



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

**May 7, 2019**

**RE: APRIL 2019 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 April 2019.

The April on-line and grab sampling turbidity reports include results obtained for the Water Treatment Plant raw water and the eight filters. Please note that the maximum turbidity for Filter 2 on April 4 was 5.00 ntu, this was a reading of the calibration cuvette, not the filter effluent; please see CAR\_01-2019, submitted on May 6, 2019, for additional details. The turbidity results for the effluent from the filters met the licence requirements.

The April 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 April 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 may be reached by telephone at 204-986-8359 or by e-mail at [rgrosselle@winnipeg.ca](mailto:rgrosselle@winnipeg.ca).

Yours sincerely,

Original signed by:

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)  
T. Shanks, P.Eng. (email)  
M. Szmon, P.Eng. (email)  
C. Diduck (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**

April 2019 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
1/04/2019	0.28	0.03	0.09	0.05	0.11	0.05	0.14	0.05	0.13	0.05	0.09	0.03	0.10	0.02	0.03	0.01	0.01
2/04/2019	0.32	0.03	0.08	0.06	5.00	0.05	0.08	0.04	0.10	0.04	0.09	0.03	0.08	0.04	0.06	0.01	0.03
3/04/2019	0.37	0.03	0.09	0.06	0.10	0.05	0.13	0.02	0.11	0.04	0.10	0.05	0.12	0.03	0.08	0.00	0.01
4/04/2019	0.40	0.04	0.06	0.07	0.13	0.04	0.13	0.04	0.09	0.04	0.10	0.04	0.12	0.03	0.09	0.00	0.01
5/04/2019	0.42	0.04	0.10	0.06	0.14	0.04	0.14	0.03	0.11	0.06	0.09	0.04	0.12	0.03	0.06	0.01	0.01
6/04/2019	0.47	0.03	0.10	0.05	0.13	0.05	0.07	0.03	0.11	0.04	0.11	0.03	0.06	0.05	0.09	0.01	0.02
7/04/2019	0.50	0.02	0.09	0.09	0.10	0.05	0.13	0.13	0.06	0.04	0.11	0.06	0.13	0.04	0.10	0.00	0.02
8/04/2019	0.52	0.04	0.06	0.06	0.13	0.04	0.13	0.04	0.10	0.04	0.07	0.04	0.12	0.04	0.09	0.00	0.02
9/04/2019	0.54	0.03	0.09	0.05	0.13	0.04	0.07	0.03	0.09	0.05	0.11	0.04	0.12	0.04	0.07	0.01	0.01
10/04/2019	0.56	0.03	0.09	0.05	0.08	0.06	0.12	0.02	0.09	0.04	0.11	0.05	0.08	0.04	0.09	0.00	0.03
11/04/2019	0.57	0.03	0.05	0.07	0.13	0.04	0.13	0.04	0.07	0.03	0.10	0.04	0.11	0.04	0.09	0.00	0.01
12/04/2019	0.58	0.04	0.09	0.05	0.12	0.04	0.12	0.03	0.10	0.05	0.08	0.04	0.11	0.03	0.09	0.01	0.01
13/04/2019	0.60	0.03	0.08	0.05	0.12	0.04	0.06	0.02	0.08	0.04	0.10	0.03	0.11	0.05	0.07	0.01	0.02
14/04/2019	0.62	0.03	0.08	0.06	0.08	0.05	0.11	0.02	0.08	0.04	0.09	0.05	0.08	0.04	0.08	0.00	0.02
15/04/2019	0.62	0.03	0.05	0.07	0.11	0.04	0.11	0.04	0.07	0.03	0.10	0.04	0.10	0.04	0.09	0.00	0.03
16/04/2019	0.62	0.04	0.09	0.04	0.12	0.04	0.12	0.03	0.09	0.06	0.09	0.03	0.11	0.04	0.06	0.01	0.01
17/04/2019	0.85	0.02	0.11	0.03	0.23	0.05	0.28	0.02	0.23	0.01	0.05	0.03	0.07	0.04	0.09	0.02	0.10
18/04/2019	0.62	0.03	0.06	0.03	0.08	0.05	0.13	0.04	0.09	0.00	0.01	0.04	0.11	0.04	0.09	0.04	0.11
19/04/2019	0.62	0.04	0.10	0.03	0.09	0.05	0.13	0.03	0.10	0.01	0.01	0.03	0.10	0.04	0.23	0.04	0.07
20/04/2019	0.61	0.03	0.08	0.02	0.08	0.04	0.07	0.03	0.08	0.01	0.02	0.03	0.10	0.05	0.07	0.05	0.11
21/04/2019	0.59	0.03	0.09	0.02	0.05	0.06	0.14	0.02	0.08	0.00	0.02	0.04	0.06	0.04	0.09	0.04	0.10
22/04/2019	0.59	0.03	0.05	0.03	0.07	0.05	0.12	0.03	0.05	0.00	0.02	0.04	0.09	0.04	0.08	0.04	0.10
23/04/2019	0.59	0.04	0.09	0.02	0.07	0.04	0.13	0.03	0.08	0.01	0.01	0.03	0.10	0.03	0.09	0.04	0.06
24/04/2019	0.59	0.02	0.07	0.02	0.06	0.05	0.07	0.02	0.08	0.00	0.02	0.03	0.04	0.05	0.07	0.04	0.10
25/04/2019	0.60	0.02	0.04	0.02	0.05	0.05	0.12	0.02	0.05	0.00	0.03	0.04	0.09	0.03	0.11	0.03	0.11
26/04/2019	0.61	0.03	0.07	0.02	0.06	0.04	0.11	0.02	0.08	0.01	0.01	0.02	0.07	0.03	0.07	0.03	0.05
27/04/2019	0.59	0.02	0.07	0.02	0.06	0.05	0.07	0.02	0.08	0.00	0.02	0.02	0.04	0.05	0.06	0.04	0.08
28/04/2019	0.59	0.02	0.06	0.02	0.04	0.06	0.11	0.02	0.04	0.00	0.02	0.03	0.06	0.03	0.08	0.03	0.08
29/04/2019	0.61	0.03	0.05	0.02	0.06	0.05	0.11	0.03	0.07	0.00	0.01	0.02	0.07	0.03	0.08	0.03	0.08
30/04/2019	0.61	0.03	0.07	0.02	0.06	0.04	0.12	0.02	0.08	0.01	0.02	0.02	0.07	0.04	0.05	0.04	0.05

Total Number of Measurements Taken, A:	13510	10566	13505	11325	14148	12724	12646	14052
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:	13510	10565	13505	11325	14148	12724	12646	14052
Compliance with Turbidity Standard, C = B/A X 100%:	100.000%	99.991%	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%

File Path: N:\Water Treatment Branch\Administration\Reports\Regulatory Submissions\Turbidity\2019\04-April

Submitted By (Print): D.Merredew

Signature: Original signed by D.Merredew



CITY OF WINNIPEG  
 WATER AND WASTE DEPARTMENT  
 ENVIRONMENTAL STANDARDS DIVISION

WATER TREATMENT PLANT TURBIDITY GRAB MONITORING REPORT																				
Water System Code: 252.00		Turbidity (NTU)																		
Licence No. PWS-09-412-01		Raw Water		Filter 1		Filter 2		Filter 3		Filter 4		Filter 5		Filter 6		Filter 7		Filter 8		
Date	Grab	Analysed	Grab	Analysed	Grab	Analysed	Grab	Analysed	Grab	Analysed	Grab	Analysed	Grab	Analysed	Grab	Analysed	Grab	Analysed	Grab	Analysed
01-Apr-2019	0.40	0.26	0.10	0.03	OL	OL	0.11	0.06	0.15	0.09	0.10	0.04	OL	OL	0.11	0.02	0.11	<0.02		
02-Apr-2019	0.37	0.28	OL	OL	0.09	0.07	0.11	0.06	OL	OL	0.11	0.06	0.09	0.05	0.09	0.02	0.10	<0.02		
03-Apr-2019	0.38	0.34	0.07	0.02	0.08	0.07	0.11	0.06	0.08	0.03	OL	OL	0.08	0.06	0.10	0.06	OL	OL		
04-Apr-2019	0.40	0.36	0.09	0.03	0.10	0.09	OL	OL	0.11	0.05	0.08	0.04	0.13	0.09	OL	OL	0.08	<0.02		
05-Apr-2019	NR	0.37	NR	0.04	OL	OL	NR	0.05	NR	0.08	NR	0.05	OL	OL	NR	0.04	NR	<0.02		
06-Apr-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
07-Apr-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
08-Apr-2019	NR	0.50	NR	0.03	NR	0.09	NR	OL	NR	0.04	NR	0.04	NR	0.10	OL	OL	NR	<0.02		
09-Apr-2019	0.42	0.50	0.11	0.05	OL	OL	0.10	0.05	OL	OL	0.10	0.06	0.09	0.05	0.09	0.04	0.10	<0.02		
10-Apr-2019	0.48	0.54	OL	OL	0.08	0.08	0.10	0.06	0.08	0.03	OL	OL	0.10	0.06	0.10	0.06	0.13	0.03		
11-Apr-2019	0.55	0.53	0.08	0.03	0.09	0.09	OL	OL	0.09	0.04	0.07	0.04	0.11	0.07	OL	OL	0.07	<0.02		
12-Apr-2019	0.53	0.56	0.09	0.03	OL	OL	0.11	0.05	0.12	0.06	0.08	0.05	OL	OL	0.08	0.03	0.09	<0.02		
13-Apr-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14-Apr-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
15-Apr-2019	0.60	0.60	0.09	0.03	0.09	0.09	OL	OL	0.10	0.05	0.08	0.04	0.11	0.07	OL	OL	0.08	<0.02		
16-Apr-2019	0.56	0.61	0.10	0.03	OL	OL	0.09	0.05	0.12	0.06	0.16	0.05	OL	OL	0.12	0.04	0.09	<0.02		
17-Apr-2019	0.56	0.60	OL	OL	0.08	0.03	0.09	0.05	0.08	0.02	OL	OL	0.09	0.04	0.09	0.04	0.09	<0.02		
18-Apr-2019	0.53	0.60	0.12	0.02	0.10	0.04	0.16	0.10	0.12	0.04	0.09	<0.02	0.12	0.07	0.13	0.07	0.13	0.04		
19-Apr-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
20-Apr-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
21-Apr-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
22-Apr-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
23-Apr-2019	0.58	0.56	0.08	0.03	0.10	0.05	OL	OL	0.11	0.04	0.09	<0.02	0.16	0.07	0.07	0.03	0.08	0.04		
24-Apr-2019	0.51	0.56	OL	OL	0.07	0.03	0.10	0.06	OL	OL	0.10	0.02	0.08	0.04	0.10	0.04	0.09	0.04		
25-Apr-2019	0.56	0.56	0.10	<0.02	0.08	0.03	0.10	0.07	0.08	0.03	0.09	<0.02	0.11	0.06	OL	OL	OL	OL		
26-Apr-2019	0.56	0.59	0.08	0.03	OL	OL	0.08	0.06	0.10	0.04	0.07	<0.02	OL	OL	0.06	0.03	0.07	0.03		
27-Apr-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
28-Apr-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
29-Apr-2019	0.52	0.59	0.08	0.02	0.09	0.03	OL	OL	0.09	0.03	0.08	<0.02	0.09	0.05	OL	OL	0.08	0.03		
30-Apr-2019	0.50	0.60	0.09	0.02	OL	OL	0.09	0.06	0.12	0.06	0.08	0.02	OL	OL	0.08	0.04	0.07	0.03		
<b>Total number of measurements taken, A:</b>			14		12		13		15		15		13		13		16			
<b>Turbidity Standard for Monitoring Location (NTU):</b>			0.30		0.30		0.30		0.30		0.30		0.30		0.30		0.30			
<b>Number of measurements meeting standard, B:</b>			14		12		13		15		15		13		13		16			
<b>Compliance with Turbidity Standard, C= B/A X 100%:</b>			100%		100%		100%		100%		100%		100%		100%		100%			

NS: No Sample NA: Not Analyzed OL: Off-Line

**Comments:**  
 No result on April 5 and 8, 2019 due to sample bottle contamination.

**Report Compiled By:** H.Demchenko

**Authorized By:** C.Diduck

**Date Compiled:** 6-May-19



**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 May 2019

Report Period: April 2019

Date	BRANCH 1 [mg/L]		BRANCH 2 [mg/L]	
	Average	Minimum	Average	Minimum
01/04/2019	1.07	0.93	1.11	1.05
02/04/2019	1.15	0.91	1.17	1.05
03/04/2019	1.22	1.13	1.23	1.14
04/04/2019	1.19	1.08	1.16	1.08
05/04/2019	1.14	1.04	1.12	1.09
06/04/2019	1.11	1.03	1.09	1.04
07/04/2019	1.11	1.01	1.14	1.08
08/04/2019	1.12	1.00	1.15	1.08
09/04/2019	1.11	1.02	1.14	1.11
10/04/2019	1.08	0.99	1.10	1.03
11/04/2019	1.06	0.95	1.09	1.04
12/04/2019	1.02	0.93	1.08	1.05
13/04/2019	0.99	0.90	1.04	0.94
14/04/2019	0.93	0.79	0.94	0.85
15/04/2019	0.94	0.86	0.92	0.90
16/04/2019	0.99	0.82	1.06	0.91
17/04/2019	1.26	0.97	1.41	1.16
18/04/2019	1.11	0.89	1.27	0.99
19/04/2019	1.13	0.99	1.04	0.99
20/04/2019	1.18	1.07	1.11	1.02
21/04/2019	1.14	1.02	1.10	1.06
22/04/2019	1.09	0.99	1.04	0.95
23/04/2019	1.08	0.94	1.06	0.98
24/04/2019	1.13	0.90	1.11	1.03
25/04/2019	1.19	1.04	1.04	0.96
26/04/2019	1.34	0.95	1.60	0.74
27/04/2019	1.24	1.08	1.25	1.03
28/04/2019	1.12	0.98	1.02	0.86
29/04/2019	1.18	1.02	1.06	0.60
30/04/2019	1.21	1.07	1.17	1.02

Total Number of Measurements, A:	20838	20837
Minimum Free Chlorine Standard:	0.5	0.5
Number of Measurements Meeting Standard, B:	20838	20837
COMPLIANCE, C = B/A X 100%:	100.00	100.00

File Path: N:\Water Treatment Branch\Administration\Reports\Regulatory Submissions\Chlorine\2019\04-April

Submitted By (Print): D.Merredew

Signature: Original signed by D.Merredew



CITY OF WINNIPEG  
 WATER AND WASTE DEPARTMENT  
 ENVIRONMENTAL STANDARDS DIVISION

**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-Apr-2019	1.03	0.98	1.23	1.09	1.17	1.27
02-Apr-2019	1.03	1.09	1.25	1.07	1.12	1.22
03-Apr-2019	1.14	1.20	1.27	1.18	1.15	1.31
04-Apr-2019	1.18	1.25	1.39	1.13	1.24	1.35
05-Apr-2019	1.15	1.14	1.36	1.12	1.17	1.29
06-Apr-2019	NA	NA	NA	NA	NA	NA
07-Apr-2019	NA	NA	NA	NA	NA	NA
08-Apr-2019	1.10	1.04	1.30	1.10	1.22	1.38
09-Apr-2019	1.13	1.08	1.28	1.16	1.21	1.33
10-Apr-2019	1.11	1.09	1.24	1.13	1.09	1.31
11-Apr-2019	1.05	1.05	1.17	1.11	1.15	1.31
12-Apr-2019	1.04	1.01	1.16	1.06	1.09	1.21
13-Apr-2019	NA	NA	NA	NA	NA	NA
14-Apr-2019	NA	NA	NA	NA	NA	NA
15-Apr-2019	0.95	0.95	1.04	0.93	0.96	1.07
16-Apr-2019	0.93	0.99	1.14	0.98	1.01	1.17
17-Apr-2019	1.52	1.61	1.71	1.79	1.77	1.96
18-Apr-2019	0.93	1.00	1.10	1.08	1.09	1.23
19-Apr-2019	NA	NA	NA	NA	NA	NA
20-Apr-2019	NA	NA	NA	NA	NA	NA
21-Apr-2019	NA	NA	NA	NA	NA	NA
22-Apr-2019	NA	NA	NA	NA	NA	NA
23-Apr-2019	1.07	1.04	1.23	1.06	1.03	1.18
24-Apr-2019	1.03	1.07	1.11	1.11	1.06	1.17
25-Apr-2019	1.21	1.16	1.37	1.03	1.06	1.20
26-Apr-2019	1.21	1.21	1.35	1.05	1.13	1.26
27-Apr-2019	NA	NA	NA	NA	NA	NA
28-Apr-2019	NA	NA	NA	NA	NA	NA
29-Apr-2019	1.11	1.17	1.38	0.96	1.13	1.26
30-Apr-2019	1.26	1.13	1.39	1.22	1.10	1.26
<b>Total number of measurements taken, A:</b>		20			20	
<b>Chlorine Standard for Monitoring Location (mg/L):</b>		0.50			0.50	
<b>Number of measurements meeting standard, B:</b>		20			20	
<b>Compliance with Chlorine Standard, C= B/A X 100%:</b>		100%			100%	

NS: No Sample NA: Not Analyzed OL: Off-Line

Comments:

Report Compiled By: H.Demchenko

Authorized By: C.Diduck

Date Compiled: 2-May-19



**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: **April 2019**

Report Created: **Wednesday, May 01, 2019**

Date	Transmittance %	UVR-D100A				UVR-D200A				UVR-D300A				UVR-D400A				UVR-D500A				UVR-D600A				Total				% Volume Treated To Dose												
		Water Volume [ML]								Water Volume [ML]								Water Volume [ML]								Water Volume [ML]								Water Volume [ML]								
		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		Untreated	Below	To	Total								
01/04/2019	94.66	0.00	0.00	30.96	30.96	0.00	0.00	45.12	45.12	0.00	0.73	0.83	1.55	0.00	0.00	30.41	30.41	0.00	0.00	21.14	21.14	0.00	0.00	65.77	65.77	0.00	0.73	194.23	194.95	99.63												
02/04/2019	94.59	0.00	0.00	68.71	68.71	0.00	0.00	0.00	0.00	0.01	0.28	31.54	31.83	0.00	0.05	5.67	5.72	0.00	0.00	54.54	54.54	0.00	0.00	40.48	40.48	0.01	0.33	200.94	201.28	99.83												
03/04/2019	94.49	0.00	0.00	64.31	64.31	0.00	0.00	0.00	0.00	0.00	0.05	34.71	34.75	0.00	0.00	34.53	34.53	0.00	0.00	67.77	67.77	0.00	0.00	0.00	0.00	0.00	0.05	201.32	201.37	99.98												
04/04/2019	94.39	0.00	0.00	63.99	63.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.26	66.26	0.00	0.00	64.49	64.49	0.00	0.00	0.00	0.00	0.00	0.00	194.74	194.74	100.00												
05/04/2019	94.42	0.00	0.00	62.19	62.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.62	64.62	0.00	0.00	63.23	63.23	0.00	0.00	0.00	0.00	0.00	0.00	190.05	190.05	100.00												
06/04/2019	94.39	0.00	0.00	61.03	61.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.31	64.31	0.00	0.00	60.44	60.44	0.00	0.00	0.00	0.00	0.00	0.00	185.78	185.78	100.00												
07/04/2019	94.42	0.00	0.00	60.35	60.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.75	63.75	0.00	0.04	8.71	8.75	0.00	0.00	51.17	51.17	0.00	0.04	183.98	184.02	99.98												
08/04/2019	94.43	0.00	0.00	59.25	59.25	0.00	0.00	0.00	0.00	0.00	0.00	18.88	18.88	0.04	0.04	44.79	44.88	0.00	0.00	0.00	0.00	1.34	1.34	58.79	61.47	1.38	1.38	181.71	184.48	98.50												
09/04/2019	94.50	0.00	0.00	60.36	60.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.00	64.00	0.00	0.00	0.00	0.00	0.00	0.00	59.63	59.63	0.00	0.00	183.99	183.99	100.00												
10/04/2019	94.65	0.00	0.00	60.49	60.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.88	63.88	0.00	0.00	0.00	0.00	0.00	0.00	59.95	59.95	0.00	0.00	184.31	184.31	100.00												
11/04/2019	94.85	0.00	0.00	60.93	60.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.05	64.05	0.00	0.00	0.04	0.04	0.00	0.00	60.23	60.23	0.00	0.00	185.24	185.24	100.00												
12/04/2019	94.75	0.00	0.00	61.22	61.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.23	64.23	0.00	0.00	0.00	0.00	0.00	0.00	60.54	60.54	0.00	0.00	185.99	185.99	100.00												
13/04/2019	94.62	0.00	0.00	59.98	59.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.54	63.54	0.00	0.00	0.00	0.00	0.00	0.00	59.66	59.66	0.00	0.00	183.17	183.17	100.00												
14/04/2019	94.40	0.00	0.00	59.73	59.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.41	63.41	0.00	0.00	0.00	0.00	0.00	0.00	59.87	59.87	0.00	0.00	183.01	183.01	100.00												
15/04/2019	93.91	0.00	0.00	61.77	61.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.29	65.29	0.00	0.00	0.00	0.00	0.00	0.00	61.37	61.37	0.00	0.00	188.42	188.42	100.00												
16/04/2019	93.32	0.00	0.00	61.65	61.65	0.00	0.00	0.00	0.00	0.00	0.00	28.75	28.75	0.00	0.00	38.00	38.00	0.01	0.01	27.87	27.89	0.00	0.00	36.72	36.72	0.01	0.01	193.00	193.02	99.99												
17/04/2019	92.14	0.01	0.01	43.98	44.00	0.00	0.00	0.00	0.00	0.01	0.01	47.12	47.14	0.02	0.02	0.30	0.33	0.19	0.19	51.61	52.00	0.09	0.09	0.11	0.30	0.33	0.33	143.11	143.77	99.54												
18/04/2019	92.32	0.00	0.00	61.11	61.11	0.00	0.00	0.00	0.00	0.00	0.00	40.07	40.07	0.09	0.12	32.91	33.11	0.00	0.00	50.69	50.69	0.00	0.04	30.92	30.96	0.09	0.15	215.70	215.93	99.89												
19/04/2019	91.59	0.00	0.00	78.32	78.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.61	53.61	0.00	0.00	0.00	0.00	0.00	0.00	76.30	76.30	0.00	0.00	208.23	208.23	100.00												
20/04/2019	90.94	0.00	0.00	69.16	69.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.71	55.71	0.00	0.00	0.00	0.00	0.00	0.00	68.91	68.91	0.00	0.00	193.77	193.77	100.00												
21/04/2019	90.72	0.00	0.00	62.00	62.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.21	65.21	0.00	0.00	0.00	0.00	0.00	0.00	61.21	61.21	0.00	0.00	188.42	188.42	100.00												
22/04/2019	99.94	0.00	0.00	65.81	65.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	53.65	53.71	0.00	0.00	0.00	0.00	0.00	0.00	67.93	67.93	0.00	0.06	187.38	187.44	99.97												
23/04/2019	97.59	0.00	0.05	64.61	64.66	0.00	0.00	0.00	0.00	0.00	0.00	22.15	22.15	0.00	0.00	33.03	33.03	0.00	0.00	0.00	0.00	0.00	0.00	68.16	68.16	0.00	0.05	187.95	187.99	99.98												
24/04/2019	95.72	0.00	0.00	35.44	35.44	0.00	0.00	30.04	30.04	0.00	0.00	0.00	0.00	0.00	0.00	60.85	60.85	0.00	0.00	34.05	34.05	0.00	0.00	27.63	27.63	0.00	0.00	188.02	188.02	100.00												
25/04/2019	95.68	0.00	0.00	0.00	0.00	0.00	0.00	75.08	75.08	0.00	0.00	0.00	0.00	0.00	0.00	57.21	57.21	0.00	0.00	60.30	60.30	0.00	0.00	0.00	0.00	0.00	0.00	192.60	192.60	100.00												
26/04/2019	96.09	0.00	0.00	0.00	0.00	0.00	0.00	79.44	79.44	0.00	0.00	0.00	0.00	0.00	0.00	53.11	53.11	0.00	0.00	60.37	60.37	0.00	0.00	0.00	0.00	0.00	0.00	192.92	192.92	100.00												
27/04/2019	96.17	0.00	0.00	0.00	0.00	0.00	0.00	78.78	78.78	0.00	0.00	0.00	0.00	0.00	0.00	52.69	52.69	0.00	0.00	60.07	60.07	0.00	0.00	0.00	0.00	0.00	0.00	191.54	191.54	100.00												
28/04/2019	96.18	0.00	0.00	0.00	0.00	0.00	0.00	80.70	80.70	0.00	0.00	0.00	0.00	0.00	0.00	53.85	53.85	0.00	0.00	61.45	61.45	0.00	0.00	0.00	0.00	0.00	0.00	196.01	196.01	100.00												
29/04/2019	96.11	0.00	0.00	0.00	0.00	0.00	0.00	80.72	80.72	0.00	0.00	0.00	0.00	0.00	0.00	53.83	53.83	0.00	0.00	61.46	61.46	0.00	0.00	0.00	0.00	0.00	0.00	196.01	196.01	100.00												
30/04/2019	96.11	0.00	0.00	0.00	0.00	0.00	0.00	81.14	81.14	0.00	0.00	0.00	0.00	0.00	0.00	54.09	54.09	0.00	0.00	61.83	61.83	0.00	0.00	0.00	0.00	0.00	0.00	197.05	197.05	100.00												
<b>Total [ML]:</b>		0.01	0.06	1437.36	1437.43	0.00	0.00	551.02	551.02	0.02	1.07	224.03	225.12	0.15	0.29	1540.79	1541.22	0.20	0.24	870.06	870.50	1.43	1.47	1075.34	1078.24	1.82	3.12	5698.60	5703.54													

**Water Volume [%]:**  
 Untreated: 0.03 %  
 Below Dose: 0.05 %  
 To Dose: 99.91 %

**Notes:** 1. UV Comparative Dose: 18.1 mJ/cm<sup>2</sup>

Submitted By (Print): D.Merredew

Signature: Original signed by D.Merredew