



Derek Clarke, Drinking Water Officer
Office of Drinking Water, Manitoba Sustainable Development
Box 6000
Gimli, MB R0C 1B0

April 6, 2020

RE: MARCH 2020 WATER QUALITY COMPLIANCE SUBMISSION FOR THE CITY OF WINNIPEG WATER SUPPLY SYSTEM

Please find attached on-line and grab turbidity summary reports, on-line and grab chlorine summary reports and the UV summary report for the Water Treatment Plant for March 2020.

The March on-line and grab sampling turbidity reports include results obtained for the Water Treatment Plant raw water and the eight filters. The daily maximum turbidities were greater than 0.30 NTU on Filter 2 on March 24 due to a power brown-out, on all filters (except Filter 6) on March 25 due to maintenance activities on the coagulant dosing line, and on Filter 1 on March 27 following a backwash; the elevated turbidities did not occur for more than 12 consecutive hours. The turbidity results for the filter effluent met the licence requirements.

The March on-line and grab sampling chlorine reports include results obtained for the Deacon Booster Pumping Station at the Water Treatment Plant. The free chlorine results at the Water Treatment Plant met the licence requirements.

The March UV summary report includes results obtained for the six UV reactors at the Water Treatment Plant. The UV disinfection results met the licence requirements.

Please let me know of any concerns or questions respecting this submission. I can be reached by telephone at 204-986-8359 or by e-mail at rgrosselle@winnipeg.ca.

Yours sincerely,

*Original signed by R. Grosselle:
(Signed original available upon request)*

R. Grosselle
Manager of Environmental Standards

Enclosures

cc: Dr. L. Richards, Winnipeg Regional Health Authority (email)
Dr. H. Chang, Winnipeg Regional Health Authority (email)
Dr. S. Roberecki, Manitoba Health, Seniors and Active Living (email)
M. L. Geer, CPA, CA (email)
G. Patton, P.Eng. (email)
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M. Szmon, P.Eng. (email)
B. Bradford (email)



CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT
WATER SERVICES

Water System Code: **252.00**
 Licence Number: **PWS-09-412-01**

WATER TREATMENT PLANT TURBIDITY ON-LINE MONITORING REPORT

March 2020 Turbidity (NTU)

Date	Raw	Filter #1		Filter #2		Filter #3		Filter #4		Filter #5		Filter #6		Filter #7		Filter #8	
	Avg	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max
1/03/2020	0.37	0.01	0.05	0.00	0.03	0.06	0.12	0.04	0.09	0.00	0.02	0.03	0.09	0.06	0.11	0.02	0.06
2/03/2020	0.38	0.01	0.06	0.00	0.04	0.09	0.11	0.05	0.09	0.00	0.00	0.02	0.05	0.05	0.11	0.02	0.04
3/03/2020	0.36	0.02	0.16	0.01	0.11	0.07	0.14	0.04	0.16	0.00	0.07	0.02	0.06	0.07	0.12	0.03	0.08
4/03/2020	0.36	0.01	0.06	0.00	0.02	0.07	0.14	0.03	0.09	0.00	0.02	0.02	0.05	0.10	0.12	0.02	0.07
5/03/2020	0.35	0.01	0.05	0.00	0.02	0.10	0.12	0.05	0.08	0.00	0.01	0.03	0.05	0.08	0.14	0.02	0.07
6/03/2020	0.35	0.01	0.05	0.00	0.02	0.10	0.14	0.04	0.10	0.00	0.03	0.02	0.10	0.08	0.15	0.03	0.06
7/03/2020	0.34	0.02	0.05	0.00	0.02	0.09	0.15	0.04	0.11	0.00	0.03	0.02	0.06	0.12	0.14	0.03	0.07
8/03/2020	0.36	0.02	0.06	0.00	0.03	0.09	0.14	0.05	0.10	0.00	0.03	0.04	0.06	0.10	0.16	0.02	0.07
9/03/2020	0.36	0.02	0.07	0.00	0.04	0.14	0.17	0.06	0.11	0.00	0.02	0.03	0.07	0.10	0.18	0.03	0.05
10/03/2020	0.36	0.03	0.04	0.00	0.04	0.11	0.19	0.05	0.12	0.00	0.04	0.03	0.09	0.13	0.17	0.04	0.07
11/03/2020	0.36	0.02	0.06	0.00	0.02	0.06	0.16	0.05	0.12	0.00	0.04	0.03	0.06	0.09	0.20	0.03	0.08
12/03/2020	0.37	0.03	0.07	0.00	0.03	0.00	0.01	0.08	0.10	0.00	0.01	0.04	0.07	0.05	0.10	0.03	0.08
13/03/2020	0.36	0.03	0.04	0.01	0.06	0.01	0.02	0.07	0.13	0.01	0.05	0.03	0.08	0.05	0.10	0.04	0.05
14/03/2020	0.38	0.05	0.10	0.01	0.12	0.01	0.04	0.07	0.16	0.02	0.13	0.04	0.13	0.05	0.08	0.04	0.08
15/03/2020	0.40	0.05	0.09	0.01	0.05	0.01	0.03	0.08	0.13	0.01	0.05	0.05	0.08	0.08	0.10	0.03	0.09
16/03/2020	0.36	0.04	0.11	0.01	0.04	0.01	0.02	0.12	0.16	0.01	0.05	0.05	0.13	0.06	0.11	0.03	0.07
17/03/2020	0.36	0.04	0.13	0.02	0.05	0.01	0.04	0.09	0.18	0.02	0.05	0.03	0.10	0.06	0.11	0.03	0.05
18/03/2020	0.37	0.05	0.18	0.01	0.04	0.00	0.02	0.07	0.17	0.02	0.07	0.02	0.11	0.07	0.10	0.04	0.07
19/03/2020	0.37	0.02	0.06	0.01	0.04	0.00	0.02	0.04	0.08	0.02	0.07	0.03	0.05	0.08	0.12	0.03	0.07
20/03/2020	0.37	0.02	0.07	0.02	0.03	0.01	0.05	0.04	0.09	0.03	0.05	0.02	0.11	0.07	0.13	0.03	0.07
21/03/2020	0.37	0.03	0.09	0.02	0.06	0.04	0.07	0.04	0.09	0.04	0.08	0.02	0.17	0.05	0.09	0.05	0.06
22/03/2020	0.37	0.04	0.19	0.03	0.10	0.04	0.11	0.04	0.14	0.04	0.08	0.02	0.06	0.07	0.09	0.04	0.08
23/03/2020	0.40	0.04	0.28	0.04	0.11	0.04	0.08	0.06	0.13	0.04	0.10	0.03	0.09	0.06	0.09	0.04	0.08
24/03/2020	0.40	0.07	0.26	0.26	0.51	0.07	0.21	0.08	0.16	0.05	0.09	0.03	0.10	0.05	0.10	0.04	0.09
25/03/2020	0.78	0.10	0.88	0.03	1.00	0.06	0.94	0.07	0.49	0.08	0.86	0.02	0.24	0.06	0.68	0.07	0.74
26/03/2020	0.39	0.05	0.21	0.02	0.11	0.04	0.17	0.06	0.16	0.06	0.13	0.04	0.13	0.04	0.09	0.04	0.11
27/03/2020	0.41	0.06	0.36	0.03	0.28	0.05	0.11	0.06	0.10	0.08	0.13	0.03	0.06	0.04	0.09	0.07	0.10
28/03/2020	0.41	0.04	0.16	0.01	0.04	0.04	0.07	0.04	0.10	0.10	0.14	0.02	0.06	0.06	0.08	0.06	0.12
29/03/2020	0.42	0.03	0.05	0.01	0.04	0.05	0.08	0.04	0.09	0.09	0.18	0.02	0.06	0.05	0.09	0.07	0.13
30/03/2020	0.45	0.04	0.08	0.02	0.05	0.05	0.09	0.04	0.10	0.10	0.20	0.03	0.05	0.05	0.10	0.07	0.14
31/03/2020	0.46	0.04	0.09	0.02	0.07	0.05	0.10	0.07	0.12	0.11	0.20	0.03	0.06	0.05	0.10	0.10	0.13

Total Number of Measurements Taken, A:	11494	9804	11088	13694	9697	14063	13063	14553
Turbidity Standard for Monitoring Location (NTU):	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Number of Measurements Meeting Standard, B:	11437	9766	11067	13681	9657	14063	13034	14524
Compliance with Turbidity Standard, C = B/A X 100%:	99.504%	99.612%	99.811%	99.905%	99.588%	100.000%	99.778%	99.801%

File Path: N:\Water Treatment Branch\Administration\Reports\Regulatory Submissions\Turbidity\2020\03-March

Submitted By (Print): D. Minor

Signature: Original signed by D. Minor

WATER TREATMENT PLANT TURBIDITY GRAB MONITORING REPORT

Water System Code: 252.00 Licence No. PWS-09-412-01	Turbidity (NTU)																	
	Raw Water		Filter 1		Filter 2		Filter 3		Filter 4		Filter 5		Filter 6		Filter 7		Filter 8	
	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser
01-Mar-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
02-Mar-2020	0.41	0.35	OL	OL	0.10	0.03	0.06	0.11	0.08	0.06	0.07	0.00	0.08	0.04	OL	OL	0.06	0.02
03-Mar-2020	0.39	0.37	0.07	0.03	0.07	0.00	0.08	0.12	OL	OL	0.07	0.00	OL	OL	0.07	0.08	0.07	0.03
04-Mar-2020	0.39	0.33	0.07	0.03	0.07	0.00	0.06	0.11	0.07	0.05	OL	OL	0.08	0.03	0.08	0.09	OL	OL
05-Mar-2020	0.38	0.34	0.09	0.03	0.08	0.01	0.06	0.12	0.07	0.07	0.06	0.00	0.08	0.04	0.10	0.12	0.06	0.03
06-Mar-2020	0.37	0.33	0.06	0.02	OL	OL	0.06	0.12	0.10	0.07	0.08	0.00	OL	OL	0.07	0.11	0.07	0.03
07-Mar-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
08-Mar-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
09-Mar-2020	0.41	0.35	0.07	0.04	0.08	0.02	0.07	0.15	0.08	0.08	0.06	0.01	0.09	0.05	0.09	0.16	0.06	0.03
10-Mar-2020	0.42	0.35	0.08	0.04	0.07	0.01	0.07	0.16	0.10	0.09	0.08	0.02	0.07	0.05	0.08	0.15	0.08	0.04
11-Mar-2020	0.39	0.34	0.08	0.04	0.06	0.01	0.07	0.01	0.07	0.07	0.10	0.04	0.08	0.05	0.08	0.07	0.07	0.04
12-Mar-2020	0.41	0.36	0.09	0.06	OL	OL	0.06	0.01	0.07	0.09	0.07	0.00	0.09	0.06	OL	OL	0.07	0.04
13-Mar-2020	0.44	0.34	0.06	0.04	OL	OL	0.06	0.01	0.10	0.11	0.09	0.01	OL	OL	0.09	0.06	0.07	0.03
14-Mar-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
15-Mar-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
16-Mar-2020	0.43	0.33	0.09	0.07	0.07	0.02	0.08	0.01	0.11	0.13	0.08	0.02	0.09	0.07	0.11	0.10	0.10	0.05
17-Mar-2020	0.40	0.34	0.07	0.08	0.08	0.03	0.07	0.02	0.12	0.17	0.07	0.03	0.13	0.04	0.08	0.07	0.07	0.03
18-Mar-2020	0.39	0.33	0.06	0.04	0.09	0.04	0.08	0.02	0.10	0.16	0.07	0.04	0.08	0.03	0.07	0.08	0.07	0.03
19-Mar-2020	0.42	0.35	0.07	0.04	0.08	0.02	0.06	0.01	0.06	0.05	OL	OL	0.10	0.03	0.09	0.09	OL	OL
20-Mar-2020	0.35	0.34	OL	OL	0.11	0.03	0.06	0.01	0.09	0.06	0.08	0.05	0.10	0.05	OL	OL	0.09	0.03
21-Mar-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
22-Mar-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
23-Mar-2020	0.41	0.37	0.08	0.07	0.07	0.05	0.06	0.06	0.07	0.06	0.06	0.08	0.07	0.04	0.08	0.06	0.09	0.06
24-Mar-2020	0.37	0.37	0.22	0.18	0.09	0.07	0.08	0.07	0.11	0.10	0.09	0.08	0.09	0.04	0.09	0.07	0.08	0.06
25-Mar-2020	0.44	0.38	0.09	0.09	OL	OL	OL	OL	OL	OL	0.08	0.09	0.08	0.03	0.08	0.05	0.07	0.06
26-Mar-2020	0.41	0.36	0.11	0.06	0.09	0.02	0.12	0.09	0.10	0.07	0.07	0.09	0.09	0.04	OL	OL	0.08	0.06
27-Mar-2020	0.41	0.40	OL	OL	OL	OL	0.16	0.11	0.11	0.07	0.09	0.11	0.14	0.05	0.07	0.06	0.08	0.08
28-Mar-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
29-Mar-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
30-Mar-2020	0.45	0.46	0.10	0.05	0.09	0.02	0.11	0.08	0.09	0.06	0.08	0.16	0.08	0.03	0.09	0.08	0.07	0.10
31-Mar-2020	0.45	0.46	0.11	0.07	0.11	0.04	0.12	0.08	0.11	0.08	0.09	0.17	0.09	0.04	0.07	0.06	0.07	0.11
Total number of measurements taken, A:			19		17		21		20		20		19		18		20	
Turbidity Standard for Monitoring Location (NTU):			0.30		0.30		0.30		0.30		0.30		0.30		0.30		0.30	
Number of measurements meeting standard, B:			19		17		21		20		20		19		18		20	
Compliance with Turbidity Standard, C= B/A X 100%:			100%		100%		100%		100%		100%		100%		100%		100%	

NS: No Sample NA: Not Analyzed OL: Off-Line NR: No Result IM: Instrument Maintenance

Comments:

Report Compiled By: A. Gordon

Authorized in Sample Manager By: B. Bradford

[N:\Compliance Reporting\Submittal Letters\WTP Turbidity Data](#)

Date Authorized: 6-Apr-20



WATER TREATMENT PLANT FREE CHLORINE ON-LINE MONITORING REPORT
Deacon Booster Pumping Station

Water System Code: **252.00**
Licence Number: **PWS-09-412-01**
Report Created: 01 April 2020

Report Period: March 2020

Date	BRANCH 1 [mg/L]		BRANCH 2 [mg/L]	
	Average	Minimum	Average	Minimum
01/03/2020	1.15	1.11	1.14	1.05
02/03/2020	1.14	0.85	1.17	0.96
03/03/2020	1.20	1.11	1.14	1.02
04/03/2020	1.18	0.77	1.11	0.92
05/03/2020	1.12	1.05	1.05	1.00
06/03/2020	1.16	1.04	1.13	0.94
07/03/2020	1.14	1.09	1.15	1.08
08/03/2020	1.11	1.08	1.10	1.05
09/03/2020	1.11	1.07	1.10	1.06
10/03/2020	1.08	1.04	1.09	1.04
11/03/2020	1.09	1.02	1.11	1.08
12/03/2020	1.13	1.07	1.13	1.09
13/03/2020	1.17	1.10	1.17	1.11
14/03/2020	1.12	1.07	1.12	1.09
15/03/2020	1.13	1.09	1.14	1.10
16/03/2020	1.15	1.10	1.14	1.11
17/03/2020	1.14	1.07	1.07	0.97
18/03/2020	1.13	1.07	1.11	1.04
19/03/2020	1.07	1.00	1.09	1.02
20/03/2020	1.10	1.02	1.07	1.03
21/03/2020	1.14	1.10	1.08	1.04
22/03/2020	1.12	1.08	1.06	1.01
23/03/2020	1.08	1.00	1.03	0.98
24/03/2020	0.99	0.83	0.96	0.80
25/03/2020	1.10	0.98	1.07	0.91
26/03/2020	1.12	1.06	1.11	0.98
27/03/2020	1.08	1.02	1.14	1.02
28/03/2020	1.07	1.02	1.23	1.19
29/03/2020	1.07	1.01	1.24	1.19
30/03/2020	1.11	1.02	1.19	1.07
31/03/2020	1.12	1.06	1.10	1.03

Total Number of Measurements, A:	21564	21564
Minimum Free Chlorine Standard:	0.5	0.5
Number of Measurements Meeting Standard, B:	21564	21564
COMPLIANCE, C = B/A X 100%:	100.00	100.00

File Path: N:\Water Treatment Branch\Administration\Reports\Regulatory Submissions\Chlorine\2020\03-March

Submitted By (Print): D. Minor

Signature: Original signed by D. Minor



WATER TREATMENT PLANT CHLORINE GRAB MONITORING REPORT

Water System Code: 252.00 Licence No. PWS-09-412-01	Deacon Booster Pumping Station Branch 1			Deacon Booster Pumping Station Branch 2		
	Free Chlorine (mg/L)		Total Chlorine (mg/L)	Free Chlorine (mg/L)		Total Chlorine (mg/L)
Date	Analyser	Grab	Grab	Analyser	Grab	Grab
01-Mar-2020	NA	NA	NA	NA	NA	NA
02-Mar-2020	1.12	1.22	1.37	1.16	1.24	1.36
03-Mar-2020	1.21	1.24	1.40	1.14	1.18	1.35
04-Mar-2020	1.19	1.24	1.40	1.11	1.16	1.34
05-Mar-2020	1.10	1.15	1.27	1.04	1.04	1.26
06-Mar-2020	1.19	1.23	1.44	1.12	1.21	1.30
07-Mar-2020	NA	NA	NA	NA	NA	NA
08-Mar-2020	NA	NA	NA	NA	NA	NA
09-Mar-2020	1.11	1.13	1.36	1.10	1.14	1.26
10-Mar-2020	1.08	1.20	1.39	1.06	1.16	1.36
11-Mar-2020	1.07	1.28	1.37	1.12	1.16	1.31
12-Mar-2020	1.13	1.12	1.31	1.12	1.17	1.34
13-Mar-2020	1.14	1.11	1.29	1.14	1.13	1.28
14-Mar-2020	NA	NA	NA	NA	NA	NA
15-Mar-2020	NA	NA	NA	NA	NA	NA
16-Mar-2020	1.14	1.22	1.39	1.15	1.22	1.32
17-Mar-2020	1.14	1.10	1.28	1.19	1.14	1.26
18-Mar-2020	1.12	1.12	1.26	1.14	1.17	1.30
19-Mar-2020	1.08	1.08	1.24	1.10	1.10	1.24
20-Mar-2020	1.06	1.08	1.22	1.07	1.12	1.24
21-Mar-2020	NA	NA	NA	NA	NA	NA
22-Mar-2020	NA	NA	NA	NA	NA	NA
23-Mar-2020	1.11	1.10	1.24	1.04	1.10	1.23
24-Mar-2020	0.91	1.00	1.17	0.88	0.98	1.14
25-Mar-2020	1.01	1.02	1.16	0.94	1.08	1.21
26-Mar-2020	1.10	1.13	1.29	1.14	1.14	1.36
27-Mar-2020	1.10	1.11	1.26	1.07	1.11	1.27
28-Mar-2020	NA	NA	NA	NA	NA	NA
29-Mar-2020	NA	NA	NA	NA	NA	NA
30-Mar-2020	1.11	1.13	1.39	1.12	1.19	1.40
31-Mar-2020	1.14	1.16	1.29	1.10	1.17	1.29
Total number of measurements taken, A:		22			22	
Chlorine Standard for Monitoring Location (mg/L):		0.50			0.50	
Number of measurements meeting standard, B:		22			22	
Compliance with Chlorine Standard, C= B/A X 100%:		100%			100%	

NS: No Sample NA: Not Analyzed OL: Off-Line NR: No Result IM: Instrument Maintenance

Comments:

Report Compiled By: A. Gordon

Authorized By: B. Bradford

Date Authorized: 6-Apr-20



CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT
WATER SERVICES

Water System Code: **252.00**
 Licence Number: **PWS-09-412-01**

WATER TREATMENT PLANT UV REPORT

Report Period: **March 2020**

Report Created: **Wednesday, April 01, 2020**

Date	Transmittance %	UVR-D100A Water Volume [ML]				UVR-D200A Water Volume [ML]				UVR-D300A Water Volume [ML]				UVR-D400A Water Volume [ML]				UVR-D500A Water Volume [ML]				UVR-D600A Water Volume [ML]				Total Water Volume [ML]				% Volume Treated To Dose	
		UVTag	Untreated	Below	To	Total	Untreated	Below	To	Total	Untreated	Below	To	Total	Untreated	Below	To	Total	Untreated	Below	To	Total	Untreated	Below	To	Total	Untreated	Below	To		Total
01/03/2020	92.96	0.00	0.00	59.38	59.38	0.00	0.00	51.65	51.65	0.00	0.13	21.86	21.99	0.00	0.05	20.50	20.55	0.00	0.16	14.27	14.43	0.00	0.68	28.25	28.93	0.00	1.02	195.92	196.94	99.48	
02/03/2020	93.08	0.02	0.06	48.49	48.57	0.01	0.01	56.84	56.86	0.00	0.00	0.00	0.00	0.04	0.04	66.71	66.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.12	172.03	172.23	99.89	
03/03/2020	93.13	0.00	0.00	44.64	44.64	0.00	0.00	36.11	36.11	0.00	0.00	0.00	0.00	0.00	0.04	65.71	65.75	0.00	0.00	0.00	0.00	0.00	0.72	37.03	37.75	0.00	0.76	183.48	184.24	99.59	
04/03/2020	93.17	0.04	0.04	61.56	61.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	63.71	63.74	0.00	0.00	0.00	0.00	0.04	1.53	58.66	60.23	0.09	1.59	183.93	185.61	99.10	
05/03/2020	93.31	0.00	0.09	63.33	63.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.29	66.29	0.00	0.00	0.00	0.00	0.00	1.17	61.05	62.22	0.00	1.26	190.68	191.94	99.34	
06/03/2020	93.19	0.00	0.04	57.44	57.49	0.00	0.00	26.39	26.39	0.00	0.00	0.00	0.00	0.00	0.00	67.47	67.47	0.00	0.00	0.00	0.00	0.00	1.39	33.28	34.67	0.00	1.43	184.58	186.01	99.23	
07/03/2020	93.22	0.00	0.00	52.98	52.98	0.00	0.00	62.93	62.93	0.00	0.00	0.00	0.00	0.00	0.00	74.07	74.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	189.98	189.98	100.00	
08/03/2020	93.23	0.00	0.00	53.04	53.04	0.00	0.00	62.94	62.94	0.00	0.00	0.00	0.00	0.00	0.00	74.16	74.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	190.14	190.14	100.00	
09/03/2020	93.45	0.00	0.00	53.00	53.00	0.00	0.00	62.88	62.88	0.00	0.00	0.00	0.00	0.00	0.00	74.11	74.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	190.00	190.00	100.00	
10/03/2020	93.38	0.00	0.00	51.69	51.69	0.00	0.00	62.88	62.88	0.00	0.00	0.00	0.00	0.00	0.00	75.43	75.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	190.00	190.00	100.00	
11/03/2020	93.42	0.00	0.00	50.31	50.31	0.00	0.00	61.90	61.90	0.00	0.00	0.00	0.00	0.00	0.00	77.38	77.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	189.58	189.58	100.00	
12/03/2020	93.50	0.00	0.00	51.30	51.30	0.00	0.00	62.09	62.09	0.00	0.00	0.00	0.00	0.00	0.00	76.59	76.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	189.98	189.98	100.00	
13/03/2020	93.24	0.00	0.00	51.28	51.28	0.00	0.00	62.02	62.02	0.00	0.00	0.00	0.00	0.00	0.00	76.53	76.53	0.00	0.00	0.00	0.00	0.04	0.17	0.00	0.21	0.04	0.17	189.83	190.03	99.89	
14/03/2020	93.19	0.00	0.00	51.30	51.30	0.00	0.00	62.05	62.05	0.00	0.00	0.00	0.00	0.00	0.00	76.64	76.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	189.99	189.99	100.00	
15/03/2020	92.96	0.00	0.00	51.97	51.97	0.00	0.00	62.83	62.83	0.00	0.00	0.00	0.00	0.00	0.00	77.47	77.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	192.27	192.27	100.00	
16/03/2020	93.06	0.00	0.00	51.86	51.86	0.00	0.00	62.76	62.76	0.00	0.00	0.00	0.00	0.00	0.00	77.39	77.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	192.00	192.00	100.00	
17/03/2020	93.02	0.00	0.00	57.82	57.82	0.00	0.00	69.89	69.89	0.08	0.08	9.94	10.10	0.00	0.00	29.60	29.60	0.00	0.00	0.00	0.00	0.00	1.45	23.25	24.70	0.08	1.53	190.50	192.12	99.16	
18/03/2020	93.24	0.00	0.00	55.10	55.10	0.00	0.00	66.46	66.46	0.00	0.10	50.57	50.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	15.03	15.38	0.00	0.44	187.17	187.62	99.76	
19/03/2020	93.30	0.00	0.00	51.70	51.70	0.00	0.00	62.18	62.18	0.00	0.00	73.14	73.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	187.02	187.02	100.00	
20/03/2020	93.34	0.00	0.00	51.80	51.80	0.00	0.00	62.10	62.10	0.00	0.10	72.98	73.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	186.88	186.98	99.94	
21/03/2020	93.29	0.00	0.04	51.55	51.59	0.00	0.00	61.82	61.82	0.00	0.10	72.64	72.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	186.02	186.16	99.93	
22/03/2020	93.11	0.00	0.00	51.86	51.86	0.00	0.00	62.38	62.38	0.00	0.41	72.93	73.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	187.17	187.59	99.78	
23/03/2020	93.06	0.00	0.11	53.10	53.21	0.00	0.00	63.77	63.77	0.00	0.32	74.72	75.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43	191.59	192.02	99.78	
24/03/2020	92.77	0.00	0.28	50.83	51.11	0.02	0.02	62.19	62.24	0.01	0.38	72.59	72.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.68	185.61	186.32	99.62	
25/03/2020	92.12	0.00	0.04	18.36	18.40	0.00	0.10	43.61	43.70	0.00	0.05	38.11	38.17	0.00	0.00	11.26	11.26	0.16	0.20	3.38	3.74	0.00	0.00	0.00	0.00	0.16	0.39	114.72	115.27	99.53	
26/03/2020	92.38	0.00	0.00	0.00	0.00	0.00	0.00	85.04	85.04	0.00	0.00	44.33	44.33	0.00	0.00	62.59	62.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	191.95	191.95	100.00	
27/03/2020	92.71	0.00	0.00	0.00	0.00	0.00	0.00	38.22	38.22	0.00	0.00	48.29	48.29	0.00	0.00	57.63	57.63	0.00	0.00	0.00	0.00	0.00	0.00	46.91	46.91	0.00	0.00	191.04	191.04	100.00	
28/03/2020	93.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	51.86	51.93	0.00	0.00	54.10	54.10	0.00	0.00	0.00	0.00	0.00	0.00	84.97	84.97	0.00	0.07	190.93	191.00	99.96	
29/03/2020	93.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	51.79	51.94	0.00	0.00	54.07	54.07	0.00	0.00	0.00	0.00	0.00	0.00	84.98	84.98	0.00	0.15	190.84	190.99	99.92	
30/03/2020	93.12	0.00	0.71	49.71	50.42	0.00	0.00	0.00	0.00	0.00	0.10	48.45	48.55	0.00	0.00	60.87	60.87	0.00	0.35	3.16	3.51	0.00	0.00	27.57	27.57	0.00	1.16	189.76	190.92	99.39	
31/03/2020	93.06	0.00	0.83	78.65	79.48	0.00	0.00	0.00	0.00	0.00	0.13	46.49	46.62	0.00	0.00	64.90	64.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.96	190.04	191.00	99.50	
Total [ML]:		0.06	2.24	1424.05	1426.35	0.03	0.13	1473.94	1474.10	0.09	2.13	850.69	852.91	0.06	0.15	1505.18	1505.40	0.16	0.70	20.81	21.67	0.07	7.46	500.98	508.52	0.48	12.82	5775.65	5788.94		

Water Volume [%]:
 Untreated: 0.01 %
 Below Dose 0.22 %
 To Dose 99.77 %

Notes: 1. UV Comparative Dose: 18.1 mJ/cm²

Submitted By (Print): D. Minor

Signature: Original signed by D. Minor