From: E. Uranga
Sent: February 25, 2021 6:41 AM
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Subject: RE: Conveyance pipe

CAUTION! EXTERNAL EMAIL

Hello

This message is to report my findings in the decision to build a wastewater conveyance pipeline for the City of Courtenay, and to express my complete opposition to the project; it not only unnecessary, it is a waste of our money and a profundo assault to the commitment made to the environment and carbon neutrality. Who will be held responsible for the decision to go ahead with this project?

I hope you decide to read my report in its entirety.

After attending the February 9th, 2021 meeting of the Sewage Commission and present my observations as a delegation, a message from the CVRD staff to inform me of the decision and today, watching the video of the February 23rd, 2021 Comox Valley Sewage Commission, It is now apparent that the Comox Valley Regional District has a total control on how decisions are made for us citizens in the Comox Valley, I consider that completely unacceptable. It seems that all decisions are made based on staff recommendations, not on the willingness to take responsibility of a decision made based on personal analysis, research and fact checking.

It is also evident that most residents in the Comox Valley do not think their voice will be heard when they disagree with the opinion of the CVRD staff. In fact, the CVRD staff seems to think that they can ignore our opposition to what they believe needs to be done.

Why is the Town of Comox and its citizens forced to deal with the City of Courtenayôs excrement?

We are in a hole; we need to stop digging. This pipeline is a bad step in the wrong direction. We have better technology in 2021 than 40 years ago, why not adopt it?

A new wastewater treatment plant and reuse of the treated water for irrigation in agriculture is a much better option. With the construction of a new plant, the nightmare of the construction of the sewer pipe through the town of Comox disappears.
To make my point more palpable, let us start with a quote from the 20200305 Dyson SR CVSS LWMP Conveyance Short List Options report from the CVRD Staff to the Sewage Commission:

Sustainability Strategy 2050 Targets

- Climate 80 per cent reduction in greenhouse gases from 2007 levels.
- Energy 50 per cent decrease in per capita energy use and/or will not increase energy use from current levels.
- Water All wastewater treatment in the Comox Valley will be advanced or reuse level.

Sustainability Strategy Goals & Objectives

- 2.2.2. Existing local government buildings and facilities are retrofitted to achieve a 25-30 per cent improvement in energy and water efficiency.
- 3.5. Liquid waste is handled to minimize negative impacts and to turn wastes into resources.
- 3.5.1(a). Consider amending approach to Sewage Master Plan to make it a comprehensive LWMP that addresses all aspects of sustainable wastewater management. Ensure any update to Sewage/liquid waste management plans are aligned with sustainability objectives and targets.

Citizen/Public Relations

- Public engagement is a cornerstone of the LWMP process, and indeed is written into the Environmental Management Act.
- The philosophy adopted for this LWMP is that each major decision contemplated by the TACPAC will be taken out to the public for input. The input from the public is then brought back to the TACPAC for review and consideration in their decisions and recommendations to the CVSC. The CVSC makes the final decisions based on recommendations from the TACPAC.
- This decision by the CVSC on the conveyance short list will be communicated to the public and TACPAC as part of the ongoing public engagement process.

What happened to aspiration of the Comox Valley residents to protect the environment and reduce our impact? What value has our commitment in front of the actions taken by the CVRD Staff?

This project is flushing all this down the sewer, literally.

What do we have today?

A 39-year-old Sewage plant in Comox that uses 50-year-old technology and dumps the semi treated Sewage in the Georgia Strait at the expense of the shellfish industry and the health of the ocean. Such plant needs to be replaced, not expanded to keep using the same 40-year-old technology at great expense.

The Regional District of Comox Strathcona made a mistake 39 years ago, why do you want to perpetuate a wrong decision and waste the opportunity to act on something that you have the power change for the better?

I was part of the group of valley residents that opposed the project in 1982, especially the construction of the conveyance pipeline, knowing the devastating effect that it was going to have in the premature erosion of the Willemar Bluffs, among other problems. We were not heard and now we can see the evidence of the huge mistake made by the regional district, and the lack of accountability, even after the adverse report from the Ombudsman to the BC Legislative Assembly in 1997. This will not happen again.

Eduardo Uranga's Credentials: (intellectual discrimination will not be tolerated)

- Chemical Engineer
- Computer Science
- Data Scientist
- Database miner
- Irrigation specialist
- Conservation, efficiency, and renewable energy specialist
- Ruth Master's Degree in Shit Disturbing

Why am I doing this?

- To oppose the decision made by the Sewage Commission, based on CVRD staff recommendation, and the advice of a consultant whose primary interest is to sell a pipeline, not to consider the construction of a new wastewater treatment plant as a viable option to the Conveyance pipeline.
- Such pipeline is an economic aberration that will have a massive impact on the Comox Valley's environment for many years to come; the effects are unpredictable, but we, the residents of the Comox Valley, will demand accountability from the people that make such decision.
- To request the opportunity to present a proposal to solve the problem with the construction of a 25,000 m3/day state of the art wastewater tertiary treatment facility, that will have the capacity to treat the wastewater of the projected 66,000 residents of the regional district service area until the year 2060, for which a builder, a site, and discharge point have been determined and quotations have been obtained. The cost of this plant is to be less than 25,000,000 CAD.

Issues that need to be addressed:

- Why are the needs of Sewage treatment for the city of Courtenay tied to Comox's?

- The cost of the plant was the only consideration to reject the option, nothing else was mentioned in the report presented by the consultant on environmental impact, daily life disruption during construction, or the perpetuation of an odor problem that will continue to exist.
- I oppose the construction of the pipeline based on the uneconomical and environmental impact of such project.
- A new wastewater treatment plant is the only reasonable option.
- The CVRD staff is promoting something for which they have no evidence to replace or economic justification.
- The consultant company WSP is not an expert in wastewater plants. They have no track record of it.
- The consultant is a pipeline builder.
- There was no consideration to the carbon footprint of the pipeline construction or operation.
- There is no consideration to the embodied carbon of materials used to make the pipe itself, which are staggering.
- No consideration to the CO2 emissions during the construction of the pipeline.
- There was no emphasis in the number of resident hours wasted and the 18-24 months that it will take to build it.
- The use of the treated water recovery for irrigation was not given the importance that it deserves, including the use of the nitrogen and phosphorous it contains.
- The demand for wastewater treatment from the city of Courtenay's residents is grossly exaggerated.
- The existing pipeline in use shows no signs of damage after 39 years, what is the urgency to replace it? Why was not done 20 years ago? could not wait for another 20 years?
- The average use of potable water in Canada is 250 liters per day per person; 454 in the Comox Valley; should not be going in that direction?
- The pipeline will use close to 1,000,000 kWh/year of electricity
- Who is responsible for the Plant's carbon footprint?
-

The big question: why was the option to build a new plant rejected by the Sewage commission since is the obvious best alternative? The existing Wastewater treatment plant (the Comox Valley Water Pollution Control Center, CVWPCC) is 39 years old, I was here when it was built. It is in the process of getting a major upgrade to accommodate the obsolescence of the treatment method and the population growth, at an exceptionally large expense. A new plant will take the pressure from that plant and could be easily accommodated in the new plant if the water saving measures are implemented.

I have made every possible attempt to address the issues with the Engineering Department at the CVRD, Marc Rutten, the manager; and he has stonewalled me. He communicated noticeably clear that if I wanted information from him, I needed to go through the freedom of information act procedure, that we all know takes a long time and is usually inaccurate, to prolong the process and delay any possible action that I could take.

Will the Sewage Commission defend their decisions, based on the recommendations from the staff at the CVRD engineering department and the consultant? who am I blowing the whistle on? The CVRD staff is not interested in further investigation on anything that contradicts what Kris La Rose decides; I tried at the open house talking to Kris La Rose, with no results either. In his own words, he asked me to bring the issues to him and he said he will decide how to proceed without having to ask anybody.

He believes that he is the decision maker and made that noticeably clear to me the day I spoke to him at the open house; he had the nerve to tell me that will be a waste of my time to bypass him; which may be correct by the turn of events, but I am not giving up easily; I have a Ruth Masterôs degree in Shit Disturbing.

There is something very strange going on between the consultants and the engineering department; and I am sure it will come out sooner or later.

The consultant, WSP, claims on their website that they built the Sewage treatment plant at Town of Lady Smith.

https://www.wsp.com/en-GL/projects/town-of-ladysmith-wastewater-treatment-plant-upgrade

which after investigation with the staff at the Town of Lady Smith, it was built by TRITECH GROUP LTD. (BC), 5413 ï 271 Street, Langley, BC V4W 3Y7, (604) 607-8878.

According to them, the project was presented by Opus, and cost 18 million dollars to service 17,200 future population, currently 9,000 people, and after speaking with the manager of public services, was more expensive because of the small footprint of the plant because they have extremely limited space. Opus is not mentioned on the website page but is the author of the report in the attachment, and this is the only water treatment plant WSP has, to show the extensive experience in water treatment plants, according to Marc Rutten.

Opus subcontracted the project to Tritech Group at the time; at the time there is no connection between WSP and the Sewage plant at the Town of Lady Smith.

Does WSP really know enough about wastewater treatment plants to reject the option for the Comox Valley? Absolutely, not.

One thing is noticeably clear on their website, they sell pipelines, not wastewater treatment plants: what an extraordinary coincidence.

The Sewage Commission under the recommendation of Kris La Rose, rejected the option to build a new plant because, according to him, it will cost three times as much. I asked to see where that figure came from, and Marc Rutten refused to provide that information. I contacted the consultant directly, and Mark Rutten reprimanded me over the phone and sent a follow up letter telling me that I should not contact the CVRDôs consultants directly; which I also find strange; do they have something to hide? The person that signed the report Negin Tousi, EIT graduated in 2015 with a nonrelated degree to pipelines or Sewage treatment plants, and when I spoke to her, it was clear that she lacks the expertise be in charge of a multimillion-dollar project, 73 million of our money in the hands of somebody with 3 years of experience in an unrelated field?

Since when the staff at the CVRD has the right to tell me who I can talk to? Do you think the CVRD has heard of the constitutional right to free speech? If anything, that is bulling, intimidation, harassment and most important, intellectual discrimination of a local citizen that opposes their unsupported recommendation to the Sewage commission.

I am qualified to question the CVRD, with a degree in Chemical Engineering, Computer Science, Data Science, Database Management, Irrigation, energy conservation, energy efficiency and renewable energy, among other things.
The option for a new plant was rejected by the Sewage commission based on the following table:

Description	Capital Cost	Investment Year	Renewal Frequency	Renewal %	Total Power (kW)	Labour hrs/day
New Courtenay - High Pressure Increase	$29,400,000	2020	25	40%	900	3
Downgrade Jane	$2,362,500	2020	25	40%	25	0
New Jane - Moderate Pressure Increase	$3,850,000	2020	25	40%	425	3
Overland Jane to connect to FM (Long Distance to North)	$4,804,800	2020	60	100%	0	0
Overland Forcemain North from Courtenay to CVWPCC	$27,489,000	2020	60	100%	0	0
New Courtenay WWTP	$105,000,000	2020	100	100%	2000	24
Old Jane to New Jane	$51,744	2020	60	100%	0	0
KFN Pump Station and FM to Courtenay	$616,000	2020	60	100%	0	0
Total Capital Cost	$173,574,044					

The cost of the new treatment plan, they say, is 105 million, plus 29 million for high pressure increase, although, shit runs downhill and is already doing it; and 27 million for overland force main to CVWPCC, assuming that we are dumb enough to pump the water to the old plant after it is treated, instead of using it for irrigation on the farmland that is just across from the current Courtenay Pumping Station, using the Nitrogen and the phosphorous that it contains as fertilizer. Why do we take the Nitrogen and Phosphorous out of the sewer water and buy the same thing later as chemical fertilizer? Seems pretty stupid to me.

Look at the items on the list of capital costs and tell me that they make any sense to you. High pressure increases, Downgrade Jane, overland force main north? Merville is to the north, not the CVWPCC, does it sound professional to you? 51,744, Old Jane to New Jane? What is Old Jane to New Jane? Nothing costs 51,744 CAD in a project like this, all other numbers are rounded, but not this one, $173,574.044? why not just 175 million CAD? Who prepared this table? I asked, no answer. A Sewage plant that would last 100 years? WSP honestly thinks we are just a bunch of Yahoos. I had a good laugh when I saw the 2,000-kW power demand for the plant; if it is

running 24/7 that means that the plant will use more than 10 million kWh of electricity per year; I hope you are laughing too.

This table is the only evidence available to justify the rejection of the New plant option, which is rather strange that all the figures in this table seem to have been rounded up. The items on the list have no explanation anywhere in the report from WSP. What is New Courtenay-High Pressure Increase? Overland Forcemain to CVWPCC? Another pipeline? Why pipe back the already treated water to the current plant? That is absurd to say that you can do the conveyance pipe for 29 million once the water is treated and for 73 million if it is not treated. Marc Rutten said that because there is no discharge point up the valley, the treated water would have to be sent to the discharge point at the Comox plant, absurd? Yes, I suggested the Tsolum river, and he said that that will not be allowed. How come Cumberland has been discharging untreated Sewage into the Trent River for more than 19 years? I also happen to know that Dawson Creek discharges the treated water from their Sewage plant into Dawson Creek.
The CVRD Engineering staff needs to be questioned about the following situation:

	Cumberland	Victoria	CVRD system	CVRD Plant	Proposed	Courtenay only	
Total Cost	$ 11,600,000	$ 775,000,000	$ 173,000,000	$ 105,000,000	$ 25,000,000	$ 15,656,628	CAD
Design m3 per Day	1,600	108,000	24,000	24,000	14,736	9,229	m3/day
Sewer Water Production	250	200	399	399	245	245	L/person
Cost of Plant	$ 7,250	$ 7,176	$ 7,208	$ 4,375	$ 1,696	$ 1,696	$/m3
Current Population	4,000	320,000	45,282	45,282	45,282	27,095	people
Projected population 2050	8,000		60,141	60,141	60,141	37,664	people
Estrapolated Values			Average	Difference	Estimated	Quoted	
Extrapolation to CVRD Plant	$ 174,000,000	$ 172,222,222	$ 173,111,111	$ 463,889	$ 25,000,000	$ 6,599,904	CAD

Oh, my God, what a coincidence, the average of the two numbers is $173,111,111 for a 24,000 m3/day Sewage treatment plant. Also amazing is the cost of conversion from Old Jane to New Jane is $51,744 exactly; whatever that conversion is, was never explained in the report.
To support the cost claim, Marc Rutten referred me to fact that the city of Victoria is spending 775 million dollars to build a system that Victoria did not have before; as you probably know, they were dumping the raw sewage water into the ocean. First, there is no reason to compare the system that is needed for Courtenay with Victoria; look at the attachments so you can see the difference. According to the attached brochure, the plant is to serve 320,000 people, with a treatment capacity of 108,000 m3 per day, with a discharge of 200 liters per person per day of sewage.

The biggest question mark is the 173,574,044, it came from nowhere, or perhaps was just extrapolated from other projects? If you take 775 million dollars and divide it by 108,000 = it is $7,175.90 CAD per m3 plant capacity; then multiply that number by 24,000 m3 per day that the new wastewater treatment plant is supposed to treat in the future; voila, what a coincidence: $172,222,222 million dollars for a new plant for Courtenay; is not totally amazing how close the two number are? $173,574,044; a difference of 1.35 million dollars. Especially looking at the breakdown of all the costs.

Another example of this type of estimation is the Village of Cumberland, for which the projected Sewage treatment system is going to cost 11,600,000 for a 1,600 m3 per day Wastewater treatment system. If you divide 1.6 million dollars by 1,600 = $7,250 per m3 of plant capacity,

then you multiply that number by 24,000 m3 per day that the new wastewater treatment plant is supposed to treat in the future; voila, what a coincidence: $174,000,000 million dollars for a new plant for the city of Courtenay, what a remarkable coincidence, the difference is minimal.

What is the common denominator to this numeric approach? The project coordinator in both cases is Paul Nash. Shall we question him directly? Perhaps is a good idea to ask the Village of Cumberland how their budget was determined and what kind of documentation was provided to support that figure.

I am sure that the moment these numbers see the public light, the citizens of Courtenay are not going to be very happy with the way the engineering department at the CVRD get their reference numbers to select a best alternative. I guarantee, the reaction is not going to be pleasant.

One thing to bring up is that WSP says that a 24,000 m3 per day wastewater treatment plant to serve 27,000 people + growth ï reduction in water use for Courtenay will cost $105 million CAD; and the one in Lady Smith, for 17,200 people cost 18 million CAD according to the attached report and the comments from the staff in Lady Smith. The difference is extremely disproportionate, it is hard to believe the CVRD is trying to pull this one off. I wonder what Bob Wells and the rest of the Courtenay Council will say when they hear all this. Interesting enough, Dough Hillian is now the newly elected Chair of the Sewage Commission, is it fair to make him responsible for this decision?

The maximum future demand in 2060, according to the consultant it will be 24,000 m3 per day, but the projections using the trend of population growth, for the year 2060 should be only 20,000. Currently the permit is for 18,500 m3 per day and the MOE, the same as for the Village of Cumberland will not increase; in fact, we should be reducing our use of water not increasing it, wastewater should go down too.

One big number to consider is that the freshwater plant has a current average daily demand of 21,682 m3 per day of fresh water, to supply 49,000 residents of the CV, with those numbers, 44,000 people will turn 19,469 m3 of fresh water into 14,000 m3 of Sewage. I have requested quotations from three different sources, and a 25,000 m3 wastewater treatment plant would cost less than 25,000,000 CAD, not 105,000,000 CAD that Kris La Rose estimates. The new filtration plant is now close to cost $126,000,000 CAD to produce 140,000 m3 per day of fresh water when we only need maybe 25,000 m3 per day? Where are we going to put all the wastewater that will be produced?

A few years ago. he wanted to spend 56,000,000 in the south Sewage plant project; luckily, the people stopped him.

According to the person that runs the plant in Comox, the daily average input to the treatment plant is 14.000 m3 per day, including the town of Comox and the new areas, with the occasional 20,000 m3 per day when it is very wet weather, due to infiltration of storm water. The maximum flow is 300 liters per second, with a minimum flow of 20 liters per second; the maximum he has ever seen in all the year he has been working there is 600 liter per second; a rare occurrence.

According to the CVRD, the plant serves 44,000 people with an average daily flow of 17,000 m3 per day. Now, here comes the best part; according to Paul Nash, for the Village of Cumberland, each person should produce, 250 liters of Sewage per person per day. The population of Courtenay, which the Sewage is coming from, is 27,000 people; that is 6,750 m3 per day of wastewater per day, is not that Paul Nash is contradicting himself? Do People in Courtenay and Comox poop more than the Cumberland villagers?

Four conflicting figures from the information obtained from the man that runs the plant; that is 318 liters of Sewage per person per day; from the CVRD it is 386 litters of Sewage per person per day; from Paul Nash and the Village of Cumberland it is 250 liter of Sewage per person per day, and for the city of Victoria; 200 liters per person per day. The average of those 4 figures: 288.5 liters per person per day.

So, that is what the conveyance pipe is going to be used for, the average daily flow for the pipe is 8,300 m3/day of wastewater, that is less that 1/3 of what the pipe is being asked to convey.

The conveyance pipeline.

Price tag, 73 million CAD in Capital costs for a 34ò pipe, plus O&M of more than 1,000,000 per year.

	CPS						JPS						Total					
	ADWF		PDWF		PWWF		ADWF		PDWF		PWWF		ADWF		PDWF		PWWF	
	L/s	GPM	L/s	GPM	L/s	GPM	L/s	GPM	L/s	GPM	L/s	GPM	L/s	GPM	L/s	GPM	L/s	GPM
2016	59	935	138	2,188	350	5,548	41	650	98	1,554	209	3,313	100	1,585	236	3,741	559	8,861
2020	70	1,110	161	2,552	469	7,435	42	666	101	1,601	212	3,361	112	1,775	262	4,153	680	10,779
2030	79	1,252	181	2,869	488	7,736	45	713	108	1,712	218	3,456	124	1,966	289	4,581	707	11,207
2040	91	1,443	203	3,218	511	8,100	49	777	115	1,823	226	3,583	139	2,203	318	5,041	737	11,683
2050	103	1,633	228	3,614	534	8,465	53	840	124	1,966	234	3,709	156	2,473	351	5,564	769	12,190
2060	116	1,839	253	4,011	559	8,861	57	904	133	2,108	244	3,868	173	2,742	386	6,119	803	12,729
2105	193	3,059	392	6,214	700	11,096	88	1,395	193	3,059	303	4,803	281	4,454	585	9,273	1,003	15,900

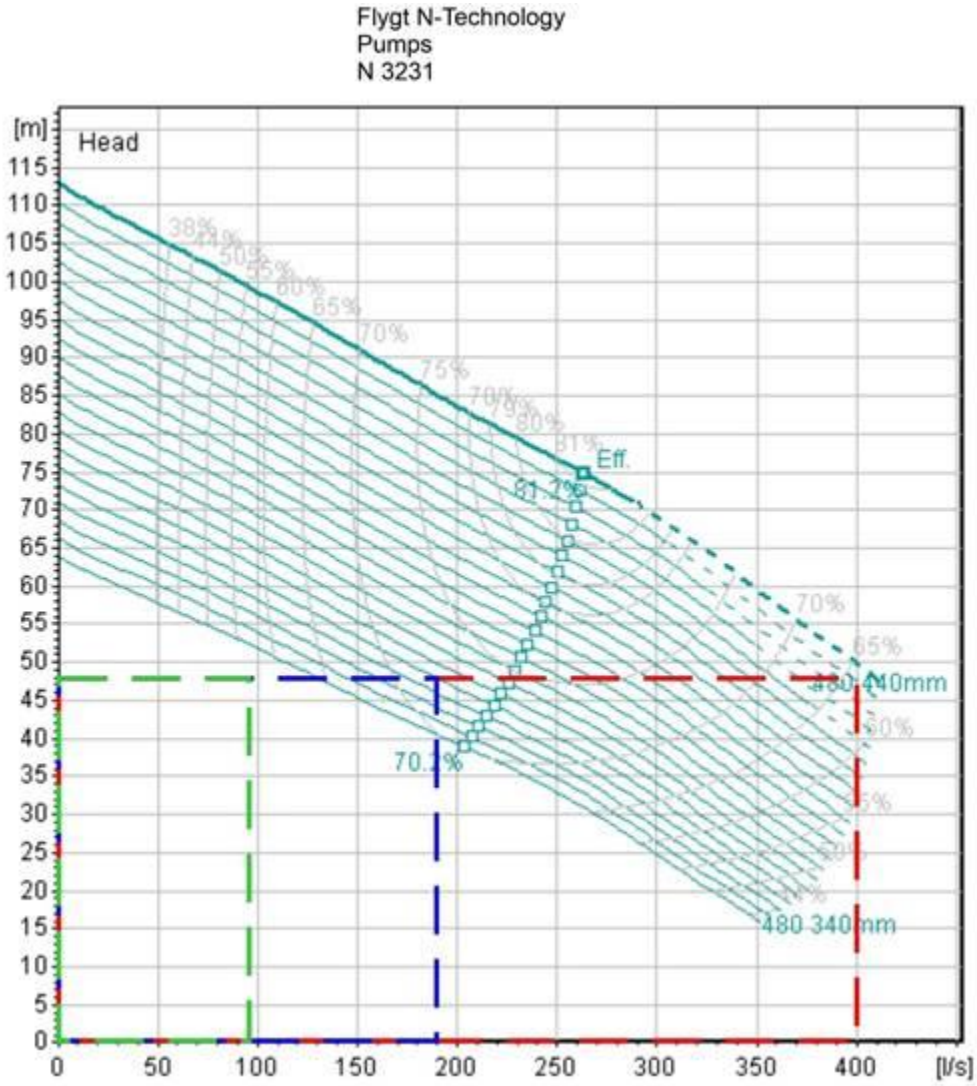
According to the following table, a 34ò pipe has a design capacity of 26,900 GPM = 1,696 liters per second, high demand of 2,037 liters per second, and a maximum of 2,549 liters per second. Why are the consultants using a 34ô pipe? No answer from Kris la Rose, Mike Rutten or WSP The CPS will never need a pipeline larger than 16ò.

Pipe Sizing Criteria Schedule 40 Steel **S-40 Steel**

Design: 3'/100' PD , 10 fps max vel High: 5'/100' PD , 12 fps max vel Maxim: 7'/100' PD , 15 fps max vel

Nominl	Outside	Wall	Inside		Design			High			Maxim	
Pipe	Diamete	Thicknes	Diamete	P.D. per	Velocity	Flow	P.D. per	Velocity	Flow	P.D. per	Velocity	Flow
Size	(in)	(in)	(in)	100 ft	(ft/sec)	(gpm)	100 ft	(ft/sec)	(gpm)	100 ft	(ft/sec)	(gpm)
0.38	0.675	0.091	0.493	3.0	0.9	**0.5**	5.0	1.7	**1**	7.0	2.5	**1.5**
0.50	0.840	0.109	0.622	3.0	1.6	**1.5**	5.0	2.1	**2**	7.0	2.6	**2.5**
0.75	1.050	0.113	0.824	3.0	2.1	**3.5**	5.0	2.7	**4.5**	7.0	3.3	**5.5**
1.00	1.315	0.133	1.049	3.0	2.4	**6.5**	5.0	3.2	**8.5**	7.0	3.7	**10**
1.25	1.660	0.140	1.380	3.0	2.6	**12**	5.0	3.7	**17**	7.0	4.5	**21**
1.50	1.900	0.145	1.610	3.0	3.2	**20**	5.0	4.3	**27**	7.0	5.1	**32**
2.00	2.375	0.154	2.067	3.0	3.8	**40**	5.0	4.8	**50**	7.0	5.7	**60**
2.50	2.875	0.203	2.469	3.0	4.3	**65**	5.0	5.7	**85**	7.0	6.5	**97**
3.00	3.500	0.216	3.068	3.0	4.8	**110**	5.0	6.3	**145**	7.0	7.6	**175**
3.50	4.000	0.226	3.548	3.0	5.3	**160**	5.0	7.0	**200**	7.0	8.5	**250**
4.00	4.500	0.237	4.026	3.0	5.8	**230**	5.0	7.6	**300**	7.0	8.8	**350**
5.00	5.563	0.258	5.047	3.0	6.4	**400**	5.0	8.3	**520**	7.0	10.3	**640**
6.00	6.625	0.280	6.065	3.0	7.7	**690**	5.0	10.0	**900**	7.0	12.2	**1,100**
8.00	8.625	0.322	7.891	3.0	9.0	**1,400**	5.0	12.0	**1,900**	7.0	14.1	**2,200**
10.00	10.75	0.365	10.02	2.7	10.0	**2,500**	3.8	12.0	**3,000**	5.8	15.0	**3,700**
12.00	12.75	0.406	11.94	2.1	10.0	**3,500**	3.0	12.0	**4,200**	4.6	15.0	**5,200**
14.00	14.00	0.437	13.13	1.9	10.0	**4,200**	2.7	12.0	**5,100**	4.1	15.0	**6,300**
16.00	16.00	0.500	15.00	1.7	10.0	**5,500**	2.3	12.0	**6,600**	3.6	15.0	**8,300**
18.00	18.00	0.562	16.88	1.5	10.0	**7,000**	2.0	12.0	**8,400**	3.0	15.0	**10500**
20.00	20.00	0.593	18.81	1.3	10.0	**8,900**	1.8	12.0	**10400**	2.6	15.0	**13000**
22.00	22.00	1.250	20.75	1.1	10.0	**10500**	1.6	12.0	**12600**	2.4	15.0	**15700**
24.00	24.00	1.360	22.64	1.0	10.0	**12500**	1.4	12.0	**15000**	2.2	15.0	**18700**
26.00	26.00	0.750	25.25	0.9	10.0	**15500**	1.3	12.0	**18600**	2.1	15.0	**23300**
28.00	28.00	0.750	27.25	0.8	10.0	**18100**	1.2	12.0	**21700**	2.0	15.0	**27100**
30.00	30.00	0.750	29.25	0.7	10.0	**20800**	1.1	12.0	**25000**	1.9	15.0	**31300**
32.00	32.00	0.750	31.25	0.6	10.0	**23800**	1.0	12.0	**28500**	1.8	15.0	**35700**
34.00	34.00	0.750	33.25	0.5	10.0	**26900**	0.9	12.0	**32300**	1.7	15.0	**40400**
36.00	36.00	0.750	35.25	0.4	10.0	**30300**	0.8	12.0	**36300**	1.6	15.0	**45400**

Regarding the CPS, the pump identified by the consultant, the Flygt N-3231 pump 335HP:



Why is it that the consultant suggested 2+1 of these pumps if one pump can almost handle the whole thing? Why not have 1+1? One of them standing by? Or maybe use the existing CPS pumps as backup and buy only one new pump?

The discharge diameter of this pump is 8ò, why do we have to use 34ò pipeline? It is very unlikely that more than one pump will be used at any given time. The maximum flow per day currently is 178 L/s.

The information I offered is to make you aware of the problem, so further investigation should take place before any final decisions are made.

The Sewage commission members do not seem to be willing to make the decision they are being asked to make. After talking at the meeting, it is evident that they are forced to accept the

decisions and recommendations they have received from CVRD staff and, so called technical experts. It was sad to sense the fear that members of the Sewage Commission have to contradict staff or to demand clear answer to their questions.

I am not giving up, I just wanted to give you a fair shot at the irregularities of the process of spending 73 million dollars of our money, us, the citizens of Courtenay, it used to be 54 million; what is it going to be in 2023?
Easy to spend otherôs people money, isnôt it?

What the CVRD is really asking is permission to waste our money. 35% contingency? Arenôt we supposed to be asking the experts? $25,000,000 to cover their ass? Even my grandmother could do this withing budget. I am intrigued of what the people in Courtenay are going to think and do when they hear the details of what the CVRD is doing. This 73 million figure was never mentioned to us the public ever before.

Environmental Impact of the Conveyance Pipeline

The embedded carbon and embedded energy of the Conveyance Pipeline are huge, the horrifying carbon footprint of building this pipeline was not mentioned, let alone considered in the environmental impact reported by the consultant.

Did anybody in this commission heard of a report from the consultant about this? How many metric tons of CO2 will be produced? How many kWh of electricity will be invested in a trenchless pipeline? No answers were provided by the CVRD staff. The consultant is obviously not interested in pointing out how bad for the environment their proposal is.

ñShit runs downhill.ò

- Does this sound familiar?
- Pumping Sewage 48.1 meters uphill is an awfully bad step in the wrong direction.
- Around 1,000,000 kWh of electricity will be used per year in pumping, what is the carbon footprint of this amount? That goes on the Carbon budget for the City of Courtenay, and could be avoided.

ñif it is not broken, donôt fix it.ò

- The assessment of the current conveyance pipe is that it is in good condition; why is it going to fail? There is no evidence that it will.

Sustainability

- ñmeeting the needs of the present without compromising the ability of future generations to meet their own needs.ò
- The needs of the Comox Valley residents in 20 or 30 years will certainly be different than ours today; what makes you think you can decide what will be good for them using 60-year-old technology? Magnetic flocculation or Oxidation Ditch are good example of available processes to replace the ones used at the Comox Plant.

- Resource recovery to reuse treated water will be a mandate in the extremely near future due to water scarcity.
- We are an agriculture community; why take nitrogen and phosphorous out of the wastewater when it could be used as is? No takers? Ask again.
- The most expensive water is the water you do not have; ask farmers in the Comox Valley.

A new wastewater plant?

- Option that was rejected under the false premise that it will be too expensive to build and to maintain.

The cost of such plant will never be 105 million dollars. Where is that premise coming from?

A consultant, for which the CVRD has not provided evidence to prove that the information in the consultantôs report is accurate.

The Consultant:

WSP is an infrastructure company that builds pipelines and has only one wastewater treatment plant in their portfolio.

The only instance of a wastewater treatment plant is the claim that the Town of Ladysmithôs was built by them, which after investigation with staff at the Town of Ladysmith, such claim is not documented, it is assumed to be a dubious claim. An attempt was made to verify this claim with the consultant, but they refused to communicate with me to provide evidence; in other words, their claim is false.

In WSPôs website, they claim that they built a state-of-the-art Sewage treatment plant that will serve a population of 17,200 residents, although, the population of Ladysmith is only 9,000. The Town of Ladysmith reported that the cost for such facility was 18 million CAD, more expensive than expected because of the restrictions on the land available for the project.

The budget for the treatment plant of $105,000,000 was never documented, Kris La Rose indicated that the plant would cost three times as much as the Conveyance Pipeline but failed to produce proof to support that figure, and there was no information provided of how much Sewage this plant would be able to treat. Marc Rutten was asked the same question and his only reply was that a plant on the north side of the city would be an awfully expensive option, citing the cost of the wastewater system for the city of Victoria that will cost 800 million dollars, I believe it is unreasonable to make such comparison.

The assumption is that it would have to cover the full wastewater treatment demand of the entire service area, which has been determined to be 24,000 m3/day in the year 2060.

Incidentally, the expected cost for a 24,000 m3/day wastewater tertiary treatment plant is expected to be less than $25 million dollars, all included, and the O&M cost to be less than $0.50

CAD/m3. Everything included. And most important, it will be carbon neutral because all the energy needed for the process will be produced inhouse.

The Sewage from Comox and Cumberland could be incorporated later into this project at minimal cost in a gravity fashion, as instructed by the laws of nature.

Circularity is required to maximize the use of resources.

- Why not use reclaimed water in Fertigation?
- Nitrogen and phosphorus are needed in Agriculture.
- Water for irrigation is scarce and expensive and will be more soon.
- 24,000 m3/day are enough water to irrigate between 500 and 750 acres of food producing land in the Comox Valley.

The CPS

To establish the real demand of conveyance, there are several parameters that need to be determined since the ones presented in the WSP report are not completely accurate.

Kris La Rose made and maintains the statement that the design flow for the Conveyance Pipeline is 500 liters/second several times during the open house at the CVRD office. To put this in perspective, it is 7.55% of the total flow of the Puntledge River on Feb. 8, 2021; it would take a two-hour shower to use that much water.

- Station ID 08HB084
- Station Name PUNTLEDGE RIVER BELOW DIVERSION
- LATITUDE 49.67
- LONGITUDE -125.09
- Current Reading: H= 120.462 (m), Q= 6.62 (m3/s)
- Return Period <2y.
- WSC Real-Time Data More info
- Updated at 08:04AM Mon 2021-02-08

Water use facts:

What is the use per capita of drinking water in Canada?

- 250 liters per person per day

What is the usage rate in the Comox Valley?

- 454 liters per day average throughout the year, according to the CVRD information

This is categorically unsustainable and expected to down to at least 30% lower by the year 2025. Where is the Sewage water for the Conveyance Pipeline coming from?

- Only from Courtenay residents, that according to Census Canada, 27,091 projected for 2021
- OCP calls for a 30% reduction.
- Old Toilet replacement should be mandatory.
- Infiltration from roofs must be eliminated.

Average wastewater per capita production from different sources of information:

- 180 liters/day per capita as a rule of thumb for developed countries
- 180-200 liters/day per capita in Victoria, BC
- 250 liters/day per capita according to Paul Nash for the Village of Cumberland
- 14,000 m3/day according to the Comox plant operator, 306 liters/day per capita

Where does the Sewage water originally comes from?

- The CVRD water purification system that takes the water from the Comox Lake.
- The demand is between 16,000 and 40,000 m3 per day, depending on the time of the year; with an average is about 20,000 m3 per day for the entire service area of 44,000 residents.
- If all the fresh water provided to households in the system could be turned into Sewage water, which is impossible, 20,000m3 per day divided by 44,000 = 454 liters of Sewage per day, multiplied by the population of Courtenay of 27,000, it equals to 12,200 m3 of Sewage per day.
- 454 liters per day per person of fresh water contradicts the resolution to reduce the amount of fresh water used.

I just received an email from the CVRD staff announcing that the project was approved; only a week after the chair of the committee was elected. Do they expect that we will not question that decision? What happened to the previous Chair of the Sewage Commission?

I am hoping that all this information warrants further investigation; it will be made public in all possible media channels and will also reach the provincial and federal governments, MLA and MP, social media, newspapers, and the Ombudsman, who previously has reported the misconduct of the CVRD in a similar matter: An Investigation into the Instability and Recession of Willemar Bluffs (Regional District of Comox-Strathcona).

I requested to present my findings to the CVRD Board as a delegation, and I was refused that opportunity, instead, I was directed to speak as a delegation to the Sewage commission. I objected because it was obvious that no matter what I said, they were going to proceed with their decision of building a pipeline.

That day, a new chair of the Sewage commission was elected.

My prediction was correct, and after only 15 days, the decision was announced. The Sewage commission and, the new chair did not have time to familiarize himself to what was being decided and was denied the opportunity to read this report.

I was given only 10 minutes to do a presentation of an extraordinarily complex matter, I requested to have 30 minutes and was refused the extension, with no other items in the agenda except the election of the new Chair. I had to write this report and did not have the opportunity to present it before the decision was made.

The tone in the announcement of February 24 of 2021 is that it is a done deal, and nothing else can be done to change the direction of this project.

I just watched the video of the February 23, 2021 Sewage Commission meeting, in which the recommendation of the CVRD staff were passed, nothing in the meeting indicated that there is a recorded vote of the members of the Sewage Commission to approve or disapprove the execution of the project.

I also noticed that the residents of Comox have not given a clear picture of having their life disrupted for months in order to accommodate the needs of sewage treatment by the City of Courtenay and will have to also pay for it at a rate of $150 CAD per year per parcel without any benefit to the current sewage treatment needs.

The subject in the message I received from Michael Briggs on behalf of ñThe Project Teamò reads:

ñSewage Commission chooses preferred conveyance route for Comox Valley Sewer Service.ò

ñThe Comox Valley Sewage Commission approved a plan on Feb.23 to upgrade the pipes and pump stations that move wastewater from Courtenay, Comox and the Kôwmoks First Nation to the Sewage Treatment Plant.

This decision was supported by recommendations from staff, technical experts and the public.ò

Does it sound that we, the citizens have any say in this?

In fact, no decision has been made since they do not even have a firm quotation from any entity on how much it will actually cost. Why do they communicate with us in a form that we may think that nothing can be done to change this? AAP will prove this point, the majority of residents will not support this approach.

We cannot give the CVRD an open purse to spend 73 million dollars based on the fear that the existing pipe is going to fail, for sure.

Listening to Kris La Rose during the meeting, was like listening to an insurance agent, trying to sell me insurance against the possibility of a meteorite impact that is going to wipe out life on earth. There is no base for his arguments that the existing pipe is going to fail, except the opinion of somebody that cannot show one single example of a similar pipeline that has failed.

Why are we buying Kris La Rose fears? Why donôt we ask him to give us written arguments of the empty opinions he presented at the meeting? Has anybody in the Sewer Commission seen the report from the expert he continuously referred to during the meeting?

He keeps talking about the need to replace the CPS because of the ground failure, and he proposes building the new one on the vicinity of where it is now.

The original reason for this project is now shadowed by the lack of evidence that the existing pipe is going to fail and is now based on fear of something that has an exceptionally low probability to materialize. The same with the probability for the great earthquake, that when it happens, we will be running for our lives and the sewer pipe will be the last thing to worry about, we will be, literally shitless.

I want to bring up the fact that Kris La Rose is and was behind the project to filter the water from the Comox Lake due to high turbidity, and now that threat has disappeared and we are still liable for the 126 million dollars that the CVRD is spending to produce 75,000 m3 per day of drinking water that we donôt need since the average use per person is 454 liter per day per person, the demand in 2050 of 60,000 residents will be 27,000 m3 per day, of which a good portion will be turned into waste water that is going to be treated at the Comox plant, that has a maximum capacity to treat 20,000 m3 per day, with a discharge permit of 18,500 m3 per day. I have proof that turbidity is not an issue and we are paying dearly for that mistake. I have several meetings with Kris La Rose on the issue of turbidity and drinking water demand; he finally run out of turbidity reasons and claimed that the filtration system is a matter of water security, and that I should trust that he was doing the right thing; I had a good laugh at him and left the meeting.

During the open house last fall, for which there were very few residents of Courtenay besides me, he made two remarkable comments, the design flow for the pipe is 500 liters/second and that the cost of a new wastewater treatment plant would be three times the cost of the pipeline that the CVRD is proposing. During that meeting I had a very long and intense conversation with him, and he failed to produce any evidence of any of this two totally off the wall statements.

I also had a conversation with Marc Rutten and James Warren outside the building and he insisted that all the information was available on the CVRD site; and that I was welcome to revise it and discuss and ask questions later. Soon after, Marc Rutten told me that if I wanted the information I was requesting, I should go through the Freedom of Information Act routine. He also called me on the phone to reprimand me for calling WSP directly to request the information that I was missing. Maybe he forgets that we the citizens pay the CVRD to serve us and pay for the consultants that have to cover their lack of knowledge on the issues at hand, like weather to build a new plant or build a controversial pipeline.

We, the citizens of Courtenay, have the right to disagree on the decisions and recommendations given to the elected officials that are to work for the people that elected them.

One thing is certain; this Conveyance Pipeline is not a done deal, and the citizens of Courtenay will have the opportunity to know the details. I also promise that there will be responsibility and

accountability demanded from the people responsible for the decision to go ahead with this project.
I am prepared to propose a plan B to the Sewage Commission, I request such opportunity.

I deeply apologize for the imperfections of my writing, I am an engineer and it is almost 5 am, I am tired, I sincerely hope that you see a legitimate intention to prevent a mistake that will be worse that the one made 39 years ago on the Willemar pipeline; the love for the Comox Valley is driving me to address you. A copy of this letter in PDF is attached. Rest assured that all my statement are well documented and carefully thought about.

I wish you enough.

Eduardo Uranga

TOWN OF LADYSMITH

LIQUID WASTE MANAGEMENT PLAN
STAGE 3

JANUARY 2013

OPUS DAYTONKNIGHT

218.007.200

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TOWN OF LADYSMITH
LIQUID WASTE MANAGEMENT PLAN – STAGE 3

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TOWN OF LADYSMITH
LIQUID WASTE MANAGEMENT PLAN – STAGES 1 AND 2

1.0 INTRODUCTION AND BACKGROUND

The Town of Ladysmith Three-Stage Liquid Waste Management Plan (LWMP) is to provide the strategies for wastewater management over the next 20 to 30 years. The LWMP addresses existing and future development, including servicing of areas not yet connected to the central or other planned wastewater collection systems, greenfield developments, and potential boundary expansions.

1.1 LWMP Process

The LWMP was initiated in November 2007; the plan developed using the published Guidelines, and the recent update, produced by the B.C. Ministry of Environment (MOE). In accordance with the Guidelines, the LWMP includes consideration of source control of contaminants, wastewater volume reduction, stormwater management, wastewater collection and treatment, beneficial use of treated wastewater and residual solids, and the incorporation of sustainable design and integrated resource recovery technologies.

For the Town of Ladysmith LWMP, Stages 1 and 2 were combined to include both the identification of existing conditions and constraints, and the development of technical solutions. The LWMP committee structure combined the Technical and Local Advisory Committee into one Joint Advisory Committee (JAC) to facilitate communications and scheduling. A Steering Committee including representatives of the Town, a member of

the combined committee and a Ministry of Environment (MOE) representative provided overall project direction and planning. Seven Joint Advisory Committee meetings were held throughout Stages 1 and 2, and two open houses provided public feedback. First Nations were consulted at a meeting on April 6, 2010 and again on November 21, 2011. The Townsite also maintains a website with LWMP documentation.

1.2 Wastewater Collection and Treatment Service Areas

Currently the Town occupies about 1,480 hectares of land and stretches about 9 km north to south, along the Island Highway. The OCP identifies a build-out population of 17,200, assuming no additions to the service areas or boundary expansion. Prudence suggests that siting of a plant should accommodate up to 30,000 people, to allow for the potential inclusion of additional service areas in future. New growth areas within the Town Boundary include Holland Creek, North End (Rocky Creek), South End (Russell Creek); Waterfront and infill. Future additions to the Town service area could include Saltair, Diamond Improvement District and First Nations lands. The OCP contains environmental protection policies relating to development and the wastewater and stormwater systems, which are included in the LWMP objectives.

1.3 Receiving Environment

The Town of Ladysmith is situated adjacent to embayed Ladysmith Harbour. Holland Creek, Stocking Creek and Russell Creek flow to the outer harbour, and Rocky Creek flows to the inner harbour; all creeks are fishbearing. The harbour has a low tidal exchange rate. The riparian zones along the streams and undeveloped harbour provide wide areas of wildlife habitat and conduits for movement.

The existing Ladysmith wastewater treatment plant (WWTP) provides primary treatment and disinfection of effluent with outfall discharge to Ladysmith Harbour. Primary settled solids are pasteurized and stabilized in thermophilic digesters (ATAD), dewatered and trucked to the Town Works Yard for composting. Water and sediment studies by MOE

indicate that the existing wastewater discharge is impacting the marine environment. The shellfish resource in Ladysmith Harbour is a primary concern.

1.4 Summary of Stage 1 and 2 LWMP

Various options were considered for inclusion in the LWMP; these were developed by the study team in consultation with the JAC and the public and are described in detail in the Stage 1 and 2 LWMP report. The LWMP components recommended for advancement to Stage 3 are outlined below.

1.4.1 Source Control

- develop a sanitary sewer source control bylaw to protect effluent quality and biosolids quantity;
- public and private sector education and consultation with other knowledgeable jurisdictions;
- sampling and inventories to identify problem discharges to the sewer system;
- water quality monitoring.

1.4.2 Wastewater Volume Reduction

- universal metering to help minimize water use;
- public education to reduce water use;
- regulations requiring use of low-flow plumbing fixtures (e.g., low-flush toilets);
- ongoing reduction of infiltration and inflow to the sewer system.

1.4.3 Stormwater Management

- develop a Master Drainage Plan for the Town;
- identify environmental resources needing protection;
- implement a storm drainage bylaw;

- encourage onsite infiltration of precipitation where feasible;
- public education.

1.4.4 Wastewater Management

- complete the current upgrade at the WWTP to achieve secondary treatment for a service population of 17,200 people. Include consideration of resource recovery in designing the upgraded facilities (e.g., heat recovery). Monitor the effectiveness of I&I reduction efforts so that a realistic schedule can be developed for eliminating the bypass to primary treatment.

- once the WWTP upgrade to secondary treatment has been commissioned, conduct environmental studies of Ladysmith Harbour to determine if additional action is needed to protect the environment. If additional action to meet water quality objectives is needed, determine whether the addition of tertiary treatment and/or extension of the outfall to open marine waters is the preferred solution.

- identify and secure a property suitable for construction of wastewater treatment facilities in future (possibly in the Industrial Park). New facilities may include treatment for waste solids generated at the existing WWTP, as well as future facilities for treating liquid wastewater. When the existing (upgraded) WWTP reaches capacity at 17,200 population, the decision can be made to either expand the existing plant, or to initiate construction of a second facility for treatment of wastewater at the new site.

- pursue the implementation of satellite water reclamation plants for pockets of new development, with localized use of the reclaimed water (e.g. for planned development in the Holland Creek area and other developments as appropriate).

1.4.5 Biosolids Management

- alternatives where prior treatment (digestion) is not required (waste solids to be dewatered at WWTP before transport to composting facility)
  - cooperative regional composting solution with others (Cowichan Valley Regional District)
  - transport to Comox Valley RD composting facility

- alternatives where prior digestion to minimum Class B standards is required under current legislation
  - woodlot application of biosolids within Vancouver Island University program
  - partnerships with private sector (e.g., commercial composting facility at Duke Point)

1.4.6 Water Reclamation and Reuse

- reclamation and reuse of treated wastewater should be focused on internal use for non-potable purposes at the (upgraded) WWTP, and on localized satellite reclamation plants in new developments for seasonal landscape irrigation as described above in Section 10.4.

1.4.7 Approval of Stage 1 and 2 LWMP

The Stage 1 and 2 LWMP report was approved by the B.C. Ministry of Environment in April, 2011 (see letter attached in Appendix A). Conditions included in the letter are summarized as follows:

- clearly document consultation process;
- detailed implementation schedule for WWTP upgrade to secondary treatment and subsequent Stage 2 EIS;
- identify suitable property for future WWTP;
- draft source control bylaw, consider Codes of Practice;

- include stormwater management and I&I reduction measures;
- draft storm drainage bylaw;
- primary and alternate biosolids management strategies;
- identify cost per user for implementing LWMP;
- establish Plan Monitoring Committee; and
- continue First Nations consultation.

1.5 Scope of Work for Stage 3 LWMP

- summary of Stage 1 and 2 report;
- Public and First Nations consultation – include summary of results of mail out brochure and questionnaire, meeting with First Nations;
- incorporate MOE recommendations;
- list of LWMP commitments (cost estimates, implementation schedule, revenue sources);
- technical details for Operational Certificates;
- JAC/MOE review of draft Stage 3 report;
- JAC meeting and recommendations to Council;
- Council review and adoption of Stage 3 LWMP; and
- submit Stage 3 LWMP to Minister for approval.

1.6 Acknowledgements

The participation and assistance of all of the members of the Steering Committee and the Joint Advisory Committee is gratefully acknowledged (see Appendix B for a list of the Committee membership). In addition, we thank the Town of Ladysmith staff for their valuable assistance in providing technical information, organizing Committee meetings, and providing follow-up documentation.

2.0 CONSULTATION

Essential to the success of the LWMP process is effective public consultation. The public consultation program for the LWMP commenced with the formation of the Steering, Technical and Local Advisory Committees, and will continue through newsletters, posting information on the Town's website, press releases, committee meetings and public information meetings. A summary of the public consultation program undertaken during the LWMP is outlined in this section.

It should also be noted that another consultation process focusing on establishing a community sustainability vision was underway throughout the fall of 2008 - roughly the same time period as many of the LWMP consultation initiatives discussed in this section. This award-winning process yielded unprecedented levels of community participation, and resulted in detailed report, which is now formally referenced in the Town's Official Community Plan – "*Ladysmith Community Vision for a Sustainable West Coast Town*".

The report outlines a detailed sustainability strategy for the community, and is important in the development of the LWMP in the sense that includes a recent and very highly supported vision for future development in Ladysmith, as well as specific goals and strategies with respect to development of innovative infrastructure and wastewater management.

The LWMP must therefore consider and ensure consistency between the results and final report from the sustainability visioning consultation process, and the input gathered through the LWMP consultation process described throughout the remainder of this section.

2.1 Stage 1 and 2 LWMP Consultation

2.1.1 Advisory Committee Meetings

The MOE guidelines (B.C. Environment, 1992a) require the Town of Ladysmith to strike Advisory Committees to administer the development of the LWMP. A summary of the meetings of the Advisory Committees undertaken is provided below. Copies of the meeting minutes can be found in Appendix 2 of the Stage 1 and 2 LWMP Report.

1. Steering Committee Meeting No. 1

   Steering Committee Meeting No. 1 was held on Tuesday May 13, 2008 to initiate the Stage 1 work. Items presented and discussed with the Steering Committee included the LWMP process, the roles of the Advisory Committees, meeting protocols, review of the project work plan and schedule, and Committee membership.

2. Joint Advisory Committee Meeting No. 1

   Joint Advisory Committee (JAC) Meeting No. 1 was held after the first Steering Committee Meeting on Tuesday May 13, 2008. Committee terms of reference, meeting protocols, role of committees and means of defining consensus were reviewed with the members of the JAC. The work plan and schedule were also reviewed. Draft initial public information advertisement was reviewed. JAC Meeting No. 1 also included a presentation on the Municipal Sewage Regulation, and the fundamentals of wastewater treatment, as well as an update on the impending upgrades to the existing WWTP.

The JAC decided at Meeting No. 1 that the next committee meeting should be dedicated to a discussion of appropriate technologies for adding secondary (biological) treatment to the existing WWTP; this was to include one or more site visits to reference facilities by selected members of the JAC and the technical team.

3. Joint Advisory Committee Meeting No. 2

JAC Meeting No. 2 was held on June 17, 2008 to discuss the results of the site visit to a reference treatment facility located in Olso, Norway. This facility was based on the use of the moving bed bioreactor (MBBR) process for secondary treatment. The MBBR process was identified as a suitable candidate for use at the Ladysmith WWTP based on an evaluation of four candidate processes, namely integrated fixed film activated sludge (IFAS), membrane bioreactor (MBR), biological aerated filter (BAF), and MBBR. The MBBR process was identified as the preferred candidate based on an evaluation that included costs, space requirements, track record, reliability, operating characteristics, expandability, effluent quality and sludge production (Dayton & Knight Ltd., 2008). See the Stage 1 and 2 LWMP Report for additional information regarding process selection.

4. Joint Advisory Committee Meeting No. 3

JAC Meeting No. 3 was held on September 24, 2008 to discuss the 50% draft LWMP report, which was circulated to members of the Committee in advance of the meeting for review. The content of the 50% draft was reviewed at the meeting, and members of the Committee were requested to provide follow-up comments to the Town via e-mail. Information regarding the biosolids land application program at Malaspina Woodlot was also tabled at the meeting by a

member of the Committee. MOE Nanaimo noted that all WWTP upgrades must meet the requirements of the Municipal Sewage Regulation, and that alternatives to chlorination must be considered.

5. Joint Advisory Committee Meeting No. 4

JAC Meeting No. 4 was held on November 26, 2008 to discuss the LWMP options set out in the full draft LWMP report. Three concept options for long-term wastewater management were tabled for discussion and input from the Committee. A disk copy of the draft LWMP report was distributed to members of the Committee for review and comment. The Committee elected to hold a subsequent meeting for initial discussion before providing comments on the draft report.

6. Joint Advisory Committee Meeting No. 5A and 5B

JAC Meeting No. 5A was held on April 22, 2009 to review changes to the draft LWMP report arising from comments provided by MOE and other members of the Committee. A follow-up meeting for further discussion (5B) was held on June 10, 2009. The format, content and schedule for Public Open House No. 1 was discussed and agreed upon at Meeting 5A. Additional matters and clarifications regarding the LWMP process, content and format were discussed at Meeting 5B.

The draft Open House advertising and questionnaire were also discussed. Open House No. 1 was initially scheduled for May 20, 2009; however, this was subsequently re-scheduled for July 9, 2009 to allow more time for advertising.

7. Joint Advisory Committee Meeting No. 6

JAC Meeting No. 6 was held on September 23, 2009 to discuss the results of Public Open House No. 1 (see Section 2.2). Based on feedback obtained from Open House No. 1 and follow-up discussion among members of the Committee, consensus was achieved regarding revisions to the LWMP draft report. The revisions mainly focused on the provision of cost estimates for the wastewater management options, and matters of clarification regarding the descriptions of the options.

8. Joint Advisory Committee Meeting No. 7

JAC Meeting No. 7 was held on November 4, 2009 to review revisions to the draft LWMP report. The primary purpose of Meeting No. 7 was to obtain consensus from the Committee regarding the draft LWMP commitments to be presented at Public Open House No. 2.

2.1.2 Stage 1 and 2 Public Open Houses and Information

During the course of the LWMP work, LWMP information was published on the Town's website and in the local media to keep citizens informed on the progress of the work and to notify citizens of Committee meetings and public information meetings. Copies of these documents are included in the Stage 1 and 2 LWMP report.

Public Open House No. 1

Public Open House No. 1 was held on July 9th, 2009 at the Ladysmith Pioneer (Aggie) Hall. The draft material from the Stage 1 and 2 LWMP was summarized on poster displays. The Open House was staffed by representatives of the Town and by members of the consulting team, who were available for discussion and questions throughout the evening. Representatives of senior government regulatory agencies were also present.

There was a summary slide presentation by Dayton & Knight Ltd. (see Appendix 3), followed by a question and answer session.

Approximately fifty people attended the first Open House, and thirty-three (33) questionnaires were filled out and submitted. The primary purpose of the Open House was to obtain public feedback regarding which options should be advanced for preparation of cost estimates, analysis and selection of preferred option(s).

The questionnaire responses are described in the Stage 1 and 2 LWMP report and are summarized below:

- most of the respondents (nearly 67%) learned of the Open House through newspaper advertising (Question #1).

- 82% of respondents are connected to the sanitary sewer system, with 12% serviced by septic tank/ground disposal and 6% not responding (Question #2).

- 97% of respondents supported source control of contaminants, with 3% not responding (Question #3).

- 100% of respondents supported water conservation (Question #4).

- 90% of respondents supported beneficial reuse of treated biosolids, with 9% not sure (Question #5).

- 97% supported reclamation and reuse of treated wastewater, with 3% not sure (Question #6).

- Question #7 asked whether all residents of the Town should contribute financially to an expanded and improved waste management system to pay the costs generated by new development; 78% of respondents supported this, with 6% disagreeing, 12% not sure and 3% not responding. Additional comments related to Question #7 are listed on the summary immediately following the collated responses to Question #7 in Appendix 3 of the Stage 1 and 2 LWMP Report.

- Question #8 asked for input regarding the wastewater collection and treatment options. The responses are summarized below (additional comments received regarding Question #8 are listed on the summary immediately following the collated responses to Question #8 in Appendix 3 of the Stage 1 and 2 LWMP Report).

	Agree	Disagree	Not Sure or No Response
Option 1 (expand and upgrade WWTP at present location)	55%	15%	30%
Option 2 (satellite treatment with water reclamation)	48%	6%	45%
Option 3 (new central WWTP)	58%	6%	36%
Option 4 (relocate outfall discharge)	36%	18%	45%

- 79% of respondents agreed that the open house material was easy to understand, with 6% disagreeing and 15% not answering this question (#9).

- Approximately 82% agreed that the level of information presented at the Open House was appropriate, with 3% disagreeing and 15% not answering this question (#10).

- Question #11 requested additional input from members of the public; the comments received are listed at the end of the summary in Appendix 3 of the Stage 1 and 2 LWMP Report.

Public Open House No. 2

Public Open House No. 2 was held on May 13, 2010 at the Ladysmith Pioneer Hall. Draft material from Stage 1 and 2 LWMP from Open House No. 1 as well as the new draft material identifying Option Costs was summarized on poster displays (see Appendix 3 in the Stage 1 and 2 LWMP Report for more detail).

The Open House was staffed by the Town and by Dayton & Knight Ltd. Members of Council and the Joint Advisory Committee also attended including a representative from the Ministry of Environment. All were available for discussion and questions throughout the evening.

Very few other people attended the Open House and only two (2) questionnaires were returned.

The questionnaires:

- Indicated strong agreement with all of the questions posed with the exception that one of the two returns did not strongly favour the Option 2 – Central Treatment Plant.
- All attendees stated they had learned of the Open House through the newspaper advertisement and were connected to the Town sewer system.
- A suggestion was made to partner with CVRD to subsidize rain barrel purchase.

Appendix 3 in the Stage 1 and 2 LWMP Report provides a copy of the Open House questionnaires.

2.1.3 Stage 1 and 2 First Nations Consultation

Information related to the Liquid Waste Management Plan for Ladysmith was presented in a joint Council meeting between the Stz'uminus First Nation and the Town of Ladysmith on April 6, 2010. The meeting included a power point presentation explaining

the LWMP process, timelines, scope and study findings, including the project history/background, the current treatment facility, public consultation, government regulations for protection of the Ladysmith Harbour, environmental studies, and treatment options including cost estimates for protection of the environment. A general understanding was developed that a larger scope of responsibility beyond the Town of Ladysmith boundary would need to be considered to ensure protection of the overall Harbour water quality, since there are inputs to the Harbour from outside the Town boundary.

Minutes from the initial April 6, 2010 meeting with First Nations and a copy of the slide presentation are included in the Stage 1 and 2 LWMP report. The Stz'uminus Council representatives voiced concerns at the meeting regarding the health of streams and creeks, pollution in Ladysmith Harbour, lack of traditional food sources, and the current and future waste treatment facility and the outfall.

Specific concerns regarding the Town's wastewater discharge to Ladysmith Harbour will be addressed through the current upgrade to the WWTP (which will add secondary treatment), and additional improvements if shown to be necessary by environmental studies (e.g. tertiary treatment and/or extension of the outfall).

The Town and Stz'uminus First Nation have agreed to a working group that will meet in the near future.

2.2 Stage 3 Consultation

2.2.1 Stage 3 Advisory Committee Meetings

1. Joint Advisory Committee Meeting No. 8

JAC Meeting No. 8 was held on Tuesday, November 1, 2011. The objective of the meeting was to discuss the scope and schedule for completing the Stage 3 LWMP,

including the conditions set out in the MOE Approval letter for Stage 1 and 2. Minutes of JAC Meeting No. 8 are included in Appendix B.

2. Joint Advisory Committee Meeting No. 9

JAC Meeting No. 9 was held on Wednesday, January 18, 2012. The objective of the meeting was to discuss the initial draft of the Stage 3 LWMP report, which had been circulated to the members of the JAC for review prior to the meeting. Input was received from the JAC regarding revisions, and additional information needed to complete the Stage 3 LWMP report. Minutes of JAC Meeting No. 9 are included in Appendix B.

3. Joint Advisory Committee Meeting No. 10

JAC Meeting No. 10 was held on Tuesday, April 10, 2012. The objective of the meeting was to present proposed revisions to the draft Stage 3 LWMP report that were undertaken as a result of committee input and questions raised at JAC Meeting No. 9. The JAC approved proposed revisions, and a motion to recommend that Council adopt the revised Stage 3 LWMP received unanimous approval. Minutes of JAC Meeting No. 10 are included in Appendix B.

2.2.2 Stage 3 Public Consultation

A mail-out Public Input Form was developed by the Joint Advisory Committee (JAC) and in consultation with the MOE. A copy of the Form is included in Appendix C. The Form was mailed out to each Ladysmith resident with the utility bill in July, 2011, and it was also made available at all municipal locations (e.g., City Hall, Community Centre, Town's website). A summary of the Public Input results is included in Appendix C.

2.2.3 Stage 3 First Nations Consultation

A meeting with the Stz'uminus First Nation was held on November 21, 2011 to present and discuss the LWMP, including the Stage 1 and 2 findings, and the scope and schedule for Stage 3. Copies of the slide presentation and the meeting minutes are attached in Appendix C. Correspondence regarding additional consultation between the Town of Ladysmith and the Stz'uminus First Nation is included in Appendix C.

On August 27, 2012, the Town of Ladysmith and the Stz'uminus First Nation signed a Memorandum of Understanding (MOU) that included Fist Nations support of the Town's LWMP and provision of water and sanitary services to designated areas on IR12 and IR13. A copy of the Joint News Release and the MOU are included in Appendix C.

TOWN OF LADYSMITH
LIQUID WASTE MANAGEMENT PLAN – STAGE 3

3.0 LWMP IMPLEMENTATION PLAN

The commitments, budget and schedule for the Town of Ladysmith LWMP are summarized in Table 3-1. Line items are included for specific LWMP components over the next five to ten years, beginning in 2012. As shown under Item 1 in Table 3-1, a line item has been included for annual review of LWMP progress to the year 2017 with review on a five-year cycle thereafter; the results of this progress review should be used to update and further develop detailed line items for financial commitments and scheduling as the LWMP proceeds. A Plan Monitoring Committee will provide ongoing review and comment as noted in Section 3.7. Once the Stage 3 LWMP is adopted by Council and approved by the Minister, the Town will adopt the LWMP as a bylaw and also incorporate the LWMP as part of the OCP.

3.1 Wastewater Collection and Treatment

The recommended approach for the Town of Ladysmith LWMP includes upgrading the existing central wastewater treatment facilities to provide secondary treatment, since this will conserve the Town's investment in the existing sewer collection systems. To secure the Town's long-term needs (20 to 50 year time frame and beyond), an alternative site more distant from residential development will be identified for future wastewater treatment facilities. The primary issues associated with developing central treatment facilities at the alternate location in the long term are reducing the risk of problem odours near the

downtown area and residential development along the shore near the existing plant, and limited space for expansion for long-term future wastewater treatment facilities.

The approach for upgrading of the existing WWTP is summarized as follows (see also Section 1.4.4, Appendix D, and Item 2 in Table 3-1):

- upgrade existing plant to secondary treatment using MBBR process with dissolved air flotation (DAF) for solids separation, and maintain discharge to Ladysmith Harbour;
- then complete Stage 2 EIS to determine effluent quality needs for Harbour discharge, add advanced treatment and/or extend outfall if needed;
- acquire additional property for possible future WWTP (min. area 4 ha, pref. 10 ha).;
- identify potential location for future open marine discharge (drogue studies, dispersion modelling); and
- satellite water reclamation plants for new development.

The approach for effluent disinfection is summarized as follows (see also Appendix D):

- consult with Environment Canada regarding federal disinfection standards for continued discharge to harbour;
- Stage 3 WWTP upgrade;
    - install and commission MBBR/DAF process
    - maintain use of existing chlorine disinfection tank
    - convert from chlorine gas to sodium hypochlorite (bleach) for disinfection
    - use sodium bisulfite for de-chlorination
- then conduct pilot study to determine feasibility and effectiveness of UV disinfection on the MBBR/DAF effluent;
- consultation with Environment Canada indicates that they are concerned with viruses as well as fecal coliform indicators in effluent discharges with regard to establishing prohibited zones for shellfish harvesting – inactivation of viruses should be included as a component of the UV pilot study.

- complete Stage 2 EIS (possible advanced treatment or outfall extension); and
- review feasibility of UV disinfection in light of confirmed effluent standards, pilot testing results, and decisions resulting from Stage 2 EIS.

The strategy outlined above allows the Town to ensure that the receiving environment will be adequately protected in the most cost effective manner possible. If the Town elects to extend the outfall after the Stage 2 EIS has been completed, then in all likelihood the recreational disinfection standard would apply and UV disinfection could be added to the plant without the need for effluent filtration. If outfall discharge to the Harbour is to continue, then additional treatment levels (including effluent filtration and UV disinfection to shellfish standards) can be implemented if the need is identified. In the meantime, use of the MBBR/DAF process with chlorination/dechlorination will ensure that shellfish standards can be reliably and consistently met, without incurring excessive capital and operating costs.

The LWMP also includes ongoing inspection and improvements to the sewer collection system to reduce inflow and infiltration (see Item 3 in Table 3-1).

3.2 Biosolids Management

The preferred long-term approach for biosolids management is to transport waste primary and secondary solids produced at the WWTP to a regional composting facility to be constructed by others (alternatively, the Town may construct its own composting facility). As an interim measure (over the next 2 to 3 years), the Town will investigate options for waste solids management for the immediate future, including a local small-scale composting facility owned and operated by the Town (possibly in cooperation with other partners), and incorporation of waste solids into the wastewater treatment system at Crofton Mill (see Item 5 in Table 3-1).

3.3 Wastewater Volume Reduction

Environmental initiatives such as water conservation and reuse to reduce wastewater volume are also included in the LWMP (see Item 3 in Table 3-1). Recommended water conservation measures include the adoption of a water use efficiency policy, an education and awareness education program, a bylaw to require low-flush toilets for new construction, audits of large commercial/industrial/institutional water users, a program to retrofit low use water fixtures to existing buildings, and universal water metering.

3.4 Source Control

Source control initiatives are used to prevent the discharge of harmful contaminants to the sanitary sewer and storm drainage systems. Initiatives for the Town of Ladysmith LWMP include developing a sanitary sewer protection bylaw, conducting an inventory of industrial/commercial/institutional dischargers, a public education program, and a monitoring and enforcement program for the sanitary sewer protection bylaw (see Item 6 in Table 3-1).

3.5 Stormwater Management

Stormwater management initiatives included in the LWMP are ongoing maintenance and repair of the storm drainage system, the development of a Master Drainage Plan, upgrading and expansion of the storm drainage system, the development of a storm drainage bylaw, review of the Town's development application procedures to ensure that drainage issues are considered at the outset of the land use planning process, and a review of the Official Community Plan to ensure that important natural components of the local hydrology and drainage are protected (see Item 7 in Table 3-1). An example of a storm drainage bylaw is attached as Appendix F.

TABLE 3-1
LWMP FINANCIAL COMMITMENTS AND SCHEDULE

LWMP Component	Budget Amount (2012 $)[1]	Funding Source	Schedule
1. Update and Monitor LWMP			
a. Review LWMP Progress, Update and Revise as Required	$10,000/yr	General Revenues	Annual to 2017, every five years thereafter
b. LWMP Monitoring Committee	Volunteer	N/A	Two meetings per year
2. Upgrade WWTP			
a. WWTP Upgrade to Secondary Treatment (Phase 3 including sustainability)	$16,500,000	Infrastructure Grants, DCC, Sewer Utility, Borrowing	2012 to 2013
b. Complete Stage 2 Environmental Impact Study	$100,000		2013
c. Site selection study for eventual relocation of WWTP, in accordance with the Town's Communication Plan and legislated consultation requirements	$75,000	Infrastructure Grants, Sewer Utility	2015 to 2017
d. Identify Potential location for Future Open Marine Discharge (Drogue studies, Dispersion modeling)	$250,000	Infrastructure Grants, Sewer Utility	2013
e. Satellite Water Reclamation Plants for New Development	Depends on service population	Development	Future
3. Sewer Collection System			
a. Sewer Inspection, Maintenance and Repair	$50,000 to $150,000/yr	Sewer Utility	ongoing
b. Infiltration and Inflow Reduction	$150,000/yr	Sewer Utility	ongoing

[1] Based on Class C estimates

TABLE 3-1 (cont'd)
LWMP FINANCIAL COMMITMENTS AND SCHEDULE

LWMP Component	Budget Amount (2012 $)[1]	Funding Source	Schedule
c. Separate sewer connections on private property in the Old Town	Private cost	Private cost	2012 to 2017
d. Achieve treatment of dry and wet weather flows to be in accordance with MSR	Future	Future	Future
4. Wastewater Flow Reduction			
a. Universal water metering program.	$800,000	Water Utility	2005
b. Education mail outs	$10,000	Water Utility	2005 to 2012
c. Adopt bylaw requiring low flush toilets for all new buildings.	Minimal	Water Utility	2005
d. Install low flow toilets in municipal facilities	$2,000	Sewer Utility	2013
e. Low Flush Toilet Rebate Program	$15,000	Sewer Utility	2012
5. Biosolids Management			
a. Short-term options			
i. Primary - Interim small-scale composting at Ladysmith Public Works Yard or elsewhere	$800,000 ±	Infrastructure Grants, Sewer Utility, Borrowing	2012 to 2014
ii. Alternative - Haul to Crofton Mill	$60,000/yr[2]	Sewer Utility (WWTP O&M Budget)	2012 to 2014

[2] Includes allowance for transportation @ $150/hr plus tipping fee @ $20/wet tonne; Assumed volume of 4.5 m^3/day @ 7% TS; Haul time 15 hrs/month ($27,000/yr); Tipping fee $20/wet tonne (1642.5 wet tonnes/yr @ $20/tonne = $32,850/yr).

TABLE 3-1 (cont'd)
LWMP FINANCIAL COMMITMENTS AND SCHEDULE

LWMP Component	Budget Amount (2012 $)[1]	Funding Source	Schedule
b. Long-term options			
i. Primary - Cooperative regional composting solution in partnership with others.	$60,000/yr[3]	Sewer Utility (WWTP O&M Budget)	Beginning 2014
ii. Alternative -small-scale composting at Ladysmith Public Works Yard or elsewhere (possibly in partnership with others).	$1,500,000	Infrastructure Grants, Sewer Utility, Borrowing	Beginning 2014
6. Source Control			
a. Develop Bylaw	$15,000	Sewer Utility	2013
b. Source control monitoring and enforcement program.			
i. develop program	$10,000	Sewer Utility or General Revenues	2014
ii. ongoing monitoring and enforcement	$10,000/yr		ongoing
c. Education program			
i. develop program	$15,000	Sewer Utility or General Revenues	2015
ii. deliver program	$3,000/yr		ongoing
d. Inventory of Industrial, Commercial and Institutional Sector (see Section 5).	future	future	future
7. Stormwater Management			
a. System inspection, maintenance and repair.	$50,000 to 100,00/yr	General Revenues	ongoing
b. Master drainage plan.	$150,000	General Revenues	2013
c. Develop storm drainage bylaw.	$20,000	General Revenues	2013

[3] Includes tip fee $80/wet tonne @ 25% TS and 3 hour round trip: Assumed 1.26 m^3/day @ 25% ($36,800/yr) & haul 1x/week ($23,400/yr)

TABLE 3-1 (cont'd)
LWMP FINANCIAL COMMITMENTS AND SCHEDULE

LWMP Component	Budget Amount (2012 $)[1]	Funding Source	Schedule
d. Review and revise development application approval procedures.	$15,000	General Revenues	2013
e. Public education.	See Item 6c	See Item 6c	See Item 6c

The estimated cost per user for the upgrades to the WWTP and for biosolids management are summarized in Table 3-2 (based on Class C estimates).

TABLE 3-2
ESTIMATED COST PER CONNECTION FOR WWTP UPGRADES AND BIOSOLIDS MANAGEMENT

Project	Additional Annual Cost per User(1)		
	Capital Repayment	Operation & Maintenance	Total Cost Per Connection
WWTP Upgrades			
• Complete Current Upgrade	None	$66.30(3)	$66.30
• Add Secondary Treatment	$115(2)	$200(4)	$315
• Stage 2 EIS	$2.5(2)		$2.5
• Site Selection Study	$1.9(2)		$1.9
• Drogue studies, dispersion modeling	$6.3(2)		$6.3
Biosolids Management			
• Short Term			
o Interim small-scale composting	$12.60(2)	$23.75(5)	$36.35
o Haul to Crofton Mill	-	$19.01(7)	$19.01

TABLE 3-2 (cont'd)
ESTIMATED COST PER CONNECTION FOR WWTP UPGRADES AND BIOSOLIDS MANAGEMENT

Project	Additional Annual Cost per User[1]		
	Capital Repayment	Operation & Maintenance	Total Cost Per Connection
• Long Term			
o Cooperative composting with CVRD	-	$19.01[2]	$13.31
o Small scale composting	$25.10[2]	$23.75[5]	$48.85

1 Incremental cost additional to existing facilities, cost per user based on total cost divided by 3,516 properties connected to sewer,

2 This is the maximum parcel increase estimated by the Town accounting for borrowing and grant funding.

3 Based on current costs to operate plant of $189,500 + $19,750 for solids handling.

4 Includes current operating costs for primary treatment.

5 Assumed operating cost of $100,000, incl. chip purchase.

6 Assumed $1M borrowed for small-scale long-term operation set up.

7 See Item 5(a), Table 3.1

3.6 Technical Details for Draft Operational Certificates

3.6.1 Central Ladysmith WWTP

The Stage 3 upgrade described in the Stage 1 and 2 LWMP will result in secondary treatment being implemented at the central Ladysmith WWTP, with continued discharge of treated effluent to Ladysmith Harbour. The applicable MSR minimum effluent standards for discharge to surface water are as follows:

- Maximum day carbonaceous BOD_5 concentration 45 mg/L
- Maximum day total suspended solids concentration 45 mg/L

In addition to the above, it is anticipated that the discharge will have to meet the MSR criteria for discharges to shellfish bearing waters at the edge of the Initial Dilution Zone:

- Median number of fecal coliforms outside initial dilution zone not to exceed 14/100 mL, with not more than 10% of samples exceeding 43/100 mL (based on the geometric mean of 5 samples taken over the last 30 days).

It is important to note that the Stage 3 upgrade will also meet the future federal effluent standards set out in the Wastewater Systems Effluent Regulations (i.e., average $CBOD_5$ and TSS not to exceed 25 mg/L). Dechlorination following disinfection will be used to meet the federal standards for chlorine residual. The discharge is also expected to meet federal standards for unionized ammonia. The federal standard for effluent fecal coliforms remains to be confirmed.

As noted elsewhere in this report, the Stage 2 EIS to be carried out in Ladysmith Harbour after the Stage 3 WWTP upgrade is completed will determine whether additional measures are needed to protect Ladysmith Harbour.

A draft Operational Certificate for the Ladysmith WWTP is attached as Appendix E. The Operational Certificate is designed to take effect once secondary treatment is in place. The Operational Certificate will be finalized in accordance with the latest provincial and federal regulations prior to commencing of the discharge.

3.6.2 Satellite Water Reclamation Plants

As described in the Stage 1 and 2 LWMP reports, satellite water reclamation plants are to be used where applicable for pockets of new development, with local use of the reclaimed water. Treatment standards for these plants will have to meet the applicable requirements set out in the MSR for reclaimed water, for use in areas with unrestricted or restricted public access as the case may be.

3.7 Plan Monitoring Committee

The Town intends to invite the members of the LWMP Advisory Committee to sit on the Plan Monitoring Committee (PMC). The Terms of Reference for the PMC will be the same as for the LWMP Advisory Committee. The role of the PMC will be to monitor the progress of the approved LWMP, and to provide input and comment. Table 3-1, Item 1 shows a schedule and budget for monitoring and updating of the LWMP. The frequency of PMC meetings is expected to be twice per year.

TOWN OF LADYSMITH
LIQUID WASTE MANAGEMENT PLAN – STAGE 3

APPENDIX A

MOE LETTER OF APPROVAL FOR STAGE 1 AND 2 LWMP

BRITISH COLUMBIA
The Best Place on Earth

April 28, 2011

File: 76780-30/TLADY

His Worship Mayor Rob Hutchins
and Councillors
Town of Ladysmith
PO Box 220
Ladysmith BC V9G 1A2

Dear Mayor Hutchins:

Re: Town of Ladysmith – Liquid Waste Management Plan Stages 1 & 2

I am in receipt of the plan entitled "Town of Ladysmith Liquid Waste Management Plan - Stages 1 and 2 Final" dated November 2010 and prepared by Dayton and Knight Ltd. Consulting Engineers on behalf of the Town of Ladysmith (TOL).

I understand that the TOL has combined Stage 1 and Stage 2 of the liquid waste management plan to accommodate your particular circumstances. I am satisfied that the required components of Stage 1 and 2 of a plan development process have been included in the submission and that public consultation has been adequate. Stage 2 of the Town of Ladysmith Liquid Waste Management Plan is hereby approved, and the town should proceed with Stage 3 of the planning process. It is recommended that the following components be included in the Stage 3 plan:

1) Clear documentation of the consultation process and results, including all correspondence between the TOL and applicable government authorities, First Nations and the general public.
2) A detailed implementation schedule for upgrading the wastewater treatment facility to provide secondary treatment, and subsequent Stage 2 Environmental Impact Study work to determine if tertiary treatment and/or extension of the outfall will be necessary.
3) Identification and securing of a suitable property to serve as a future wastewater treatment site.

…/2

Ministry of Environment
Coast Region
Environmental Protection Division
Mailing Address:
2080A Labieux Rd
Nanaimo BC V9T 6J9
Telephone: 250 751-3100
Facsimile: 250 751-3103
Website: www.gov.bc.ca/env

4) Drafting of a Sanitary Sewer Source Control Bylaw to include both prohibited and restricted wastes. Stage 3 should also include further investigation into the potential use of Codes of Practice for industry sectors as part of a source control monitoring and enforcement program.
5) Inclusion of the stormwater management initiatives and inflow and infiltration reduction initiatives outlined in the Stage 1 & 2 plan.
6) Drafting of a Storm Drainage Bylaw to enable the Town to regulate and enforce all aspects of stormwater management.
7) Inclusion of both a primary biosolids management option and an alternate management option, in the event that the primary application or reuse option becomes unavailable.
8) Identification of the costs per user for users in the sewered area, projected over the life of the plan.
9) A schedule for implementing the commitments of the plan.
10) The establishment of an ongoing plan monitoring committee to ensure the commitments of the plan are carried out in accordance with the implementation schedule.

As part of the TOL's continued public consultation efforts, the TOL should continue to solicit input and feedback from First Nation representative(s) through the Joint Advisory Committee and the TOL - Stz'uminus First Nation working group. In addition, a copy of the Town of Ladysmith Liquid Waste Management Plan - Stages 1 and 2 Final report should be mailed to all affected First Nations.

If you have any questions about the procedures for developing Stage 3 of the plan, please contact Senior Environmental Protection Officer, Kirsten White at 250 751 3233.

Yours truly,

Blake Medlar
A/Regional Manager
Coast Region
KW/jlk \\Tarpon\S40133\EnvProtection_Share\General\SAVE\2011\April\TOL LWMP Stage 1 & 2.doc
cc: Joe Friesenhan, Director of Public Works, PO Box 220, Ladysmith, BC V9G 1A2
Al Gibb, Dayton & Knight Ltd. Consulting Engineers, #210 - 889 Harbourside Drive, North Vancouver BC V7P 3S1

LADYSMITH

TOWN OF LADYSMITH
LIQUID WASTE MANAGEMENT PLAN – STAGE 3

APPENDIX B

TECHNICAL AND LOCAL LIQUID WASTE ADVISORY COMMITTEE MEMBERSHIP, AND MEETING MINUTES

LWMP Committee Members - Contact Information	
John T. Wilson	Citizen/Chairperson
Ladysmith, BC	
Rob Hutchins	TOL Mayor
Ladysmith, BC	
Gerry Clarke	Citizen
Ladysmith, BC	
Jim Cram	Citizen
Ladysmith, BC	
Ross Davis	Citizen
Ladysmith, BC	
Greg Edwards	Citizen
Ladysmith, BC	
Curtis Baker	TOL Chief Operator
Ladysmith, BC	
Joe Friesenhan	TOL Director of PW
Ladysmith, BC	
Blake Medlar	MOE
BC Ministry of Environment	
Nanaimo, BC	
Kirsten White	MOE
BC Ministry of Environment	
Nanaimo, BC	
Nick Meijerdrees	Citizen
Ladysmith, BC	
James Szasz	Citizen
Ladysmith, BC	
Lorena Mueller	Citizen

Ladysmith, BC	
David Brown	Citizen
Jill Dashwood	TOL Council Liaison
Dave Leitch, AScT	CVRD Rep
Cowichan Valley Regional District	
Duncan, BC	
Ray Gauthier	
Manager of Business Dev.	First Nations Rep
Chemainus First Nation	
Ladysmith, BC	

TOWN OF LADYSMITH
LIQUID WASTE MANAGEMENT PLAN
STAGE I, II AND III

JOINT ADVISORY COMMITTEE MEETING NO. 8

LOCATION: Town of Ladysmith City Hall

DATE: November 1, 2011

TIME: 6:30 p.m.

ATTENDING:

Town of Ladysmith (ToL)	Joe Friesenhan, A.Sc.T.
Ministry of Environment (MOE)	Kirsten White, A.Ag.
JAC	John Wilson - Chair Rob Hutchins David Brown Nick Meijerdrees Lorena Mueller
Opus Dayton Knight (Opus DK)	Harlan Kelly, P.Eng. Al Gibb, PhD, P.Eng.

REGRETS: Jill Dashwood, Ross David, Jim Cram, Greg Edwards, Gerry Clarke, Curtis Baker, Blake Medlar, James Szasz, David Leitch, Ray Gaulthier

DISTRIBUTION: All present

Item	Description	Action By
1.	Stage 3 Objectives and Scope a. Stage 1 and 2 now approved by MOE with conditions. b. Stage 3 to include summary of Stage 1 & 2 with commitments and schedules for approval by Council (time frame is needed). c. Council needs to confirm funding approach. d. Only if there are other changes, does further public involvement need to be undertaken. e. A First Nations meeting will need to be scheduled to discuss Stage 1 and 2 and to request input (mid November or early December).	ToL

Item	Description	Action By
2.	Slide presentation by Al Gibb summarizing Stage 1 and 2 components. a. Source Control b. Water conservation c. Wastewater volume reduction d. Stormwater management e. Watewater management plan, including future site for new WWTP, outfall siting, satellite water reclamation plant(s). f. Biosolids management i. Untreated sludge (only to publicly owned facilities) • Cowichan Valley RD – composting (future) • Comox Valley RD – composting (interim – short term) ii. Class B treatment required • Wood lot application • Partnerships with private sector g. MOE letter Stage 2 – recommended components for Stage 3 i. Clearly document consultation undertaking. ii. Provide detailed schedule for secondary treatment. iii. Clarify funding commitment. iv. Suggest word change in commitment to select a public site for future plant. This may in future require further public consultation. h. Consultation update (28 replies) from July 2011 mail out i. Town Hall meeting July 23, 2011 should be added to consultation (90 attendees). ii. Responses of mail out suggested 95% would prefer to do secondary plant now.	Council
3.	Council Meetings – 5th and 19th December a. Borrowing not likely needed before the fall; detailed design would be done prior. b. Once detailed design is completed, the work would likely be started early fall, pending funding arrangements	ToL

Item	Description	Action By
	c. Funding can be applied through grants as long as construction has not started.	
4.	Next JAC meeting December 14 at 6:00 pm, Town of Ladysmith.	ToL
5.	Draft Stage 3 report to be done by end of November, 2011.	Opus DK

Minutes recorded by:

Opus DaytonKnight Consultants Ltd.

Harlan Kelly, P.Eng.

HK/lp
218.007

The content of these minutes reflects the writer's interpretation of the proceedings. Participants shall advise the author of any errors or omissions within 5 days of receipt of this Pre-Construction Meeting Minutes.

Town of Ladysmith

LIQUID WASTE MANAGEMENT COMMITTEE

Minutes of the Liquid Waste Management Committee meeting, held in Council Chambers at City Hall on Wednesday, January 18, 2012 at 6:00 p.m.

Present:

John Wilson – Chair	Rob Hutchins – Mayor	Kirsten White (MOE)
Nick Meijer Drees	David Brown	Curtis Baker (TOL)
Alan Gibb (ODK)	Glenda Patterson – Counc. Liaison	John Manson (TOL)
Ruth Malli (TOL)	Gord Horth – Counc. Liaison	Ross Davis

Call to Order

Chair John Wilson called the meeting to order at 6:01 p.m. and introduced the new Director of Infrastructure Services, John Manson. John gave a brief outline of his work experience and said he looked forward to working with this Committee on the project.

OPUS DK

Alan Gibb of Opus DaytonKnight reviewed the Liquid Waste Management Plan Stage 3 Initial Draft.

The following items were noted during the presentation as discussions ensued:

- Kirsten White (MoE) will provide Committee with the Ministry's latest policy regarding "consultation"
- The need to document what steps taken, what input received, etc.
- Town staff to send letter to Ministry of Environment summarizing project to date and summarizing the consultation process to date.
- Harlan Kelly will attend next meeting and review project budget figures
- Director of Finance to provide summary of grant application and funding
- There have been no changes in project since the grant application went to Council in February 2011
- Require minutes from "Joint Committee" November 21st meeting with Stz'uminus First Nations – minutes are pending from SFN, as the Town and SFN alternate minute taking.
- John Manson advised that hard copies of Stage 1 and Stage 2 of the LWMP report have been mailed to MOE, and delivered to Stz'uminus First Nation
- Town is in the first stages of discussion with SFN and their consultants regarding their future servicing needs
- Comment made – if some of the green components of secondary treatment are taken out will it jeopardize the grant?
- Table 3.1 needs to be finalized (money for studies, change date, include Public Consultation – good turn out!)
- Ministry's main requirement pertaining to the management of

biosolids is that there be an alternate backup (currently Plan has primary option as CVRD with Comox as backup).

- Comox is having a meeting in February. The Town expects to hear from them following that meeting on our Biosolids proposal.
- Will need bylaw to regulate discharge to sanitary sewer (can hire consultant or liaise with other municipalities and adapt their bylaws to the Town of Ladysmith needs).
- Regarding the Source Control Bylaw slide - The committee agreed that educating the public be should be moved ahead on the time line to follow implementation of the bylaw, and precede the enforcing section.
- John Manson would like to budget for a Master Drainage Plan earlier than 2018. Having this in place will benefit other Town operations.
- Suggested that a Water Course Bylaw would be good to have.
- ODK will enquire of District of North Cowichan regarding their Chemainus and Crofton who are proposing to use UV light for disinfection in their waste water treatment.
- ODK to update Stage 3 draft and bring back to next meeting
- It was suggested that the Summary of WWTP survey that was done this past summer be put in body of report
- Identify in report table items that are completed
- A transition to a "Plan Monitoring Committee" is required by the Ministry *(to ensure commitments met, tasks are on track, approvals requested for changes when delays forseen, should meet yearly to review Plan, report every 5 years to Ministry)*
- It was proposed this group be the Plan Monitoring Committee (PMC)
- The Joint Advisory Committee (JAC) will become the PMC

Distribution of Report to Members Gord Horth and Rob Hutchins will accept electronic copies of Report, all other members would prefer hard copies of the Report

Next Meeting Monday, January 30, 2012 at 6:00 p.m., in City Hall Council Chambers

Adjournment Chair John Wilson called the meeting adjourned at 7:36 p.m.

Chair John Wilson

LADYSMITH

LIQUID WASTE MANAGEMENT PLAN MEETING
COUNCIL CHAMBERS
~~November 18~~, 2012
JAN.

Attendance:

NAME (print)	SIGNATURE
Al Gibb, ODK	
Baljeet Mann, MoE	
Blake Medlar, MoE	
Curtis Baker, TOL	
Dave Leitch,	
David Brown	
Gerry Clarke	
Glenda Patterson, Councillor	
Gord Horth, Councillor	
Greg Edwards	
Jim Cram	
John Manson, TOL	
John Wilson, Chair	
Kirsten White, MoE	
Lorena Mueller	
Nick Mejerdress	
Rob Hutchins, Mayor	
Ronda Jordan, SFN	
Ross Davis	

RUTH MALLI, TOFL RMalli.

Town of Ladysmith

LIQUID WASTE MANAGEMENT COMMITTEE

Minutes of a meeting of the Liquid Waste Management Committee held in Council Chambers at City Hall on Wednesday, April 10, 2012 at 6:00 p.m.

Present:

John Wilson – Chair	Rob Hutchins – Mayor	Lorena Mueller
Al Gibb (ODK)	Baljeet Mann (MoE)	Curtis Baker (TOL)
David Brown	Glenda Patterson – Council Liaison	Gord Horth – Council Liaison
Greg Edwards	John Manson (TOL)	Nick Mejerdress
Harlan Kelley (ODK)	Ross Davis	Ruth Malli (TOL)
Bill Drysdale – Councillor	Duck Paterson - Councillor	

CALL TO ORDER

The Chair called the meeting to order at 6:01 p.m.

AGENDA

Agenda be amended to add adoption of January 18, 2012 minutes.
It was moved, seconded and carried that the agenda be approved as amended.

MINUTES

It was moved, seconded and carried that the minutes of the January 18, 2012 Liquid Waste Management Advisory Committee meeting be adopted as circulated.

PROJECT COST REVIEW

Table 3-1 LWMP Financial Commitments and Schedule prepared by Opus Dayton Knight (ODK) was reviewed by the members. John Manson, Director of Infrastructure Services for the Town of Ladysmith spoke to the concerns raised at the last meeting regarding the project cost differences and noted the following:

- Four green components were added to the project scope to increase qualifications for grant applications, which were not included in the $12.0 mill. Estimated project cost, the cost of these items was approx.. $2.0 Million.
- The Town was successful with a gas tax grant worth 5.2 million, which includes the sustainability components;
- Rational was to reduce the $16 mill. down to $12mill. cost if the sludge was processed off site, by deleting the entire costs of the ATAD components – however tanks are still needed so of the $4 mill. deducted there is still approx. $ 2 mill needed for Stage 3.

The LWM Plan and the Public consultation process is equivalent to the petition process. The questionnaire that went out to the public quoted that the cost to the tax payer would be $115.00 parcel tax. Of those that responded 70-80% were in favour. Discussion ensued. Mayor Hutchins felt that the consensus from the public was that more money be put into tertiary treatment rather than extending the outfall. Further he felt First Nations was of the same opinion.

Other discussions from the committee strategy members pertained to the time frame. Item 2b Schedule Column of Table 3-1 will be changed to 2014-2015. Item 2d Schedule Column of Table 3-1 will be changed to 2015. Item 5c title needs to be changed to read "Composting at Local site" and the budget amount changed to $250,000 / yr. Also, the disinfection strategy will be added.

EFFLUENT DISINFECTION STRATEGY – STAGE III

Al Gibb, Professional Engineer with Opus Dayton Knight gave a power point presentation covering the effluent disinfection strategy. The Town has to meet the Municipal Sewage Regulations and there is Federal disinfection standards to take into consideration. The presentation covered UV Disinfection vs Chlorine. Once a MBBR/DAF is in place then site specific testing can be done to determine effectiveness of UV for disinfection. These results together with the Stage 2 EIS will help with the decision making on the best feasible path to completion.

FIRST NATIONS (FN) CONSULTATION UPDATE

Ruth Malli, City Manager advised that herself , the Mayor and staff had met with First Nations on a number of matters. Generally First Nations are supportive of the Liquid Waste management Plan as drafted. The Mayor will be receiving a letter from the Chief to this effect. A letter from the Town to other First Nations bands, those in proximity to Ladysmith, has yet to be sent out. Ruth explained the delay was because the Town wanted to meet first with the Ministry of Environment. Once the letter has been sent there will be a 30 day notification time frame for responses to the Ministry.

WATER SUSTAINABILITY STRATEGY

John Manson, Director of Infrastructure Services talked to the Committee about water sustainability strategy. It may take a year or two to get through this process. Steps should be taken to move forward on the sustainability plan. Ladysmith is one of the few municipalities who handle their water from start to finish.

BIO-SOLIDS HAULING UPDATE

John Manson informed the Committee that it is not likely the Comox Valley Regional District will take our sludge. We should be hearing from them soon following their meeting. Two other possibilities – process at local Cowichan Valley Regional District or Capital Regional District's Hartland site. Possible interm solution – works yard or site near by. Odour control would be critical. There are leasing opportunities for the equipment needed. Discussion ensued and the possibility of sludge going to a local mill was brought up. The sludge has to be processed before it leaves site if its going to a private sector facility. Could the Town partner with a private facility and if so, what % of ownership would be required of the Town for the business to be considered government and therefore a provincially approved facility. Baljeet Mann with the Ministry of Environment will enquire. Other methods to convert sludge to biosolids were discussed. What could be added? Lime? What could be done with the product that might be have an economic spin to it – make bricks. More research is needed into this. Composting may be the best option. "OMAR" is being reviewed and potentially could change – so the Ministry will keep us informed.

APPROVAL OF LWMP – STAGE III

Staff to check with Jim Cram and Gerry Clarke on their membership in the Committee. The Plan Monitoring Committee (PMC) will require terms of reference. The members were asked if the Committee is ready to approve the LWMP- Stage III.

It was moved, seconded and carried that the Liquid Waste Management Committee recommend that Council adopt the Liquid Waste Management Plan – Stage 3 as amended in the Liquid Waste Management Committee meeting of April 10, 2012. (Table 3-1 item 2b, 2d , 5c, add disinfection, update public engagement materials, add info on consultation as needed) .

It was moved, seconded and carried that the Liquid Waste Management Committee recommend that Council refer the LWMP Stage 3 to the Province for review and approval once any feedback from First Nations interests have been received, following the 30 days notice.

It was moved, seconded and carried that the Liquid Waste Management Committee recommend that Council include in the 2012 Financial Plan the initiation of the design for the Stage III Sewage Treatment Plan Improvements with construction to follow.

It was moved, seconded and carried that the Liquid Waste Management Committee recommend that Council refer the Water Sustainability Strategy to staff for consideration in 2012/2013, as staff resource's permit.

NEXT MEETING Will be at the call of the chair

ADJOURNMENT It was moved, seconded and carried that this meeting adjourn (7:50 p.m.)

LADYSMITH

TOWN OF LADYSMITH
LIQUID WASTE MANAGEMENT PLAN – STAGE 3

APPENDIX C

STAGE 3 CONSULTATION

Town of Ladysmith

Liquid Waste Management Plan
Meeting with Stz'uminus First Nation
November 21, 2011

What is a Liquid Waste Management Plan?

- 3-stage process - Provincial Guidelines
- examine long term wastewater management needs for the whole community
- minimize environmental impact of development
- liquid waste reduction, reuse and recycling
- written record of community decisions
- public and stakeholder consultation

Why have a LWMP?

- allows the community to develop and propose its own solutions and schedules for environmental protection

Why have a LWMP?

- describes the state of the environment in the study area

Why have a LWMP?

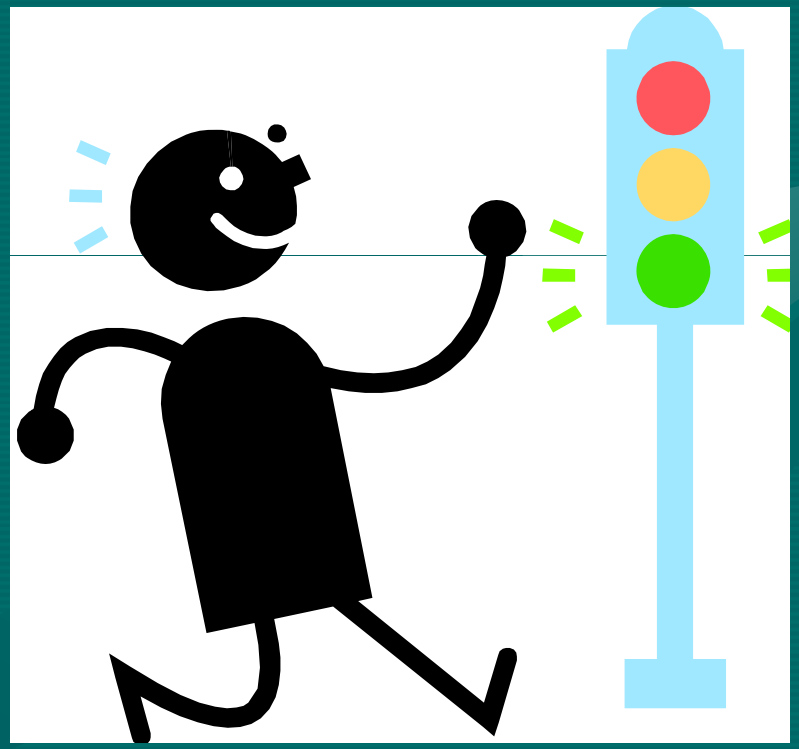
- integrates management options for different types of liquid waste

Why have a LWMP?

- improves chances of infrastructure funding from provincial and federal governments

Why have a LWMP?

- an approved LWMP allows the local government to implement the works without further approvals from the electorate



3 Stage Liquid Waste Management Plan

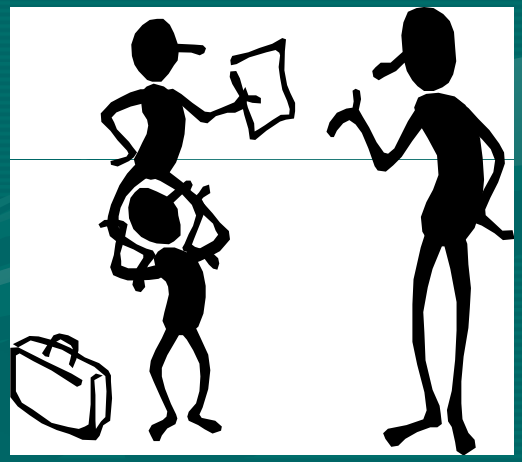
- Stage 1: develop a set of realistic concept options
- Stage 2: cost estimates, evaluation and selection of preferred option(s)
- Stage 3: finalize discharge standards, schedule and cost estimates, develop proposed financing, submit for approval
- Stage 1 and 2 combined for Ladysmith LWMP

Scope of Work

- LWMP planning horizon 20 to 30 years
- examine feasible options
  - liquid waste treatment and disposal
  - water reclamation and reuse
  - biosolids management
  - storm water management
- incorporate stakeholder and public input
- draft and final LWMP reports

Consultation Update

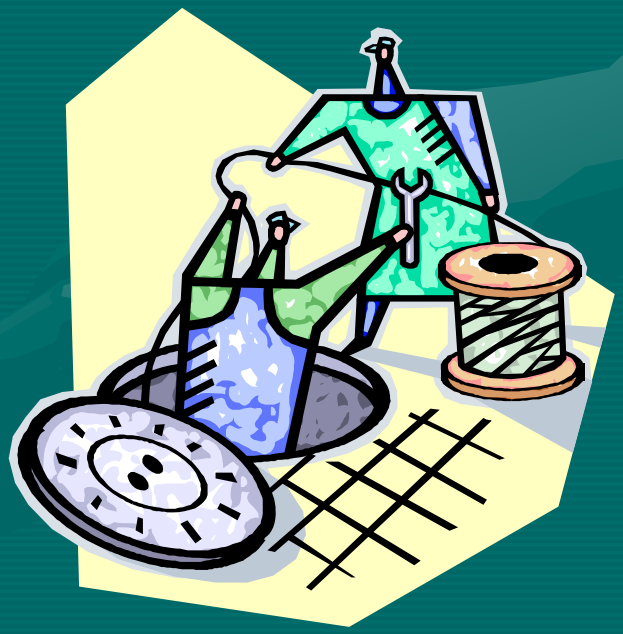
- eight meetings of Joint Advisory Committee
- two Public Open Houses
- initial meeting with Stz'uminus First Nation April 6, 2010
- Stage 1 & 2 and supporting information report available on Town's website
- Public Input Form mailed to residents with utility bill (also on Town's website)
- second meeting with Stz'uminus First Nation November, 21 2011 to receive their input on the LWMP



Stage 2 LWMP Components

Recommended LWMP Commitments
Source Control

- bylaw to regulate discharges to sanitary sewers + enforcement strategy
- public and private sector education
- publicize source control activities and successes
- maintain contact with other jurisdictions
- consider additional elements in future (monitoring, inventory of industrial/commercial discharges)



Recommended LWMP Commitments
Wastewater Volume Reduction

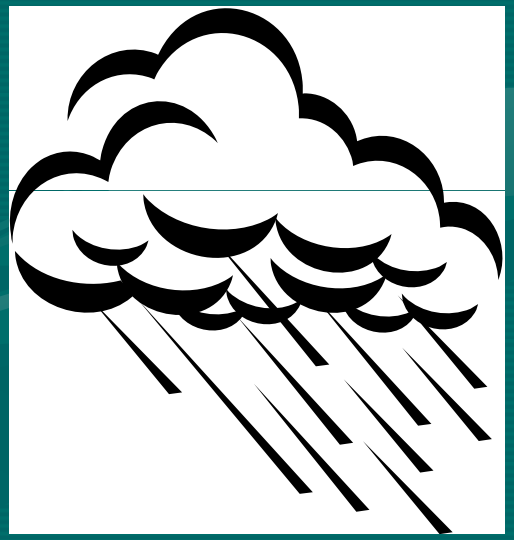
- Ladysmith is undertaking water conservation (included as LWMP component)
  - universal installation of water meters
  - education mail-outs to households
  - regulations requiring low flow toilets
  - grant program for retrofitting toilets to low flush models
  - install low-flow toilets in municipal facilities

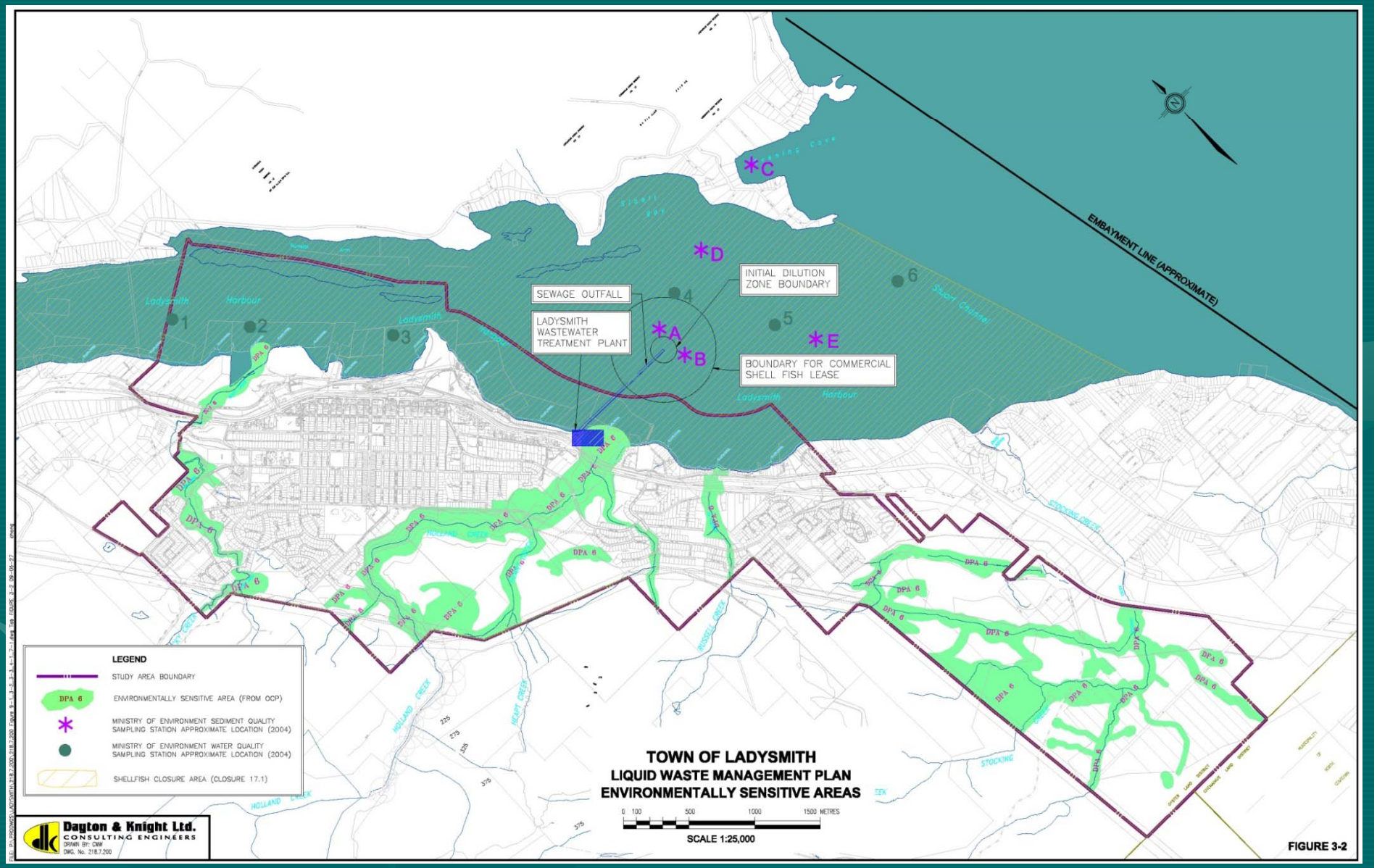
Recommended LWMP Commitments
Wastewater Volume Reduction

- ongoing reduction of inflow and infiltration to the sewer system
- separation of public sewers completed in the Old Town
- private service connections to be separated within 5 years of completion of secondary WWTP
- treatment of dry and wet weather flows to be in accordance with Municipal Sewage Regulation

Recommended LWMP Commitments
Storm Water Management

- develop a Master Drainage Plan
- review existing development application procedures to ensure protection of key components of hydrologic cycle
- storm drainage bylaw
- encourage onsite infiltration of precipitation
- include drainage issues in sewer source control education





Environmental Resources

Wastewater Management

- current OCP buildout population for Town of Ladysmith is 17,200 people

- high priority issue is protection of Ladysmith Harbour and shellfish resource (Conditional Management Plan)

Wastewater Collection and Treatment

- LWMP recognizes need to serve up to 30,000 people with wastewater collection and treatment facilities (includes Town population plus potential sewer service to neighbours – e.g. First Nations)
- existing WWTP does not have capacity to accept additional flows – Stage 3 upgrade & expansion of existing facilities required to allow for additional capacity
- regulations require minimum of secondary treatment required
- additional measures may be needed in future (e.g., nutrient removal, filtration, UV disinfection, extension of outfall)

Recommended LWMP Commitments
Wastewater Management

- upgrade existing plant to secondary treatment, maintain discharge to Ladysmith Harbour
- complete Stage 2 Environmental Impact Study to determine effluent quality needs for Harbour discharge
- add advanced treatment and/or extend outfall if needed
- purchase additional property for possible future WWTP (min. area 4 ha, pref. 10 ha)
- identify potential location(s) for future open marine discharge - drogue studies, dispersion modeling, consultation
- satellite water reclamation plants for new development

Waste Solids Management Alternatives Currently being Pursued

- alternatives where prior treatment (digestion) is not required (waste solids to be dewatered at WWTP before transport to composting facility)
  - cooperative regional composting solution with others (Cowichan Valley Regional District)
  - transport to Comox Valley RD composting facility
- alternatives where prior digestion to minimum Class B standards is required under current legislation
  - woodlot application of biosolids within Vancouver Island University program
  - partnerships with private sector (e.g., commercial composting facility at Duke Point)

MOE letter approving Stage 2 (April 28, 2011) Recommended Components for Stage 3

- clearly document consultation process
- detailed implementation schedule for WWTP upgrade to secondary treatment and subsequent Stage 2 EIS
- identify suitable property for future WWTP
- draft source control bylaw, consider Codes of Practice
- include storm water management and I&I reduction measures
- draft storm drainage bylaw
- primary and alternate biosolids management strategies
- identify cost per user for implementing LWMP
- establish Plan Monitoring Committee
- continue First Nations consultation

Scope for Stage 3 LWMP

- summary of Stage 1 and 2 report
- consultation – results of mail out brochure and questionnaire, November 2011 meeting with Stz'uminus First Nation
- incorporate MOE recommendations
- list of LWMP commitments (cost estimates, implementation schedule, revenue sources)
- technical details for Operational Certificates
- JAC/MOE review of draft Stage 3 report, JAC meeting and recommendations to Council
- Council review and adoption of Stage 3 LWMP
- submit Stage 3 LWMP to Minister for approval

Schedule for LWMP Completion

- submit initial draft Stage 3 LWMP report to Town by Nov 30, 2011
- Joint Advisory Committee meeting Dec 14 2011
- adoption of Stage 3 LWMP by Council Jan, 2012
- submit LWMP to Minister for approval Feb, 2012
- approval by Minister March, 2012

Schedule for WWTP Upgrades

- begin design work for Stage 3 upgrade/expansion now
- explore additional funding opportunities
- begin construction of Stage 3 upgrade autumn 2012
- finish construction late 2012 or early 2013
- studies (Stage 2 EIS, drogue and modeling for outfall discharge) 2013

Stz'uminus First Nation/Town of Ladysmith
Joint Council Meeting
November 21, 2011 4:00 – 5:45 p.m.

Attendee's:
Stz'uminus First Nation
Chief: John Elliott
Council: Herb Seymour, Harvey Seymour Sr., Terry Sampson, Roxanne Harris, Gordon Seymour, Kevin Frenchy, George Seymour
Ronda Jordan – Administrator
Teoni Jameson – Executive Assistant
Ray Gauthier – CEO, Coast Salish Development Corporation

Town of Ladysmith:
Mayor Rob Hutchins
Council: Steve Arnett, Duck Paterson, Jill Dashwood, Bruce Whittington
Ruth Malli – City Manager
Al Gibbs – Opus Dayton Knight

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1. Liquid Waste Management Plan – Power Point Presentation
   - Al Gibbs goes through the presentation to Chief and Council. The Town of Ladysmith is in the process of developing a Liquid Waste Management Plan which will allow the community to develop and propose its own solutions and schedules for environmental protection. The main objective of this plan is to look at the long term wastewater management needs for the Town of Ladysmith. This is a three stage process – stage 2 has been approved by the Province, so they are moving on to Stage 3.
   - How does Stz'uminus enter this process to address long term needs? Stz'uminus has issues on IR 13 and has short term solutions but need to look at long term. Stz'uminus is also trying to get something going on IR 12 and the Town of Ladysmith is aware of this.
   - The Town and Stz'uminus need to get together and have discussions on this.
   - The Mayor suggests a meeting be scheduled to see how to address the short and long term needs. This plan allows the Town of Ladysmith to accept wastewater from outside of the Towns boundaries.

2. Water and Sewer
   - Stz'uminus has received feasibility funding but is receiving push back from the Town of Ladysmith. We have until March 31, 2012 to spend the funds.
   - The Town of Ladysmith will look at the request re: feasibility at tonight's meeting.

3. Update MOU
   - Stz'uminus was wondering if there is a signed MOU. If so, it should be revisited or created. It was mentioned tonight that these meetings are consultation, but that is **not Stz'uminus' understanding.**
   - There was an Accord signed between the two communities but not an MOU. These joint council meetings were started in 2005/2006 and the purpose was to get the council's together and build a working relationship because historically there has not been one.

- Consultation is a law, it is not information sharing. With anything that will affect First Nations, consultation and accommodation needs to take place. Proponents that want to do anything in First Nations territory need to consult. This is Stz'uminus Territory and the Town of Ladysmith is within it. Stz'uminus is not sure the joint council meetings are the place for consultation. In other instances, the Crown notifies the First Nation of an upcoming project. Technical staff reviews the referral and then bring it to Chief and Council for a decision. An MOU would outline and clarify the expectation for both Councils
- Last year the joint councils spoke about meeting with Sliammon & Powell River because they had signed an Accord.
- **Direction:** It is suggested a committee be formed to look at establishing an MOU. Chief and Council and the Mayor and Council will each appoint three representatives to the committee. The Administrator and the City Manager are to work together to ensure this committee gets started.

4. District Lot 651

- Stz'uminus would like to be updated on what is happening with this as the current agreement expires on December 15th.
- The Town of Ladysmith is in the process of extending that and will update council at the next meeting.

Meeting adjourned at 5:45 p.m.

STZ'UMINUS FIRST NATION

January 27, 2011

Gas Tax / Public Transit Management Services
Union of British Columbia Municipalities
525 Government Street
Victoria, BC
V8V 0A8

Dear Selection Committee,

RE: Gas Tax Pooled Funding Application - Ladysmith Wastewater Treatment Plant Upgrade

The Town of Ladysmith is submitting an application for funding under the Gas Tax Pooled Funding programs for the Ladysmith Wastewater Treatment Plant Upgrade project. The Stz'uminus First Nation wishes to express formal, written support for the application.

Ladysmith Harbour is of vital economic and cultural importance to the people of the Stz'uminus First Nation. The protected, natural harbour is exceptionally rich with marine resources, including oysters, clams and scallops. What was once a thriving shellfish industry and traditional food source for the Stz'uminus First Nation has suffered a significant decline due to pollution in recent decades.

The restoration of the environmental health of the harbour is a high priority for the Stz'uminus First Nation. The existing municipal wastewater treatment plant is one of the most significant sources of pollution in the area, and therefore the Stz'uminus First Nation is highly supportive of the Town's proposed project, and their efforts towards restoration and protection of this valuable, natural resource.

I trust the information noted above will assist you in your consideration of the Town's application. Please contact the undersigned should you have any questions in this regard.

Sincerely

Stephen Olson

Administrator

12611A Trans Canada Highway
Ladysmith, BC V9G 1M5
Ph: 250.245.7155
Fax: 250.245.3012

TOWN OF LADYSMITH

410 Esplanade, P.O. Box 220, Ladysmith, BC V9G 1A2
Municipal Hall 250-245-6400 • Fax 250-245-6411 • info@ladysmith.ca • www.ladysmith.ca

January 31, 2011

Our File: 1855-20

Gas Tax / Public Transit Management Services
Union of British Columbia Municipalities
525 Government Street
Victoria, BC V8V 0A8

RE: CERTIFIED RESOLUTION OF COUNCIL
GAS TAX AGREEMENT FUNDING APPLICATION

January 31, 2011

It was moved, seconded and carried that staff be directed to apply under the Gas Tax Agreement's General Strategic Priorities Fund and Innovations Fund for:

- *$2,488,000 for the Ladysmith Water System Upgrade, and*
- *$5,210,000 for the Ladysmith Waste Water Treatment Plant Upgrade.*

I hereby certify this to be a true and correct copy
of Town of Ladysmith, Resolution #2011-052.

Deputy Corporate Officer (J. Winter)

LWMP Committee Members - Contact Information	
John T. Wilson	Citizen/Chairperson
Ladysmith, BC	
Rob Hutchins	TOL Mayor
Ladysmith, BC	
Gerry Clarke	Citizen
Ladysmith, BC	
Jim Cram	Citizen
Ladysmith, BC	
Ross Davis	Citizen
Ladysmith, BC	
Greg Edwards	Citizen
Ladysmith, BC	
Curtis Baker	TOL Chief Operator
Ladysmith, BC	
Joe Friesenhan	TOL Director of PW
Ladysmith, BC	
Blake Medlar	MOE
BC Ministry of Environment	
Nanaimo, BC	
Kirsten White	MOE
BC Ministry of Environment	
Nanaimo, BC	
Nick Meijerdrees	Citizen
Ladysmith, BC	
James Szasz	Citizen
Ladysmith, BC	
Lorena Mueller	Citizen

Ladysmith, BC	
David Brown	Citizen
Jill Dashwood	TOL Council Liaison
Dave Leitch, AScT	CVRD Rep
Cowichan Valley Regional District	
Duncan, BC	
Ray Gauthier	
Manager of Business Dev.	First Nations Rep
Chemainus First Nation	
Ladysmith, BC	

TOWN OF LADYSMITH
LIQUID WASTE MANAGEMENT PLAN
STAGE I, II AND III

JOINT ADVISORY COMMITTEE MEETING NO. 8

LOCATION: Town of Ladysmith City Hall

DATE: November 1, 2011

TIME: 6:30 p.m.

ATTENDING:

Town of Ladysmith (ToL)	Joe Friesenhan, A.Sc.T.
Ministry of Environment (MOE)	Kirsten White, A.Ag.
JAC	John Wilson - Chair Rob Hutchins David Brown Nick Meijerdrees Lorena Mueller
Opus Dayton Knight (Opus DK)	Harlan Kelly, P.Eng. Al Gibb, PhD, P.Eng.

REGRETS: Jill Dashwood, Ross David, Jim Cram, Greg Edwards, Gerry Clarke, Curtis Baker, Blake Medlar, James Szasz, David Leitch, Ray Gaulthier

DISTRIBUTION: All present

Item	Description	Action By
1.	Stage 3 Objectives and Scope a. Stage 1 and 2 now approved by MOE with conditions. b. Stage 3 to include summary of Stage 1 & 2 with commitments and schedules for approval by Council (time frame is needed). c. Council needs to confirm funding approach. d. Only if there are other changes, does further public involvement need to be undertaken. e. A First Nations meeting will need to be scheduled to discuss Stage 1 and 2 and to request input (mid November or early December).	ToL

Item	Description	Action By
2.	Slide presentation by Al Gibb summarizing Stage 1 and 2 components. a. Source Control b. Water conservation c. Wastewater volume reduction d. Stormwater management e. Watewater management plan, including future site for new WWTP, outfall siting, satellite water reclamation plant(s). f. Biosolids management i. Untreated sludge (only to publicly owned facilities) • Cowichan Valley RD – composting (future) • Comox Valley RD – composting (interim – short term) ii. Class B treatment required • Wood lot application • Partnerships with private sector g. MOE letter Stage 2 – recommended components for Stage 3 i. Clearly document consultation undertaking. ii. Provide detailed schedule for secondary treatment. iii. Clarify funding commitment. iv. Suggest word change in commitment to select a public site for future plant. This may in future require further public consultation. h. Consultation update (28 replies) from July 2011 mail out i. Town Hall meeting July 23, 2011 should be added to consultation (90 attendees). ii. Responses of mail out suggested 95% would prefer to do secondary plant now.	Council
3.	Council Meetings – 5th and 19th December a. Borrowing not likely needed before the fall; detailed design would be done prior. b. Once detailed design is completed, the work would likely be started early fall, pending funding arrangements	ToL

Item	Description	Action By
	c. Funding can be applied through grants as long as construction has not started.	
4.	Next JAC meeting December 14 at 6:00 pm, Town of Ladysmith.	ToL
5.	Draft Stage 3 report to be done by end of November, 2011.	Opus DK

Minutes recorded by:

Opus DaytonKnight Consultants Ltd.

Harlan Kelly, P.Eng.

HK/lp
218.007

The content of these minutes reflects the writer's interpretation of the proceedings. Participants shall advise the author of any errors or omissions within 5 days of receipt of this Pre-Construction Meeting Minutes.

Town of Ladysmith

LIQUID WASTE MANAGEMENT COMMITTEE

Minutes of the Liquid Waste Management Committee meeting, held in Council Chambers at City Hall on Wednesday, January 18, 2012 at 6:00 p.m.

Present:

John Wilson – Chair	Rob Hutchins – Mayor	Kirsten White (MOE)
Nick Meijer Drees	David Brown	Curtis Baker (TOL)
Alan Gibb (ODK)	Glenda Patterson – Counc. Liaison	John Manson (TOL)
Ruth Malli (TOL)	Gord Horth – Counc. Liaison	Ross Davis

Call to Order

Chair John Wilson called the meeting to order at 6:01 p.m. and introduced the new Director of Infrastructure Services, John Manson. John gave a brief outline of his work experience and said he looked forward to working with this Committee on the project.

OPUS DK

Alan Gibb of Opus DaytonKnight reviewed the Liquid Waste Management Plan Stage 3 Initial Draft.

The following items were noted during the presentation as discussions ensued:

- Kirsten White (MoE) will provide Committee with the Ministry's latest policy regarding "consultation"
- The need to document what steps taken, what input received, etc.
- Town staff to send letter to Ministry of Environment summarizing project to date and summarizing the consultation process to date.
- Harlan Kelly will attend next meeting and review project budget figures
- Director of Finance to provide summary of grant application and funding
- There have been no changes in project since the grant application went to Council in February 2011
- Require minutes from "Joint Committee" November 21st meeting with Stz'uminus First Nations – minutes are pending from SFN, as the Town and SFN alternate minute taking.
- John Manson advised that hard copies of Stage 1 and Stage 2 of the LWMP report have been mailed to MOE, and delivered to Stz'uminus First Nation
- Town is in the first stages of discussion with SFN and their consultants regarding their future servicing needs
- Comment made – if some of the green components of secondary treatment are taken out will it jeopardize the grant?
- Table 3.1 needs to be finalized (money for studies, change date, include Public Consultation – good turn out!)
- Ministry's main requirement pertaining to the management of

biosolids is that there be an alternate backup (currently Plan has primary option as CVRD with Comox as backup).

- Comox is having a meeting in February. The Town expects to hear from them following that meeting on our Biosolids proposal.
- Will need bylaw to regulate discharge to sanitary sewer (can hire consultant or liaise with other municipalities and adapt their bylaws to the Town of Ladysmith needs).
- Regarding the Source Control Bylaw slide - The committee agreed that educating the public be should be moved ahead on the time line to follow implementation of the bylaw, and precede the enforcing section.
- John Manson would like to budget for a Master Drainage Plan earlier than 2018. Having this in place will benefit other Town operations.
- Suggested that a Water Course Bylaw would be good to have.
- ODK will enquire of District of North Cowichan regarding their Chemainus and Crofton who are proposing to use UV light for disinfection in their waste water treatment.
- ODK to update Stage 3 draft and bring back to next meeting
- It was suggested that the Summary of WWTP survey that was done this past summer be put in body of report
- Identify in report table items that are completed
- A transition to a "Plan Monitoring Committee" is required by the Ministry *(to ensure commitments met, tasks are on track, approvals requested for changes when delays forseen, should meet yearly to review Plan, report every 5 years to Ministry)*
- It was proposed this group be the Plan Monitoring Committee (PMC)
- The Joint Advisory Committee (JAC) will become the PMC

Distribution of Report to Members Gord Horth and Rob Hutchins will accept electronic copies of Report, all other members would prefer hard copies of the Report

Next Meeting Monday, January 30, 2012 at 6:00 p.m., in City Hall Council Chambers

Adjournment Chair John Wilson called the meeting adjourned at 7:36 p.m.

Chair John Wilson

LADYSMITH

LIQUID WASTE MANAGEMENT PLAN MEETING
COUNCIL CHAMBERS
~~November 18~~, 2012
JAN.

Attendance:

NAME (print)	SIGNATURE
Al Gibb, ODK	
Baljeet Mann, MoE	
Blake Medlar, MoE	
Curtis Baker, TOL	
Dave Leitch,	
David Brown	
Gerry Clarke	
Glenda Patterson, Councillor	
Gord Horth, Councillor	
Greg Edwards	
Jim Cram	
John Manson, TOL	
John Wilson, Chair	
Kirsten White, MoE	
Lorena Mueller	
Nick Mejerdress	
Rob Hutchins, Mayor	
Ronda Jordan, SFN	
Ross Davis	

RUTH MALLI, TOFL RMalli.

Town of Ladysmith

LIQUID WASTE MANAGEMENT COMMITTEE

Minutes of a meeting of the Liquid Waste Management Committee held in Council Chambers at City Hall on Wednesday, April 10, 2012 at 6:00 p.m.

Present:

John Wilson – Chair	Rob Hutchins – Mayor	Lorena Mueller
Al Gibb (ODK)	Baljeet Mann (MoE)	Curtis Baker (TOL)
David Brown	Glenda Patterson – Council Liaison	Gord Horth – Council Liaison
Greg Edwards	John Manson (TOL)	Nick Mejerdress
Harlan Kelley (ODK)	Ross Davis	Ruth Malli (TOL)
Bill Drysdale – Councillor	Duck Paterson - Councillor	

CALL TO ORDER

The Chair called the meeting to order at 6:01 p.m.

AGENDA

Agenda be amended to add adoption of January 18, 2012 minutes.
It was moved, seconded and carried that the agenda be approved as amended.

MINUTES

It was moved, seconded and carried that the minutes of the January 18, 2012 Liquid Waste Management Advisory Committee meeting be adopted as circulated.

PROJECT COST REVIEW

Table 3-1 LWMP Financial Commitments and Schedule prepared by Opus Dayton Knight (ODK) was reviewed by the members. John Manson, Director of Infrastructure Services for the Town of Ladysmith spoke to the concerns raised at the last meeting regarding the project cost differences and noted the following:

- Four green components were added to the project scope to increase qualifications for grant applications, which were not included in the $12.0 mill. Estimated project cost, the cost of these items was approx.. $2.0 Million.
- The Town was successful with a gas tax grant worth 5.2 million, which includes the sustainability components;
- Rational was to reduce the $16 mill. down to $12mill. cost if the sludge was processed off site, by deleting the entire costs of the ATAD components – however tanks are still needed so of the $4 mill. deducted there is still approx. $ 2 mill needed for Stage 3.

The LWM Plan and the Public consultation process is equivalent to the petition process. The questionnaire that went out to the public quoted that the cost to the tax payer would be $115.00 parcel tax. Of those that responded 70-80% were in favour. Discussion ensued. Mayor Hutchins felt that the consensus from the public was that more money be put into tertiary treatment rather than extending the outfall. Further he felt First Nations was of the same opinion.

Other discussions from the committee strategy members pertained to the time frame. Item 2b Schedule Column of Table 3-1 will be changed to 2014-2015. Item 2d Schedule Column of Table 3-1 will be changed to 2015. Item 5c title needs to be changed to read "Composting at Local site" and the budget amount changed to $250,000 / yr. Also, the disinfection strategy will be added.

EFFLUENT DISINFECTION STRATEGY – STAGE III

Al Gibb, Professional Engineer with Opus Dayton Knight gave a power point presentation covering the effluent disinfection strategy. The Town has to meet the Municipal Sewage Regulations and there is Federal disinfection standards to take into consideration. The presentation covered UV Disinfection vs Chlorine. Once a MBBR/DAF is in place then site specific testing can be done to determine effectiveness of UV for disinfection. These results together with the Stage 2 EIS will help with the decision making on the best feasible path to completion.

FIRST NATIONS (FN) CONSULTATION UPDATE

Ruth Malli, City Manager advised that herself , the Mayor and staff had met with First Nations on a number of matters. Generally First Nations are supportive of the Liquid Waste management Plan as drafted. The Mayor will be receiving a letter from the Chief to this effect. A letter from the Town to other First Nations bands, those in proximity to Ladysmith, has yet to be sent out. Ruth explained the delay was because the Town wanted to meet first with the Ministry of Environment. Once the letter has been sent there will be a 30 day notification time frame for responses to the Ministry.

WATER SUSTAINABILITY STRATEGY

John Manson, Director of Infrastructure Services talked to the Committee about water sustainability strategy. It may take a year or two to get through this process. Steps should be taken to move forward on the sustainability plan. Ladysmith is one of the few municipalities who handle their water from start to finish.

BIO-SOLIDS HAULING UPDATE

John Manson informed the Committee that it is not likely the Comox Valley Regional District will take our sludge. We should be hearing from them soon following their meeting. Two other possibilities – process at local Cowichan Valley Regional District or Capital Regional District's Hartland site. Possible interm solution – works yard or site near by. Odour control would be critical. There are leasing opportunities for the equipment needed. Discussion ensued and the possibility of sludge going to a local mill was brought up. The sludge has to be processed before it leaves site if its going to a private sector facility. Could the Town partner with a private facility and if so, what % of ownership would be required of the Town for the business to be considered government and therefore a provincially approved facility. Baljeet Mann with the Ministry of Environment will enquire. Other methods to convert sludge to biosolids were discussed. What could be added? Lime? What could be done with the product that might be have an economic spin to it – make bricks. More research is needed into this. Composting may be the best option. "OMAR" is being reviewed and potentially could change – so the Ministry will keep us informed.

APPROVAL OF LWMP – STAGE III

Staff to check with Jim Cram and Gerry Clarke on their membership in the Committee. The Plan Monitoring Committee (PMC) will require terms of reference. The members were asked if the Committee is ready to approve the LWMP- Stage III.

It was moved, seconded and carried that the Liquid Waste Management Committee recommend that Council adopt the Liquid Waste Management Plan – Stage 3 as amended in the Liquid Waste Management Committee meeting of April 10, 2012. (Table 3-1 item 2b, 2d , 5c, add disinfection, update public engagement materials, add info on consultation as needed) .

It was moved, seconded and carried that the Liquid Waste Management Committee recommend that Council refer the LWMP Stage 3 to the Province for review and approval once any feedback from First Nations interests have been received, following the 30 days notice.

It was moved, seconded and carried that the Liquid Waste Management Committee recommend that Council include in the 2012 Financial Plan the initiation of the design for the Stage III Sewage Treatment Plan Improvements with construction to follow.

It was moved, seconded and carried that the Liquid Waste Management Committee recommend that Council refer the Water Sustainability Strategy to staff for consideration in 2012/2013, as staff resource's permit.

NEXT MEETING Will be at the call of the chair

ADJOURNMENT It was moved, seconded and carried that this meeting adjourn (7:50 p.m.)

TOWN OF LADYSMITH

410 Esplanade, P.O. Box 220, Ladysmith, BC V9G 1A2
Municipal Hall 250-245-6400 • Fax 250-245-6411 • info@ladysmith.ca • www.ladysmith.ca

April 29, 2010

Our File: 5340-05

Chief Councillor John Elliott
Stz'uminus First Nation
12611A Trans Canada Highway
Ladysmith, BC. V9G 1M5

John,

Dear Chief Elliott:

RE: **TOWN OF LADYSMITH LIQUID WASTE MANAGEMENT PLAN OPEN HOUSE**

On behalf of Council I respectfully invite you, members of your Council and members of the Stz'uminus First Nation to attend the Open House presentation and discussion regarding the development of the new Liquid Waste Management Plan for the Town of Ladysmith.

This Open House is the next step in the process that was presented to your Council at our joint meeting on April 6, 2010. The Open House will take place on Thursday, May 13 from 6:00 p.m. to 8:00 p.m., at the Aggie Hall in Ladysmith. Details are on the attached notice.

As we discussed at our April joint meeting as well as on other occasions, the effective and environmentally sustainable treatment of liquid waste and sewage is of utmost importance due to the potential impact on Ladysmith Harbour.

We hope that members of the Stz'uminus First Nation will be able to attend the Open House in order to continue to provide important input.

Do not hesitate to get in touch with me if you required further information.

Sincerely,

Rob Hutchins
Mayor

Encl.

cowichan

LADYSMITH

Town of Ladysmith

Liquid Waste Management Plan

(Sewer and Drainage System)

Public Open House and Presentation

Date: Thursday, May 13, 2010

Time: 6:00 pm to 8:00 pm
Consultant presentation at 7:00 pm followed by question period

Location: Aggie Hall
1110 First Avenue
Ladysmith

Additional information will be available at the Open House, or contact the Town of Ladysmith (see below).
Or check the Town's website at www.ladysmith.ca

We value your active participation in this process.
Your opinions are important to us; we look forward to meeting you at the Open House.

Contact:
Public Works Department
Town of Ladysmith
250-245-6445

The Town began preparation of a Liquid Waste Management Plan (LWMP) in November, 2007. A technical team and a Joint Advisory Committee representing government agencies and a cross section of community interests developed a number of draft liquid waste management options.

One of the most important issues is to determine the best way to collect and treat wastewater (sewage) now and in the future. As the Town grows, the wastewater system will have to be expanded and the treatment facilities will have to be improved to meet increasingly stringent environmental regulations. A key issue is the need to upgrade the Town's wastewater treatment plant to protect water and sediment quality in sensitive Ladysmith Harbour. The following elements are also included in the LWMP:

- control of contaminants at the source;
- wastewater volume reduction;
- beneficial use of the treated solids (biosolids) produced by wastewater treatment;
- reclamation and reuse of treated wastewater; and
- management of storm runoff.

In accordance with provincial guidelines, the Town is seeking public input on the LWMP issues. The first Public Open House was held on July 9, 2009 to present the LWMP Options. The second Public Open House includes cost estimates for each option, and is designed to give the citizens of Ladysmith a voice in helping to develop the best long-term solutions for managing liquid waste.

Chemainus First Nation
Department of Natural Resources
12611A Trans Canada Hwy
Ladysmith BC, V9G-1M5
Tel: (250) 245-7155 Fax: (250) 245-7140

Via E-mail to: Gord.Smaill@gov.bc.ca

May 11, 2009

Ministry of Agriculture and Lands
Integrated Land Management Bureau
142-2080 Labieux Road
Nanaimo, BC
V9T 6J9

Attention: Gord Smaill

Re: File No. 1413319-0341103

Please be advised the Chemainus First Nation (CFN) has recently reviewed your April 22, 2009 Referral *File No. 1413319-0341103*, in regards to the Town of Ladysmith's proposed amendment to their existing water licence.

The subject Referral falls within the traditional territory of the Chemainus First Nation, to which we have aboriginal title and rights that have never been ceded or extinguished. We are also currently in treaty negotiations with British Columbia and Canada for the lands and resources that are affected by the Referral.

While it is impossible to fully document CFN title and rights in the Referral area in this letter, we take this opportunity to provide some preliminary concerns to help facilitate the anticipated consultation process.

We have been engaged in Treaty negotiations to resolve our claims to lands and resources, including those contemplated in the Referral. We take the position that British Columbia should not be alienating, or creating new third party interests in, lands or resources that are currently on the treaty table. To do so while concurrently negotiating with CFN over title and rights to these resources appears to undermine the Treaty process in favour of the Crowns and/or proponents prevailing interim interests. Should this Referral be granted the proposed Licence of Occupation it must be executed in such a manner so as to not restrict, impede nor encumber CFN's treaty interests in the subject lands. In your response to this submission I ask that you specifically detail how a Licence of Occupation will not result in restrictions, impediments nor encumbrances to CFN's treaty interests in the subject lands.

Upon review of your submission it appears considerable studies and assessments have taken place with respect to evaluating potential environmental concerns as well as water supply issues. Please be advised your April 22, 2009 referral submission falls to include these reports for evaluation by CFN. At this time CFN does not specifically require formal copies of the subject reference materials and/or studies however we do reserve our options to request said materials should the need arise.

We also observe that it appears no Archaeological Overview Assessment (AOA) or Archaeological Impact Assessment (AIA) has occurred to date. CFN records reveal that the subject development area is positioned entirely within a Traditional Use Site, generally identified as a resource procurement region. We believe the potential for archaeological resources within the development area may be high and therefore request an AOA be conducted in advance of the project proceeding to the development stage. Should any archaeological or cultural heritage resources be identified through the AOA, CFN further reserves the option of requesting an AIA in advance of the project proceeding to the development stage.

By copy of this letter to Joe Friesenhan, Town of Ladysmith, CFN requests the proponent's appointed representative contact the undersigned so as to discuss CFN's preferred archaeologist for this undertaking.

CFN recognizes the importance of this initiative to the Town of Ladysmith and respective community members however CFN holds a duty to protect cultural heritage and archaeological resources within CFN traditional territory. As such, we ask for your cooperation in this regard and look forward to working with you and the proponents.

Please confirm that you will not make any decisions advancing this Referral prior to addressing our concerns and interests identified above. Should you have any specific questions or concerns regarding this submission please direct your inquires to the undersigned. Mr. Krevesky can be reached at (250) 245-6838 (ext 249).

Thank you,

Digital Signature

Heath Krevesky
Referrals Coordinator
Department of Natural Resources
Chemainus First Nation

CC: Chief and Council, CFN

Warren Johnny, Manager, Department of Natural Resources, CFN
Stephen Olson, Administrator, CFN
Kathleen Johnnie, Referrals Coordinator, HTG
Cameron Bezanson, Water Stewardship Division, Via e-mail to: Cameron.Bezanson@gov.bc.ca
Joe Friesenhan, Town of Ladysmith, Via E-mail to: clafleur@ladysmith.ca

LADYSMITH

TOWN OF LADYSMITH

410 Esplanade, P.O. Box 220, Ladysmith, B.C. V9G 1A2
Municipal Hall (250) 245-6400 • Fax (250) 245-6411 • info@ladysmith.ca • www.ladysmith.ca

April 2, 2008

Attention: Chief & Council
Chemainus First Nations
12611 Trans Canada Highway
Ladysmith, BC
V9G 1M5

Dear Chief & Council;

The Town of Ladysmith passed a resolution on November 19, 2007 to develop a Liquid Waste Management Plan (LWMP). The LWMP is a comprehensive study that will determine how wastewater is managed in the community to minimize the environmental impacts of existing and future developments.

In 1992 the B.C. Ministry of Environment published "Guidelines for Developing a Liquid Waste Management Plan." As required in the guidelines, the Town is establishing a Local Advisory Committee to assist in developing the LWMP. The Local Advisory Committee will include Town staff, a consulting team, and representatives of the community including local businesses, ratepayer and consumer groups, environmental groups, First Nations, and elected officials. An extensive public and stakeholder consultation process is an essential component of a successful LWMP.

The Town of Ladysmith is committed to managing its water and wastewater in a cost-effective and environmentally responsible manner. We value your input and encourage you to participate as a member of the Local Advisory Committee.

Please contact the writer if you have any questions or if you would like further information. We would be grateful for your response within thirty (30) days stating whether or not you wish to participate in the LWMP.

Yours truly,

Joe Friesenhan, A.Sc.T.
Director of Public Works

cowichan

TOWN OF LADYSMITH

410 Esplanade, P.O. Box 220, Ladysmith, BC V9G 1A2
Municipal Hall (250) 245-6400 • Fax (250) 245-6411 • info@town.ladysmith.bc.ca • www.town.ladysmith.bc.ca

December 23, 2005

Our File: 0470-60

Chief Terry Sampson
Chemainus First Nations
12611 Trans Canada Highway
LADYSMITH, B.C.
V9G 1M5

Dear Chief Sampson,

RE: LETTER OF SUPPORT AND PROPOSED COMMUNITY ACCORD

On behalf of Council of the Town of Ladysmith, I wish to extend my most sincere gratitude for the letter of support that you provided on behalf of the Chemainus First Nation recently to Honourable Ida Chong, Minister of Community Services respecting the Town's application for funding for the wastewater treatment plant upgrade project.

I am absolutely delighted to report that the Town has been awarded $2.25 million dollars from the Provincial Government for this innovative project, and I strongly believe that your letter of support was among the influential factors in the Ministry's deliberations.

I also wish to address the concerns raised in your follow-up correspondence of December 16, 2005. I thank you for raising and speaking openly about these concerns as the relationship and consultation between our two communities is very important to the Town.

That is the very reason why Council voted unanimously in March of 2005 (see attached correspondence) to invite the Chemainus First Nation to consider entering into a Community Accord with the Town of Ladysmith. The main purpose of a Community Accord is to formally recognize and understand our common interests and goals so that we may work, in true partnership, towards the greater good of our communities.

It is also the reason that the Town invited the Chemainus First Nation to send a representative to participate in the Town's Utilities Task Force which met throughout 2002 to review and plan for new and upgraded water and sewer infrastructure. Other requests for representation have been extended, including invitations to participate in the Health Care Task Force (2002) and the Harbour Task Force (2002). In addition, we continue to extend invitations to our Protective Services Committee meetings, Health Centre Advisory Committee meetings and Ladysmith Inter-agency Group meetings. Furthermore, we were extremely pleased to participate in the Tribal Canoe Journey in August 2004, as well as to host a meeting of our two Councils last Christmas season. While not all of our invitations are answered, we believe that the Town has made improvements in consultation and our goal is to continue that pattern.

/...2

As was evidenced with the recent Provincial Government funding announcement, our communities are much stronger when we work together. It is my sincere hope, and that of Town Council, that you will consider our proposal to develop a Community Accord as a true and honest symbol of our intent to continue improving our relationship, as well as the wellbeing of our communities.

I would welcome an opportunity to discuss building the relationship of our two communities. I would suggest a breakfast meeting in the near future. Please contact me at 246-0420 at your convenience. I look forward to hearing from you.

Yours truly,
Town of Ladysmith

Robert Hutchins
Mayor

Chemainus First Nation
12611A Trans Canada Hwy
Ladysmith BC, V9G-1M5
Tel: (250) 245-7155 Fax: (250) 245-7140

1411

December 15, 2005

Rob Hutchins, Mayor
Town of Ladysmith
Box 220
Ladysmith BC, V9G-1A2

Re: Letter of Support – Wastewater Treatment Plant Upgrade – Town of Ladysmith

Dear Mr. Hutchins,

Earlier today I wrote a support letter to the Honorable Ida Chong regarding the above project that the town of Ladysmith will be initiating to improve better management of our sensitive marine environments. This was only done after discussion with my natural resources staff and their positive feedback.

I would like to add that I am frustrated regarding the process that your staff have taken with respect towards meaningful consultation with me, my council and the administration staff who are responsible for these types of projects within our traditional territory. I found it very disturbing that the staff, responsible for the protection of our nation's interests, were not given an opportunity to fully review the project details and fully comprehend the severity it may have on our interests or aboriginal rights, due to your time frames.

Therefore, I write to express that only after discussions with my natural resources manager, did I felt comfortable in providing the letter of support for the project. I'm saddened and I am suggesting that better communications between our communities be implemented in the future, but also that we need to develop a mechanism for dealing with each other on a government to government basis.

I want to remind you, we don't view ourselves as stakeholders within our traditional territory, but are the caretakers of a resource that has been our sustenance since time immemorial.

We are also striving for the greatest benefit for our communities and since we are going to be neighbors for centuries to come, I believe we must work together to establish an understanding of each others aspirations and common goals within our beautiful geographical area for the benefit of both our communities and our future generations.

Sincerely,

Chief Terry Sampson

TS/wj

Hul'qumi'num TREATY GROUP
12611B Trans Canada Highway
Ladysmith, B.C. V9G 1M5
Ph: (250) 245-4660 fax: (250) 245-4668
Toll Free: 1-888-9TREATY
E-Mail: htg-communications@shaw.ca

CHEMAINUS FIRST NATION
LAKE COWICHAN FIRST NATION
COWICHAN TRIBES
LYACKSON FIRST NATION
HALALT FIRST NATION
PENELAKUT TRIBE

June 13, 2005

Joe A. Friesenhan, A.Sc.T., Director of Public Works
Town of Ladysmith
410 Esplanade, PO Box 220
Ladysmith, B.C. V0R 2E0
FAX: 250-245-6411

RE: Town of Ladysmith's proposed Waste Water Treatment Centre atop recorded archeological site, DfRw-013

Dear Mr. Friesenhan,

The staff of Hul'qumi'num thank you for the tour of the Ladysmith Sewage Treatment Plant and the area proposed for upgrade. The Hul'qumi'num Treaty Group (HTG) appreciates the efforts of Town of Ladysmith's Public Works Department's to protect our First Nations' archaeological heritage site, DfRw-013, during the planning phase of the proposed new Waste Water Treatment Center at Holland Creek.

HTG acknowledges that the current building plans have been redesigned to avoid the disturbance of the majority of archaeological deposits at DfRw-013; however, we caution the Town of Ladysmith that there are recorded archaeological materials within the proposed development area that require further archaeological attention.

First, we note that the Archaeological Impact Assessment study identified at least three positive subsurface tests (ST 32-34) in the proposed development area located on the upper terrace (pp.11). According to the preliminary site plans, these archaeological materials are located in the area of the proposed new Stage 1 service building, sludge pumps, and seawater tanks. In Appendix 1 of the AIA study, ArchaeoResearch Ltd. has interpreted that the cultural deposits observed in ST 32-34 are small, shallow, redistributed concentrations of archaeological materials. Regardless of their condition, however, please be advised that s.13 (2) of the *Heritage Conservation Act* [R.S.B.C. 1996, chapter 187] protects all archaeological materials from any non-permitted disturbance.

Secondly, we understand that the boundary of the proposed development area is located within and estimated two metres from observed archaeological deposits on the upper terrace at DfRw-013. The Hul'qumi'num Treaty Group is concerned that there is a high potential for the disturbance of archaeological materials by proposed development activity on the periphery of the estimated DfRw-013 site boundary.

Thirdly, based on our review of the ArchaeoResearch Ltd.'s *Archaeological Impact Assessment Study* ['AIA'] (2004), it is evident that the DfRw-013 archaeological site since last recorded by the provincial government in 1974 has been largely destroyed by the past construction of the municipal sewage treatment plant in the Town of Ladysmith. The DfRw-013 site form of 1974 estimated the original site boundary at 120 m x 30 m – a size three times larger than the present estimate of 42 m x 13 m in 2004. The Hul'qumi'num Treaty Group is concerned that there may additional unrecorded archaeological materials, deposits and features within the Waste Water Treatment Plant property that may be negatively impacted by proposed development activity.

For these reasons, the Hul'qumi'num Treaty Group recommends that the Town of Ladysmith contact the Archaeology and Registry Services Branch, Ministry of Sustainable Resource Management for further advice on whether the Town of Ladysmith is required to apply for a Heritage Site Alteration Permit (s.12) *Heritage Conservation Act* [RSBC 1996, Chapter 187] prior to proceeding with its proposed construction. The purpose of a Heritage Site Alteration Permit is to receive provincial authorization to conduct a defined set of activities that may alter a recorded archaeological site. A permit provides a detailed outline of the proposed development activities and conservation measures necessary to mitigate any related negative impacts to an archaeological site, such as monitoring of all land-altering development activities. Importantly, a Heritage Site Alteration Permit is held by a representative in charge of the development (ie. the Town of Ladysmith), not a contracted archaeological consultant.

The Hul'qumi'num Treaty Group would be pleased to assist the Town of Ladysmith in this matter and work directly with our First Nations to accommodate our concerns. Thank you for your consideration of our First Nations' heritage in the Town of Ladysmith – *Heritage-by-the-Sea*. If you have any questions, please contact Kathleen Johnnie, Referrals Co-ordinator at 250-245-4660, or if you prefer email: kathleenj@hulquminum.bc.ca

Huy ch qa (Thank you).

for

Robert Morales, Chief Negotiator
Hul'qumi'num Treaty Group

cc. Robert Hutchins, Mayor, Town of Ladysmith (250-245-6411)
Honourable George Abbott, MSRM (250-356-8273)
Justine Batten, Director, Archaeology and Registry, MSRM (250-952-4188)
Chemainus First Nation, Chief and Council
attn: Warren Johnny and Ramona Sampson

AN ARCHAEOLOGICAL INVENTORY SURVEY OF TRANSFER BEACH PARK, LADYSMITH, B.C.

CONDUCTED UNDER HERITAGE INSPECTION PERMIT 2004–019

PREPARED FOR:

TOWN OF LADYSMITH
P.O. BOX 220
LADYSMITH, B.C. V9G 1A2

PREPARED BY:

ARCHAEO RESEARCH LIMITED
205 – 2614 BRIDGE STREET
VICTORIA, B.C. V8T 4S9

MAY, 2004

TOWN OF LADYSMITH
LIQUID WASTE MANAGEMENT PLAN

PUBLIC INPUT FORM

Please let us know your thoughts and preferences regarding the way the Town of Ladysmith treats waste water (sewage). First, review the following information carefully.

Every time we flush a toilet, we make waste that needs to go somewhere. Where does it go, and what happens to it along the way?

Most of us don't spend much time thinking about what needs to be done to our raw sewage so that it is safe to dispose of.

The Town of Ladysmith has spent a lot of time thinking about what to do with our sewage, and is developing a Liquid Waste Management Plan. This plan will lay out how the Town can best manage its liquid waste (sewage) for the next thirty to fifty years.

An Advisory Committee made up of local residents as well as provincial government officials has developed a number of options, and has consulted with the public as well as the Stz'uminus First Nation. It is clear from feedback received that our community supports actions that protect the local environment, especially the water quality in Ladysmith Harbour.

Before finishing the Liquid Waste Management Plan, we want to hear from the residents of Ladysmith. Please read the information here carefully, fill out the questionnaire below, and let us know your thoughts, comments and suggestions.

Highlights of the draft Liquid Waste Management Plan include:

- Manage waste water effectively
  - Upgrade Ladysmith's sewage treatment plant from Primary Treatment to Secondary Treatment to meet Provincial and Federal regulations, and discharge the treated water into Ladysmith Harbour
  - Complete an environmental impact study after the sewer plant upgrade to make sure that water quality in Ladysmith Harbour meets Provincial and Federal regulations to protect water and shellfish
  - If need be, develop a more advanced waste water treatment system, and/or move the outlet for the treated waste water outside the Harbour (after studies are completed to find the best and safest location for the outlet)
  - Purchase property for future replacement or expansion of the sewer treatment facility at a new location.

- Reduce the amount of waste water in the system
  - Keep storm runoff out of the sewer system
  - Encourage citizens to make less sewage by using less water

- Manage storm water in the sewer system
  - Find ways to keep rainwater in the ground rather than running into storm drains
  - Encourage development that preserves natural drainage systems

- Reclaim and reuse resources
  - Use reclaimed water at the upgraded waste water treatment plant for things like washdown, watering or processing
  - Reclaim storm run-off in pockets of new development such as Holland Creek
  - Extract heat from waste water to use in the treatment plant
  - Make electricity from a turbine on the effluent (sewage) stream at the treatment plant

- Use leftover, treated waste solids
  - Work with the Cowichan Valley Regional District on a joint composting project
  - Look into other uses or partnerships with the private sector (this would require further processing of the waste solids before taking them off-site)

- Prevent hazardous and toxic waste from entering the sewer and storm drain systems
  - Through monitoring, education and development of bylaws to set standards
  - Keep track of discharge by businesses and industry

HOW MUCH IS THIS GOING TO COST ME AS A TAXPAYER?

The cost of the new secondary sewage treatment plant depends on how much money the Town receives in grants from the provincial and federal governments and how much can be collected through development fees. Waste water treatment plants are expensive to build, and moving to a further amount of treatment of the raw sewage will lead to higher operating costs. The estimated cost increase to implement the plan as outlined here shown in the table below. Each Ladysmith household that is connected to the sewer system currently pays $154 a year without grant funding to help pay for the sewer plant upgrades for secondary treatment this annual amount will go up to $269. Please see table:

Project	Cost	Additional Cost to Taxpayer
Completed Upgrades and Current Work on the First Phase of Secondary Treatment	$5,500,000	None
Future Secondary Treatment	$12,000,000	None (with grant) or $115 Annually (without grant)
Future Upgrade if Required (2020)		
Extend Outfall Outside Harbour	$5,000,000	$115 Annually (without grant & without growth)
OR		
Advanced Treatment	$7,000,000	$166 Annually (without grant & without growth)

Please take a few minutes to fill out the attached input form. This is your chance to let us know what you think about the Town's plans for treating our sewage and to share any comments or suggestions.

If you would like further information, visit our website at www.ladysmith.ca, or contact Joe Friesenhan, Director of Public Works (250.245.6440; jfriesenhan@ladysmith.ca).

Please return your completed form **by September 2, 2011** to :

- City Hall at 410 Esplanade
- Public Works at 330 6th Avenue
- Frank Jameson Community Centre at 660 6th Avenue

OR mail it to: Town of Ladysmith, P.O. Box 220, Ladysmith BC V9G 1A2

With the options for sewage treatment and their estimated costs in mind, please state whether or not you agree with the following statements:

(1) The Town of Ladysmith should expand and upgrade the existing wastewater treatment plant from primary to secondary treatment of waste water to meet Provincial and Federal regulations.

Strongly Agree ☐ Somewhat Agree ☐ ☐ Somewhat Disagree Strongly Disagree ☐ Not Sure ☐

(2) If needed to protect Ladysmith Harbour, the outlet for treated waste water should be moved outside the harbour

Strongly Agree ☐ Somewhat Agree ☐ Somewhat Disagree ☐ Strongly Disagree ☐ Not Sure ☐

(3) If needed to further protect Ladysmith Harbour, the waste water treatment plant should be upgraded to provide additional advanced treatment

Strongly Agree ☐ Somewhat Agree ☐ Somewhat Disagree ☐ Strongly Disagree ☐ Not Sure ☐

(4) If feasible, features should be added at the waste water treatment plant to allow heat and energy recovery

Strongly Agree ☐ Somewhat Agree ☐ Somewhat Disagree ☐ Strongly Disagree ☐ Not Sure ☐

Additional comments or thoughts:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Thank you for taking the time to give us your comments and thoughts.
Your input is vital to this process.

WELCOME!

Please let us know your thoughts and preferences regarding the way the Town of Ladysmith treats sewage. This survey hsould take no more than 10 minutes of your time. The first three pages contain important information to help you answer the four short survey questions.

Your answers will be completely ananymous. In order to progress through this survey, please use the following navigation buttons:
~ Click the 'Next' button to continue to the next page
~ Click the 'Previous' button to return to the previous page.
~ Click the 'Exit the Survey Early' button if you need to exit the survey.
~ Click the 'Submit' button to submit your survey.

READ THIS FIRST -- IMPORTANT INFORMATION

Every time we flush a toilet, we make waste that needs to go somewhere. Where does it go, and what happens to it along the way?

Most of us don't spend much time thinking about what needs to be done to our raw sewage so that it is safe to dispose of.

The Town of Ladysmith has spent a lot of time thinking about what to do with our sewage, and is developing a Liquid Waste Management Plan. This plan will lay out how the Town can best manage its liquid waste (sewage) for the next thirty to fifty years.

An Advisory Committee made up of local residents as well as provincial government officials has developed a number of options, and has consulted with the public as well as the Stz'uminus First Nation. It is clear from feedback received that our community supports actions that protect the local environment, especially the water quality in Ladysmith Harbour.

Before finishing the Liquid Waste Management Plan, we want to hear from the residents of Ladysmith. Please read the information here carefully, answer the four short questions, and let us know your thoughts, comments and suggestions.

LADYSMITH'S SEWAGE TREATMENT PLAN -- HIGHLIGHTS

Highlights of the draft Liquid Waste Management Plan include:

1. Manage waste water effectively
o Upgrade Ladysmith's sewage treatment plant from Primary Treatment to Secondary Treatment to meet Provincial and Federal regulations, and discharge the treated water into Ladysmith Harbour
o Complete an environmental impact study after the sewer plant upgrade to make sure that water quality in Ladysmith Harbour meets Provincial and Federal regulations to protect water and shellfish
o If need be, develop a more advanced waste water treatment system, and/or move the outlet for the treated waste water outside the Harbour (after studies are completed to find the best and safest location for the outlet)
o Purchase property for future replacement or expansion of the sewer treatment facility at a new location.

2. Reduce the amount of waste water in the system
o Keep storm runoff out of the sewer system
o Encourage citizens to make less sewage by using less water

3. Manage storm water in the sewer system
o Find ways to keep rainwater in the ground rather than running into storm drains
o Encourage development that preserves natural drainage systems

4. Reclaim and reuse resources
o Use reclaimed water at the upgraded waste water treatment plant for things like washdown, watering or processing
o Reclaim storm run-off in pockets of new development such as Holland Creek
o Extract heat from waste water to use in the treatment plant
o Make electricity from a turbine on the effluent (sewage) stream at the treatment plant

5. Use leftover, treated waste solids
o Work with the Cowichan Valley Regional District on a joint composting project
o Look into other uses or partnerships with the private sector (this would require further processing of the waste solids before taking them off-site)

6. Prevent hazardous and toxic waste from entering the sewer and storm drain systems
o Through monitoring, education and development of bylaws to set standards
o Keep track of discharge by businesses and industry

HOW MUCH IS THIS GOING TO COST ME AS A TAXPAYER? GO TO THE NEXT PAGE...

HOW MUCH WILL LADYSMITH'S PROPOSED SEWAGE TREATMENT PLAN COST?

The cost of the new secondary sewage treatment plant depends on how much money the Town receives in grants from the provincial and federal governments and how much can be collected through development fees. Waste water treatment plants are expensive to build, and moving to a further amount of treatment of the raw sewage will lead to higher operating costs. The estimated cost increase to implement the plan as outlined here shown in the table below. Each Ladysmith household that is connected to the sewer system currently pays $154 a year without grant funding to help pay for the sewer plant upgrades for secondary treatment this annual amount will go up to $269. Please see table:

SEWAGE TREATMENT COSTS		
Project	**Cost**	**Additional Cost to the Taxpayer**
Completed Upgrades and Current Work on the First Phase of Secondary Treatment	$5,500,000	None
Future Secondary Treatment	$12,000,000	None (with grant) or $115 Annually (without grant)
Future Upgrade if Required (2020)		
Extend Outfall Outside Harbour	$5,000,000	$115 Annually (without grant & without growth)
or		
Advanced Treatment	$7,000,000	$166 Annually (without grant & without growth)

Four simple questions are all you need to answer, and then you are done.

1. The Town of Ladysmith should expand and upgrade the existing wastewater treatment plant from primary to secondary treatment of waste water to meet Provincial and Federal regulations.

- Strongly Agree
- Somewhat Agree
- Somewhat Disagree
- Strongly Disagree
- Not Sure

2. If needed to protect Ladysmith Harbour, the outlet for treated waste water should be moved outside the harbour

- Strongly Agree
- Somewhat Agree
- Somewhat Disagree
- Strongly Disagree
- Not Sure

3. If needed to further protect Ladysmith Harbour, the waste water treatment plant should be upgraded to provide additional advanced treatment

- Strongly Agree
- Somewhat Agree
- Somewhat Disagree
- Strongly Disagree
- Not Sure

4. If feasible, features should be added at the waste water treatment plant to allow heat and energy recovery.

- Strongly Agree
- Somewhat Agree
- Somewhat Disagree
- Strongly Disagree
- Not Sure

YOUR THOUGHTS AND COMMENTS

5. Please tell us your thoughts, comments or concerns.

YOUR WORK IS DONE!

Thank you for taking the time to give us your comments and thoughts. Your input is vital to the process!

If you would like more information, please visit www.ladysmith.ca and click on the Sewage Treatment link on the home page.

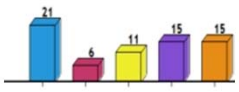
Or, contact Joe Friesenhan, Director of Public Works, at 250.245.6440 or jfriesenhan@ladysmith.ca

Done 68

Audience Question #1

- How did you first hear about this meeting?

A. Local Newspaper
B. Town Bulletin Board
C. Electronic Notice, Twitter, Facebook
D. Town Newsletter in Utility Bill
E. Word of Mouth

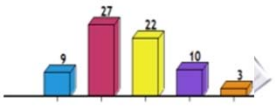


Done 71

Audience Question #2

Throughout the evening there will be many opportunities to ask questions or make a statement. In the interest of allowing everyone voices to be heard how much time do you wish to allow for individual question-statements?

A. Thirty seconds
B. One Minute
C. Two Minutes
D. Three Minutes
E. Five Minutes

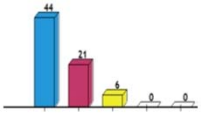


Done 71

Audience Question #3

Where do you live in Ladysmith?

A. North of the Holland Creek
B. South of the Holland Creek
C. I do not live in Ladysmith

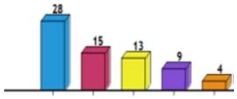


Wait 0

Audience Question #4

How long have you lived in Ladysmith?

A. < 10 years
B. 10 – 20 years
C. 21 – 40 years
D. 41 + years
E. I do not live in Ladysmith



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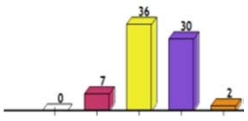
Audience Question #5

What is your age?

A. < 24 years
B. 24 – 39 years
C. 40 – 59 years
D. 60 - 79 years
E. 80+

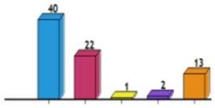


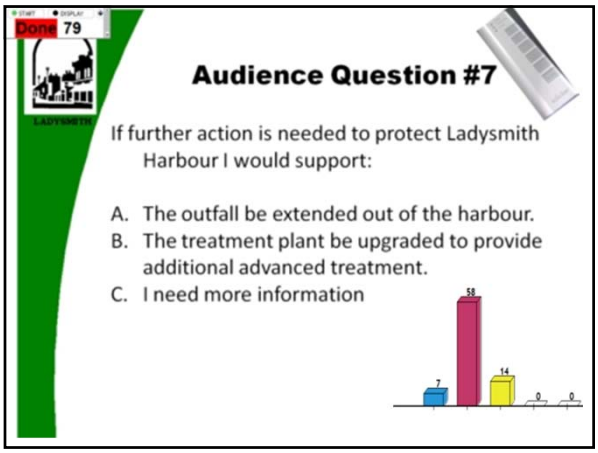
Done 78

Audience Question #6

The Town of Ladysmith should expand and upgrade the existing wastewater treatment plant from primary to secondary treatment ?

A. Strongly Agree
B. Agree
C. Disagree
D. Strongly Disagree
E. I need more information




Done 79
Audience Question #7
If further action is needed to protect Ladysmith Harbour I would support:
A. The outfall be extended out of the harbour.
B. The treatment plant be upgraded to provide additional advanced treatment.
C. I need more information
7
58
14
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JOINT NEWS RELEASE

FOR IMMEDIATE DISTRIBUTION

STZ'UMINUS FIRST NATION AND TOWN OF LADYSMITH SIGN MEMORANDUM OF UNDERSTANDING TO GUIDE JOINT PROJECTS

LADYSMITH, August 27, 2012 – The Councils of the Town of Ladysmith and Stz'uminus First Nation today signed a new and far-reaching joint agreement, this one designed to guide how they will work together on specific initiatives.

"This is the next step in working closely together on projects that will benefit our communities and make them stronger," said Chief John Elliot.

"The Memorandum of Understanding sets out a list of overdue and exciting joint initiatives that we will be working on together," said Ladysmith Mayor Rob Hutchins.

Joint initiatives contained in the Memorandum of Understanding (MOU) include:

- The inclusion of water and sewer services to SFN in the Town's Liquid Waste Management Plan and the support of the SFN for the LWMP and the Holland Lake/Stocking Lake Pipeline
- Service agreements for Water and Sewer Services provided by the Town of Ladysmith to 1,500 homes in IR 12 and 13, with 100 of these connections to take place in the very near future
- Collaborative watershed management for the protection of our shared drinking water supply
- Clean-up of the Ladysmith Harbour and a possible marina expansion
- Uniform bylaws for the protection of the environment
- Joint applications for mutual funding opportunities and grants
- Consultation on amendments to the Town's Official Community Plan
- Joint development of industrial land in South Ladysmith
- Inclusion of First Nations heritage and culture in future agreements and projects, and formal recognition of Stz'uminus First Nation within the Town

- Harmonization of new land use policy

The two communities first pledged in 2007 to strengthen their relationship and work together on matters of common interest when they signed their original Community Accord. In May this year, they signed an updated Accord, titled the Naut'sa Mawt (Working Together) Community Accord, which reaffirms and strengthens the communities' commitment to build their relationship and increase cooperation, and lays out specific steps for how to work together on joint initiatives.

The Memorandum of Understanding has been approved by both Councils and is effective immediately.

- 30 -

For further information:
Chief John Elliott
250.245.7155

Mayor Rob Hutchins
250.245.6403

MEMORANDUM OF UNDERSTANDING

A MEMORANDUM OF UNDERSTANDING WITH RESPECT TO STZ' UMINUS FIRST NATION AND THE TOWN OF LADYSMITH RELATIONS AND PARTNERSHIPS

BETWEEN:

STZ'UMINUS FIRST NATION	**and**	**TOWN OF LADYSMITH**
12611 Trans Canada Highway		PO Box 220, 410 Esplanade
Ladysmith, British Columbia		Ladysmith, British Columbia
V7T 1A2		V9G 1A2
("Stz'uminus First Nation")		("Town")

(Collectively referred to as the "Parties")

GIVEN THAT:

A. The Parties are engaged in discussions toward establishing a long-term, meaningful relationship in relation to their respective communities;

B. The Parties wish to work collaboratively to support their respective communities' goals and objectives in a principled manner;

C. Each of the Stz'uminus First Nation and the Town respects the lawful jurisdiction of the other Party;

D. The Stz'uminus First Nation, the Town and the Province of British Columbia have engaged in discussions as reflected in this Memorandum of Understanding respecting:

(a) Liquid Waste Management Plan Approval;

(b) IR 12 (Oyster Bay) and IR 13 (Kulleet Bay and Shell Beach) Water/Sewer Services Agreement;

(c) Holland Lake-Stocking Lake Pipeline Agreement;

(d) Watershed management;

(e) Operational services, such as building inspection, and water meter reading;

(f) Boundary extension;

(g) Ladysmith Harbour clean-up;

(h) DL 651 Partnership;

(i) Uniform bylaws for the protection of environment;

(j) Explore mutual funding opportunities;

(k) OCP consultation;

(l) South Ladysmith Stz'uminus First Nation (Crown) Land development;

(m) Incremental Treaty Process;

(n) Inclusion of First Nation's heritage/culture;

(o) Emergency Preparedness.

E. The Parties intend this Memorandum of Understanding to set out their mutual expectations and goals in relation to the matters contained herein;

F. The Memorandum of Understanding is to be read in the context of the Naut'Sa Mawt (Working Together) Community Accord and the Cooperation Protocol between the parties, and the principles stated therein;

THE PARTIES AGREE AS FOLLOWS:

Guiding Principles

1. In relation to the matters expressly addressed in this Memorandum of Understanding, the following principles apply:

(a) The Stz'uminus First Nation has constitutionally protected rights and it asserts aboriginal rights and title to its traditional territory; and

(b) The Town is a municipality with governance authorities as set out in Provincial legislation; and

(c) The Stz'uminus First Nation is a first nation with governance authority under federal law and rights of a self-governing nation; and,

(d) The Stz'uminus First Nation and the Town have mutual interests and shared objectives; and

(e) The Stz'uminus First Nation and the Town are building a working relationship based on mutual respect, cooperation, friendship, and trust; and

(f) The Stz'uminus First Nation and the Town wish to further their relationship by entering into this Memorandum of Understanding following up on the Community Accord and Cooperation Protocol.

Liquid Waste Management Plan Approval

2. (a) The Stz'uminus First Nation supports the Town's Liquid Waste Management Plan.

(b) The Town will provide the Stz'uminus First Nation with capacity in the Town's Waste Treatment Plant upgrade, in order to provide IR 12 and IR 13 with sanitary sewer services to facilitate the orderly and efficient development of IR 12 and IR 13.

(c) The Stz'uminus First Nation will on the reference date of an agreement between the parties with respect to section 3(c) deliver to the Province of British Columbia a letter supporting the Town's Liquid Waste Management Plan.

IR 12 AND IR 13 Water/Sewer Services Agreement

3. (a) The Town will provide water and sanitary services

(i) for 1000 connections to the Stz'uminus First Nation's IR12 Reserve Lands (Oyster Bay); and

(ii) for 500 connections to the Stz'uminus First Nations IR13 Reserve Lands (Kulleet Bay and Shell Beach) Lands, plus potential capacity for additional units in the future,

at the same level of service the Town provides to lands and occupants throughout the Town, on generally the same terms and conditions, and subject in all respects to the same limitations, as are applicable to the provision of these services to lands in the Town and to occupants of those lands, after the Town completes the upgrade of its sewer and water capacity.

(b) The parties will develop the phraseology of mutually satisfactory services agreements to implement sub-paragraphs (a)(i) and (ii).

(c) Despite section 3(a), and until the parties can enter into the agreements under section 3(b), the parties will enter into an interim water and sewer services agreement for the Town to provide such services for the first 100 connections (of the total number of 1000 connections) for water and sewer for use by the Stz'uminus First Nation on IR 12 (Oyster Bay). This interim agreement will be amalgamated with the final comprehensive agreement referred to in section 3(b).

Holland Lake – Stocking Lake Pipeline Agreement

4. The Stz'uminus First Nation will, on the reference date of an agreement to provide water and sanitary sewer services under section 3(c), deliver to the Province of British Columbia a letter to support the Town's proposal to construct, install, operate, and maintain and repair a potable water pipeline between Holland Lake and Stocking Lake.

Watershed Management

5. The Stz'uminus First Nation and the Town will work together and facilitate stakeholders (e.g. other government agencies and private land owners) to develop a watershed management plan in relation to the Town's water service and commitments under its LWMP, and the Town will manage the plans and the services.

Operational Services

6. (a) In the Water and Sewer Services Agreement referred to in section 3(b), the parties may include provision by the Town of other services of an operational nature, including building inspection and water meter reading. Other services that may be discussed include preparation of tax notices, bylaw enforcement, police services or other matters. The Agreement will also include provision by Stz'uminus First Nation of services to the Town including but not limited to operational services. It is the intent to reduce duplication of services to the extent feasible.

   (b) The parties will develop phraseology for a mutually satisfactory set of provisions for operational services to be included in the services agreement.

Boundary Extension

7. (a) The Stz'uminus First Nation supports the extension of the Town's boundaries in the area shown on Schedule A, subject to the satisfactory conclusion of discussions between Stz'uminus First Nation and third parties.

   (b) The Stz'uminus First Nation will on the reference date of the agreement made between the parties under section 3(c) deliver to the Province of British Columbia a letter to support the boundary extension.

Ladysmith Harbour Clean-Up

8. The Stz'uminus First Nation and the Town will work together to utilize their jurisdiction, resources and capacity to work with the Federal and Provincial governments agencies and the private sector to take such action as may be necessary to move in the direction of ultimately restoring Ladysmith Harbour to its original natural state, subject to the limited financial resources of each of the parties.

DL 651 Partnership

9. (a) The Stz'uminus First Nation and the Town will continue their discussions on utilizing DL 651 for the purposes of cleaning up Ladysmith Harbour, further to section 8, and ultimately for the purpose of an expanded marina as a joint project in which both will have a significant role and interest.

   (b) The parties will develop the phraseology of a mutually satisfactory DL 651 partnership agreement.

Uniform Bylaws for the Protection of Environment

10. (a) The Stz'uminus First Nation and the Town will consult on the desirability of harmonizing and making uniform a number of regulatory bylaws that would apply in the Town and on the Reserve in relation to the protection of the environment or other regulatory matters.

    (b) Both the Town and Stz'uminus First Nation will follow the commitments under the LWMP (e.g. source point control bylaw).

    (b) Subject to its ongoing discussions on land use and management leading to its land code, the objective of the Stz'uminus First Nation is that every person on the Reserve who uses water obtained from the Town water supply system act consistent with orders or bylaws respecting water use restrictions and orders or bylaws respecting fire protection and building safety.

Explore Mutual Funding Opportunities

11. Each of the parties has access to unique funding opportunities for capital works, including infrastructure, facilities and services. The parties will work together on an overarching mutual funding opportunity plan.

Official Community Plan Consultation

12. Under section 879 of the *Local Government Act*, the Town will consult with the First Nation on amendments to the Town's Official Community Plan by providing the First Nation with early and ongoing opportunities to make submissions to the Town in relation to the preparation of an Official Community plan amendment, to attend a meeting with the Town's staff if desired by the First Nation, and to make submissions at the formal public hearing if the First Nation so desires.

South Ladysmith Stz'uminus First Nation (Crown) Land Development

13. The parties will develop the phraseology of a mutually satisfactory servicing agreement and development plan in respect of the South Ladysmith Crown Land Development by the Stz'uminus First Nation.

Incremental Treaty Process

14. (a) The Stz'uminus First Nation will consult with the Town in relation to the Incremental Treaty Process on the same basis as the Town consults with the First Nation in relation to Official Community Plan amendments under section 12.

    (b) Without limiting paragraph 9(b) or 14(a), the Parties may develop partnerships in relation to Crown Land located within the Town, and in this regard may develop the phraseology of a mutually satisfactory partnership agreement for each partnership.

Inclusion of First Nation's Heritage/Culture

15. (a) The Town acknowledges and agrees that the Stz'uminus First Nation's heritage and culture will be reflected in each of the agreements, plans and understanding reached by the parties under this Memorandum of Understanding.

    (b) The parties will provide for the formal recognition of Stz'uminus First Nation within the Town.

Emergency Preparedness.

16. The parties will work together to enhance the Cowichan Valley Regional District's emergency preparedness plan.

Land Use Strategy

17. The Stz'uminus First Nation and the Town will work together towards land use policy harmonization in the context of the Town's Official Community Plan, the Stz'uminus First Nation's Oyster Bay Land Use Plan and Smart Growth Principles, recognizing that each is subject to laws and statutory requirements and each is an independent government whose discretion cannot be fettered.

General

18. This Memorandum of Understanding is not a binding legal agreement. It does not define, create, recognize or amend the rights of the Parties. This Memorandum of Understanding is not intended to be a treaty or a land claims agreement within the meaning of sections 25 and 35 of the *Constitution Act, 1982*. Nothing in this Memorandum of Understanding, or anything done based on it, is to be taken as limiting, interfering with, or derogating from the constitutionally protected rights of Stz'uminus First Nation and the assertion by it of its aboriginal rights and title to its traditional territory.

19. Nothing in this Memorandum of Understanding obliges the Town to act in a manner inconsistent with Provincial legislative and Town bylaw regulatory jurisdictions or authorities.

20. Nothing in this Memorandum of Understanding obliges the Stz'uminus First Nation to act in a manner inconsistent with applicable laws or regulatory or other authorities having jurisdiction with respect to Stz'uminus First Nation and its affairs.

21. For greater certainty, this Memorandum of Understanding will not be interpreted in a manner which fetters the discretion of statutory decision makers.

Public Messaging

22. Given that the Parties are engaged in discussions toward establishing a long-term, meaningful relationship in relation to their respective communities, the Parties will work together in relation to constructive positive public messaging in respect of this Memorandum of Understanding and the agreements arising out of it.

Schedules

23. The following schedules are attached to and form part of this Memorandum of Understanding:

    (a) Schedule A – Boundary Extension Area

EXECUTED in Ladysmith, British Columbia on the _____day of _____, 2012.

On behalf of the STZ'UMINUS FIRST NATION	**On behalf of the TOWN OF LADYSMITH**
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
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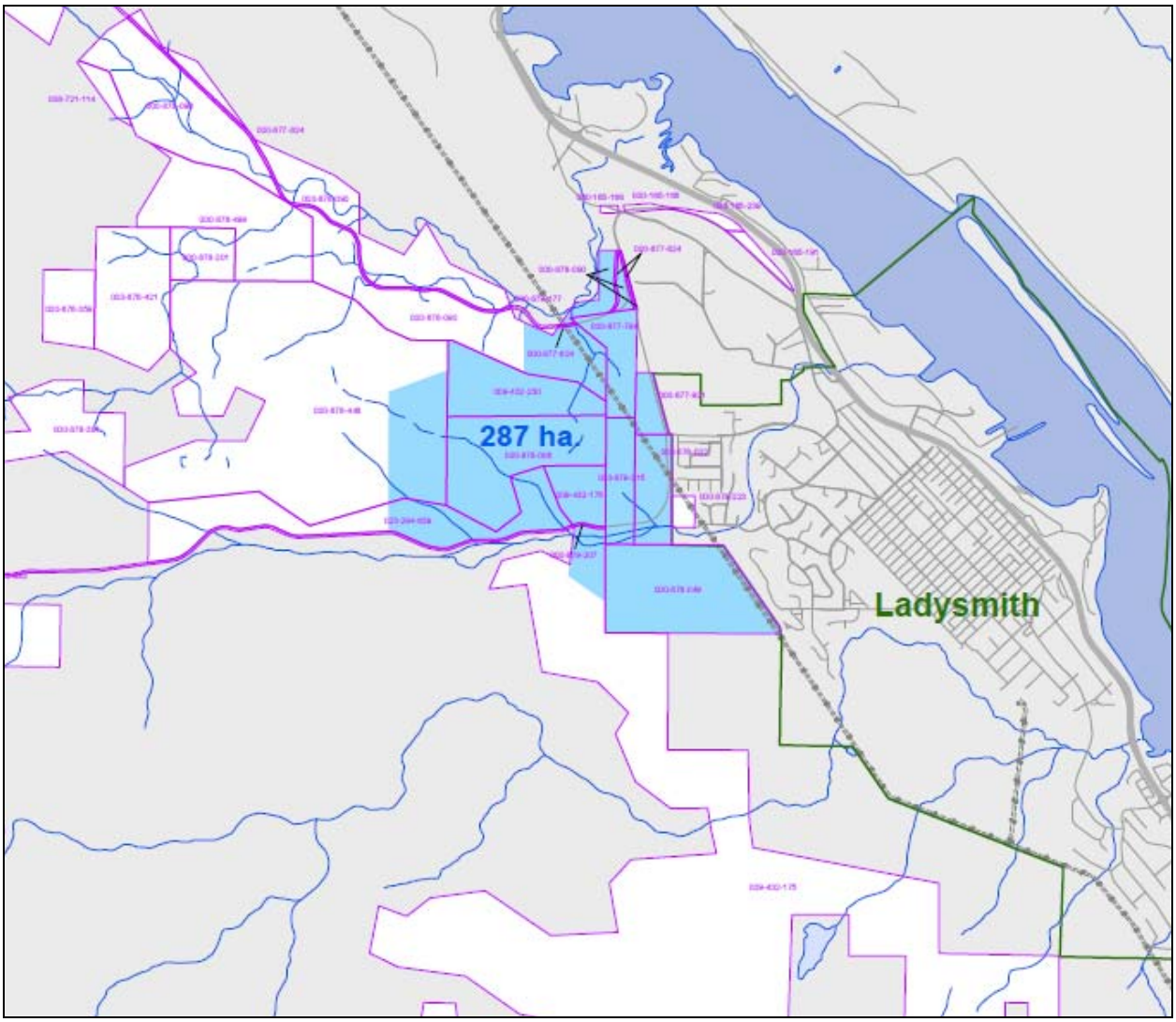
_____	

Schedule A

Boundary Extension Area



TOWN OF LADYSMITH
LIQUID WASTE MANAGEMENT PLAN – STAGE 3

APPENDIX D

ADDITIONAL DETAIL ON STAGE 3 WWTP UPGRADES AND EFFLUENT DISINFECTION

Town of Ladysmith

Liquid Waste Management Plan
Committee Meeting No. 10
April 10, 2012

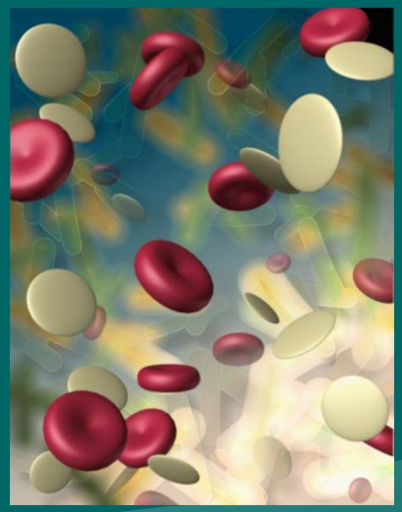
LWMP Commitments for Wastewater Management

- upgrade existing plant to secondary treatment, maintain discharge to Ladysmith Harbour
- then complete Stage 2 EIS to determine effluent quality needs for Harbour discharge, add advanced treatment and/or extend outfall if needed
- purchase additional property for possible future WWTP (min. area 4 ha, pref. 10 ha)
- identify potential location for future open marine discharge (drogue studies, dispersion modeling)
- satellite water reclamation plants for new development

WWTP Upgrade and Effluent Disinfection

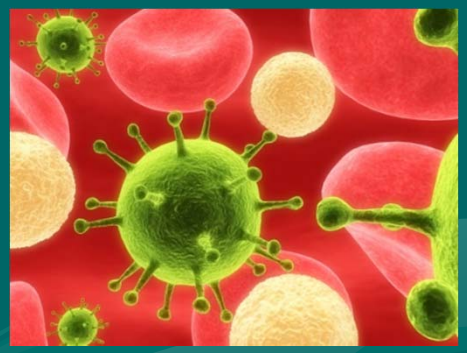
- Municipal Sewage Regulation (provincial) requirements for fecal coliforms
  - standards to be met at the edge of the Initial Dilution Zone (IDZ)
  - shellfish waters 14 MPN/100mL
  - recreational waters 200 MPN/100mL
- federal disinfection standards for continued discharge to Ladysmith Harbour to be determined
- computer modeling for existing WWTP outfall
  - worst-case dilution at IDZ boundary is about 35:1 (no diffuser)
  - if a diffuser is added, dilution improves to > 100:1
- therefore, meeting the recreational standard at end-of-pipe should meet MSR shellfish criteria at IDZ (no diffuser)

UV Disinfection vs Chlorine



- UV generally preferred over chlorination by regulatory agencies (fish toxicity)
- effectiveness of UV disinfection difficult to predict (may require tertiary filtration of effluent to reduce suspended solids to meet shellfish standards at end-of-pipe)
- chlorination (chlorine gas or sodium hypochlorite) is less affected by suspended solids (requires de-chlorination prior to release of effluent)
- decision on which to use depends in part on effluent disinfection sandards and on effluent suspended solids concentration

Ladysmith WWTP Stage 3 Upgrade



- primary-treated effluent is currently disinfected using chlorination/de-chlorination
- selected process for secondary treatment is moving bed bioreactor (MBBR) with dissolved air floatation (DAF) for solids separation
- MBBR/DAF = high quality secondary effluent
- design effluent total suspended solids concentration = 10 mg/L
- site-specific testing will be required after commissioning of MBBR/DAF process to accurately determine effectiveness of UV for disinfection

LWMP Strategy for Effluent Disinfection

- consult with Environment Canada regarding federal disinfection standards for continued discharge to harbour
- Stage 3 WWTP upgrade
  - install and commission MBBR process
  - maintain use of existing chlorine disinfection tank
  - convert from chlorine gas to sodium hypochlorite (bleach) fro disinfection
  - use sodium bisulfite for de-chlorination
- pilot study to determine feasibility and effectiveness of UV disinfection on MBBR/DAF effluent
- complete Stage 2 EIS (possible advanced treatment or outfall extension)
- review feasibility of UV disinfection in light of confirmed effluent standards, pilot testing results, and decisions resulting from Stage 2 EIS

TOWN OF LADYSMITH
LIQUID WASTE MANAGEMENT PLAN – STAGE 3

APPENDIX E

DRAFT OPERATIONAL CERTIFICATE FOR TOWN OF LADYSMITH WWTP

(to take effect after secondary treatment is implemented)

DRAFT

MINISTRY OF ENVIRONMENT

OPERATIONAL CERTIFICATE
PE-_____

Under the Provisions of the Environmental Management Act and in accordance with the Town of Ladysmith Liquid Waste Management Plan, the

Town of Ladysmith

410 Esplanade

P.O. Box 220

Ladysmith, B.C.

V9G 1A2

is authorized to discharge effluent from a municipal wastewater collection and treatment system located at Ladysmith, British Columbia to Ladysmith Harbour, subject to the conditions listed below. Contravention of any of these conditions is a violation of the Environmental Management Act and may result in prosecution. This Operational Certificate supersedes Waste Management Permit PE-120 and its amendments.

1. AUTHORIZED DISCHARGES

1.1 This subsection applies to the discharge of effluent from a wastewater treatment plant serving the Town of Ladysmith in accordance with the approved Liquid Waste Management Plan.

1.1.1 The maximum authorized rate of discharge is 15,500 m^3/d.

1.1.2 The characteristics of the discharge shall be equivalent to or better than:

5-day Carbonaceous Biochemical Oxygen Demand	45 mg/L
Total Suspended Solids	45 mg/L
Fecal coliform	14 CFU (or MPN)/100 mL at the Initial Dilution Zone Boundary

1.1.3 The authorized works are influent screening, primary treatment using the Salsnes Filter process, secondary (biological) treatment using the moving bioreactor (MBBR) process, dissolved air flotation (DAF) for separation of biological solids, disinfection using sodium hypochlorite followed by the

dechlorination using sodium bisulfite, 300 mm and 710 mm diameter parallel outfalls extending 850 m from mean low water to a depth of 17.9 m below mean low water, sludge handling and dewatering facilities, and related appurtenances approximately located as shown on attached Site Plan A.

1.1.4 The location of the facilities from which the discharge originates is the Town of Ladysmith.

1.1.5 The location of the point of discharge is Ladysmith Harbour.

2. GENERAL REQUIREMENTS

2.1 Maintenance of Works and Emergency Procedures

The Town of Ladysmith shall inspect the treatment works regularly and maintain them in good working order. In the event of an emergency or condition beyond the control of the Town of Ladysmith, which prevents continuing operation of the approved method of pollution control, the Town of Ladysmith shall immediately notify the Regional Waste Manager and take appropriate remedial action.

2.2 Bypasses

The discharge of effluent which has bypassed the designated treatment works is prohibited unless the approval of the Regional Waste Manager is obtained and confirmed in writing.

2.3 Process Modifications

The Town of Ladysmith shall notify the Regional Waste Manager prior to implementing changes to any process that may affect the quality and/or quantity of the discharge.

2.4 Plans

Plans and specifications of works authorized in Subsection 1.1.3 shall be submitted to the Regional Waste Manager. Plans of the authorized works shall be signed and sealed by a Professional Engineer licensed to practice in the Province of British Columbia.

2.5 Posting of Outfall

The Town of Ladysmith shall maintain a sign along the alignment of the outfall above high water mark. The sign shall identify the nature of the works. The wording and size of the sign requires the approval of the Regional Waste Manager.

2.6 Outfall Inspection

The Town of Ladysmith may be required to inspect the outfall line. The inspection shall be conducted when directed by the Regional Waste Manager.

2.7 Waste Solids Reuse and Disposal

Waste solids from the treatment plant shall be reused in accordance with the Organic Matter Recycling Regulation.

2.8 Standby Power

The Town of Ladysmith shall provide auxiliary power facilities to insure the continuous operation of the treatment works and operations building during power outages.

2.9 Odour Control

Should objectionable odours, attributable to the operation of the sewage treatment plant, occur beyond the property boundary, as determined by the Regional Waste Manager, measures or additional works will be required to reduce odour to acceptable levels.

2.10 Facility Classification and Operator Certification

The Town of Ladysmith shall have the works authorized by this Operational Certificate classified (and the classification shall be maintained) by the "Environmental Operators Certification Program Society" (Society). The works shall be operated and maintained by persons certified within and according to the program provided by the Society. Certification must be completed to the satisfaction of the Regional Waste Manager. In addition, the Regional Waste Manager shall be notified of the classification level of the facility and certification level of the operators, and changes of operators and/or operator certification levels within 30 days of any change.

Alternatively, the works authorized by this Operational Certificate shall be operated and maintained by persons who the Town of Ladysmith can demonstrate to the satisfaction of the Regional Waste Manager, are qualified in the safe and proper operation of the facility for the protection of the environment.

3. MONITORING AND REPORTING REQUIREMENTS

3.1 Discharge Monitoring

3.1.1 Flow Measurement

The Town of Ladysmith shall provide and maintain a suitable flow measuring device and record once per day the effluent volume discharged over a 24-hour period.

3.1.2 Sampling and Analysis

The Town of Ladysmith shall obtain composite samples of the effluent except as otherwise noted below. The composite samples shall comprise samples taken over a 24 hour period.

The following samples and analyses shall be obtained:

Parameters	Frequency
5-day Carbonaceous Biochemical Oxygen Demand	weekly
Non-filterable Residue (total suspended solids)	weekly
Total Phosphorus	monthly
Total Kjeldahl Nitrogen	monthly
Ammonia	monthly
Nitrates	monthly
Fecal Coliforms	monthly grab
pH	monthly
Toxicity	annually grab

Proper care should be taken in sampling, storing and transporting the samples to adequately control temperature and avoid contamination, breakage, etc.

3.2 Monitoring Procedures

3.2.1 Analyses

Analyses are to be carried out in accordance with procedures described in the latest version of "British Columbia Environmental Laboratory Manual for the Analysis of Water, Wastewater, Sediment and Biological Materials, (2005 Permittee Edition)", or by suitable alternative procedures as authorized by the Regional Waste Manager.

Analyses for determining the toxicity of liquid effluent to fish shall be carried out in accordance with the procedures described in the "Laboratory

Procedures for Measuring Acute Lethal Toxicity of Liquid Effluent to Fish" dated November, 1982.

Copies of the above manual are available on the Ministry of Environment website at the following link
www.env.gov.bc.ca/air/wamr/labsys/field_man_03.html

3.2.2 Sampling Location and Techniques

Sampling and flow measurement shall be carried out in accordance with the procedures described in "British Columbia Field Sampling Manual for Continuous Monitoring plus the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment and Biological Samples 2003 Edition (Permittee)", or most recent edition, as published by the Ministry of Environment, or by suitable alternative procedures as authorized by the Regional Waste Manager.

Copies of the above manual are available from the Ministry of Environment website at the following link
www.env.gov.bc.ca/air/wamr/labsys/lab_main_03.html.

The referenced manuals may also be purchased from the Queen's Printer Publication's Center, P.O. Box 9452, Stn. Prov. Gov., Victoria, B.C., V8W 9V7 (1-800-663-6105) and are available for inspection at all Environmental Protection offices.

3.5 Reporting

The Town of Ladysmith shall maintain data analyses and flow measurements for inspection, and every month, submit the data, suitably tabulated, to the Regional Waste Manager for the previous month.

3.6 Annual Report

The Town of Ladysmith shall submit an annual report on or before March 31 of the year.

The annual report shall review and interpret monitoring data for the preceding calendar year and provide graphical analysis with suitable interpretations of any trends in the monitoring results.

The annual report shall review the performance of the sewage treatment system and identify any necessary changes to the treatment process and for works.

LADYSMITH

TOWN OF LADYSMITH
LIQUID WASTE MANAGEMENT PLAN – STAGE 3

APPENDIX F

EXAMPLE STORM DRAINAGE BYLAW

THE CORPORATION OF THE DISTRICT OF SAANICH

BYLAW NO. 7501

FOR THE REGULATION AND PROTECTION OF NATURAL WATER COURSES, DITCHES, AND DRAINS

WHEREAS the Council may by bylaw pursuant to Section 587(a) of the *Municipal Act* prohibit a person from fouling, obstructing or impeding the flow of a stream, creek, waterway, watercourse, ditch, drain or sewer whether or not it is situate on private property and may provide for the imposition of penalties for the contravention of these regulations;

AND WHEREAS the Council may by bylaw pursuant to Section 589 of the *Municipal Act* provide for defining the channel or bed of a stream as defined by the *Water Act*, passing through the Municipality and provide works to protect its banks from erosion or damage;

AND WHEREAS Council by bylaw may require manufacturers and processors to dispose of the waste from their plants in a manner directed by bylaw pursuant to Section 932(j) of the *Municipal Act*;

NOW THEREFORE the Council of the Corporation of the District of Saanich in open meeting assembled enacts as follows:

1. **Definitions**

(a) "Air" means the atmosphere but, except in a sewer or a stormwater management facility or as the context may otherwise require, does not include the atmosphere inside a constructed enclosure that is not open to the weather.

(b) "Air contaminant" means any substance or odour whether gaseous, liquid, solid or a combination that is emitted into the air and that:

(i) injures or is capable of injuring the health or safety of a person,
(ii) injures or is capable of injuring property or any life form,
(iii) interferes or is capable of interfering with visibility,
(iv) interferes or is capable of interfering with the normal conduct of business,
(v) causes or is capable of causing material physical discomfort to a person, or
(vi) damages or is capable of damaging the environment.

(c) “Biomedical waste” means biomedical waste as defined in “Guidelines for the Management of Biomedical Waste” established by the Canadian Council of Ministers of the Environment (CCME) and dated February 1992.

(d) “Colour” means the true colour of water from which turbidity has been removed, as determined by the appropriate procedure in Standard Methods.

(e) “Composite sample” means a sample which is composed of equivalent portions of a specified number of grab samples collected manually or automatically at the same sampling point, at specified times or flow intervals during a specified sampling period.

(f) “Condensed water” means water which is produced through the process of condensation and includes condensate drainage from refrigeration equipment, air conditioning equipment and steam heating systems.

(g) “Council” means the Council of the Corporation of the District of Saanich.

(h) “Development” includes the construction of a building or structure, the placement of fill, the paving of land or any other alteration to land which causes a change to the existing drainage characteristics.

(i) “Director of Engineering” means the person duly appointed by Council as “Director of Engineering”, or any person authorized to act on his behalf.

(j) “Discharge” means to directly or indirectly introduce a substance by spilling, disposing of, abandoning, depositing, leaking, seeping, pouring, draining, emptying, or by any other means.

(k) “Domestic waste” means waste, sanitary waste and the water-carried wastes from drinking, culinary uses, washing, bathing, laundering or food processing which is introduced on a residential property.

(l) “Enactment” means any applicable act, regulation, bylaw, order, or authorization, by a federal, provincial, regional, municipal government or their authorized representatives.

(m) “Grab sample” means a sample of water or stormwater collected at a particular time and place.

(n) “Improvement District” means an improvement district incorporated under the Municipal Act.

(o) “Manager” means the Manager of Inspection Services of the Municipality and includes any other municipal employee acting under his or her authority.

(p) “Municipality” means the Corporation of the District of Saanich.

(q) “Natural Watercourse” means a watercourse or section of a watercourse which has not been physically altered from its natural state other than cleaning, clearing or the removal of vegetation.

(r) “Non-domestic waste” means all waste except domestic waste, trucked liquid waste, sanitary waste, stormwater, and uncontaminated water.

(s) “Oil and grease” means an organic substance or substances recoverable by procedures set out in Standard Methods or procedures authorized by the Manager and includes, but is not limited to, hydrocarbons, esters, fats, oils, waxes, and high-molecular weight carboxylic acids.

(t) “Oil and Grease Interceptor” means an in-ground structure designed specifically to trap oil, grease and silt contained in stormwater flows.

(u) “Owner” means any person who is registered under the Land Title Act as the owner of land, or any other person who is in lawful possession of land or who is in lawful possession or occupancy of any buildings situated on the land.

(v) “PCB” means any monochlorinated, dichlorinated, or polychlorinated biphenyl or any mixture that contains one or more of these.

(w) “Person” includes an individual, society, partnership, or corporation.

(x) “Pesticides” means pesticides regulated under the Pesticide Control Act of British Columbia.

(y) “pH” means the expression of the acidity or basicity of a solution as defined and determined by the appropriate procedure described in Standard Methods.

(z) “Pollution” means the presence in the environment of substances or contaminants that substantially alter or impair the health of the environment.

(aa) “Pool” means any water receptacle designed for decorative purposes or used for swimming or as a bath or hot tub designed to accommodate more than one bather at a time.

(bb) “Premises” means any land or building or both or any part thereof.

(cc) “Prohibited waste” means prohibited waste as defined in Schedule “A” to this Bylaw.

(dd) “Radioactive materials” means radioactive material as defined in the Atomic Energy Control Act of Canada and Regulations under that Act.

(ee) “Regional District” means the Capital Regional District.

(ff) “Residential property” means a property which is used primarily for the purpose of residence by persons on a permanent, temporary or seasonal basis.

(gg) “Sanitary waste” means waste that contains human feces, urine, blood or body fluids originating from sanitary conveniences or other sources.

(hh) “Sewer” means all pipes, conduits, drains, and other equipment and facilities, owned or otherwise under the control or jurisdiction of the Regional District, the Municipality or one or more municipalities, for collecting, pumping, and transporting wastewater and includes all such pipes, conduits, drains, and other equipment and facilities which connect with those of the Regional District, the Municipality or one or more municipalities.

(ii) “Sharps” means hypodermic needles, hypodermic syringes, blades, broken glass, and any devices, instruments or other objects which have acute rigid corners, edges or protuberances.

(jj) “Special Waste” means Special Waste as defined in the Waste Management Act of British Columbia or any legislation that replaces the Waste Management Act.

(kk) “Special Waste Regulation” means the Special Waste Regulation enacted pursuant to the Waste Management Act or any legislation that replaces the Waste Management Act.

(ll) “Standard Methods” means the latest edition of “Standard Methods for the Examination of Water and Wastewater” jointly prepared and published from time to time by the American Public Health Association, American Water Works Association, and the Water Environment Federation.

(mm) “Storm sewer” means a pipe, conduit, drain or other equipment or facilities for the collection and transmission of stormwater or uncontaminated water.

(nn) “Stormwater” means water resulting from natural precipitation from the atmosphere.

(oo) “Stormwater management facility” means an impoundment and appurtenant structures, connections and controls for containment, detention or retention of stormwater and its delayed release at a controlled rate to a receiving storm sewer or watercourse.

(pp) "Substance" includes any solid, liquid or gas.

(qq) "Trucked liquid waste" means any waste that is collected and transported from the site where the waste originated by means other than discharge to a sewer including, but not limited to, holding tanks waste, septic tank waste, chemical toilet contents, oil and grease from interceptors or traps, and other sludges of organic or inorganic origin.

(rr) "Uncontaminated water" means any water excluding stormwater but including cooling water, condensed water and water from municipal waterworks or a private water supply to which no contaminant has been added as a consequence of its use, or to modify its use by any person.

(ss) "Waste" means any substance whether gaseous, liquid or solid, that is or is intended to be discharged or discarded, directly or indirectly, to a sewer, storm sewer or stormwater management facility.

(tt) "Wastewater" means the composite of water and water-carried wastes from residential, commercial, industrial or institutional premises or any other source.

(uu) "Wastewater quality parameter" means any parameter used to describe the quality of wastewater.

(vv) "Water" includes surface water, groundwater and ice.

(ww) "Watercourse" means:

(i) a river, stream, creek, waterway, lagoon, lake, spring, swamp, marsh or other natural body of fresh water; or
(ii) a canal, ditch, reservoir or other man-made surface feature

in which water flows constantly, intermittently or at any time.

(xx) "Waterworks" means any works owned or otherwise under the control or jurisdiction of the Regional District or one or more of its member municipalities or the Greater Victoria Water District or an Improvement District that collects, treats, transports, or stores drinking water.

2. **Channel of Watercourse**

(a) Pursuant to S. 589 of the *Municipal Act* the channel or bed of each watercourse or portion of watercourse shown on Schedule "B" to this Bylaw is in the approximate location shown on Schedule "B".

(b) The Council may appropriate the channel or bed of the watercourses shown on Schedule "B", without compensation to the owner for the purpose of constructing any works authorized by S. 587, 588 or 589 of the *Municipal Act* or any successor provision.

(c) The watercourses shown on Schedule "B" are part of the municipal drainage system.

3. **Obstructing Watercourses**

No person shall foul, obstruct or impede the flow of a stream, creek, waterway, watercourse, waterworks, ditch, drain or sewer, whether or not it is situate on private property.

4. **Enclose of Watercourse**

No person shall enclose any natural watercourse in a drain or culvert without the prior written permission of the Director of Engineering; the Director of Engineering shall not grant such permission unless the enclosure has been approved by the Director of Planning and designed by a professional engineer, provided that this provision may be waived by the Director of Engineering Service and the Director of Planning if, in their discretion, they consider the proposed works to be of a minor nature. Before granting approval under this section, the Director of Planning shall consider the effect of the proposed work on the natural environment of the watercourse.

5. **Work on Municipal Drainage System**

No person shall alter, repair, remove, fill in, reconstruct, divert or carry out any other works on any watercourse shown on Schedule "B" or any sewer, storm sewer, stormwater management facility or watercourse constructed, owned or under the responsibility of the Municipality without the prior written approval of the Director of Engineering. In the case of a natural watercourse the work shall not be carried out without the prior written approval of the Director of Planning. Before granting approval under this section, the Director of Planning shall consider the effect of the proposed work on the natural environment of the watercourse.

6. **Discharges to Storm Sewers and Watercourses**

(a) No person shall discharge or allow or cause to be discharged into a storm sewer or watercourse any domestic waste, trucked liquid waste or prohibited waste.

(b) Notwithstanding the prohibition contained in subsection 6(a), a person may discharge into a storm sewer or watercourse water resulting from domestic activities customarily incidental to a residential use of land including:

(i) water resulting from natural precipitation, and drainage of such water;
(ii) water resulting from garden and lawn maintenance, non-commercial car washing, building washing and driveway washing; and
(iii) uncontaminated water.

(c) Notwithstanding the prohibition contained in subsection 6(a), a person may discharge into a storm sewer or watercourse water resulting from the following non-domestic activities:

(i) street, hydrant and water main flushing; and
(ii) firefighting activities.

7. **Stormwater Management Facility**

(a) Where the existing drainage system downstream from a proposed development has insufficient capacity to accommodate the projected increase in stormwater run-off from the proposed development of the lands, a stormwater management facility will be provided on the lands by the developer as part of the development project.

(b) The stormwater management facility will be designed by a professional engineer and the design approved by the Director of Engineering. Capacity of the stormwater management facility shall be based on the criteria set out in the engineering specifications attached as Schedule “H” to the Subdivision Bylaw, 1987 or any successor specifications.

(c) The owner of the lands shall keep the stormwater management facility in good operating condition and shall service and repair the facility at least once per year. At the request of the Manager, the owner of the land shall provide satisfactory proof of service by a qualified contractor.

8. **Oil and Grease Interceptor**

(a) Where a paved or impervious motor vehicle parking lot is constructed as part of any development, other than a single family dwelling or duplex, the developer shall install an in-line oil and grease interceptor to intercept the stormwater run-off from the parking lot before it reaches the municipal drainage system.

(b) The oil and grease interceptor shall be designed:

(i) To conform to design drawing SD15 of the engineering specifications attached as Schedule "H" to the Subdivision Bylaw, 1987 or any successor specifications, or

(ii) Where the design drawing SD15 of the engineering specifications will not adequately serve the proposed development, to a design prepared by a professional engineer and approved by the Director of Engineering.

(c) The owner of the land shall keep the oil and grease interceptor in good operating condition and shall maintain and repair the device at least once per year from the date of completion of the interceptor. At the request of the Manager, the owner of the lands shall provide satisfactory proof of service by a qualified contractor.

9. **Inspection**

The Manager, an employee of the Municipality authorized by the Manager, or a bylaw enforcement officer may enter at all reasonable times, on any property that is subject to this Bylaw to ascertain whether the regulations of this Bylaw are being observed or the requirements of this Bylaw are being met.

10. **Offences and Penalties**

(a) A person who contravenes this Bylaw commits an offence and is liable upon conviction to a fine of not less than $200.00.

(b) Each day that a violation occurs or continues shall constitute a separate offence.

11. **General**

(a) No person shall hinder or prevent the Manager, a person authorized by the Manager, or a bylaw enforcement officer from entering any premises or from carrying out his or her duties with respect to the administration of this Bylaw.

(b) Nothing in this Bylaw shall be interpreted as relieving a person discharging waste from complying with Federal, Provincial and local government enactments governing the discharge of stormwater into storm sewers and watercourses, and in the event of a conflict between the provisions of this Bylaw and a Federal or Provincial enactment, the provisions of the Federal or Provincial enactment shall prevail.

(c) In this Bylaw words importing the male gender include the female gender and either includes the neuter and vice versa, and words importing the singular number include the plural number and vice versa.

(d) The schedules annexed to this Bylaw shall be deemed to be an integral part of this Bylaw.

(e) If any provision of this Bylaw is found to be invalid by a court of competent jurisdiction it may be severed from the Bylaw.

12. **Repeal**

Bylaw No. 4998, being the "Watercourse and Drainage Regulation Bylaw, 1983, No. 4998" is hereby repealed except insofar as it may repeal any other bylaw.

13. **Citation**

This Bylaw may be cited for all purposes as the **"WATERCOURSE AND DRAINAGE REGULATION BYLAW, 1996, NO. 7501"**.

Includes Bylaw Amendments No. 7604 and 9044

SCHEDULE "A"

PROHIBITED WASTE

Prohibited Waste means:

1. Special Waste

   Special Waste as defined by the Waste Management Act of British Columbia and its Regulations or any legislation that replaces the Waste Management Act.

2. Biomedical Waste

   Any of the following categories of Biomedical Waste: human anatomical waste, animal waste, untreated microbiological waste, waste sharps and untreated human blood and body fluids listed in "Risk Group 4" as defined in "Laboratory Biosafety Guidelines", published by Health and Welfare Canada and dated 1990.

3. Air Contaminant Waste

   Any waste which, by itself or in combination with another substance, is capable of creating, causing or introducing an air contaminant, causing air pollution outside any storm sewer or stormwater management facility or is capable of creating, causing or introducing an air contaminant within any storm sewer or stormwater management facility which would prevent safe entry by authorized personnel.

4. Flammable or Explosive Waste

   Any waste, which by itself or in combination with another substance, is capable of causing or contributing to an explosion or supporting combustion in any storm sewer, watercourse or stormwater management facility including, but not limited to gasoline, naphtha, propane, diesel, fuel oil, kerosene or alcohol.

5. Obstructive Waste

   Any waste which by itself or in combination with another substance is capable of obstructing the flow of, or interfering with, the operation, performance or flow of any storm sewer, watercourse or stormwater management facility including, but not limited to earth, sand, sweepings, gardening or agricultural waste, ash, chemicals, paint, metal, glass, sharps, rags, cloth, tar, asphalt, cement-based products, plastic, wood, waste portions of animals, fish or fowl, and solidified fat.

6. Corrosive Waste

Any waste with corrosive properties which, by itself, or in combination with any other substance, may cause damage to any storm sewer or stormwater management facility or which may prevent safe entry by authorized personnel.

7. High Temperature Waste

(a) Any waste which, by itself or in combination with another substance, will create heat in amounts which will interfere with the operation and maintenance of a storm sewer or stormwater management facility;

(b) any waste which will raise the temperature of waste discharged by a storm sewer, watercourse or stormwater management facility by 2 degrees Celsius or more;

(c) Any waste with a temperature of 40 degrees Celsius or more at the point of discharge.

8. PCBs, Pesticides

Any waste containing PCBs or pesticides.

9. Pool Water

Any water from a pool containing residual chlorine or chloramine.

10. Radioactive Waste

Any waste containing radioactive materials that, prior to the point of discharge into a storm sewer or watercourse, exceeds radioactivity limitations as established by the Atomic Energy Control Board of Canada.

11. pH Waste

Any waste which, prior to the point of discharge into a storm sewer or watercourse, has a pH lower than 6.0 or higher than 9.0 as determined by either a grab sample or composite sample.

12. Dyes and Colouring Material

Dyes or colouring materials which produce in a grab sample or composite sample a colour value greater than or equal to 50 true colour units, or that causes discolouration of water to such an extent that the colour cannot be determined by

the visual comparison method as set out in Standard Methods except where the dye is used by a municipality or regional district as a tracer.

13. Miscellaneous Wastes

Any waste which by itself or in combination with another substance:

(a) constitutes or may constitute a health or safety hazard to any person;

(b) causes pollution in any storm sewer, watercourse or stormwater management facility.

14. Disinfectant Process Water

Any water from a waterworks containing residual chlorine or chloramine remaining from the disinfection of the waterworks or any part of the waterworks but does not include water containing chlorine or chloramine ordinarily added to a supply of potable water by a municipality, the Regional District, the Greater Victoria Water District or an Improvement District.

15. Fill

Soil, sand, clay, gravel, rock or other material of which land is composed.

Note: Schedule B is available by contacting the Office of the Municipal Clerk at (250) 475-1775 and is comprised mainly of maps.

Wastewater Treatment Project
Treated for a cleaner future

Wastewater Treatment Project

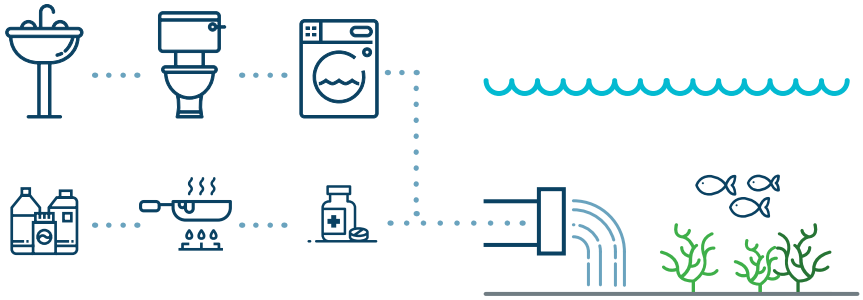
Treated for a cleaner future

What is wastewater?

- Wastewater is used water from human activities such as washing dishes, doing laundry, and flushing the toilet.
- Some pollutants in wastewater include industrial and commercial waste, detergents, cooking fats, and prescription drugs.

Why we treat wastewater

- To reduce contaminants prior to releasing the effluent into the environment, helping to protect and maintain healthy waterways.
- If pollutants in wastewater are not removed, they flow directly into the ocean. This can threaten fisheries, wildlife habitat, recreation, quality of life, and public health.



About the system

- Wastewater flows from residences and businesses into a sewer pipe that connects to larger pipes under our streets, which ultimately connect to either the Clover Point Pump Station or the Macaulay Point Pump Station.
- At present, wastewater is screened at these pump stations and then discharged into the Strait of Juan de Fuca without treatment.
- The Wastewater Treatment Project will connect these two pump stations to the McLoughlin Point Wastewater Treatment Plant so that wastewater can be treated to a tertiary level prior to discharge.

Did you know?

In the Core Area:

- There are **seven municipalities** (Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford, and Colwood) and the Esquimalt and Songhees Nations.
- The population is approximately **320,000 people** covering **215km²**.
- There are over **175 pump stations** and **110km** of existing sanitary sewer pipes.
- The McLoughlin Point Wastewater Treatment Plant will treat up to **108,000,000 litres** of wastewater per day, providing capacity to accommodate future population growth.
- Every person produces an average of **185–200 litres** of wastewater per day.
- Wastewater flows are greater on rainy days.

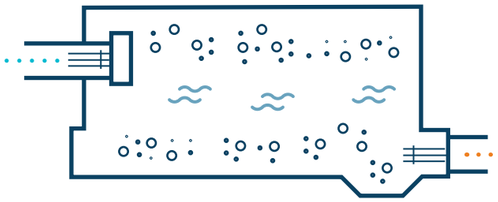
Treatment Process

1 CONVEYANCE SYSTEM

Collects wastewater from across the core area and conveys it to the Clover Point and Macaulay Point pump stations.

Screening
Wastewater is screened (6mm) to remove stones, paper, cloth, plastics and other debris.

Grit Removal
A vortex system uses centrifugal force to keep the organic material suspended while grit settles and is removed.



Pumping
Wastewater will be pumped to the new treatment plant.

The grit and screenings are compacted and trucked to an approved landfill.

Storm Outfalls
Currently, untreated wastewater is discharged out of the Clover Point and Macaulay Point outfalls. Once the Project is built, these outfalls will only be used to discharge storm flows associated with heavy-rain events. To reduce the need to discharge storm flows, a buried underground concrete tank (the Arbutus Attenuation Tank) will be built in Saanich to temporarily store flows during high volume storm events. In addition, core area municipalities have committed to an inflow and infiltration program that will reduce the volume of storm flows that need to be discharged.

2 MCLOUGHLIN POINT WASTEWATER TREATMENT PLANT

PRIMARY TREATMENT
Is the physical separation of solids from wastewater.

Removing Solids
Heavier solids settle to the bottom and lighter 'scum' floats to the top.

SECONDARY TREATMENT
Is a biological process that removes dissolved and suspended organic compounds in the wastewater.

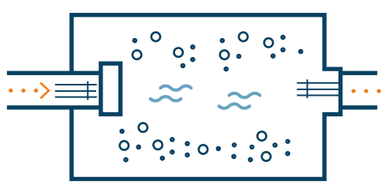
Fine Screening
Primary effluent will be finely screened (2mm) to remove smaller debris.

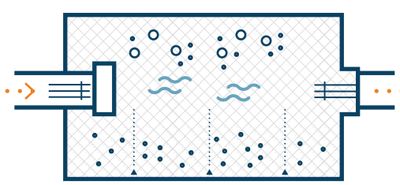
Biological Reactors
Wastewater flows through tanks where microorganisms grow. The microorganisms consume organic compounds in the wastewater and reproduce to form cells that result in residual biological solids. Solids are removed and sent to the Residuals Treatment Facility for further treatment. Treated secondary effluent is sent to tertiary treatment.

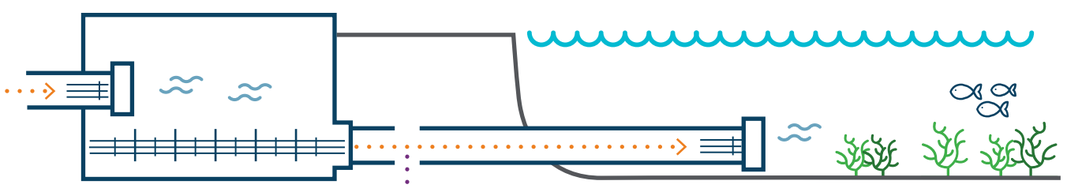
TERTIARY TREATMENT
Is one of the highest levels of treatment, reducing contaminants that remain after the secondary treatment process.

Disc Filter
Wastewater will pass through a fabric disc filter (5-micron), reducing many pharmaceuticals, hormones, microplastics and other contaminants.

OUTFALL
The tertiary-treated effluent will flow through the outfall and discharge into the ocean approximately 2km from shore and 60m deep.







As wastewater moves through the treatment process, residual solids are removed. These solids will be pumped to the Residuals Treatment Facility for further treatment.

3 RESIDUALS TREATMENT FACILITY

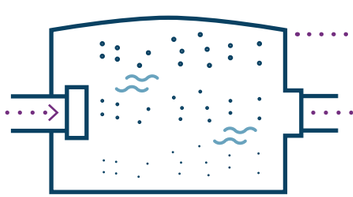
Digestion
The residual solids undergo anaerobic digestion in which microorganisms will break down biodegradable material in the absence of oxygen and produce biogas.

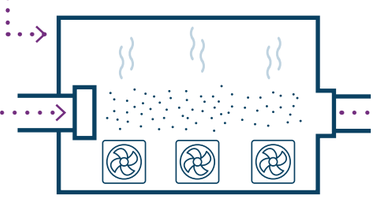
Biogas
Biogas produced during the digestion process will be collected and reused within the facility as fuel for the dryer.

Drying
The residual solids are dewatered and then heated at a very high temperature (220°C).

Biosolids
Dried Class A biosolids will be produced that will contain almost no detectable levels of pathogens. These are the highest standard of biosolids and are suitable for beneficial use. The biosolids will be dark, dry granular pellets.

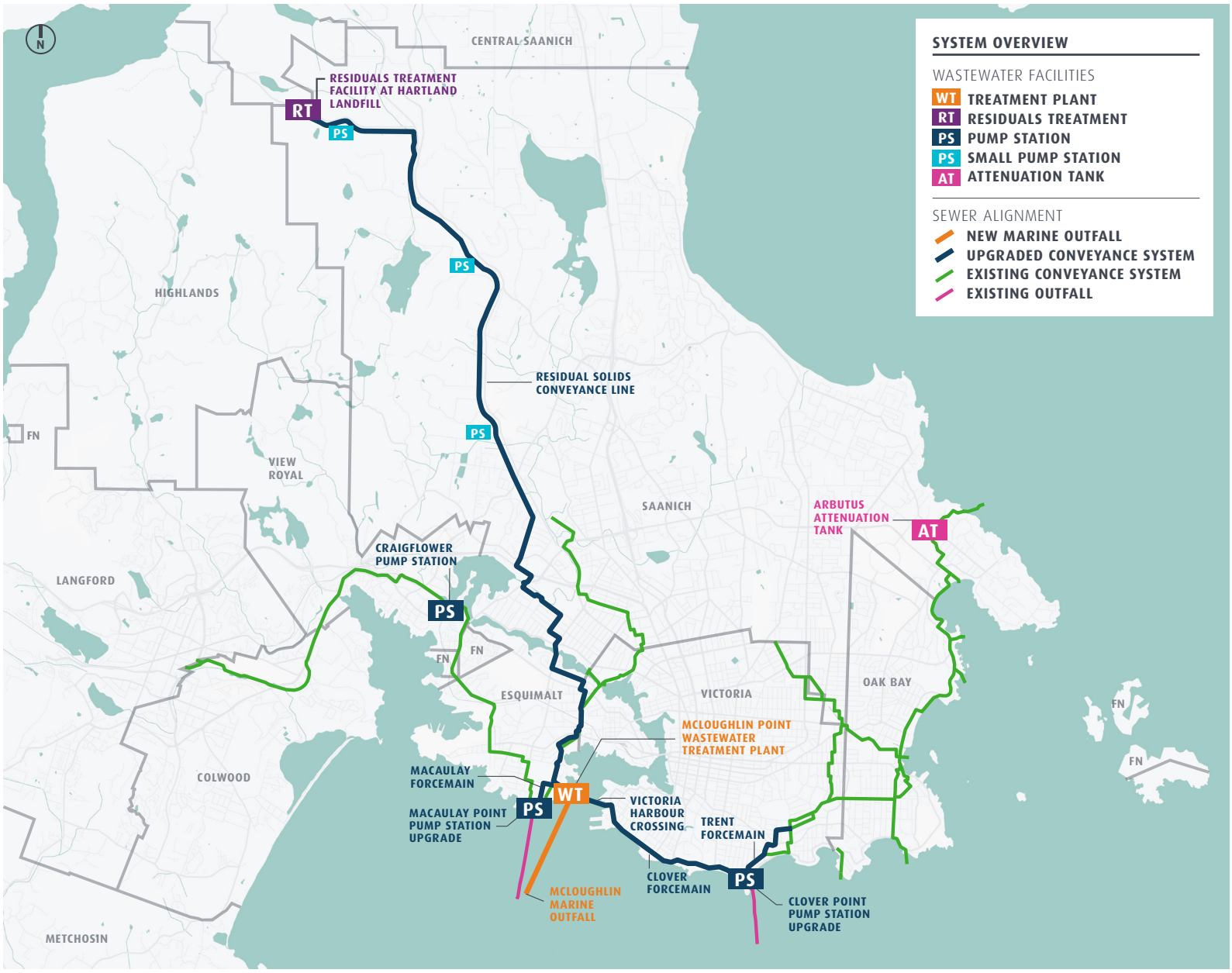
Residual Solids Conveyance Line
Will consist of two pipes and three small pump stations to transport all residual solids to the Residuals Treatment Facility. Liquid removed from the residual solids during the treatment process will be returned to the McLoughlin Point Wastewater Treatment Plant through the conveyance system.





Wastewater Treatment Project Components

The Wastewater Treatment Project is being built to meet the provincial and federal regulations for treatment by December 31, 2020.



For more information

Website
wastewaterproject.ca

Email
wastewater@crd.bc.ca

24–7 Project information line
1.844.815.6132

Flygt N-pump Series

SELF-CLEANING PUMPS WITH SUSTAINED HIGH EFFICIENCY

FLYGT
a xylem brand

Sustained high efficiency is priceless

Flygt N-pumps take on the toughest applications and get the job done. Every component is designed and manufactured to deliver sustained high efficiency. Thanks to the patented N-technology with its innovative self-cleaning impeller, Flygt N-pumps deliver the highest total efficiency – lowering your energy bill and reducing unplanned maintenance costs. That adds up to total peace of mind – and big savings over the long term.

Our vast fluid handling knowledge and dedication to research and development lead to technological advances and continuous improvement.

That's why our Flygt N-pumps are at work in more than a hundred thousand installations worldwide. They have proven to be the best and most reliable choice for both dry and submersible installations far and away over our competition.

Robust and reliable
Every Flygt N-pump is tested in the factory to ensure high performance and premium quality. Flygt products deliver outstanding, cost-effective performance that has been proven in applications such as:

- Wastewater
- Stormwater
- Sludge
- Industrial effluent
- Raw water
- Cooling water

THE N-PUMP ADVANTAGE

- Patented technology
- Innovative design
- Sustained high efficiency
- Self-cleaning ability
- Modular design
- Reliable
- Fewer unplanned service calls

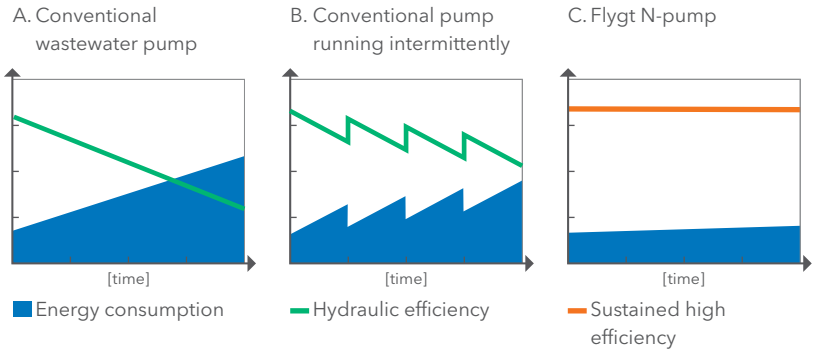
BROAD RANGE CAPACITY

- Ratings from 2.2 hp to 870 hp
- Discharges up to 20" (500 mm)
- Flows up to 16,000 US GPM (1,000 l/s)
- Heads up to 400 ft (120 m)
- Submersible and dry installations
- Every Flygt pump is performance tested in the factory
- Can handle dry solids up to 8%

Self-cleaning N-pump saves money

Sustained high efficiency

When solid objects such as stringy fibrous material and modern trash enter the inlet of a conventional pump, they tend to get caught on the leading edges of the impeller vanes. This buildup reduces the impeller's efficiency, resulting in increased power consumption (Fig. A) and generating increased energy charges.



As solids continue to build up inside the impeller, motor thermal protection can trip causing the pump to stop and leading to costly unplanned service calls. If a conventional wastewater pump runs intermittently, the solids buildup will be removed by backflushing when the pump is shut off at the end of the operating cycle. When the next cycle begins, efficiency returns to its initial value since the impeller is free from solid objects (Fig B).

The high efficiency of the Flygt N-pump is sustained over time due to its self-cleaning ability, keeping energy costs to a minimum (Fig. C).

All Flygt N-pumps have the same self-cleaning performance regardless of duty point.

THE SELF-CLEANING CONCEPT

Stage 1. Most solid objects entering the pump will pass through the impeller between the impeller vanes. If an object gets caught on the leading edge of one of the vanes, it will slide along the backswept shape towards the perimeter of the inlet.

Stage 2. The solid object will slide along the tip of the impeller vane inside the relief groove. The guide pin in the insert ring will push all types of solids away from the center of the impeller, along the leading edge and out through the relief groove.

Broad capacity range to suit your application

Flexible and modular design

Flygt N-technology enables you to tailor the hydraulics to meet the requirements of virtually any application. Choose the hardened cast iron version for typical wastewater applications and the chopper ring version for cutting long fibers or solids. The Hard-Iron™ version should be used in abrasive applications and waters that could cause erosion corrosion due to high oxygen content.

Whatever you choose, you never sacrifice pump efficiency – and you can easily switch the module if the operating conditions change.

Cast iron

Hard-Iron™ (60 HRC)

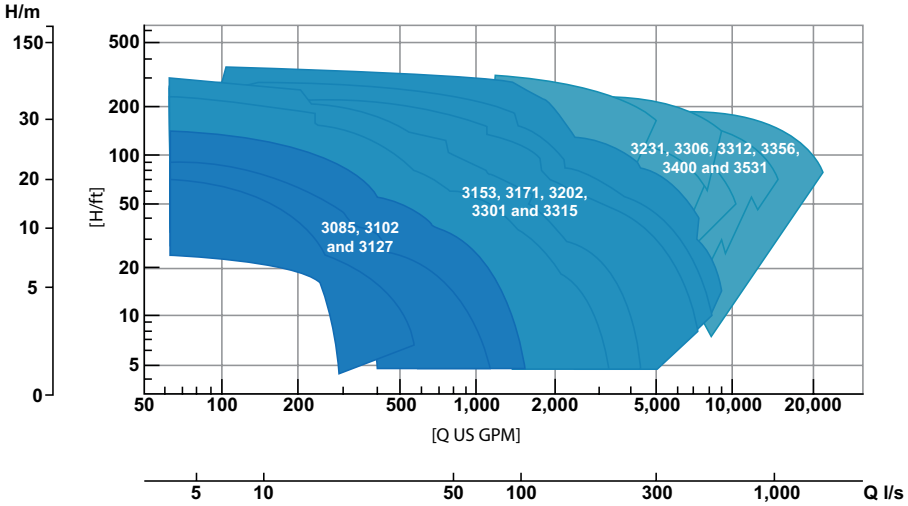
Cast iron impeller with hardened edges and insert ring for typical pumping applications.

Extra durable option for abrasive and erosion corrosion applications.

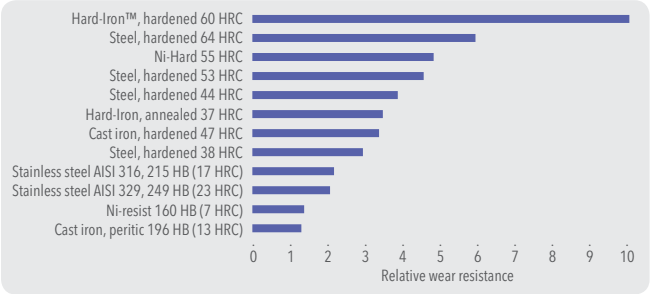
Chopper ring for cutting long fibers or solids.

Top performance with a broad capacity range

- Large capacity pumps
- Medium capacity pumps
- Low capacity pumps



Composite curves for comparison purposes only. Consult engineering data for exact flow and head capabilities.



HARD-IRON™ (60 HRC) FOR THE TOUGHEST WASTEWATER CHALLENGES

Accelerated wear tests prove that Hard-Iron™ hydraulic components keep on working efficiently with minimal wear after pumping water with a very high concentration of coarse sand (2,400 tons).

Flygt N-pumps with Hard-Iron™ components continue to deliver sustained high efficiency without clogging or erosion corrosion, prolonging lifetime by 200 percent compared to standard hardened cast iron hydraulics.

Designed and engineered for longer life

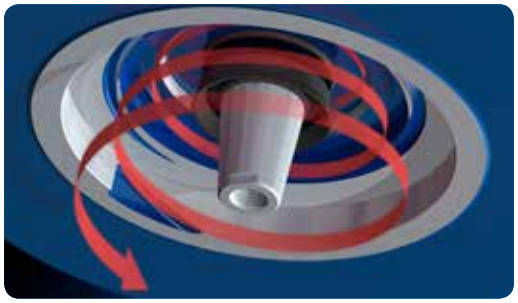
Xylem specially designs and manufactures Flygt N-pump components, such as the motor, seals and shaft, to optimize operation and prolong pump service life.

Motor
The Class H squirrel-cage induction motor delivers outstanding performance and superior heat transfer in submersible and dry installations. Heat losses are concentrated around the shrink-fitted stator, which is cooled by means of the surrounding water. The motor has a NEMA Class B maximum operating temperature rise of 80°C (176°F) to ensure long service life. All motors are capable of fully utilizing the available power while operating on a variable frequency drive.

For an even higher overall efficiency, premium efficiency motors IE3 are available.

Long-life seals
Durable tungsten carbide seals offer exceptional mechanical strength as well as superior sliding properties even when running dry. These low-friction seals withstand thousands of hours of high-pressure operation under extreme conditions without cracking, seizing up or showing signs of unacceptable wear.

Low shaft deflection
To minimize vibration, promote quiet operation, and prolong seal and bearing life, all Flygt N-pumps feature a short shaft overhang to reduce shaft deflection.

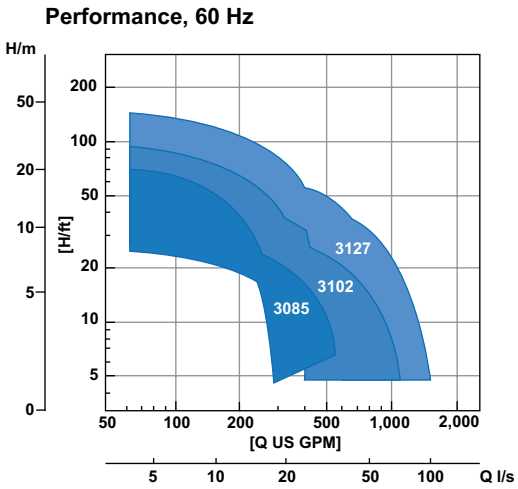


SPIN-OUT™ SEAL PROTECTION FOR PUMPS WITH CAVITIES IN THE SEAL CHAMBER

The patented Spin-out™ design expels abrasive particles from the seal chamber, providing protection against wear of the outer seal. As an integral part of the seal chamber, Spin-out™ is as simple as it is effective.

Low capacity pumps

This series of Flygt N-pumps includes three models that handle capacities up to 1,600 US GPM (100 l/s). Like all Flygt N-pumps, these contribute to reducing the total life cycle costs of your installation.



Power ratings and size

Model	3085	3102	3127
Rating, hp	2.2–4	5–6	7.5–11
Discharge, in	3" (80 mm)	3" (80 mm)	3" (80 mm)
		4" (100 mm)	4" (100 mm)
		6" (150 mm)	6" (150 mm)

Methods of installation

P

For semi-permanent wet well installations. The pump is installed with twin guide bars on a discharge connection.

S

A semi-permanent freestanding installation. Transportable version with pipe or hose connection.

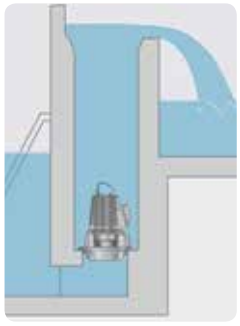
T

A vertically-mounted, permanent dry well or in-line installation with flange connections for suction and discharge pipework.

Z

A horizontally-mounted, permanent dry well or in-line installation with flange connections for suction and discharge pipework.

L



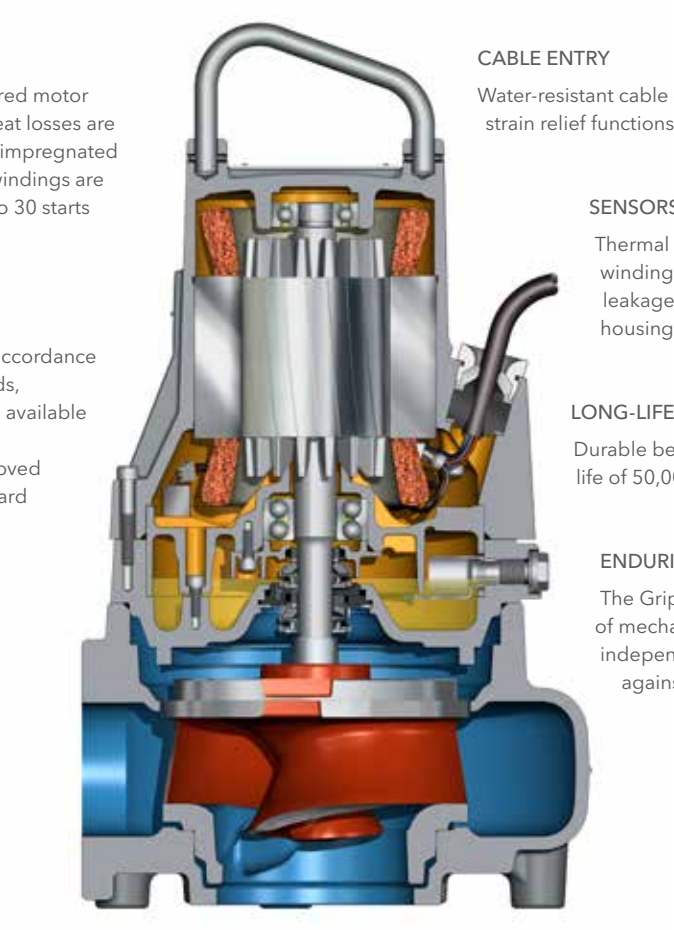
A semi-permanent installation of a pump within a vertical steel or concrete column.

BETTER HEAT TRANSFER

Our specially designed and manufactured motor provides enhanced cooling because heat losses are concentrated around the stator. Trickle impregnated in resin (Class H insulation), the stator windings are rated at 180°C (355°F) and enable up to 30 starts per hour.

COMPLIANCE

Each pump is tested and approved in accordance with national and international standards, including 60034-1 and CSA. Pumps are available in explosion-proof versions for use in hazardous environments, and are approved by the Factory Mutual, European Standard and IEC.



CABLE ENTRY

Water-resistant cable entry provides both sealing and strain relief functions to ensure a safe installation.

SENSORS

Thermal sensors embedded in the stator windings prevent overheating. Optional leakage sensors in the stator and oil housings are also available.

LONG-LIFE BEARINGS

Durable bearings provide a minimum service life of 50,000 hours.

ENDURING SEALS

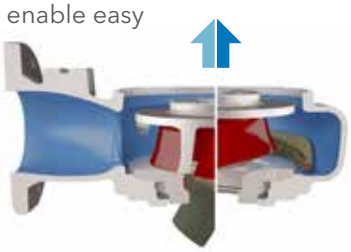
The Griploc™ system consists of two sets of mechanical shaft seals that operate independently to provide double security against leakage.

Griploc™ seal

With a robust design, Griploc™ seals offer consistent performance and trouble-free operation in challenging environments. Solid seal rings minimize leakage and the patented griplock spring, which is tightened around the shaft, provides axial fixation and torque transmission. In addition, the Griploc™ design facilitates quick and correct assembly and disassembly.

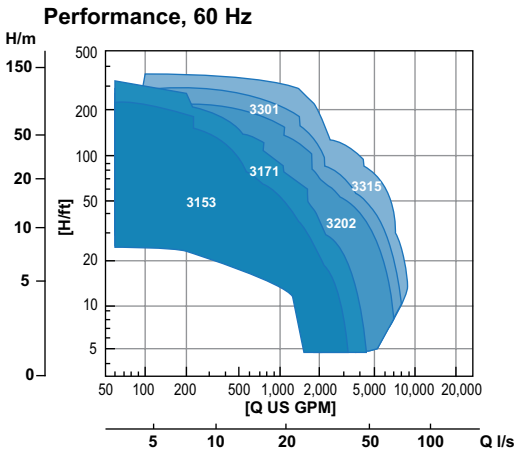
Adaptive N-impeller

The Flygt N3085 – N3127 feature an adaptive self-cleaning N-impeller that can move axially to enable easy passage of large solids through the pump.



Medium capacity pumps

For demanding pumping duties, five models handle fluid transport for capacities up to 8,000 US GPM (500 l/s). Highly efficient, these heavy-duty models provide clog-free performance in order to achieve the best overall life cycle cost.



Power ratings and size

Model	3153	3171	3202	3301	3315
Rating, hp	12–23	25–35	35–75	60–105	85–160
Discharge, in	3" (80 mm)	4" (100 mm)	4" (100 mm)	6" (150 mm)	6" (150 mm)
	4" (100 mm)	6" (150 mm)	6" (150 mm)	10" (250 mm)	10" (250 mm)
	6" (150 mm)	10" (250 mm)	8" (200 mm)	12" (300 mm)	12" (300 mm)
	8" (200 mm)			14" (350 mm)	14" (350 mm)
	10" (250 mm)				

Methods of installation

P

For semi-permanent wet well installations. The pump is installed with twin guide bars on a discharge connection.

S

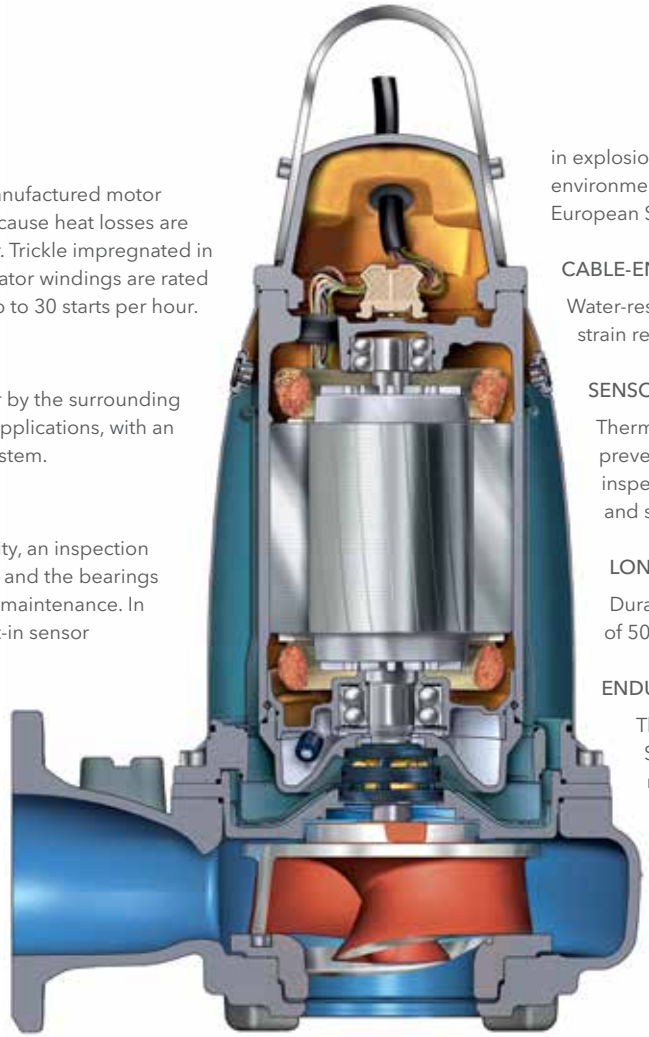
A semi-permanent freestanding installation. Transportable version with pipe or hose connection.

T

A vertically-mounted, permanent dry well or in-line installation with flange connections for suction and discharge pipework.

Z

A horizontally-mounted, permanent dry well or in-line installation with flange connections for suction and discharge pipework.



BETTER HEAT TRANSFER

Our specially designed and manufactured motor provides enhanced cooling because heat losses are concentrated around the stator. Trickle impregnated in resin (Class H insulation), the stator windings are rated at 180°C (355°F) and enable up to 30 starts per hour.

EFFICIENT COOLING

These pumps are cooled either by the surrounding liquid or, in more demanding applications, with an internal closed-loop cooling system.

INSPECTION CHAMBER

To increase operational reliability, an inspection chamber between the seal unit and the bearings enables rapid spot checks and maintenance. In the case of a seal failure, a built-in sensor provides an early warning of any fluid buildup, thus reducing the risk of expensive repair work.

COMPLIANCE

Each pump is tested and approved in accordance with national and international standards, including IEC60034-1 and CSA. Pumps are available in explosion-proof versions for use in hazardous environments, and are approved by the Factory Mutual, European Standard and IEC.

CABLE-ENTRY

Water-resistant cable entry provides both sealing and strain relief functions to ensure a safe installation.

SENSORS

Thermal sensors embedded in the stator windings prevent overheating, and a leakage sensor in the inspection chamber minimizes the risk for bearing and stator failure.

LONG-LIFE BEARINGS

Durable bearings provide a minimum service life of 50,000 hours.

ENDURING SEALS

The Flygt Plug-in™ seal with the Active Seal™ system offers increased sealing reliability and zero leakage into the motor, thereby reducing the risk of bearing and stator failure.

Flygt Plug-in™ seal with Active Seal™ system

The Flygt Plug-in™ seal is a seal unit that eliminates the risks associated with incorrect installation and careless handling. It comprises the Active Seal™ system in one easy-to-handle unit.

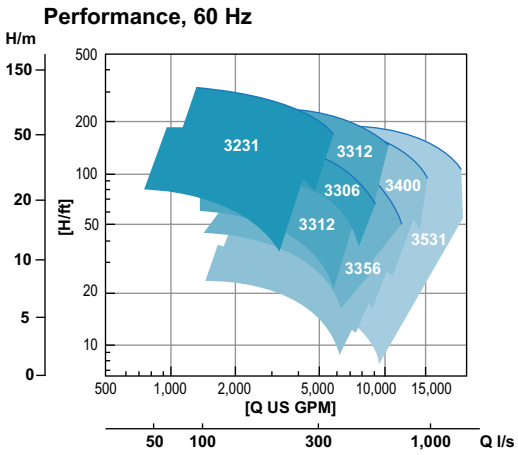
The Active Seal™ system is a patented zero-leakage double-seal system that actively prevents liquid from entering the motor cavity, thereby reducing the risk for bearing and stator failure. It comprises a unique inner seal that acts as a micro-pump and an outer seal that prevents leakage of pumped media into the buffer chamber.

Inner seal with laser-cut spiral grooves.

Laser-cut grooves on the inner seal create a hydrodynamic pumping effect that prevents any leakage from entering the motor. This translates into enhanced sealing reliability, reduced downtime and fewer unscheduled maintenance checks. In addition, regular service inspections can be prolonged in many applications.

Large capacity pumps

When higher capacity is required, the Flygt N-pump series has five pumps to do the job. These models deliver unprecedented pumping power – reliably and efficiently.



Power ratings and size

Model	3231	3306	3312	3356	3400	3531
Rating, hp	90–335	70–280	90–470	70–280	60–470	60–870
Discharge, in	8" (200 mm)	12" (300 mm)	12" (300 mm)	14" (350 mm)	16" (400 mm)	20" (500 mm)

Methods of installation

P

For semi-permanent wet well installations. The pump is installed with twin guide bars on a discharge connection.

S

A semi-permanent freestanding installation. Transportable version with pipe or hose connection.

T

A vertically-mounted, permanent dry well or in-line installation with flange connections for suction and discharge pipework.

Z

A horizontally-mounted, permanent dry well or in-line installation with flange connections for suction and discharge pipework.

BETTER HEAT TRANSFER

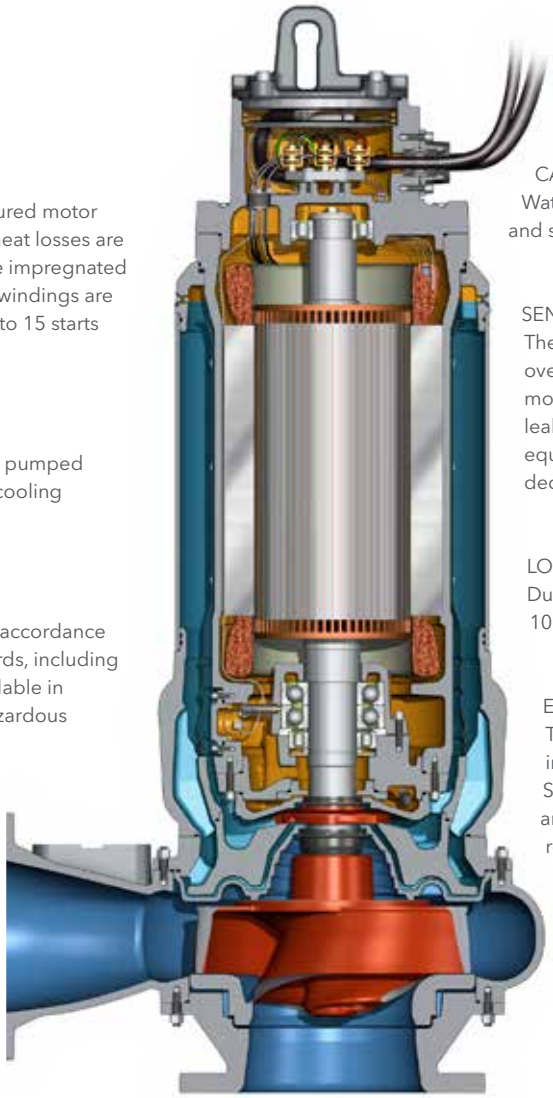
Our specially designed and manufactured motor provides enhanced cooling because heat losses are concentrated around the stator. Trickle impregnated in resin (Class H insulation), the stator windings are rated at 180°C (355°F) and enable up to 15 starts per hour.

EFFICIENT COOLING

These pumps are cooled either by the pumped liquid or with an internal closed-loop cooling system.

COMPLIANCE

Each pump is tested and approved in accordance with national and international standards, including IEC 60034-1 and CSA. Pumps are available in explosion-proof versions for use in hazardous environments, and are approved by the Factory Mutual, European Standard and IEC.



CABLE ENTRY

Water-resistant cable entry provides both sealing and strain relief functions for a safe installation.

SENSORS

Thermal sensors in the stator windings prevent overheating, and an analog temperature sensor monitors the lower bearing. The stator housing/ leakage chamber and the junction box are equipped with leakage sensors. The sensors decrease the risk of bearing and stator failure.

LONG-LIFE BEARINGS

Durable bearings provide a minimum service life of 100,000 hours.

ENDURING SEALS

Two sets of mechanical shaft seals work independently for double security. The Active Seal™ system offers increased sealing reliability and zero leakage into the motor, thereby reducing the risk of bearing and stator failure.

Zero leakage into the motor cavity

The Active Seal™ system is a patented zero-leakage double-seal system that actively prevents liquid from entering the motor cavity, thereby reducing the risk for bearing and stator failure. It comprises a unique inner seal that acts as a micro-pump and an outer seal that prevents leakage of pumped media into the buffer chamber.

Laser-cut grooves on the inner seal create a hydrodynamic pumping effect that prevents any leakage to enter the motor.

This translates into enhanced sealing reliability, reduced downtime and fewer unscheduled maintenance checks. In addition, regular service inspections can be prolonged in many applications.

Complete solutions for your needs

Ready-to-install pre-engineered, prefabricated pumping solutions
Flygt offers several packaged solutions combining our premium N-pumps with dedicated monitoring and control options and pre-fabricated pump stations designed for your needs. The prefabricated pump stations are available in a range of designs and sizes, all supplied complete with the necessary materials and equipment to allow ease and speed of installation and commissioning.

Our packaged solutions have a self-cleaning design and are tested as a system to work perfectly together to give you the ultimate performance within wastewater pumping.

Flygt SmartRun™

Flygt Multismart™

MONITORING AND CONTROL

Our state-of-the-art solutions are designed to ensure pumps work at optimum efficiency, to provide key data, to increase reliability and to prevent pump breakdown.

Our monitoring and control systems are designed for use in a variety of pumping applications. It is the specific conditions at each pump station that help you decide the best monitoring and control solution for your needs. Whether it's wastewater, stormwater, effluent, RAS, WAS, lightly contaminated water or clean water, it all demands a different solution. Naturally each system is designed to work well on its own. However, our pumps and monitoring & control systems are optimized to work even better together.

All Flygt monitoring and control equipment integrate easily into SCADA control systems for remote monitoring and control. Flygt PumpView puts you in Total Control, Your Way.

Engineered pumping solutions

Flygt's standard pump station designs are based on our long history in wastewater pumping. Our engineers work closely with you, from design and system analysis to selection of pumps, installation and monitoring & control solutions. Whether we recommend a proven Flygt standard design or develop a custom solution for you, we can offer you reliable and cost-effective pumping solutions that meet your specific requirements.

FLYGT N-PUMPS: SUBMERSIBLE AND DRY INSTALLATIONS

Flygt N-pumps are an excellent choice for handling solids in dry-pit installations. Originally designed for submersible conditions, our pumps eliminate the risk of damage to the motor due to station flooding. Submersible or dry-installed Flygt N-pumps deliver superior clog-free operation with minimal maintenance and substantial energy savings.

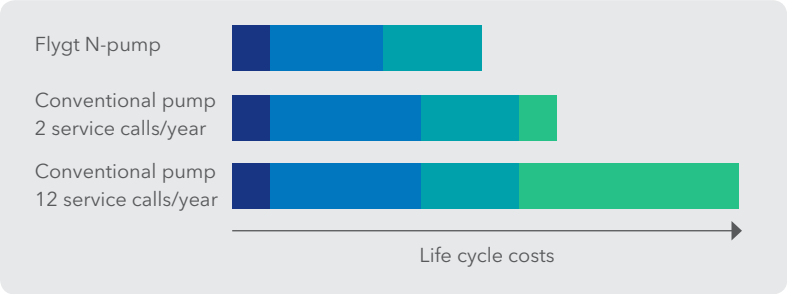
The power to adapt

Options table

Customize your Flygt N-pump with optional equipment.

Flygt N-pump model	3085	3102	3127	3153	3171	3202	3301	3315	3231	3306	3312	3356	3400	3531
Option/Product														
Motor														
Premium efficiency (IE3)	◖	◖	◖	◖	◖	◖	◖		◐	◐	◐	◐	◐	◐
Hydraulic														
Guidepin	●	●	●	◐	◐	◐								
Hard-Iron™	◐	◐	◐	◐	◐	◐	◐	○	○		○	○		○
Chopper			○	◐	◐	◐								
Adaptive N	●	●	●											
Seal system														
Griploc™ seal	●	●	●											
Plug-in™ seal				●	●	●	●	●						
Active Seal™				●	●	●	●	●	●	●	●	●	●	●
Spin-out™	●	●	●	●	●	●	●	●	◖	◖	◖	◖	◖	◖
Seal flush									○	○	○	○	○	○
Cooling system														
1. w/o cooling jacket	●	●	●	○	○	○	○	○	○	○	○	○	○	○
2. Closed Loop Cooling				●	●	●	●	●	◐	◐	◐	◐	◐	◐
3. Pump media									●	●	●	●	●	●
4. External				○	○	○	○	○	○	○	○	○	○	○
Installation														
P	●	●	●	●	●	●	●	●	●	●	●	●	●	●
S	●	●	●	●	●	●	◐	◐	●	●	●	◐	◐	◐
T	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Z	●	●	●	●	●	●	●	●	●	●	●	●	●	●
L		●	●											
Accessories														
Flush valve	○	○	○	◐	◐	◐	◐	◐						
Pump monitor *Prepared for*														
– Mini CAS	●	●	●	●	●	●	●	●						
– MAS					○	○	○	○	●	●	●	●	●	●
Pump control														
– SmartRun™	○	○	○	○	○	○	○							
– MultiSmart™				○	○	○	○	○	○	○	○	○	○	○
– FGC	○	○												

● = Standard
○ = Optional
◐ = Standard but also optional depending on model
◖ = Standard or not available depending on model
◐ = Optional or not available depending on model



SELF CLEANING SAVES MONEY

Schematic overview of calculations made on a 30kW Flygt N-pump

- Purchase cost
- Energy cost
- Service cost
- Unplanned maintenance cost

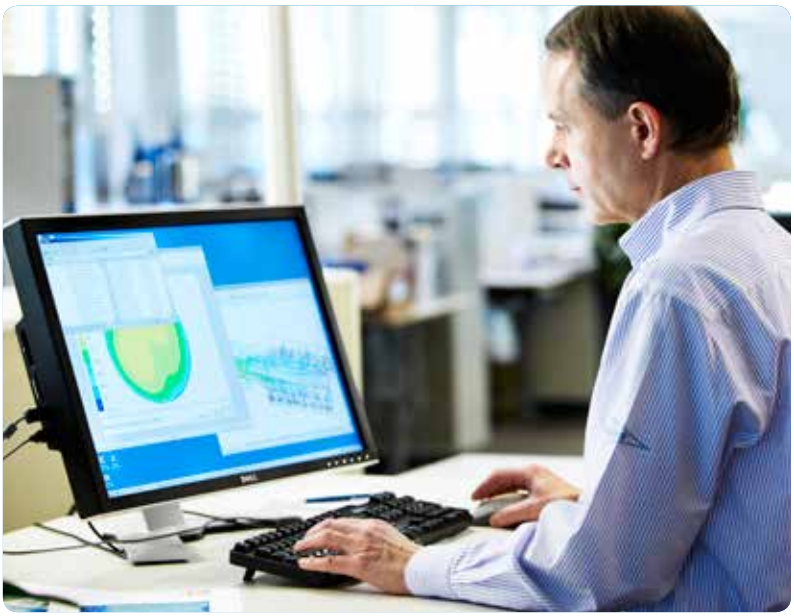
Supporting your business, every step of the way

Extensive engineering know-how
Xylem has extensive knowledge of fluid dynamics and vast practical experience in designing, operating and maintaining efficient wastewater transport systems. We provide a broad range of engineering services, including:

- System analysis and calculations
- Sump design
- Water hammer calculations
- Pump start analysis
- Transient analysis
- Computational Fluid Dynamics (CFD)
- Scale model testing

In short, we can assist you with everything you need for optimal performance and economical, energy-efficient operation.

Empower your system
With Flygt monitoring and control products, you can control and optimize the performance of every component of your system. This helps reduce stress on pumps, valves and mains, enable reliable, efficient operation, and prolong service lifetime.



Support for your Flygt pumps
Our global network of local service centers and service partners provide integrated services to support safe, efficient and reliable operation. To ensure trouble-free operation and minimal downtime, count on us for quick, professional response and quality maintenance services, using genuine Flygt spare parts.

EXTENSIVE MONITORING AND CONTROL

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GENUINE FLYGT SPARE PARTS AND WARRANTY

When downtime isn't an option, rely on our global service network to deliver genuine Flygt spare parts to you – quickly and efficiently. All Flygt spare parts are backed by a solid 15-year availability guarantee. Large capacity pumps offer a 20-year availability guarantee.

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Wastewater Treatment Project
Treated for a cleaner future

Wastewater Treatment Project

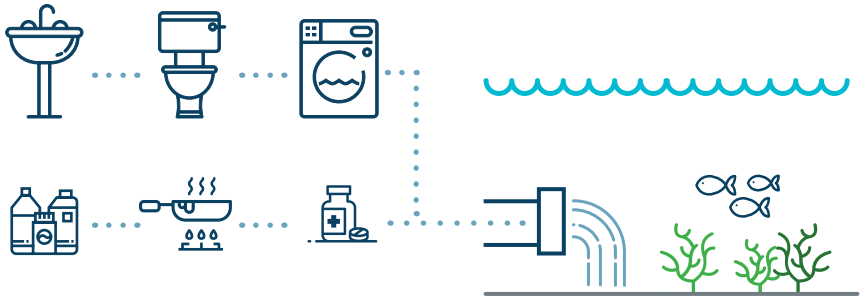
Treated for a cleaner future

What is wastewater?

- Wastewater is used water from human activities such as washing dishes, doing laundry, and flushing the toilet.
- Some pollutants in wastewater include industrial and commercial waste, detergents, cooking fats, and prescription drugs.

Why we treat wastewater

- To reduce contaminants prior to releasing the effluent into the environment, helping to protect and maintain healthy waterways.
- If pollutants in wastewater are not removed, they flow directly into the ocean. This can threaten fisheries, wildlife habitat, recreation, quality of life, and public health.



About the system

- Wastewater flows from residences and businesses into a sewer pipe that connects to larger pipes under our streets, which ultimately connect to either the Clover Point Pump Station or the Macaulay Point Pump Station.
- At present, wastewater is screened at these pump stations and then discharged into the Strait of Juan de Fuca without treatment.
- The Wastewater Treatment Project will connect these two pump stations to the McLoughlin Point Wastewater Treatment Plant so that wastewater can be treated to a tertiary level prior to discharge.

Did you know?

In the Core Area:

- There are **seven municipalities** (Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford, and Colwood) and the Esquimalt and Songhees Nations.
- The population is approximately **320,000 people** covering **215km²**.
- There are over **175 pump stations** and **110km** of existing sanitary sewer pipes.
- The McLoughlin Point Wastewater Treatment Plant will treat up to **108,000,000 litres** of wastewater per day, providing capacity to accommodate future population growth.
- Every person produces an average of **185–200 litres** of wastewater per day.
- Wastewater flows are greater on rainy days.

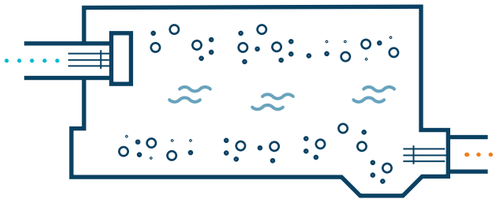
Treatment Process

1 CONVEYANCE SYSTEM

Collects wastewater from across the core area and conveys it to the Clover Point and Macaulay Point pump stations.

Screening
Wastewater is screened (6mm) to remove stones, paper, cloth, plastics and other debris.

Grit Removal
A vortex system uses centrifugal force to keep the organic material suspended while grit settles and is removed.



Pumping
Wastewater will be pumped to the new treatment plant.

The grit and screenings are compacted and trucked to an approved landfill.

Storm Outfalls
Currently, untreated wastewater is discharged out of the Clover Point and Macaulay Point outfalls. Once the Project is built, these outfalls will only be used to discharge storm flows associated with heavy-rain events. To reduce the need to discharge storm flows, a buried underground concrete tank (the Arbutus Attenuation Tank) will be built in Saanich to temporarily store flows during high volume storm events. In addition, core area municipalities have committed to an inflow and infiltration program that will reduce the volume of storm flows that need to be discharged.

2 MCLOUGHLIN POINT WASTEWATER TREATMENT PLANT

PRIMARY TREATMENT
Is the physical separation of solids from wastewater.

Removing Solids
Heavier solids settle to the bottom and lighter 'scum' floats to the top.

SECONDARY TREATMENT
Is a biological process that removes dissolved and suspended organic compounds in the wastewater.

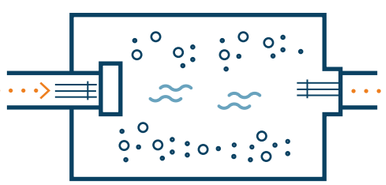
Fine Screening
Primary effluent will be finely screened (2mm) to remove smaller debris.

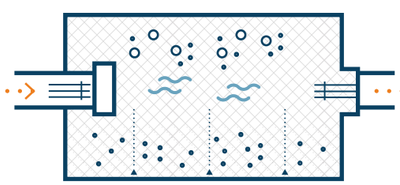
Biological Reactors
Wastewater flows through tanks where microorganisms grow. The microorganisms consume organic compounds in the wastewater and reproduce to form cells that result in residual biological solids. Solids are removed and sent to the Residuals Treatment Facility for further treatment. Treated secondary effluent is sent to tertiary treatment.

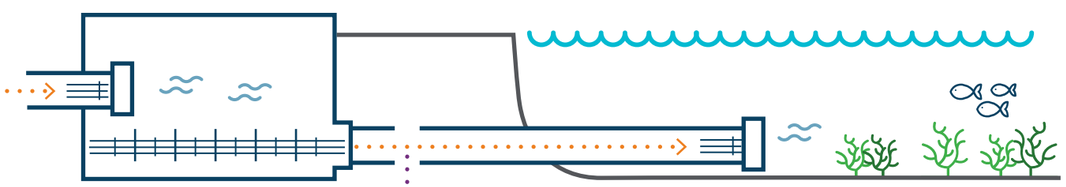
TERTIARY TREATMENT
Is one of the highest levels of treatment, reducing contaminants that remain after the secondary treatment process.

Disc Filter
Wastewater will pass through a fabric disc filter (5-micron), reducing many pharmaceuticals, hormones, microplastics and other contaminants.

OUTFALL
The tertiary-treated effluent will flow through the outfall and discharge into the ocean approximately 2km from shore and 60m deep.







As wastewater moves through the treatment process, residual solids are removed. These solids will be pumped to the Residuals Treatment Facility for further treatment.

3 RESIDUALS TREATMENT FACILITY

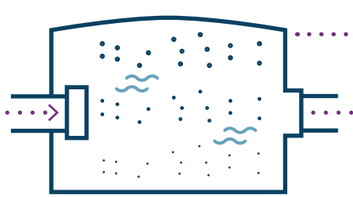
Digestion
The residual solids undergo anaerobic digestion in which microorganisms will break down biodegradable material in the absence of oxygen and produce biogas.

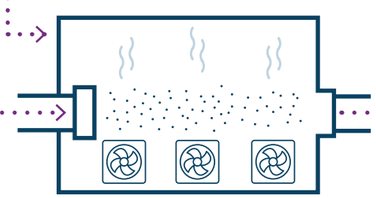
Biogas
Biogas produced during the digestion process will be collected and reused within the facility as fuel for the dryer.

Drying
The residual solids are dewatered and then heated at a very high temperature (220°C).

Biosolids
Dried Class A biosolids will be produced that will contain almost no detectable levels of pathogens. These are the highest standard of biosolids and are suitable for beneficial use. The biosolids will be dark, dry granular pellets.

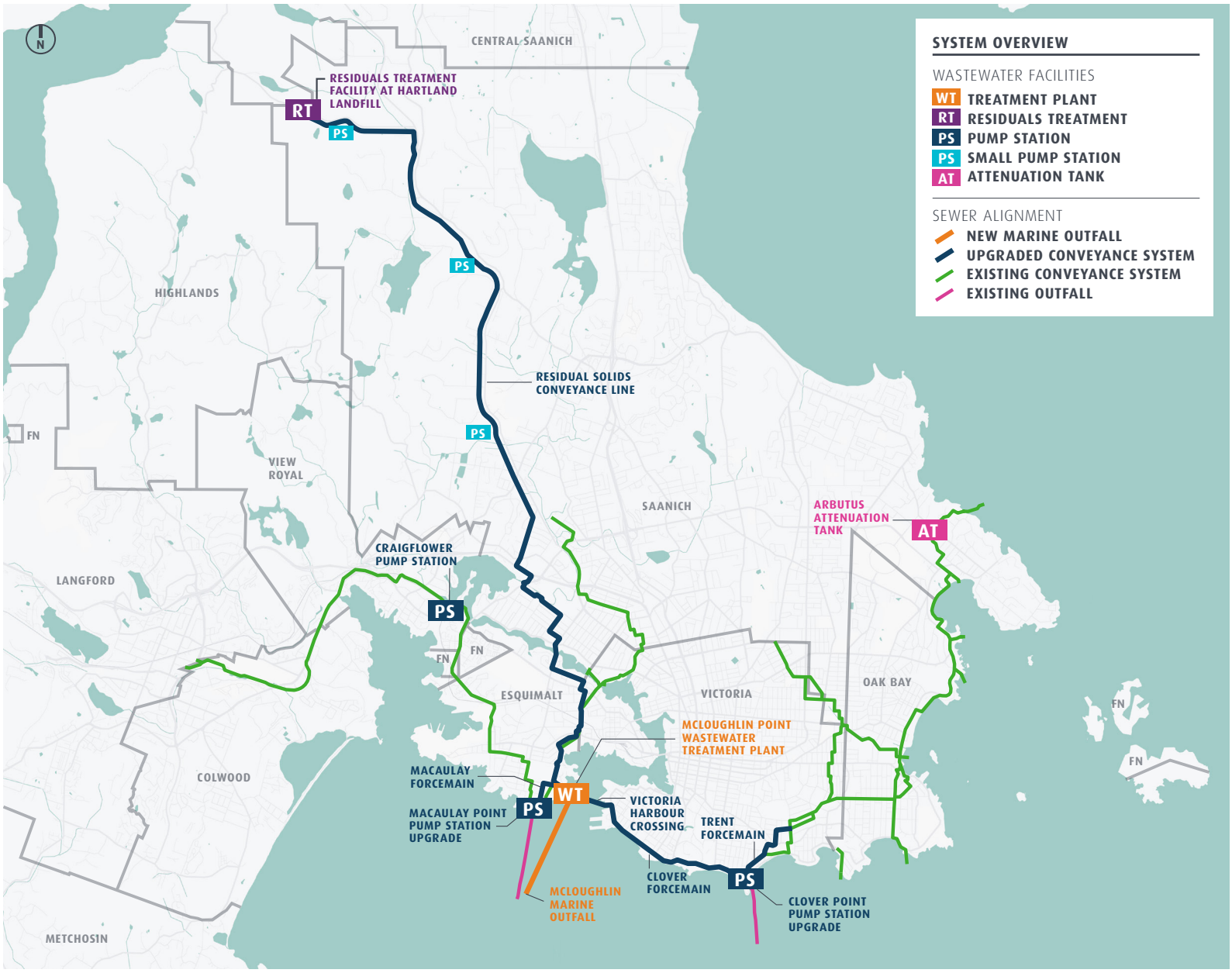
Residual Solids Conveyance Line
Will consist of two pipes and three small pump stations to transport all residual solids to the Residuals Treatment Facility. Liquid removed from the residual solids during the treatment process will be returned to the McLoughlin Point Wastewater Treatment Plant through the conveyance system.





Wastewater Treatment Project Components

The Wastewater Treatment Project is being built to meet the provincial and federal regulations for treatment by December 31, 2020.



For more information

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1.844.815.6132

Wastewater Treatment Project
Treated for a cleaner future

REPORT TO CORE AREA WASTEWATER TREATMENT PROJECT BOARD
MEETING OF FRIDAY, APRIL 12, 2019

SUBJECT **CRD Board Approval to Increase the Project's Budget**

ISSUE

Significant progress has been made on the Wastewater Treatment Project: the vast majority of the Project is under construction, with only one contract remaining to be procured. The Project is on schedule to provide tertiary treatment for wastewater from the core area municipalities (of Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford and Colwood) and the Esquimalt and Songhees Nations, by the regulatory deadline of December 31, 2020.

The Project has experienced cost pressures on every conveyance contract awarded, primarily as a result of escalation in the Vancouver Island construction market. The Project Team has awarded seven conveyance contracts to-date. Each contract has been subject to a competitive procurement, with qualified and experienced contractors submitting competitive proposals for the work. However, due primarily to escalation in the price of materials and labour the total cost of the conveyance contracts awarded to-date has exceeded the amount within the Project's control budget by $56.5M. Each contract award has therefore required a draw to be made from the Project's contingency, to offset the overages.

Given the cost pressures to-date the Project Team engaged Kerr Wood Leidal to refresh the cost estimate for the four conveyance components remaining to be procured. Based on the value of the contracts awarded to-date and the refreshed cost estimate, the Project Team has estimated the cost to complete the Project. The Project Team forecasts that, if the Project were to be constructed with the scope as defined in the Project Board's September 2016 business case, the total cost of the Project would be $795M, or $30M (3.9%) over the Project's budget.

The Project Team also engaged Kerr Wood Leidal to develop an updated model of the core area's wastewater system in order to allow the CRD to make informed decisions regarding capital investments required to meet future demands.

As a result of that work, in a separate report the Project team are seeking the Project Board's approval to refine the Project's scope and remove three components of the conveyance system as they do not provide a benefit to the CRD's residents and businesses, and are not required to meet the Project's goals.

If the Project Board approve the Project Team's recommendation to refine the scope of the Project, the Project Team forecast that the Project could be completed at a total cost of $775M, or $10M (1.3%) over the Project's control budget.

The Project Board have engaged Ernst & Young to make an independent assessment of the sufficiency of the control budget to complete the Project. Ernst & Young will report their findings directly to the Project Board.

The Project Team have undertaken value engineering from the start of the Project, and will continue with that approach for the remainder of the Project, with the aim of minimising costs to

CRD's residents and businesses (life cycle costs) and providing value for money. The Project Team will also continue to work with CRD staff to review and appropriately-allocate costs between the capital and operating budgets.

As the Project Team forecast that the Project's cost will exceed the budget available, the Project Team are recommending that the Project Board seek the CRD Board's approval to increase the Project's budget.

BACKGROUND

On May 25, 2016 the Regional Board of the CRD:

i) Adopted by resolution the Core Area Wastewater Treatment Project Board Terms of Reference (Project Board Terms of Reference) for the purposes of establishing principles governing the Core Area Wastewater Treatment Project (the Wastewater Treatment Project or the WTP);
ii) Established the Core Area Wastewater Treatment Project Board (Project Board) under Bylaw 4109 (the CRD Core Area Wastewater Treatment Board Bylaw No. 1, 2016) for the purposes of administering the Core Area Wastewater Treatment Project; and
iii) Delegated certain of its powers, duties and functions to the Project Board under Bylaw 4110 (the CRD Core Area Wastewater Treatment Project Board Delegation Bylaw No. 1, 2016).

Schedule A of the CRD Core Area Wastewater Treatment Project Board Bylaw No. 1, 2016 defined four goals for the Project Board (the Project's Goals):

i) Meet or exceed federal regulations for secondary treatment by December 31, 2020;
ii) Minimize costs to residents and businesses (life cycle costs) and provide value for money;
iii) Optimize opportunities for resource recovery and greenhouse gas reduction; and
iv) Deliver a solution that adds value to the surrounding community and enhances the livability of neighbourhoods.

On September 14, 2016 the Regional Board of the CRD:

i) Received the final report of the Project Board with respect to its recommendation for the WTP, dated September 7, 2016 (the Final Report); and
ii) Approved the business case attached as Appendix 1 (the Business Case) to the Final Report.

The Business Case established the WTP control budget (the Control Budget) of $765M, and defined the scope of the Project.

The Wastewater Treatment Project will provide tertiary treatment for wastewater from the core area municipalities of Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford and Colwood, and the Esquimalt and Songhees Nations.

The Wastewater Treatment Project is being built to meet the provincial and federal regulations for treatment by December 31, 2020. The Project consists of three main elements:

- McLoughlin Point Wastewater Treatment Plant: located at McLoughlin Point in Esquimalt, the treatment plant will provide tertiary treatment to the core area's wastewater.

- Residuals Treatment Facility: residual solids from the wastewater treatment plant will be piped to a Residuals Treatment Facility at Hartland Landfill, where they will be turned into what are known as Class A biosolids. These biosolids are a high quality by-product treated such that it is safe for further use.
- Conveyance System: the conveyance system refers to the 'pumps and pipes' of the Wastewater Treatment Project. This system will carry wastewater from across the core area to the treatment plant, and residual solids to the Residuals Treatment Facility at Hartland Landfill.

DISCUSSION

Significant progress has been made on the Wastewater Treatment Project: the vast majority of the Project is under construction, with only one contract remaining to be procured.

Appendix A outlines how the completed Project will meet the goals defined by the CRD Board, as well as the progress made to-date on delivering those goals. The Project is on schedule to provide tertiary treatment for wastewater from the core area municipalities and the Esquimalt and Songhees Nations, by the regulatory deadline of December 31, 2020.

The Project Team has been reporting budget pressures through its monthly reports to the Project Board (and CRD Board) since September 2017, and these pressures have steadily increased as each conveyance contract has been awarded.

The cost pressures have been primarily as a result of escalation in the Vancouver Island construction market. The Project Team has awarded seven conveyance contracts to-date. Each contract has been subject to a competitive procurement, with qualified and experienced contractors submitting competitive proposals for the work. However, the total cost of the conveyance contracts awarded to-date has exceeded the amount within the Project's control budget by $56.5M. Each contract award has therefore required a draw to be made from the Project's contingency, to offset the overages.

The primary reason for the overages is that escalation in the BC construction market has exceeded expectations: there has been a significant increase in the cost of both labour and materials, including high-density polyethylene piping, steel and aluminum. Other factors that have contributed to budget pressures include:

- Design development to incorporate stakeholder input;
- Geotechnical considerations, including removal and disposal of contaminated material; and
- Schedule constraints associated with the requirement to provide wastewater treatment by the regulatory deadline of December 31, 2020.

While the need to treat wastewater by the regulatory deadline of December 31, 2020 has always been known, it has constrained management's ability to mitigate cost pressures. The Project is on-track to meet the regulatory deadline, but additional costs have been incurred in order to maintain progress against schedule.

Given the cost pressures to-date the Project Team engaged Kerr Wood Leidal to refresh the cost estimate for the four conveyance components remaining to be procured. In line with the escalation

evident on the other components, the cost estimate for the remaining scope is greater than that included in the Control Budget.

Based on the value of the contracts awarded to-date and the refreshed cost estimate as well as a forecast of the risks remaining to be managed, the Project Team has forecasted the cost to complete the Project. The Project Team forecasts that, if the Project were to be constructed with the scope as defined in the Project Board's September 2016 business case, the total cost of the Project would be $795M, or $30M over the Project's budget.

The Project Team also engaged Kerr Wood Leidal to develop an updated model of the core area's wastewater system in order to allow the CRD to make informed decisions regarding capital investments required to meet future demands.

As a result of that work, in a separate report the Project team are seeking the Project Board's approval to refine the Project's scope and remove three components of the conveyance system as they do not provide a benefit to the CRD's residents and businesses, and are not required to meet the Project's goals.

If the Project Board approve the Project Team's recommendation to refine the scope of the Project, the Project Team forecast that the Project could be completed at a total cost of $775M, or $10M over the Project's control budget.

The Project Team's confidence in the forecast cost to complete the Project is high as:

- the vast majority of the Project is under contract, with only one contract remaining to be procured;
- construction is underway on all key components of the Project; and
- the foundation work is close to completion at all of the Project's pumping and treatment facilities.

The Project Board have engaged Ernst & Young to make an independent assessment of the sufficiency of the control budget to complete the Project. Ernst & Young will report their findings directly to the Project Board.

The Project Team have undertaken value engineering from the start of the Project, and will continue with that approach for the remainder of the Project, with the aim of minimising costs to CRD's residents and businesses (life cycle costs) and providing value for money. The Project Team will also continue to work with CRD staff, including the CRD's Chief Financial Officer and Chief Administrative Officer, to review and appropriately-allocate costs between the capital and operating budgets, as outlined in the budget implications section of this report.

The CRD Board established the Project Board through the CRD Core Area Wastewater Treatment Board Bylaw No. 1, 2016, and delegated certain of its powers, duties and functions to the Project Board under the CRD Core Area Wastewater Treatment Project Board Delegation Bylaw No. 1, 2016. Notwithstanding the delegation of authority from the CRD Board to the Project Board, approval from the CRD Board is required for any alteration to the scope, schedule or budget of the Project that would result in the Project:

- not meeting provincial and federal regulations governing the Project;
- exceeding approved funding for the Project; or
- increasing costs to taxpayers from those stated in the Business Case.

As the Project Team forecast that the Project's cost will exceed the budget available, the Project Team are recommending that the Project Board seek the CRD Board's approval to increase the Project's budget by $30M, or $10M if the Project Board approve a refinement to the Project's scope.

The Project Team will continue to diligently manage risks and safely-deliver the Project to meet the Project's goals, including minimizing life cycle costs to residents and businesses and providing value for money, and meeting federal regulations for wastewater treatment by December 31, 2020.

FINANCIAL IMPLICATIONS

The federal and provincial governments are funding 60% of the Project's Control Budget, through four funding agreements:

- The Government of Canada is contributing
  - up to $120 million through the Building Canada Fund – Major Infrastructure Component towards the McLoughlin Point Wastewater Treatment Plant;
  - up to $50 million through the Green Infrastructure Fund towards the conveyance system project; and
  - up to $41 million towards the Residuals Treatment Facility through the P3 Canada Fund; and
- The Government of British Columbia will provide up to $248 million towards the three components of the project.

The Project Team provide regular updates to the provincial and federal funding partners, in accordance with the funding agreements. The funding partners are therefore aware of the Project's cost pressures, and any increase to the Project's budget will not impact the federal and provincial funding contributions to the Project.

The federal and provincial governments' funding contributions are capped and therefore if the CRD Board approve an increase to the Project's budget, it would increase the CRD's share of the Project costs by the same amount. The allocation between the core area municipalities of the CRD's portion of the Project's capital costs were defined and agreed based on each municipality's allotted design capacity, and would not be expected to change if an increase to the Project's budget is approved.

The requested increase to the Project's budget is to accommodate the total forecast cost to complete the Project, and is not anticipated to impact this year's capital expenditures. An increase to the Project's budget would therefore not require a change to the 2019 capital expenditures included in the 5-year 2019-2023 Capital Plan, approved by the CRD Board on March 20, 2019.

If the CRD Board approve an increase to the Project's budget, staff would bring an amendment of the 5-year 2019-2023 Capital Plan (for year 2), through the Governance and Finance Committee for approval. An increase to the Project budget will impact the CRD Board approved WTP Financing Strategy by amending the forecasted balance to be financed. Under the current strategy, there would be an anticipated end of project balance of $3M to be financed following commissioning, which is currently anticipated to be repaid by 2031.

If the Project's budget were increased by $10M or $30M, the forecasted end-of-project balance would be increased to either $13M or $33M. A high-level preliminary estimate results in an incremental 1.5 or 4.5 years of debt servicing costs, holding all other assumptions constant.

The Project Team will continue to work with CRD staff to review and refine cost allocations of the project budget between capital and operating funding streams. This review includes assessing ongoing or operating costs versus construction or one-time impacts. This review may result in costs that are currently forecasted within the Project's capital budget being funded through CRD service operating budgets.

RECOMMENDATION

That the Core Area Wastewater Treatment Project Board (the Project Board) approve either resolution 1 (if the Project Board pass the resolution in agenda item 6.3 'Refinement of Project Scope' of the Project Board's April 12, 2019 meeting) or resolution 2.

RESOLUTION 1:

RESOLVED that:

1. The Project Board seek the CRD Board's approval to increase the capital budget for the Wastewater Treatment Project from $765M (as set out in original business case for the Project), to $775M.

2. This report be forwarded to the Core Area Liquid Waste Management Committee for information.

3. This report be forwarded to the CRD Board seeking their approval of the following resolution:

   RESOLVED that:
   The Board of the Capital Regional District approve an increase to the Wastewater Treatment Project's budget from $765M (as set out in the original business case for the Project) to $775M.

RESOLUTION 2:

RESOLVED that:

1. The Project Board seek the CRD Board's approval to increase the capital budget for the Wastewater Treatment Project from $765M (as set out in original business case for the Project), to $795M.

2. This report be forwarded to the Core Area Liquid Waste Management Committee for information.

3. This report be forwarded to the CRD Board seeking their approval of the following resolution:

RESOLVED that:
The Board of the Capital Regional District approve an increase to the Wastewater Treatment Project's budget from $765M (as set out in the original business case for the Project) to $795M.

Dave Clancy, Project Director Wastewater Treatment Project	Elizabeth Scott, Deputy Project Director Wastewater Treatment Project Concurrence

Appendix A: Progress against Project Goals

SPECIAL REPORT NO. 19
to
The Legislative Assembly of British Columbia

An Investigation into the Instability and Recession of Willemar Bluffs (Regional District of Comox-Strathcona)

Ombudsman
Province of British Columbia

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OMBUDSMAN

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Province of British Columbia

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Open Letter from the Ombudsman
June 1997

Since 1987 my Office has been investigating a complaint about excessive erosion at Willemar Bluffs, near Comox, British Columbia. Numerous parties complained that the Bluffs had begun to erode at excessive rates since a sewer pipeline was installed along the foreshore in 1982. In the ten years my Office has been involved with this matter we have undertaken extensive and repeated consultations to try to seek consensual resolutions to this very problematic situation. We have particularly focussed our resolution efforts at the Regional District of Comox-Strathcona, which was granted conditional approval to install the pipeline, and the (now) Ministry of Environment, Lands and Parks, which granted the conditional approval.

Despite these lengthy and repeated efforts, the parties have been unable to achieve consensual resolution, and undue erosion continues to cause grave concern. One home is currently a mere ten metres from the edge of the very unstable bluff, and it is clearly foreseeable that the home and perhaps its occupant will fall onto the beach 150 feet below unless a comprehensive solution is found in the very near future.

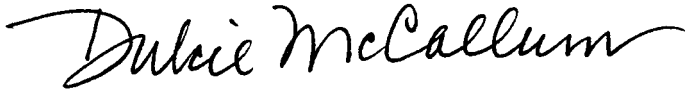
Having exhausted all possibility of consensual resolution, I concluded my investigation into this matter in November 1996. I found that the Regional District of Comox-Strathcona had wrongfully failed to ensure that the conditions attached to the sewer installation approval had been fulfilled, most particularly the requirement that the foreshore be returned to its natural condition following installation of the pipeline. I recommended that the Regional District undertake specified restoration work to the foreshore along the Bluffs. The Regional District has refused to accept my findings and recommendations, and in the circumstances I am compelled to draw this very important matter to the attention of the Legislative Assembly, the Board of the Regional District, and the people of British Columbia by way of this Special Report, pursuant to section 31(3) of the ***Ombudsman Act***, R.S.B.C. 1996, c. 340.

My jurisdiction over local governments was proclaimed in March 1995, and I recognize that local governments may face change and challenges in being subject to Ombudsman review. However, the fact that the Legislature has entrusted local government to the Ombudsman's scrutiny in my view affirms a commitment to local government as a strong and important component of our

democratic fabric, and along with this responsibility and authority must go administrative accountability.

It is disturbing that, in one of the infrequent cases where I make formal findings against a local government, that authority has not to date been prepared to honour those findings and recommendations. I hope that this Special Report will cause the Regional District to reconsider its position and to work with all relevant agencies to address this longstanding concern.

Yours very truly,



Dulcie McCallum
Ombudsman for the Province of B.C.

Introduction

Willemar Bluffs is a natural quadra sand deposit located along the beachfront, approximately two km. east of Comox, British Columbia. The Bluffs rise from the ocean approximately forty metres in places, and extend several hundred metres at a point between Point Holmes and Goose Spit. Until the early 1980s, the Bluffs were covered in most places with vegetation, including alder and fir trees, brush, flowering plants and grasses, and the toe of the Bluffs was protected by a layer of beach rock. This vegetation and rock, which had accumulated over a period of many decades, served to protect the Bluffs from excessive erosion. In addition, a reef extended perpendicular from the toe of the Bluffs at a location known as Stoker's Point, which had for years served to further protect the Bluffs from undue erosion as it diffused wave impact and limited the natural process of sand being swept away along the base of the Bluffs.

In the early 1980s the Regional District of Comox-Strathcona proposed to install a sewer pipeline along the foreshore of Willemar Bluffs, to transport sewage from the City of Courtenay to a treatment station. Approval for a "sanitary sewer pipeline over unsurveyed foreshore" was granted by the then Ministry of Lands, Parks and Housing on July 23, 1982. This approval was granted "subject to the following terms and conditions." Among those terms and conditions were:

> *The foreshore is to be returned to its natural condition after construction is completed.*
>
> *Late spring and summer (i.e. March to October) are the recommended months for construction. Mitigation may be called for during construction.*
>
> *All contractors are to be made aware of the environmental concerns and performance bonds posted to ensure their compliance.*

Because of delays in the project, the sewer pipeline was installed in November-December 1982, when high tides and strong storm conditions existed. During this stormy, high-tide period, part of the disturbed foreshore was washed out to sea, and it was necessary for the

contractor to stabilize the pipeline work by utilizing rock from the reef and foreshore. This information is supported by numerous residents of the area who witnessed the construction, as well as through photographic documentation.

Shortly after this construction, numerous individuals who lived and owned property atop the Bluffs complained that, as a result of the construction, they had experienced accelerated and undue erosion, with the result that they were losing considerable portions of their property. As the ocean undercut the Bluffs, large portions of property atop the Bluffs would fall, and the bank material would be swept away along the foreshore. The process would repeat itself in a cyclical nature. While complainants acknowledge that over the long term natural erosion patterns were evident on Willemar Bluffs, like similar bluffs in the Gulf Islands area, they note that the frequency and magnitude of erosion events has, since the installation of the sewer pipeline, come to greatly exceed the historic pattern. In support of this they rely on their long time presence in the area (in one instance seventy-five years) as well as maps, surveys and photographs of the Bluffs.

On November 22, 1983 the Regional District wrote one of the property owners in respect of the concerns expressed regarding the reef destruction. The letter stated in part:

> *The matter of [the reef at] Stoker's Point has been recognized as a deficiency to the foreshore contract. Pursuant to Article 27 to the contract, the contractor is to be served with 10 days notice to correct the deficiency.*

In April 1985 some work was undertaken through holdback funds to restore the reef. This restoration work apparently consisted of the dumping of several loads of rock, which did not prove to be similar in size, shape or stability to the original reef. The "restored" reef was not able to withstand the natural ocean action, such that within a period of months some rock sank into the sand and other rock was scattered. At this time there is no reef present comparable to that which is clearly noted in historic aerial photographs of this area.

The residents affected by this matter were very active early on in seeking to have their concerns addressed. For a variety of reasons these residents have had difficulty in getting all involved parties to respond to

their requests. It is very clear that the matter has had a profound effect not only on the property, but also on the lives of affected residents, many of whom have a deep and personal commitment to the land in question. One description of this issue made by affected home owners is as follows:

> *The upset to Bluff property owners' lives brought about by this sewage disaster is immeasurable. Aside from seeing their magnificent natural area, with its delightful shoreline community of birds, animals, marine life and vegetation totally destroyed as their properties drop away by the ton, there is the constant strain of taking photographs and measurements, accumulating evidence, trying to get beach repairs made and redress for loss of land, as well as depression to their property values. Writing letters, making telephone calls, attempting to get action from politicians, and recording the disaster as it proceeds, and being brushed off by each level of government takes an awful toll on the lives of residents...*

Process of the Ombudsman Investigation

My Office began its investigation in January 1987. At that time it became apparent that there were two principal governmental agencies that were integrally involved with the situation at Willemar Bluffs. These were the Regional District of Comox-Strathcona, which was responsible for the sewer installation contract, and the then Ministry of Lands, Parks and Housing, which granted the Regional District the license to undertake the work in question on Crown foreshore. At that time my Office did not have jurisdiction over local governments, but my Office did consult extensively with both levels of government. Over the course of a number of years my Office sought to obtain information regarding the nature of the problem in question, and we worked very hard to try to bring all affected public bodies together in the hopes of achieving a consensual agreement towards resolution of the problem.

This was not always an easy process. As is the case with any difficult problem involving complex geophysical issues and related ocean dynamics, numerous technical issues arose. Not all public bodies were prepared to acknowledge that the rate of erosion had increased, or if it had, that the installation of the sewer pipeline had any bearing on this

matter. Similarly, there were debates as to who would be responsible, even if it could be shown that the installation of the pipeline did result in undue erosion of the bluffs.

Notwithstanding the unwillingness of the various public bodies to accept any responsibility for this difficult situation, numerous efforts to address the problem were explored. In 1988-89 discussions were held, involving this Office, regarding possible settlement of the outstanding claims through a joint contribution of $179,000 to restore the reef and foreshore in question. These discussions arose in the context of several civil claims that had been commenced by the property owners against the Regional District of Comox-Strathcona, the Ministry of Environment and Crown Lands, and the engineer and the contractor responsible for the work. Unfortunately, these settlement discussions did not come to fruition. One party showed minimal interest, and the lawyers for certain public bodies took the position that any such settlement might prejudice their client's position regarding responsibility for this matter, and that it may have implications with respect to insurance. This was particularly regrettable given the fact that, according to my understanding, the various home owners would have been prepared to settle their claims without any compensation for lost property, so long as the required remedial work was completed. Furthermore, they were prepared to sign documents which would have released the authorities from any further claims in the event the remediation did not prove successful.

Over the next several years my Office continued its work to seek a consensual resolution of the matter, and continued to meet and consult with all affected parties. While there was some debate as to the specific cause of the erosion and who may be responsible for any harm, it appeared that all public bodies remained interested in securing restorative work, provided that they would not bear the burden of legal responsibility.

Part of the discussions that were ongoing at this time included consulting with provincial government agencies to determine whether the province might be willing to contribute towards the cost of such restoration, which by this time was estimated to be approximately $250,000. As a result of these efforts, the province agreed to support $250,000 in funding by way of an *ex gratia* payment. On March 5, 1993 a meeting was facilitated by my Office with the various parties, which resulted in apparent agreement that the restoration works should be

completed, and my Office agreed to draft a letter setting out a proposed comprehensive plan for such a project. Such a draft letter was circulated on April 6, 1993 and it contained, among other things, the following terms:

- The work of constructing a foreshore reef would be undertaken by the Regional District with the *ex gratia* grant of $250,000 from the provincial government. In exchange for the grant the Regional District was to:

  a. *Implement a Ministry-approved construction setback by-law governing development on Willemar Bluff.*

  b. *Obtain restrictive covenants under section 215 of the* ***Land Titles Act*** *for all bluff properties, requiring Ministry approved construction setbacks for all future development.*

  c. *Construct a properly designed and engineered reef on the foreshore off Willemar Bluff.*

  d. *[R]etain a Professional Engineer experienced in coastal engineering to design the works and provide quality control during construction as project manager, subject to the approval of the Ministry of Environment. During the project, Mr. Brendan Holden, P.Eng. [Coastal/Oceans Engineer, Ministry of Environment, Lands and Parks] will monitor and review the project and assist and advise the project manager and the Ombudsman's Office.*

     The location and general dimensions of the restoration will conform to coastal engineering requirements and consider information from old photographs, residents and any other beneficial sources.

  e. *Be responsible, with assistance from the Ombudsman's Office, for obtaining all rights-of-way and accesses: in this respect, initial approaches have been made by the Ombudsman's Office with:*

i) Ministry of Environment, Van. Island Region Acting Regional Director, Max Nock (Use of beach/foreshore by equipment)

*ii) Canadian Coast Guard, Vancouver Comox area member, Brian Balfe (**Navigable Waters Protection Act**)*

iii) Federal Fisheries and Oceans, Nanaimo Fisheries Biologist, Bruce Hillaby (Federal Fisheries and Oceans interests).

f. Be responsible for future maintenance, if any, of the works.

- The owners of all affected properties would discontinue legal action and complete releases in favour of the provincial government and the Regional District.
- The project was to be a "once only" initiative to replace the natural reef, with the understanding that it was not expected to reduce natural erosion.
- One house, which was in most immediate danger of falling onto the beach below, would be relocated (with the costs paid by the Provincial Emergency Program).
- The Office of the Ombudsman would act as the coordinating Office through the project.

On May 5, 1993 the Regional District wrote my Office, with a copy to the Ministry, to indicate that it felt the proposed resolution as outlined in the draft letter was different from what they had agreed to at the March 5, 1993 meeting. The Regional District noted, among other things, concern that:

- $250,000 would not cover all costs of the project.
- They had understood the Office of the Ombudsman would obtain all signatures from the landowners in the area.
- Requesting restrictive covenants on the affected properties regarding setbacks, and implementing a set-back by-law may have implications for potential future liability.
- The Regional District should not be responsible for design and overseeing of the project.
- The Regional District should not be responsible for maintenance of the restoration works.

In this letter the Regional District also stated:

> *Our understanding on March 5 was simply that the Regional District would act as a form of "paymaster" only and would release funds on a progress payment basis, upon the approval of the engineer hired by the Provincial Government. Any participation of the Regional District would be subject to the approval of the Regional District Board. It was also our understanding that any payment for engineering services would be in addition to the $250,000 and would be covered by the provincial government. We reiterate that the Regional District has not in the past nor at the present time, assumed or admitted any responsibility for erosion of Willemar Bluffs... [W]e point out that your draft letter of April 6, 1993 would simply allow the Ministry of Environment to make the ex gratia payment and saddle the Regional District with the responsibility to put the works into effect as well as assume any long-term potential liability.*

It is important to note that while the Regional District was not prepared to accept a major role in the restoration process, and while it was careful to not accept any liability for the matter, it neither contested the need for restoration nor the principle that an agreement was reached at the March 5, 1993 meeting regarding the general need for restoration.

On July 19, 1993 the Ministry of Environment, Lands and Parks wrote the Regional District in respect of the concerns noted by the Regional District and stated:

> *While we see certain areas where the ministry can assist in implementing the proposal, it is considered that the conditions of the grant would remain essentially as stated in the April 6, 1993 draft you reviewed. The following are the arrangements that the ministry would expect to be put into place...*
>
> *I note that there is a short construction window and recognize that there must be early agreement if the Regional District of Comox-Strathcona wishes to avail itself of the opportunity afforded by the offer of a grant.*

On July 28, 1993 the Regional District wrote the Ministry to advise that on July 26, 1993 the Regional District Board passed a motion stating:

> *THAT with regard to the Willemar Bluff Reef Restoration Project, the Regional District advise the Ministry of Environment that we can not accept the conditions in their letter of July 19, 1993 as there is [sic] obligations within that letter that the Regional District can not accept and perform.*

The Ministry replied to this letter on August 13, 1993 and stated:

> *The conditions of [the July 19, 1993] letter are similar to those applied to other works assistance projects, although, some special conditions are necessary to protect both the regional district and the province in the event of future erosion complaints...*
>
> *I regret that the offer of an ex gratia payment must lapse at the end of the current fiscal year.*

It was with great regret that this Office was, at this point, forced to once again revisit this matter. This was particularly unfortunate, as the Regional District was not amenable to a potential consensual resolution that would have them accept any significant role or responsibility (financial or otherwise). Mindful of the difficult position all parties were in, my Office once again continued to explore possible solutions to this problem.

On September 7, 1994 another meeting was held with officials from the Regional District, the Ministry of Environment, Lands and Parks, the Ministry of Municipal Affairs and this Office, at which time the previously noted restoration plan was again discussed. Following this meeting my Office wrote the Ministry of Environment to determine whether there was still the potential for the provincial government to provide funds for the restoration work by way of *ex gratia* payment. However, at a meeting held on November 1, 1994 officials from the Ministry of Environment indicated that they did not have funds available for this project. Subsequent discussion between my Office and the various parties involved in the matter have not proven effective, and it is my conclusion that all reasonable efforts at consensual resolution have been fully explored in the ten years my Office has been involved with this matter. In these circumstances, it has become necessary that I

conclude my investigation and determine whether findings are warranted against an authority within the Ombudsman's jurisdiction (which, as of March 1995, includes the Regional District of Comox-Strathcona).

Findings and Recommendations

(i) How has the situation of Willemar Bluffs changed following installation of the pipeline?

It is clear from a review of historic photographs that the reef at Stoker's Point was not in the same condition following the installation of the pipeline as it was prior to this time. A review of aerial photographs taken in 1968, 1975, 1981 and August 1982 show a distinct reef, which was connected to the toe of the Bluffs. A 1984 photo shows a significantly diminished reef, which is no longer connected to the toe. A 1986 photo shows a somewhat more prominent reef, but which again is not connected to the toe of the Bluffs. Similar photographs were provided to my Office from residents of the area. This information has satisfied me that the reef in question had been clearly and significantly diminished as a result of the installation of the pipeline, and that it is not in its natural condition at this time.

With respect to the rate of erosion, experts have indicated that the natural rate of erosion for quadra sand bluffs in the Gulf Islands area, of which Willemar Bluffs is typical, is approximately twelve inches per year on average. My Office has interviewed a number of individuals who have lived in the Willemar Bluffs area for many years, and these individuals have been able to provide a great deal of information in terms of historic photographs and descriptions. This information indicates that the rate of erosion of Willemar Bluffs was likely at or below such an average rate in the decades prior to the installation of the sewer pipeline, and that erosion since the installation of the pipeline is well in excess of this average.

In addition to the information provided by the complainants, during the years in which my Office has sought to develop a consensual resolution to this problem, members of my staff have visited the site regularly. These visits have also confirmed that exceptional rates of erosion continue to this day. In numerous instances several feet of property fell onto the beach below in a storm, only to be washed out to sea in short order. We have also seen many established trees on both the face and the top of the Bluffs fall in recent years. In one notable event in January 1987, one property lost a 105 foot wide strip that slipped 82 feet onto the beach, creating an avalanche of sand. Our file records indicate that,

prior to 1982, one home in question was approximately 70 feet from the edge of the Bluffs, and that only several feet of natural erosion had occurred in the previous 20 years. As of March 1996, that distance was reduced to approximately 50 feet, and at present, the minimum distance between the house and the edge of the cliff is approximately 30 feet. As a result, both the home and its occupant are in obvious and imminent danger.

During the course of this investigation, a variety of technical reviews have been undertaken and professional opinions expressed. Some such information has indicated that the installation of the pipeline has expedited the erosion, although some reports have also focused on natural forces as the cause. It is of course extremely difficult to achieve a definitive substantive determination of such issues in the context of complex ocean and geophysical factors, particularly having regard to the fact that any such review or report necessarily has potential implications for attribution of responsibility. In my view, the evidence on balance is clear that the rate of erosion since the installation of the pipeline is well in excess of the historic natural rates, and that remedial work clearly is required.

I believe there is one other very important factor, which clearly supports my conclusion in this regard. That is the simple fact that all public bodies involved have in the past reached tentative agreement that such work should indeed proceed. As noted above, the July 1993 tentative agreement contained very specific provisions regarding the work required to address the situation, and it was most unfortunate that a dispute as to the Regional District's role in effecting the actual restoration caused this agreement to falter. I believe this clearly indicates that, notwithstanding the positions parties have taken to dispute legal liability, all have acknowledged that this work needs to be done.

(ii) What remediation efforts are required to address the present situation?

(a) Reef restoration

Several technical reviews have been conducted by experts in relation to the issue of erosion at Willemar Bluffs, with particular attention to the issue of restoration of the reef

in question. Two reports were prepared by and for the Ministry of Environment, Lands and Parks in 1994 and 1995. Each recognized that there was a relationship, albeit delayed, between erosion at the base of the Bluffs and collapse of the Bluffs at the top. These reports also noted that a proposed reef restoration would not completely stop all erosion, and that it may have implications for adjoining beach areas including nearby Goose Spit, which requires a steady supply of sand for its own stability. One report questioned the efficacy of reef restoration, but went on to suggest such could be supported simply for "aesthetic benefit."

In early 1995 my Office requested that another report be prepared by Dr. Brian Bornhold, Coastal Engineer, Pacific Geoscience Centre, Geological Survey of Canada. Dr. Bornhold stated the following regarding a proposed reef restoration:

Suggestions for Remediation

The following suggestions for remediation will have little impact on the rate of retreat of the upper parts of Willemar Bluffs in the short term. They will continue to erode for many years before returning to their former condition characterized by localized and episodic retreat. It should be noted that it is not expected that Willemar Bluffs will ever be completely stabilized, nor is it even desirable that it should be. The material derived through erosion of these bluffs supplies sediment to the Goose Spit system; without it the beach to the west would diminish in width and the spit would undergo significant erosion.

The aim of the suggested measures is to return the beach area to a condition as close as possible to that which existed prior to construction of the pipeline and thereby to afford some protection to the toe of the bluff from wave attack. These are merely general suggestions for remedial action; any final decisions and design specifications (e.g., sizes of material to be used and its distribution) should be developed

by a coastal engineer in consultation with geologists and physical oceanographers.

1) *Any remediation should be conducted in such a way as to appear as "natural" as possible (i.e., aesthetically acceptable to the other many users of this area). Material should be of similar character (i.e., size and shape) to that which is found on natural beaches in the area; it should* **not** *consist of over-sized blocks of quarried granitic material.*

2) *In the area between existing protective structures, the berm should be replaced by coarse gravelly to cobbly material in such a way as to replicate a natural winter storm profile. This berm should consist of coarser material (boulders and cobbles) rising significantly above the high tide level (probably initially about 2 metres above) at the base of the bluffs and tending seaward to finer gravelly material. This berm should be sufficiently wide so as to accommodate some redistribution as a result of severe storms and some burial by continued slope failures.*

3) *If possible, larger blocks as well as boulders and cobbles should be added to intertidal reefs to afford somewhat greater protection to the beach from storm wave attack. Past aerial photography may assist in the selection of appropriately sized material and in its distribution.*

4) *Care should be taken that sufficient sand continues to be delivered to the beach to maintain downstream beaches, including Goose Spit. Careful analysis will be required by competent coastal geologists/physical oceanographers in order to ascertain the sediment budget required to maintain these beaches. The coastal engineer responsible for overseeing the remediation would then be responsible for determining the most appropriate design, which would allow for protection of the base of the bluffs while permitting sufficient sand to enter the longshore drift.*

These measures, as indicated above, should provide some stability to the base of the bluffs by protecting them from wave attack under normal conditions. There is little that property owners can do to reduce the rate of erosion on the upper parts of the bluff. Indeed these areas will not regain their former quasi-stability until they have had an ample opportunity to erode back to a lower overall angle of repose. Erosion of the upper parts of the bluff will result in continued significant loss of property and is expected to threaten some dwellings, most particularly the Buchanan residence, over the next several years. It is strongly recommended that measures be taken to ensure, to the extent possible, the safety of residents in areas that will continue to be subject to rapid rates of retreat.

Since some of the erosion in the upper parts of the bluff may be anthropogenic (related to clear-cut logging and septic fields), some reduction in rates of retreat could perhaps be achieved through addressing the groundwater drainage/seepage problem. Soils engineers could perhaps advise on the likely success of reducing groundwater flows on diminishing the erosion on the upper bluffs.

The conditions noted by Dr. Bornhold are consistent with the substantive nature of the tentative agreement that was reached in the March 1993 meeting noted above.

I am satisfied that restoration work to the toe of the Bluff and the reef in question are warranted in the circumstances, as it has been stated that this may allow a stable angle of natural repose of the Bluff to be established in this area, and that it would likely significantly limit ***extraordinary*** erosion. Certain natural erosion, at the historic natural rate, will of course always occur and any restoration effort must have as its principle to ensure that the reef restoration would, as closely as possible, restore the natural circumstances that existed before the installation of the pipeline.

(b) Installation of rock along the base of the Bluffs

While most attention has focused on restoration of the reef as the requisite remedial work, two property owners in the Willemar Bluffs area, on their own initiative, installed large rock at the base of the toe in order to assist with stabilization. This has allowed the Bluff to stabilize and become covered with vegetation in these locations. It has been suggested that it would perhaps be useful to consider installation of such rock along the other properties in question. It would, however, also be necessary to ensure that such work would not have an undue impact on erosion in other nearby locations, and on the natural supply of sand to Goose Spit. I believe that this matter should be explored further in the context of the remedial efforts noted above.

(c) Relocation of the home currently in danger of falling over the Bluffs

It is imperative that I stress the need to relocate the home, which is at present dangerously close (approximately ten metres) to the edge of the Bluffs. It appears clear that even if remedial work is undertaken, the house cannot be saved in its present location, as it will fall before the Bluffs obtain a natural angle of repose. Although the Provincial Emergency Program has previously indicated it would be prepared to effect relocation of the home, the owner has been adamant that the larger issue of beach and reef restoration must occur before she will even contemplate such relocation. It is my understanding that the Provincial Emergency Program remains willing to assist with relocation of the home. I strongly believe that all public bodies must revisit the potential relocation of this home immediately. Otherwise, it seems clearly foreseeable that the home will fall over the Bluffs in the near future, and the life of the home owner is in very significant danger at this time. In addition, the present state of the Bluffs presents a danger to persons using the beach below.

One final word bears mention in relation to the need for remedial work. Throughout the history of this project,

various representatives of the public bodies have indicated that remedial efforts may be problematic in that any such work could have implications for other areas of the Bluffs, or that unduly limiting erosion of the Bluffs may have implications for the feedings of sand further down at Goose Spit. While it is acknowledged that these are important factors to consider in the technical development of any restoration plan, it is most difficult to accept any assertion that restoring the foreshore to its natural condition would be an unacceptable alteration of the natural balance. Similarly, I find it most disturbing that, while the complex balance of forces has been cited as a factor to avoid remedial work, it was not a sufficient factor to forestall installation of the pipeline in the first place.

(d) Compensation for lost property

The home owners in question have been extremely cooperative and patient in seeking to have this matter addressed. They have impressed me with their commitment to the land and their desire to secure a long-term resolution. They have not, in the context of the complaint to this Office, sought any compensation for lost property or lost property value resulting from the extraordinary erosion. As such, I have not made any findings or recommendations in respect of this issue.

(iii) Who is responsible for the remedial work?

As noted earlier in this Special Report, the original approval granted to the Regional District by the Ministry of Lands, Parks and Housing was expressly subject to the following conditions:

> *The foreshore is to be returned to its natural condition after construction is completed.*
>
> *Late Spring and summer (i.e. March to October) are the recommended months for construction. Mitigation may be called for during construction.*

> *All contractors are to be made aware of the environmental concerns and performance bonds posted to ensure their compliance.*

In my view, the Regional District, as holder of this approval, was responsible to ensure that these conditions were met, and as noted above it is my view that these conditions were not met. The construction was undertaken on behalf of the Regional District in November - December, an inopportune time of year, and the foreshore was not returned to its natural condition following the use of rocks from the reef and beach for pipeline stabilization.

I, therefore, find that the Regional District of Comox-Strathcona was wrong in failing to ensure that the foreshore was returned to its natural condition following installation of the sewer pipeline, and it is my recommendation that the Regional District effect the necessary remedial work.

In making this finding and recommendation, it is very important that one distinguish the role of the Ombudsman from that of the courts. The Ombudsman has the power to investigate complaints regarding the administration of government, and has broad powers to make findings and recommendations according to section 23 (previously s.22) of the ***Ombudsman Act*** R.S.B.C. 1996, c. 340 which states:

Procedure after investigation

23. (1) If, after completing an investigation, the Ombudsman is of the opinion that

(a) a decision, recommendation, act or omission that was the subject matter of the investigation was

(i) contrary to law,

(ii) unjust, oppressive or improperly discriminatory,

(iii) made, done or omitted under a statutory provision or other rule of law or practice that is unjust, oppressive or improperly discriminatory,

(iv) based wholly or partly on a mistake of law or fact or on irrelevant grounds or consideration,

(v) related to the application of arbitrary, unreasonable or unfair procedures, or

(vi) otherwise wrong,

(b) in doing or omitting an act or in making or acting on a decision or recommendation, an authority

(i) did so for an improper purpose,

(ii) failed to give adequate and appropriate reasons in relation to the nature of the matter, or

(iii) was negligent or acted improperly, or

(c) there was unreasonable delay in dealing with the subject matter of the investigation,

the Ombudsman must report that opinion and the reasons for it to the authority and may make the recommendation the Ombudsman considers appropriate.

(2) Without restricting subsection (1), the Ombudsman may recommend that

(a) a matter be referred to the appropriate authority for further consideration,

(b) an act be remedied,

(c) an omission or delay be rectified,

(d) a decision or recommendation be cancelled or changed,

(e) reasons be give,

(f) a practice, procedure or course of conduct be altered,

(g) an enactment or other rule of law be reconsidered, or

(h) any other steps be taken.

This process is quite separate from a court process, and it is neither necessary nor appropriate that my investigation be limited to a question of legal liability, that is, whether negligence has been established. My focus is on whether any maladministration of governmental activity occurred and whether any unfairness has resulted to any aggrieved parties. The fact that certain issues could also have been raised in a judicial process clearly does not preclude the Ombudsman's review. In the present case several parties originally contemplated or commenced legal action. It is my understanding that one such action was settled out of court following the death of the affected homeowner, and the other actions were not pursued by the complainants, who noted the exceptionally high cost and time delay of litigation as their reason for this decision. The Regional District of Comox-Strathcona has previously taken the position that the claims of the complainants should be

pursued in court, if anywhere. For the foregoing reasons, I must most clearly reject this assertion.

Finally, I should also note that over the course of this investigation the Regional District has at several times suggested that any remedial work should be undertaken by the Ministry of Environment. Similarly, the Regional District has raised its objection to the apparent change of position on the part of the Ministry of Environment. This included the March 5, 1993 meeting and the Ministry's role in a potential restoration plan, and subsequently with respect to support for an *ex gratia* payment.

For the reasons noted in this Special Report, I believe that the responsibility for the sewer installation project and the remedial work rightly rests with the Regional District of Comox-Strathcona, in accordance with the terms of the authorization granted by the Ministry of Environment. I do not consider it necessary in these circumstances to make any finding against the Ministry of Environment. However, it is my view that the Ministry of Environment has an important responsibility to use all reasonable means to ensure that the conditions stipulated in the original approval to the Regional District are fulfilled, given that the Ministry granted the approval specifically subject to those conditions, and given that the Ministry has an obvious interest in this type of matter. It is my hope that in these circumstances the Ministry of Environment will again cooperate with the Regional District to the greatest extent possible.

The Regional District's Response to My Findings and Recommendation

On August 2, 1996, I wrote the Regional District of Comox-Strathcona pursuant to s.17 (previously s.16) of the ***Ombudsman Act*** to advise that I proposed to make findings against it, on the basis that the work undertaken pursuant to the approval granted to the Regional District by the Ministry of Environment did not comply with the conditions regarding recommended time of construction and the requirement to return the foreshore to its natural state. In this letter I noted my tentative recommendation that the Regional District restore the reef in question, in accordance with specifications contemplated by the tentative agreement reached in 1993. I also explained that the process established by the ***Ombudsman Act*** required that I give them a formal opportunity to make representations before concluding my investigation, and I requested a reply by August 19, 1996.

The Regional District responded shortly thereafter by letter. The letter stated in part:

> *We reiterate that the Regional District has not, nor does it now, accept any responsibility for the situation at Willemar Bluffs. There has been no proof, only opinions, offered as to the responsibility of the Regional District in this matter...*
>
> *This matter has been reviewed several times by the Regional District and our position remains the same - the Regional District is of the opinion that the cause of the situation is not of the Regional District's making nor has the Regional District the necessary legal and financial resources to address the problem. As stated to [the Deputy Ombudsman], we are prepared to further discuss this matter with others who may be prepared to act. To some extent and under certain circumstances, we may be prepared to consider participating in a limited way. Such participation would of course be dependent on working through the Regional District's financial and legal concerns.*

This response did not address the concerns I have raised and it did not cause me to alter my tentative findings and recommendation in any way. In order to ensure that I had fully exhausted all possibilities for

consultation I nonetheless held a conference call with both the Chair and the Administrator of the Regional District on September 3, 1996. As the new Administrator had recently assumed his position, I agreed not to issue a report for a short period of time while he had the opportunity to further review this matter. Following several further communications, I agreed to withhold any final findings until the Board of the Regional District could revisit this matter.

On October 29, 1996 I received a formal reply from the Regional District's legal counsel. The Regional District took exception with my tentative findings and recommendation and stated:

> *Rather, it is the Regional District's position, and our respectful submission, that the proper conclusion is that the subsidence of the Willemar Bluffs is, and always has been the result of natural causes, with the possibility of intermittent man-made contributory causes, not including installation of the pipeline.*
>
> *The Regional District has also asked us to make clear that they share the Provincial Government's view that steps ought to be taken to protect the residents along the Willemar Bluffs from further subsidence of their lands and that they would endorse a Provincial Government program, designed and financed by the Provincial Government, along the lines previously proposed...*

This letter did not address the issue of the timing of the sewer pipeline construction and the failure to return the foreshore to its natural condition following the installation of the sewer pipeline, which were conditions of the approval granted to the Regional District. It did argue that there was not sufficient technical data to support the contention of harm, that the Ministry of Environment should bear responsibility, and that the fact that litigation was not pursued suggests there was no merit to the complainants' claim. Each of these issues has of course been discussed in this Report, and they have not caused me to alter my position in respect of this matter. Therefore, on November 20, 1996, I provided my final findings and recommendation to the Regional District pursuant to s.23 (previously s. 22) of the ***Ombudsman Act.*** In that letter I stated:

My Findings:

My final findings are that the Regional District of Comox-Strathcona improperly failed to ensure that the contracts it entered into for construction of the sewer line below Willemar Bluffs contained the necessary terms and conditions to ensure compliance with the conditions of the license granted to the Regional District by the approving authority. The Regional District did not ensure that the contract required the work to be performed between the months of March to October, and it did not ensure the foreshore was returned to its natural condition.

My Recommendations:

It is my recommendation that the Regional District undertake the restoration and construction work that was referenced in the July 19, 1993 letter from John O'Riordan, Assistant Deputy Minister, Ministry of Environment, Lands and Parks to the Regional District. Specifically, the location and general dimensions of the restoration should conform to coastal engineering requirements and consider information from old photographs, residents, and any other beneficial sources. Dr. Brendan Holden, P.Eng, Floodplain Management Branch, Ministry of Environment, Lands and Parks should be consulted to monitor, review and advise with respect to the project.

It is also my understanding that Ms. Melda Buchanan has refused to allow her house to be moved until the underlying issue of the reef is resolved. Ms. Buchanan's home and safety continue to be placed in imminent danger by the present situation and I urge the Regional District to act upon my recommendations immediately.

I requested the Regional District to advise me of its intentions in this regard within forty five days. On January 3, 1997 the Regional District requested further time to reply. I extended the reply date until February 28, 1997. On April 15, 1997 legal counsel for the Regional District finally responded to my findings and advised:

I am now instructed by the Regional District of Comox-Strathcona to advise that after considerable deliberation, their position remains as outlined in my letter to you of October 29, 1996. It is their

> *understanding that the technical evidence does not support the suggestion that anything done or omitted to be done by the Regional District caused any subsidence or movement in the Bluffs, that being attributable entirely to the natural forces acting on the Bluffs.*

Once again, this response did not address the simple fact that the conditions of the original approval, particularly the requirement to return the foreshore to its natural condition, were not complied with.

Conclusion:

It is with considerable concern and regret that after ten years of investigation, consultation and efforts at achieving consensual resolution, this matter remains outstanding. Although the matter is of a lengthy history and involves some complex issues, the central issue in question is that the foreshore below Willemar Bluffs was not returned to its natural condition following the installation of the sewer pipeline in 1982. This is a matter for which I consider the Regional District of Comox-Strathcona to be responsible, and to date it has not been prepared to take proper corrective action.

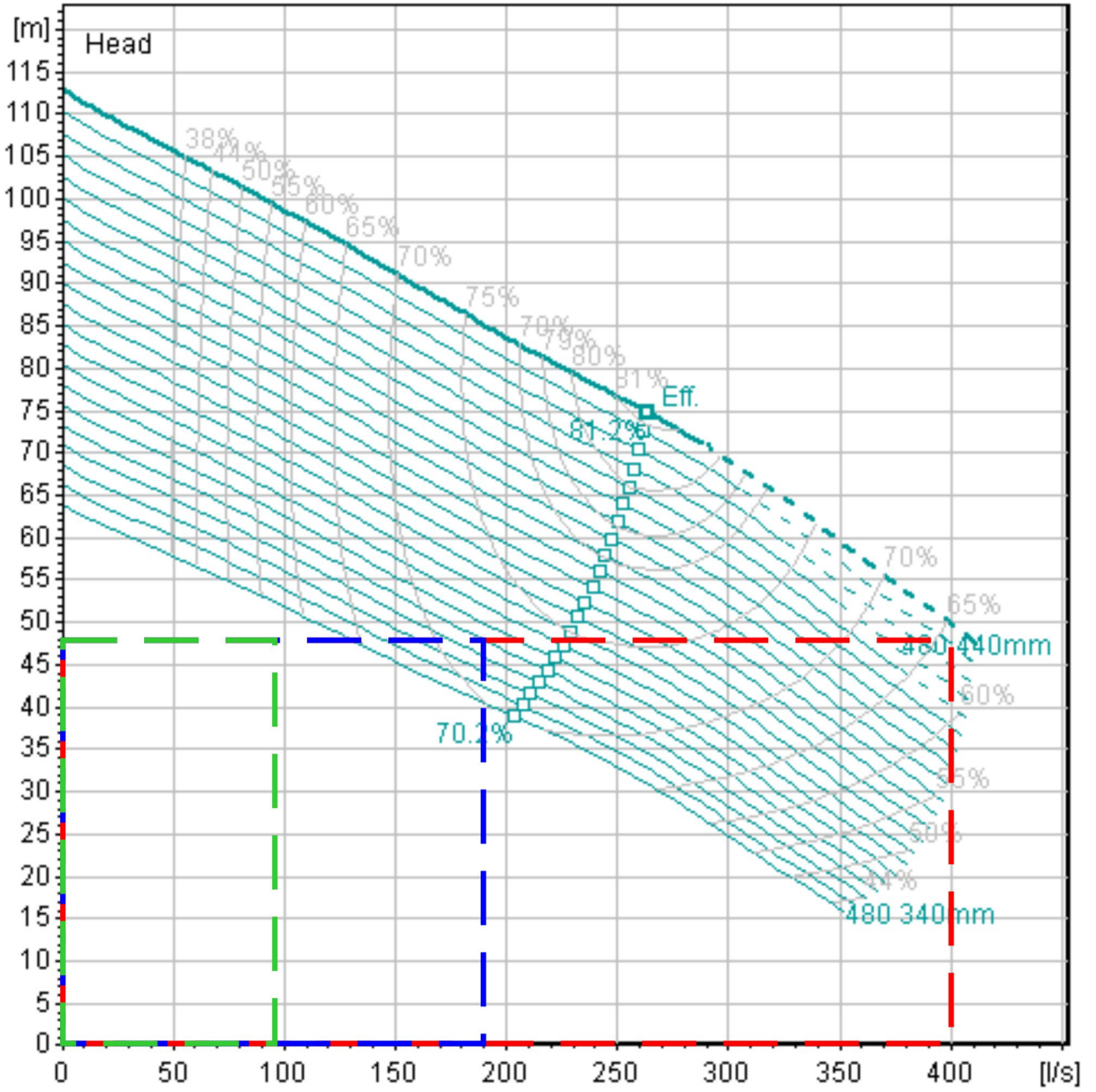
Section 31(3) of the ***Ombudsman Act*** provides:

> *If the Ombudsman considers it to be in the public interest or in the interest of a person or authority, the Ombudsman may make a special report to the Legislative Assembly or comment publicly about a matter relating generally to the exercise of the Ombudsman's duties under this Act or to a particular case investigated by the Ombudsman.*

It is my hope that by documenting the results of my investigation into this matter in this Special Report the necessity of immediate action will be made widely known, and that it may result in the Regional District of Comox-Strathcona revisiting its position in respect of this very important issue. I believe that the potential danger to individuals, particularly the home currently located a mere ten metres from the edge of the Bluffs, is completely unacceptable. It is my sincere hope that this matter can be attended to without any further delay and without further undue threat to people or property.

Description	Capital Cost	Investment Year	Renewal Frequency	Renewal %	Total Power (kW)	Labour hrs/day
New Courtenay - High Pressure Increase	$29,400,000	2020	25	40%	900	3
Downgrade Jane	$2,362,500	2020	25	40%	25	0
New Jane - Moderate Pressure Increase	$3,850,000	2020	25	40%	425	3
Overland Jane to connect to FM (Long Distance to North)	$4,804,800	2020	60	100%	0	0
Overland Forcemain North from Courtenay to CVWPCC	$27,489,000	2020	60	100%	0	0
New Courtenay WWTP	$105,000,000	2020	100	100%	2000	24
Old Jane to New Jane	$51,744	2020	60	100%	0	0
KFN Pump Station and FM to Courtenay	$616,000	2020	60	100%	0	0
Total Capital Cost	$173,574,044					

Flygt N-Technology
Pumps
N 3231



Wastewater Treatment Project
Treated for a cleaner future

Wastewater Treatment Project

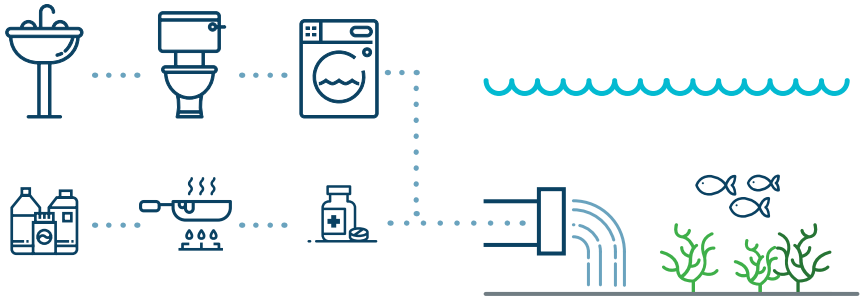
Treated for a cleaner future

What is wastewater?

- Wastewater is used water from human activities such as washing dishes, doing laundry, and flushing the toilet.
- Some pollutants in wastewater include industrial and commercial waste, detergents, cooking fats, and prescription drugs.

Why we treat wastewater

- To reduce contaminants prior to releasing the effluent into the environment, helping to protect and maintain healthy waterways.
- If pollutants in wastewater are not removed, they flow directly into the ocean. This can threaten fisheries, wildlife habitat, recreation, quality of life, and public health.



About the system

- Wastewater flows from residences and businesses into a sewer pipe that connects to larger pipes under our streets, which ultimately connect to either the Clover Point Pump Station or the Macaulay Point Pump Station.
- At present, wastewater is screened at these pump stations and then discharged into the Strait of Juan de Fuca without treatment.
- The Wastewater Treatment Project will connect these two pump stations to the McLoughlin Point Wastewater Treatment Plant so that wastewater can be treated to a tertiary level prior to discharge.

Did you know?

In the Core Area:

- There are **seven municipalities** (Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford, and Colwood) and the Esquimalt and Songhees Nations.
- The population is approximately **320,000 people** covering **215km²**.
- There are over **175 pump stations** and **110km** of existing sanitary sewer pipes.
- The McLoughlin Point Wastewater Treatment Plant will treat up to **108,000,000 litres** of wastewater per day, providing capacity to accommodate future population growth.
- Every person produces an average of **185–200 litres** of wastewater per day.
- Wastewater flows are greater on rainy days.

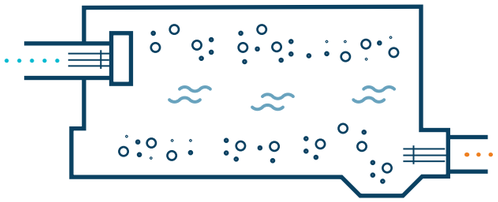
Treatment Process

1 CONVEYANCE SYSTEM

Collects wastewater from across the core area and conveys it to the Clover Point and Macaulay Point pump stations.

Screening
Wastewater is screened (6mm) to remove stones, paper, cloth, plastics and other debris.

Grit Removal
A vortex system uses centrifugal force to keep the organic material suspended while grit settles and is removed.



Pumping
Wastewater will be pumped to the new treatment plant.

The grit and screenings are compacted and trucked to an approved landfill.

Storm Outfalls
Currently, untreated wastewater is discharged out of the Clover Point and Macaulay Point outfalls. Once the Project is built, these outfalls will only be used to discharge storm flows associated with heavy-rain events. To reduce the need to discharge storm flows, a buried underground concrete tank (the Arbutus Attenuation Tank) will be built in Saanich to temporarily store flows during high volume storm events. In addition, core area municipalities have committed to an inflow and infiltration program that will reduce the volume of storm flows that need to be discharged.

2 MCLOUGHLIN POINT WASTEWATER TREATMENT PLANT

PRIMARY TREATMENT
Is the physical separation of solids from wastewater.

Removing Solids
Heavier solids settle to the bottom and lighter 'scum' floats to the top.

SECONDARY TREATMENT
Is a biological process that removes dissolved and suspended organic compounds in the wastewater.

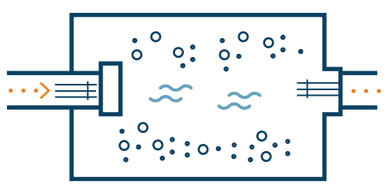
Fine Screening
Primary effluent will be finely screened (2mm) to remove smaller debris.

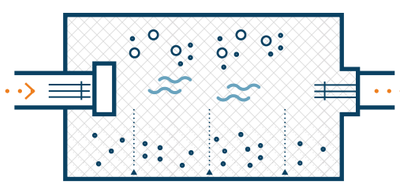
Biological Reactors
Wastewater flows through tanks where microorganisms grow. The microorganisms consume organic compounds in the wastewater and reproduce to form cells that result in residual biological solids. Solids are removed and sent to the Residuals Treatment Facility for further treatment. Treated secondary effluent is sent to tertiary treatment.

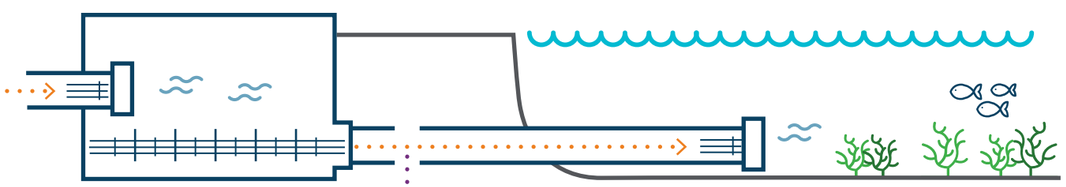
TERTIARY TREATMENT
Is one of the highest levels of treatment, reducing contaminants that remain after the secondary treatment process.

Disc Filter
Wastewater will pass through a fabric disc filter (5-micron), reducing many pharmaceuticals, hormones, microplastics and other contaminants.

OUTFALL
The tertiary-treated effluent will flow through the outfall and discharge into the ocean approximately 2km from shore and 60m deep.







As wastewater moves through the treatment process, residual solids are removed. These solids will be pumped to the Residuals Treatment Facility for further treatment.

3 RESIDUALS TREATMENT FACILITY

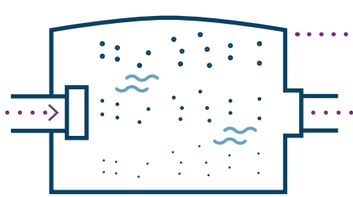
Digestion
The residual solids undergo anaerobic digestion in which microorganisms will break down biodegradable material in the absence of oxygen and produce biogas.

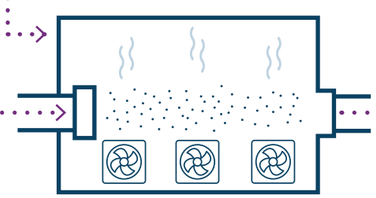
Biogas
Biogas produced during the digestion process will be collected and reused within the facility as fuel for the dryer.

Drying
The residual solids are dewatered and then heated at a very high temperature (220°C).

Biosolids
Dried Class A biosolids will be produced that will contain almost no detectable levels of pathogens. These are the highest standard of biosolids and are suitable for beneficial use. The biosolids will be dark, dry granular pellets.

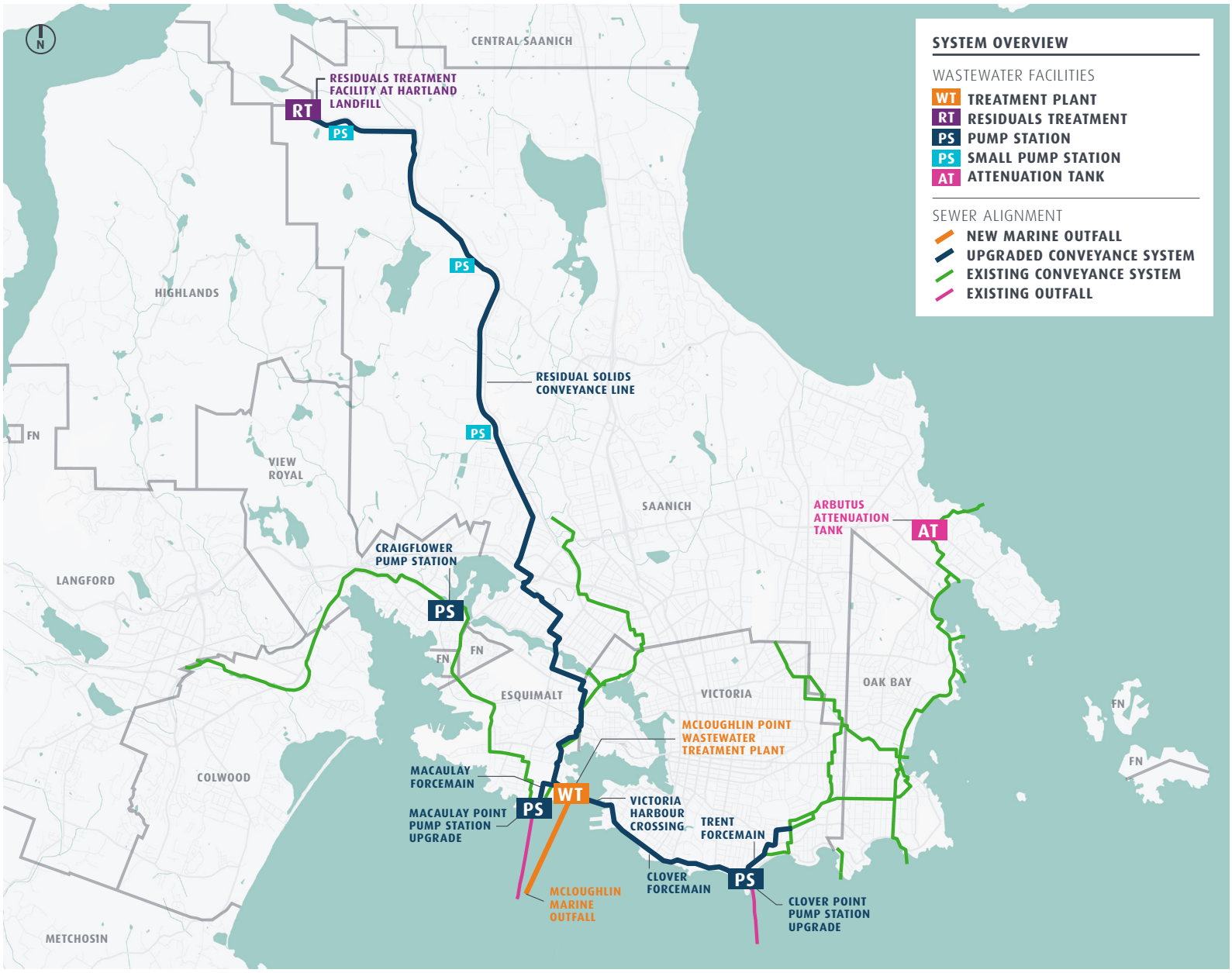
Residual Solids Conveyance Line
Will consist of two pipes and three small pump stations to transport all residual solids to the Residuals Treatment Facility. Liquid removed from the residual solids during the treatment process will be returned to the McLoughlin Point Wastewater Treatment Plant through the conveyance system.





Wastewater Treatment Project Components

The Wastewater Treatment Project is being built to meet the provincial and federal regulations for treatment by December 31, 2020.



For more information

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