



**Water and Waste Department • Service des eaux et des déchets**

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April 5, 2013

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

Melanie Betsill  
Office of Drinking Water  
Manitoba Conservation and Water Stewardship  
1007 Century Street  
Winnipeg, Manitoba  
R3H 0W4

Dear Ms. Betsill:

**RE: MARCH 2013 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 reports for the Water Treatment Plant for March 2013. We have also included one corrective action report for positive total coliforms in the distribution system.

The March on-line and grab sampling turbidity reports include results obtained for the Water Treatment Plant raw water and the eight filters. The turbidity results for the effluent from the filters are in compliance with 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 have met the licence requirements.

The UV submission includes a summary report and reports for each reactor for March 2013 in accordance with Section 4.13, Table 2 of the Operating Licence. You will note that all 6 UV reactors are in compliance with the licence requirements.

On March 4, a positive total coliform result >10 per 100 mL was reported [REDACTED]. On March 5, the location was resampled and samples were collected from upstream and downstream locations. Our resampling also indicated that the chlorine levels at the location were normal and provided adequate disinfection.

On March 4, positive total coliform results were reported [REDACTED]. On March 5, the locations were resampled and results were reported to be negative. Our resampling also indicated that the chlorine levels at the locations were normal and provided adequate disinfection.

Based on the chlorine residual levels at the locations with positive bacteriological results above, we would consider the results to be "false positives, cause unknown".

Please let me know of any concerns or questions respecting this submission. I may be reached at the below address, by telephone at 204-986-4807 or by e-mail at [kkjartanson@winnipeg.ca](mailto:kkjartanson@winnipeg.ca).

Thanks for your ongoing cooperation and understanding in this matter.

Yours sincerely,

*Original signed by:*

K.J.T. Kjartanson, P.Eng.  
Manager of Environmental Standards

KJTK:rg  
Attachments

c: Dr. L. Richards, Winnipeg Regional Health Authority  
Dr. S. Roberecki, Manitoba Health  
D.P. Sacher, P.Eng (e-mail)  
G. Patton, P.Eng.  
T. Josephson, P.Eng (e-mail)  
A.J. Weremy, P.Eng  
S. Fletcher (e-mail)

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**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 A	Free Chlorine (mg/L)	Total Chlorine (mg/L)	Free Chlorine (mg/L)	Total Chlorine (mg/L)
Date				
01-Mar-2013	1.18	1.31	1.07	1.24
02-Mar-2013	NS	NS	NS	NS
03-Mar-2013	NS	NS	NS	NS
04-Mar-2013	1.09	1.21	1.08	1.17
05-Mar-2013	0.96	1.15	0.85	1.05
06-Mar-2013	0.99	1.21	0.97	1.14
07-Mar-2013	1.16	1.25	1.11	1.28
08-Mar-2013	1.15	1.31	1.14	1.36
09-Mar-2013	NS	NS	NS	NS
10-Mar-2013	NS	NS	NS	NS
11-Mar-2013	1.19	1.36	1.17	1.32
12-Mar-2013	1.16	1.34	1.13	1.29
13-Mar-2013	1.22	1.39	1.26	1.38
14-Mar-2013	1.26	1.38	1.26	1.37
15-Mar-2013	1.33	1.44	1.22	1.39
16-Mar-2013	NS	NS	NS	NS
17-Mar-2013	NS	NS	NS	NS
18-Mar-2013	1.22	1.41	1.22	1.41
19-Mar-2013	1.15	1.35	1.26	1.35
20-Mar-2013	1.13	1.33	1.23	1.36
21-Mar-2013	1.24	1.38	1.25	1.39
22-Mar-2013	1.28	1.43	1.24	1.38
23-Mar-2013	NS	NS	NS	NS
24-Mar-2013	NS	NS	NS	NS
25-Mar-2013	1.19	1.33	1.24	1.36
26-Mar-2013	1.35	1.51	1.26	1.40
27-Mar-2013	1.22	1.41	1.25	1.44
28-Mar-2013	1.22	1.34	1.33	1.49
29-Mar-2013	NS	NS	NS	NS
30-Mar-2013	NS	NS	NS	NS
31-Mar-2013	NS	NS	NS	NS
<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

Approved in LIMS By: S.Fletcher/ A.Vanderstel



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

Water System Code: **252.00**  
Licence Number: **PWS-09-412 A**  
Report Created: 01 April 2013

Report Period: March 2013

Date	BRANCH 1 [mg/L]		BRANCH 2 [mg/L]	
	Average	Minimum	Average	Minimum
1/03/2013	1.15	1.09	1.02	0.98
2/03/2013	1.02	0.93	0.96	0.92
3/03/2013	0.93	0.87	0.92	0.90
4/03/2013	0.95	0.89	0.90	0.78
5/03/2013	0.88	0.78	0.82	0.77
6/03/2013	0.86	0.75	0.92	0.79
7/03/2013	0.98	0.92	1.05	0.97
8/03/2013	1.05	0.94	1.03	1.00
9/03/2013	1.13	1.05	1.03	0.99
10/03/2013	1.20	1.15	1.00	0.96
11/03/2013	1.18	1.13	0.98	0.95
12/03/2013	1.19	1.13	0.99	0.96
13/03/2013	1.11	1.05	1.01	0.96
14/03/2013	1.09	0.89	0.98	0.78
15/03/2013	1.16	1.09	1.08	1.04
16/03/2013	1.13	1.09	1.11	1.08
17/03/2013	1.15	1.11	1.14	1.10
18/03/2013	1.19	1.11	1.17	1.12
19/03/2013	1.18	1.14	1.14	1.10
20/03/2013	1.13	1.06	1.12	1.06
21/03/2013	1.13	1.09	1.15	1.11
22/03/2013	1.14	1.11	1.16	1.13
23/03/2013	1.15	1.07	1.17	1.07
24/03/2013	1.18	1.03	1.21	1.09
25/03/2013	1.22	1.12	1.25	1.15
26/03/2013	1.22	1.00	1.19	1.01
27/03/2013	1.09	1.03	1.15	1.11
28/03/2013	1.06	1.03	1.15	1.12
29/03/2013	1.03	0.98	1.16	1.10
30/03/2013	1.09	0.97	1.06	1.00
31/03/2013	1.17	1.11	1.07	1.03

Total Number of Measurements, A:	21570	21570
Minimum Free Chlorine Standard:	0.50	0.50
Number of Measurements Meeting Standard, B:	21570	21570
COMPLIANCE, C = B/A X 100%:	100.00	100.00

File Path: N:\Water Treatment Branch\Administration\Reports\Regulatory Submissions\Chlorine\2013\03-March

Submitted By (Print): D.Minor

Signature: Original signed by D.Minor



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-09-412RR	Raw Water	Filter 1	Filter 2	Filter 3	Filter 4	Filter 5	Filter 6	Filter 7	Filter 8
Date	Raw Water	Filter 1	Filter 2	Filter 3	Filter 4	Filter 5	Filter 6	Filter 7	Filter 8
01-Mar-2013	0.43	OL	0.09	0.08	OL	0.10	0.09	0.09	0.08
02-Mar-2013	NS	NS	NS	NS	NS	NS	NS	NS	NS
03-Mar-2013	NS	NS	NS	NS	NS	NS	NS	NS	NS
04-Mar-2013	0.38	OL	0.12	0.14	0.13	OL	0.18	0.14	0.08
05-Mar-2013	0.34	0.10	0.09	0.16	0.08	0.07	OL	0.07	OL
06-Mar-2013	0.44	OL	0.12	0.07	0.16	0.09	0.07	0.08	0.07
07-Mar-2013	0.33	0.17	OL	0.11	0.17	0.09	0.09	0.06	0.10
08-Mar-2013	0.45	0.14	0.11	0.07	0.10	0.07	0.08	0.10	OL
09-Mar-2013	NS	NS	NS	NS	NS	NS	NS	NS	NS
10-Mar-2013	NS	NS	NS	NS	NS	NS	NS	NS	NS
11-Mar-2013	0.34	OL	0.12	0.09	OL	0.11	0.16	0.15	0.08
12-Mar-2013	0.37	0.06	OL	0.07	0.05	0.06	OL	0.05	0.06
13-Mar-2013	0.40	0.07	0.09	0.08	OL	0.07	0.05	0.08	OL
14-Mar-2013	0.30	0.07	OL	0.08	0.08	0.08	0.08	OL	0.08
15-Mar-2013	0.30	0.09	0.05	OL	0.07	0.06	0.06	0.07	OL
16-Mar-2013	NS	NS	NS	NS	NS	NS	NS	NS	NS
17-Mar-2013	NS	NS	NS	NS	NS	NS	NS	NS	NS
18-Mar-2013	0.32	0.06	0.06	0.14	OL	0.06	0.06	0.07	OL
19-Mar-2013	0.43	OL	0.08	0.08	0.07	OL	0.07	0.08	0.08
20-Mar-2013	0.36	0.07	0.08	OL	0.07	0.06	OL	0.05	0.07
21-Mar-2013	0.29	OL	0.07	0.08	OL	0.08	0.08	0.06	0.06
22-Mar-2013	0.35	0.07	OL	0.09	0.09	0.08	0.09	OL	0.06
23-Mar-2013	NS	NS	NS	NS	NS	NS	NS	NS	NS
24-Mar-2013	NS	NS	NS	NS	NS	NS	NS	NS	NS
25-Mar-2013	0.34	0.11	0.07	0.08	0.11	0.13	0.08	0.08	0.08
26-Mar-2013	0.34	OL	0.07	0.08	OL	0.08	0.07	0.09	0.06
27-Mar-2013	0.28	0.11	0.09	0.12	0.09	0.09	0.13	OL	0.09
28-Mar-2013	0.28	0.09	0.06	0.14	0.12	0.12	0.09	0.06	OL
29-Mar-2013	NS	0.07	0.09	0.08	0.08	0.14	0.08	0.10	0.08
30-Mar-2013	NS	NS	NS	NS	NS	NS	NS	NS	NS
31-Mar-2013	NS	NS	NS	NS	NS	NS	NS	NS	NS
<b>Total number of measurements taken, A:</b>		14	17	19	15	19	18	18	15
<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	17	19	15	19	18	18	15
<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:

Report Compiled By: H.Demchenko

Approved in LIMS By: S.Fletcher/ A.Vanderstel

Date Approved: 4-Apr-13



**CITY OF WINNIPEG**  
**WATER AND WASTE DEPARTMENT**  
**WATER SERVICES DIVISION**

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

**WATER TREATMENT PLANT TURBIDITY ON-LINE MONITORING REPORT**

March 2013 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
1/03/2013	0.32	0.04	0.11	0.01	0.02	0.03	0.05	0.03	0.10	0.04	0.11	0.02	0.06	0.07	0.11	0.02	0.07
2/03/2013	0.32	0.04	0.06	0.01	0.04	0.04	0.09	0.05	0.06	0.03	0.09	0.02	0.07	0.04	0.11	0.03	0.05
3/03/2013	0.32	0.05	0.10	0.00	0.01	0.03	0.10	0.04	0.09	0.05	0.08	0.01	0.03	0.06	0.08	0.02	0.07
4/03/2013	0.32	0.04	0.09	0.01	0.11	0.04	0.13	0.04	0.09	0.04	0.09	0.02	0.06	0.05	0.10	0.02	0.03
5/03/2013	0.32	0.05	0.07	0.01	0.15	0.04	0.10	0.05	0.07	0.04	0.08	0.01	0.08	0.05	0.24	0.02	0.08
6/03/2013	0.31	0.04	0.09	0.02	0.03	0.04	0.04	0.04	0.09	0.05	0.18	0.01	0.02	0.05	0.09	0.01	0.06
7/03/2013	0.31	0.05	0.06	0.02	0.08	0.04	0.09	0.04	0.06	0.04	0.09	0.02	0.05	0.04	0.08	0.02	0.03
8/03/2013	0.30	0.04	0.09	0.01	0.03	0.03	0.08	0.04	0.09	0.05	0.07	0.01	0.02	0.05	0.06	0.01	0.04
9/03/2013	0.30	0.03	0.07	0.02	0.06	0.04	0.05	0.02	0.04	0.03	0.08	0.02	0.05	0.03	0.08	0.01	0.02
10/03/2013	0.29	0.04	0.05	0.01	0.05	0.02	0.08	0.04	0.08	0.04	0.06	0.01	0.04	0.03	0.05	0.01	0.05
11/03/2013	0.29	0.03	0.07	0.01	0.03	0.03	0.04	0.02	0.06	0.03	0.08	0.01	0.03	0.04	0.07	0.01	0.02
12/03/2013	0.29	0.03	0.05	0.01	0.04	0.03	0.07	0.03	0.04	0.03	0.05	0.01	0.05	0.03	0.07	0.01	0.04
13/03/2013	0.28	0.03	0.06	0.01	0.01	0.02	0.06	0.02	0.06	0.04	0.07	0.01	0.02	0.04	0.05	0.01	0.03
14/03/2013	0.30	0.02	0.06	0.01	0.08	0.03	0.08	0.02	0.06	0.02	0.07	0.01	0.07	0.03	0.08	0.01	0.05
15/03/2013	0.28	0.04	0.21	0.01	0.03	0.04	0.08	0.03	0.07	0.04	0.06	0.01	0.04	0.04	0.10	0.01	0.03
16/03/2013	0.27	0.03	0.08	0.00	0.02	0.03	0.08	0.02	0.08	0.02	0.09	0.01	0.02	0.05	0.08	0.00	0.01
17/03/2013	0.27	0.04	0.05	0.00	0.02	0.03	0.06	0.04	0.05	0.02	0.04	0.01	0.04	0.04	0.09	0.01	0.04
18/03/2013	0.26	0.04	0.07	0.00	0.00	0.03	0.10	0.02	0.06	0.04	0.07	0.01	0.03	0.06	0.07	0.01	0.03
19/03/2013	0.26	0.03	0.08	0.00	0.03	0.03	0.05	0.02	0.05	0.02	0.06	0.02	0.04	0.04	0.09	0.01	0.01
20/03/2013	0.25	0.05	0.06	0.00	0.03	0.03	0.06	0.04	0.07	0.03	0.05	0.01	0.04	0.04	0.07	0.01	0.03
21/03/2013	0.25	0.04	0.09	0.00	0.02	0.03	0.05	0.03	0.08	0.04	0.08	0.01	0.03	0.07	0.10	0.01	0.04
22/03/2013	0.25	0.04	0.06	0.00	0.04	0.04	0.09	0.04	0.05	0.03	0.08	0.01	0.05	0.04	0.10	0.01	0.02
23/03/2013	0.25	0.05	0.10	0.00	0.00	0.03	0.07	0.03	0.09	0.04	0.07	0.01	0.02	0.06	0.08	0.01	0.04
24/03/2013	0.26	0.03	0.09	0.00	0.04	0.04	0.05	0.03	0.05	0.03	0.08	0.02	0.06	0.04	0.20	0.01	0.02
25/03/2013	0.26	0.05	0.06	0.00	0.04	0.03	0.16	0.04	0.08	0.04	0.05	0.01	0.05	0.04	0.07	0.01	0.04
26/03/2013	0.26	0.03	0.09	0.00	0.01	0.03	0.04	0.02	0.08	0.03	0.07	0.01	0.02	0.06	0.09	0.00	0.04
27/03/2013	0.26	0.04	0.06	0.00	0.04	0.04	0.07	0.04	0.05	0.02	0.08	0.01	0.04	0.04	0.10	0.01	0.02
28/03/2013	0.26	0.05	0.09	0.00	0.01	0.03	0.08	0.03	0.08	0.04	0.08	0.01	0.04	0.06	0.08	0.01	0.04
29/03/2013	0.27	0.03	0.08	0.00	0.02	0.03	0.05	0.02	0.04	0.03	0.11	0.02	0.04	0.04	0.10	0.01	0.01
30/03/2013	0.27	0.06	0.07	0.00	0.04	0.03	0.09	0.05	0.07	0.04	0.05	0.01	0.05	0.05	0.07	0.01	0.04
31/03/2013	0.27	0.05	0.10	0.01	0.04	0.04	0.05	0.03	0.08	0.02	0.08	0.02	0.03	0.06	0.10	0.00	0.01

Total Number of Measurements Taken, A:	14319	12683	14429	11297	14797	14791	15210	14347
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:	14319	12683	14429	11297	14797	14791	15210	14347
Compliance with Turbidity Standard, C = B/A X 100%:	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

File Path: N:\Water Treatment Branch\Administration\Reports\Regulatory Submissions\Turbidity\2013\03-March

Submitted By (Print) D.Minor

Signature Original signed by D.Minor



Water and Waste Department • Service des eaux et des déchets

Monday, March 11, 2013

**Our Incident/Report No: 01-2013**  
LIMS Reference No: **35242**

Ms. Melanie Betsill  
Drinking Water Officer  
Manitoba Water Stewardship, Office of Drinking Water  
1007 Century Street  
Winnipeg MB R3H 0W4

## **RE: CORRECTIVE ACTION REPORT**

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<b>WATER SYSTEM</b>	Winnipeg Public Water System
<b>WATER SYSTEM CODE</b>	252.00
<b>LOCATION OF NON-COMPLIANT INCIDENT</b>	<b>Winnipeg 3-Dist NE02; NE07; SW07</b>
<b>OPERATOR IN CHARGE</b>	NA
<b>INCIDENT REPORTED BY</b>	Steve Fletcher, Supervisor of Analytical Services Branch
<b>TYPE OF NON-COMPLIANT INCIDENT</b>	1. High positive Total Coliform (>10 per100mL), 3 MR 41/2007 2. Low positive Total Coliform (<10 per100mL), 3 MR 41/2007
<b>INCIDENT DATE</b>	March 04, 2013
<b>DESCRIPTION OF CORRECTIVE ACTIONS</b>	AS SOON AS POSSIBLE: Re-sampled original locations, also tested additional samples upstream/downstream where Total Coliform >10 per 100 mL was reported. All additional samples tested for turbidity, free/total chlorine and temperature. The ODW was contacted.
<b>TEST RESULTS</b>	See Attached

### NOTES/COMMENTS:

1. All microbiological tests performed by contract laboratory.
2. UP/DOWN STREAM testing performed when EC is >0 /100mL, TC is >10 /100mL or when resample/consecutive sample is positive for EC or TC or as directed by the Manager of Environmental Standards Division or the Office of Drinking Water
3. INITIAL chlorine, turbidity and temperature only tested at the required 39 sample locations.
4. NR-No Result due to laboratory/analyst error.

**EMERGENCY REPORTING IS REQUIRED WHERE A POTENTIAL HEALTH RISK IS INVOLVED. FOLLOW THE INSTRUCTIONS OF YOUR DRINKING WATER OFFICER ON SITUATIONS REQUIRING IMMEDIATE REPORTING**

### **DISTRIBUTION**

FORWARD THE ORIGINAL TO THE DRINKING WATER OFFICER WITH THE MONTHLY COMPLIANCE SUBMISSIONS.

**Contact the Drinking Water Officer for any comments, questions or concerns**

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REFERENCE: ODW-RF-016

*Embrace the spirit • Vivez l'esprit*

Environmental Standards Division • Division des normes environnementales  
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fax/téléc. (204) 339-2147 • www.winnipeg.ca

SampleName	Sample Number	Date Sampled	ColiEsch-QT (MPNU/100mL)	ColiTotal-QT (MPNU/100mL)	Chlorine, Free (mg/L)	Chlorine, Total (mg/L)	Temperature (°C)	Turbidity (ntu)
NE02	352988	04-Mar-13	<1	16	1.13	1.30	3.4	0.21
NE02	353499	05-Mar-13	<1	<1	0.95	1.12	3.4	0.18
NE02	353497	05-Mar-13	<1	<1	0.91	1.09	3.8	0.21
NE02	353498	05-Mar-13	<1	<1	0.88	1.23	6.2	0.20
NE07	352993	04-Mar-13	<1	1	1.04	1.16	3.8	0.20
NE07	353500	05-Mar-13	<1	<1	0.99	1.12	4.0	0.27
SW07	353025	04-Mar-13	<1	1	0.82	1.01	5.6	0.26
SW07	353501	05-Mar-13	<1	<1	0.99	1.12	4.0	0.18





**CITY OF WINNIPEG**  
 WATER AND WASTE DEPARTMENT  
 WATER SERVICES DIVISION

Water System Code **252.00**  
 Licence Number **PWS 09 412 A**

**WATER TREATMENT PLANT UV REPORT**

Report Period: **March 2013**

Report Created: **Monday, April 01, 2013**

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	
		Untreated	Below T	o	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		
1/03/2013	93.70	0.00	0.00	60.65	60.65	0.00	0.00	45.36	45.36	0.00	0.00	0.00	0.00	0.00	0.00	21.12	21.12	0.00	0.00	0.00	0.00	0.00	0.00	72.86	72.86	0.00	0.00	199.99	199.99	100.00	
2/03/2013	93.90	0.00	0.00	52.48	52.48	0.00	0.00	71.93	71.93	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	0.00	75.60	75.60	0.00	0.00	200.00	200.00	100.00
3/03/2013	94.04	0.00	0.00	52.54	52.54	0.00	0.00	71.70	71.70	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	0.00	75.74	75.74	0.00	0.00	199.98	199.98	100.00
4/03/2013	94.07	0.00	0.00	58.43	58.43	0.00	0.00	50.71	50.71	0.00	0.00	0.00	0.00	0.00	0.00	16.68	16.68	0.00	0.00	0.00	0.00	0.00	0.00	72.67	72.67	0.00	0.00	198.50	198.50	100.00	
5/03/2013	94.01	0.00	0.00	74.98	74.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.89	56.89	0.00	0.00	0.00	0.00	0.00	0.00	68.14	68.14	0.00	0.00	200.00	200.00	100.00	
6/03/2013	94.14	0.00	0.00	41.60	41.60	0.00	0.00	37.61	37.61	0.00	0.00	0.00	0.00	0.00	0.00	55.31	55.31	0.00	0.00	32.49	32.49	0.00	0.00	32.98	32.98	0.00	0.00	199.99	199.99	100.00	
7/03/2013	94.34	0.00	0.00	0.00	0.00	0.00	0.00	84.16	84.16	0.00	0.00	0.00	0.00	0.00	0.00	53.41	53.41	0.00	0.00	62.43	62.43	0.00	0.00	0.00	0.00	0.00	0.00	200.01	200.01	100.00	
8/03/2013	94.52	0.00	0.00	0.00	0.00	0.00	0.00	84.44	84.44	0.00	0.00	0.00	0.00	0.00	0.00	53.35	53.35	0.00	0.00	62.24	62.24	0.00	0.00	0.00	0.00	0.00	0.00	200.02	200.02	100.00	
9/03/2013	94.56	0.00	0.35	0.02	0.38	0.00	0.00	42.45	42.45	0.00	0.00	37.27	37.27	0.00	0.00	27.48	27.48	0.00	0.00	53.56	53.56	0.00	0.00	38.90	38.90	0.00	0.35	199.68	200.03	99.82	
10/03/2013	94.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	76.31	76.31	0.00	0.00	0.00	0.00	0.00	0.00	44.91	44.91	0.00	0.00	78.80	78.80	0.00	0.00	200.01	200.01	100.00	
11/03/2013	94.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.83	75.83	0.00	0.00	0.00	0.00	0.00	0.00	44.70	44.70	0.00	0.00	78.30	78.30	0.00	0.00	198.84	198.84	100.00	
12/03/2013	94.72	0.00	0.00	0.00	0.00	0.00	0.00	28.83	28.83	0.00	0.00	65.76	65.76	0.00	0.00	0.00	0.00	0.00	0.00	50.68	50.68	0.00	0.00	49.68	49.68	0.00	0.00	194.95	194.95	100.00	
13/03/2013	94.77	0.00	0.00	0.00	0.00	0.00	0.00	81.76	81.76	0.00	0.00	50.43	50.43	0.00	0.00	0.00	0.00	0.00	0.00	63.82	63.82	0.00	0.00	0.00	0.00	0.00	0.00	196.01	196.01	100.00	
14/03/2013	94.70	0.00	0.00	27.83	27.83	0.00	0.00	33.45	33.45	0.00	0.00	42.90	42.90	0.00	0.00	0.00	0.00	0.00	0.00	48.60	48.60	0.00	0.00	9.78	9.78	0.00	0.00	162.56	162.56	100.00	
15/03/2013	94.64	0.00	0.00	72.48	72.48	0.00	0.00	0.00	0.00	0.00	0.00	48.57	48.57	0.00	0.00	0.00	0.00	0.00	0.00	74.95	74.95	0.00	0.00	0.00	0.00	0.00	0.00	196.00	196.00	100.00	
16/03/2013	94.68	0.00	0.00	72.55	72.55	0.00	0.00	0.00	0.00	0.00	0.00	48.53	48.53	0.00	0.00	0.00	0.00	0.00	0.00	74.90	74.90	0.00	0.00	0.00	0.00	0.00	0.00	195.97	195.97	100.00	
17/03/2013	94.69	0.00	0.00	72.61	72.61	0.00	0.00	0.00	0.00	0.00	0.00	48.48	48.48	0.00	0.00	0.00	0.00	0.00	0.00	74.88	74.88	0.00	0.00	0.00	0.00	0.00	0.00	195.98	195.98	100.00	
18/03/2013	94.72	0.00	0.00	72.43	72.43	0.00	0.00	0.00	0.00	0.00	0.00	48.63	48.63	0.00	0.00	0.00	0.00	0.00	0.00	74.94	74.94	0.00	0.00	0.00	0.00	0.00	0.00	196.00	196.00	100.00	
19/03/2013	94.64	0.00	0.00	72.29	72.29	0.00	0.00	0.00	0.00	0.00	0.00	48.84	48.84	0.00	0.00	0.00	0.00	0.00	0.00	74.90	74.90	0.00	0.00	0.00	0.00	0.00	0.00	196.02	196.02	100.00	
20/03/2013	94.11	0.00	0.00	72.57	72.57	0.00	0.00	0.00	0.00	0.00	0.00	49.20	49.20	0.00	0.00	0.00	0.00	0.00	0.00	75.36	75.36	0.00	0.00	0.00	0.00	0.00	0.00	197.13	197.13	100.00	
21/03/2013	93.97	0.00	0.00	73.86	73.86	0.00	0.00	0.00	0.00	0.00	0.00	49.71	49.71	0.00	0.00	0.00	0.00	0.00	0.00	76.42	76.42	0.00	0.00	0.00	0.00	0.00	0.00	200.00	200.00	100.00	
22/03/2013	93.79	0.00	0.00	74.04	74.04	0.00	0.00	0.00	0.00	0.00	0.00	49.53	49.53	0.00	0.00	0.00	0.00	0.00	0.00	76.41	76.41	0.00	0.00	0.00	0.00	0.00	0.00	199.98	199.98	100.00	
23/03/2013	93.82	0.00	0.00	67.87	67.87	0.00	0.03	0.02	0.05	0.00	0.00	58.32	58.32	0.00	0.00	0.00	0.00	0.00	0.00	72.17	72.17	0.00	0.00	0.00	0.00	0.00	0.03	198.37	198.41	99.98	
24/03/2013	93.94	0.00	0.00	6.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	54.01	54.01	0.00	0.00	61.50	61.50	0.00	0.00	73.51	73.51	0.00	0.00	0.00	0.00	0.00	0.00	195.02	195.02	100.00	
25/03/2013	94.15	0.00	0.00	0.00	0.00	0.00	0.00	10.27	10.27	0.00	0.00	54.44	54.44	0.00	0.00	57.39	57.39	0.00	0.00	72.81	72.81	0.00	0.00	0.05	0.05	0.00	0.00	194.97	194.97	100.00	
26/03/2013	94.11	0.00	0.00	0.00	0.00	0.00	0.00	63.66	63.66	0.00	0.00	65.08	65.08	0.00	0.00	0.00	0.00	0.00	0.00	66.24	66.24	0.00	0.00	0.00	0.00	0.00	0.00	194.98	194.98	100.00	
27/03/2013	94.27	0.00	0.00	0.00	0.00	0.00	0.00	63.74	63.74	0.00	0.00	65.05	65.05	0.00	0.00	0.00	0.00	0.00	0.00	66.21	66.21	0.00	0.00	0.00	0.00	0.00	0.00	194.99	194.99	100.00	
28/03/2013	94.37	0.00	0.02	5.14	5.16	0.00	0.00	61.37	61.37	0.00	0.00	63.20	63.20	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	0.02	195.00	195.01	99.99	
29/03/2013	94.36	0.00	0.00	31.56	31.56	0.00	0.00	49.60	49.60	0.00	0.00	53.54	53.54	0.00	0.00	0.00	0.00	0.00	0.00	60.28	60.28	0.00	0.00	0.00	0.00	0.00	0.00	194.98	194.98	100.00	
30/03/2013	94.18	0.15	0.20	35.58	35.94	0.00	0.00	18.36	18.36	0.00	0.00	66.75	66.75	0.00	0.04	0.03	0.07	0.03	0.03	31.30	31.37	0.00	0.00	42.20	42.20	0.18	0.27	194.22	194.67	99.77	
31/03/2013	93.51	0.00	0.00	28.90	28.90	0.00	0.00	31.74	31.74	0.00	0.00	65.94	65.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.43	68.43	0.00	0.00	195.01	195.01	100.00	
		0.15	0.57	1126.41	1127.13	0.00	0.03	931.14	931.17	0.00	0.00	1286.29	1286.29	0.00	0.04	403.16	403.20	0.03	0.03	1574.01	1574.08	0.00	0.00	764.14	764.14	0.19	0.67	6085.15	6086.01		

Water Volume [%]:  
 Untreated 0.00 %  
 Below Dose 0.01 %  
 To Dose 99.99 %

Submitted By (Print): D.Minor

Signature: Original signed by D.Minor



**CITY OF WINNIPEG**  
 WATER AND WASTE DEPARTMENT  
 WATER SERVICES DIVISION

Water System Code **252.00**  
 Licence Number **PWS 09 412 A**

**WATER TREATMENT PLANT UV REPORT**

Report Period: **March 2013**

Report Created: **Monday, April 01, 2013**

Reactor: **UVR-100A**

Date	UV Dose mJ/cm <sup>2</sup>			Reactor Flow MLD			Average UV Lamp Intensity W/m <sup>2</sup>									UV Lamp Status Hours									% Volume Treated to Validate Conditions	Daily Totals Water Volume [ML]			
	Min.	Max.	Avg.	Min.	Max.	Avg.	1-1	1-2	1-3	2-1	2-2	2-3	3-1	3-2	3-3	1-1	1-2	1-3	2-1	2-2	2-3	3-1	3-2	3-3		Untreated	Below Dose	To Dose	Total
1/03/2013	19.4	27.2	24.1	42.8	78.7	60.6	215.9	105.9	101.9	OL	OL	OL	171.3	97.7	108.7	583	454	856	342	3040	3039	1916	583	3406	100.00	0.00	0.00	60.65	60.65
2/03/2013	19.6	26.6	24.2	50.3	54.4	52.5	217.4	94.1	90.6	OL	OL	OL	158.2	84.7	101.3	607	478	880	342	3040	3039	1940	607	3430	100.00	0.00	0.00	52.48	52.48
3/03/2013	20.0	26.8	24.2	50.5	54.4	52.6	228.2	94.4	95.8	OL	OL	OL	171.1	84.8	102.1	631	502	904	342	3040	3039	1964	631	3454	100.00	0.00	0.00	52.54	52.54
4/03/2013	19.5	27.4	24.2	39.9	81.3	58.4	229.1	103.7	102.9	OL	OL	OL	184.7	94.4	108.7	655	526	928	342	3040	3039	1988	655	3478	100.00	0.00	0.00	58.43	58.43
5/03/2013	19.5	24.8	24.0	70.4	79.1	75.0	236.8	120.1	120.1	OL	OL	OL	202.7	120.1	120.1	679	550	952	342	3040	3039	2012	679	3502	100.00	0.00	0.00	74.98	74.98
6/03/2013	0.0	35.6	24.0	0.0	78.9	75.1	235.9	120.3	120.3	OL	OL	OL	200.7	120.3	120.4	692	563	966	342	3040	3039	2026	692	3516	100.00	0.00	0.00	41.60	41.60
7/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	692	563	966	342	3040	3039	2026	692	3516	OL	0.00	0.00	0.00	0.00
8/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	692	563	966	342	3040	3039	2026	692	3516	OL	0.00	0.00	0.00	0.00
9/03/2013	0.0	46.3	16.4	0.0	81.0	67.6	149.2	89.0	88.4	51.6	47.8	25.3	154.9	69.8	98.0	692	563	966	342	3040	3039	2026	692	3516	6.10	0.00	0.35	0.02	0.38
10/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	692	563	966	342	3040	3039	2026	692	3516	OL	0.00	0.00	0.00	0.00
11/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	692	563	966	342	3040	3039	2026	692	3516	OL	0.00	0.00	0.00	0.00
12/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	692	563	966	342	3040	3039	2026	692	3516	OL	0.00	0.00	0.00	0.00
13/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	692	563	966	342	3040	3039	2026	692	3516	OL	0.00	0.00	0.00	0.00
14/03/2013	15.8	45.0	24.1	2.9	76.2	71.4	210.1	93.9	96.9	110.0	80.1	72.2	188.5	72.9	113.9	703	574	976	352	3050	3049	2036	703	3526	100.00	0.00	0.00	27.83	27.83
15/03/2013	19.4	24.7	24.0	69.5	76.7	72.5	209.8	115.8	115.8	132.4	88.1	75.3	185.8	115.4	116.0	727	598	1000	352	3050	3049	2060	727	3550	100.00	0.00	0.00	72.48	72.48
16/03/2013	19.6	25.0	24.0	69.4	76.3	72.5	203.1	116.3	116.4	OL	OL	OL	182.3	116.3	116.3	751	622	1024	352	3050	3049	2084	751	3574	100.00	0.00	0.00	72.55	72.55
17/03/2013	19.5	24.7	24.0	69.3	75.9	72.6	197.0	116.4	116.6	OL	OL	OL	177.9	116.4	116.4	775	646	1048	352	3050	3049	2108	775	3598	100.00	0.00	0.00	72.61	72.61
18/03/2013	19.5	27.1	24.0	69.5	76.7	72.4	195.0	116.1	116.2	OL	OL	OL	177.7	116.1	116.1	799	670	1072	352	3050	3049	2132	799	3622	100.00	0.00	0.00	72.43	72.43
19/03/2013	19.2	27.1	24.0	69.6	76.6	72.3	191.7	115.9	116.0	OL	OL	OL	175.5	115.9	115.9	823	694	1096	352	3050	3049	2156	823	3646	100.00	0.00	0.00	72.29	72.29
20/03/2013	19.6	24.8	24.0	69.2	75.6	72.6	187.6	116.3	116.4	OL	OL	OL	173.3	116.3	116.3	847	718	1120	352	3050	3049	2180	847	3670	100.00	0.00	0.00	72.57	72.57
21/03/2013	19.5	24.7	24.0	70.5	77.9	73.9	179.4	118.3	118.4	OL	OL	OL	167.1	118.3	118.3	871	742	1144	352	3050	3049	2204	871	3694	100.00	0.00	0.00	73.86	73.86
22/03/2013	19.5	25.9	24.0	70.2	77.3	74.1	176.6	118.6	118.7	OL	OL	OL	165.2	118.6	118.6	895	766	1168	352	3050	3049	2228	895	3718	100.00	0.00	0.00	74.04	74.04
23/03/2013	1.5	26.7	24.0	32.0	80.1	67.9	174.4	108.9	109.0	125.6	71.3	2.4	164.6	108.9	108.9	919	790	1192	352	3051	3049	2252	919	3742	100.00	0.00	0.00	67.87	67.87
24/03/2013	0.0	31.5	24.2	0.0	65.7	58.5	173.5	94.2	93.7	OL	OL	OL	165.0	93.7	94.2	920	791	1194	352	3051	3049	2254	920	3744	100.00	0.00	0.00	6.00	6.00
25/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	920	791	1194	352	3051	3049	2254	920	3744	OL	0.00	0.00	0.00	0.00
26/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	920	791	1194	352	3051	3049	2254	920	3744	OL	0.00	0.00	0.00	0.00
27/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	920	791	1194	352	3051	3049	2254	920	3744	OL	0.00	0.00	0.00	0.00
28/03/2013	1.9	26.3	24.3	4.2	33.2	31.4	128.8	74.1	51.7	53.6	29.9	1.5	125.4	53.6	73.7	925	796	1199	352	3051	3049	2259	925	3749	99.70	0.00	0.02	5.14	5.16
29/03/2013	18.9	27.0	24.5	29.8	33.5	31.6	137.3	76.2	51.8	OL	OL	OL	165.5	57.1	74.2	949	820	1223	352	3051	3049	2283	949	3773	100.00	0.00	0.00	31.56	31.56
30/03/2013	0.0	103.1	24.4	0.0	60.9	45.5	203.7	90.6	81.1	93.0	96.5	100.0	179.0	60.6	80.3	968	839	1242	363	3062	3060	2291	958	3781	99.02	0.15	0.20	35.58	35.94
31/03/2013	0.0	27.9	24.0	0.0	60.9	58.0	188.7	93.3	93.3	93.5	93.3	93.2	OL	OL	OL	979	850	1253	374	3073	3071	2291	958	3781	100.00	0.00	0.00	28.90	28.90
<b>Total [ML]:</b>																									0.15	0.57	1126.41	1127.13	

**Water Volume [%]:**

Untreated 0.01 %  
 Below Dose 0.05 %  
 To Dose 99.94 %

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



**CITY OF WINNIPEG**  
**WATER AND WASTE DEPARTMENT**  
**WATER SERVICES DIVISION**

Water System Code **252.00**  
 Licence Number **PWS 09 412 A**

**WATER TREATMENT PLANT UV REPORT**

Report Period: **March 2013**

Report Created: **Monday, April 01, 2013**

Reactor: **UVR-200A**

Date	UV Dose mJ/cm <sup>2</sup>			Reactor Flow MLD			Average UV Lamp Intensity W/m <sup>2</sup>									UV Lamp Status Hours									% Volume Treated to Validate Conditions	Daily Totals Water Volume [ML]			
	Min.	Max.	Avg.	Min.	Max.	Avg.	1-1	1-2	1-3	2-1	2-2	2-3	3-1	3-2	3-3	1-1	1-2	1-3	2-1	2-2	2-3	3-1	3-2	3-3		Untreated	Below Dose	To Dose	Total
1/03/2013	0.0	99.4	24.2	5.0	77.7	72.1	167.4	115.3	146.8	178.1	133.1	118.5	205.3	79.3	104.0	2763	2763	2763	2132	1615	4230	2767	2768	2767	100.00	0.00	0.00	45.36	45.36
2/03/2013	20.9	35.1	24.2	69.7	75.1	71.9	114.0	86.2	87.9	94.9	85.7	85.8	195.9	73.4	73.4	2787	2787	2787	2156	1639	4254	2784	2785	2784	100.00	0.00	0.00	71.93	71.93
3/03/2013	20.8	24.9	24.3	69.6	74.7	71.7	95.0	73.2	73.2	73.3	73.2	73.2	195.5	73.2	73.2	2811	2811	2811	2180	1663	4278	2808	2809	2808	100.00	0.00	0.00	71.70	71.70
4/03/2013	0.0	36.7	24.3	0.0	74.9	71.6	90.1	73.2	73.2	76.4	73.1	73.1	192.6	73.2	73.2	2828	2828	2828	2197	1680	4295	2825	2826	2825	100.00	0.00	0.00	50.71	50.71
5/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	2828	2828	2828	2197	1680	4295	2825	2826	2825	OL	0.00	0.00	0.00	0.00
6/03/2013	17.9	79.5	24.2	4.5	86.5	84.0	85.4	85.1	85.1	99.4	86.1	85.4	178.6	85.6	85.4	2839	2839	2839	2207	1691	4305	2836	2837	2836	100.00	0.00	0.00	37.61	37.61
7/03/2013	20.7	24.7	24.2	82.0	86.4	84.2	85.7	85.5	85.5	85.6	85.6	85.5	185.7	85.6	85.5	2863	2863	2863	2231	1715	4329	2860	2861	2860	100.00	0.00	0.00	84.16	84.16
8/03/2013	20.5	24.8	24.2	81.8	86.6	84.4	86.0	85.8	85.8	85.8	85.8	85.7	187.5	85.8	85.8	2887	2887	2887	2255	1739	4353	2884	2885	2884	100.00	0.00	0.00	84.44	84.44
9/03/2013	0.0	31.7	24.2	0.0	86.6	84.4	86.2	85.8	85.8	85.7	85.7	85.7	187.1	85.7	85.7	2899	2899	2899	2267	1751	4365	2896	2897	2896	100.00	0.00	0.00	42.45	42.45
10/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	2899	2899	2899	2267	1751	4365	2896	2897	2896	OL	0.00	0.00	0.00	0.00
11/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	2899	2899	2899	2267	1751	4365	2896	2897	2896	OL	0.00	0.00	0.00	0.00
12/03/2013	17.7	110.5	24.2	3.3	84.2	81.6	146.8	111.8	162.9	252.9	189.4	136.9	229.2	128.2	129.6	2899	2899	2900	2277	1761	4375	2906	2906	2906	100.00	0.00	0.00	28.83	28.83
13/03/2013	20.7	33.5	24.2	79.7	84.2	81.8	138.1	85.9	129.9	158.8	102.1	88.7	175.1	86.8	87.1	2923	2922	2923	2301	1785	4399	2930	2930	2930	100.00	0.00	0.00	81.76	81.76
14/03/2013	0.0	43.9	23.9	0.0	83.6	79.5	90.1	80.8	81.1	85.8	80.8	79.5	153.6	80.9	80.6	2932	2931	2932	2310	1794	4408	2939	2940	2939	100.00	0.00	0.00	33.45	33.45
15/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	2932	2931	2932	2310	1794	4408	2939	2940	2939	OL	0.00	0.00	0.00	0.00
16/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	2932	2931	2932	2310	1794	4408	2939	2940	2939	OL	0.00	0.00	0.00	0.00
17/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	2932	2931	2932	2310	1794	4408	2939	2940	2939	OL	0.00	0.00	0.00	0.00
18/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	2932	2931	2932	2310	1794	4408	2939	2940	2939	OL	0.00	0.00	0.00	0.00
19/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	2932	2931	2932	2310	1794	4408	2939	2940	2939	OL	0.00	0.00	0.00	0.00
20/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	2932	2931	2932	2310	1794	4408	2939	2940	2939	OL	0.00	0.00	0.00	0.00
21/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	2932	2931	2932	2310	1794	4408	2939	2940	2939	OL	0.00	0.00	0.00	0.00
22/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	2932	2931	2932	2310	1794	4408	2939	2940	2939	OL	0.00	0.00	0.00	0.00
23/03/2013	0.0	29.3	19.9	0.0	53.2	24.1	46.9	26.5	41.7	32.1	26.0	19.1	88.8	35.6	32.5	2932	2932	2932	2310	1794	4408	2939	2940	2939	30.67	0.00	0.03	0.02	0.05
24/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	2932	2932	2932	2310	1794	4408	2939	2940	2939	OL	0.00	0.00	0.00	0.00
25/03/2013	17.9	106.0	24.6	4.2	65.9	63.4	169.4	100.9	184.4	238.2	173.5	134.6	204.3	68.5	106.3	2937	2937	2937	2315	1799	4413	2939	2940	2939	100.00	0.00	0.00	10.27	10.27
26/03/2013	20.8	33.4	24.2	62.1	66.3	63.7	126.5	87.8	111.5	105.7	89.3	88.3	203.9	65.1	65.1	2961	2961	2961	2339	1823	4437	2951	2951	2951	100.00	0.00	0.00	63.66	63.66
27/03/2013	18.4	24.8	24.0	61.8	67.4	63.7	100.4	95.1	95.1	65.2	65.2	63.3	195.4	94.3	94.7	2985	2985	2985	2344	1827	4442	2975	2975	2975	100.00	0.00	0.00	63.74	63.74
28/03/2013	20.0	26.1	23.4	48.3	66.4	61.4	98.9	98.9	92.3	OL	OL	OL	188.8	98.7	98.8	3009	3009	3009	2344	1827	4442	2999	2999	2999	100.00	0.00	0.00	61.37	61.37
29/03/2013	21.4	25.2	24.2	48.1	51.0	49.6	80.3	80.2	80.1	OL	OL	OL	186.8	80.2	80.2	3033	3033	3033	2344	1827	4442	3023	3023	3023	100.00	0.00	0.00	49.60	49.60
30/03/2013	0.0	27.3	24.2	0.0	50.9	49.5	80.5	80.3	80.0	OL	OL	OL	189.0	80.2	80.2	3041	3040	3041	2344	1827	4442	3031	3031	3031	100.00	0.00	0.00	18.36	18.36
31/03/2013	18.1	109.1	24.3	3.5	65.8	63.0	131.3	94.0	118.0	134.5	131.3	109.2	215.1	100.9	101.6	3041	3041	3041	2356	1839	4454	3043	3043	3043	100.00	0.00	0.00	31.74	31.74
<b>Total [ML]:</b>																										0.00	0.03	931.14	931.17

**Water Volume [%]:**

Untreated 0.00 %  
 Below Dose 0.00 %  
 To Dose 100.00 %

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



**CITY OF WINNIPEG**  
 WATER AND WASTE DEPARTMENT  
 WATER SERVICES DIVISION

Water System Code **252.00**  
 Licence Number **PWS 09 412 A**

**WATER TREATMENT PLANT UV REPORT**

Report Period: **March 2013**

Report Created: **Monday, April 01, 2013**

Reactor: **UVR-300A**

Date	UV Dose mj/cm <sup>2</sup>			Reactor Flow MLD			Average UV Lamp Intensity W/m <sup>2</sup>									UV Lamp Status Hours									% Volume Treated to Validate Conditions	Daily Totals Water Volume [ML]			
	Min.	Max.	Avg.	Min.	Max.	Avg.	1-1	1-2	1-3	2-1	2-2	2-3	3-1	3-2	3-3	1-1	1-2	1-3	2-1	2-2	2-3	3-1	3-2	3-3		Untreated	Below Dose	To Dose	Total
1/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4237	4237	4237	4370	4370	4370	4355	4355	4355	OL	0.00	0.00	0.00	0.00
2/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4237	4237	4237	4370	4370	4370	4355	4355	4355	OL	0.00	0.00	0.00	0.00
3/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4237	4237	4237	4370	4370	4370	4355	4355	4355	OL	0.00	0.00	0.00	0.00
4/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4237	4237	4237	4370	4370	4370	4355	4355	4355	OL	0.00	0.00	0.00	0.00
5/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4237	4237	4237	4370	4370	4370	4355	4355	4355	OL	0.00	0.00	0.00	0.00
6/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4237	4237	4237	4370	4370	4370	4355	4355	4355	OL	0.00	0.00	0.00	0.00
7/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4237	4237	4237	4370	4370	4370	4355	4355	4355	OL	0.00	0.00	0.00	0.00
8/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4237	4237	4237	4370	4370	4370	4355	4355	4355	OL	0.00	0.00	0.00	0.00
9/03/2013	19.8	66.0	24.3	5.3	78.9	76.2	99.0	77.3	103.7	103.2	77.6	77.6	77.6	77.5	77.4	4249	4249	4249	4382	4382	4381	4367	4367	4367	100.00	0.00	0.00	37.27	37.27
10/03/2013	20.6	25.1	24.3	73.5	79.0	76.3	96.4	77.7	97.6	107.6	77.7	77.7	77.8	77.7	77.8	4273	4273	4273	4406	4406	4405	4391	4391	4391	100.00	0.00	0.00	76.31	76.31
11/03/2013	20.7	25.2	24.3	71.7	79.0	75.9	93.8	77.4	92.4	105.8	78.1	77.2	77.4	77.3	77.4	4297	4297	4297	4430	4430	4429	4415	4415	4415	100.00	0.00	0.00	75.83	75.83
12/03/2013	18.3	27.0	24.3	44.0	77.1	65.8	91.9	77.6	88.2	105.8	77.5	75.4	77.5	77.5	77.4	4321	4321	4321	4445	4444	4444	4439	4439	4439	100.00	0.00	0.00	65.76	65.76
13/03/2013	21.3	25.0	24.2	48.2	52.6	50.4	91.4	81.5	83.9	OL	OL	OL	81.5	81.5	81.5	4345	4345	4345	4445	4444	4444	4463	4463	4463	100.00	0.00	0.00	50.43	50.43
14/03/2013	0.0	70.4	24.3	0.0	71.0	46.6	95.8	75.5	89.7	101.2	81.6	71.8	79.3	79.5	78.6	4367	4367	4367	4458	4458	4458	4472	4472	4472	100.00	0.00	0.00	42.90	42.90
15/03/2013	21.0	25.3	24.3	44.0	51.6	48.6	99.6	78.6	90.4	109.7	82.5	78.5	OL	OL	OL	4391	4391	4391	4482	4482	4482	4472	4472	4472	100.00	0.00	0.00	48.57	48.57
16/03/2013	21.0	25.8	24.3	45.2	51.9	48.5	100.0	78.5	91.4	111.2	83.5	78.5	OL	OL	OL	4415	4415	4415	4506	4506	4506	4472	4472	4472	100.00	0.00	0.00	48.53	48.53
17/03/2013	21.1	25.3	24.3	45.2	51.3	48.5	99.8	78.4	90.0	110.4	83.4	78.4	OL	OL	OL	4439	4439	4439	4530	4530	4530	4472	4472	4472	100.00	0.00	0.00	48.48	48.48
18/03/2013	21.2	26.1	24.2	44.6	51.5	48.6	99.7	78.6	89.3	110.5	83.4	78.6	OL	OL	OL	4463	4463	4463	4554	4554	4554	4472	4472	4472	100.00	0.00	0.00	48.63	48.63
19/03/2013	21.2	25.3	24.2	45.0	52.0	48.8	99.8	78.9	87.1	110.3	83.9	78.9	OL	OL	OL	4487	4487	4487	4578	4578	4578	4472	4472	4472	100.00	0.00	0.00	48.84	48.84
20/03/2013	21.3	25.7	24.2	45.5	52.5	49.2	99.1	79.5	85.3	109.7	83.1	79.5	OL	OL	OL	4511	4511	4511	4602	4602	4602	4472	4472	4472	100.00	0.00	0.00	49.20	49.20
21/03/2013	21.2	25.3	24.2	45.9	52.9	49.7	96.1	80.4	81.5	105.9	81.7	80.3	OL	OL	OL	4535	4535	4535	4626	4626	4626	4472	4472	4472	100.00	0.00	0.00	49.71	49.71
22/03/2013	20.9	25.2	24.2	46.4	52.6	49.6	95.2	80.1	80.5	105.2	81.1	80.1	OL	OL	OL	4559	4559	4559	4650	4650	4650	4472	4472	4472	100.00	0.00	0.00	49.53	49.53
23/03/2013	20.5	35.0	24.3	17.9	83.3	58.3	96.2	75.2	82.0	105.9	80.9	75.3	68.8	69.5	67.6	4583	4583	4583	4674	4674	4674	4484	4484	4484	100.00	0.00	0.00	58.32	58.32
24/03/2013	18.1	36.2	24.4	30.1	71.3	54.0	97.1	68.9	82.5	106.2	82.2	74.2	56.6	56.6	56.6	4607	4607	4607	4698	4698	4698	4498	4498	4497	100.00	0.00	0.00	54.01	54.01
25/03/2013	21.2	26.4	24.2	39.7	67.2	54.4	98.7	87.6	88.2	106.7	87.7	87.6	OL	OL	OL	4631	4631	4631	4722	4722	4722	4498	4498	4497	100.00	0.00	0.00	54.44	54.44
26/03/2013	21.3	24.8	24.1	61.9	67.4	65.1	104.5	104.5	104.7	105.9	104.5	104.5	OL	OL	OL	4655	4655	4655	4746	4746	4746	4498	4498	4497	100.00	0.00	0.00	65.08	65.08
27/03/2013	21.2	25.0	24.1	61.8	67.5	65.1	104.5	104.5	104.7	106.8	104.5	104.5	OL	OL	OL	4679	4679	4679	4770	4770	4770	4498	4498	4497	100.00	0.00	0.00	65.05	65.05
28/03/2013	21.2	25.0	24.1	50.6	67.2	63.2	103.2	101.5	101.7	105.3	101.5	101.5	OL	OL	OL	4703	4703	4703	4794	4794	4794	4498	4498	4497	100.00	0.00	0.00	63.20	63.20
29/03/2013	21.4	25.7	24.2	49.5	56.2	53.5	93.7	86.3	86.5	103.8	86.3	86.3	OL	OL	OL	4727	4727	4727	4818	4818	4818	4498	4498	4497	100.00	0.00	0.00	53.54	53.54
30/03/2013	19.2	26.0	24.1	46.9	92.1	66.8	112.0	107.7	107.7	115.6	107.5	107.5	OL	OL	OL	4751	4751	4751	4842	4842	4842	4498	4498	4497	100.00	0.00	0.00	66.75	66.75
31/03/2013	21.2	25.1	24.1	53.9	70.9	66.0	105.9	106.0	106.1	105.9	105.9	106.0	OL	OL	OL	4774	4774	4774	4865	4865	4865	4498	4498	4497	100.00	0.00	0.00	65.94	65.94
<b>Total [ML]:</b>																										0.00	0.00	1286.29	1286.29

**Water Volume [%]:**

Untreated 0.00 %  
 Below Dose 0.00 %  
 To Dose 100.00 %

**Notes:** 1. UV Comparative Dose 18.1 mj/cm<sup>2</sup>  
 2. OL - Off Line

N:\Water Treatment Branch\Administration\Reports\Regulatory Submissions\UV\2013\03-March



**CITY OF WINNIPEG**  
 WATER AND WASTE DEPARTMENT  
 WATER SERVICES DIVISION

Water System Code **252.00**  
 Licence Number **PWS 09 412 A**

**WATER TREATMENT PLANT UV REPORT**

Report Period: **March 2013**

Report Created: **Monday, April 01, 2013**

Reactor: **UVR-400A**

Date	UV Dose mJ/cm <sup>2</sup>			Reactor Flow MLD			Average UV Lamp Intensity W/m <sup>2</sup>									UV Lamp Status Hours									% Volume Treated to Validate Conditions	Daily Totals Water Volume [ML]					
	Min.	Max.	Avg.	Min.	Max.	Avg.	1-1	1-2	1-3	2-1	2-2	2-3	3-1	3-2	3-3	1-1	1-2	1-3	2-1	2-2	2-3	3-1	3-2	3-3		Untreated	Below Dose	To Dose	Total		
1/03/2013	0.0	36.8	24.6	0.0	59.7	56.8	58.3	58.4	58.3	82.5	58.6	68.9	80.3	71.1	100.8	880	880	639	1330	1330	1330	1308	308	1309	100.00	0.00	0.00	21.12	21.12		
2/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	880	880	639	1330	1330	1330	1308	308	1309	OL	0.00	0.00	0.00	0.00		
3/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	880	880	639	1330	1330	1330	1308	308	1309	OL	0.00	0.00	0.00	0.00		
4/03/2013	20.2	58.8	24.5	4.6	59.2	56.6	58.9	58.2	58.0	86.1	58.3	72.4	81.9	73.0	106.8	887	887	646	1337	1337	1338	1316	315	1316	100.00	0.00	0.00	16.68	16.68		
5/03/2013	21.3	26.0	24.5	54.3	60.0	56.9	58.6	60.0	58.5	95.1	58.5	75.5	91.0	82.4	115.6	911	911	670	1361	1361	1362	1340	339	1340	100.00	0.00	0.00	56.89	56.89		
6/03/2013	21.1	26.1	24.6	44.3	59.3	55.3	57.0	61.1	57.0	96.0	56.9	76.1	90.1	85.1	115.6	935	935	694	1385	1385	1386	1364	363	1364	100.00	0.00	0.00	55.31	55.31		
7/03/2013	21.3	25.6	24.6	51.4	55.6	53.4	55.1	57.5	55.0	92.1	55.1	70.7	87.4	76.0	111.1	959	959	718	1409	1409	1410	1388	387	1388	100.00	0.00	0.00	53.41	53.41		
8/03/2013	21.2	25.8	24.6	51.4	55.3	53.3	55.0	55.4	54.9	91.4	55.0	67.9	90.4	72.5	111.4	983	983	742	1433	1433	1434	1412	411	1412	100.00	0.00	0.00	53.35	53.35		
9/03/2013	0.0	36.1	24.6	0.0	84.7	53.5	55.1	55.2	55.1	91.1	55.1	66.0	90.5	70.0	109.9	995	995	755	1446	1445	1446	1424	423	1424	100.00	0.00	0.00	27.48	27.48		
10/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	995	995	755	1446	1445	1446	1424	423	1424	OL	0.00	0.00	0.00	0.00		
11/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	995	995	755	1446	1445	1446	1424	423	1424	OL	0.00	0.00	0.00	0.00		
12/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	995	995	755	1446	1445	1446	1424	423	1424	OL	0.00	0.00	0.00	0.00		
13/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	995	995	755	1446	1445	1446	1424	423	1424	OL	0.00	0.00	0.00	0.00		
14/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	995	995	755	1446	1445	1446	1424	423	1424	OL	0.00	0.00	0.00	0.00		
15/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	995	995	755	1446	1445	1446	1424	423	1424	OL	0.00	0.00	0.00	0.00		
16/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	995	995	755	1446	1445	1446	1424	423	1424	OL	0.00	0.00	0.00	0.00		
17/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	995	995	755	1446	1445	1446	1424	423	1424	OL	0.00	0.00	0.00	0.00		
18/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	995	995	755	1446	1445	1446	1424	423	1424	OL	0.00	0.00	0.00	0.00		
19/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	995	995	755	1446	1445	1446	1424	423	1424	OL	0.00	0.00	0.00	0.00		
20/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	995	995	755	1446	1445	1446	1424	423	1424	OL	0.00	0.00	0.00	0.00		
21/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	995	995	755	1446	1445	1446	1424	423	1424	OL	0.00	0.00	0.00	0.00		
22/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	995	995	755	1446	1445	1446	1424	423	1424	OL	0.00	0.00	0.00	0.00		
23/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	995	995	755	1446	1445	1446	1424	424	1424	OL	0.00	0.00	0.00	0.00		
24/03/2013	20.4	63.9	24.3	3.2	73.7	68.4	71.0	71.3	69.9	76.1	69.9	70.3	70.3	70.2	76.7	1018	1018	777	1468	1468	1469	1447	446	1447	100.00	0.00	0.00	61.50	61.50		
25/03/2013	0.0	38.5	23.4	0.0	73.0	68.4	70.0	69.9	67.7	69.9	70.0	69.9	69.9	71.7	75.8	1037	1037	796	1488	1487	1488	1466	465	1466	100.00	0.00	0.00	57.39	57.39		
26/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	1037	1037	796	1488	1487	1488	1466	465	1466	OL	0.00	0.00	0.00	0.00		
27/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	1037	1037	796	1488	1487	1488	1466	465	1466	OL	0.00	0.00	0.00	0.00		
28/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	1037	1037	796	1488	1487	1488	1466	465	1466	OL	0.00	0.00	0.00	0.00		
29/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	1037	1037	796	1488	1487	1488	1466	465	1466	OL	0.00	0.00	0.00	0.00		
30/03/2013	0.0	32.1	21.1	0.0	64.6	37.1	41.8	18.8	22.1	48.2	50.0	34.1	51.1	57.4	66.1	1037	1037	797	1488	1487	1488	1466	466	1466	43.16	0.00	0.04	0.03	0.07		
31/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	1037	1037	797	1488	1487	1488	1466	466	1466	OL	0.00	0.00	0.00	0.00		
<b>Total [ML]:</b>																												0.00	0.04	403.16	403.20

**Water Volume [%]:**

Untreated 0.00 %  
 Below Dose 0.01 %  
 To Dose 99.99 %

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



**CITY OF WINNIPEG**  
 WATER AND WASTE DEPARTMENT  
 WATER SERVICES DIVISION

Water System Code **252.00**  
 Licence Number **PWS 09 412 A**

**WATER TREATMENT PLANT UV REPORT**

Report Period: **March 2013**

Report Created: **Monday, April 01, 2013**

Reactor: **UVR-500A**

Date	UV Dose mJ/cm <sup>2</sup>			Reactor Flow MLD			Average UV Lamp Intensity W/m <sup>2</sup>									UV Lamp Status Hours									% Volume Treated to Validate Conditions	Daily Totals Water Volume [ML]			
	Min.	Max.	Avg.	Min.	Max.	Avg.	1-1	1-2	1-3	2-1	2-2	2-3	3-1	3-2	3-3	1-1	1-2	1-3	2-1	2-2	2-3	3-1	3-2	3-3		Untreated	Below Dose	To Dose	Total
1/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	2907	2563	4669	3360	4940	3793	1948	1947	1947	OL	0.00	0.00	0.00	0.00
2/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	2907	2563	4669	3360	4940	3793	1948	1947	1947	OL	0.00	0.00	0.00	0.00
3/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	2907	2563	4669	3360	4940	3793	1948	1947	1947	OL	0.00	0.00	0.00	0.00
4/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	2907	2563	4669	3360	4940	3793	1948	1947	1947	OL	0.00	0.00	0.00	0.00
5/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	2907	2563	4669	3360	4940	3793	1948	1947	1947	OL	0.00	0.00	0.00	0.00
6/03/2013	17.9	109.7	24.2	4.3	69.2	62.9	101.4	101.1	195.4	96.2	79.5	95.2	125.5	101.0	101.2	2920	2576	4681	3360	4940	3794	1960	1960	1959	100.00	0.00	0.00	32.49	32.49
7/03/2013	21.0	25.4	24.1	60.0	64.5	62.4	100.5	100.4	151.0	OL	OL	OL	117.1	100.5	100.5	2944	2600	4705	3360	4940	3794	1984	1984	1983	100.00	0.00	0.00	62.43	62.43
8/03/2013	20.9	24.9	24.1	59.5	64.2	62.2	100.1	100.1	114.2	OL	OL	OL	108.4	100.1	100.2	2968	2624	4729	3360	4940	3794	2008	2008	2007	100.00	0.00	0.00	62.24	62.24
9/03/2013	20.6	28.6	24.2	27.3	66.0	53.5	85.8	85.8	99.6	OL	OL	OL	102.8	86.1	86.9	2992	2648	4753	3360	4940	3794	2032	2032	2031	100.00	0.00	0.00	53.56	53.56
10/03/2013	20.4	26.0	24.3	41.1	49.4	44.9	72.9	72.8	97.9	OL	OL	OL	100.1	72.9	73.0	3016	2672	4777	3360	4940	3794	2056	2056	2055	100.00	0.00	0.00	44.91	44.91
11/03/2013	20.4	26.0	24.3	39.9	48.9	44.7	72.5	72.4	97.1	OL	OL	OL	100.5	72.5	72.8	3040	2696	4801	3360	4940	3794	2080	2080	2079	100.00	0.00	0.00	44.70	44.70
12/03/2013	20.0	27.1	24.2	26.7	65.6	50.6	81.2	81.4	98.5	OL	OL	OL	102.7	81.6	85.2	3064	2720	4825	3360	4940	3794	2104	2104	2103	100.00	0.00	0.00	50.68	50.68
13/03/2013	20.7	24.8	24.1	61.2	65.7	63.8	102.6	102.5	102.7	OL	OL	OL	102.8	102.6	102.6	3088	2744	4849	3360	4940	3794	2128	2128	2127	100.00	0.00	0.00	63.82	63.82
14/03/2013	0.0	37.2	24.2	0.0	77.2	58.7	97.6	91.8	105.5	68.9	63.6	57.9	107.5	99.0	100.1	3108	2764	4869	3363	4942	3796	2148	2148	2147	100.00	0.00	0.00	48.60	48.60
15/03/2013	20.9	24.7	24.1	71.3	79.2	74.9	120.2	120.1	120.3	OL	OL	OL	123.5	120.2	120.1	3132	2788	4893	3363	4942	3796	2172	2172	2171	100.00	0.00	0.00	74.95	74.95
16/03/2013	20.8	24.7	24.1	72.0	77.6	74.9	120.2	120.1	120.2	OL	OL	OL	122.3	120.2	120.0	3156	2812	4917	3363	4942	3796	2196	2196	2195	100.00	0.00	0.00	74.90	74.90
17/03/2013	20.7	24.7	24.1	71.6	77.6	74.9	120.1	120.1	120.1	OL	OL	OL	120.2	120.2	120.0	3180	2836	4941	3363	4942	3796	2220	2220	2219	100.00	0.00	0.00	74.88	74.88
18/03/2013	20.7	24.8	24.1	71.6	77.4	74.9	120.0	120.1	120.2	OL	OL	OL	120.2	120.2	120.0	3204	2860	4965	3363	4942	3796	2244	2244	2243	100.00	0.00	0.00	74.94	74.94
19/03/2013	20.8	26.5	24.1	71.8	77.5	74.9	120.0	120.0	120.2	OL	OL	OL	120.2	120.2	120.0	3228	2884	4989	3363	4942	3796	2268	2268	2267	100.00	0.00	0.00	74.90	74.90
20/03/2013	20.7	24.8	24.1	72.6	78.7	75.4	120.7	120.7	120.9	OL	OL	OL	120.9	120.9	120.8	3252	2908	5013	3363	4942	3796	2292	2292	2291	100.00	0.00	0.00	75.36	75.36
21/03/2013	20.8	26.6	24.1	73.4	78.9	76.4	122.6	122.4	122.6	OL	OL	OL	122.5	122.6	122.5	3276	2932	5037	3363	4942	3796	2316	2316	2315	100.00	0.00	0.00	76.42	76.42
22/03/2013	20.9	24.7	24.1	73.4	78.9	76.4	122.6	122.4	122.7	OL	OL	OL	122.5	122.5	122.5	3300	2956	5061	3363	4942	3796	2340	2340	2339	100.00	0.00	0.00	76.41	76.41
23/03/2013	20.8	29.6	24.1	33.1	80.0	72.2	116.1	116.0	120.8	OL	OL	OL	116.0	116.0	115.9	3324	2980	5085	3363	4942	3796	2364	2364	2363	100.00	0.00	0.00	72.17	72.17
24/03/2013	20.8	24.8	24.1	58.7	76.1	73.5	118.0	117.8	120.7	OL	OL	OL	117.9	118.0	117.9	3348	3004	5109	3363	4942	3796	2388	2388	2387	100.00	0.00	0.00	73.51	73.51
25/03/2013	20.4	28.1	24.1	35.1	76.1	72.8	117.0	116.8	125.3	OL	OL	OL	116.9	116.9	116.9	3372	3028	5133	3363	4942	3796	2412	2412	2411	100.00	0.00	0.00	72.81	72.81
26/03/2013	20.8	25.9	24.1	62.8	68.2	66.3	106.6	106.5	166.4	OL	OL	OL	106.5	106.5	106.5	3396	3052	5157	3363	4942	3796	2436	2436	2435	100.00	0.00	0.00	66.24	66.24
27/03/2013	20.8	24.8	24.1	62.5	68.0	66.2	106.6	106.3	187.8	OL	OL	OL	106.4	106.5	106.4	3420	3076	5181	3363	4942	3796	2460	2460	2459	100.00	0.00	0.00	66.21	66.21
28/03/2013	20.8	25.5	24.1	58.0	68.2	65.3	105.1	104.9	194.4	OL	OL	OL	105.0	105.1	105.0	3444	3100	5205	3363	4942	3796	2484	2484	2483	100.00	0.00	0.00	65.29	65.29
29/03/2013	20.8	24.7	24.1	57.5	62.1	60.3	97.2	97.1	184.9	OL	OL	OL	97.1	97.2	97.0	3468	3124	5229	3363	4942	3796	2508	2508	2507	100.00	0.00	0.00	60.28	60.28
30/03/2013	0.0	33.5	24.3	0.0	62.1	52.9	95.2	85.2	193.5	OL	OL	OL	93.8	90.8	91.0	3481	3137	5242	3363	4942	3796	2521	2521	2521	99.79	0.03	0.03	31.30	31.37
31/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	3481	3137	5242	3363	4942	3796	2521	2521	2521	OL	0.00	0.00	0.00	0.00
<b>Total [ML]:</b>																									0.03	0.03	1574.01	1574.08	

**Water Volume [%]:**

Untreated 0.00 %  
 Below Dose 0.00 %  
 To Dose 100.00 %

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



**CITY OF WINNIPEG**  
**WATER AND WASTE DEPARTMENT**  
**WATER SERVICES DIVISION**

Water System Code **252.00**  
 Licence Number **PWS 09 412 A**

**WATER TREATMENT PLANT UV REPORT**

Report Period: **March 2013**

Report Created: **Monday, April 01, 2013**

Reactor: **UVR-600A**

Date	UV Dose mJ/cm <sup>2</sup>			Reactor Flow MLD			Average UV Lamp Intensity W/m <sup>2</sup>										UV Lamp Status Hours										% Volume Treated to Validate Conditions	Daily Totals Water Volume [ML]				
	Min.	Max.	Avg.	Min.	Max.	Avg.	1-1	1-2	1-3	2-1	2-2	2-3	3-1	3-2	3-3	1-1	1-2	1-3	2-1	2-2	2-3	3-1	3-2	3-3	Untreated	Below Dose		To Dose	Total			
1/03/2013	17.8	25.6	24.2	58.1	78.4	72.8	90.1	74.1	191.3	74.1	74.1	76.8	79.6	74.1	57.6	4320	2181	2181	2561	2561	2561	3866	33	2468	100.00	0.00	0.00	72.86	72.86			
2/03/2013	18.0	24.9	24.2	73.4	77.7	75.6	77.0	77.0	127.7	77.0	77.0	77.0	77.0	77.0	43.8	4344	2205	2205	2585	2585	2585	3890	57	2492	100.00	0.00	0.00	75.60	75.60			
3/03/2013	18.7	24.9	24.2	73.4	77.9	75.8	77.1	77.1	109.7	77.1	77.1	77.2	77.2	77.1	51.2	4368	2229	2229	2609	2609	2609	3914	81	2516	100.00	0.00	0.00	75.74	75.74			
4/03/2013	18.5	25.9	24.3	52.3	77.3	72.7	74.1	74.0	104.2	73.9	73.9	73.9	76.9	74.0	67.0	4392	2253	2253	2633	2633	2633	3938	105	2540	100.00	0.00	0.00	72.67	72.67			
5/03/2013	18.6	25.2	24.3	65.4	72.0	68.1	71.4	69.5	111.1	69.5	69.5	69.5	86.5	69.5	69.5	4416	2277	2277	2657	2657	2657	3962	129	2564	100.00	0.00	0.00	68.14	68.14			
6/03/2013	0.0	40.5	24.3	0.0	70.8	67.9	75.9	69.3	117.3	69.4	69.4	69.5	100.1	69.4	69.3	4428	2289	2288	2669	2668	2669	3973	141	2576	100.00	0.00	0.00	32.98	32.98			
7/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4428	2289	2288	2669	2668	2669	3973	141	2576	OL	0.00	0.00	0.00	0.00			
8/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4428	2289	2288	2669	2668	2669	3973	141	2576	OL	0.00	0.00	0.00	0.00			
9/03/2013	18.6	89.1	24.3	3.3	82.2	78.7	80.0	80.0	106.7	80.0	80.0	80.0	100.6	80.0	79.8	4440	2301	2300	2681	2680	2681	3985	153	2588	100.00	0.00	0.00	38.90	38.90			
10/03/2013	18.6	25.3	24.2	75.5	82.0	78.8	80.1	80.1	105.8	80.1	80.1	80.1	102.6	80.1	80.1	4464	2325	2324	2705	2704	2705	4009	177	2612	100.00	0.00	0.00	78.80	78.80			
11/03/2013	18.7	25.2	24.2	73.7	82.1	78.3	79.7	79.7	104.6	79.7	79.7	79.7	101.2	79.7	79.7	4488	2349	2348	2729	2728	2729	4033	201	2636	100.00	0.00	0.00	78.30	78.30			
12/03/2013	0.0	36.0	24.3	0.0	80.3	76.6	78.0	78.0	104.8	78.0	78.0	78.0	100.8	78.0	78.0	4502	2363	2363	2743	2743	2744	4048	216	2650	100.00	0.00	0.00	49.68	49.68			
13/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4502	2363	2363	2743	2743	2744	4048	216	2650	OL	0.00	0.00	0.00	0.00			
14/03/2013	0.0	75.5	24.5	0.0	58.0	55.0	62.3	56.6	98.4	65.9	67.8	68.1	96.9	57.0	56.2	4507	2367	2367	2747	2747	2748	4052	220	2655	100.00	0.00	0.00	9.78	9.78			
15/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4507	2367	2367	2747	2747	2748	4052	220	2655	OL	0.00	0.00	0.00	0.00			
16/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4507	2367	2367	2747	2747	2748	4052	220	2655	OL	0.00	0.00	0.00	0.00			
17/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4507	2367	2367	2747	2747	2748	4052	220	2655	OL	0.00	0.00	0.00	0.00			
18/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4507	2367	2367	2747	2747	2748	4052	220	2655	OL	0.00	0.00	0.00	0.00			
19/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4507	2367	2367	2747	2747	2748	4052	220	2655	OL	0.00	0.00	0.00	0.00			
20/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4507	2367	2367	2747	2747	2748	4052	220	2655	OL	0.00	0.00	0.00	0.00			
21/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4507	2367	2367	2747	2747	2748	4052	220	2655	OL	0.00	0.00	0.00	0.00			
22/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4507	2367	2367	2747	2747	2748	4052	220	2655	OL	0.00	0.00	0.00	0.00			
23/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4507	2368	2367	2748	2747	2748	4052	220	2655	OL	0.00	0.00	0.00	0.00			
24/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4507	2368	2367	2748	2747	2748	4052	220	2655	OL	0.00	0.00	0.00	0.00			
25/03/2013	0.0	65.4	28.3	0.0	48.9	29.6	52.8	37.8	67.9	56.4	50.5	50.4	100.9	53.4	37.7	4507	2368	2367	2748	2748	2748	4052	220	2655	100.00	0.00	0.00	0.05	0.05			
26/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4507	2368	2367	2748	2748	2748	4052	220	2655	OL	0.00	0.00	0.00	0.00			
27/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4507	2368	2367	2748	2748	2748	4052	220	2655	OL	0.00	0.00	0.00	0.00			
28/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4507	2368	2367	2748	2748	2748	4052	220	2655	OL	0.00	0.00	0.00	0.00			
29/03/2013	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	4507	2368	2367	2748	2748	2748	4052	220	2655	OL	0.00	0.00	0.00	0.00			
30/03/2013	0.0	62.1	24.1	5.2	71.9	66.9	68.0	67.7	70.3	68.2	68.1	68.7	72.0	68.0	67.6	4523	2384	2384	2764	2764	2765	4069	237	2671	100.00	0.00	0.00	42.20	42.20			
31/03/2013	17.8	25.5	24.1	61.0	72.4	68.4	69.8	69.8	69.8	69.9	69.9	69.9	71.2	69.8	69.8	4546	2407	2407	2787	2787	2788	4092	260	2694	100.00	0.00	0.00	68.43	68.43			
<b>Total [ML]:</b>																													0.00	0.00	764.14	764.14

**Water Volume [%]:**

Untreated 0.00 %  
 Below Dose 0.00 %  
 To Dose 100.00 %

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

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