



Water and Waste Department • Service des eaux et des déchets

Environmental Standards Division • Division des Normes Environnementales

February 7, 2019

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

Our File: 040-18-18-55-00

Dear Mr. Clarke:

**RE: JANUARY 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 January 2019. There are no corrective action reports to be submitted for January 2019.

The January on-line and grab sampling turbidity reports include results obtained for the Water Treatment Plant raw water and the eight filters. Please note that on January 23, the maximum turbidities for Filters 6, 7, and 8 were greater than 0.3 NTU at start-up after a scheduled plant shut-down, the elevated turbidities occurred for a short period of time which did not exceed 12 consecutive hours. The turbidity results for the effluent from the filters met the licence requirements.

The January 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 January 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.

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

January 2019 Turbidity (NTU)

Date	Raw		Filter #1		Filter #2		Filter #3		Filter #4		Filter #5		Filter #6		Filter #7		Filter #8	
	Avg	Avg	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max
1/01/2019	0.47	0.02	0.06		0.08	0.10	0.04	0.11	0.05	0.11	0.07	0.11	0.05	0.13	0.02	0.08	0.00	0.01
2/01/2019	0.47	0.02	0.05		0.06	0.11	0.04	0.06	0.04	0.08	0.04	0.10	0.04	0.10	0.03	0.07	0.01	0.04
3/01/2019	0.47	0.03	0.04		0.06	0.11	0.05	0.10	0.04	0.11	0.05	0.09	0.04	0.08	OL	OL	0.01	0.04
4/01/2019	0.46	0.03	0.05		0.07	0.14	0.06	0.10	0.05	0.07	0.05	0.08	0.05	0.09	OL	OL	0.01	0.02
5/01/2019	0.44	0.03	0.06		0.07	0.10	0.07	0.12	0.05	0.09	0.05	0.07	0.04	0.08	OL	OL	0.01	0.01
6/01/2019	0.43	0.03	0.08		0.09	0.13	0.06	0.12	0.04	0.09	0.05	0.08	0.04	0.08	OL	OL	0.01	0.01
7/01/2019	0.43	0.03	0.07		0.07	0.12	0.07	0.10	0.04	0.09	0.05	0.08	0.04	0.08	OL	OL	0.01	0.01
8/01/2019	0.43	0.04	0.06		0.07	0.12	0.06	0.13	0.04	0.08	0.04	0.08	0.04	0.06	OL	OL	0.01	0.02
9/01/2019	0.42	0.04	0.06		0.08	0.13	0.06	0.11	0.05	0.08	0.05	0.09	0.05	0.12	OL	OL	0.01	0.02
10/01/2019	0.43	0.03	0.06		0.08	0.10	0.07	0.12	0.05	0.09	0.07	0.08	0.06	0.10	OL	OL	0.01	0.04
11/01/2019	0.42	0.02	0.06		0.07	0.15	0.07	0.12	0.05	0.13	0.05	0.13	0.06	0.16	0.06	0.12	0.01	0.03
12/01/2019	0.40	OL	OL		0.08	0.12	0.07	0.09	0.05	0.11	0.06	0.11	0.06	0.12	0.04	0.09	0.01	0.04
13/01/2019	0.40	OL	OL		0.07	0.12	0.06	0.12	0.05	0.08	0.06	0.11	0.07	0.10	0.05	0.10	0.01	0.04
14/01/2019	0.39	OL	OL		0.07	0.11	0.05	0.12	0.05	0.11	0.07	0.08	0.06	0.12	0.04	0.09	0.01	0.03
15/01/2019	0.38	OL	OL		0.08	0.11	0.05	0.10	0.04	0.09	0.06	0.10	0.06	0.12	0.05	0.07	0.01	0.03
16/01/2019	0.38	0.05	0.11		0.06	0.11	0.05	0.07	0.04	0.09	0.05	0.10	0.05	0.13	0.05	0.09	0.01	0.03
17/01/2019	0.38	0.04	0.10		0.06	0.11	0.06	0.12	0.05	0.08	0.05	0.08	0.08	0.11	0.04	0.09	0.01	0.04
18/01/2019	0.38	0.04	0.07		0.08	0.10	0.05	0.11	0.05	0.10	0.07	0.12	0.05	0.13	0.04	0.07	0.01	0.03
19/01/2019	0.38	0.07	0.11		0.07	0.14	0.04	0.12	0.05	0.11	0.05	0.11	0.04	0.11	0.04	0.06	0.01	0.01
20/01/2019	0.39	0.05	0.11		0.06	0.14	0.07	0.11	0.05	0.08	0.04	0.11	0.06	0.10	0.03	0.07	0.01	0.02
21/01/2019	0.38	0.04	0.12		0.08	0.10	0.06	0.13	0.08	0.12	0.07	0.08	0.05	0.12	0.03	0.07	0.00	0.02
22/01/2019	0.40	0.07	0.12		0.08	0.15	0.07	0.19	0.06	0.12	0.04	0.11	0.04	0.11	0.04	0.05	0.01	0.01
23/01/2019	0.42	0.04	0.29		0.03	0.15	0.05	0.25	0.05	0.23	0.02	0.10	0.05	0.44	0.04	0.49	0.02	0.38
24/01/2019	0.40	0.05	0.08		0.08	0.10	0.05	0.14	0.07	0.12	0.06	0.11	0.05	0.11	0.03	0.07	0.00	0.01
25/01/2019	0.40	0.06	0.10		0.07	0.13	0.04	0.12	0.06	0.14	0.05	0.10	0.04	0.11	0.04	0.05	0.01	0.01
26/01/2019	0.38	0.04	0.10		0.06	0.12	0.06	0.08	0.07	0.15	0.05	0.10	0.05	0.09	0.03	0.07	0.01	0.02
27/01/2019	0.37	0.04	0.09		0.06	0.09	0.04	0.10	0.13	0.15	0.06	0.08	0.06	0.11	0.03	0.06	0.00	0.01
28/01/2019	0.37	0.06	0.12		0.08	0.11	0.04	0.10	0.10	0.18	0.05	0.10	0.05	0.11	0.03	0.05	0.00	0.01
29/01/2019	0.37	0.04	0.10		0.07	0.13	0.05	0.20	0.08	0.16	0.05	0.11	0.05	0.09	0.04	0.07	0.01	0.01
30/01/2019	0.36	0.04	0.09		0.06	0.11	0.04	0.08	0.01	0.03	0.06	0.09	0.08	0.12	0.03	0.07	0.00	0.02
31/01/2019	0.36	0.04	0.06		0.08	0.10	0.03	0.09	0.01	0.05	0.07	0.12	0.05	0.11	0.02	0.05	0.00	0.01

Total Number of Measurements Taken, A: 12666 11059 15091 13320 15791 14705 10156 15030
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: 12666 11059 15091 13320 15791 14684 10135 15016
Compliance with Turbidity Standard, C = B/A X 100%: 100.000% 100.000% 100.000% 100.000% 100.000% 99.857% 99.793% 99.907%

OL = Offline

File Path: N:\Water Treatment Branch\Administration\Reports\Regulatory Submissions\Turbidity\2019\01-January

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)																	
	Raw Water		Filter 1		Filter 2		Filter 3		Filter 4		Filter 5		Filter 6		Filter 7		Filter 8	
Date	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser
01-Jan-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
02-Jan-2019	0.44	0.44	0.06	<0.02	0.08	0.08	0.07	0.05	OL	OL	0.11	0.07	0.08	0.05	0.08	0.02	0.08	<0.02
03-Jan-2019	0.45	0.46	0.10	<0.02	OL	OL	0.12	0.06	0.10	0.05	0.09	0.05	0.10	0.05	OL	OL	0.12	0.02
04-Jan-2019	0.46	0.45	0.09	0.02	0.08	0.08	OL	OL	0.09	0.05	0.08	0.05	0.09	0.06	OL	OL	0.07	<0.02
05-Jan-2019	NA	NA	NA	NA	0.09	0.09	NA	OL	OL	NA	NA							
06-Jan-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	OL	OL	NA	NA
07-Jan-2019	0.47	0.41	0.10	0.02	0.11	0.10	0.10	0.07	0.08	0.05	OL	OL	0.08	0.05	OL	OL	0.09	<0.02
08-Jan-2019	0.48	0.44	0.09	0.02	OL	OL	0.11	0.07	0.09	0.05	0.07	0.04	0.10	0.05	OL	OL	0.09	<0.02
09-Jan-2019	0.48	0.42	0.15	0.04	0.11	0.10	OL	OL	0.13	0.07	0.17	0.05	0.10	0.06	OL	OL	0.08	<0.02
10-Jan-2019	0.44	0.42	OL	OL	0.16	0.09	0.10	0.06	0.12	0.06	0.10	0.06	0.14	0.09	OL	OL	0.10	<0.02
11-Jan-2019	0.47	0.39	0.11	0.03	0.13	0.12	0.12	0.08	OL	OL	0.16	0.10	OL	OL	0.17	0.07	0.15	0.04
12-Jan-2019	NA	NA	OL	OL	NA	0.11	0.05	NA	NA									
13-Jan-2019	NA	NA	OL	OL	NA													
14-Jan-2019	0.48	0.38	OL	OL	0.09	0.09	0.16	0.10	0.12	0.06	0.10	0.06	0.14	0.08	0.12	0.04	OL	OL
15-Jan-2019	0.48	0.38	OL	OL	0.11	0.09	0.08	0.06	OL	OL	0.09	0.06	0.14	0.07	0.10	0.04	0.11	<0.02
16-Jan-2019	0.46	0.37	0.11	0.06	OL	OL	0.10	0.05	0.11	0.05	OL	OL	0.11	0.08	0.13	0.05	0.10	0.02
17-Jan-2019	0.53	0.38	0.10	0.06	0.08	0.09	0.10	0.06	0.09	0.05	0.08	0.06	0.11	0.08	OL	OL	0.10	0.03
18-Jan-2019	0.44	0.38	0.09	0.04	0.10	0.09	OL	OL	0.12	0.07	0.11	0.07	0.15	0.12	0.11	0.04	0.10	<0.02
19-Jan-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
20-Jan-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
21-Jan-2019	0.43	0.37	0.10	0.06	0.09	0.10	OL	OL	0.12	0.09	0.09	0.06	0.12	0.08	0.11	0.03	OL	OL
22-Jan-2019	0.46	0.36	0.12	0.06	0.12	0.11	0.17	0.10	OL	OL	0.12	0.08	OL	OL	0.10	0.03	0.07	<0.02
23-Jan-2019	0.44	0.38	OL	OL	OL	OL	0.10	0.07	0.10	0.09	0.08	0.05	0.09	0.07	0.13	0.07	0.09	0.02
24-Jan-2019	0.44	0.37	0.09	0.05	0.08	0.09	OL	OL	0.10	0.10	0.09	0.06	0.08	0.09	0.08	0.03	OL	OL
25-Jan-2019	0.45	0.37	0.11	0.05	0.10	0.09	0.18	0.09	OL	OL	0.11	0.07	OL	OL	0.10	0.03	0.09	<0.02
26-Jan-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
27-Jan-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
28-Jan-2019	0.43	0.35	0.08	0.04	0.08	0.09	OL	OL	0.11	0.16	0.09	0.06	OL	OL	0.09	0.03	0.06	<0.02
29-Jan-2019	0.43	0.37	0.11	0.06	0.13	0.11	0.09	0.04	0.09	0.14	OL	OL	0.08	0.08	0.09	0.04	0.08	<0.02
30-Jan-2019	0.43	0.35	OL	OL	0.08	0.08	0.11	0.05	0.09	0.02	0.08	0.07	0.09	0.08	OL	OL	0.10	<0.02
31-Jan-2019	0.42	0.33	0.10	0.04	0.10	0.08	OL	OL	0.10	0.03	0.09	0.07	OL	OL	0.10	0.02	0.08	<0.02
Total number of measurements taken, A:				17		19		15		17		19		17		15		19
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:				17		19		15		17		19		17		15		19
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

Comments:

Filter 7 was offline for scheduled maintenance from January 2 to 11, 2019.

Report Compiled By: H.Demchenko

Authorized in Sample Manager By: C.Diduck

Date Authorized: 7-Feb-19

**City Of Winnipeg**

Water and Waste Department

Water Services

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 February 2019**

Report Period: January 2019

Date	BRANCH 1 [mg/L]		BRANCH 2 [mg/L]	
	Average	Minimum	Average	Minimum
01/01/2019	0.99	0.90	0.99	0.92
02/01/2019	1.04	0.95	1.07	1.03
03/01/2019	1.04	0.95	1.06	1.00
04/01/2019	1.07	0.99	1.05	0.99
05/01/2019	1.10	1.03	1.06	0.99
06/01/2019	1.13	1.03	1.07	1.00
07/01/2019	1.11	1.01	1.06	1.00
08/01/2019	1.06	0.98	1.05	1.00
09/01/2019	1.22	1.00	1.22	1.04
10/01/2019	1.17	1.08	1.21	1.15
11/01/2019	1.10	1.02	1.12	1.01
12/01/2019	1.02	0.92	1.03	0.95
13/01/2019	1.07	1.00	1.11	1.02
14/01/2019	1.07	1.01	1.09	1.04
15/01/2019	1.06	0.93	1.07	1.00
16/01/2019	1.09	1.02	1.09	1.05
17/01/2019	1.07	1.00	1.11	1.06
18/01/2019	1.09	1.01	1.18	1.11
19/01/2019	1.04	0.95	1.18	1.12
20/01/2019	1.06	0.99	1.20	1.15
21/01/2019	1.10	1.02	1.20	1.11
22/01/2019	1.08	1.02	1.21	1.13
23/01/2019	1.09	0.86	1.15	0.91
24/01/2019	1.12	1.02	1.22	1.13
25/01/2019	1.14	1.08	1.22	1.13
26/01/2019	1.13	1.06	1.19	1.11
27/01/2019	1.14	1.06	1.21	1.12
28/01/2019	1.10	1.03	1.18	0.95
29/01/2019	1.15	1.10	1.25	1.15
30/01/2019	1.14	1.08	1.27	1.12
31/01/2019	1.08	0.95	1.16	0.99

Total Number of Measurements, A: **21607**

21549

Minimum Free Chlorine Standard: **0.5**

0.5

Number of Measurements Meeting Standard, B: **21607**

21549

COMPLIANCE, C = B/A X 100%: **100.00**

100.00

File Path: N:\Water Treatment Branch\Administration\Reports\Regulatory Submissions\Chlorine\2019\01-January

Submitted By (Print): D.MerredewSignature: 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		Deacon Booster Pumping Station Branch 1			Deacon Booster Pumping Station Branch 2		
Licence No. PWS-09-412-01		Free Chlorine (mg/L)		Total Chlorine (mg/L)	Free Chlorine (mg/L)		Total Chlorine (mg/L)
Date		Analyser	Grab	Grab	Analyser	Grab	Grab
01-Jan-2019		NA	NA	NA	NA	NA	NA
02-Jan-2019		1.03	1.05	1.25	1.06	1.07	1.28
03-Jan-2019		1.04	1.07	1.23	1.05	1.10	1.25
04-Jan-2019		1.05	1.15	1.29	1.03	1.11	1.30
05-Jan-2019		NA	NA	NA	NA	NA	NA
06-Jan-2019		NA	NA	NA	NA	NA	NA
07-Jan-2019		1.11	1.12	1.31	1.07	1.11	1.30
08-Jan-2019		1.10	1.08	1.25	1.05	1.11	1.29
09-Jan-2019		1.30	1.25	1.48	1.30	1.34	1.49
10-Jan-2019		1.18	1.15	1.34	1.18	1.16	1.37
11-Jan-2019		1.11	1.12	1.32	1.11	1.11	1.34
12-Jan-2019		NA	NA	NA	NA	NA	NA
13-Jan-2019		NA	NA	NA	NA	NA	NA
14-Jan-2019		1.07	1.16	1.31	1.10	1.18	1.36
15-Jan-2019		1.05	1.12	1.30	1.08	1.13	1.33
16-Jan-2019		1.11	1.18	1.35	1.15	1.15	1.34
17-Jan-2019		1.03	1.16	1.34	1.10	1.19	1.34
18-Jan-2019		1.13	1.19	1.39	1.24	1.32	1.52
19-Jan-2019		NA	NA	NA	NA	NA	NA
20-Jan-2019		NA	NA	NA	NA	NA	NA
21-Jan-2019		1.11	1.19	1.37	1.20	1.24	1.50
22-Jan-2019		1.11	1.14	1.36	1.21	1.26	1.46
23-Jan-2019		1.06	1.13	1.33	1.21	1.23	1.42
24-Jan-2019		1.06	1.14	1.29	1.14	1.21	1.44
25-Jan-2019		1.15	1.17	1.40	1.20	1.32	1.56
26-Jan-2019		NA	NA	NA	NA	NA	NA
27-Jan-2019		NA	NA	NA	NA	NA	NA
28-Jan-2019		1.10	1.12	1.31	1.16	1.21	1.43
29-Jan-2019		1.16	1.15	1.34	1.24	1.25	1.50
30-Jan-2019		1.15	1.07	1.28	1.25	1.26	1.44
31-Jan-2019		1.12	1.16	1.30	1.19	1.18	1.44
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

Comments:

Report Compiled By: _____ H.Demchenko

Authorized By: _____ C.Diduck

Date Authorized: _____ 7-Feb-19



CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT
WATER SERVICES

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

Report Period: January 2019

Report Created: Friday, February 01, 2019

WATER TREATMENT PLANT UV REPORT

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]				Water Volume [ML]				Water Volume [ML]				
		Untreated	Below	To	Total	Untreated	Below	To	Total																					
01/01/2019	93.57	0.00	0.00	0.00	0.00	0.00	0.00	72.63	72.63	0.00	0.21	31.71	31.91	0.00	0.00	10.50	10.50	0.00	0.00	65.06	65.06	0.00	0.00	0.00	0.00	0.00	0.21	179.89	180.10	99.88
02/01/2019	93.92	0.00	0.00	0.00	0.00	0.00	0.00	71.95	71.95	0.00	0.00	0.00	0.00	0.00	0.00	42.88	42.88	0.00	0.00	63.11	63.11	0.00	0.00	0.00	0.00	0.00	0.00	177.94	177.94	100.00
03/01/2019	93.95	0.00	0.00	0.00	0.00	0.00	0.00	72.07	72.07	0.00	0.00	0.00	0.00	0.00	0.00	41.97	41.97	0.00	0.00	63.09	63.09	0.00	0.00	0.00	0.00	0.00	0.00	177.14	177.14	100.00
04/01/2019	93.86	0.00	0.00	0.00	0.00	0.00	0.00	72.31	72.31	0.00	0.00	0.00	0.00	0.00	0.00	42.21	42.21	0.00	0.00	63.50	63.50	0.00	0.00	0.00	0.00	0.00	0.00	178.01	178.01	100.00
05/01/2019	93.82	0.00	0.00	0.00	0.00	0.00	0.00	71.88	71.88	0.00	0.00	0.00	0.00	0.00	0.00	42.93	42.93	0.00	0.00	63.17	63.17	0.00	0.00	0.00	0.00	0.00	0.00	177.97	177.97	100.00
06/01/2019	93.79	0.00	0.00	0.00	0.00	0.00	0.00	72.41	72.41	0.00	0.00	0.00	0.00	0.00	0.00	45.17	45.17	0.00	0.00	64.31	64.31	0.00	0.00	0.00	0.00	0.00	0.00	181.89	181.89	100.00
07/01/2019	93.70	0.00	0.00	0.00	0.00	0.00	0.00	71.58	71.58	0.00	0.00	0.00	0.00	0.00	0.00	53.62	53.62	0.00	0.00	65.13	65.13	0.00	0.00	0.00	0.00	0.00	0.00	190.33	190.33	100.00
08/01/2019	93.68	0.00	0.00	0.00	0.00	0.00	0.00	72.47	72.47	0.00	0.00	0.00	0.00	0.00	0.00	54.24	54.24	0.00	0.00	66.26	66.26	0.00	0.00	0.00	0.00	0.00	0.00	192.97	192.97	100.00
09/01/2019	93.62	0.00	0.00	0.00	0.00	0.00	0.00	72.49	72.49	0.00	0.00	0.00	0.00	0.00	0.00	54.09	54.09	0.00	0.00	66.39	66.39	0.00	0.00	0.00	0.00	0.00	0.00	192.97	192.97	100.00
10/01/2019	93.41	0.00	0.00	0.00	0.00	0.00	0.00	71.17	71.17	0.00	0.00	0.00	0.00	0.00	0.00	53.10	53.10	0.00	0.00	64.87	64.87	0.00	0.00	0.00	0.00	0.00	0.00	189.13	189.13	100.00
11/01/2019	93.10	0.00	0.00	0.00	0.00	0.00	0.00	70.54	70.54	0.00	0.00	0.00	0.00	0.00	0.00	52.64	52.64	0.00	0.00	63.82	63.82	0.00	0.00	0.00	0.00	0.00	0.00	187.01	187.01	100.00
12/01/2019	93.25	0.00	0.00	0.00	0.00	0.00	0.00	69.56	69.56	0.00	0.00	0.00	0.00	0.00	0.00	51.87	51.87	0.00	0.00	62.49	62.49	0.00	0.00	0.00	0.00	0.00	0.00	183.93	183.93	100.00
13/01/2019	93.22	0.00	0.00	0.00	0.00	0.00	0.00	69.47	69.47	0.00	0.00	0.00	0.00	0.00	0.00	51.83	51.83	0.00	0.00	62.74	62.74	0.00	0.00	0.00	0.00	0.00	0.00	184.04	184.04	100.00
14/01/2019	93.24	0.00	0.00	0.00	0.00	0.00	0.00	69.39	69.39	0.00	0.00	0.00	0.00	0.00	0.00	51.88	51.88	0.00	0.00	62.73	62.73	0.00	0.00	0.00	0.00	0.00	0.00	184.00	184.00	100.00
15/01/2019	93.34	0.00	0.00	0.00	0.00	0.00	0.00	69.41	69.41	0.00	0.00	0.00	0.00	0.00	0.00	51.91	51.91	0.00	0.00	62.67	62.67	0.00	0.00	0.00	0.00	0.00	0.00	183.99	183.99	100.00
16/01/2019	93.31	0.00	0.00	0.00	0.00	0.00	0.00	69.39	69.39	0.00	0.00	0.00	0.00	0.00	0.00	51.93	51.93	0.00	0.00	62.69	62.69	0.00	0.00	0.00	0.00	0.00	0.00	183.99	183.99	100.00
17/01/2019	93.16	0.00	0.00	0.00	0.00	0.00	0.00	71.98	71.98	0.00	0.00	0.00	0.00	0.00	0.00	47.54	47.54	0.00	0.00	64.47	64.47	0.00	0.00	0.00	0.00	0.00	0.00	183.99	183.99	100.00
18/01/2019	93.16	0.00	0.00	0.00	0.00	0.00	0.00	73.33	73.33	0.00	0.00	0.00	0.00	0.00	0.00	44.24	44.24	0.00	0.00	21.21	21.21	0.00	0.00	43.80	43.80	0.00	0.00	182.58	182.58	100.00
19/01/2019	93.16	0.00	0.00	0.00	0.00	0.00	0.00	72.76	72.76	0.00	0.00	0.00	0.00	0.00	0.00	43.72	43.72	0.00	0.00	0.00	0.00	0.00	0.00	64.07	64.07	0.00	0.00	180.55	180.55	100.00
20/01/2019	93.10	0.00	0.00	0.00	0.00	0.00	0.00	72.49	72.49	0.00	0.00	0.00	0.00	0.00	0.00	43.55	43.55	0.00	0.00	0.00	0.00	0.00	0.00	63.98	63.98	0.00	0.00	180.01	180.01	100.00
21/01/2019	93.06	0.00	0.07	28.95	29.01	0.00	0.00	66.74	66.74	0.00	0.00	1.76	1.76	0.00	0.00	61.92	61.92	0.00	0.00	0.00	0.00	0.00	0.00	21.96	21.96	0.00	0.07	181.32	181.39	99.96
22/01/2019	92.92	0.00	0.00	0.00	0.00	0.00	0.00	79.27	79.27	0.00	0.00	42.58	42.58	0.00	0.00	66.08	66.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	187.92	187.92	100.00
23/01/2019	92.79	0.00	0.00	0.00	0.00	0.00	0.00	44.83	44.83	0.00	0.00	24.79	24.79	0.00	0.00	41.93	41.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	111.54	111.54	100.00
24/01/2019	93.05	0.00	0.00	0.01	0.01	0.00	0.00	80.82	80.82	0.00	0.00	42.28	42.28	0.00	0.00	76.89	76.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	200.00	200.00	100.00
25/01/2019	93.09	0.00	0.00	0.00	0.00	0.00	0.00	81.14	81.14	0.00	0.00	42.02	42.02	0.00	0.00	76.87	76.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	200.03	200.03	100.00
26/01/2019	93.15	0.00	0.00	0.00	0.00	0.00	0.00	73.72	73.72	0.00	0.00	38.31	38.31	0.00	0.00	69.93	69.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	181.96	181.96	100.00
27/01/2019	93.26	0.00	0.00	0.00	0.00	0.00	0.00	72.09	72.09	0.00	0.00	37.66	37.66	0.00	0.00	68.67	68.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	178.42	178.42	100.00
28/01/2019	93.25	0.00	0.00	0.00	0.00	0.00	0.00	73.81	73.81	0.00	0.00	38.38	38.38	0.00	0.00	70.57	70.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	182.75	182.75	100.00
29/01/2019	93.15	0.00	0.00	0.00	0.00	0.00	0.00	73.88	73.88	0.00	0.00	38.46	38.46	0.00	0.00	70.70	70.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	183.03	183.03	100.00
30/01/2019	93.23	0.00	0.00	0.00	0.00	0.00	0.00	74.20	74.20	0.00	0.00	38.21	38.21	0.00	0.00	70.59	70.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	182.99	182.99	100.00
31/01/2019	93.38	0.00	0.00	0.00	0.00	0.00	0.00	73.16	73.16	0.00	0.00	40.18	40.18	0.00	0.00	69.67	69.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	183.01	183.01	100.00

Water Volume [%]:

Untreated: 0.00 %

Below Dose: 0.00 %

To Dose: 100.00 %

Submitted By (Print): D.MerredewSignature: Original signed by D.Merred