

# **TOWN OF ARNPRIOR WATER FILTRATION PLANT**

## **ANNUAL SUMMARY REPORT**

**2010**

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Waterworks Department  
Corporation of the Town of Arnprior  
71 James Street  
Arnprior, Ontario  
K2E 7J5  
Waterworks Number 220000932**

## **Introduction**

The following annual summary report has been prepared to summarize the raw and treated water characteristics, whose charts may be found in Appendix A and Appendix B, as well as changes and improvements during 2010 at the Arnprior Water Filtration Plant. This report covers the period from January 1 to December 31, 2010.

## **Compliance with Terms and Conditions of the Certificate of Approval**

The Town of Arnprior owns and operates the Water Filtration Plant (WFP), and complies with the terms and conditions of the Certificate of Approval issued to the WFP.

### **WFP Plant Changes and Improvements:**

- The plant upgrade is scheduled to be completed in the spring of 2011. The plant upgrade includes a new pre-treatment process, a third filter, and upgraded low lift pump-house.
- The Town of Arnprior has a lead in drinking water sampling program for private, commercial, and distribution system locations.

In accordance with Ontario Regulation 170/03, all required sampling and laboratory analysis of the raw and treated water is carried out in the plant laboratory and a certified contracted laboratory, which includes the quarterly sampling requirements.

Flow meters are calibrated annually by the manufacturer, for flow measurement of the water taken from the Madawaska River to the distribution system.

Continuous water quality analyzers, with alarm systems, are installed for chlorine residual, turbidity of filtered water, and fluoride.

All operators are certified, with annual training.

An operation manual is kept at the filtration plant and updated as required.

All chemicals used in the water treatment process meet American Water Works Association (AWWA) and American National Standards Institute (ANSI) guidelines.

## **Non-Compliance with Terms and Conditions of the Certificate of Approval**

None at this time.

## **Adverse Test Results and Anomalies**

1- An elevated filter flow turbidity of +1 NTU occurred on May 4, 2010. This occurred during the start-up of a new section of the treatment plant expansion. The result was elevated filter flow turbidity's and treatment plant shutdown. The old treatment system was restarted and filter operation returned to normal.

2- An adverse test result occurred on June 11, 2010. The sample was mistakenly taken from a fire hydrant which can result in sample contamination; samples are normally taken at a residence tap. The sample taken had a reported Total Coliform of 8/100ml and a Total Chlorine residual of 1.77 mg/l. The site was re-sampled with a result of 0/100ml Total Coliform and a Total Chlorine residual of 1.77 mg/l. The water service was not affected.

3- On September 14, 2010 a low distribution Total Chlorine Residual was detected at 233 James Street. This was a result of an insufficient dose of Aqua Ammonia to combine with the free chlorine residual of between 1.5 and 2.0 mg/l for the Chloramination system at the Water Filtration Plant. The Chloramination system was shutdown, and reverted to a Free Chlorine system with Free Chlorine levels between 1.5 and 2.0 mg/l. The Chloramination system was reverted back in January 2011.

4- Post coagulation occurred on December 15, 2010 in the distribution system, which caused a lack of clarity in the drinking water. This was caused by excess water treatment coagulant being drawn into the treatment system due to a mechanical problem. The mechanical system was repaired and the water distribution system was flushed for several consecutive days, with the system returning to normal within the week. The Ministry of Environment and local health unit were advised. The Town of Arnprior's drinking water was not compromised.

## **Water Production**

The raw, treated, and backwash flows at the plant are measured using Endress + Hauser Electromag flow meters, these meters are calibrated annually by the manufacturer.

### **Raw Water Production**

The average daily raw water flow was measured at 5,307 m<sup>3</sup>. The maximum daily flow recorded was 9,561 m<sup>3</sup> on October 5, 2010. The total annual raw water flow for 2010 was 1,939,705 m<sup>3</sup>.

This volume has increased since 2009, which had a total flow of 1,745,096 m<sup>3</sup>, an increase of 194,609 m<sup>3</sup>. The Town's current permit to take water from the Madawaska River is for 15,000 m<sup>3</sup> per day.

### **Treated Water Production**

The Certificate of Approval for the WFP in 2010 is 7,300 m<sup>3</sup>/day of raw water production. There were no flow rate exceedences in 2010, as the average daily treated water flow was measured at 5,309 m<sup>3</sup>/day. The maximum daily treated water flow was 8,355 m<sup>3</sup> on October 5, 2010. The total annual treated water flow for 2010 was 1,756,487 m<sup>3</sup>. This volume has increased since

2009, which had a total flow of 1,636,584 m<sup>3</sup>, an increase of 119,903 m<sup>3</sup>. The per capita use of treated water is 708 litres per day, which is above the typical Canadian average of 400 – 500 litres per day. This higher than average per capita consumption is attributed to industrial use.

## **Backwash Water Consumption**

The average daily backwash water flow was 284 m<sup>3</sup>; the total annual backwash water flow was 101,227 m<sup>3</sup>. The backwash water is treated in a residuals treatment system where the solids are removed and pumped to the Water Pollution Control Centre (WPCC) for treatment and the clear supernatant is pumped to the Madawaska River. The WFP Certificate of Approval stipulates a maximum Total Suspended Solids (TSS) of 25 mg/l in the supernatant. In 2010 the average TSS was 4 mg/l.

## **Flow Rate Ascendances**

The WFP Certificate of Approval states a treatment process maximum flow rate of 84.5 liters per second. This flow rate is manually inputted into a flow control valve, so that there are no flow rate ascendances.

## **Water Quality**

The Town of Arnprior carries out all the sampling and analysis of the raw and treated water as per the Ontario Drinking Water Standard guidelines. Certain parameters are done at different frequencies such as daily, weekly, monthly, and annually. In addition, the Town of Arnprior has created and follows their Drinking Water Quality Management System (DWQMS), as required under the Safe Drinking Water Act, 2002, S.O. 2002, C. 32, Bill 195.

## **Quarterly and Annual Water Sampling**

Sampling and testing were carried out at various frequencies for Volatile Organic Compounds (VOCs), Inorganic compounds, Pesticides, and Polychlorinated Biphenyl's (PCBs). These samples are collected by plant operators and are sent to a certified contracted laboratory. The analytical results revealed that all samples collected were within acceptable concentrations under the Ontario Drinking Water Standard.

## **Water Treatment Chemicals**

The WFP uses Gas Chlorine, Aqua Ammonia, Aluminum Sulfate, Sodium Carbonate, and Hydrofluorosilicic Acid (fluoride).

## **Conclusion**

This report is available at the Arnprior Town Hall, 105 Elgin Street West, at the 2<sup>nd</sup> floor public

works space. This report will also be presented to Members of Council for adoption.

For any further information on this report please call Michael Trumble at 613-623-4231 ext. 246.

Respectfully,

Michael Trumble  
Waterworks Supervisor

## **APPENDIX A**

# Raw Water Flows 2010

## Cubic Meters (M<sup>3</sup>)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	3,858	4,392	4,123	3,961	4,175	4,863	4,955	6,111	7,735	8,410	4,905	4,725
2	4,192	4,556	4,137	4,115	4,525	4,919	5,556	6,685	7,469	8,669	4,972	4,757
3	4,186	4,364	4,401	4,076	4,702	4,564	5,478	6,279	7,367	8,156	5,420	4,785
4	4,496	4,456	4,258	4,207	4,465	4,808	6,002	6,852	7,135	9,227	5,052	4,130
5	4,200	4,226	4,224	4,361	5,088	4,262	6,768	6,387	7,160	9,561	4,689	5,877
6	4,385	3,904	3,989	4,303	4,718	4,515	6,906	5,966	7,324	8,478	4,769	4,672
7	4,574	4,333	4,221	4,263	4,763	4,824	7,198	5,960	7,038	8,617	5,119	4,728
8	4,239	4,312	4,086	4,263	4,288	4,914	6,207	6,338	7,276	8,735	5,418	5,005
9	4,008	4,083	4,138	4,113	4,513	5,067	5,575	5,883	7,889	8,680	6,467	5,775
10	4,517	4,358	4,103	4,049	3,823	4,662	4,966	7,551	7,724	8,899	5,818	5,174
11	5,151	4,216	4,228	4,231	4,452	5,162	6,413	6,702	7,730	9,329	5,221	4,669
12	5,434	4,104	3,734	4,344	4,695	4,490	5,528	7,335	7,799	8,459	4,879	4,985
13	5,178	4,003	3,813	4,381	4,439	4,605	5,584	5,421	7,759	5,850	4,708	4,991
14	5,275	3,808	4,126	4,472	4,407	5,805	5,872	6,683	7,719	2,666	5,192	5,147
15	5,338	4,375	3,914	4,503	4,268	5,031	6,201	6,817	8,689	5,223	4,754	5,614
16	5,187	4,726	4,170	4,141	4,592	5,180	5,807	6,624	8,303	4,858	6,215	4,830
17	5,523	4,538	3,621	3,924	5,548	5,367	6,104	6,969	8,252	5,057	4,809	4,690
18	5,888	4,284	3,835	4,491	4,816	5,023	5,759	7,089	8,845	4,958	5,089	4,404
19	4,285	3,716	3,839	4,716	5,319	4,877	6,160	7,106	8,494	5,049	4,817	4,494
20	4,371	3,824	3,877	4,414	5,374	5,232	6,240	7,039	8,524	5,276	5,285	4,643
21	4,201	4,079	4,151	4,028	4,929	5,370	6,029	6,912	8,630	4,809	4,550	4,544
22	4,221	4,085	4,151	4,882	4,924	4,185	6,692	6,650	8,587	4,786	5,210	5,113
23	4,271	4,037	4,454	4,283	4,976	3,972	5,913	6,991	8,187	4,392	5,031	4,775
24	4,326	4,092	4,177	4,333	5,930	3,181	6,053	7,866	8,077	5,213	4,685	4,271
25	4,102	4,052	4,611	4,535	5,614	3,356	6,234	6,635	7,741	5,310	4,989	4,140
26	4,033	3,819	4,280	4,269	5,416	4,714	6,801	7,422	8,294	5,123	5,222	4,007
27	4,465	3,735	3,946	4,493	5,372	4,979	7,139	7,127	8,335	5,316	5,046	4,403
28	4,773	4,007	4,070	4,738	4,853	3,366	6,629	6,503	8,377	4,830	5,821	3,867
29	4,007		4,671	5,562	5,253	3,368	6,068	7,061	8,436	5,139	4,887	4,280
30	4,150		4,127	4,312	5,037	3,614	6,008	7,175	8,340	5,023	4,696	4,099
31	4,508		3,210		4,735		6,144	7,505		5,172		4,256
Total	141,344	116,482	126,687	130,762	150,008	138,275	188,991	209,069	239,234	199,268	153,734	145,849
Average	4,559	4,160	4,087	4,359	4,839	4,609	6,096	6,744	7,974	6,428	5,124	4,705
Min	3,858	3,716	3,210	3,924	3,823	3,181	4,955	5,421	7,038	2,666	4,550	3,867
Max	5,888	4,726	4,671	5,562	5,930	5,805	7,198	7,866	8,845	9,561	6,467	5,877

### Raw Water

Yearly Average	5,307
Yearly Min	2,666
Yearly Max	9,561
Yearly Total	1,939,705

## **APPENDIX B**

# Treated Water Flows 2010

## Cubic Meters (M<sup>3</sup>)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	4,423	5,062	4,305	4,293	4,458	5,361	4,375	4,580	4,819	4,288	3,994	4,068
2	4,428	4,944	4,457	4,148	3,962	6,022	4,646	4,216	5,336	4,065	3,081	4,202
3	4,764	5,209	4,494	4,248	3,929	6,943	4,215	4,406	5,126	4,129	4,733	4,157
4	4,621	4,525	4,486	4,647	3,706	4,650	4,212	4,950	4,727	4,708	5,873	4,451
5	4,990	4,470	4,422	4,600	4,064	4,226	4,628	4,626	4,568	4,323	4,380	3,934
6	4,602	4,218	4,075	4,388	4,354	4,078	4,551	5,166	4,710	4,275	3,953	4,275
7	4,847	4,577	4,071	4,330	4,487	4,255	4,264	4,226	4,771	4,685	3,851	4,019
8	4,212	4,601	4,088	4,228	4,108	4,260	4,607	4,711	5,378	4,395	3,974	4,171
9	4,842	4,290	4,319	4,254	4,059	4,142	4,727	4,531	4,914	4,215	4,052	3,810
10	4,213	4,267	4,235	4,113	4,103	4,530	4,287	5,525	5,262	4,533	4,081	4,372
11	4,870	4,434	4,462	4,177	4,253	4,563	4,025	4,899	4,696	4,274	4,056	4,045
12	4,617	4,441	4,683	4,625	4,413	4,358	4,249	5,575	5,359	4,215	4,055	4,334
13	4,400	4,225	4,033	4,827	4,160	4,281	4,361	5,310	4,742	4,553	3,880	3,571
14	4,846	4,023	4,080	4,661	4,390	4,447	4,450	5,540	5,339	4,452	3,966	4,309
15	4,897	3,801	4,191	4,377	4,034	4,504	4,558	4,798	4,626	4,048	4,505	3,771
16	4,770	4,586	4,711	4,186	3,787	4,788	5,229	5,468	4,996	4,401	4,272	4,132
17	4,776	4,503	4,651	4,120	4,307	4,528	4,437	5,460	4,708	4,183	4,233	3,927
18	4,975	4,399	4,308	4,317	4,710	4,497	4,117	4,993	4,698	4,251	4,072	3,673
19	5,070	4,222	4,598	4,333	4,386	4,601	4,748	5,269	4,178	4,405	4,078	3,813
20	4,976	4,081	4,400	4,312	4,201	4,484	4,851	4,649	5,061	5,764	4,046	3,984
21	5,014	4,179	4,300	4,651	4,282	4,488	4,568	5,204	5,082	4,596	4,522	4,112
22	4,942	4,418	4,424	4,517	4,306	4,989	4,991	4,738	4,918	4,403	4,388	4,056
23	4,817	4,496	4,326	4,274	4,495	5,234	4,789	5,073	5,392	4,177	4,280	4,520
24	4,849	4,525	4,777	4,128	4,240	5,518	4,386	5,005	4,563	4,228	4,360	4,065
25	5,006	4,496	4,317	4,631	4,392	5,332	4,126	5,152	4,372	4,436	3,924	4,374
26	5,007	4,217	4,128	4,558	4,130	4,359	4,688	4,855	4,402	4,079	4,098	4,164
27	5,026	4,215	4,102	4,624	4,056	4,314	4,570	4,616	4,708	4,550	3,905	4,161
28	4,804	4,093	4,048	4,551	4,128	4,463	4,618	4,542	5,163	4,708	4,044	3,957
29	4,955		4,408	4,403	4,692	4,435	4,877	4,578	4,603	4,316	4,167	4,501
30	4,811		4,375	4,189	4,492	4,358	4,746	4,239	4,532	4,273	4,161	3,942
31	4,835		4,526		4,128		4,331	5,191		3,930		4,359
Total	148,205	123,518	134,799	131,708	131,211	141,009	140,227	152,092	145,747	135,858	124,983	127,229
Average	4,781	4,411	4,348	4,390	4,233	4,700	4,523	4,906	4,858	4,383	4,166	4,104
Min	4,212	3,801	4,033	4,113	3,706	4,078	4,025	4,216	4,178	3,930	3,081	3,571
Max	5,070	5,209	4,777	4,827	4,710	6,943	5,229	5,575	5,392	5,764	5,873	4,520
<b>Treated Water</b>				Yearly Average		4,484						
				Yearly Min		3,081						
				Yearly Max		6,943						
				Yearly Total		1,636,584						