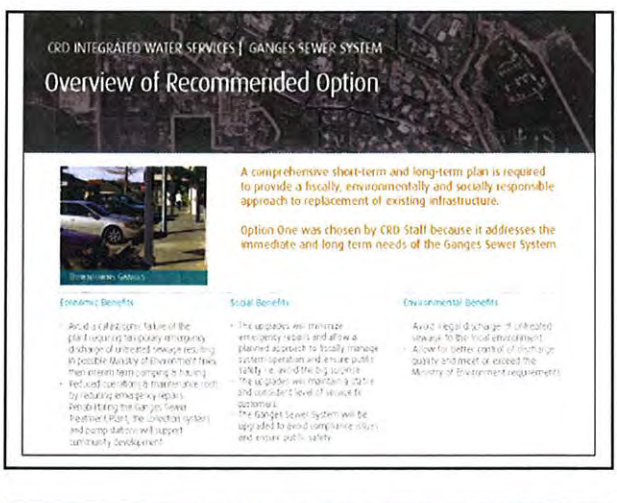


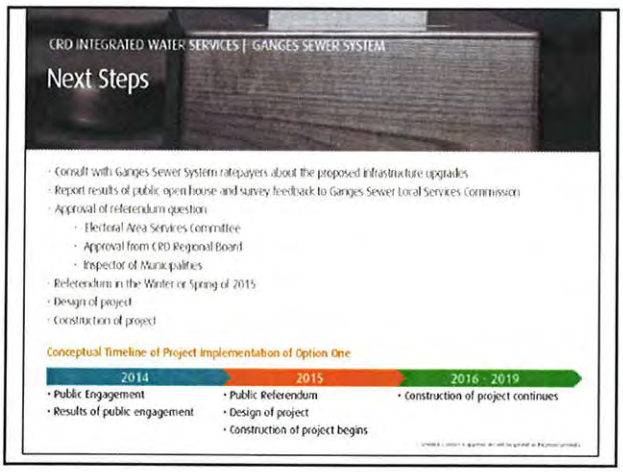


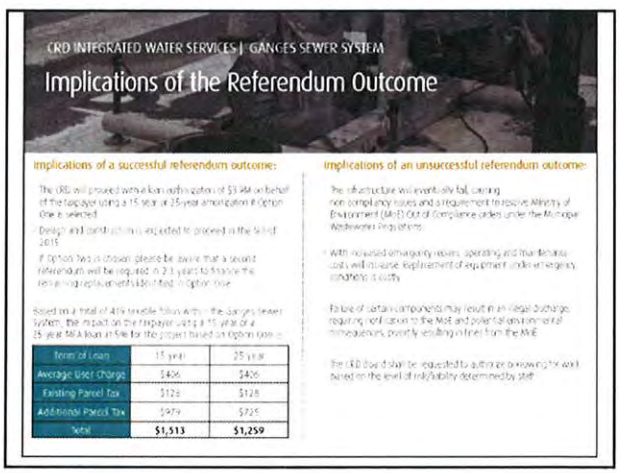

CRD INTEGRATED WATER SERVICES | GANGES SEWER SYSTEM
Overview of Option One
1. Replacement of fine screens $291,200
2. Replacement of membrane, cleaning tank heater, crane chain hoist and recirculation piping $746,200
3. Installation of new effluent piping and pumps $136,500
4. Installation of new sludge thickening process $500,080
5. Rehabilitation of Harbour House and Manson pump stations $941,660
6. I&I Inspection Program and collection system repairs $298,710
7. Replacement of Motor Control Centre $236,580
8. Rehabilitation of influent pump station and piping $326,790
9. Remove old Rotating Biological Contactor (RBC) components and convert RBC tanks to equalization tanks $127,350
10. Outfall Repairs $70,369
11. Blower vibration testing and repair of 3 blowers $17,449
12. Replace flow meters with mag meters $90,049
13. Replace automatic valves and actuators $82,189
14. Instrumentation - Turbidity meter $13,000
15. Replace roof, paint building and replace flashing $90,920
TOTAL $3,900,810
Term of Loan | Average User Charge | Existing Parcel Tax (2015) | Additional Parcel Tax* | Total
15 year | $406 | $128 | $979 | $1,513
25 year | $406 | $128 | $725 | $1,259

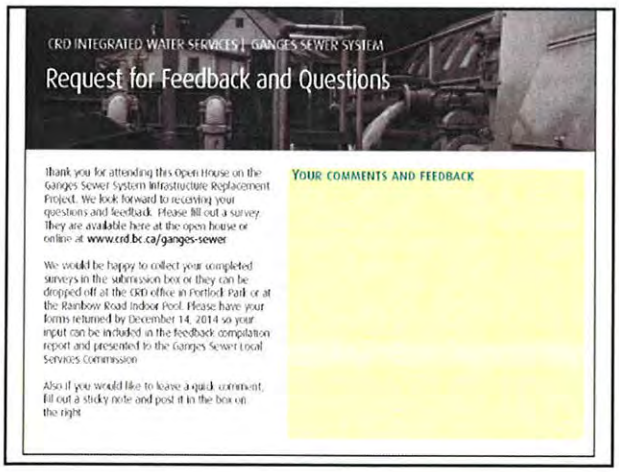

CRD INTEGRATED WATER SERVICES | GANGES SEWER SYSTEM
Overview of Option Two
1. Replacement of fine screens $291,200
2. Replacement of membrane, cleaning tank heater, crane chain hoist and recirculation $746,200
3. Installation of new effluent piping and pumps $136,500
4. Installation of new sludge thickening process $500,080
TOTAL $1,673,980
Term of Loan | Average User Charge | Existing Parcel Tax (2015) | Additional Parcel Tax* | Total
15 year | $406 | $128 | $419 | $953


CRD INTEGRATED WATER SERVICES | GANGES SEWER SYSTEM
Overview of Option Three
This option involves doing nothing to resolve the problems with the existing infrastructure
the costs of doing nothing end up being much more expensive than proactively dealing with existing and imminent problems that could have significant financial, environmental and social impacts.
• When major equipment fails, immediate emergency repairs can't be completed without available funds. The delay may result in significant operating and maintenance costs.
Example: Failure of the Membrane Bioreactor could require pumping and hauling of sewage and/or rental of temporary treatment equipment
• Even minor emergency repairs or replacements are much more expensive than a planned program.
Example: A pump failure requires unplanned site visits, temporary equipment, emergency procurement, installation and hauling of sewage that add up to a significant cost. Failed valves can make pump replacement take longer than expected
• Failure of the sewage system resulting in an illegal discharge of untreated sewage to the environment, has regulatory, environmental and social impacts.
Example: Such an event is registered with Ministry of Environment and the plant is out of compliance resulting in the possible issuance of fines. Fines are payable by the Ganges Sewer ratepayers. As well, recreational use of the area may be impacted


CRD INTEGRATED WATER SERVICES | GANGES SEWER SYSTEM
Overview of Recommended Option
A comprehensive short-term and long-term plan is required to provide a fiscally, environmentally and socially responsible approach to replacement of existing infrastructure.
Option One was chosen by CRD Staff because it addresses the immediate and long term needs of the Ganges Sewer System
Economic Benefits
Social Benefits
Environmental Benefits


CRD INTEGRATED WATER SERVICES | GANGES SEWER SYSTEM
Next Steps
• Consult with Ganges Sewer System ratepayers about the proposed infrastructure upgrades
• Report results of public open house and survey feedback to Ganges Sewer Local Services Commission
• Approval of referendum question
• Electoral Area Services Committee
• Approval from CRD Regional Board
• Inspector of Municipalities
• Referendum in the Winter or Spring of 2015
• Design of project
• Construction of project
Conceptual Timeline of Project Implementation of Option One
2014
• Public Engagement
• Results of public engagement
2015
• Public Referendum
• Design of project
• Construction of project begins
2016 - 2019
• Construction of project continues

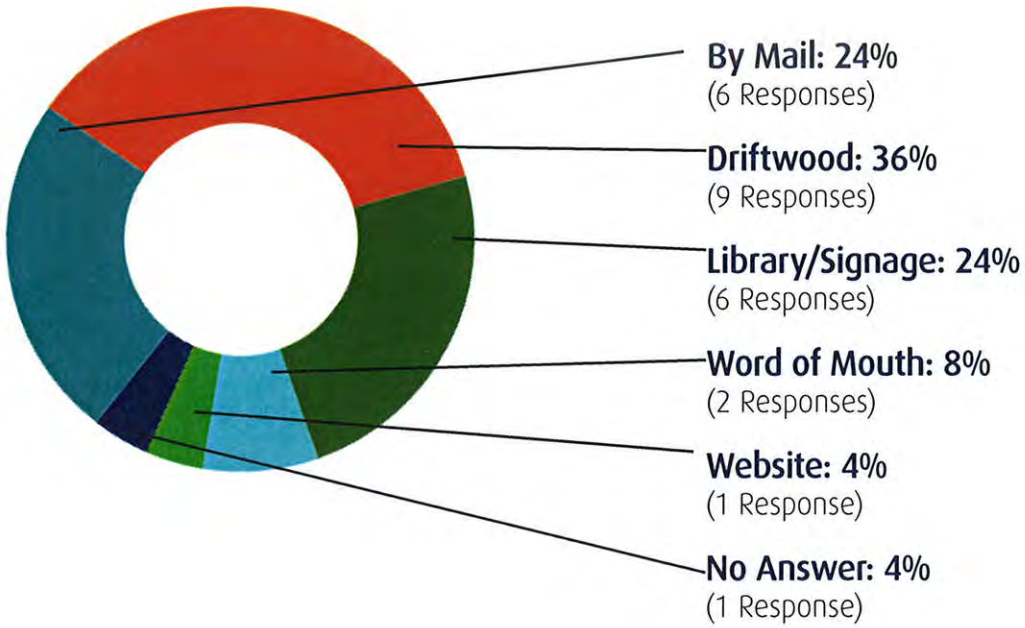

CRD INTEGRATED WATER SERVICES | GANGES SEWER SYSTEM
Implications of the Referendum Outcome
Implications of a successful referendum outcome:
Implications of an unsuccessful referendum outcome:
Term of Loan | 15 year | 25 year
Average User Charge | $406 | $406
Existing Parcel Tax | $128 | $128
Additional Parcel Tax | $979 | $725
Total | $1,513 | $1,259


CRD INTEGRATED WATER SERVICES | GANGES SEWER SYSTEM
Request for Feedback and Questions
Thank you for attending this Open House on the Ganges Sewer System Infrastructure Replacement Project. We look forward to receiving your questions and feedback. Please fill out a survey. They are available here at the open house or online at www.crd.bc.ca/ganges-sewer
We would be happy to collect your completed surveys in the submission box or they can be dropped off at the CRD office in Portlock Park or at the Rainbow Road Indoor Pool. Please have your forms returned by December 14, 2014 so your input can be included in the feedback compilation report and presented to the Ganges Sewer Local Services Commission
Also if you would like to leave a quick comment, fill out a sticky note and post it in the box on the right
YOUR COMMENTS AND FEEDBACK

Appendix E
Public Open House - Sign-In Sheet

Question 1: How did you hear about this event?

Number of attendees on sign-in form
(25* - 15 at first session, 10 at second session)



*Feedback numbers do not necessarily represent one response per person. Response was not required for all questions. Percentages have been rounded to the nearest whole number. Numbers have been rounded up.

21

Making a difference...together

GANGES SEWER LOCAL SERVICE COMMISSION

January 8, 2015

Agenda item 2.2
Results of Public Open House Meeting Appendix B

ATTACHMENT: Community Hall in Support of Public Engagement Strategy for Ganges Sewer System Improvement Program

Purpose

1. To present feedback results from Open House and Online to residents who are on the Ganges sewer system.
2. To provide a chance for residents to ask questions of CRD staff and Ganges Sewer Local Services Commission members.

Proposed Strategy

The strategy includes hosting a follow-up, community hall meeting on Salt Spring Island Island for residents who are on the Ganges sewer system to attend. At the meeting, there will be a PowerPoint presentation on updates to the project and results of the feedback and a question-and-answer period for residents to ask questions of CRD staff and Ganges Sewer Local Services Commission members. Experts will attend the session to answer any questions and hear any concerns that attendees express with the goal to have meaningful conversations about the project. The open house will be promoted using the project website, direct mail-out invitation to customers of the Ganges sewer system.

Budget – Ganges Town-Hall Meeting	**$2500**
Materials (Printing, Signage, Copies of Report Summary)	$400
Open House (Rental, 5 hours)	$150
Travel (Vehicle Rental, Ferry)	$200
Refreshments	$750
Promotion (Mail-Out, Website)	$1000

Detailed Public Engagement Plan

To be created once Commission decides on most appropriate improvement program and approves funding for public engagement activities.