

# Drinking Water Analysis SUMMARY

Drinking Water Analysis Summary for All Plants and Distribution for January 01, 2016 to December 31, 2016

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Samples	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
<b>Microbiological Parameters</b>										
E. coli - Presence/Absence			A	1/01 - 12/31	12270		5	Present	Absent	99.96% Absent
E. coli - membrane filtration	CFU/100mL		0	1/01 - 12/31	616		25	74	0	0
Heterotrophic Plate Count	CFU/mL			1/01 - 12/31	12268		2083	912	0	10
Total Coliform - Presence/Absence			A	1/01 - 12/31	12270		243	Present	Absent	98.08% Absent
Total Coliform - membrane filtration	CFU/100mL		0	1/01 - 12/31	616		102	200	0	2
Microcystin	µg/L			6/20 - 10/31	72	0.05 - 0.10	0	0	0	0
<b>Operational Parameters</b>										
Aluminum	mg/L	0.1		1/06 - 12/28	212	0.01	212	0.569	0.017	0.040
Fluoride	mg/L		1.5	1/01 - 12/31	1301	0.10	1301	0.77	0.32	0.55
Total Chlorine (Distribution only)	mg/L		3.0	1/01 - 12/31	7441	0.1	7440	3.01	<0.1	1.37
Turbidity (Distribution only)	NTU	5		1/01 - 12/31	7229	0.1	7019	5.00	<0.1	0.39
<b>General Chemical and Physical Parameters</b>										
Alkalinity	mg/L	30-500		1/25 - 12/12	93	1.6	93	92.5	85.1	89.4
Colour	T.C.U.	5		1/25 - 12/12	48		48	1	1	1
Conductivity	µmhos/cm			1/25 - 12/12	94	1.5	94	350	307	320
Hardness ( as CaCO <sub>3</sub> - calculated )	mg/L	80-100		1/25 - 12/12	107	1	107	147	124	129
pH		6.5-8.5		1/04 - 12/30	996		996	7.8	6.9	7.5
TOC	mg/L	5		1/25 - 12/12	47	1.0	47	2.2	1.5	1.8
Dissolved Solids (calculated)	mg/L	500		1/25 - 12/12	93	0.13	93	230	200	208
<b>Inorganic Parameters</b>										
Antimony	mg/L		0.006	1/25 - 10/26	16	0.00003	16	0.00034	0.00020	0.00025
Arsenic	mg/L		0.025	1/25 - 10/26	16	0.00005	16	0.0011	0.0007	0.0008
Barium	mg/L		1.0	1/25 - 10/26	16	0.0005	16	0.024	0.018	0.022
Beryllium	mg/L			1/25 - 10/26	16	0.00005	0	0	0	0
Boron	mg/L		5.0	1/25 - 10/26	16	0.005	16	0.025	0.021	0.024
Cadmium	mg/L		0.005	1/25 - 10/26	16	0.00001	1	0.00001	0	0.000001
Caesium	mg/L			1/25 - 10/26	16	0.00001	0	0	0	0
Calcium	mg/L			1/25 - 12/12	107	0.2	107	40.9	34.5	36.3
Chloride	mg/L	250		1/25 - 12/12	107	0.2	107	35.0	23.4	26.0
Chromium	mg/L		0.05	1/25 - 10/26	16	0.0002	16	0.0005	0.00022	0.0003

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Samples	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
Cobalt	mg/L			1/25 - 10/26	16	0.00001	2	0.00001	0	0.000002
Copper	mg/L	1		1/25 - 10/26	16	0.0008	14	0.0019	0	0.0012
Cyanide (Free)	mg/L		0.2	1/25 - 10/26	16	0.003	0	0	0	0
Iron	mg/L	0.3		1/25 - 10/26	16	0.01	14	0.026	0	0.013
Lead	mg/L		0.010	1/25 - 10/26	62	0.00005	45	0.001	0	0.0002
Magnesium	mg/L			1/25 - 12/12	107	0.1	107	9.7	8.8	9.2
Manganese	mg/L	0.05		1/25 - 10/26	16	0.0005	0	0	0	0
Mercury	mg/L		0.001	1/25 - 10/26	16	0.00003	0	0	0	0
Molybdenum	mg/L			1/25 - 10/26	16	0.00003	16	0.0012	0.0008	0.0010
Nickel	mg/L			1/25 - 10/26	16	0.0002	16	0.0006	0.0005	0.0005
Nitrate	mg/L		10.0	1/25 - 12/12	229	0.01	229	0.80	0.19	0.36
Nitrate + Nitrite (calculated)	mg/L		10.0	1/25 - 12/12	229	0.01	229	0.80	0.19	0.36
Nitrite	mg/L		1.0	1/25 - 12/12	229	0.002	51	0.1190	0	0.0017
Orthophosphate	mg/L			1/01 - 12/30	1186	0.5	1181	5.5	0	2.8
Potassium	mg/L			1/19 - 12/14	107	0.05	107	2.1	1.2	1.6
Selenium	mg/L		0.01	1/25 - 10/26	16	0.0005	0	0	0	0
Silver	mg/L			1/25 - 10/26	16	0.00001	1	0.00001	0	0.000001
Sodium	mg/L	200		1/04 - 12/26	154	0.4	154	22.4	12.3	14.1
Strontium	mg/L			1/25 - 10/26	16	0.00005	16	0.188	0.177	0.182
Sulphate	mg/L	500		1/25 - 12/12	107	0.2	107	28.5	23.8	25.6
Terbium	mg/L			1/25 - 10/26	16	0.00005	0	0	0	0
Thallium	mg/L			1/25 - 10/26	16	0.00005	0	0	0	0
Thorium	mg/L			4/25	4	0.00005	1	0.0001	0	0.00002
Tin	mg/L			1/25 - 10/26	16	0.0005	0	0	0	0
Titanium	mg/L			1/25 - 10/26	16	0.0002	16	0.0036	0.0022	0.0028
Tungsten	mg/L			1/25 - 10/26	16	0.00005	16	0.0002	0.0001	0.0001
Uranium	mg/L		0.02	1/25 - 10/26	16	0.00005	16	0.0004	0.0003	0.0003
Vanadium	mg/L			1/25 - 10/26	16	0.00005	16	0.0003	0.0002	0.0002
Zinc	mg/L	5		1/25 - 10/26	16	0.01	0	0	0	0

#### Disinfection Byproducts- Trihalomethanes

Bromodichloromethane	µg/L			1/18 - 12/06	70	0.2	70	9.3	1.2	4.5
Bromoform	µg/L			1/18 - 12/06	70	0.2	9	0.3	0	0.03
Chloroform	µg/L			1/18 - 12/06	70	0.2	70	8.4	1.0	3.9
Dibromochloromethane	µg/L			1/18 - 12/06	70	0.2	66	4.9	0	2.6
THM (total)	µg/L		100	1/18 - 12/06	70	0.2	70	22.6	2.9	11.0
THM (total - end of line)	µg/L		100	1/18 - 12/05	12	0.2	12	22.6	5.3	12.1

#### Disinfection Byproducts- Haloacetic acids

Bromoacetic acid	µg/L			1/18 - 12/06	64	0.9	0	0	0	0
Bromochloroacetic acid	µg/L			1/18 - 12/06	64	1.0	53	2.8	0	1.4
Chloroacetic acid	µg/L			1/18 - 12/06	64	2.0	0	0	0	0
Dibromoacetic acid	µg/L			1/18 - 12/06	64	1.20	1	1.6	0	0.06
Dichloroacetic acid	µg/L			1/18 - 12/06	64	0.5	61	3.6	0	1.9
HAA-6 (total)	µg/L			1/18 - 12/06	64	2.0	45	7.0	0	2.7
Trichloroacetic acid	µg/L			1/18 - 12/06	64	0.55	48	2.8	0	1.1

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Samples	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
<b>Disinfection Byproducts – Other</b>										
1,1,1-Trichloro-2-propanone	µg/L			3/21 - 11/07	16	0.5	0	0	0	0
1,1-Dichloro-2-propanone	µg/L			3/21 - 11/07	16	0.5	0	0	0	0
Bromate	mg/L		0.01	1/04 - 12/05	24	0.003	2	0.003	0	0.0003
Bromochloroacetonitrile	µg/L			3/21 - 11/07	16	0.5	0	0	0	0
Chloropicrin	µg/L			3/21 - 11/07	16	0.5	0	0	0	0
Dibromoacetonitrile	µg/L			3/21 - 11/07	16	0.5	9	0.7	0	0.34
Dichloroacetonitrile	µg/L			3/21 - 11/07	16	0.5	0	0	0	0
Trichloroacetonitrile	µg/L			3/21 - 11/07	16	0.5	0	0	0	0
<b>Organic Parameters</b>										
1,1,1-Trichloroethane	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
1,1,2,2-Tetrachloroethane	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
1,1,2-Trichloroethane	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
1,1-Dichloroethane	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
1,1-Dichloroethylene	µg/L		14	1/18 - 12/06	70	0.2	0	0	0	0
1,2-Dibromoethane	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
1,2-Dichlorobenzene	µg/L	3	200	1/18 - 12/06	70	0.2	0	0	0	0
1,2-Dichloroethane	µg/L		5	1/18 - 12/06	70	0.2	0	0	0	0
1,2-Dichloropropane	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
1,3-Dichlorobenzene	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
1,4-Dichlorobenzene	µg/L	1	5	1/18 - 12/06	70	0.2	0	0	0	0
2,3,4,6-Tetrachloroanisole	µg/L			3/21 - 11/07	56	0.006	0	0	0	0
2,3,4,6-Tetrachlorophenol	µg/L	1	100	3/21 - 11/07	16	0.2514	0	0	0	0
2,3,6-Trichloroanisole	µg/L			3/21 - 11/07	56	0.006	0	0	0	0
2,4,6-Trichlorophenol	µg/L	2	5	3/21 - 11/07	16	0.2763	0	0	0	0
2,4,6-Trichloroanisole	µg/L			3/21 - 11/07	56	0.006	0	0	0	0
2,4-Dichloroanisole	µg/L			3/21 - 11/07	56	0.006	0	0	0	0
2,4-Dichlorophenol	µg/L	0.3	900	3/21 - 11/07	16	0.1131	0	0	0	0
2-Isobutyl-3-methoxypyrazine	µg/L			3/21 - 11/07	56	0.006	0	0	0	0
2-Isopropyl-3-methoxypyrazine	µg/L			3/21 - 11/07	56	0.006	0	0	0	0
2-Methylisoborneol(MIB)	µg/L			3/21 - 11/07	56	0.006	0	0	0	0
Benzene	µg/L		5	1/18 - 12/06	70	0.1	0	0	0	0
Benzo(a)pyrene	µg/L		0.01	1/18 - 11/07	16	0.01	0	0	0	0
Bromomethane	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
Caffeine	µg/L			10/03	4	0.0015	4	0.0043	0.0016	0.0027
Carbon Tetrachloride	µg/L		5	1/18 - 12/06	70	0.2	0	0	0	0
Chlorobenzene	µg/L	30	80	1/18 - 12/06	70	0.2	0	0	0	0
Chloroethane	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
Chloromethane	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
cis-1,2-Dichloroethylene	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
cis-1,3-Dichloropropene	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
Dichlorodifluoromethane	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
Dichloromethane(Methylene Chloride)	µg/L		50	1/18 - 12/06	70	0.2	0	0	0	0
Ethylbenzene	µg/L	2.4		1/18 - 12/06	70	0.2	0	0	0	0
Geosmin	µg/L			3/21 - 11/07	56	0.006	0	0	0	0

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Samples	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
m- & p-Xylene	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
NDMA	µg/L		0.009	1/18 - 11/07	16	0.0008-0.0016	7	0.003	0	0.0007
o-Xylene	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
Pentachlorophenol	µg/L	30	60	3/21 - 11/07	16	0.1051	0	0	0	0
Styrene	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
Tetrachloroethylene	µg/L		30	1/18 - 12/06	70	0.2	0	0	0	0
Toluene	µg/L	24		1/18 - 12/06	70	0.2	0	0	0	0
trans-1,2-Dichloroethylene	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
trans-1,3-Dichloropropene	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
Trichloroethylene	µg/L		5	1/18 - 12/06	70	0.2	0	0	0	0
Trichlorofluoromethane	µg/L			1/18 - 12/06	70	0.2	0	0	0	0
Vinyl Chloride	µg/L		2	1/18 - 12/06	70	0.1	0	0	0	0
Xylenes ( total) calculated	µg/L	300		1/18 - 12/06	70	0.2	0	0	0	0
<b>Pesticides</b>										
2,4-D	µg/L		100	3/21 - 11/07	16	0.0100	0	0	0	0
Alachlor	µg/L		5	3/21 - 11/07	16	0.0004	0	0	0	0
Aminomethyl phosphonic acid (AMPA)	µg/L			1/18	4	12.5	0	0	0	0
Atrazine	µg/L			3/21 - 11/07	16	0.0003	16	0.0711	0.0206	0.0521
Atrazine + N-dealkylated metabolites	µg/L		5	3/21 - 11/07	16	0.0013	16	0.1390	0.0510	0.1041
Azinphos Methyl (Guthion)	µg/L		20	3/21 - 11/07	16	0.0008	0	0	0	0
Bromoxynil	µg/L		5	3/21 - 11/07	16	0.0189	0	0	0	0
Carbaryl	µg/L		90	3/21 - 11/07	16	0.0014	0	0	0	0
Carbofuran	µg/L		90	3/21 - 11/07	16	0.0023	0	0	0	0
Chlorpyrifos (Dursban)	µg/L		90	3/21 - 11/07	16	0.0057	0	0	0	0
Dalapon	µg/L			3/21	6	0.3	0	0	0	0
Des-ethyl atrazine	µg/L			3/21 - 11/07	16	0.0021	16	0.0686	0.0295	0.0521
Diazinon	µg/L		20	3/21 - 11/07	16	0.0004	0	0	0	0
Dicamba	µg/L		120	3/21 - 11/07	16	0.0417	0	0	0	0
Diclofop-methyl	µg/L		9	3/21 - 11/07	16	0.0602	0	0	0	0
Dimethoate	µg/L		20	3/21 - 11/07	16	0.0008	0	0	0	0
Diquat	µg/L		70	1/18	4	1.0	0	0	0	0
Diuron	µg/L		150	3/21 - 11/07	16	0.0009	1	0.0010	0	0.0001
Glyphosate	µg/L		280	1/18	4	25	0	0	0	0
Malathion	µg/L		190	3/21 - 11/07	16	0.0003	0	0	0	0
MCPA (2-methyl-4-chlorophenoxyacetic acid)	µg/L		900	10/03	4	0.0015	0	0	0	0
Metolachlor	µg/L		50	3/21 - 11/07	16	0.0003	16	0.0086	0.0023	0.0064
Metribuzin (Sencor)	µg/L		80	3/21 - 11/07	16	0.0006	0	0	0	0
Paraquat	µg/L		10	1/18	4	1.0	0	0	0	0
PCB total	µg/L		3	3/21 - 11/07	16	0.4	0	0	0	0
Phorate	µg/L		2	3/21 - 11/07	16	0.0087	0	0	0	0
Picloram	µg/L		190	3/21 - 11/07	16	0.1037	0	0	0	0
Prometryne	µg/L		1	3/21 - 11/07	16	0.0002	0	0	0	0
Simazine	µg/L		10	3/21 - 11/07	16	0.0004	16	0.0073	0.0013	0.0051
Terbufos	µg/L		1	3/21 - 11/07	16	0.0054	0	0	0	0
Triallate	µg/L		230	3/21 - 11/07	16	0.0104	0	0	0	0
Trifluralin	µg/L		45	3/21 - 11/07	16	0.2623	0	0	0	0

	Units	AO/OG	MAC/IMAC	Sampling Date	Number of Samples	Reporting Limits	Number of Detectable Results	Max.	Min.	Avg.
<b>Radiation Monitoring</b>										
Tritium	Bq/L		7000.0	01/03/16 - 12/31/16	202	5	60	11.0	0	1.9
Cesium-134	Bq/L		7.0	11/15/15 - 12/31/16	16	0.3	0	0	0	0
Cesium-137	Bq/L		10.0	11/15/15 - 12/31/16	16	0.3	0	0	0	0
Cobalt-60	Bq/L		2.0	11/15/15 - 12/31/16	16	0.3	0	0	0	0
Iodine-131	Bq/L		6.0	11/15/15 - 12/31/16	16	0.3	0	0	0	0
Gross Alpha	Bq/L			11/15/15 - 12/31/16	16	0.04	0	0	0	0
Gross Beta	Bq/L			11/15/15 - 12/31/16	16	0.04	16	0.07	0.05	0.06

**Notes:**

Microbiological P/A samples include Water Treatment Plants treated water samples, Distribution samples as well as samples collected after Water main repair work, Water Quality Inquiry Microbiological analyses for resamples and vicinities is conducted using the Membrane Filtration technique. Some samples were reported as NDOGN (No data overgrown with no target colonies) and NDOGT (No data overgrown with target colonies) to MOECC-SAC.

Where standards are based on sums of components, the following calculations are used:

Atrazine + N-dealkylated metabolites = Atrazine + Desethylatrazine

HAA6 (total) = Bromoacetic acid + Bromochloroacetic acid + Chloroacetic acid + Dibromoacetic acid + Dichloroacetic acid + Trichloroacetic acid

PCB total = Arochlor 1232 + 1242 + 1248 + 1254 + 1260 + 1262

THM (total) = Bromodichloromethane + Bromoform + Chloroform + Dibromochloromethane

Xylenes (total) = m- & p-Xylene + o-Xylene

Nitrate + Nitrite = Nitrate + Nitrite

**AO/OG** - Aesthetic Objective/Operational Guideline

**MAC/IMAC** - Maximum Acceptable Concentration/Interim Maximum Acceptable Concentration

**mg/L** - milligrams per litre

**µg/L** - micrograms per litre

**Bq/L** - Becquerel per litre

**TCU** - True Colour Units

**NTU** - Nephelometric Turbidity Units

**CFU** - Colony forming unit

**µmhos/cm** - Micromhos per centimeter

**<** - Less than