

WATER & SEWER FUND

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Overview

- This fund's activities include all aspects of establishing, operating and maintaining buildings, equipment and work related to the supply and treatment of potable water, distribution of potable water, and collection, treatment and disposal of sewage. These costs are recovered through charges to service users.

2014 Highlights

Highlights of the Water & Sewer Fund for 2014 include:

- Northland Trailer Park water and sewer infrastructure upgrades were awarded to RTL Enterprises in 2013. All water and sewer mains are anticipated to be installed in 2014 with an expected completion date of 2015, at a total budget of \$15,908,554.77
- Replacement of water and sewer mains and water and sewer services on portions of Franklin Avenue, Lanky Court, 52 Avenue and Forest Drive; the total budget was \$5,710,000 with \$6,634,000 awarded to date
- Engineering and Water & Sewer staff provided support and review for the Homes North Block 501 development
- Water & Sewer staff are providing operational support to facilitate construction processes during the building of the new Water Treatment Plant at Reservoir #1
- Annual/quarterly submissions of the City's water and sewage treatment report to the Mackenzie Valley Land and Water Board
- Yearly pumphouse and liftstation preventative maintenance
- Yearly cleaning of boilers at Pumphouse #1
- Cleaning, servicing and/or repairing all boilers and furnaces in the City's water and sewer system, as well as the City garage and new parking garage
- Yearly preventative maintenance of all fire extinguishers on City premises
- Monthly fly-out testing of lagoon at F1 and F3 sampling sites, as per regulatory requirements; three bulk samples taken for toxicity testing; increased sampling as per water license requirements was implemented at the beginning of the annual decant process which began on September 8th. No leaks or overflow were present in the decant structure in 2014.
- Pumphouse and liftstation fire alarms were inspected and serviced by City water and sewer staff
- Thawing of storm drains and culverts during spring runoff
- Painted one-third of hydrants in the City water system; repairs are made annually as required and dictated by routine maintenance schedule
- Leak detection program ongoing; located and repaired 91 leaks to date with an expected total in excess of 110 for 2014; this includes water main leaks, service leaks on City-owned facilities and SCFA repairs
- Annual sewer flushing program continued; 90% completion of sewer mains expected for 2014
- Liftstation cleaning scheduled from October 6th to 17th, 2014; weekly chlorine monitoring in the city's water system to ensure proper operation and resident safety and satisfaction
- 24/7 chlorine monitoring in six locations throughout the water distribution system
- Water system temperature monitoring completed weekly during winter months to ensure proper circulation and improve heating efficiencies
- Annual lagoon decant began in September 2014; decant is undertaken over a period of 12 weeks annually
- Facilitated and organized the annual servicing of all the City's back-up generators and transfer switches
- Provided safety and other related training and recertification to Water & Sewer staff.
- Clearly labeled all water and sewer facilities, as per water license requirements

Pumphouse #1

- Ongoing SCADA maintenance

*Pumphouse operators do double duty as both pumphouse operators and emergency dispatchers, which is unique to Yellowknife.

Pumphouse #2

- Routine maintenance
- Pump wells were inspected and cleaned
- Pump VFD's underwent major repairs to enable pumping requirements to be maintained

Pumphouse #3

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- Repairs to intake piping and chlorine injection points were completed to maintain facility functionality
- Routine maintenance and pump inspections by Water & Sewer staff

Pumphouse #4

- Routine maintenance and pump inspections by Water & Sewer staff
Investigated potential improvements to reservoir design which would allow improved chlorine contact time for potable water supplies

Pumphouse #5

- Routine maintenance and pump inspections by Water & Sewer staff

Pumphouse #6

- Routine maintenance and pump inspections

Liftstation #1

- Annual pump and communitor maintenance. Communitors were removed and rebuilt by Water & Sewer staff

Liftstation #2

- Annual pump maintenance and inspections by Water & Sewer staff
- Generator installation complete and warranty period approved
- This facility was hit by lightning in August 2014 causing significant electrical damage and communication disruption. Water & Sewer staff managed and completed all necessary repairs to regain full operation of the facility which included connections to Liftstation #3.

Liftstation #3

- Annual pump maintenance and inspection by Water & Sewer staff

Liftstation #4

- Annual pump and communitor maintenance. Communitor was removed and rebuilt by Water & Sewer staff.
- Electric motor for Pump 3 was upgraded to a new high efficiency motor with soft start to improve motor and pump operation and life expectancy

Liftstation #5

- Annual pump and communitor maintenance. Communitors were removed and rebuilt by Water & Sewer staff.

Liftstation #6

- Annual pump maintenance completed by Water & Sewer staff
- Architectural upgrades were completed to improve heating efficiencies and esthetics, total budget \$33,000

Liftstation #7

- Annual pump and communitor maintenance. Communitors removed and rebuilt by Water & Sewer staff

Liftstation #8

- Annual pump maintenance
- The water service to this facility was upgraded to current City standards due to a failure of the existing 12- millimetre service line.

Liftstation #9

- Annual pump maintenance by Water & Sewer staff.
- The backup/emergency generator at this facility will be replaced in October 2014.

Liftstation #10

- Annual pump maintenance by Water & Sewer staff.

Liftstation #11

- Annual pump maintenance by Water & Sewer staff.

Liftstation # 12

- Annual pump maintenance by Water & Sewer staff.

2015/2016/2017 Goals

The goals of the Water & Sewer Fund are to:

- Provide a reliable supply of high-quality, potable water to Yellowknife residents, and efficiently and responsibly dispose of waste water
- Expand on and maintain a ten-year capital replacement plan for potable water and waste water systems; maintain piped water and sewer systems in good, functional condition
- Continue elimination of water losses and wastage on mains and



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services

- Continue upgrading the City's water and sewer systems and maintain them at a good, workable standard
- Conduct regular upgrading of supervisory staff (e.g. courses and conferences to learn about new technology and explore how it could benefit the City)
- Continue to upgrade safety training of staff
- Continue to upgrade safety equipment and procedures for staff
- Increase monitoring of water temperature in the critical areas of the piped water distribution system; this will reduce the need to heat water and result in additional fuel and power savings. Water obtained from the Yellowknife River is typically around 1°C during the winter
- Rebuild or replace pumphouse and liftstation pumps to increase pumping capacity and reduce power consumption in a cost-effective manner
- Hire qualified people to maintain a high standard of repair and maintenance
- Increase water quality monitoring with the installation of continuous chlorine monitors throughout the system

2015/2016/2017 Objectives

The objectives of the Water & Sewer Fund are to:

- Provide the community with potable water that meets or exceeds the Canadian Drinking Water Quality Guidelines, the requirements of our Water License, territorial and federal environmental and public health regulations (as established by the Mackenzie Valley Land and Water Board) and the *Public Health Act*
- Treat and dispose of waste water in order to meet or exceed the requirements of the *NWT Water Act* and our Water License discharge and monitoring requirements
- Provide adequate water pressure and volume to meet fire suppression needs and plan for remedial measures of future capital projects, should deficiencies be found
- Maintain water quality and protect public health through timely water quality testing – daily chlorine and fluoride, weekly bacterial and general water quality analysis
- Repair or replace piped water and sewer distribution mains prior to

ultimate failure or excessive maintenance

- Manage and monitor trucked water delivery and trucked sewage pump-out contracts
- Eliminate water main and service losses through annual leak detection and repair, elimination of bleeders and calibration or replacement of water meters over the next three years
- Continue to reduce the number of single line water services and services having bleeders, heat trace and Aquaflo units, as resources permit
- Review future capital projects with Engineering Division to prioritize spending to best suit short- and long-term requirements from an operation and maintenance standpoint
- Initiate changes to shorten the staff time expended on water meter reading and billing through technologically advanced reading and downloading equipment, as well as a comprehensive review of current practices
- Establish an information inventory for the City's underground infrastructure and utilities
- Submit waste reports required by City's new Water License to the Mackenzie Valley Land and Water Board
- Public Works and Engineering and the Water & Sewer Division continue to work together for capital replacement projects
- Review by-laws to ensure residents are being serviced to the highest standard, equally and fairly

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Water & Sewer Fund Budget				2015	2016	2017	
	2013	2014	2014	Budget	2016	2017	Note
	Actual	Budget	Forecast	Recommended	Budget	Budget	
	(\$000's)	(\$000's)	(\$000's)	(\$000's)	(\$000's)	(\$000's)	
Revenue							
Government Transfer	-	-	-	130	130	130	
User Charges							
Piped Water	6,269	6,623	6,506	6,777	7,455	8,201	(1)
Trucked Water	1,128	1,176	1,176	1,230	1,353	1,488	(1)
Other User Charges	161	155	153	177	195	214	(2)
	7,558	7,954	7,835	8,314	9,133	10,033	
Allocated to Capital	(1,387)	(1,507)	(1,507)	(1,575)	(1,860)	(2,130)	(3)
	6,171	6,448	6,328	6,739	7,273	7,903	
Expenditures (By Activity)							
Sewage Disposal	1,626	1,723	1,773	1,775	1,811	1,861	
Water Distribution	3,182	3,362	3,430	4,278	4,175	4,132	
	4,808	5,084	5,203	6,053	5,985	5,993	
Labour & Vehicle O&M Allocation	388	251	250	242	231	239	
Amortization	4,047	4,143	4,143	4,284	5,119	5,206	
	9,243	9,478	9,595	10,579	11,335	11,438	
Net Revenue (Expenditures)	(3,073)	(3,031)	(3,268)	(3,839)	(4,062)	(3,535)	
Interfund Transfers							
(To) From General Fund	(1,134)	(1,193)	(1,175)	(1,126)	(1,149)	(1,171)	(4)
Change in Fund Balance Before Reallocation of Amortization	(4,207)	(4,224)	(4,443)	(4,965)	(5,210)	(4,706)	
Reallocation of Amortization	4,047	4,143	4,143	4,284	5,119	5,206	
Change in Fund Balance	(160)	(81)	(300)	(681)	(91)	500	
Opening Balance	(140)	(162)	(300)	(600)	(1,281)	(1,372)	
Closing Balance	(300)	(243)	(600)	(1,281)	(1,372)	(872)	
Expenditures (By Object)							
Wages & Benefits	1,990	2,158	2,100	2,113	2,081	2,140	
Other O&M	7,253	7,321	7,495	8,466	9,254	9,298	(5)
	9,243	9,478	9,595	10,579	11,335	11,438	
Details of Other O&M							
General Services	1,570	1,482	1,443	1,481	1,516	1,553	
Materials	241	285	347	333	343	352	
Maintenance	85	73	95	80	82	84	
Utility- Fuel	266	260	347	544	399	253	
Utility- Power	941	959	997	1,620	1,669	1,719	
Vehicle O&M & Fuel	105	120	124	124	127	131	
Amortization	4,047	4,143	4,143	4,284	5,119	5,206	
	7,253	7,321	7,495	8,466	9,254	9,298	
Notes:							
(1)	Piped and Trucked Water - See the following schedule of water and sewer rates based on the rate increases of 5% in 2015 and 10% in 2016 and 2017 for the estimated consumption and revenue.						
(2)	Other user charges are mainly from utilities penalties.						
(3)	According to Budget Policies, allocation to Capital Fund is based on 30% of revenues to fund water and sewer infrastructure projects. The actual transfer (plus the previous increase in infrastructure replacement levy) is reduced by \$200,000 from 2015 to 2017.						
(4)	The Water and Sewer Fund pays an administration fee to the General Fund.						
(5)	New water treatment plant in 2015						



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				2015
				Budgeted
				Revenue
				(\$)
Piped Services:		Monthly Charge (\$)	Average Monthly # of Accts.	
Equivalent residential unit charge		7.72	11,348	1,050,938
Demand charge based on water meter size:	5/8"	9.58	4,364	501,476
	3/4"	14.36	33	5,688
	1"	23.93	61	17,516
	1 1/2"	52.64	52	32,845
	2"	90.92	77	84,010
	3"	200.97	11	26,528
	4"	354.11	3	12,748
	6"	813.49	1	9,762
	8"	1,435.57	1	17,227
Consumption:		1,416,200 cubic metre		
		\$3.50/cubic metre		5,018,743
				<u>6,777,482</u>
Others				
Water Meters Fee 100% Cost Recovery				
Connect/ Disconnect Permit @\$42				
			Annual # of Account/ Consumption (Litres)	2015 Budgeted Revenue (\$)
Trucked Services		<u>Rate</u>		
Residential access charge - accounts		\$55.71	5,272	293,719
Residential consumption <3,300 gallons/15,000 Litres		\$15.92	43,685,000	153,830
Residential consumption >3,300 gallons/15,000 Litres		\$90.76	1,366,000	27,249
Commercial access charge - accounts		\$159.08	3,303	525,425
Commercial consumption <3,300 gallons/15,000 Litres		\$15.92	35,085,500	123,745
Commercial consumption >3,300 gallons/15,000 Litres		\$90.76	2,731,000	54,477
				<u>1,178,445</u>
Others				
Bulk Sales @ \$20.62/ 1,000 gallon (4,550 Litres)				51,500
New Utility Account Setup/ Registration Fee				
Paper Billing		\$35	260	9,009
Paperless Billing		24.5	259	6,346
				<u>15,355</u>
Infrastructure Replacement Levy (to finance Water & Sewer Projects)				
Charge is Per Equivalent Residential Unit (ERU)				
		Monthly Charge (\$)	Average Monthly # of ERU	07-Jul-05 Budgeted Revenue (\$)
		10.50	12,167	1,533,000

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Sewage Disposal Budget	2013	2014	2014	2015	2016	2017
	Actual	Budget	Forecast	Budget	Budget	Budget
	(\$000's)	(\$000's)	(\$000's)	Recommended	(\$000's)	(\$000's)
				(\$000's)		
Liftstations/Effluent Operations						
Operations & Maintenance	333	396	422	440	453	466
Allocated Vehicle O&M & Fuel	21	24	25	25	26	27
Allocated Labour	148	161	156	157	155	159
	502	581	603	622	634	652
Trucked Sewage						
General Services	792	845	805	855	878	902
Allocated Vehicle O&M & Fuel	-	-	-	-	-	-
Allocated Labour	1	1	1	1	1	1
	793	846	806	856	879	903
Sewage System Maintenance						
Operations & Maintenance	159	107	178	109	112	115
Allocated Vehicle O&M & Fuel	37	43	44	44	45	47
Allocated Labour	134	146	142	143	141	145
	331	296	364	296	298	306
Total Sewage Disposal						
Direct Costs	1,284	1,348	1,404	1,404	1,443	1,482
Allocated Vehicle O&M & Fuel	59	67	69	70	71	73
Allocated Labour	284	308	300	301	297	305
	1,626	1,723	1,773	1,775	1,811	1,861



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Water Distribution Budget	2013 Actual (\$000's)	2014 Budget (\$000's)	2014 Forecast (\$000's)	2015 Budget Recommended (\$000's)	2016 Budget (\$000's)	2017 Budget (\$000's)
Pumphouses						
Labour - Pumphouse # 1	-	-	-	-	-	-
Operations & Maintenance	1,055	1,064	1,167	2,010	1,909	1,809
	1,055	1,064	1,167	2,010	1,909	1,809
Allocated Vehicle O&M & Fuel	5	5	5	5	6	6
Allocated Labour	864	936	911	917	903	928
	1,923	2,005	2,083	2,932	2,817	2,743
Trucked Water Delivery						
General Services	745	781	781	776	792	808
Water Line/Hydrant Maintenance						
Operations & Maintenance	54	72	72	74	75	77
Allocated Vehicle O&M & Fuel	35	40	41	42	42	44
Allocated Labour	331	359	349	351	346	356
	420	471	463	467	464	476
Water Meter Services						
Operations & Maintenance	8	11	11	12	12	12
Allocated Vehicle O&M & Fuel	6	7	7	7	8	8
Allocated Labour	80	86	84	84	83	86
	94	105	103	103	103	105
Total Water Distribution						
Direct Costs	1,862	1,928	2,031	2,871	2,787	2,705
Allocated Vehicle O&M & Fuel	46	52	54	54	56	57
Allocated Labour	1,274	1,381	1,344	1,352	1,332	1,370
	3,182	3,362	3,430	4,278	4,175	4,132

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Water & Sewer Fund Performance Measures

	Projected 2013	Actual 2013	Projected 2014	Forecasted 2015	Forecasted 2016	Forecasted 2017	Notes
Workload Indicators							
No. of metres of replaced water and sewer mains	3,512	3,435	5,796	1,740	744	558	(1)
No. of fire hydrants	332	335	342	342	343	343	(2)
No. of fire hydrants flushed	320	120	0	300	300	300	
No. of bleeders on City main lines	2	3	3	3	-	-	
No. of water meters replaced							
Public Works (in-house)	40	28	30	40	20	20	
Contracted out	55	52	80	100	20	20	
Total water meters replaced	95	80	110	140	40	40	(3)
No. of new water and sewer (W&S) services privately installed:							
Northlands	55	10	140	108	-	-	
Block 501		30	30	40	60	-	
No. of services replaced under Capital	64	64	-	60	-	-	
No. of services repaired/replaced under Service Connection Failure Assistance Fund (SCFA)							
Public Works (in-house)	75	69	85	60	50	50	
Contracted out	10	9	35	20	10	10	
Total	85	78	120	80	60	60	
No. of services repaired/replaced by City (Capital and O&M)							
	149	142	120	140	60	60	
No. of single line bleeders eliminated	25	24	10	10	-	-	
No. of Aquaflow units eliminated	5	3	3	-	-	-	

Notes:

- (1) Values for 2013, 2014 and 2015 include mains installed in Northlands and Block 501. All mains for Northlands installed in 2014.
- (2) In this budget cycle all fire hydrants within Northland Trailer Park will become part of the City's PH #4 system, thus current identification system requires updating. Values include new hydrants in Block 501.
- (3) Replacement of meters will be ongoing, especially now that specifications have been changed due to purchase of automated reading equipment.

