

2020

CANADIAN NATIONAL BENCHMARKING INITIATIVE

Water Treatment Framework



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Goal	KPI	Applicable System Type	Breakdown	Units
Ensure Adequate Capacity	Average Day Demand / Existing Water Licence Capacity	All Systems	Average Day Demand / Existing Water Licence Capacity	%
	Days Plant Operated above 100% Capacity	Conventional Filtration & Membrane Filtration & Direct Filtration & Unfiltered	Days Plant Operated above 100% Capacity	#
	Days Plant Operated above 90% Capacity	Conventional Filtration & Membrane Filtration & Direct Filtration & Unfiltered	Days Plant Operated above 90% Capacity	#
Meet Service Requirements with Economic Efficiency	Chemical Cost	All Systems	Chlorination	\$ / ML Treated
			Coagulation	\$ / ML Treated
			Corrosion Control	\$ / ML Treated
			Dechlorination	\$ / ML Treated
			Disinfection	\$ / ML Treated
			Flocculation	\$ / ML Treated
			Fluoridation	\$ / ML Treated
			Iron Sequestering	\$ / ML Treated
			Membrane Cleaning	\$ / ML Treated
			Other	\$ / ML Treated
			Ozone Generation	\$ / ML Treated
			pH Control / Stabilisation	\$ / ML Treated
			Phosphorus Removal	\$ / ML Treated
			Pre-oxidation	\$ / ML Treated
			Sludge Conditioning	\$ / ML Treated
	Softening	\$ / ML Treated		
	Taste and Odour	\$ / ML Treated		
	Energy Consumed	All Systems	Diesel	kWh / ML Treated
			Electricity	kWh / ML Treated
			Natural Gas	kWh / ML Treated
			Oil	kWh / ML Treated
			Propane	kWh / ML Treated
	FTEs relative to No. of Groundwater Wells	Groundwater System	Laboratory	FTEs / Groundwater Well
			O&M	FTEs / Groundwater Well
			Program Support / Clerical	FTEs / Groundwater Well
			Supervisor/ Management	FTEs / Groundwater Well
			Technical / Engineering	FTEs / Groundwater Well
	FTEs relative to Volume Treated	All Systems	Laboratory	FTEs / 1,000 ML Treated
O&M			FTEs / 1,000 ML Treated	
Program Support / Clerical			FTEs / 1,000 ML Treated	
Supervisor / Management			FTEs / 1,000 ML Treated	
Technical / Engineering			FTEs / 1,000 ML Treated	
O&M Cost + Capital Reinvestment Cost	All Systems	Capital Reinvestment	\$ / ML Treated	
		O&M	\$ / ML Treated	
O&M Cost relative to No. of Groundwater Wells	Groundwater System	O&M Cost	\$ ('000) / Groundwater Well	
O&M Cost relative to Volume Treated	All Systems	Chemicals	\$ / ML Treated	
		Energy	\$ / ML Treated	
		Equipment and Materials	\$ / ML Treated	
		External Contracted Services	\$ / ML Treated	
		Internal Contracted Services	\$ / ML Treated	
		Other	\$ / ML Treated	
		Staff Training	\$ / ML Treated	
		Wages	\$ / ML Treated	

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Goal	KPI	Applicable System Type	Breakdown	Units
Protect Public Health and Safety	Average Annual Treated Water Turbidity	All Systems	Treated Water Turbidity	NTU
	Average Treated Water Nitrates	All Systems	Average Treated Water Nitrates	mg / L
	Days in Turbidity Ranges	All Systems	Days < 1 NTU	%
			Days > 50 NTU	%
			Days b/w 1 & 5 NTU	%
			Days b/w 15 & 50 NTU	%
			Days b/w 5 & 15 NTU	%
Days over Group Nitrate Target of 10 mg/L	All Systems	Days over Group Nitrate Target	#	
Days over Group Turbidity Target	All Systems	Days over Group Turbidity Target	#	
Protect Public Health and Safety	Raw Water Dissolved Carbon	Conventional Filtration & Membrane Filtration & Direct Filtration	Raw Water Dissolved Carbon	mg / L
	Raw Water Total Organic Carbon	Conventional Filtration & Membrane Filtration & Direct Filtration	Raw Water Total Organic Carbon	mg / L
	Total Coliform Occurrences in Treated Water	All Systems	Total Coliform Occurrences in Treated Water	#
	Treated Water Dissolved Carbon	Conventional Filtration & Membrane Filtration & Direct Filtration	Treated Water Dissolved Carbon	mg / L
	Treated Water Total Organic Carbon	Conventional Filtration & Membrane Filtration & Direct Filtration	Treated Water Total Organic Carbon	mg / L
Protect the Environment	GHG Emissions from Energy Consumed	All Systems	Diesel	kg CO2e / ML Treated
			Electricity	kg CO2e / ML Treated
			Natural Gas	kg CO2e / ML Treated
			Oil	kg CO2e / ML Treated
			Propane	kg CO2e / ML Treated
	Percent Backwash Waste Treated	Conventional Filtration & Membrane Filtration & Direct Filtration	Percent Backwash Waste Treated	%
Water Wasted During Treatment Process	Conventional Filtration & Membrane Filtration & Direct Filtration & Unfiltered	Water Wasted	%	
Provide a Safe and Productive Workplace	Cost of Overtime Hours	All Systems	Cost of Overtime Hours	\$ / O&M FTE
	Field Accidents with Lost Time	All Systems	Field Accidents with Lost Time	# / 1,000 O&M Labour Hours
	Lost Hours due to Field Accidents	All Systems	Lost Hours	# / 1,000 O&M Labour Hours
	Sick Days Taken	All Systems	Sick Days Taken	# / O&M Employee
	Total Overtime Hours / Total Paid O&M Hours	All Systems	Total Overtime Hours / Total Paid O&M Hours	%
	Unavailable O&M Hours / Total Paid O&M Hours	All Systems	Expended Banked Time	%
			Long Term Leave	%
			Other	%
			Other Training	%
			Safety Training	%
			Sick Time	%
Union Paid Time			%	
Vacation	%			

Goal	KPI	Applicable System Type	Breakdown	Units
Provide Reliable Service and Infrastructure	Capital Reinvestment / Replacement Value	All Systems	Capital Reinvestment/ Replacement Value	%
	Reactive Maintenance Hours / Total Maintenance Hours	All Systems	Reactive Maintenance Hours / Total Maintenance Hours	%
	Total Maintenance Hours	All Systems	Total Maintenance Hours	# / ML Treated
	Unit Filter Run Volume	Conventional Filtration & Membrane Filtration & Direct Filtration & Groundwater System	Unit Filter Run Volume	m ³ / m ²
	Unplanned Hours that Plant Could not Operate at Rated Capacity	All Systems	Unplanned Hours	#

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