
**DISTRICT OF SOOKE
WASTEWATER TREATMENT PLANT
AND COLLECTION SYSTEM**

**OPERATED BY
EPCOR WATER SERVICES INC.**



**OPERATIONS REPORT
FEBRUARY 2015
REGISTRATION NUMBER 17300**



INTRODUCTION

The Sooke wastewater collection system and treatment plant are owned by the District of Sooke and operated by EPCOR Water Services Inc. The system services the core area of Sooke.

The system consists of:

- 51 km of collection system piping
- 515 manholes
- 7 pump lift stations (Sooke Road, West Coast Road, Helgesen Road, Sunriver, Prestige Hotel, Mariner's Village and Treatment Plant)
- A secondary treatment wastewater plant with disinfection
- A marine discharge through a 1.7 km long, 30m deep outfall

The treatment plant uses a Sequencing Batch Reactor (SBR) treatment process with UV disinfection to provide secondary wastewater treatment. Plant treatment removes over 95% of the total suspended solids and high levels of other contaminants, providing significant environmental benefits to the District of Sooke and the receiving waters.

The treatment plant has a design capacity of 3,000 m³/day (annual average daily flow), and a peak wet weather flow capacity of 6,900 m³/day. The plant is expandable by an additional 3,000 m³/day (average daily flow).

Construction of the Sooke collection system and wastewater treatment plant began in 2004 and the system was commissioned in December 2005. Individual domestic and commercial connections began in May 2006 and continued throughout 2006 and 2007, with the majority completed by December 2006. Additional connections have continued since that time for new construction in the specified sewer area.



OPERATIONS

Wastewater Treatment Plant

In February, the effluent quality was excellent with the TSS (total suspended solids) averaging 6 mg/L and CBOD averaging <4 mg/L. (MWR limit is ≤ 45 mg/L and WSER limit is ≤ 25 mg/L quarterly average). The results, as detailed in this report, are obtained from samples tested at an independent ISO/IEC 17025 accredited lab.

February 1 – After hours call-out for aeration valve “fail to open” alarm. Operator attended plant and corrected the situation.

February 2 – Polymer system repairs made last week were unsuccessful. Materials used for original repair needed replacement.

February 3 – Aeration valve #2 failed to open. On-call operator attended plant and made necessary corrections.

February 5 – Exercised on-site standby generator as part of Preventative Maintenance (PM) calendar activity.

February 6 – On-call operator attended plant on statutory holiday to do lab testing and adjust plant process as necessary.

February 7– On-call operator responded to aeration valve # 2 leak alarm after hours.

February 10 – EPCOR provided noise dosimeters which operators wore to compile information about exposure to noise encountered during daily tasks. The devices were worn for four days of regular plant and collection system duties.

February 13 – Centrifuge operation had been less than optimal. Operators determined polymer dosage was too high and made substantial decreases to polymer dosage, which improved quality.

February 16 – On-call operator responded to SBR blower VFD faults over the weekend. Operator shut one blower down and began troubleshooting.

February 16 – Sooke Operator was dispatched to assist Britannia Mine Water Treatment Plant for five days.

February 23 – Sooke Fire Dept. performed annual site inspection. No issues or concerns.



February 25 – On-call operator responded to aeration valve #2 “leak alarm”. Electrical contractor called in to install new electrical connector to air valve actuator. Troubleshooting continuing to determine underlying cause of erratic aeration valve operation.

Wastewater Collection System

February 12 – Operators witnessed service connection made by a contractor to 8” gravity main.

Lift Stations

The lift stations operated well throughout the month of February.

February 6 – Operators made routine checks of all lift stations. Found no issues.

February 6 – TELUS advised of the connectivity problem with communication equipment at West Coast Road lift station. Operators attended WCR lift station to assist TELUS with troubleshooting. Determined communication functioning correctly and TELUS is scheduling technician to check phone lines to the lift station. Operator confirmed alarm auto-dialer operation.

February 24 – Routine lift station checks made at all lift stations and wetwell level indicators cleaned. High float alarm dial-outs also confirmed.

Plant and Operator Classification

The Wastewater Treatment Plant is a Class III plant, classified under EOCP # 1358 and is operated under MOE Guidelines. The Sooke WWT plant is operated in compliance with the MWR and meets the certification requirements.

The collection system is a Class III Wastewater Collection System, classified under EOCP # 1827 in accordance with the Environmental Operators Certification Program.

Table 1– Operator Certification

Name	Position	Qualifications
Dan Skidmore	Operations Manager	BC EOCP Certified: Level II Wastewater Treatment & Level IV Wastewater Collection System Operator
Shawn Pearson	Lead Operator	BC EOCP Certified: Level III Wastewater Treatment & Level I Wastewater Collection System Operator
Jesse Forcier	Operator	BC EOCP OIT (Operator in Training)



QUALITY

The District of Sooke Liquid Waste Management Plan was approved by the Ministry of Environment in June 2011. Contained in the approved plan is a proposed Operational Certificate (OC). The OC provides more extensive standards and guidelines for the operation of the wastewater treatment plant than is contained in the plant registration that was submitted by the District to the Ministry in 2002 or in the general guidelines provided in the Municipal Waste Regulations (MWR). The Operational Certificate will be finalized in the coming months and will become the standard for the plant operation.

The Wastewater Systems Effluent Regulations (WSER), under the Federal Fisheries Act, was gazetted on July 18, 2012. The Government of Canada worked with the provinces and engaged municipalities and others to establish the country's first national standards for wastewater treatment. It establishes limits for deleterious substances in the wastewater plant effluent that can be released into the natural environment. The substances and the limits are: Carbonaceous BOD: ≤ 25 mg/L, Total Suspended Solids: ≤ 25 mg/L, and a maximum of Un-ionized Ammonia: < 1.25 mg/L of N @ at $15^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The limits come into force on February 1, 2015, but the monitoring provisions were in effect on February 1, 2013. Un-ionized Ammonia testing is no longer required after July 1, 2014, however testing will continue for diligence.

Table 2 contains the WSER, MWR and the proposed OC requirements for information.

Table 2 – Summary of Regulatory Requirements

Parameters or Description	WSER		MWR		Proposed OC	
	Limits	Frequency	Limits	Frequency	Limits	Frequency
Ammonia-Nitrogen			NA	Quarterly (Grab)	NA	Quarterly (grab)
Ammonia (un-ionized) as N at 15°C (Federal WSER)	<1.25 mg/L	Monthly (until June 30, 2014)	NA	NA	NA	NA
CBOD	≤25 mg/L (Quarterly Average)	Monthly (Grab)	≤45 mg/L	Monthly (Grab)	≤45 mg/L	Monthly (Grab)
Fecal Coliforms	NA		<200 CFU/100 ml * Geometric Mean	5 samples GM/ 30 days	NA	6 x / year
<i>Enterococci</i>	NA		NA	NA	NA	6 x / year
pH			6.0 - 9.0		6.0 - 9.0	Monthly (Grab)
Receiving Environment Testing			Required	Annually	As per Receiving Environment Monitoring Plan	1/year
Operator Certification			Required notification to regulator when there is a change in operator with the highest certification level in the plant	NA	Required notification to regulator when there is a change in operator with the highest certification level in the plant	NA
Reports, Annual			As requested by Director	As requested by Director	1/year	Within 120 days of calendar Year
Reports, General	Quarterly	Within 45 days after the end of the quarter	Data submission 2 times per year		Quarterly	Within 31 days of quarter ends
Flow Measurement		Daily Total			NA	Daily Total
Flow, Average			To be determined	2/week	3,000 m ³ /day	2/week
Flow, Maximum			To be determined	2/week	6,900 m ³ /day	2/week
Total Phosphorus			NA	Quarterly (Grab)	Not Required	NA
Effluent TSS	≤25 mg/L (Quarterly Average)	Monthly (Grab)	≤ 45 mg/L	Monthly (Grab)	≤ 45 mg/L	Monthly (Grab)
Post of Outfall Sign			Required		Erect sign above high water mark.	NA
Out fall Inspection			Required	Every 5 years	Required	Every 5 years. Next Due 2018
Biosolids Management			NA		Shall be transported to an approved receiving facility	NA

*<200 CFU/100 mL on a geometric mean on the last 5 samples in 30 days at the edge of the dilution zone for recreational water use and <14 CFU/100 mL for shellfish bearing waters. ** All regulated tests are conducted by an ISO/IEC 17025 accredited laboratory. ***Un-ionized ammonia testing only required from Jan.1, 2013 to July 1, 2014. "Grab" refers to a grab sample, which is a single sample that represents the composition of the water at that specific time and place.



Table 3 – Performance Measures – District of Sooke O&M Key Performance Indicators

Water Quality & Environmental Performance Measures			
Activity	Actual Values	Actual Values	Target Values
	February	YTD	Annual
Effluent Quality & Violations to Operational Certificates	0	0	0
Laboratory QA/QC Activities	23	80	200
Proactive Environmental/Quality Initiatives	0	0	5
Completion of Required Regulatory Reporting	100%	100%	100%
Activity	Actual Values	Actual Values	Acceptable Values
	February	YTD	Annual
Releases*	0	0	2

* Uncontrolled discharges of wastewater that are reportable to Provincial Emergency Plan under legislation, excluding abnormal circumstances



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Table 4 – Monthly Quality Summary

	Influent				Effluent																		Biosolids Shipped				
	CBOD mg/L	TSS mg/L	NH3-N mg/L	TP	Flow m ³ /day			CBOD mg/L			TSS mg/L			NH3-N mg/L			Un-ionized NH3-N mg/L			TP			FC CFU/100mL			Kg	# of Loads
	Ave	Ave	Ave	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Geo Mean		
Regulatory Limit						14400	3000		≤45**	≤25 *		≤45**	≤25 *					<1.25							<200		
January	152	168	28	5.2	1931	5443	2613	<4	5	5	5	6	5	1.14	2.50	1.68	<0.05	<0.05	<0.05	2.18	3.28	2.72	10	64	29	72990	8
February	70	86	37	7.8	1767	3543	2313	<4	<4	<4	5	6	6	0.17	2.19	1.00	<0.05	<0.05	<0.05	2.33	4.35	3.25	4	96	19	41270	4
March																											
April																											
May																											
June																											
July																											
August																											
September																											
October																											
November																											
December																											
Total																										114260	12
Annual	111	127	32	6.5	1767	5443	2463	<4	5	5	5	6	6	0.17	2.50	1.34	<0.05	<0.05	<0.05	2.18	4.35	2.98	4	96	24		

* WSER- Quarterly average, **MWR



Table 5 – Influent Water Quality

		INFLUENT							
		IN HOUSE			EXTERNAL				
	Effluent flows	pH	TSS	COD	COD	CBOD	TSS	NH3-N	TP
Feb.	m ³ /d		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
1	2038								
2	2018	7.7	200	709					
3	2024								
4	2010	7.9	140	401					
5	2407								
6	3543	7.6	125	42					
7	3425								
8	3229								
9	3130	7.4	50	138					
10	3039								
11	2621	7.5	60	315	495	44	92	28.1	7.14
12	2391								
13	2380	7.6	200	476					
14	2310								
15	2302								
16	2241	7.8	160	683					
17	1949								
18	2252	7.7	235	725					
19	2105								
20	1960	7.7	165	575					
21	1919								
22	1978								
23	1852	7.8	125	517					
24	1899								
25	1851	7.8	200	632	550	96	79	45.3	8.51
26	1767								
27	2087	7.6	150	482					
28	2038								
Min	1767	7.4	50	42	495	44	79	28.1	7.14
Max	3543	7.9	235	725	550	96	92	45.3	8.51
Avg	2313	7.7	151	475	523	70	86	36.7	7.83



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Table 6 – Daily Water Quality of Effluent

	SBR 1 EFFLUENT														SBR 2 EFFLUENT													
	IN HOUSE				EXTERNAL										IN HOUSE				EXTERNAL									
	pH	TSS	COD	NH3-N	COD	TSS	CBOD	NH3-N	Temp	pH	NH3 (un-ionized)*	TP	Enterococci	FC	pH	TSS	COD	NH3-N	COD	TSS	CBOD	NH3-N	Temp	pH	NH3 (un-ionized)*	TP	Enterococci	FC
Feb.	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	°C		mg/L	mg/L	CFU/100mL	CFU/100mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	°C		mg/L	mg/L	CFU/100mL	CFU/100mL	
1																												
2	6.6	9		3.4										6.6	7		2.2											
3																												
4	6.5	9	49	1.4									12	6.5	9	62	0.5											12
5																												
6	6.5	9		<0.4										6.5	8		1.3											
7																												
8																												
9	6.3	10		<0.4										6.4	6		1.6											
10																												
11	6.5	8	24	<0.4	39	6	<4	0.41	15	6.01	<0.05	2.33	20	28	6.5	5	27	3.5	46	6	<4	2.19	15	6.06	<0.05	2.47	<10	4
12																												
13	6.5	7		0.7										6.6	6		2.1											
14																												
15																												
16	6.6	6		0.9										6.52	5		0.7											
17																												
18	6.5	6	51	0.8									28	6.4	5	25	0.4											96
19																												
20	6.5	7		<0.4										6.5	4		1.5											
21																												
22																												
23	6.5	4		2.3										6.5	6		<0.4											
24																												
25	6.5	6	42	1.6	47	6	<4	0.17	15	5.97	<0.05	3.83	40	6.5	<4	39	<0.4	60	5	<4	1.21	15	5.91	<0.05	4.35		12	
26																												
27	6.4	4		<0.4										6.6	5		1.6											
28																												
Min	6.3	4	24	<0.4	39	6	<4	0.17	15	5.97	<0.05	2.33	20	12	6.4	<4	25	<0.4	46	5	<4	1.21	15	5.91	<0.05	2.47	<10	4
Max	6.6	10	51	3.4	47	6	<4	0.41	15	6.01	<0.05	3.83	20	40	6.6	9	62	3.5	60	6	<4	2.19	15	6.06	<0.05	4.35	<10	96
Avg	6.5	7	42	1.6	43	6	<4	0.29	15	5.99	<0.05	3.08	20	25	6.5	6	38	1.5	53	6	<4	1.70	15	5.99	<0.05	3.41	<10	15

Note: Monthly average reported for fecal coliforms is a geometric mean. WSER limit is ≤25 mg/L quarterly average TSS/CBOD. MDL = Method Detection Limit, nt=not tested. External testing done by an ISO/IEC 17025 accredited Labs, EXOVA, Surrey, BC, Maxxam, Victoria, BC



Table 7: Acronyms

Acronyms /Abbreviations	Description
ATS	Automatic Transfer Switch
AVE or AVG	Average
BC EOCP	British Columbia Environmental Operators Certification Program
BOD	Biochemical Oxygen Demand
CBOD	Carbonaceous Biochemical Oxygen Demand
CFU/100mL	Colony Forming Units Per 100 milliliters
COD	Chemical Oxygen Demand
FC	Fecal Coliforms
F/M ratio	Food-to-microorganism ratio
HMI	Human Machine Interface
IC	Inspection Chamber
I/I	Inflow & Infiltration
LIT	Level Indicator Transmitter
m ³ /day	Cubic meters per day (flow)
mg/L	Milligram per liter
MDL	Method detection limit
MSR	Municipal Sewage Regulation
MWR	Municipal Wastewater Regulation
NH ₃	Ammonia
OC	Operational Certificate
PLC	Programmable Logic Controller
Q	Yearly Quarter
SBR	Sequencing Batch Reactor
SCADA	Supervisory Control And Data Acquisition (system)
SSA	Specified Sewer Area
TP	Total Phosphorus
TSS	Total Suspended Solids
VFD	Variable Frequency Drive
WWC	Wastewater Collection System
WSER	Wastewater Systems Effluent Regulations
WWTP	Wastewater Treatment Plant
YTD	Year to Date