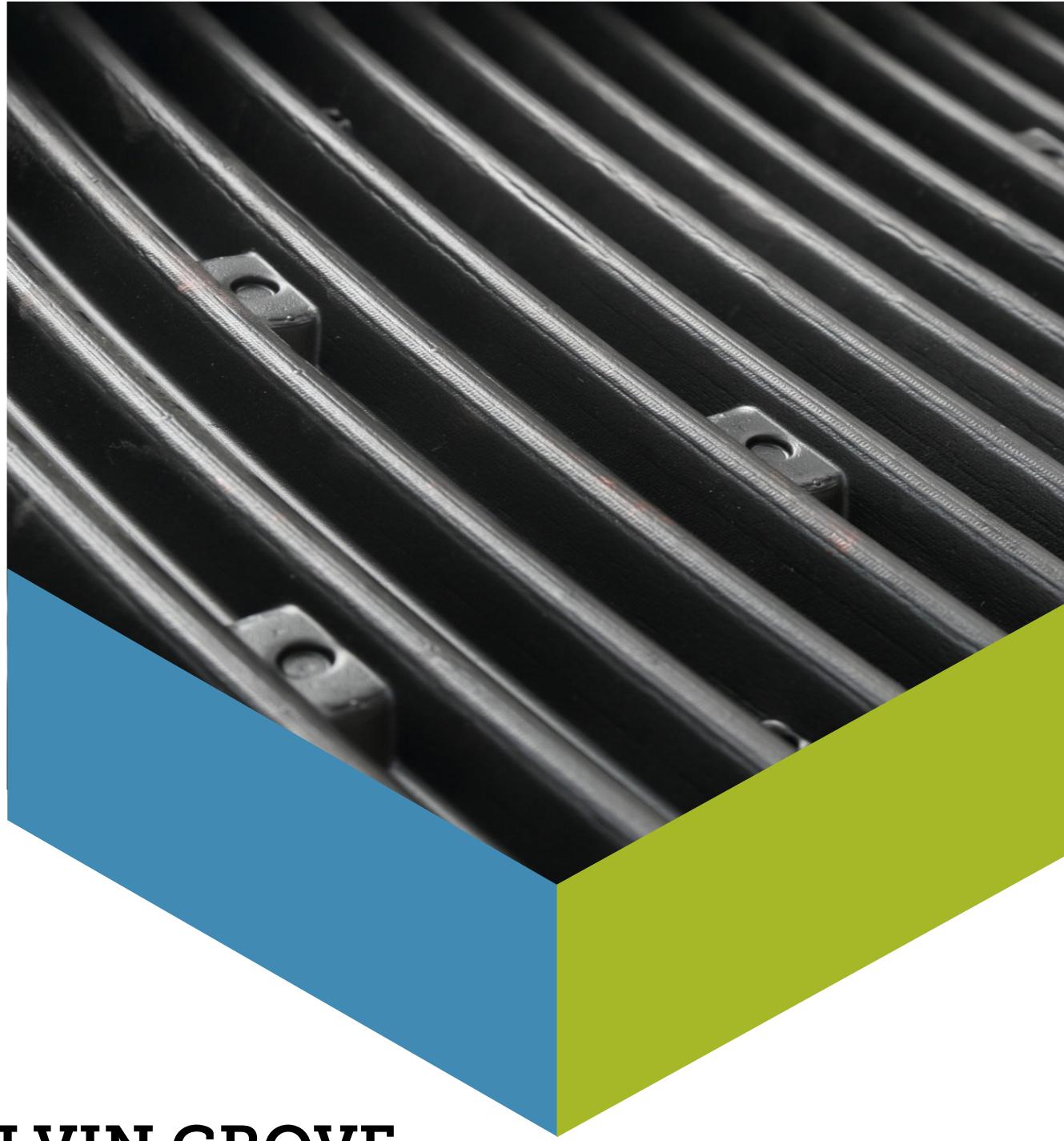


— THE VILLAGE OF LIONS BAY



KELVIN GROVE

Wastewater Treatment Plant

2019 ANNUAL REPORT

JAN
2020

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Public Works Manager





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Introduction

The upper and lower Kelvin Grove neighbourhoods in the Village of Lions Bay are serviced by a sanitary sewer network that culminates in a wastewater treatment plant (WWTP) that was constructed in 1981 on the waterfront of Howe Sound, at the Kelvin Grove Beach Park. A total of 94 residential lots are connected to the WWTP through a network of 2,173 meters of 200mm PVC sanitary sewer pipes, manholes, and property connections or service laterals. A map of this sanitary sewer system is shown in Appendix 1.

TREATMENT AND MICROBIOLOGY

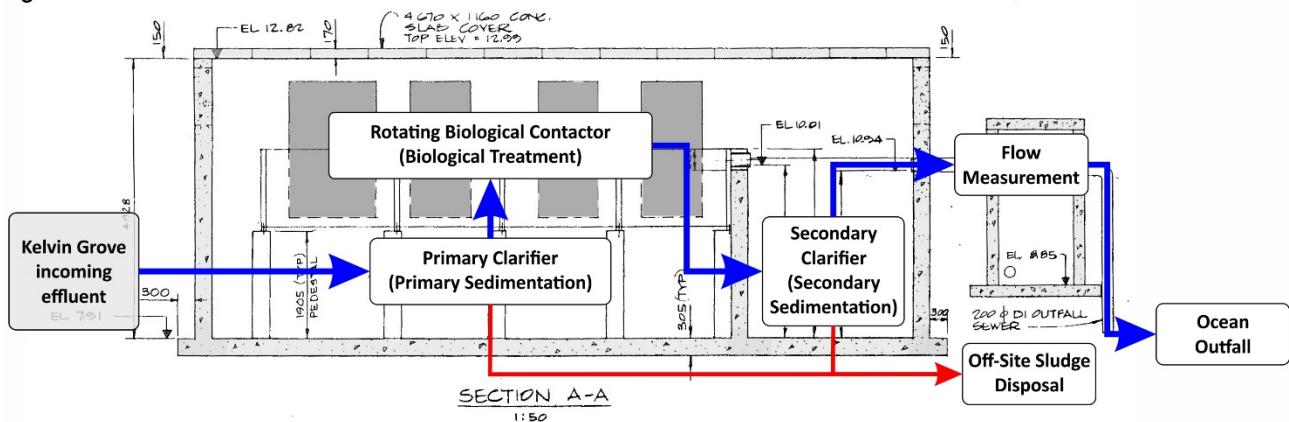
The Kelvin Grove WWTP is a fixed-film treatment process that consists of three distinct process phases:

- ◆ Primary Sedimentation;
- ◆ Biological Treatment; and
- ◆ Secondary Sedimentation.

Upon passing through each of these phases, the treated wastewater passes through a flow measurement device consisting of a weir and level transducer mounted within a metering chamber. Once through the flow meter, the wastewater is released into Howe Sound via an ocean outfall pipe 85 meters beyond the high tide mark and at a depth of 60 metres.

The treatment process is represented diagrammatically below:

Figure 1 - Treatment Process



The wastewater treatment process is dependent upon the presence and activity of the microorganisms within the wastewater and treatment plant. This microbial ecology is a complex combination of interrelationships among bacteria, protozoa, and metazoa with the organic contents of the wastewater. Microorganisms use this organic content as a carbon source for respiration, energy generation, and biomass production. Once the organic content of wastewater is depleted, microorganisms form floc and settle out of the wastewater stream as sludge.

PRIMARY SEDIMENTATION

Wastewater enters the primary clarifier or primary sedimentation tank where suspended solids are removed by gravity sedimentation under quiescent conditions. The settled solids form a sludge blanket at the bottom of the clarifier. The primary clarifier also provides for effective removal of grit, debris, and excessive fats, oils or grease (dubbed 'FOG') prior to the supernatant's entry into the biological treatment phase.

Continual input of raw wastewater into the primary clarifier and gravity settlement results in a thickening of the sludge blanket over time. Sludge blanket depth is a crucial component to the proper functioning of the treatment system, so much so that at excessive sludge blanket depths (greater than 30 cm) the sludge may turn septic, which depletes oxygen levels that ultimately inhibits healthy biomass growth which thereby decreases treatment efficiency.

BIOLOGICAL TREATMENT

From the primary clarifier, the supernatant with its colloidal and dissolved organic matter is further cleansed by biological treatment which is accomplished by a rotating biological contactor (RBC) treatment system. The RBC consists of multiple large diameter, closely spaced corrugated discs constructed of high-density polyethylene (HDPE). These disks are bundled together into what is termed a 'media pack' and are mounted in series along a horizontal shaft [Figure 2]. The Kelvin Grove WWTP utilizes the L400 ROTORDisks™ system, which has four media packs separated by baffles into a series of bioreactors, each referred to as a stage. An electric motor rotates the shaft and media packs at a rate of 1.5 to 1.6 revolutions per minute, alternately exposing the media packs to wastewater and air. Microfauna within the wastewater affix themselves to the discs creating a biofilm over the entire surface area of the media. The corrugations on the media disks are designed to give extra surface area per unit volume to each disc thereby increasing the biofilms ability to metabolize and treat the organic materials contained in the wastewater. This permits high degrees of treatment to be achieved for relatively short wastewater retention times.

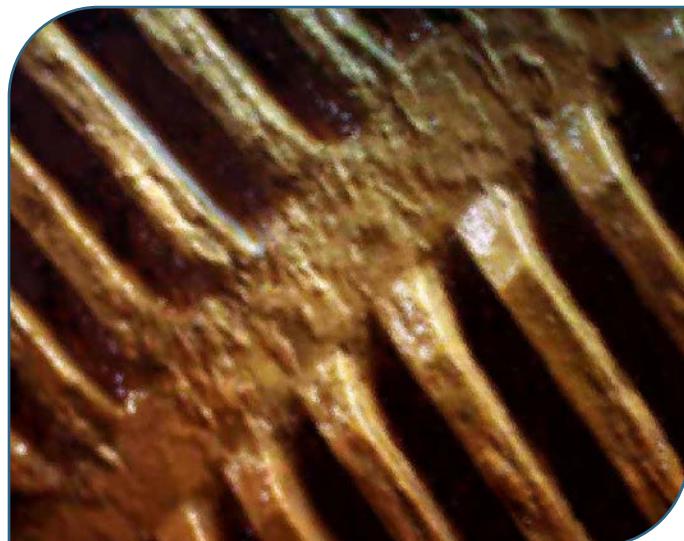
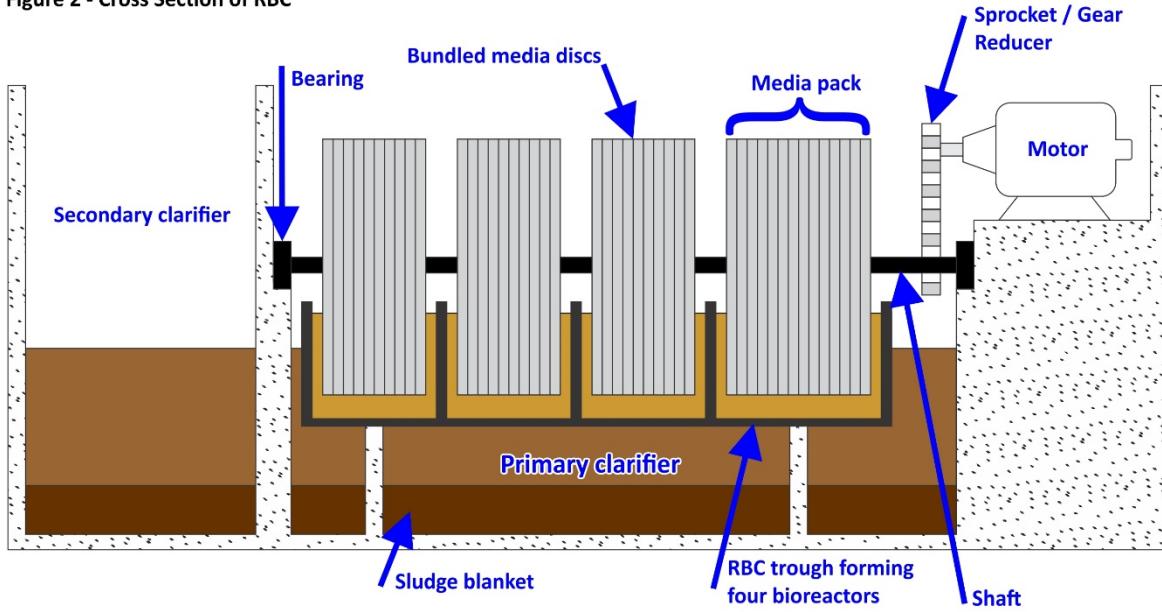


Photo: Initial biofilm growth on RBC media.

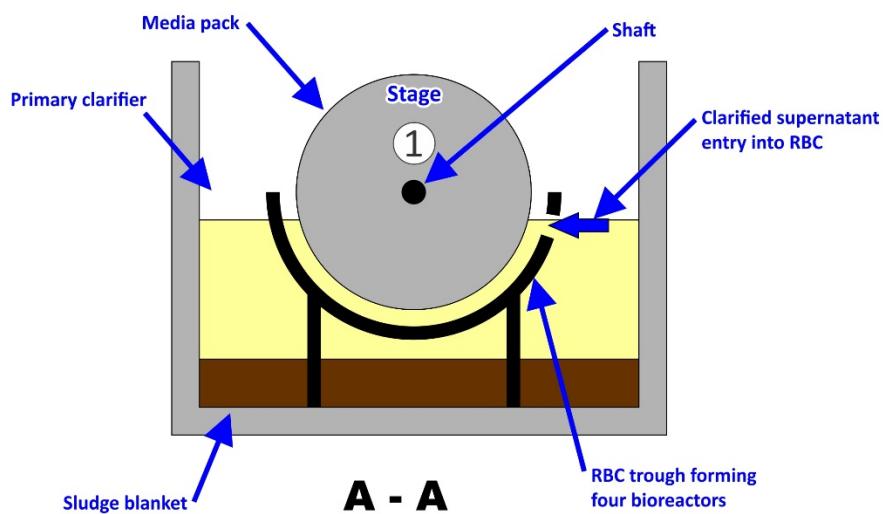
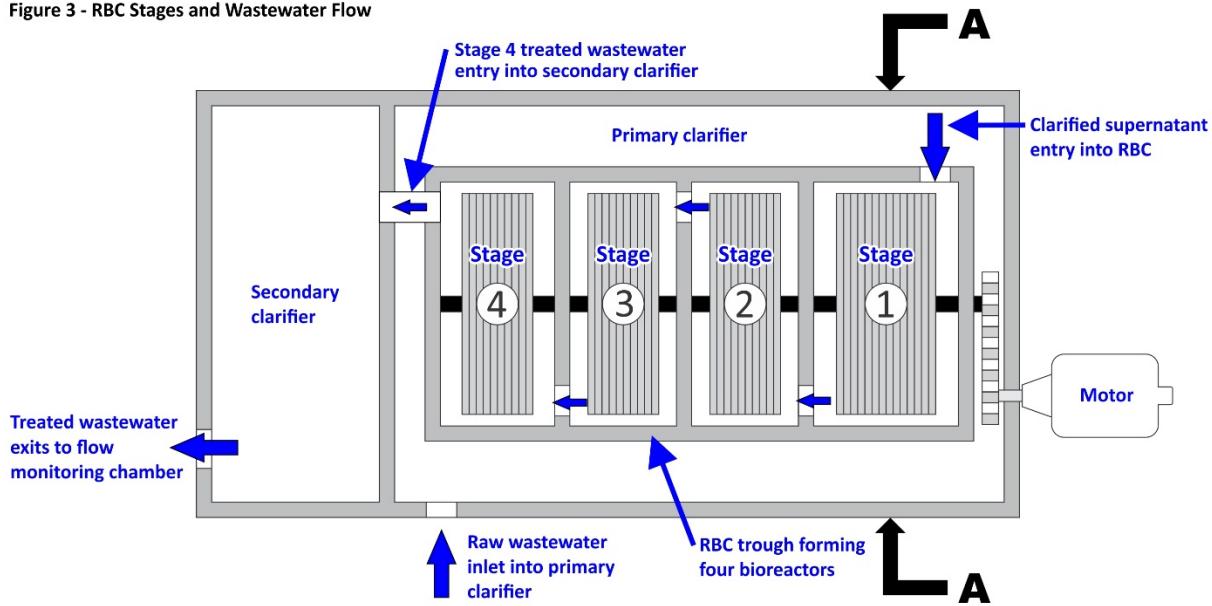
Figure 2 - Cross Section of RBC



From start to finish, the wastewater flows through the RBC's stages or bioreactors by simple displacement and gravity. As wastewater passes from stage to stage, it undergoes a progressively increasing degree of treatment by specific biological cultures in each stage, which are adapted to the changing wastewater.

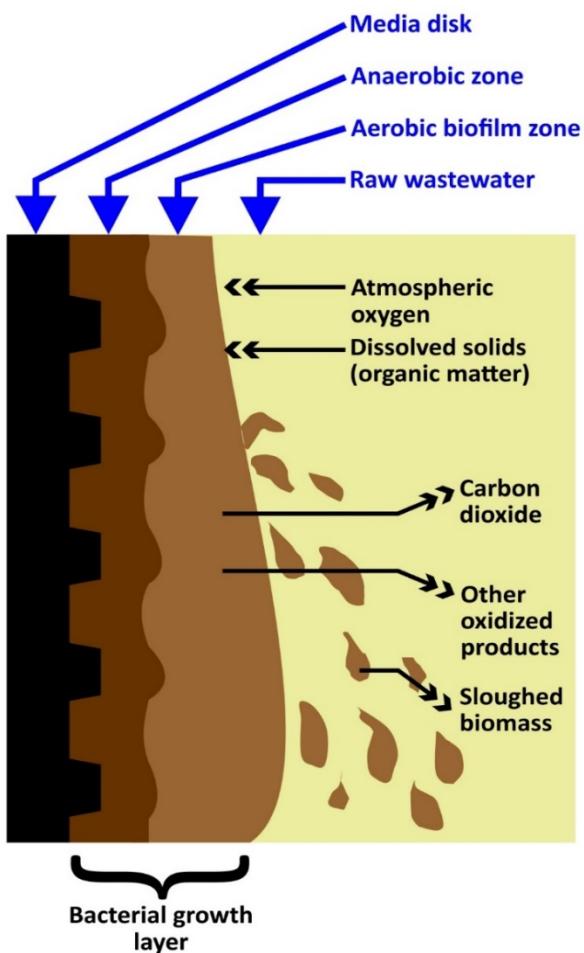
The supernatant enters the first bioreactor (Stage 1) at the point furthest away from the inlet to the plant [Figure 3]. This is the stage where the highest biological activity occurs and where biofilm accumulations are the greatest since the organic loading is highest. As the biofilm thickens, it develops into two layers: an active (aerobic) and an inactive (anaerobic) layer. By and large organics within the wastewater are transformed into biomass in the aerobic layer.

Figure 3 - RBC Stages and Wastewater Flow



Biofilm growth increases on the media disks until it reaches a tipping point with the continual drag caused by the media packs rotation generating shearing forces that causes excess biomass to slough off into the supernatant [Figure 4]. Rotation of the media also provides turbulence at the interface between biomass and wastewater so that dissolved oxygen and wastewater nutrients to the biomass through the mechanism of mixing and that of diffusion. This continual rotation also serves to keep the sloughed material in suspension through the progressive stages and into the secondary clarifier.

Figure 4 - Cross Section at RBC



Microfauna in the Initial stages are almost entirely constituted by species of ciliates and filamentous and nonfilamentous bacteria. As the wastewater passes through subsequent stages, it undergoes a progressively increasing degree of treatment by specific microfauna in each stage. The decreasing concentration of organic matter leads to the appearance of higher life forms including nitrifying bacteria, along with various types of protozoans, rotifers, and other predators.

In a well-functioning unit with the appropriate feed rate, nutrient loading, microfauna, and media rotation rates, the RBC will emit an earthy, humus-like ("musty") smell inside the unit. A substantial sour or "sewage" smell is indicative of suboptimal conditions.

SECONDARY SEDIMENTATION

Once through the fourth stage of the RBC, the treated wastewater enters the secondary clarifier. The large aggregates of biomass sloughed off the media packs retain their high density and settle rapidly in the secondary clarifier. At this point in the process the effluent is relatively clear and colourless and free of suspended matter. Sludge from the primary and secondary clarifiers is removed on an annual basis and transferred to the Iona Island wastewater treatment plant in Richmond where it undergoes further treatment.

KELVIN GROVE WWTP OPERATING PERMIT

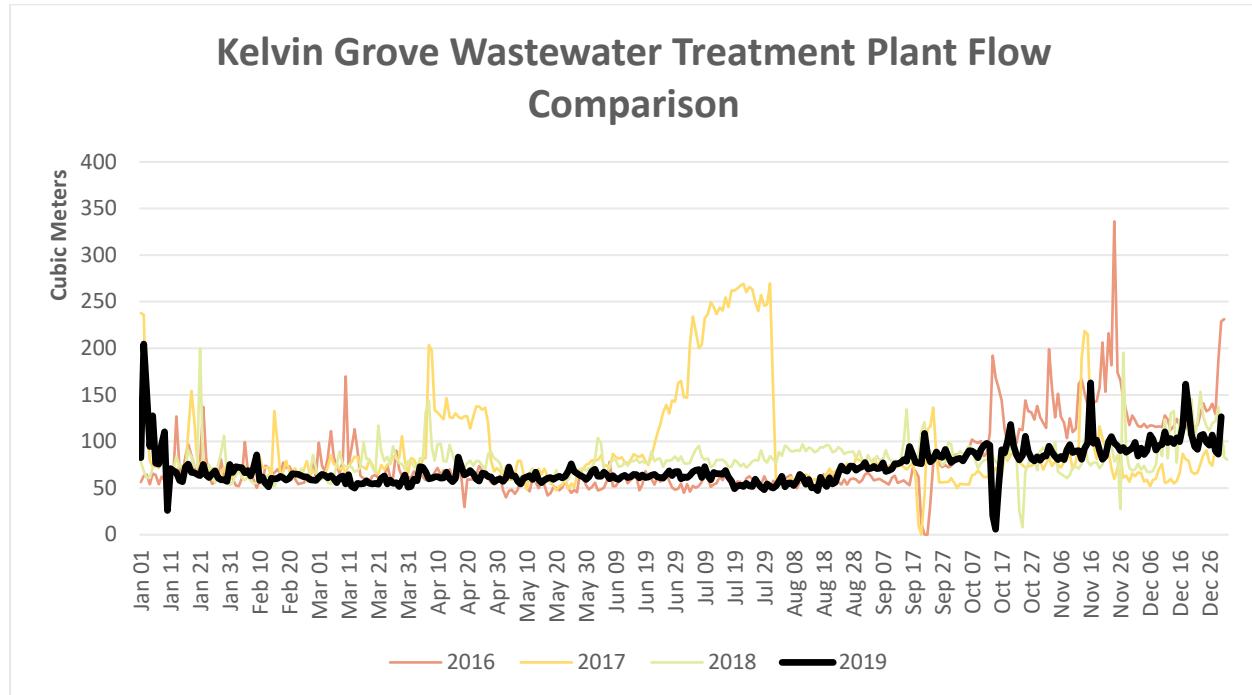
The authority to discharge wastewater into the waters of Howe Sound is governed by the provincial *Environmental Management Act*. The Kelvin Grove WWTP operates under permit number 5188 (the “Permit”) which regulates the quantity and quality of the plant’s discharge. The parameters stipulated in the Permit are as follows:

Parameter	Permit Value
Volume (m ³ /day)	340
BOD ₅ (mg/L)	45
TSS (mg/L)	60

Water Quality

Reporting requirements consist of quarterly sampling of treated wastewater for five-day biochemical oxygen demand (BOD₅) and total suspended solids (TSS) as well as the submission of an annual report to the Ministry of the Environment each January.

The following graph indicates daily wastewater discharge volumes for 2019 (black line) in comparison to the previous three years – at no time did the plant exceed the maximum discharge volume. Detailed daily flow tables for 2019 are contained in Appendix 2.



The following table indicates quarterly sampling results for five-day biological BOD_5 and TSS; however, it is important to note that these results do not capture a non-compliance event between February and March of 2019. This non-compliance event is detailed below in the Maintenance section of this report. Complete laboratory analysis records are contained in Appendix 3.

Date	BOD ₅ (mg/L)	TSS (mg/L)
	Max 45	Max 60
29-JAN-19	42	43.3
16-APR-19	44	57.8
25-JUL-19	29.6	25.7
29-OCT-19	29.7	31.9

Maintenance

In accordance with the Permit, regular inspection and maintenance activities are conducted to keep the facility in good working order. Biweekly inspections are performed to check for vandalism, damage to the media disks, misalignment or excessive shaft deflection, motor torque loading (excessive heat), and for clogging of weirs or orifice areas. At the time of inspection, grease fittings and bearings are lubricated.

On February 4, 2019, routine inspections identified a catastrophic failure of the primary media pack which resulted in mechanical and structural damage to the first stage of the treatment process. This failure was reported electronically to the Ministry of Environment and Climate Change (MECC) via a non-compliance report. In conjunction with MECC staff, effluent sampling frequency was altered from quarterly to weekly beginning on February 5, 2019.

Discussion with MECC staff resulted in a path forward that consisted of removing the damaged sections of the stage one media pack and repairing the motor and chain drive to facilitate the treatment of effluent, albeit at a reduced capacity. Parts were manufactured and delivered shortly after the middle of February and the plant was put into partial operation. By February 27, 2019, effluent quality returned to within Permit requirements. A subsequent sample was taken the week after to ensure treatment parameters had stabilized. The results were as follows:

Date	BOD ₅ (mg/L)	TSS (mg/L)
	Max 45	Max 60
05-FEB-19	195	30.4
13-FEB-19	135	37.0
20-FEB-19	206	32.2
27-FEB-19	35.7	18.8
05-MAR-19	40.4	39.2

Upon the second successive positive treated effluent results, MECC staff permitted the resumption of quarterly samples.

Plant Replacement

The February 2019 failure prompted discussions with Municipal Council around the overall condition of the RBC plant and its replacement. In the summer of 2019, an engineering firm was contracted to work with the MECC towards obtaining a bypass authorization for the ultimate replacement of the RBC. MECC staff authorized a bypass to begin in early 2020 and Municipal staff then issued a request for proposal for the replacement of the plant to take place in the spring/summer of 2020.

Annual Dewatering

Annual dewatering or removal of the sludge from the primary and secondary clarifiers is carried out in the fall of each year. This labour and resource intensive process involves the removal of the roof, pressure washing of clarifiers, and vacuuming out the sludge accumulations from the bottom of the chambers. During this maintenance activity, a detailed inspection of the bearings, shaft, motor and media disc occurs with repairs or maintenance performed as needed.

With the planned replacement of the RBC to begin in early 2020, the annual dewatering for 2019 was not performed. Dewatering of the plant will occur prior to the replacement of the plant in 2020.

Facility Classification and Operator Certification

The Kelvin Grove WWTP has been evaluated as a Small Wastewater System (Lagoon) by the Environmental Operators Certification Program Society (EOCP). The Municipality has one operator certified as a Small Wastewater System Operator and will strive to have more staff obtain certification in 2020.

Appendix 1 – Sanitary Sewer System Diagram



Appendix 2 – Daily Flow Monitoring Logs

Date	Day Total (L)	Max. DF (L/sec.)	Max. DF Time (24 Hr.)	Min. DF (L/sec.)	Min. DF Time (24 Hr.)	Max. DF Temp. (°C)	Max. DFT Time (24 Hr.)	Min. DF Temp. (°C)	Min. DFT Time (24 Hr.)
1-Jan-19	72985.15	1.97	11:32	0.39	6:39	8	23:45	7	6:33
2-Jan-19	82731.59	2.47	23:38	0.40	2:29	8	13:00	7	22:29
3-Jan-19	204571.07	3.41	9:46	1.09	3:44	8	21:33	7	12:23
4-Jan-19	153787.41	3.09	0:00	0.98	22:44	8	21:06	8	0:09
5-Jan-19	94560.40	1.94	10:31	0.56	6:23	9	19:47	8	7:37
6-Jan-19	127433.28	2.63	12:28	0.77	2:13	9	0:24	8	23:48
7-Jan-19	76675.47	1.85	7:19	0.55	2:28	8	0:16	7	23:59
8-Jan-19	75705.50	1.83	19:45	0.45	3:01	7	22:50	7	5:45
9-Jan-19	97506.95	3.27	18:02	0.46	2:05	8	23:57	7	0:51
10-Jan-19	110451.83	2.37	7:45	0.98	5:16	9	18:55	8	0:01
11-Jan-19	26057.46	1.47	7:45	0.51	5:03	9	0:10	8	5:09
12-Jan-19	71061.71	1.50	17:54	0.35	1:58	9	22:45	9	8:51
13-Jan-19	68425.28	1.56	19:16	0.33	4:45	9	15:57	9	7:22
14-Jan-19	66853.88	1.72	7:24	0.29	2:39	9	0:10	9	23:54
15-Jan-19	58219.30	1.34	7:31	0.27	4:46	9	1:36	8	10:11
16-Jan-19	57020.46	1.55	7:30	0.29	4:37	9	0:32	8	12:03
17-Jan-19	72739.13	1.56	21:25	0.30	5:26	9	21:28	8	4:06
18-Jan-19	75656.92	1.76	7:28	0.49	15:49	9	14:05	9	0:06
19-Jan-19	66833.47	1.56	9:19	0.40	4:51	9	13:37	9	16:15
20-Jan-19	66531.42	1.79	10:38	0.33	5:57	9	0:17	8	13:59
21-Jan-19	64872.01	1.52	8:40	0.29	4:41	9	0:57	8	11:07
22-Jan-19	63462.93	1.62	7:04	0.29	2:17	8	0:06	8	5:45
23-Jan-19	75378.02	1.41	9:22	0.55	4:59	9	23:32	8	9:08
24-Jan-19	63957.90	1.52	8:29	0.33	4:39	9	18:41	8	5:03
25-Jan-19	61178.93	1.30	7:10	0.29	3:29	9	18:01	8	6:05
26-Jan-19	65582.08	1.46	9:49	0.32	3:03	9	20:16	8	6:56
27-Jan-19	68525.58	1.72	18:24	0.31	3:43	9	14:44	8	7:30
28-Jan-19	60871.42	1.24	22:24	0.28	4:08	9	18:46	8	4:26
29-Jan-19	59063.17	1.18	9:17	0.31	4:48	9	1:15	8	10:43
30-Jan-19	58944.57	1.30	7:18	0.28	2:25	9	23:12	8	5:10
31-Jan-19	57206.23	1.24	7:18	0.26	5:00	9	23:01	8	5:34
1-Feb-19	75252.35	1.53	19:03	0.32	2:20	9	22:09	9	3:04
2-Feb-19	66700.01	1.78	9:26	0.36	3:50	9	1:11	9	21:52
3-Feb-19	72847.19	1.84	19:46	0.32	5:47	9	0:20	6	23:10
4-Feb-19	72313.90	1.60	7:34	0.30	2:23	7	1:27	5	3:43
5-Feb-19	72066.11	1.65	7:30	0.30	3:12	7	17:48	5	7:08
6-Feb-19	66558.49	1.62	7:16	0.33	4:23	7	20:12	5	18:51
7-Feb-19	68986.91	1.67	7:27	0.45	3:02	7	19:05	6	6:15
8-Feb-19	63093.92	1.73	7:16	0.22	3:13	6	8:57	5	23:49
9-Feb-19	71877.38	1.69	9:23	0.26	3:19	6	19:19	4	6:26
10-Feb-19	85558.99	1.86	15:30	0.37	4:36	6	0:00	5	23:53

Date	Day Total (L)	Max. DF (L/sec.)	Max. DF Time (24 Hr.)	Min. DF (L/sec.)	Min. DF Time (24 Hr.)	Max. DF Temp. (°C)	Max. DFT Time (24 Hr.)	Min. DF Temp. (°C)	Min. DFT Time (24 Hr.)
11-Feb-19	58257.05	1.54	20:45	0.24	3:58	5	21:10	4	1:46
12-Feb-19	62123.35	1.36	18:02	0.22	4:01	5	22:26	4	2:49
13-Feb-19	55204.71	1.62	18:54	0.25	2:23	6	21:08	5	2:42
14-Feb-19	51212.74	1.59	7:36	0.22	3:14	6	20:22	5	13:34
15-Feb-19	60679.33	1.41	19:32	0.21	2:42	6	20:41	5	5:13
16-Feb-19	59883.58	1.44	8:44	0.28	6:27	7	21:53	6	4:08
17-Feb-19	60193.27	1.93	10:03	0.25	3:19	7	16:55	6	8:25
18-Feb-19	62799.28	1.77	9:54	0.21	4:01	7	23:12	6	6:25
19-Feb-19	61071.94	1.69	7:26	0.30	4:39	7	0:01	7	15:39
20-Feb-19	58633.28	1.61	7:29	0.27	2:37	7	16:40	6	23:46
21-Feb-19	60538.66	1.63	19:28	0.30	4:17	7	12:26	6	9:02
22-Feb-19	65334.08	1.30	7:15	0.31	1:51	6	0:01	6	14:17
23-Feb-19	65206.39	1.55	10:56	0.28	3:38	6	16:58	6	6:05
24-Feb-19	64725.77	1.44	19:57	0.26	5:04	7	18:25	6	9:47
25-Feb-19	63400.47	1.50	7:10	0.30	1:39	6	12:18	6	23:37
26-Feb-19	62070.00	1.28	7:52	0.28	3:17	6	0:11	5	10:03
27-Feb-19	61925.17	1.80	17:23	0.28	5:03	6	21:15	5	6:24
28-Feb-19	58826.03	1.48	8:26	0.25	5:10	6	19:31	6	5:11
1-Mar-19	58079.46	1.53	7:13	0.24	4:01	7	17:25	5	4:51
2-Mar-19	61537.13	1.66	8:42	0.26	2:32	7	17:38	6	7:25
3-Mar-19	64840.88	1.66	9:22	0.27	6:04	7	12:16	6	10:08
4-Mar-19	63734.20	1.47	20:56	0.28	4:14	6	12:26	5	9:48
5-Mar-19	61123.27	1.79	7:39	0.32	5:01	6	15:35	5	6:02
6-Mar-19	63490.13	1.40	7:09	0.25	3:01	6	0:03	5	12:31
7-Mar-19	59966.09	1.62	7:35	0.31	3:56	6	12:38	5	5:51
8-Mar-19	55666.86	1.60	7:26	0.28	5:18	6	18:11	6	5:51
9-Mar-19	61241.20	1.61	9:08	0.24	5:27	7	17:38	5	6:08
10-Mar-19	63176.48	1.66	9:07	0.24	5:25	7	18:42	6	6:25
11-Mar-19	54617.40	1.57	6:20	0.23	3:01	7	12:18	7	23:52
12-Mar-19	64420.20	1.62	6:28	0.31	23:59	7	18:13	6	2:47
13-Mar-19	52038.99	1.40	18:54	0.24	3:44	8	18:24	7	4:31
14-Mar-19	49989.97	1.33	6:29	0.24	2:05	8	15:02	7	5:02
15-Mar-19	55096.29	1.21	8:06	0.24	1:59	8	17:09	8	3:00
16-Mar-19	54506.74	1.28	9:04	0.22	4:23	9	17:13	8	8:00
17-Mar-19	54973.75	1.34	9:03	0.21	4:54	10	18:41	8	6:19
18-Mar-19	58049.02	1.28	20:23	0.24	2:21	10	17:16	9	9:14
19-Mar-19	55273.16	1.28	22:01	0.23	3:33	11	19:13	10	8:30
20-Mar-19	54313.98	1.08	7:40	0.23	3:02	12	18:30	10	8:57
21-Mar-19	55270.15	1.33	19:19	0.22	2:29	12	16:36	10	8:55
22-Mar-19	54208.75	1.30	18:49	0.23	3:03	11	0:01	10	8:24
23-Mar-19	60642.28	1.22	12:28	0.27	2:06	11	0:13	10	23:59
24-Mar-19	63168.57	1.34	9:33	0.28	2:09	10	16:30	10	10:33
25-Mar-19	54423.40	1.63	21:37	0.22	3:44	11	18:55	10	6:49

Date	Day Total (L)	Max. DF (L/sec.)	Max. DF Time (24 Hr.)	Min. DF (L/sec.)	Min. DF Time (24 Hr.)	Max. DF Temp. (°C)	Max. DFT Time (24 Hr.)	Min. DF Temp. (°C)	Min. DFT Time (24 Hr.)
26-Mar-19	58413.70	1.12	19:40	0.30	3:29	10	15:08	10	21:53
27-Mar-19	55249.08	1.25	18:34	0.25	1:51	11	18:19	9	9:06
28-Mar-19	55952.25	1.31	8:50	0.29	2:16	11	19:15	10	8:27
29-Mar-19	51884.84	1.17	8:42	0.20	1:46	11	17:50	10	8:20
30-Mar-19	57478.27	1.30	11:22	0.23	2:04	12	18:13	10	6:35
31-Mar-19	64204.93	1.57	21:06	0.20	2:52	12	18:17	10	8:14
1-Apr-19	51082.17	1.65	6:31	0.20	2:22	12	18:51	11	10:45
2-Apr-19	51868.85	1.44	6:26	0.20	2:43	13	19:43	11	7:44
3-Apr-19	59768.58	1.41	6:44	0.24	1:06	13	0:12	11	21:25
4-Apr-19	57935.66	1.31	6:20	0.24	3:05	12	16:18	11	4:44
5-Apr-19	73150.85	1.77	14:40	0.28	0:56	12	0:10	11	22:54
6-Apr-19	72173.17	1.87	11:10	0.29	3:35	11	0:13	10	19:17
7-Apr-19	67339.05	1.56	7:32	0.34	23:52	11	17:21	10	5:02
8-Apr-19	60021.91	1.34	7:54	0.28	2:59	11	18:09	10	7:22
9-Apr-19	60769.78	1.55	7:06	0.24	2:03	11	15:07	10	4:09
10-Apr-19	62115.53	1.51	18:16	0.23	4:10	11	0:03	11	23:59
11-Apr-19	62216.82	1.28	15:53	0.25	1:49	11	0:12	10	23:45
12-Apr-19	60575.25	1.45	6:26	0.26	2:20	11	14:45	10	5:16
13-Apr-19	60818.09	1.45	8:33	0.23	2:51	11	2:19	10	15:18
14-Apr-19	67177.08	1.45	18:04	0.27	2:25	11	15:31	10	9:13
15-Apr-19	59795.98	1.51	6:54	0.23	3:25	11	19:01	10	4:42
16-Apr-19	56955.84	1.56	6:35	0.22	3:02	11	21:44	10	4:25
17-Apr-19	60196.10	1.36	20:36	0.23	1:53	12	17:37	10	2:42
18-Apr-19	83455.49	1.84	12:12	0.29	1:26	11	0:50	11	7:15
19-Apr-19	72774.93	1.50	8:05	0.39	4:04	12	15:53	11	4:03
20-Apr-19	64058.18	1.90	8:28	0.26	1:40	12	17:48	11	9:51
21-Apr-19	65730.65	1.73	14:49	0.24	2:49	12	18:24	11	3:29
22-Apr-19	68758.88	1.49	8:42	0.23	3:42	12	0:00	11	23:41
23-Apr-19	65127.81	2.43	16:56	0.30	1:59	12	18:17	11	2:45
24-Apr-19	59718.13	1.46	6:11	0.26	4:12	12	15:22	11	10:47
25-Apr-19	57643.05	1.33	18:40	0.25	2:22	12	18:42	11	9:35
26-Apr-19	66110.10	1.47	17:38	0.33	1:37	12	13:57	12	4:01
27-Apr-19	65529.14	1.78	10:40	0.28	1:44	12	20:28	11	9:36
28-Apr-19	62295.30	1.35	9:00	0.25	1:30	12	18:53	11	9:25
29-Apr-19	62119.57	1.54	20:12	0.23	2:09	13	20:10	11	10:48
30-Apr-19	56911.53	1.70	6:43	0.24	1:48	13	17:17	12	10:01
1-May-19	58988.54	1.50	6:34	0.22	1:33	14	15:30	12	8:54
2-May-19	60115.71	1.55	18:56	0.23	3:15	13	0:01	13	8:50
3-May-19	57200.36	1.49	6:23	0.24	2:47	13	17:34	13	6:21
4-May-19	61066.21	1.28	7:48	0.22	1:53	13	19:17	12	5:58
5-May-19	72824.48	1.77	11:07	0.23	1:23	15	18:20	13	7:14
6-May-19	63155.80	1.40	19:56	0.25	1:08	15	17:41	14	8:22
7-May-19	63200.49	1.77	5:49	0.24	1:44	16	20:53	14	8:53

Date	Day Total (L)	Max. DF (L/sec.)	Max. DF Time (24 Hr.)	Min. DF (L/sec.)	Min. DF Time (24 Hr.)	Max. DF Temp. (°C)	Max. DFT Time (24 Hr.)	Min. DF Temp. (°C)	Min. DFT Time (24 Hr.)
8-May-19	57275.33	1.44	6:32	0.21	2:57	17	18:16	15	9:23
9-May-19	54620.69	1.52	10:44	0.21	1:29	17	20:41	15	7:56
10-May-19	60507.94	1.82	6:09	0.22	2:19	18	18:29	16	8:33
11-May-19	61954.27	1.74	7:45	0.30	3:14	18	18:17	16	8:51
12-May-19	63420.26	1.57	16:51	0.23	3:12	17	0:00	16	23:58
13-May-19	59392.71	1.56	6:20	0.22	1:30	16	0:03	15	10:35
14-May-19	67329.52	1.82	18:55	0.27	4:48	15	0:22	14	23:59
15-May-19	59048.39	1.52	19:13	0.23	3:20	15	18:19	14	9:00
16-May-19	55768.55	1.41	6:21	0.24	3:20	15	18:11	14	6:25
17-May-19	58692.36	1.12	21:26	0.26	0:10	15	0:01	14	13:08
18-May-19	60694.04	1.74	9:08	0.22	3:05	16	18:24	14	9:46
19-May-19	61380.33	1.45	9:37	0.24	3:10	16	19:06	15	7:46
20-May-19	59200.15	1.40	16:44	0.20	2:46	16	0:00	15	23:36
21-May-19	61435.51	1.63	18:58	0.22	2:37	15	20:20	14	5:09
22-May-19	62532.46	1.63	19:32	0.27	3:41	16	20:42	15	7:54
23-May-19	61024.43	1.34	6:31	0.27	2:49	17	17:39	15	9:28
24-May-19	62719.37	1.28	6:32	0.26	3:30	17	0:09	15	23:33
25-May-19	68377.51	1.76	9:15	0.25	4:55	16	0:02	15	23:50
26-May-19	76055.36	1.85	8:16	0.36	5:09	16	22:41	14	9:18
27-May-19	67813.24	1.68	6:47	0.26	3:32	18	15:30	16	7:39
28-May-19	65938.39	1.41	8:15	0.36	3:28	18	15:05	16	10:29
29-May-19	63356.08	1.59	20:03	0.27	1:04	17	15:40	16	10:09
30-May-19	61914.53	1.39	21:37	0.25	3:01	18	16:51	16	8:34
31-May-19	59122.79	1.51	6:35	0.27	1:47	19	15:32	17	7:54
1-Jun-19	61941.55	1.35	21:00	0.26	3:09	19	15:39	17	8:05
2-Jun-19	68271.42	1.57	10:35	0.29	3:34	18	15:22	17	8:09
3-Jun-19	70131.65	1.61	6:34	0.27	2:54	19	15:17	17	8:30
4-Jun-19	62557.58	1.41	6:30	0.24	2:01	18	15:16	16	10:21
5-Jun-19	62628.15	1.50	22:22	0.26	3:04	17	0:08	16	23:21
6-Jun-19	67207.58	1.90	6:34	0.34	3:11	17	15:05	15	10:30
7-Jun-19	64479.89	1.53	7:15	0.29	1:33	16	0:01	15	11:41
8-Jun-19	60088.84	1.44	8:03	0.26	3:42	17	15:37	15	5:50
9-Jun-19	63465.28	1.79	8:19	0.28	3:21	17	21:10	16	9:22
10-Jun-19	60180.84	1.53	21:33	0.26	1:23	17	17:27	16	4:38
11-Jun-19	59284.54	1.60	21:33	0.23	2:12	19	21:47	17	8:41
12-Jun-19	62240.01	1.62	20:22	0.27	2:43	20	23:42	18	7:15
13-Jun-19	63712.66	1.46	7:06	0.25	2:24	21	15:25	19	7:53
14-Jun-19	61191.62	1.63	8:53	0.25	2:59	20	0:03	18	9:41
15-Jun-19	61965.02	1.51	7:40	0.27	4:41	20	17:05	18	8:02
16-Jun-19	64798.34	1.52	10:23	0.28	2:49	19	17:31	18	9:45
17-Jun-19	64462.75	1.38	6:13	0.25	2:39	19	17:28	18	9:45
18-Jun-19	61097.67	1.51	20:40	0.27	2:20	21	15:02	18	9:18
19-Jun-19	63905.80	1.44	19:26	0.26	1:30	21	15:13	18	10:22

Date	Day Total (L)	Max. DF (L/sec.)	Max. DF Time (24 Hr.)	Min. DF (L/sec.)	Min. DF Time (24 Hr.)	Max. DF Temp. (°C)	Max. DFT Time (24 Hr.)	Min. DF Temp. (°C)	Min. DFT Time (24 Hr.)
20-Jun-19	61449.04	1.37	13:25	0.25	1:44	19	15:37	17	10:37
21-Jun-19	61919.09	1.42	6:46	0.29	2:00	19	15:29	17	9:14
22-Jun-19	63566.51	1.63	10:01	0.29	2:04	18	16:59	17	8:59
23-Jun-19	64857.80	1.61	18:18	0.28	1:35	18	16:30	17	7:23
24-Jun-19	61957.29	1.40	6:23	0.28	3:57	18	15:39	17	9:10
25-Jun-19	61398.24	1.26	7:16	0.30	2:05	18	15:06	17	8:14
26-Jun-19	60477.65	1.55	8:07	0.27	4:07	19	19:18	17	7:16
27-Jun-19	64688.12	1.51	9:01	0.27	0:59	19	0:00	17	23:59
28-Jun-19	68462.54	1.85	6:17	0.39	2:55	17	18:44	17	6:15
29-Jun-19	63371.06	1.60	8:24	0.27	3:39	18	15:10	17	5:03
30-Jun-19	67617.40	1.61	9:41	0.37	3:10	19	20:25	17	8:07
1-Jul-19	67694.59	1.47	9:11	0.27	2:09	19	18:57	18	9:36
2-Jul-19	60004.48	1.37	10:38	0.25	4:12	19	0:00	18	23:45
3-Jul-19	61939.81	1.53	18:37	0.26	2:24	18	0:01	18	9:10
4-Jul-19	61216.70	1.31	7:13	0.26	2:58	18	19:13	18	8:30
5-Jul-19	63635.87	1.45	8:13	0.29	3:04	18	0:15	17	22:26
6-Jul-19	67655.34	1.74	8:20	0.31	1:45	18	0:07	17	23:29
7-Jul-19	69210.21	1.49	19:43	0.27	2:33	17	0:00	17	10:41
8-Jul-19	69745.65	1.84	6:28	0.37	23:59	18	15:16	17	5:01
9-Jul-19	61338.59	1.56	6:52	0.29	1:46	18	21:21	17	5:44
10-Jul-19	73066.32	1.50	3:45	0.31	1:50	18	0:23	18	7:03
11-Jul-19	62914.31	1.28	21:05	0.32	0:59	18	15:32	18	6:40
12-Jul-19	59067.62	1.22	21:18	0.28	3:53	19	19:29	18	10:07
13-Jul-19	66703.02	1.46	20:45	0.26	2:48	20	15:39	18	9:06
14-Jul-19	65385.69	1.46	9:21	0.27	2:25	20	15:26	18	10:27
15-Jul-19	65549.32	1.60	20:31	0.27	4:02	20	19:24	18	10:13
16-Jul-19	64764.16	1.63	20:45	0.26	1:42	20	19:30	19	10:07
17-Jul-19	68968.15	1.54	19:24	0.29	0:31	20	0:01	18	18:50
18-Jul-19	62064.84	1.43	20:29	0.28	2:12	19	15:24	17	12:48
19-Jul-19	57227.46	1.38	8:30	0.27	1:22	19	15:33	17	9:57
20-Jul-19	49216.29	1.60	11:05	0.14	3:27	19	19:55	17	10:24
21-Jul-19	52393.58	1.22	11:55	0.18	1:21	20	20:26	18	9:57
22-Jul-19	53154.86	1.52	18:51	0.15	2:47	21	17:40	19	9:15
23-Jul-19	51760.08	1.54	23:33	0.17	0:55	20	0:01	19	9:34
24-Jul-19	55171.17	1.40	21:15	0.19	2:58	20	0:00	18	9:43
25-Jul-19	52485.02	1.20	18:38	0.16	2:42	20	19:06	18	8:26
26-Jul-19	51833.23	1.28	18:16	0.12	2:08	21	18:20	19	7:46
27-Jul-19	59577.91	1.51	9:29	0.23	3:04	20	0:00	19	23:36
28-Jul-19	54870.44	1.25	9:03	0.16	1:52	20	20:12	18	10:30
29-Jul-19	50976.15	1.29	20:45	0.14	3:50	20	16:27	19	10:04
30-Jul-19	48121.97	1.26	6:33	0.16	3:48	20	16:18	19	7:45
31-Jul-19	54406.53	1.61	20:58	0.18	2:19	20	18:10	19	6:45
1-Aug-19	52025.38	1.49	19:19	0.16	3:16	20	0:02	19	23:11

Date	Day Total (L)	Max. DF (L/sec.)	Max. DF Time (24 Hr.)	Min. DF (L/sec.)	Min. DF Time (24 Hr.)	Max. DF Temp. (°C)	Max. DFT Time (24 Hr.)	Min. DF Temp. (°C)	Min. DFT Time (24 Hr.)
2-Aug-19	49891.05	1.07	19:22	0.19	3:27	20	18:32	19	7:28
3-Aug-19	52335.13	1.19	8:23	0.16	3:14	20	19:50	19	10:19
4-Aug-19	57319.77	1.53	21:45	0.18	3:13	21	20:52	19	10:08
5-Aug-19	62829.34	1.36	8:31	0.30	23:57	21	18:11	20	9:49
6-Aug-19	51504.00	1.27	20:20	0.15	1:28	21	18:21	20	9:38
7-Aug-19	55491.36	1.46	19:06	0.19	2:12	21	18:14	20	10:13
8-Aug-19	55397.98	1.44	20:29	0.17	2:28	21	15:32	20	9:17
9-Aug-19	52802.99	1.49	7:29	0.17	2:05	20	0:02	20	23:46
10-Aug-19	57583.79	1.51	8:17	0.20	1:42	20	0:15	19	20:47
11-Aug-19	64663.84	1.50	18:41	0.22	2:26	19	0:14	19	23:34
12-Aug-19	62175.01	1.42	8:06	0.22	3:10	20	18:31	19	5:03
13-Aug-19	54036.88	1.41	20:12	0.22	4:23	20	19:26	19	9:03
14-Aug-19	59335.48	1.44	20:18	0.19	3:12	20	19:26	19	9:00
15-Aug-19	50506.41	1.49	19:51	0.17	2:35	20	19:03	19	9:10
16-Aug-19	50779.29	1.47	7:00	0.16	2:47	20	0:09	19	11:55
17-Aug-19	47408.34	1.18	9:28	0.16	2:53	19	0:00	19	10:03
18-Aug-19	61755.42	1.37	18:02	0.18	3:12	20	18:30	19	7:05
19-Aug-19	55646.43	1.51	19:23	0.16	4:19	20	0:00	19	9:22
20-Aug-19	51782.35	1.60	8:28	0.17	2:51	20	18:52	19	8:59
21-Aug-19	61078.00	2.17	7:29	0.18	1:27	19	0:27	19	23:55
22-Aug-19	54461.73	1.23	18:38	0.18	1:10	19	15:17	18	7:44
23-Aug-19	56199.34	1.26	18:58	0.17	2:10	19	0:05	18	23:56
24-Aug-19	66189.29	1.46	8:14	0.26	1:58	19	20:55	18	12:02
25-Aug-19	73746.49	2.44	17:31	0.22	4:55	19	20:05	18	15:44
26-Aug-19	69630.40	1.70	19:46	0.24	3:07	19	18:21	18	9:52
27-Aug-19	68031.33	1.91	20:08	0.21	2:34	19	18:43	18	6:46
28-Aug-19	73582.31	1.54	8:35	0.33	2:33	20	18:09	19	7:56
29-Aug-19	73464.77	1.41	5:54	0.32	1:57	20	17:46	19	7:44
30-Aug-19	69326.32	1.43	19:28	0.29	1:41	20	0:00	19	23:57
31-Aug-19	71703.87	1.60	10:58	0.48	1:07	20	18:35	19	9:32
1-Sep-19	73138.22	1.86	8:31	0.33	1:16	19	16:20	19	22:18
2-Sep-19	77495.09	1.77	18:27	0.32	2:59	20	18:36	19	9:18
3-Sep-19	70654.34	1.56	19:29	0.31	0:47	20	18:55	19	7:59
4-Sep-19	71284.75	1.76	18:54	0.32	1:54	20	18:16	19	10:44
5-Sep-19	73255.51	1.82	6:46	0.31	2:17	20	18:15	19	7:43
6-Sep-19	70837.12	1.58	22:37	0.25	4:01	20	18:12	19	9:17
7-Sep-19	71177.36	1.52	19:08	0.32	3:39	20	0:02	19	10:31
8-Sep-19	77130.00	1.69	12:04	0.32	3:13	19	0:09	19	23:58
9-Sep-19	68017.43	1.45	6:14	0.33	4:00	19	0:03	18	22:40
10-Sep-19	68918.83	1.70	21:03	0.33	0:36	18	19:56	18	6:07
11-Sep-19	70633.13	2.07	18:29	0.35	1:01	18	19:07	18	7:15
12-Sep-19	76208.23	2.30	18:55	0.31	3:36	18	0:43	18	23:55
13-Sep-19	76012.41	1.70	18:22	0.36	3:35	18	18:31	18	5:19

Date	Day Total (L)	Max. DF (L/sec.)	Max. DF Time (24 Hr.)	Min. DF (L/sec.)	Min. DF Time (24 Hr.)	Max. DF Temp. (°C)	Max. DFT Time (24 Hr.)	Min. DF Temp. (°C)	Min. DFT Time (24 Hr.)
14-Sep-19	76974.95	1.49	7:54	0.39	2:25	18	0:14	17	17:04
15-Sep-19	80555.00	2.05	9:22	0.35	2:59	18	0:02	17	23:52
16-Sep-19	78933.51	2.20	18:02	0.40	4:25	17	0:00	17	9:04
17-Sep-19	94731.16	2.81	6:16	0.36	2:50	17	1:07	16	23:17
18-Sep-19	85972.89	1.87	6:23	0.50	2:06	17	17:35	16	9:20
19-Sep-19	77553.32	1.67	6:22	0.39	4:20	17	21:30	16	6:35
20-Sep-19	76916.11	1.66	18:31	0.33	2:58	17	14:39	17	5:59
21-Sep-19	76046.54	1.57	21:42	0.36	4:31	17	20:37	17	7:20
22-Sep-19	108634.97	2.41	8:36	0.45	3:32	17	19:33	17	6:40
23-Sep-19	87150.91	1.80	6:47	0.53	23:59	17	0:14	16	22:51
24-Sep-19	78055.94	1.89	19:03	0.44	2:49	16	17:36	16	5:59
25-Sep-19	81023.98	1.75	6:15	0.42	1:31	16	0:08	16	9:47
26-Sep-19	88757.35	2.17	6:19	0.58	23:59	16	17:12	16	4:06
27-Sep-19	83817.53	1.99	17:49	0.40	2:27	16	0:00	15	23:51
28-Sep-19	82957.82	1.99	8:51	0.41	3:13	15	19:26	14	9:31
29-Sep-19	91486.07	2.20	19:34	0.36	2:57	15	18:31	15	8:17
30-Sep-19	84097.61	2.09	7:16	0.38	3:30	15	0:04	14	9:28
1-Oct-19	77527.02	1.73	16:50	0.37	2:22	15	0:06	14	9:56
2-Oct-19	79751.72	1.95	18:59	0.31	2:56	15	23:27	14	6:02
3-Oct-19	81150.99	1.73	19:42	0.35	2:44	15	0:18	14	6:14
4-Oct-19	82084.11	1.71	8:07	0.38	2:26	14	2:05	14	6:34
5-Oct-19	79312.02	1.90	9:18	0.37	1:53	15	12:15	14	7:00
6-Oct-19	84410.67	1.81	16:51	0.36	2:48	14	19:28	14	7:18
7-Oct-19	90117.15	1.85	6:40	0.43	0:41	14	17:20	14	5:02
8-Oct-19	89742.92	1.80	18:37	0.41	1:35	14	0:03	13	23:55
9-Oct-19	87724.00	1.86	17:41	0.43	1:05	13	1:33	12	7:25
10-Oct-19	82668.88	1.72	18:08	0.41	2:03	13	0:03	12	9:27
11-Oct-19	91112.15	1.83	6:45	0.56	4:32	13	17:36	12	6:01
12-Oct-19	95628.80	2.07	10:16	0.43	1:35	13	21:14	12	10:16
13-Oct-19	98090.98	2.10	10:05	0.46	1:30	13	18:31	12	0:12
14-Oct-19	96066.63	2.10	8:50	0.42	1:06	13	1:13	12	10:07
15-Oct-19	20621.87	2.08	6:31	0.05	21:18	13	0:35	12	21:33
16-Oct-19	5844.86	0.08	0:00	0.05	5:26	12	0:28	12	11:54
17-Oct-19	49589.31	1.67	18:13	0.05	3:45	12	20:59	12	3:48
18-Oct-19	91324.83	2.22	17:09	0.47	12:20	12	2:17	11	11:35
19-Oct-19	87784.86	1.85	8:34	0.53	4:49	12	15:37	12	23:48
20-Oct-19	99663.29	2.13	8:19	0.47	2:43	12	20:03	11	6:54
21-Oct-19	118353.24	2.55	9:36	0.48	2:18	12	22:04	11	4:52
22-Oct-19	96019.82	1.89	6:51	0.57	23:59	13	15:48	12	0:09
23-Oct-19	85676.52	1.77	15:43	0.45	3:10	13	11:54	12	5:20
24-Oct-19	80233.28	1.53	7:33	0.41	3:26	13	21:07	12	8:55
25-Oct-19	84981.98	1.57	9:06	0.40	2:36	14	11:49	13	0:03
26-Oct-19	105704.97	1.91	9:36	0.69	23:08	13	0:02	12	8:23

Date	Day Total (L)	Max. DF (L/sec.)	Max. DF Time (24 Hr.)	Min. DF (L/sec.)	Min. DF Time (24 Hr.)	Max. DF Temp. (°C)	Max. DFT Time (24 Hr.)	Min. DF Temp. (°C)	Min. DFT Time (24 Hr.)
27-Oct-19	89629.01	2.12	18:01	0.36	2:47	13	1:33	12	23:47
28-Oct-19	81635.40	1.64	17:53	0.41	3:32	12	0:32	11	9:54
29-Oct-19	79313.54	1.65	21:08	0.37	2:35	12	0:03	11	13:28
30-Oct-19	83524.79	1.80	19:35	0.00	3:17	11	0:00	10	10:16
31-Oct-19	80024.17	1.60	6:27	0.42	2:13	11	11:50	10	7:25
1-Nov-19	84808.09	1.65	19:04	0.40	1:36	11	22:39	10	9:08
2-Nov-19	84193.07	2.07	8:19	0.40	2:28	11	17:32	11	7:16
3-Nov-19	94831.93	1.96	19:36	0.42	3:32	11	18:14	11	8:13
4-Nov-19	88624.75	1.74	9:02	0.40	1:48	11	20:47	11	7:02
5-Nov-19	84091.54	2.19	7:36	0.38	4:41	12	15:49	11	0:06
6-Nov-19	80454.51	1.61	9:45	0.38	3:48	12	22:54	11	6:19
7-Nov-19	83893.94	1.60	7:51	0.42	2:40	12	21:43	11	6:58
8-Nov-19	80381.46	1.78	7:39	0.39	3:41	12	21:52	12	7:25
9-Nov-19	91040.88	1.65	13:30	0.43	4:59	12	23:34	12	7:37
10-Nov-19	96733.31	2.09	10:27	0.48	5:11	13	12:29	12	7:18
11-Nov-19	87970.97	1.96	9:08	0.43	4:47	12	1:06	12	14:44
12-Nov-19	89650.66	1.73	18:38	0.59	0:27	12	0:37	12	6:09
13-Nov-19	90093.27	1.68	7:41	0.48	2:26	12	14:39	12	6:22
14-Nov-19	80915.58	1.61	18:32	0.39	4:40	12	22:14	12	7:18
15-Nov-19	92514.91	1.81	8:52	0.45	2:45	12	18:21	12	0:03
16-Nov-19	98537.14	1.79	11:09	0.50	6:01	12	0:18	12	8:18
17-Nov-19	162934.13	3.37	9:01	0.78	1:21	13	12:12	12	0:24
18-Nov-19	97937.63	1.73	22:25	0.60	5:25	13	0:02	12	23:40
19-Nov-19	101487.85	1.72	20:41	0.38	4:33	12	0:24	11	23:45
20-Nov-19	90196.26	1.59	8:26	0.71	3:45	12	0:00	11	12:40
21-Nov-19	81007.17	1.61	7:51	0.43	2:50	11	1:06	10	10:25
22-Nov-19	84466.11	1.55	7:14	0.48	1:47	10	1:08	10	9:04
23-Nov-19	99714.00	1.87	9:24	0.42	2:56	11	23:35	10	0:34
24-Nov-19	105430.86	2.22	10:58	0.62	4:12	11	0:00	10	8:24
25-Nov-19	98465.75	2.02	18:43	0.56	5:03	11	0:02	10	23:55
26-Nov-19	95294.52	1.84	20:25	0.67	0:32	10	0:00	9	23:52
27-Nov-19	90126.35	1.78	6:50	0.46	3:27	9	17:17	8	23:51
28-Nov-19	93701.25	1.73	20:08	0.50	5:15	9	2:33	8	12:34
29-Nov-19	88506.14	1.74	9:35	0.48	2:29	9	0:12	8	23:51
30-Nov-19	90812.63	2.35	9:50	0.44	3:53	8	20:17	7	12:42
1-Dec-19	93062.32	2.03	12:05	0.47	3:13	8	23:09	8	8:36
2-Dec-19	99223.32	1.96	22:09	0.51	5:19	9	22:27	8	2:45
3-Dec-19	84177.92	1.62	19:12	0.47	4:48	10	23:11	9	0:30
4-Dec-19	92810.14	1.63	17:03	0.53	2:54	10	13:36	9	0:09
5-Dec-19	86202.16	1.56	8:05	0.46	2:48	10	0:01	9	8:59
6-Dec-19	90064.60	1.60	8:43	0.49	2:35	10	23:46	10	6:45
7-Dec-19	106816.26	2.15	8:32	0.87	3:09	10	23:01	10	2:00
8-Dec-19	102322.58	1.95	10:32	0.56	3:43	10	2:57	10	23:54

Date	Day Total (L)	Max. DF (L/sec.)	Max. DF Time (24 Hr.)	Min. DF (L/sec.)	Min. DF Time (24 Hr.)	Max. DF Temp. (°C)	Max. DFT Time (24 Hr.)	Min. DF Temp. (°C)	Min. DFT Time (24 Hr.)
9-Dec-19	90913.51	1.81	19:14	0.51	3:27	10	0:42	10	23:44
10-Dec-19	95604.59	1.97	22:33	0.68	2:56	10	0:05	9	4:55
11-Dec-19	96744.05	2.02	19:43	0.48	4:11	10	23:45	9	7:03
12-Dec-19	110519.46	2.37	7:21	0.66	4:26	10	7:57	10	3:11
13-Dec-19	98719.24	1.86	21:34	0.64	3:08	10	0:09	10	7:41
14-Dec-19	103049.30	2.23	9:14	0.67	3:24	10	0:27	9	22:00
15-Dec-19	97554.15	1.93	10:49	0.51	4:30	9	0:29	9	22:32
16-Dec-19	103747.11	2.01	22:18	0.50	3:11	9	2:33	9	10:17
17-Dec-19	99869.91	1.88	22:27	0.52	4:11	9	22:28	9	1:16
18-Dec-19	116547.51	2.59	20:37	0.61	2:58	9	21:32	9	3:14
19-Dec-19	161741.01	2.82	21:24	1.19	4:45	9	0:16	9	22:09
20-Dec-19	136047.11	2.14	6:47	1.20	15:34	9	0:02	9	6:02
21-Dec-19	107527.15	2.00	9:55	0.84	4:50	9	0:52	9	5:58
22-Dec-19	94719.53	1.66	18:38	0.57	5:18	9	0:25	8	23:28
23-Dec-19	91449.44	1.68	7:44	0.48	4:59	9	3:28	8	7:20
24-Dec-19	106385.27	2.10	16:11	0.46	4:11	9	21:30	8	8:04
25-Dec-19	107651.95	2.30	12:26	0.48	5:07	9	21:29	8	8:00
26-Dec-19	98970.19	2.23	11:39	0.47	3:58	9	0:03	8	8:21
27-Dec-19	95930.23	1.89	9:31	0.43	4:26	9	21:40	8	7:14
28-Dec-19	107058.58	2.36	11:10	0.69	5:34	9	13:41	8	5:55
29-Dec-19	89910.12	1.80	10:08	0.45	4:40	9	20:16	9	0:36
30-Dec-19	86359.06	1.71	8:59	0.43	3:57	10	20:43	9	6:49
31-Dec-19	126583.29	2.28	17:29	0.70	2:49	10	18:53	9	16:46

Appendix 3 – Laboratory Analysis Records

ALS Results Summary			
Job Reference	L2226225		
Report To	VILLAGE OF LIONS BAY		
Date Received	29-Jan-2019 13:00		
Report Date	6-Feb-2019 14:11		
Client Sample ID	KG WWTP		
Date Sampled	29-Jan-2019		
Time Sampled	12:20		
ALS Sample ID	L2226225-1		
Parameter	Lowest Detection Limit	Units	Water
Physical Tests (Water)			
Total Suspended Solids	3.0	mg/L	43.0
Aggregate Organics (Water)			
BOD	20	mg/L	42

ALS Results Summary			
Job Reference	L2228910		
Report To	VILLAGE OF LIONS BAY		
Date Received	5-Feb-2019 13:11		
Report Date	11-Feb-2019 13:15		
Client Sample ID	KG WWTP		
Date Sampled	5-Feb-2019		
Time Sampled	12:20		
ALS Sample ID	L2228910-1		
Parameter	Lowest Detection Limit	Units	Water
Physical Tests (Water)			
Total Suspended Solids	3.0	mg/L	30.4
Aggregate Organics (Water)			
BOD	60	mg/L	195

ALS Results Summary

Job Reference	L2232562		
Report To	VILLAGE OF LIONS BAY		
Date Received	13-Feb-2019 13:40		
Report Date	25-Feb-2019 17:17		
Client Sample ID	KG WWTP		
Date Sampled	13-Feb-2019		
Time Sampled	12:30		
ALS Sample ID	L2232562-1		
Parameter	Lowest Detection Limit	Units	Water
Physical Tests (Water)			
Total Suspended Solids	3.0	mg/L	37.0
Aggregate Organics (Water)			
BOD	20	mg/L	135

ALS Results Summary

Job Reference	L2234836		
Report To	VILLAGE OF LIONS BAY		
Date Received	20-Feb-2019 12:48		
Report Date	27-Feb-2019 15:25		
Client Sample ID	KG WWTP		
Date Sampled	20-Feb-2019		
Time Sampled	12:15		
ALS Sample ID	L2234836-1		
Parameter	Lowest Detection Limit	Units	Water
Physical Tests (Water)			
Total Suspended Solids	3.0	mg/L	32.2
Aggregate Organics (Water)			
BOD	60	mg/L	206

ALS Results Summary

Job Reference	L2237740		
Report To	VILLAGE OF LIONS BAY		
Date Received	27-Feb-2019 13:15		
Report Date	4-Mar-2019 15:05		
Client Sample ID		KG WWTP	
Date Sampled		27-Feb-2019	
Time Sampled		12:30	
ALS Sample ID		L2237740-1	
Parameter	Lowest Detection Limit	Units	Water
Physical Tests (Water)			
Total Suspended Solids	3.0	mg/L	18.8
Aggregate Organics (Water)			
BOD	6	mg/L	36

ALS Results Summary

Job Reference	L2240155		
Report To	VILLAGE OF LIONS BAY		
Date Received	5-Mar-2019 13:19		
Report Date	11-Mar-2019 14:22		
Client Sample ID		KG WWTP	
Date Sampled		5-Mar-2019	
Time Sampled		12:30	
ALS Sample ID		L2240155-2	
Parameter	Lowest Detection Limit	Units	Water
Physical Tests (Water)			
Total Suspended Solids	3.0	mg/L	39.2
Aggregate Organics (Water)			
BOD	6	mg/L	40

ALS Results Summary

Job Reference	L2258927		
Report To	VILLAGE OF LIONS BAY		
Date Received	16-Apr-2019 13:30		
Report Date	29-Apr-2019 15:37		
Client Sample ID		KG WWTP	
Date Sampled		16-Apr-2019	
Time Sampled		13:00	
ALS Sample ID		L2258927-1	
Parameter	Lowest Detection Limit	Units	Water
Physical Tests (Water)			
Total Suspended Solids	8.0	mg/L	57.8
Aggregate Organics (Water)			
BOD	20	mg/L	44

ALS Results Summary

Job Reference	L2317209		
Report To	VILLAGE OF LIONS BAY		
Date Received	25-Jul-2019 13:38		
Report Date	7-Aug-2019 14:00		
Client Sample ID		KG WWTP	
Date Sampled		25-Jul-2019	
Time Sampled		13:00	
ALS Sample ID		L2317209-1	
Parameter	Lowest Detection Limit	Units	Water
Physical Tests (Water)			
Total Suspended Solids	3.0	mg/L	25.7
Aggregate Organics (Water)			
BOD	6	mg/L	30

ALS Results Summary

Job Reference	L2373594		
Report To	VILLAGE OF LIONS BAY		
Date Received	29-Oct-2019 13:14		
Report Date	6-Nov-2019 14:57		
Client Sample ID	KG WWTP		
Date Sampled	29-Oct-2019		
Time Sampled	12:30		
ALS Sample ID	L2373594-1		
Parameter	Lowest Detection Limit	Units	Water
Physical Tests (Water)			
Total Suspended Solids	3.0	mg/L	31.9
Aggregate Organics (Water)			
BOD	6	mg/L	30