Bearspaw Water Treatment Plant Summary

January 1, 2022 to December 31, 2022

PARAMETER	UNITS	Bearspaw Treated Water (Entering the Distribution System)			Maximum Acceptable Concentration or Guideline[1]	Common Source
		Minimum	Maximum	Average		
Alkalinity, Total	mg/L as $CaCO_3$	92	134	119	No Guidelines	Erosion of natural deposits in watershed.
Aluminum	mg/L	0.014	0.135	0.055	0.100 (O) (Annual Average)	Water treatment process
Ammonia	mg/L as N	<0.05	0.060	<0.05	No Guidelines	Naturally occurring; released from agricultural or industrial wastes.
Antimony	mg/L	<0.0005			0.006	Erosion of natural deposits in watershed
Arsenic	mg/L	<0.0005			0.010	Erosion of natural deposits in watershed
Atrazine + metabolites	mg/L	<0.0010			0.005	Leaching and/or runoff from agricultural or rural use
Azinphos - methyl	mg/L	<0.0010			0.02	Leaching and/or runoff from agricultural or rural use
Barium	mg/L	0.028	0.037	0.033	2.0	Erosion of natural deposits in watershed
Benzene	mg/L	<0.0005			0.005	Releases or spills from industrial use
Benzo[a]pyrene	mg/L	<0.000005			0.00004	Distribution System materials
Beryllium	mg/L	<0.0005			No Guidelines	Contamination from ceramic applications and manufacturing of aerospace, electronics and mechanical industries
Bicarbonate	mg/L as $CaCO_3$	92	134	119	No Guidelines	Erosion of natural deposits in watershed
Boron	mg/L	<0.002	0.007	0.005	5	Naturally occurring; leaching or runoff from industrial use
Bromate	mg/L	<0.0095			0.01	Possible contamination in hypochlorite solution
Bromoxynil	mg/L	<0.0001			0.005	Leaching and/or runoff from agricultural or rural use
Cadmium	mg/L	<0.0005			0.007	Erosion of natural deposits in watershed
Calcium	mg/L	34	52	44	No Guidelines	Erosion of natural deposits in watershed
Carbaryl	mg/L	<0.0020			0.09	Leaching and/or runoff from agricultural or rural use
Carbofuran	mg/L	<0.0050			0.09	Leaching and/or runoff from agricultural or rural use
Carbonate	mg/L as $CaCO_3$	<20			No Guidelines	Erosion of natural deposits in watershed
Carbon Tetrachloride	mg/L	<0.0005			0.002	Industrial effluents and leaching from hazardous waste sites
Chloramines, Total	mg/L	<0.09			No Guidelines	Formed in the presence of both chlorine and ammonia
Chlorate	mg/L	<0.10			1	Possible contamination in hypochlorite solution
Chloride	mg/L	3.2	5.6	4.8	250 (A)	Naturally occurring, dissolved salt deposits, highway salt
Chlorine, free	mg/L	0.69	1.26	1.09	No Guidelines	Water treatment process
Chlorite	mg/L	<0.10			1	Possible contamination in hypochlorite solution, water treatment process
Chlorpyrifos	mg/L	<0.001			0.09	Leaching and/or runoff from agricultural or rural use
Chromium	mg/L	<0.0005			0.05	Erosion of natural deposits in watershed
Cobalt	mg/L	<0.0005			No Guidelines	Erosion of natural deposits in watershed.
Coliforms, *E.coli*	MPN/100mL	<1			0	Domestic animals, wildlife and human waste.
Coliforms, Total	MPN/100mL	<1	>200.5*	<1	0	Soil, domestic animals and wildlife.
Color	TCU	<2.0			15 (A)	Erosion of natural deposits in watershed.
Conductivity at 25°C	uS/cm	279	378	336	No Guidelines	Leaching and/or runoff from agricultural or rural use
Copper	mg/L	<0.0005	0.0015	<0.0005	2 1 (A)	Erosion of natural deposits in watershed.
Cryptosporidium, Log Reduction Ratio[3]	no units	1.00	1.33	1.32	>=1[2]	Domestic animals, wildlife and human waste.
Cyanazine	mg/L	<0.001			No Guidelines	Leaching and/or runoff from agricultural or rural use
Cyanide	mg/L	<0.002			0.2	Industrial and mining effluents; Release from organic compounds.
Cyanobacterial toxins – total microcystin	mg/L	<0.0001			0.0015	Naturally occurring; released from blooms of blue-green algae
Diazinon	mg/L	<0.001			0.02	Run off from agricultural or other uses.
Dicamba	mg/L	<0.00020			0.11	Leaching and/or runoff from agricultural or rural use
1,2-Dichlorobenzene	mg/L	<0.0005			0.2 0.003(A)	Releases or spills from industrial use
1,4-Dichlorobenzene	mg/L	<0.0005			0.005 0.001(A)	Releases or spills from industrial use
1,1-Dichloroethylene	mg/L	<0.0005			0.014	Releases or spills from industrial use
1,2-Dichloroethane	mg/L	<0.0005			0.005	Releases or spills from industrial use
Dichloromethane	mg/L	<0.0005			0.05	Industrial and municipal wastewater discharges
2,4-Dichlorophenol	mg/L	<0.0002			0.9 0.0003(A)	By-product of chlorination.
2,4-D	mg/L	<0.0001			0.1	Leaching and/or runoff from use as a weed controller
Diclofop-methyl	mg/L	<0.00090			0.009	Leaching and/or runoff from use as a weed controller
Diesel Range Normal Hydrocarbons (C16 to C28)	mg/L	<0.01			No Guidelines	Releases or spills from industrial use
Dimethoate	mg/L	<0.0010			0.02	Leaching and/or runoff from agricultural or rural use
1,4-Dioxane	mg/L	<0.001			0.05	Releases or spills from landfills and industrial use
Diquat	mg/L	<0.0070			0.05	Leaching and/or runoff from agricultural or rural use

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Diuron	mg/L	<0.00005			0.15	Leaching and/or runoff from use in controlling vegetation
Ethylbenzene	mg/L	<0.0005			0.14 0.0016 (A)	Emissions, effluents or spills from petroleum and chemical industries
Fluoride	mg/L	0.06	0.14	0.11	1.5	Erosion of natural deposits in watershed.[4]
Giardia, Log Reduction Ratio[3]	no units	1.52	3.58	2.36	>=1[2]	Domestic animals, wildlife and human waste.
Glyphosate	mg/L	<0.010			0.28	Leaching and/or runoff from use as a weed controller.
Gross Alpha	Bq/L	<0.12			0.5	Naturally occurring; emissions from nuclear reactors
Gross Beta	Bq/L	<0.05	0.10	0.06	1.0	Naturally occurring; emissions from nuclear reactors
Haloacetic Acids, Total	mg/L	0.0043	0.0225	0.0086	0.08 (Annual Average)	By-product of chlorination.
Hardness	mg/L as $CaCO_3$	131	196	167	No Guidelines	Erosion of natural deposits in watershed.
Iron	mg/L	<0.010			0.3 (A)	Erosion of natural deposits in watershed.
Lead	mg/L	<0.0005			0.005	Leaching from plumbing (pipes, solders, brass fittings, and lead service lines)
Lithium	mg/L	0.0015	0.0037	0.0030	No Guidelines	Releases or spills from industrial use
Magnesium	mg/L	11.0	17.4	14.3	No Guidelines	Erosion of natural deposits in watershed.
Malathion	mg/L	<0.0010			0.19	Leaching and/or runoff from agricultural or rural use
Manganese	mg/L	<0.0005	0.0015	<0.0005	0.12 0.02 (A)	Erosion of natural deposits in watershed.
MCPA (2-methyl-4-chlorophenoxyacetic acid)	mg/L	<0.00002			0.35	Leaching and/or runoff from agricultural and other uses
MCPP (methylchlorophenoxy propionic acid)	mg/L	<0.00005			0.015 (A)	Leaching and/or runoff from agricultural and other uses
Mercury	mg/L	<0.0000019			0.001	Erosion of natural deposits in watershed
Methyl parathion	mg/L	<0.0010			No Guidelines	Leaching and/or runoff from agricultural or rural use
Metolachlor	mg/L	<0.0010			0.05	Leaching and/or runoff from agricultural and other uses
Metribuzin	mg/L	<0.0010			0.08	Leaching and/or runoff from agricultural or rural use
Molybdenum	mg/L	<0.0005	0.0009	0.0007	No Guidelines	Leaching and/or runoff from industrial, agricultural and other uses
Monochlorobenzene	mg/L	<0.0005			0.08 0.03(A)	Releases or spills from industrial effluents
MTBE (methyl tertiary-butyl ether)	mg/L	<0.0005			0.015 (A)	Spills from gasoline refineries, filling stations and gasoline powered boats; seepage into groundwater from leaking storage tanks
Nickel	mg/L	<0.0005	0.0023	<0.0005	No Guidelines	Leaching from plumbing (pipes, solders, and brass fittings)
Nitrate	mg/L as N	0.057	0.145	0.100	10	Erosion of natural deposits in watershed
Nitrite	mg/L as N	<0.005			1	Erosion of natural deposits in watershed
Nitrilotriacetic acid (NTA)	mg/L	<0.050			0.4	Sewage contamination
Nitrogen-Phosphorus Pesticides, Total[5]	mg/L	<0.01			No Guidelines	Leaching and/or runoff from agricultural or rural use
N-Nitrosodimethylamine (NDMA)	mg/L	<0.0000019			0.00004	By-product of chlorination; industrial and sewage treatment plant effluents
Nitrogen, total (TKN)	mg/L	<0.1	0.13	<0.1	No Guidelines	Erosion of natural deposits in watershed
Odour	Scale = 0-12	6.4	10.5	8.8	Inoffensive	Biological, industrial, or treatment disinfection sources
Paraquat	mg/L	<0.0010			0.01	Leaching and/or runoff from agricultural and other uses
Parathion	mg/L	<0.0010			0.05	Leaching and/or runoff from agricultural or rural use
Pentachlorophenol	mg/L	<0.00010			0.06 0.03 (A)	By-product of chlorination
Perfluorooctane Sulfonate (PFOS)	mg/L	<0.000020			0.0006	Synthetic chemical used in consumer products and fire-fighting foams for their water and oil repellant properties.
Perfluorooactanoic Acid (PFOA)	mg/L	<0.000010			0.0002	Synthetic chemical used in consumer products and fire-fighting foams for their water and oil repellant properties.
pH	pH units	6.6	8.0	7.6	7.0 - 10.5 (O)	Influenced by the dissolved minerals in the water, temperature and water treatment processes.
Phorate	mg/L	<0.0005			0.002	Leaching and/or runoff from agricultural and other uses
Phosphorus, Total	mg/L	<0.001	0.003	0.002	No Guidelines	Leaching and/or runoff from agricultural and other uses
Phthalate Esters[6]	mg/L	<0.01			No Guidelines	Industrial effluents or spills
Picloram	mg/L	<0.00020			0.19	Leaching and/or runoff from agricultural and other uses
Potassium	mg/L	0.4	0.6	0.5	No Guidelines	Erosion of natural deposits in watershed.
Polycyclic Aromatic Hydrocarbons[7] (PAH)	mg/L	<0.0001			No Guidelines	Industrial sources
Selenium	mg/L	<0.0005	0.0007	<0.0005	0.05	Naturally occurring (erosion and weathering of rocks and soils) and release from coal ash from coal-fired power plants and mining, refining of copper and other metals
Silicon, dissolved	mg/L	1.07	1.89	1.51	No Guidelines	Erosion of natural deposits in watershed.

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Silver	mg/L	<0.001	0.002	<0.001	No Guidelines	Naturally occurring (erosion and weathering of rocks and soils)
Simazine	mg/L	<0.0010			0.01	Leaching and/or runoff from agricultural and other uses
Sodium	mg/L	3.3	5.1	4.4	200 (A)	Erosion of natural deposits in watershed.
Strontium	mg/L	0.126	0.213	0.173	7.0	Erosion of natural deposits in watershed.
Sulphate	mg/L	37	63	51	500 (A)	Erosion of natural deposits in watershed.
Sulphide	mg/L as H_2S	<0.0018			0.05 (A)	Can occur in the distribution system from the reduction of sulphates by sulphate-reducing bacteria; industrial wastes
Temperature	^{o}C	1.3	17.5	8.1	15 (A)	Surface water temperature.
Terbufos	mg/L	<0.0005			0.001	Leaching and/or runoff from agricultural and other uses
Tetrachloroethylene	mg/L	<0.0005			0.01	Industrial effluents or spills
2,3,4,6-Tetrachlorophenol	mg/L	<0.0005			0.1	By-product of chlorination; industrial effluents and use of pesticides
Thallium	mg/L	<0.0005			No Guidelines	Erosion of natural deposits in watershed.
Tin	mg/L	<0.0005			No Guidelines	Industrial effluents or spills
Titanium	mg/L	<0.0005			No Guidelines	Industrial effluents or spills
Toluene	mg/L	<0.0005			0.06 0.024(A)	Emissions, effluents or spills from petroleum and chemical industries
Total Dissolved Solids	mg/L	153	234	194	500 (A)	Erosion of natural deposits in watershed.
Total Organic Carbon	mg/L	0.4	1.7	0.7	No Guidelines	Erosion of natural deposits in watershed.
Triallate	mg/L	<0.0010			No Guidelines	Leaching and/or runoff from agricultural and other uses
Trichloroethylene	mg/L	<0.0005			0.005	Industrial effluents and spills from improper disposals
2,4,6-Trichlorophenol	mg/L	<0.0005			0.005 0.002 (A)	By-product of chlorination; industrial effluents and spills
Trifluralin	mg/L	<0.0010			0.045	Runoff from agricultural uses
Total Trihalomethanes[8] (TTHMs)	mg/L	0.0033	0.0236	0.0091	0.1 (Annual Average)	By-product of chlorination.
Turbidity	NTU	<0.05	0.07	<0.05	1.0	Suspended particles in solution.
Uranium	mg/L	<0.0005	0.0006	<0.0005	0.02	Industrial effluents or spills
Vanadium	mg/L	<0.0005	0.0008	<0.0005	No Guideline	Naturally occurring (erosion and weathering of rocks and soils)
Vinyl Chloride	mg/L	<0.0005			0.002	Industrial effluents; degradation product from organic solvents in groundwater; leaching from polyvinyl chloride pipes
Virus, Log Reduction Ratio[3]	no units	1.5			>=1[2]	Domestic animals, wildlife and human waste.
Xylenes, total[8]	mg/L	<0.0010			0.09 0.02 (A)	Emissions, effluents or spills from petroleum and chemical industries
Zinc	mg/L	<0.003	0.008	<0.003	5.0 (A)	Erosion of natural deposits in watershed. Leaching may occur from galvanized pipes, hot water tanks and brass fittings.

Legend

[1] Maximum acceptable concentrations and guidelines as determined by Health Canada and the Alberta Environment and Protected Areas license to operate

[2] Raw water enteric protozoa concentrations are used to determine the log reduction required

[3] Log Redution Ratios are calucated by the minimum total log recution achieved / log reduction required

[4] The City of Calgary ceased fluoridation of its drinking water on May 19, 2011

[5] Total concentration calculated based on 15 Nitrogen-Phosphorus regulated pesticides

[6] Total concentration calculated based on the following phthalate esters (Dimethyl phthalate, Diethyl phthalate, Di-n-butyl phthalate, Benzyl butyl phthalate, Bis (2-ethylhexyl) phthalate, and Di-n-octyl phthalate)

[7] Total concentration calculated based on EPA 16 Priority PAH compounds

[8] Calculated parameter based on individual analytes

* Total Coliforms were detected in one sample, preparation error was suspected

(O) Operating guidance as determined by Health Canada

(A) Aesthetic Objective as determined by Health Canada

(AEPA) Alberta Environment and Parks provincial guidance

< Indicates not detected above the specified value

Bq/L = Becquerel per litre

mg/L = milligrams per litre, or parts per million (ppm)

MPN = Most-Probable Number

NTU = Nephelometric Turbidity Units

TCU = True Colour Units

Information Sources

Health Canada Guidelines for Canadian Drinking Water Quality, Summary Table (Sept. 2022)

Health Canada Water Quality - Reports and Publications

Alberta Environment & Protected Areas