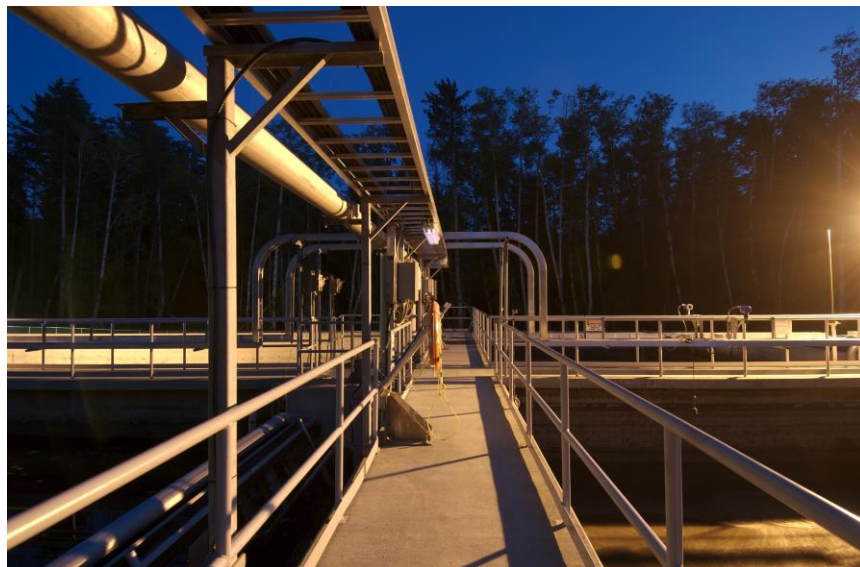


---

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

**OPERATED BY  
EPCOR WATER SERVICES INC.**



**OPERATIONS REPORT  
JANUARY 2015  
REGISTRATION NUMBER 17300**



---

## INTRODUCTION

---

The Sooke wastewater collection system and treatment plant is 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 m<sup>3</sup>/day (annual average daily flow), and a peak wet weather flow capacity of 6,900 m<sup>3</sup>/day. The plant is expandable by an additional 3,000 m<sup>3</sup>/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 hook-ups 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 January, the effluent quality was excellent with the TSS (total suspended solids) averaging 5 mg/L and CBOD averaging 5 mg/L. (MWR limit is  $\leq 45$  mg/L and WSER limit is  $\leq 25$  mg/L quarterly average). The results, as detailed in this report, are obtained from samples tested at an independent ISO/IEC 17025 accredited lab.

January 2 – The grit classifier auger chute to the screenings bin became plugged. Operators dismantled the chute and cleared the blockage.

January 2 – Operators noted elevated COD concentrations in effluent. Dissolved Oxygen (DO) setpoints of SBRs were subsequently increased to provide more available DO for microbial oxidization of organics in effluent to lower the COD.

January 5 – Operators manually decanted as high flows during rain event were continuing to park decanters. (To “park” a decanter means that it raises automatically thus discontinuing the decant).

January 8 – Aeration valve #2 failed to open. Trouble-shooting determined that cooler temperatures caused valve to physically take longer to travel from closed to opened and opened to closed due to stiffer grease consistency. EPCOR Senior Technologist reviewed PLC programming. Review found the delay time to trigger the alarm was insufficient. Technologist expanded the alarm timer and experienced no further issues.

January 8 – Received equipment from external lab for acute lethality tests. The test is not mandatory for the Sooke plant but EPCOR is doing for diligence.

January 12, 13 – Centrifuge experienced excessive vibration. (usually due to dried solids inside). Continued operation and changing setpoints were conducted until the machine cleared the internal dried solids.

January 12, 13 – Contractor on site to price metal doors and windows in headworks building as corrosive environment is deteriorating their condition.

January 23 – Received UV light resistant face shields for ultra-violet treatment equipment maintenance.

January 26 – Operators checked UV lamps. Found 100% to be on and working.

January 26 – Contractor at WWTP to calibrate fixed gas monitors in headworks building. Monitors are recalibrated every four months. Confirmation of entire warning system operation includes warning light, audible horn, and report to SCADA and dial-out to alarm monitoring company. (Gas monitors monitor H<sub>2</sub>S and methane lower explosive limit (LEL)).



January 27 – Oil changed in both SBR blowers as PM Calendar activities begin for 2015.

January 29 – Aeration valve #2 failed to open alarm. On-call operator attended plant, corrected situation, cleared alarms and monitored to ensure proper operation.

January 30 – Polymer system had a supply tube rupture which caused a polymer spill in the centrifuge room. The ERP was activated to maintain operator safety. Clean-up done by operators throughout the day and repairs to the supply tubing were made.

### **Wastewater Collection System**

January 9 – Attained valve wrench for 1- ¼' operating nut isolation valves on Aarronwood Drive.

### **Lift Stations**

The lift stations operated well throughout the month of January.

January 11, 13 – Low level float alarm at Mariner's Village after hours. On-call operator responded, cleared alarm and confirmed correct operation.

January 15 – Operators attended Mariner's Village to clear low level float alarm. Operators confirmed that nothing was interfering between ultra-sonic sensor head and water level in lift station and notified electrical contractor of situation.

January 15 – Sunriver lift station levels displayed on SCADA at plant appeared erratic. Operators suspected physical interference between the ultrasonic level indicator and the wetwell's water surface. Found pump #1 power cables were not restrained sufficiently and were the cause of interference.

January 20 – Routine lift station checks done at Prestige Hotel, Mariner's Village and West Coast Road included LIT cleanings and high level float dial-outs.

January 21 – Routine lift station checks done at Sunriver, Sooke Rd. and Helgesen included LIT cleanings and high level float dial-outs.

January 26 – Contractor at Sooke Rd. lift station to install remote mounted VFD reset on pump #2. Remote resets will be installed for all pumps using VFDs to allow for resets to be made without opening high voltage cabinets.



January 26 – Odours noted at Sooke Rd. lift station. Investigation found electrical timer on odour control equipment had inadvertently been placed in off position. Timer was corrected, odour control equipment started, and odours disappeared.

### 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:  $\leq 25$  mg/L, Total Suspended Solids:  $\leq 25$  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 January 1, 2015, but the monitoring provisions were in effect on January 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 <sup>3</sup> /day	2/week
Flow, Maximum			To be determined	2/week	6,900 m <sup>3</sup> /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**

<b>Water Quality &amp; Environmental Performance Measures</b>			
<b>Activity</b>	<b>Actual Values</b>	<b>Actual Values</b>	<b>Target Values</b>
	<b>January</b>	<b>YTD</b>	<b>Annual</b>
Effluent Quality & Violations to Operational Certificates	0	0	0
Laboratory QA/QC Activities	57	57	200
Proactive Environmental/Quality Initiatives	0	0	5
Completion of Required Regulatory Reporting	100%	100%	100%
<b>Activity</b>	<b>Actual Values</b>	<b>Actual Values</b>	<b>Acceptable Values</b>
	<b>January</b>	<b>YTD</b>	<b>Annual</b>
Releases*	0	0	2

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



Sooke Wastewater Treatment Plant  
Operations Report January 2015



Table 4 – Monthly Quality Summary

	Influent				Effluent																		Biosolids Shipped				
	CBOD mg/L	TSS mg/L	NH3-N mg/L	TP	Flow m <sup>3</sup> /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																											
March																											
April																											
May																											
June																											
July																											
August																											
September																											
October																											
November																											
December																											
Total																										72990	8
Annual	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		

\* WSER- Quarterly average, \*\*MWR





**Table 5 – Influent Water Quality**

		INFLUENT								
		IN HOUSE				EXTERNAL				
	Effluent flow	pH	TSS	NH3-N	COD	COD	CBOD	TSS	NH3-N	TP
Jan.	m <sup>3</sup> /d		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
1	2061									
2	2165	7.5	250	38	561					
3	2154									
4	2647									
5	5443	7.4	110	15	179					
6	3917									
7	3078	7.6	135	25	531	413	188	180	29	5.1
8	2598									
9	2323	7.8	145	29	287					
10	2406									
11	2266									
12	2216	7.7	180	35	273					
13	2053									
14	2013	7.7	205	41	591					
15	1931									
16	2016	7.6	150	37	372					
17	2073									
18	3105									
19	3516	7.6	65	19	239					
20	2984									
21	2516	7.6	130	29	401	337	116	156	26	5.3
22	2516									
23	2816	7.5	80	24						
24	3403									
25	3151									
26	2653	7.6	130	27	319					
27	2377									
28	2346	7.7	195	36	562					
29	2215									
30	2027		160	39	519					
31	2017									
Min	1931	7.4	65	15	179	337	116	156	26	5.1
Max	5443	7.8	250	41	591	413	188	180	29	5.3
Avg	2613	7.6	149	30	403	375	152	168	28	5.2



Sooke Wastewater Treatment Plant  
Operations Report January 2015



Table 6 – Daily Water Quality of Effluent

	SBR 1 EFFLUENT													SBR 2 EFFLUENT												
	IN HOUSE				EXTERNAL									IN HOUSE				EXTERNAL								
	pH	TSS	NH3-N	COD	COD	TSS	CBOD	NH3-N	Temp	pH	NH3-N (un-ionized)*	TP	FC	pH	TSS	NH3-N	COD	COD	TSS	CBOD	NH3-N	Temp	pH	NH3-N (un-ionized)*	TP	FC
Jan.		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	°C		mg/L		CFU/100 mL		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	°C		mg/L		CFU/100 mL
1																										
2	6.5	9	-0.5											6.4	6	-0.5	50									
3																										
4																										
5	6.3	14	-0.6											6.6	8	-0.6										
6																										
7	6.4	6	0.6	57	56	5	4	1.18	15.0	6.04	<0.05	2.18	30	6.5	8	0.6	44	50	6	5	2.50	15.0	6.04	<0.05	2.66	54
8																										
9	6.5	8	1.7											6.4	7	1.7										
10																										
11																										
12	6.5	8	1.5											6.6	5	1.5										
13																										
14	6.5	6	1.4	40									50	6.5	6	1.4	35									64
15																										
16	6.6	6	3.3											6.5	4	3.3										
17																										
18																										
19	6.6	8	4.0											6.6	6	4.0										
20																										
21	6.4	5	0.5	34	44	5	<4	1.14	15.0	6.02	<0.05	2.77	10	6.4	6	0.5	43	44	5	<4	1.90	15.0	6.04	<0.05	3.28	10
22																										
23	6.4	7	2.1											6.5	8	2.1										
24																										
25																										
26	6.5	5	0.6											6.5	4	0.6										
27																										
28	6.5	4	1.3	22									28	6.5	7	1.3	44									38
29																										
30	nt	5	1.8												6	1.8										
31																										
Min	6.3	4	-0.6	22	44	5	<4	1.14	15.0	6.02	<0.05	2.18	10	6.4	<4	-0.6	35	44	5	<4	1.90	15.0	6.04	<0.05	2.66	10
Max	6.6	14	4.0	57	56	5	4	1.18	15.0	6.04	<0.05	2.77	50	6.6	8	4.0	50	50	6	5	2.50	15.0	6.04	<0.05	3.28	64
Avg	6.5	7	1.4	38	50	5	4	1.16	15.0	6.03	<0.05	2.48	25	6.5	6	1.4	43	47	6	5	2.20	15.0	6.04	<0.05	2.97	34

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 Lab, EXOVA, Surrey, BC, except. *Enterococci*, done by 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
LEL	Lower explosive limit
LIT	Level Indicator Transmitter
m <sup>3</sup> /day	Cubic meters per day (flow)
mg/L	Milligram per liter
MDL	Method detection limit
MSR	Municipal Sewage Regulation
MWR	Municipal Wastewater Regulation
NH <sub>3</sub>	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