Survey of Drinking Water Plants Reporting year 2015

CONFIDENTIAL once completed Si vous préférez ce questionnaire en français,

veuillez nous appeler au 1-866-445-4323

	Please provide your email address.
C0009	Email address
	Please verify the business name, address and contact name, and correct where needed.
C0001	Legal name (facility owner)
C0002	Business name (facility owner)
C0008	First name
C0028	Last name
C0004	Address (number and street)
C0005	City
C0006	Province, territory or state Postal code or zip code

PLEASE READ BEFORE COMPLETING

This survey is conducted under the authority of the *Statistics Act*, Revised Statutes of Canada, 1985, Chapter S-19. COMPLETION OF THIS QUESTIONNAIRE IS A LEGAL REQUIREMENT UNDER THIS ACT.

Survey Purpose

This survey collects detailed information on the quantity and quality of water processed by plants that draw raw water from the environment to produce potable water. The plants in the survey range in size from ones that use complex treatment processes for surface water to ones that use minimal treatment for groundwater. The data collected will be used to monitor water reserves at the regional level in Canada and to develop environmental accounts. The information you provide may also be used by Statistics Canada for other statistical purposes.

Confidentiality

Statistics Canada is prohibited by law from releasing any information it collects which could identify any person, business, or organization, unless consent has been given by the respondent or as permitted by the *Statistics Act*. Statistics Canada will use the information from this survey for statistical purposes.

Data-sharing Agreements

To reduce respondent burden, Statistics Canada has entered into data-sharing agreements with provincial and territorial statistical agencies and other government organizations, which have agreed to keep the data confidential and use them only for statistical purposes.

Information on data-sharing agreements and record linkages can be found on the last page of this questionnaire.

Completing the questionnaire

The people in the best position to complete this questionnaire are managers who are familiar with plant processes, operating costs and water-quality monitoring.

Multiple Water Facilities/sources

If there are multiple water sources or facilities associated with the plant identified on the mailing label, complete Sections 1, 2, 3 and 4 of this questionnaire and provide the total and combined information for all facilities. Complete Section 5 for the facility that supplied the largest volume of water in 2015.

Returning the questionnaire

Please return the completed questionnaire within 60 days of receipt using the enclosed envelope, or fax it to 1-888-883-7999. If you have any questions, or need to make alternate arrangements, please call **1-866-445-4323**.

Fax or E-mail Transmission Disclosure

Statistics Canada advises you that there could be a risk of disclosure during the transmission of information by facsimile or e-mail. However, upon receipt, Statistics Canada will provide the guaranteed level of protection afforded all information collected under the authority of the *Statistics Act*.

🖉 PLEASE COMPLETE THIS QUESTIONNAIRE USING A BLACK BALLPOINT PEN.

Person primarily responsible for completing this questionnaire:

Last name	Telephone number	Extension
C0054	C0017	C0027
First name	Fax number	
C0013	C0016	
Organization	E-mail address	
C0401	C0018	

4-2300-59.1: 2015-08-20



Canadä

SECTION 1 – DRINKING WATER PLANT INFORMATION FOR 2015

FACILITY FOR WHICH THIS QUESTIONNAIRE IS COMPLETED

1. In 2015, did the facility identified on the mailing label withdraw water from the environment, in order to treat and/or convey potable water to a permanent community of 300 or more people?

C1000 1	Yes
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3

No If no, please complete the cover page and question 1 only, and return the questionnaire in the enclosed envelope. Thank you.

SOURCE/RAW WATER TYPE

INSTRUCTIONS

- Do not write in coloured areas. Comments on any section of this survey should be provided in the space on page 13.
- Indicate the percentage and type of source water (raw water) obtained for processing by this facility below. If there are multiple water facilities/sources associated with the facility identified on the mailing label, complete this part to represent the total for all associated sources.
- Indicate the number of production facilities for each source water type where raw water withdrawn from the environment was treated and/or conveyed as potable water to a distribution system.

	PERCENTAGE	NUMBER OF PRODUCTION FACILITIES
2. Surface water	C1001	01004
3. Groundwater	C1002	C1005
4. GUDI - Groundwater Under Direct Influence of surface water	C1003	C1006
FACILITY LOCATION AND COORDINATES		
Questions 5,6,7,8 can be left blank if the information has been pro the mailing label and the information has not changed.	wided in past surveys for the facility	identified on
5. If there are multiple water facilities/sources being reported for the location and coordinates for the facility that produce List the names of other facilities/sources in the comments se (If the address is the same as the address on page 1, indicate "same")	ed the largest volume of potable	
Address number Street or road name		Street type (Rd, Ave, etc.)
C1007 C1008 Name of township or municipality	C10	
C1010 C1012 There is no civic address		21011
• Answer only one of questions 6, 7 or 8. There are mapping we Canada's "The Atlas of Canada: Toporama" and "Google Earth degrees, in degrees, minutes, seconds or in Universal Transver	n" that can assist you in finding coord	
6. Facility Coordinates (decimal degrees)		
Latitude: C1013 degrees decimals	ngitude: C1014	decimals
7. Facility Coordinates (degrees, minutes, seconds)		
Latitude: ° Minutes Seconds "N Lon	ngitude: C1016 o o o o o o o o o o o o o o o o o o o	seconds "W
8. Facility Coordinates (Universal Transverse Mercator – UTM z	one, eastings and northings)	
Zone: C1017 Eastings: C1018 eastings	Northings: C1019	hings
Page	2	4230059021

PLANT CAPACITY

INSTRUCTIONS

• Capacity for 2015 is to be reported in the units used at the drinking water facility. If there are multiple water facilities/sources being reported for the facility identified on the mailing label, report the combined total for all associated sources.

9.	What was the maximum rated treatment capacity of this	C1020	т					
	What was the maximum rated treatment capacity of this facility in 2015? (Specify the units in question 10.)							

10. Select th	he unit on the left and the time period on the rig	int for the capacity value in que	stion 9.
UN	т	TIME PERIOD	
C1021 1	Cubic metres	C1023 1 Per second	
2	Litres	² Per minute	
3	Mega Litres (1 million litres)	³ Per day	
4	Imperial gallons (1 imperial gallon = 4.5 litres)	⁴ Per year	
5	U.S. gallons (1 U.S. gallon = 3.8 litres)	⁵ Other (specify):	
6	Other (specify units clearly):	C1024	
C1	1022		
		•	C1025
11. How ma	any days in 2015 did the facility operate at greate	r than 90% capacity?	
SECTOR	USE AND POPULATION SERVED		
INSTRUCT	IONS		
Repo	t the percentage of water used by the sectors id	entified and the population serve	ed for the facility identified on the
	ng label. If there are multiple water facilities/sources combined total for all associated sources.	s being reported for the facility ide	entified on the mailing label, repor
	otal potable water produced, indicate the perce wn, indicate their percentages in the relevant bo		
	e. Consult with other departments within your org		known, please provide your bes
			PERCENTAGE
Residen	tial		C1027
			C1028
Industria	al, commercial, institutional, agricultural, municipal	services and other non-residenti	ial %
Losses f	rom the distribution system (leaks, system mainte	nance and flushing)	C1029
Wholesa	ale water provided to other jurisdictions		C1030 %
			/0
TOTAL			100%
13. What so	purce(s) of information were used for the sector u	se percentages? Mark all that a	pply.
C1031 1	Specific study/analysis for this facility ³	Other (specify):	
2	Water billing accounts	32	
14 \A/b at		in a Weter Diant in 00150	
	as the size of the population served by this Drink the number of persons, the number of connection		C1033
C1034 1	Persons ³ Other (spec	sify)·	
2		<i>ny)</i> .	
	Connections		
15 What so	ource(s) of information were used for the size of t	ne population served? Mark all	that apply
C1036 1	Specific study/analysis for this facility	Census data	
2	Water billing accounts 4	Other (specify):	
	C103	7	

SECTION 2 - POTABLE WATER VOLUMES FOR 2015

INSTRUCTIONS

- 16. Report by month below the **volumes** of potable water produced by this drinking water facility. If there are multiple water facilities/sources being reported for the facility identified on the mailing label, report the combined total for all associated sources.
- 17. Monthly potable water volumes for 2015 are to be reported in the units used at the drinking water facility. Select the **unit of measure** (right column) for the volumes produced (left column) for all volumes reported in this section.

		VOLU	MES		UNIT	-
January	C2000			C2013	1 C	Cubic metres
	C2001				3	Litres
February	62001				4	Mega Litres (1 million litres) Imperial gallons (1 imperial gallon = 4.5 litres)
March	C2002				5	U.S. gallons (1 U.S. gallon = 3.8 litres)
April	C2003				6 C201	Other (specify units clearly):
May	C2004					
June	C2005					
July	C2006	\bigcirc				
August	C2007					
September	C2008					
October	C2009					
November	C2010	2.6				
December	C2011	X				
TOTAL C20	112					
3. Are potabl	e water volu	umes metered or	estimated?			
C2015 1	Metered					
2	Estimated		3			

SECTION 3 – WATER TREATMENT PROCESSES	FOR 2015	
 INSTRUCTIONS In this section, report the treatment processes applied t Note: disinfection only (e.g. chlorination) is a treatment 		115.
19. Are there multiple water facilities that withdraw raw wate identified on the mailing label?	r directly from the environm	ent being reported for the facility
^{C3000 1} Yes \blacktriangleright Go to question 20 ³ N	o ► Go to question 22	
20. Does each facility use the same water treatment process	;?	
^{C3001 1} Yes \blacktriangleright Go to question 22 ³ N	o ► Go to question 21	
21. For the facility that produced the largest volume of potal it represents:	ble water, indicate what perc	centage of the total volume
^{C3002}	the facility that produced the	e largest volume of
22. Is the raw water withdrawn by this facility conveyed direct Note: disinfection only (e.g. chlorination) is a treatm		table water for consumption?
C3003 1 Yes \blacktriangleright Go to question 63 ³ N	o ► Complete questions 2	23 to 62
INSTRUCTIONS		
 In the "Process Used" column, confirm either yes or n 		processes listed below.
UNIT PROCESSES FOR WATER TREATMENT	PROCESS USED YES NO	Either Yes or No must be
PRE-TREATMENT		checked for each line. Review the entire list prior to making selections.
23. Microscreening	C3004 1 3	Selections.
24. Other pre-treatment (specify):	C3006 1 3	
DISINFECTION/OXIDATION		
25. Chlorination (hypochlorites or chlorine gas)	C3007 1 3	
26. Chlorine dioxide	C3008_13	
27. Chloramination	C3009 3	
28. UV irradiation	C3010 1 3	
29. Ozonation	C3011 1 3	
30. Application of potassium permanganate	C3012 1 3 • •	Indicate "no" if only used to recharge a greensand filtration system.
31. Other disinfection/oxidation reagents	C3013 1 3	continued on next page

		PROCESS	
	UNIT PROCESSES FOR WATER TREATMENT	USED YES NO	
Т	CHEMICAL TREATMENT OR ADDITION		
32.	Fluoridation (if 'yes', mark all those applied)	C3014 1 3	If 'yes', mark all those applied.
33.	Alkalinity adjustment for process control	C3016 1 3	 Sodium fluoride Sodium silicofluoride Hydro-fluosilicic acid Hydro-fluosilicic acid
34.	pH adjustment for process control	C3017 1 3	⁴ Ammonium silicofluoride
35.	Corrosion control – pH adjustment	C3018 1 3	
36.	Corrosion control – alkalinity adjustment	C3019 1 3	\mathbf{O}
37.	Corrosion control – inhibitors (if 'yes', mark all those applied)	G3020 1 3	If 'yes', mark all those applied.
38.	COAGULATION/FLOCCULATION & FILTER AID Coagulation – aluminum based coagulant	C3022 1 3	 Polyphosphates Silicates
39.	Coagulation – ferric based coagulant	C3023 1 3	4 Other
40.	Other coagulant	C3024 1 3	
41.	Enhanced coagulation	<u>C3025 1 3 </u>	
42.	Flocculation	C3026 1 .	
	CLARIFICATION/SEDIMENTATION		
43.	Sedimentation - conventional, tube, plate or high rate	C3027 1 3	
44.	Dissolved air flotation (DAF) – conventional or high rate	C3028 1 3	
45.	Other clarification – (sludge blanket, pulsed blanket, ballasted, solids contact or other)	C3029 1 3 0	continued on next page

	UNIT PROCESSES FOR WATER TREATMENT			PRO US	CES SED	s
-	FILTRATION		Ì	/ES		NO
46.	Filtration – granular media (single, dual or triple media)	C3030	1		3	
47.	Granular activated carbon – used as part of filter media	C3031	1	•	3	•
48.	Granular activated carbon – used as separate unit process	C3032	1	•	3	•
49.	Filtration – membrane (microfiltration) – 0.1-10 microns	C3033	1		3	•
50.	Filtration – membrane (ultrafiltration) – 0.01-0.1 microns	C3034			3	
51.	Filtration – cartridge/bag	C3035	1		3	•
52.	Filtration – slow sand OTHER PROCESSES	C3036	1	•	3	•
53.	Aeration – transfer of oxygen or air to water	C3037	1	•	3	
54.	Air stripping – contacting water with air to transfer contaminants to air	C3038	1	•	3	•
55.	Lime softening	C3039	1	•	3	•
56.	Activated alumina	C3040	1	•	3	•
57.	lon exchange	C3041	1	•	3	•
58.	Sequestering	C3042	1	•	3	•
59.	Greensand filtration	C3043	1	•	3	•
60.	Powdered activated carbon	C3044	1	•	3	
61.	Reverse osmosis or nano filtration	C3045	1	•	3	
62.	Other processes (specify):	C3047	1		3	

SECTION 4 – CAPITAL EXPENDITURES AND OPERATION AND MAINTENANCE COSTS

CAPITAL EXPENDITURES - WATER TREATMENT 2014 AND 2015

INSTRUCTIONS

- Report capitalized costs for 2014 and 2015 in Canadian dollars for the calendar year (January-December). If there are multiple water facilities/sources being reported for the facility identified on the mailing label, report the combined total for all associated sources.
- Provide capital costs related to the acquisition and treatment of source/raw water.
- **Exclude** costs associated with distribution.
- Include money spent to add, expand or upgrade physical assets such as:
 - » property » machinery
 - » buildings » processing equipment/infrastructure
- **Include** capitalized costs related to waste treatment processes (i.e. backwash/sludge processing and residuals disposal related to potable water production)
- Include construction and engineering costs such as:
 - » installation
 - » retrofitting
 - » contingencies
- » legal and related administrative fees

» contractor

» engineering

- Include indirect costs related to capital expenditures such as:
 - » housing
 - » permitting
- » piloting

» training

» education

Two years of capital expenditures are being collected to produce

a better time series data set. 63a. 2014 CAPITAL EXPENDITURES

» land

63b. 2015 CAPITAL EXPENDITURES ..

OPERATION AND MAINTENANCE COSTS - WATER TREATMENT 2015

INSTRUCTIONS

- Provide operation and maintenance costs for 2015 related to the acquisition and treatment of source/raw water. If there are multiple water facilities/sources being reported for the facility identified on the mailing label, report the combined total for all associated sources.
- Exclude costs associated with distribution.
- **Include** the following:
 - » materials (chemicals and replacement parts)
 - » labour (internal and external staff including laboratory personnel)
 - » energy
 - Include other costs such as:
 - » waste disposal and residuals handling related to potable water production
 - » analytical/sampling costs
 - » any associated administration and service costs directly related to operation and maintenance (consultants, contractors)
 - » operation and maintenance costs related to waste treatment processes (i.e. backwash/sludge processing and residuals disposal related to potable water production)

64. 2015 OPERATION AND MAINTENANCE COSTS

Materials (chemicals and replacement parts)	C4001 \$	Millions	Thousands	Hundreds	Cents
Labour (internal and external staff)	^{C4002} \$	Millions	Thousands	Hundreds	Cents
Energy	^{C4003} \$	Millions	Thousands	Hundreds	Cents
Other (specify): C4004	^{C4005} \$	Millions	Thousands	Hundreds	Cents
TOTAL	^{C4006} \$	Millions	Thousands	Hundreds	Cents

Hundreds

Thousand

Cents

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ХХ

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SECTION 5 - RAW SURFACE WATER QUALITY DATA FOR 2015

INSTRUCTIONS

Report for surface water only

• Complete this section for raw surface water sources only. Do not report for groundwater, groundwater under the direct influence of surface water (GUDI), or treated surface water. If the plant does not process raw surface water, skip to question 68.

Purpose

- The purpose of this section is the compilation of source/raw water quality data comparable to the applicable limits in Provincial/Territorial and/or Guidelines for Canadian Drinking Water Quality (GCDWQ). Water quality data submitted should be comparable (based on method of testing) to these guidelines where applicable.
- If there are multiple water facilities/sources associated with the facility identified on the mailing label, complete this section for the facility that provides the largest portion of water by volume with available data that reflects the source/raw water quality processed by the facility.

Number of samples per month

- Provide the number of samples, minimum, maximum, and average values for the parameters identified. If the number of samples is large due to on-line metering, enter 999.
- Enter 0 for the number of samples if the parameter is not monitored.

Reporting water quality units

- Report each parameter only in the units indicated.
- Select the reporting units for *Escherichia coli* on page 10. If reporting presence/absence results, use the maximum column to report the number of positive samples (the average and minimum columns are not applicable for presence/ absence results).

IMPORTANT:	Any additional information or comments regarding the water quality data reported in this section
	should be provided in the comments section on page 13.

SECTION 5 - RAW SURFACE WATER QUALITY DATA FOR 2015

65. Report monthly values for Escherichia coli in raw water for 2015. See instructions on page 9.

Escherichia coli IN RAW WATER, 2015 Select units reported: C5070 1 Colony forming units per 100 millilitres (cfu/100 mL) Most Probable Number per 100 millilitres (MPN/100 mL) Presence/Absence (P/A) Number of samples Minimum Maximum Average per month value per month (not applicable value per month value per month Month (enter 0 if not (Number of positive (not applicable sampled, 999 samples if reporting P/A) if reporting P/A) *if reporting P/A)* for continuous monitoring) C5073 C5071 C5072 C5074 January C5075 C5076 C5077 February C5079 C5080 C5081 March C5084 C5086 April C5090 C5087 C5088 May C5091 C5093 C5094 June C5098 C5097 July C5099 C5100 C5102 August C5103 C5104 C5106 September C5107 C5110 25108 C5109 October C5113 C5114 C5111 C5112 November C5115 C5116 C5117 C5118 December

66. Report monthly values for turbidity of raw water for 2015. See instructions on page 9.

TURBIDITY OF RAW WATER, 2015

Month	Number of samples per month (enter 0 if not sampled, 999	Minimum value per month	Maximum value per month	Average value per month		
	for continuous monitoring)					
January	C5168	C5169	C5170	C5171		
February	C5172	C5173	C5174	C5175		
March	C5176	C5177	C5178	C6179		
April	C5180	C5181	C5182	65183		
May	C5184	C5185	C5186	C5187		
June	C5188	C5189	C5 190	C5191		
July	65192	C5193	C5194	C5195		
August	C51 96	C5197	C5198	C5199		
September	C5200	C5201	65202	C5203		
October	C5204	C5205	C5206	C5207		
November	C5208	C5209	C5210	C5211		
December	C5212	C5213	C5214	C5215		

67. Report monthly values for temperature of raw water for 2015. See instructions on page 9.

TEMPERATURE OF RAW WATER, 2015

Month	Number of samples per month (enter 0 if not sampled, 999 for continuous monitoring)	Minimum value per month	Maximum value per month degrees Celsius (°C)	Average value per month
January	C5216	C5217	C5218	C5219
February	C5220	C5221	C5222	C5223
March	C5224	C5225	C5226	C5227
April	C5228	C5229	C5230	C5231
Мау	65732	C5233	C5234	C5235
June	C5236	C5237	65238	C5239
July	58240	C5241	C5242	C5243
August	68244	C5245	C524 6	C5247
September	C5248	C5249	C5250	C5251
October	C5252	P5253	C5254	C5255
November	C5256	C5257	C5258	C5259
December	C5260	C5261	C5262	C5263

SECTION 6	COMMENTS
SECTION 6 – (COMMENTS
	how long did it take to collect the data and complete this survey?
<i>Hour(s)</i> C9910	C9909
69. We invite your	comments on any section of this survey below. Please be assured that we review all comments
C9920	of improving the survey.
C9913	
C9914	
C9915	
C9916	
C9917	
C9918	
C9919	
C9922	
C9923	
C9924	
C9925	
C9926	
C9927	
C9928	
C9929	
C9930	

GENERAL INFORMATION

Data-sharing agreements

To reduce respondent burden, Statistics Canada has entered into data-sharing agreements with provincial and territorial statistical agencies and other government organizations, which have agreed to keep the data confidential and use them only for statistical purposes. Statistics Canada will only share data from this survey with those organizations that have demonstrated a requirement to use the data.

Section 11 of the *Statistics Act* provides for the sharing of information with provincial and territorial statistical agencies that meet certain conditions. These agencies must have the legislative authority to collect the same information, on a mandatory basis, and the legislation must provide substantially the same provisions for confidentiality and penalties for disclosure of confidential information as the *Statistics Act*. Because these agencies have the legal authority to compel businesses to provide the same information, consent is not requested and businesses may not object to the sharing of the data.

For this survey, there are Section 11 agreements with the provincial and territorial statistical agencies of Newfoundland and Labrador, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia, and the Yukon. The shared data will be limited to information pertaining to business establishments located within the jurisdiction of the respective province or territory.

Section 12 of the *Statistics Act* provides for the sharing of information with federal, provincial or territorial government organizations. Under Section 12, you may refuse to share your information with any of these organizations by writing a letter of objection to the Chief Statistician and returning it with the completed questionnaire. Please specify the organizations with which you do not want to share your data.

For this survey, there are Section 12 agreements with the statistical agencies of Prince Edward Island, the Northwest Territories and Nunavut as well as with Health Canada and Environment Canada.

For agreements with provincial and territorial government organizations, the shared data will be limited to information pertaining to business establishments located within the jurisdiction of the respective province or territory.

Record Linkage

To enhance the data from this survey and to minimize the reporting burden, Statistics Canada may combine it with information from other surveys or from administrative sources.

Lost the return envelope or need help?

Call us at **1-866-445-4323** or mail to:

Ottawa, Ontario, K1A 0T6

Statistics Canada, Operations and Integration Division, Central Reception, 150 Tunney's Pasture Driveway



Please retain a copy for your records.

Visit our website at <u>www.statcan.gc.ca</u>