902-420-9287
450 Cowie Hill Road
P.O. Box 8388 RPO CSC
Halifax, Nova Scotia
Canada B3K 5M1

September 1, 2022

Colleen Rollings, P. Eng., PMP, Chair
Halifax Water
Halifax, NS

The regular meeting of the Halifax Water Board will be held virtually on Thursday, September 22, 2022, beginning at 9:00 a.m. Visit www.halifaxwater.ca to register to attend the public portion of the meeting.

AGENDA

In Camera Reports

1C Approval of Minutes of the In-Camera Meeting held on Thursday, June 23, 2022 (5 minutes)

Motion: *That the Halifax Water Board approve the In-Camera minutes of June 23, 2022.*

2C Business Arising from Minutes (5 minutes)
a)

3C-I Legal Matter (10 minutes)

4C-I Regulatory Matter (15 minutes)

5C-I Regulatory Matter (10 minutes)

6C-I Legal Matter (15 minutes)

7C-I Governance Matter (5 minutes)

Motion: *That the Halifax Water Board approve the motion.*

Regular Reports

1. a) Ratification of In-Camera motions (2 minutes)

Motion: *That the Halifax Water Board ratify the In-Camera Motions.*

b) Approval of the order of business and approval of additions and deletions (2 minutes)

Motion: *That the Halifax Water Board approve the order of business and approve additions and deletions.*

2. Approval of minutes of the Regular meeting held on Thursday, June 23, 2022 (2 minutes)

Motion: *That the Halifax Water Board approve the minutes of the June 23, 2022, Regular meeting.*

3. Business arising from minutes
a)

STRAIGHT from the SOURCE

Financial Reports

4.1 Operating results as at August 31, 2022 and year-end projection (15 minutes)

4.2 Capital expenditures as at August 31, 2022 and year-end projections (10 minutes)

4.3 Fall 2022 Debenture (10 minutes)

***Motion**: That the Halifax Water Board approve the re-financing of $7,664,675 with a ten-year amortization term and financing over ten years, with an all-inclusive rate not to exceed 6.0%.*

4.4 Auditor Appointment (5 minutes)

***Motion**: That the Halifax Water Board appoint Grant Thornton LLP as auditors for the Halifax Regional Water Commission financial statements for the year ended March 31, 2023, and the Halifax Regional Water Commission Employees' Pension Plan for the year ended December 31, 2022.*

Capital Approvals

5.1 Cogswell Redevelopment Infrastructure Relocation Cost Sharing (20 minutes)

Motion: *It is recommended that the Halifax Water Board approve the Cogswell District capital project at a total project cost of $19,500,000, which includes:*

1. *Execution of a cost sharing agreement with the Halifax Regional Municipality wherein $15,496,782 is the net Halifax Water share of the overall $95,663,634 construction costs,*
2. *Halifax Water staff time for supervision and management of the project in the amount of $1,000,000,*
3. *Contingency allowance costs related to unknown conditions and conflicts that may arise during construction in the amount of $3,000,000, and*
4. *Application to the Nova Scotia Utility and Review Board for project approval.*

Other Business

6. Asset Management Policy - (15 minutes)

***Motion**: It is recommended that the Halifax Water Board approve the Asset Management Policy #9.2 as revised on June 9, 2022the Asset Management Policy.*

7. Duffus Street Pump Station Failure – (20 minutes)
8. Update on Institutional Capacity – (15 minutes)

Nova Scotia Utility and Review Board

The items in this section are the reports ordered to be filed by Halifax Water with the Nova Scotia Utility and Review Board by September 30, 2022.

9. Capital Project Spending Summary

> ***Motion**: It is recommended the Halifax Water Board approve for filing with the Nova Scotia Utility and Review Board the capital project spending summary for the period April 1, 2021, to March 31, 2022 and the capital project spending over $1,000,000 summary for the period April 1, 2021 and March 31, 2022.*

10. NSUARB Annual September Report (*Report to Follow)*

Information Reports

1-I Operational Performance Information Report
2-I Halifax Water Compliance Statement – Quarterly Certification
3-I HRWC Employees' Pension Plan Financial Report, Second Quarter, 2022
4-I Halifx Water Annual Report for 2021/22
5-I Cost Containment

Digitally signed by Heidi Schedler
Date: 2022.09.16 14:43:10 -03'00'

Heidi Schedler
Secretary

ITEM # 4.1
Halifax Water Board

September 22, 2022

TO: Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: Digitally signed by Louis de Montbrun Date: 2022.09.15 17:12:23 -03'00'

Louis de Montbrun, CPA, CA
Director, Corporate Services/CFO

APPROVED: Digitally signed by Cathie O'Toole Date: 2022.09.15 19:33:43 -03'00'

Cathie O'Toole, MBA, FCPA, FCGA, ICD.D
General Manager

DATE: September 16, 2022

SUBJECT: Operating results for the 5 months ended August 31, 2022

ORIGIN

Financial Information Reporting.

DISCUSSION

Attached are the operating results for the five (5) months ended August 31, 2022, with comparative figures for August 31, 2021.

The following discussion of the operating results reflect direct operating costs by department and allocations among water, wastewater and stormwater for common costs shared across all the services provided by Halifax Water.

Statement of Financial Position (NSUARB) – page 3 of Attachment 1

Key items to note:

- Cash and cash equivalents continue to be healthy but are expected to decrease as capital expenditures increase and current portion of long-term debt payments are made.
- Accounts receivable have decreased $1.5M from the prior year due in part to a receivable in the prior year for capital cost contributions for West Bedford of $1.2 million and improved collection activities offset by a higher HST accrued rebate.
- Trade accounts payable and accruals are $6.7M higher than last year related to capital spend and new process to record holdbacks on capital projects which amount to $2.1M of the increase.
- Halifax Regional Municipality (HRM) payable has increased from the prior year receivable by $3.2M relating to an accrued payable for a cost sharing invoice for a Bayers Road project and in the prior year, a receivable for the Ellenvale Run project has since been paid.

- The current portion of long-term debt has increased $21.6M due to balloon payments required in the next twelve months. Overall long-term debt has decreased by $5.7M due to repayments.
- Deferred contributions have increased $13.5M due to receipt of Regional Development Charges (RDCs).

The following tables are for informational purposes to supplement Attachment 1: Operating Results:

Accounts Receivable:

Customer charges and contractual				
	2022	2021		
	'000	'000	$ Change	% Change
Trade receivables	**$ 16,127**	$ 18,734	$ (2,607)	(13.9%)
Other receivables	**3,142**	2,236	906	40.5%
Allowance for doubtful accounts	**(3,208)**	(3,394)	186	(5.5%)
	$ 16,061	$ 17,576	$ (1,515)	(8.6%)

Aging of Trade Receivables (in thousands)					
	Current	**31 to 60**	**61 to 120**	**120+**	**Grand Total**
2022	$ 8,632	$ 1,332	$ 825	$ 5,338	$ 16,127
2021	$ 9,748	$ 1,712	$ 945	$ 6,329	$ 18,734
$ Change	$ (1,116)	$ (380)	$ (120)	$ (991)	$ (2,607)
% Change	(11.4%)	(22.2%)	(12.7%)	(15.7%)	(13.9%)

Accounts Payable and Accruals:

Payables and Accruals				
	2022	2021		
	'000	'000	$ Change	% Change
Trade payables	**$ 6,250**	$ 3,102	$ 3,148	101.5%
Trade accrued payables	**7,080**	3,483	3,597	103.3%
Accrued wastewater rebate	**764**	791	(27)	(3.4%)
	$ 14,094	$ 7,376	$ 6,718	91.1%

Aging of Accounts Payable (in thousands)					
	Current	**31 to 60**	**61 to 120**	**120+**	**Grand Total**
2022	$ 4,393	$ 138	$ 1,011	$ 708	$ 6,250
2021	$ 2,721	$ 143	$ 210	$ 28	$ 3,102
$ Change	$ 1,672	$ (5)	$ 801	$ 680	$ 3,148
% Change	61.4%	(3.5%)	381.4%	2428.6%	101.5%

HRM Receivables and Payables				
	2022	2021		
	'000	'000	$ Change	% Change
Receivables	**$ 347**	$ 2,487	$ (2,140)	(86.0%)
RDC	**3,062**	2,482	580	23.4%
Payables	**(4,916)**	(3,284)	(1,632)	49.7%
	$ (1,507)	$ 1,685	$ (3,192)	(189.4%)

Statement of Earnings (NSUARB) – pages 4 through 9 of Attachment 1

Operating Revenues to Forecast

There have not been significant changes to forecasts, the largest of them being:

1. Wastewater revenue has been forecast $0.2M lower due to new wastewater rebate customers and an increase in the volume eligible for rebate due to discharge not entering the wastewater system.
2. Stormwater site generated service revenue has been forecast $0.1M lower due to the boundary expansion not projected to generate as much revenue as initially budgeted.

The table below presents consumption by customer class which is showing an increase of 3.3% on a volumetric basis compared to the prior year.

Consumption by Customer Class (m3)				
	2022/23	2021/22	m3 Change	% Change
Commercial	**2,874,330**	2,371,327	503,003	21.2%
Industrial	**790,605**	820,190	(29,585)	(3.6%)
Institutional	**1,524,321**	1,549,324	(25,003)	(1.6%)
Multi-residential	**3,179,124**	3,171,100	8,024	0.3%
Residential	**5,499,961**	5,516,009	(16,048)	(0.3%)
	13,868,341	13,427,950	440,391	3.3%

The increase in commercial consumption is driven by businesses reopening in a post-COVID19 environment.

Water

- Bulk water station actual revenues of $0.2M are 58.97% of forecast as they always tend to be higher in summer and level out by year end.
- Miscellaneous revenues of $0.1M are 38.79% of forecast as new connection fees trend higher in summer months.

Wastewater

- Leachate and other contract revenues of $0.2M are 38.01% of forecast as the leachate contract with HRM is trending lower than budgeted. Budget is based on the costs incurred at the facility plus a markup.
- Septage tipping revenues of $0.3M are 53.76% of forecast. It is expected septage tipping revenues will even out by year end. There is one new septage tipper this year and higher usage from another compared to prior year.

- Miscellaneous revenues of $0.1M are 48.07% of forecast as new connection fees trend higher in summer months.

Stormwater
- Miscellaneous revenues are 55.28% of forecast as drawing review fees are higher than anticipated.

Operating Expenditures

Water
- Water supply and treatment expenditure has increased over prior year $0.4M mainly due to increased chemicals prices. The forecast has been adjusted to reflect the increase in costs.
- Engineering and technology services expenditures are $0.7M lower than prior year as the allocation between Water, Wastewater and Stormwater was reassessed during budget process. A higher percentage of costs is allocated to Wastewater in the current year.
- Depreciation and amortization is forecasted $0.3M lower due to fewer additions in the prior year than expected when depreciation budget was prepared.
- Dividend/grant in lieu of taxes is forecasted to be lower as capital additions in 2021/22 ended up being less than budgeted. Dividend in 2022/23 is capped at 1% growth above the 2021/22 dividend paid to HRM.

Wastewater
- Wastewater treatment
    - Forecast $0.2M lower due to vacancy for Process Engineer and supervisor for treatment plants due to reorganization.
    - Expenditures increased over the prior year $0.7M (8.65%) due to an increase in biosolids treatment, contract services and chemical costs.
- Engineering and technology services expenditures are $0.6M higher than prior year as the allocation between Water, Wastewater and Stormwater was reassessed during budget process.
- Depreciation and amortization is forecast $0.5M higher due to prior year expectation that a higher proportion of assets would have been donated asset and excluded from the depreciation expense.

Stormwater
- Regulatory services expenditures lower than prior year $0.2M due to change in the allocation between services.

Combined Overall Expenditures
- Engineering and technology services, Regulatory services and Customer services overall expenditures are comparable to prior year, but allocations between services changed between current and prior year resulting in variances when analyzing each service individually.
- Corporate services expenditures are $0.3M higher than prior year due to rise in RDC merchant discount fees. A proposal to allocate these costs to RDC Reserve is being considered.

Non-operating Revenues to Forecast
- Interest rates are on the rise resulting in higher revenues. Revenues are allocated to each service based on the accumulated surplus/deficit. As Stormwater services is in a deficit position, it is being charged interest. The forecast has been adjusted to account for the rise in interest rates, but the expectation is the cash balance will decrease therefore the actuals year to date as a percentage of forecast are currently high.
- Other, energy generation and scrap metal sales are lower than anticipated.

Non-operating Expenditures to Forecast

- Debt appropriation expenditures are forecast slightly higher than budget due to an increase in interest rates on new debt.
- Dividend/grant in lieu of taxes is forecast lower as capital additions ended up being less than budgeted for fiscal 2021/22 and dividend is capped at 1% growth.

Attachments

Attachment 1: Operating Results for August 31, 2022.

Report prepared by:

Ian Woodacre, CPA, CMA
Accountant (902) 201-6026

Report reviewed by:

Alicia Scallion, CPA, CA
Manager, Finance (902) 497-9785

HALIFAX WATER
UNAUDITED STATEMENT OF FINANCIAL POSITION - IFRS
AUGUST 31, 2022 (in thousands)

August 31 (in thousands)	2022	2021	March 31 2022	From Prior Year $ Change	From Prior Year % Change
Assets					
Current					
Cash and cash equivalents	$ 76,981	$ 84,103	$ 65,586	$ (7,122)	(8.5%)
Receivables					
Customers charges and contractual	16,061	17,576	15,900	(1,515)	(8.6%)
Unbilled service revenues	20,612	20,464	18,838	148	0.7%
Halifax Regional Municipality	0	1,685	851	(1,685)	(100.0%)
Inventory	2,114	2,173	2,042	(59)	(2.7%)
Prepaids	1,977	3,185	2,408	(1,208)	(37.9%)
	117,745	129,186	105,625	(11,441)	(8.9%)
Intangible assets	19,809	19,708	20,805	101	0.5%
Capital work in progress	77,608	44,427	51,013	33,181	74.7%
Utility plant in service - Water	735,074	720,633	735,074	14,441	2.0%
Utility plant in service - Wastewater	851,563	829,760	851,563	21,803	2.6%
Utility plant in service - Stormwater	303,963	294,181	303,963	9,782	3.3%
Less: Accumulated depreciation - Water	(243,095)	(227,603)	(236,558)	(15,492)	6.8%
Accumulated depreciation - Wastewater	(312,720)	(287,320)	(302,036)	(25,400)	8.8%
Accumulated depreciation - Stormwater	(77,851)	(70,168)	(74,646)	(7,683)	10.9%
Utility plant in service	1,256,934	1,259,483	1,277,360	(2,549)	(0.2%)
Total assets	1,472,096	1,452,804	1,454,803	19,292	1.3%
Regulatory deferral account	2,349	2,541	2,428	(192)	(7.6%)
Total assets and regulatory deferral account	**$ 1,474,445**	**$ 1,455,345**	**$ 1,457,231**	**$ 19,100**	**1.3%**
Liabilities					
Current					
Payables and accruals					
Trade	14,094	7,376	23,255	6,718	91.1%
Non-trade	4,225	5,033	5,060	(808)	(16.1%)
Interest on long term debt	2,382	2,213	2,038	169	7.6%
Halifax Regional Municipality	1,507	0	0	1,507	0.0%
Contractor and customer deposits	2,715	2,343	2,705	372	15.9%
Current portion of deferred contributed capital	14,614	14,580	14,614	34	0.2%
Current portion of long term debt	43,154	21,559	46,272	21,595	100.2%
Unearned revenue	6,762	6,796	80	(34)	(0.5%)
	89,453	59,900	94,024	29,553	49.3%
Deferred contributed capital	895,377	889,536	893,975	5,841	0.7%
Long term debt	190,243	217,508	177,910	(27,265)	(12.5%)
Employee benefit obligation	45,785	79,843	41,950	(34,058)	(42.7%)
Total liabilities	1,220,858	1,246,787	1,207,859	(25,929)	(2.1%)
Equity					
Accumulated other comprehensive loss	11,226	(29,681)	11,225	40,907	(137.8%)
Accumulated surplus	242,361	238,239	238,147	4,122	1.7%
Total equity	253,587	208,558	249,372	45,029	21.6%
Total liabilities and equity	**$ 1,474,445**	**$ 1,455,345**	**$ 1,457,231**	**$ 19,100**	**1.3%**

HALIFAX WATER
UNAUDITED STATEMENT OF EARNINGS AND COMPREHENSIVE EARNINGS - ALL SERVICES - IFRS
APRIL 1, 2022 - AUGUST 31, 2022 (5 MONTHS)
ACTUAL YEAR TO DATE COMPLETE: 41.67%

	ACTUAL YEAR TO DATE THIS YEAR '000	ACTUAL YEAR TO DATE LAST YEAR '000	APR 1/22 MAR 31/23 BUDGET '000	APR 1/22 MAR 31/23 FORECAST '000	ACTUAL YEAR TO DATE as % of BUDGET	ACTUAL YEAR TO DATE as % of FORECAST	From Prior Year $ Change	From Prior Year % Change
Operating revenues								
Water	$ 20,765	$ 20,567	$ 48,770	$ 48,829	42.58%	42.53%	$ 198	0.96%
Wastewater	34,635	34,397	81,607	81,450	42.44%	42.52%	238	0.69%
Stormwater	4,524	4,320	10,786	10,646	41.94%	42.49%	204	4.72%
Public fire protection	3,178	3,178	7,628	7,628	41.66%	41.66%	0	0.00%
Private fire protection	550	520	1,335	1,353	41.20%	40.65%	30	5.77%
Other operating revenue	1,217	1,159	2,639	2,628	46.12%	46.31%	58	5.00%
	64,869	**64,141**	**152,765**	**152,534**	**42.46%**	**42.53%**	**728**	**1.13%**
Operating expenditures								
Water supply and treatment	4,396	4,040	11,246	11,778	39.09%	37.32%	356	8.81%
Water transmission and distribution	4,831	4,114	12,441	12,266	38.83%	39.39%	717	17.43%
Wastewater collection	5,303	5,390	13,096	13,157	40.49%	40.31%	(87)	(1.61%)
Stormwater collection	1,745	1,783	5,281	5,258	33.04%	33.19%	(38)	(2.13%)
Wastewater treatment	9,144	8,416	23,395	23,206	39.09%	39.40%	728	8.65%
Engineering and technology services	5,607	5,542	13,941	14,025	40.22%	39.98%	65	1.17%
Regulatory services	1,811	1,752	4,866	4,788	37.22%	37.82%	59	3.37%
Customer services	1,815	1,943	4,844	4,844	37.47%	37.47%	(128)	(6.59%)
Corporate services	1,201	889	2,970	3,146	40.44%	38.18%	312	35.10%
Administration services	1,944	1,838	5,855	5,855	33.20%	33.20%	106	5.77%
Pension services	3,924	6,026	9,415	9,415	41.68%	41.68%	(2,102)	(34.88%)
Depreciation and amortization	21,013	20,421	48,716	48,900	43.13%	42.97%	592	2.90%
	62,734	**62,154**	**156,066**	**156,638**	**40.20%**	**40.05%**	**580**	**0.93%**
Earnings (loss) from operations before financial and other revenues and expenditures	**2,135**	**1,987**	**(3,301)**	**(4,104)**	**(64.68%)**	**(52.02%)**	**148**	**7.45%**
Financial and other revenues								
Interest	137	64	105	275	130.48%	49.82%	73	114.06%
Amortization of contributed capital	7,783	7,720	17,864	17,864	43.57%	43.57%	63	0.82%
Other	216	1,004	628	636	34.39%	33.96%	(788)	(78.49%)
	8,136	**8,788**	**18,597**	**18,775**	**43.75%**	**43.33%**	**(652)**	**(7.42%)**
Financial and other expenditures								
Interest on long term debt	3,165	3,019	6,668	6,761	47.47%	46.81%	146	4.84%
Amortization of debt discount	101	95	233	229	43.35%	44.10%	6	6.32%
Dividend/grant in lieu of taxes	2,718	2,762	6,803	6,524	39.95%	41.66%	(44)	(1.59%)
Other	54	86	46	146	117.39%	36.99%	(32)	(37.21%)
	6,038	**5,962**	**13,750**	**13,660**	**43.91%**	**44.20%**	**76**	**1.27%**
Total comprehensive earnings for the year	**$ 4,233**	**$ 4,813**	**$ 1,546**	**$ 1,011**	**273.80%**	**418.69%**	**$ (580)**	**(12.05%)**

HALIFAX WATER
UNAUDITED STATEMENT OF FINANCIAL POSITION - NSUARB
AUGUST 31, 2022 (in thousands)

August 31 (in thousands)	2022	2021	March 31 2022	From Prior Year $ Change	From Prior Year % Change
Assets					
Current					
Cash and cash equivalents	$ 76,981	$ 84,103	$ 65,586	$ (7,122)	(8.5%)
Receivables					
Customer charges and contractual	16,061	17,576	15,900	(1,515)	(8.6%)
Unbilled service revenues	20,612	20,464	18,838	148	0.7%
Halifax Regional Municipality	0	1,685	851	(1,685)	(100.0%)
Inventory	2,114	2,173	2,042	(59)	(2.7%)
Prepaids	1,977	3,185	2,408	(1,208)	(37.9%)
	117,745	129,186	105,625	(11,441)	(8.9%)
Capital work in progress	77,608	44,427	51,013	33,181	74.7%
Utility plant in service	1,313,705	1,313,806	1,334,162	(101)	0.0%
Total assets	1,509,058	1,487,419	1,490,800	21,639	1.5%
Regulatory deferral account	2,349	2,541	2,428	(192)	(7.6%)
Total assets and regulatory deferral account	**$ 1,511,407**	**$ 1,489,960**	**$ 1,493,228**	**$ 21,447**	**1.4%**
Liabilities					
Current					
Payables and accruals					
Trade	14,094	7,376	23,255	6,718	91.1%
Non-trade	4,225	5,033	5,060	(808)	(16.1%)
Interest on long term debt	2,382	2,213	2,038	169	7.6%
Halifax Regional Municipality	1,507	0	0	1,507	0.0%
Contractor and customer deposits	2,715	2,343	2,705	372	15.9%
Current portion of long term debt	43,154	21,559	46,272	21,595	100.2%
Unearned revenue	6,762	6,796	80	(34)	(0.5%)
	74,839	45,320	79,410	29,519	65.1%
Long term debt	190,243	217,508	177,910	(27,265)	(12.5%)
Deferred contributions	78,216	64,708	69,140	13,508	20.9%
Total liabilities	343,298	327,536	326,460	15,762	4.8%
Equity					
Accumulated capital surplus	1,127,574	1,112,678	1,125,228	14,896	1.3%
Accumulated operating surplus	29,133	35,729	35,542	(6,596)	(18.5%)
Operating surplus used to fund capital	12,380	12,380	12,380	0	0.0%
Deficiency of revenues over expenditures	(978)	1,637	(6,382)	(2,615)	(159.7%)
Total equity	1,168,109	1,162,424	1,166,768	5,685	0.5%
Total liabilities and equity	**$ 1,511,407**	**$ 1,489,960**	**$ 1,493,228**	**$ 21,447**	**1.4%**

HALIFAX WATER
UNAUDITED STATEMENT OF EARNINGS - ALL SERVICES - NSUARB
APRIL 1, 2022 - AUGUST 31, 2022 (5 MONTHS)
ACTUAL YEAR TO DATE COMPLETE: 41.67%

	ACTUAL YEAR TO DATE THIS YEAR '000	ACTUAL YEAR TO DATE LAST YEAR '000	APR 1/22 MAR 31/23 BUDGET '000	APR 1/22 MAR 31/23 FORECAST '000	ACTUAL YEAR TO DATE as % of BUDGET	ACTUAL YEAR TO DATE as % of FORECAST	From Prior Year $ Change	From Prior Year % Change	Actual to Forecast $ Remaining	Actual to Forecast % Remaining	Budget to Forecast $ Change	Budget to Forecast % Change
Operating revenues												
Water	$ 20,765	$ 20,567	$ 48,770	$ 48,829	42.58%	42.53%	$ 198	0.96%	$ (28,064)	(57.47%)	$ 59	0.12%
Wastewater	34,635	34,397	81,607	81,450	42.44%	42.52%	238	0.69%	(46,815)	(57.48%)	(157)	(0.19%)
Stormwater site generated service	2,926	2,722	6,790	6,650	43.09%	44.00%	204	7.49%	(3,724)	(56.00%)	(140)	(2.06%)
Stormwater right of way service	1,598	1,598	3,996	3,996	39.99%	39.99%	0	0.00%	(2,398)	(60.01%)	0	0.00%
Fire protection (public and private)	3,728	3,698	8,963	8,981	41.59%	41.51%	30	0.81%	(5,253)	(58.49%)	18	0.20%
Other services and fees	675	611	1,376	1,387	49.06%	48.67%	64	10.47%	(712)	(51.33%)	11	0.80%
Late payment and other connection fees	234	222	617	555	37.93%	42.16%	12	5.41%	(321)	(57.84%)	(62)	(10.05%)
Miscellaneous	308	326	646	686	47.68%	44.90%	(18)	(5.52%)	(378)	(55.10%)	40	6.19%
	64,869	**64,141**	**152,765**	**152,534**	**42.46%**	**42.53%**	**728**	**1.13%**	**(87,665)**	**(57.47%)**	**(231)**	**(0.15%)**
Operating expenditures												
Water supply and treatment	4,396	4,040	11,246	11,778	39.09%	37.32%	356	8.81%	(7,382)	(62.68%)	532	4.73%
Water transmission and distribution	4,831	4,114	12,441	12,266	38.83%	39.39%	717	17.43%	(7,435)	(60.61%)	(175)	(1.41%)
Wastewater collection	5,303	5,390	13,096	13,157	40.49%	40.31%	(87)	(1.61%)	(7,854)	(59.69%)	61	0.47%
Stormwater collection	1,745	1,783	5,281	5,258	33.04%	33.19%	(38)	(2.13%)	(3,513)	(66.81%)	(23)	(0.44%)
Wastewater treatment	9,144	8,416	23,395	23,206	39.09%	39.40%	728	8.65%	(14,062)	(60.60%)	(189)	(0.81%)
Engineering and technology services	5,607	5,542	13,941	14,025	40.22%	39.98%	65	1.17%	(8,418)	(60.02%)	84	0.60%
Regulatory services	1,811	1,752	4,866	4,788	37.22%	37.82%	59	3.37%	(2,977)	(62.18%)	(78)	(1.60%)
Customer services	1,815	1,943	4,844	4,844	37.47%	37.47%	(128)	(6.59%)	(3,029)	(62.53%)	0	0.00%
Corporate services	1,201	889	2,970	3,146	40.44%	38.18%	312	35.10%	(1,945)	(61.82%)	176	5.93%
Administration services	1,944	1,838	5,855	5,855	33.20%	33.20%	106	5.77%	(3,911)	(66.80%)	0	0.00%
Depreciation and amortization	12,630	12,137	30,852	31,036	40.94%	40.69%	493	4.06%	(18,406)	(59.31%)	184	0.60%
	50,427	**47,844**	**128,787**	**129,359**	**39.16%**	**38.98%**	**2,583**	**5.40%**	**(78,932)**	**(61.02%)**	**572**	**0.44%**
Earnings from operations before financial and other revenues and expenditures	**14,442**	**16,297**	**23,978**	**23,175**	**60.23%**	**62.32%**	**(1,855)**	**(11.38%)**	**(8,733)**	**(37.68%)**	**(803)**	**(3.35%)**
Financial and other revenues												
Interest	137	64	105	275	130.48%	49.82%	73	114.06%	(138)	(50.18%)	170	161.90%
Other	216	194	628	636	34.39%	33.96%	22	11.34%	(420)	(66.04%)	8	1.27%
	353	**258**	**733**	**911**	**48.16%**	**38.75%**	**95**	**36.82%**	**(558)**	**(61.25%)**	**178**	**24.28%**
Financial and other expenditures												
Interest on long term debt	3,165	3,019	6,668	6,761	47.47%	46.81%	146	4.84%	(3,596)	(53.19%)	93	1.39%
Repayment on long term debt	9,735	8,956	21,846	21,846	44.56%	44.56%	779	8.70%	(12,111)	(55.44%)	0	0.00%
Amortization of debt discount	101	95	233	229	43.35%	44.10%	6	6.32%	(128)	(55.90%)	(4)	(1.72%)
Dividend/grant in lieu of taxes	2,718	2,762	6,803	6,524	39.95%	41.66%	(44)	(1.59%)	(3,806)	(58.34%)	(279)	(4.10%)
Other	54	86	46	146	117.39%	36.99%	(32)	(37.21%)	(92)	(63.01%)	100	217.39%
	15,773	**14,918**	**35,596**	**35,506**	**44.31%**	**44.42%**	**855**	**5.73%**	**(19,733)**	**(55.58%)**	**(90)**	**(0.25%)**
Earnings (loss) for the year	**$ (978)**	**$ 1,637**	**$ (10,885)**	**$ (11,420)**	**8.98%**	**8.56%**	**$ (2,615)**	**(159.74%)**	**$ 10,442**	**(91.44%)**	**$ (535)**	**4.92%**

HALIFAX WATER
UNAUDITED STATEMENT OF EARNINGS - WATER - NSUARB
APRIL 1, 2022 - AUGUST 31, 2022 (5 MONTHS)
ACTUAL YEAR TO DATE COMPLETE: 41.67%

	ACTUAL YEAR TO DATE THIS YEAR '000	ACTUAL YEAR TO DATE LAST YEAR '000	APR 1/22 MAR 31/23 BUDGET '000	APR 1/22 MAR 31/23 FORECAST '000	ACTUAL YEAR TO DATE as % of BUDGET	ACTUAL YEAR TO DATE as % of FORECAST	From Prior Year $ Change	From Prior Year % Change	Actual to Forecast $ Remaining	Actual to Forecast % Remaining	Budget to Forecast $ Change	Budget to Forecast % Change
Operating revenues												
Water	$ 20,765	$ 20,567	$ 48,770	$ 48,829	42.58%	42.53%	$ 198	0.96%	$ (28,064)	(57.47%)	$ 59	0.12%
Public fire protection	3,178	3,178	7,628	7,628	41.66%	41.66%	0	0.00%	(4,450)	(58.34%)	0	0.00%
Private fire protection	550	520	1,335	1,353	41.20%	40.65%	30	5.77%	(803)	(59.35%)	18	1.35%
Bulk water stations	194	187	334	329	58.08%	58.97%	7	3.74%	(135)	(41.03%)	(5)	(1.50%)
Late payment and other connection fees	98	98	265	232	36.98%	42.24%	0	0.00%	(134)	(57.76%)	(33)	(12.45%)
Miscellaneous	128	86	296	330	43.24%	38.79%	42	48.84%	(202)	(61.21%)	34	11.49%
	24,913	**24,636**	**58,628**	**58,701**	**42.49%**	**42.44%**	**277**	**1.12%**	**(33,788)**	**(57.56%)**	**73**	**0.12%**
Operating expenditures												
Water supply and treatment	4,396	4,040	11,246	11,778	39.09%	37.32%	356	8.81%	(7,382)	(62.68%)	532	4.73%
Water transmission and distribution	4,831	4,114	12,441	12,266	38.83%	39.39%	717	17.43%	(7,435)	(60.61%)	(175)	(1.41%)
Engineering and technology services	1,902	2,605	4,667	4,695	40.75%	40.51%	(703)	(26.99%)	(2,793)	(59.49%)	28	0.60%
Regulatory services	551	499	1,465	1,438	37.61%	38.32%	52	10.42%	(887)	(61.68%)	(27)	(1.84%)
Customer services	925	1,040	2,470	2,470	37.45%	37.45%	(115)	(11.06%)	(1,545)	(62.55%)	0	0.00%
Corporate services	612	409	1,514	1,605	40.42%	38.13%	203	49.63%	(993)	(61.87%)	91	6.01%
Administration services	971	1,059	2,986	2,986	32.52%	32.52%	(88)	(8.31%)	(2,015)	(67.48%)	0	0.00%
Depreciation and amortization	4,863	4,680	12,171	11,892	39.96%	40.89%	183	3.91%	(7,029)	(59.11%)	(279)	(2.29%)
	19,051	**18,446**	**48,960**	**49,130**	**38.91%**	**38.78%**	**605**	**3.28%**	**(30,079)**	**(61.22%)**	**170**	**0.35%**
Earnings from operations before financial and other revenues and expenditures	**5,862**	**6,190**	**9,668**	**9,571**	**60.63%**	**61.25%**	**(328)**	**(5.30%)**	**(3,709)**	**(38.75%)**	**(97)**	**(1.00%)**
Financial and other revenues												
Interest	110	44	72	220	152.78%	50.00%	66	150.00%	(110)	(50.00%)	148	205.56%
Other	173	154	473	439	36.58%	39.41%	19	12.34%	(266)	(60.59%)	(34)	(7.19%)
	283	**198**	**545**	**659**	**51.93%**	**42.94%**	**85**	**42.93%**	**(376)**	**(57.06%)**	**114**	**20.92%**
Financial and other expenditures												
Interest on long term debt	999	883	2,306	2,446	43.32%	40.84%	116	13.14%	(1,447)	(59.16%)	140	6.07%
Repayment on long term debt	2,599	2,411	6,063	6,064	42.87%	42.86%	188	7.80%	(3,465)	(57.14%)	1	0.02%
Amortization of debt discount	37	34	84	91	44.05%	40.66%	3	8.82%	(54)	(59.34%)	7	8.33%
Dividend/grant in lieu of taxes	2,337	2,381	5,918	5,608	39.49%	41.67%	(44)	(1.85%)	(3,271)	(58.33%)	(310)	(5.24%)
Other	50	63	16	116	312.50%	43.10%	(13)	(20.63%)	(66)	(56.90%)	100	625.00%
	6,022	**5,772**	**14,387**	**14,325**	**41.86%**	**42.04%**	**250**	**4.33%**	**(8,303)**	**(57.96%)**	**(62)**	**(0.43%)**
Earnings (loss) for the year	**$ 123**	**$ 616**	**$ (4,174)**	**$ (4,095)**	**(2.95%)**	**(3.00%)**	**$ (493)**	**(80.03%)**	**$ 4,218**	**(103.00%)**	**$ 79**	**(1.89%)**

HALIFAX WATER
UNAUDITED STATEMENT OF EARNINGS - WASTEWATER - NSUARB
APRIL 1, 2022 - AUGUST 31, 2022 (5 MONTHS)
ACTUAL YEAR TO DATE COMPLETE: 41.67%

	ACTUAL YEAR TO DATE THIS YEAR '000	ACTUAL YEAR TO DATE LAST YEAR '000	APR 1/22 MAR 31/23 BUDGET '000	APR 1/22 MAR 31/23 FORECAST '000	ACTUAL YEAR TO DATE as % of BUDGET	ACTUAL YEAR TO DATE as % of FORECAST	From Prior Year $ Change	From Prior Year % Change	Actual to Forecast $ Remaining	Actual to Forecast % Remaining	Budget to Forecast $ Change	Budget to Forecast % Change
Operating revenues												
Wastewater	$ 34,635	$ 34,397	$ 81,607	$ 81,450	42.44%	42.52%	$ 238	0.69%	$ (46,815)	(57.48%)	$ (157)	(0.19%)
Leachate and other contract revenue	176	182	491	463	35.85%	38.01%	(6)	(3.30%)	(287)	(61.99%)	(28)	(5.70%)
Septage tipping fees	293	239	475	545	61.68%	53.76%	54	22.59%	(252)	(46.24%)	70	14.74%
Airplane effluent	12	3	76	50	15.79%	24.00%	9	300.00%	(38)	(76.00%)	(26)	(34.21%)
Late payment and other connection fees	89	76	248	211	35.89%	42.18%	13	17.11%	(122)	(57.82%)	(37)	(14.92%)
Miscellaneous	112	163	253	233	44.27%	48.07%	(51)	(31.29%)	(121)	(51.93%)	(20)	(7.91%)
	35,317	**35,060**	**83,150**	**82,952**	**42.47%**	**42.58%**	**257**	**0.73%**	**(47,635)**	**(57.42%)**	**(198)**	**(0.24%)**
Operating expenditures												
Wastewater collection	5,303	5,390	13,096	13,157	40.49%	40.31%	(87)	(1.61%)	(7,854)	(59.69%)	61	0.47%
Wastewater treatment	9,144	8,416	23,395	23,206	39.09%	39.40%	728	8.65%	(14,062)	(60.60%)	(189)	(0.81%)
Engineering and technology services	2,862	2,235	7,109	7,152	40.26%	40.02%	627	28.05%	(4,290)	(59.98%)	43	0.60%
Regulatory services	840	649	1,674	1,645	50.18%	51.06%	191	29.43%	(805)	(48.94%)	(29)	(1.73%)
Customer services	814	794	2,171	2,171	37.49%	37.49%	20	2.52%	(1,357)	(62.51%)	0	0.00%
Corporate services	530	413	1,310	1,387	40.46%	38.21%	117	28.33%	(857)	(61.79%)	77	5.88%
Administration services	876	670	2,582	2,582	33.93%	33.93%	206	30.75%	(1,706)	(66.07%)	0	0.00%
Depreciation and amortization	6,727	6,492	16,093	16,550	41.80%	40.65%	235	3.62%	(9,823)	(59.35%)	457	2.84%
	27,096	**25,059**	**67,430**	**67,850**	**40.18%**	**39.94%**	**2,037**	**8.13%**	**(40,754)**	**(60.06%)**	**420**	**0.62%**
Earnings from operations before financial and other revenues and expenditures	**8,221**	**10,001**	**15,720**	**15,102**	**52.30%**	**54.44%**	**(1,780)**	**(17.80%)**	**(6,881)**	**(45.56%)**	**(618)**	**(3.93%)**
Financial and other revenues												
Interest	44	13	21	88	209.52%	50.00%	31	238.46%	(44)	(50.00%)	67	319.05%
Other	43	40	155	197	27.74%	21.83%	3	7.50%	(154)	(78.17%)	42	27.10%
	87	**53**	**176**	**285**	**49.43%**	**30.53%**	**34**	**64.15%**	**(198)**	**(69.47%)**	**109**	**61.93%**
Financial and other expenditures												
Interest on long term debt	1,849	1,827	3,639	3,564	50.81%	51.88%	22	1.20%	(1,715)	(48.12%)	(75)	(2.06%)
Repayment on long term debt	6,255	5,691	13,635	13,634	45.87%	45.88%	564	9.91%	(7,379)	(54.12%)	(1)	(0.01%)
Amortization of debt discount	54	52	127	114	42.52%	47.37%	2	3.85%	(60)	(52.63%)	(13)	(10.24%)
Dividend/grant in lieu of taxes	324	324	736	778	44.02%	41.65%	0	0.00%	(454)	(58.35%)	42	5.71%
Other	4	23	30	30	13.33%	13.33%	(19)	(82.61%)	(26)	(86.67%)	0	0.00%
	8,486	**7,917**	**18,167**	**18,120**	**46.71%**	**46.83%**	**569**	**7.19%**	**(9,634)**	**(53.17%)**	**(47)**	**(0.26%)**
Earnings (loss) for the year	**$ (178)**	**$ 2,137**	**$ (2,271)**	**$ (2,733)**	**7.84%**	**6.51%**	**$ (2,315)**	**(108.33%)**	**$ 2,555**	**(93.49%)**	**$ (462)**	**20.34%**

HALIFAX WATER
UNAUDITED STATEMENT OF EARNINGS - STORMWATER - NSUARB
APRIL 1, 2022 - AUGUST 31, 2022 (5 MONTHS)
ACTUAL YEAR TO DATE COMPLETE: 41.67%

	ACTUAL YEAR TO DATE THIS YEAR '000	ACTUAL YEAR TO DATE LAST YEAR '000	APR 1/22 MAR 31/23 BUDGET '000	APR 1/22 MAR 31/23 FORECAST '000	ACTUAL YEAR TO DATE as % of BUDGET	ACTUAL YEAR TO DATE as % of FORECAST	From Prior Year $ Change	From Prior Year % Change	Actual to Forecast $ Remaining	Actual to Forecast % Remaining	Budget to Forecast $ Change	Budget to Forecast % Change
Operating revenues												
Stormwater site generated service	$ 2,926	$ 2,722	$ 6,790	$ 6,650	43.09%	44.00%	$ 204	7.49%	$ (3,724)	(56.00%)	$ (140)	(2.06%)
Stormwater right of way service	1,598	1,598	3,996	3,996	39.99%	39.99%	0	0.00%	(2,398)	(60.01%)	0	0.00%
Late payment and other connection fees	47	48	104	112	45.19%	41.96%	(1)	(2.08%)	(65)	(58.04%)	8	7.69%
Miscellaneous	68	77	97	123	70.10%	55.28%	(9)	(11.69%)	(55)	(44.72%)	26	26.80%
	4,639	**4,445**	**10,987**	**10,881**	**42.22%**	**42.63%**	**194**	**4.36%**	**(6,242)**	**(57.37%)**	**(106)**	**(0.96%)**
Operating expenditures												
Stormwater collection	1,745	1,783	5,281	5,258	33.04%	33.19%	(38)	(2.13%)	(3,513)	(66.81%)	(23)	(0.44%)
Engineering and technology services	843	702	2,165	2,178	38.94%	38.71%	141	20.09%	(1,335)	(61.29%)	13	0.60%
Regulatory services	420	604	1,727	1,705	24.32%	24.63%	(184)	(30.46%)	(1,285)	(75.37%)	(22)	(1.27%)
Customer services	76	109	203	203	37.44%	37.44%	(33)	(30.28%)	(127)	(62.56%)	0	0.00%
Corporate services	59	67	146	154	40.41%	38.31%	(8)	(11.94%)	(95)	(61.69%)	8	5.48%
Administration services	97	109	287	287	33.80%	33.80%	(12)	(11.01%)	(190)	(66.20%)	0	0.00%
Depreciation and amortization	1,040	965	2,588	2,594	40.19%	40.09%	75	7.77%	(1,554)	(59.91%)	6	0.23%
	4,280	**4,339**	**12,397**	**12,379**	**34.52%**	**34.57%**	**(59)**	**(1.36%)**	**(8,099)**	**(65.43%)**	**(18)**	**(0.15%)**
Earnings from operations before financial and other revenues and expenditures	**359**	**106**	**(1,410)**	**(1,498)**	**(25.46%)**	**(23.97%)**	**253**	**238.68%**	**1,857**	**(123.97%)**	**(88)**	**6.24%**
Financial and other revenues												
Interest	(17)	7	12	(33)	(141.67%)	51.52%	(24)	(342.86%)	16	(48.48%)	(45)	(375.00%)
	(17)	**7**	**12**	**(33)**	**(141.67%)**	**51.52%**	**(24)**	**(342.86%)**	**16**	**(48.48%)**	**(45)**	**(375.00%)**
Financial and other expenditures												
Interest on long term debt	317	309	723	751	43.85%	42.21%	8	2.59%	(434)	(57.79%)	28	3.87%
Repayment on long term debt	881	854	2,148	2,148	41.01%	41.01%	27	3.16%	(1,267)	(58.99%)	0	0.00%
Amortization of debt discount	10	9	22	24	45.45%	41.67%	1	11.11%	(14)	(58.33%)	2	9.09%
Dividend/grant in lieu of taxes	57	57	149	138	38.26%	41.30%	0	0.00%	(81)	(58.70%)	(11)	(7.38%)
	1,265	**1,229**	**3,042**	**3,061**	**41.58%**	**41.33%**	**36**	**2.93%**	**(1,796)**	**(58.67%)**	**19**	**0.62%**
Loss for the year	**$ (923)**	**$ (1,116)**	**$ (4,440)**	**$ (4,592)**	**20.79%**	**20.10%**	**$ 193**	**(17.29%)**	**$ 3,669**	**(79.90%)**	**$ (152)**	**3.42%**

HALIFAX WATER
UNAUDITED STATEMENT OF EARNINGS - REGULATED AND UNREGULATED ACTIVITIES - NSUARB
APRIL 1, 2022 - AUGUST 31, 2022 (5 MONTHS)
ACTUAL YEAR TO DATE COMPLETE: 41.67%

	ACTUAL YEAR TO DATE THIS YEAR '000	ACTUAL YEAR TO DATE LAST YEAR '000	APR 1/22 MAR 31/23 BUDGET '000	APR 1/22 MAR 31/23 FORECAST '000	ACTUAL YEAR TO DATE as % of BUDGET	ACTUAL YEAR TO DATE as % of FORECAST	From Prior Year $ Change	From Prior Year % Change	Actual to Forecast $ Remaining	Actual to Forecast % Remaining	Budget to Forecast $ Change	Budget to Forecast % Change
REGULATED ACTIVITIES												
Operating revenues												
Water	$ 20,765	$ 20,567	$ 48,770	$ 48,829	42.58%	42.53%	$ 198	0.96%	$ (28,064)	(57.47%)	$ 59	0.12%
Wastewater	34,635	34,397	81,607	81,450	42.44%	42.52%	238	0.69%	(46,815)	(57.48%)	(157)	(0.19%)
Stormwater	4,524	4,320	10,786	10,646	41.94%	42.49%	204	4.72%	(6,122)	(57.51%)	(140)	(1.30%)
Public fire protection	3,178	3,178	7,628	7,628	41.66%	41.66%	0	0.00%	(4,450)	(58.34%)	0	0.00%
Private fire protection	550	520	1,335	1,353	41.20%	40.65%	30	5.77%	(803)	(59.35%)	18	1.35%
Miscellaneous	720	720	1,559	1,532	46.18%	47.00%	0	0.00%	(812)	(53.00%)	(27)	(1.73%)
	64,372	**63,702**	**151,685**	**151,438**	**42.44%**	**42.51%**	**670**	**1.05%**	**(87,066)**	**(57.49%)**	**(247)**	**(0.16%)**
Operating expenditures												
Water supply and treatment	4,385	4,022	11,214	11,746	39.10%	37.33%	363	9.03%	(7,361)	(62.67%)	532	4.74%
Water transmission and distribution	4,831	4,114	12,441	12,266	38.83%	39.39%	717	17.43%	(7,435)	(60.61%)	(175)	(1.41%)
Wastewater collection	5,286	5,382	13,014	13,075	40.62%	40.43%	(96)	(1.78%)	(7,789)	(59.57%)	61	0.47%
Stormwater collection	1,745	1,783	5,281	5,258	33.04%	33.19%	(38)	(2.13%)	(3,513)	(66.81%)	(23)	(0.44%)
Wastewater treatment	8,845	8,151	22,681	22,492	39.00%	39.33%	694	8.51%	(13,647)	(60.67%)	(189)	(0.83%)
Engineering and technology services	5,607	5,542	13,941	14,025	40.22%	39.98%	65	1.17%	(8,418)	(60.02%)	84	0.60%
Regulatory services	1,811	1,752	4,866	4,788	37.22%	37.82%	59	3.37%	(2,977)	(62.18%)	(78)	(1.60%)
Customer services	1,796	1,941	4,804	4,804	37.39%	37.39%	(145)	(7.47%)	(3,008)	(62.61%)	0	0.00%
Corporate services	1,194	882	2,957	3,133	40.38%	38.11%	312	35.37%	(1,939)	(61.89%)	176	5.95%
Administration services	1,874	1,781	5,725	5,725	32.73%	32.73%	93	5.22%	(3,851)	(67.27%)	0	0.00%
Depreciation and amortization	12,623	12,130	30,834	31,018	40.94%	40.70%	493	4.06%	(18,395)	(59.30%)	184	0.60%
	49,997	**47,480**	**127,758**	**128,330**	**39.13%**	**38.96%**	**2,517**	**5.30%**	**(78,333)**	**(61.04%)**	**572**	**0.45%**
Earnings from operations before financial and other revenues and expenditures	**14,375**	**16,222**	**23,927**	**23,108**	**60.08%**	**62.21%**	**(1,847)**	**(11.39%)**	**(8,733)**	**(37.79%)**	**(819)**	**(3.42%)**
Financial and other revenues												
Interest	137	64	105	275	130.48%	49.82%	73	114.06%	(138)	(50.18%)	170	161.90%
Other	16	(4)	5	39	320.00%	41.03%	20	(500.00%)	(23)	(58.97%)	34	680.00%
	153	**60**	**110**	**314**	**139.09%**	**48.73%**	**93**	**155.00%**	**(161)**	**(51.27%)**	**204**	**185.45%**
Financial and other expenditures												
Interest on long term debt	3,165	3,019	6,668	6,761	47.47%	46.81%	146	4.84%	(3,596)	(53.19%)	93	1.39%
Repayment on long term debt	9,735	8,956	21,846	21,846	44.56%	44.56%	779	8.70%	(12,111)	(55.44%)	0	0.00%
Amortization of debt discount	101	95	233	229	43.35%	44.10%	6	6.32%	(128)	(55.90%)	(4)	(1.72%)
Dividend/grant in lieu of taxes	2,718	2,762	6,803	6,524	39.95%	41.66%	(44)	(1.59%)	(3,806)	(58.34%)	(279)	(4.10%)
	15,719	**14,832**	**35,550**	**35,360**	**44.22%**	**44.45%**	**887**	**5.98%**	**(19,641)**	**(55.55%)**	**(190)**	**(0.53%)**
Earnings (loss) for the year - Regulated	**$ (1,191)**	**$ 1,450**	**$ (11,513)**	**$ (11,938)**	**10.34%**	**9.98%**	**$ (2,641)**	**(182.14%)**	**$ 10,747**	**(90.02%)**	**$ (425)**	**3.69%**

HALIFAX WATER
UNAUDITED STATEMENT OF EARNINGS - REGULATED AND UNREGULATED ACTIVITIES - NSUARB
APRIL 1, 2022 - AUGUST 31, 2022 (5 MONTHS)
ACTUAL YEAR TO DATE COMPLETE: 41.67%

	ACTUAL YEAR TO DATE THIS YEAR '000	ACTUAL YEAR TO DATE LAST YEAR '000	APR 1/22 MAR 31/23 BUDGET '000	APR 1/22 MAR 31/23 FORECAST '000	ACTUAL YEAR TO DATE as % of BUDGET	ACTUAL YEAR TO DATE as % of FORECAST	From Prior Year $ Change	From Prior Year % Change	Actual to Forecast $ Remaining	Actual to Forecast % Remaining	Budget to Forecast $ Change	Budget to Forecast % Change
UNREGULATED ACTIVITIES												
Operating revenues												
Septage tipping fees	$ 293	$ 239	$ 475	$ 545	61.68%	53.76%	$ 54	22.59%	$ (252)	(46.24%)	$ 70	14.74%
Leachate and other contract revenue	176	182	491	463	35.85%	38.01%	(6)	(3.30%)	(287)	(61.99%)	(28)	(5.70%)
Airplane effluent	12	3	76	50	15.79%	24.00%	9	300.00%	(38)	(76.00%)	(26)	(34.21%)
Miscellaneous	16	15	38	38	42.11%	42.11%	1	6.67%	(22)	(57.89%)	0	0.00%
	497	**439**	**1,080**	**1,096**	**46.02%**	**45.35%**	**58**	**13.21%**	**(599)**	**(54.65%)**	**16**	**1.48%**
Operating expenditures												
Water supply and treatment	11	18	32	32	34.38%	34.38%	(7)	(38.89%)	(21)	(65.63%)	0	0.00%
Wastewater treatment	299	265	714	714	41.88%	41.88%	34	12.83%	(415)	(58.12%)	0	0.00%
Wastewater collection	17	8	82	82	20.73%	20.73%	9	112.50%	(65)	(79.27%)	0	0.00%
Sponsorships and donations	43	13	73	73	58.90%	58.90%	30	230.77%	(30)	(41.10%)	0	0.00%
Corporate services	7	7	13	13	53.85%	53.85%	0	0.00%	(6)	(46.15%)	0	0.00%
Administration services	46	46	97	97	47.42%	47.42%	0	0.00%	(51)	(52.58%)	0	0.00%
Depreciation and amortization	7	7	18	18	38.89%	38.89%	0	0.00%	(11)	(61.11%)	0	0.00%
	430	**364**	**1,029**	**1,029**	**41.79%**	**41.79%**	**66**	**18.13%**	**(599)**	**(58.21%)**	**0**	**0.00%**
Earnings from operations before financial and other revenues and expenditures	**67**	**75**	**51**	**67**	**131.37%**	**100.00%**	**(8)**	**(10.67%)**	**0**	**0.00%**	**16**	**31.37%**
Financial and other revenues												
Other - leases and rentals	108	109	363	372	29.75%	29.03%	(1)	(0.92%)	(264)	(70.97%)	9	2.48%
Other - energy projects	92	89	260	225	35.38%	40.89%	3	3.37%	(133)	(59.11%)	(35)	(13.46%)
	200	**198**	**623**	**597**	**32.10%**	**33.50%**	**2**	**1.01%**	**(397)**	**(66.50%)**	**(26)**	**(4.17%)**
Financial and other expenditures												
Other	54	86	46	146	117.39%	36.99%	(32)	(37.21%)	(92)	(63.01%)	100	217.39%
	54	**86**	**46**	**146**	**117.39%**	**36.99%**	**(32)**	**(37.21%)**	**(92)**	**(63.01%)**	**100**	**217.39%**
Earnings for the year - Unregulated	**$ 213**	**$ 187**	**$ 628**	**$ 518**	**33.92%**	**41.12%**	**$ 26**	**13.90%**	**$ (305)**	**(58.88%)**	**$ (110)**	**(17.52%)**
Total earnings (loss) for the year (Regulated and Unregulated)	**$ (978)**	**$ 1,637**	**$ (10,885)**	**$ (11,420)**	**8.98%**	**8.56%**	**$ (2,615)**	**(159.74%)**	**$ 10,442**	**(91.44%)**	**$ (535)**	**4.92%**

ITEM # 4.2
Halifax Water Board

September 22, 2022

TO: Chair and Members of the Halifax Regional Water Commission Audit and Finance Committee

SUBMITTED BY:

Digitally signed by Louis de Montbrun
Date: 2022.09.16 09:45:31 -03'00'

Louis de Montbrun, CPA, CA
Director, Corporate Services/CFO

Digitally signed by Reid Campbell
Date: 2022.09.15 20:37:50 -03'00'

Reid Campbell, M.Eng., P.Eng.
Director, Engineering and Technology Services

APPROVED:

Digitally signed by Cathie O'Toole
Date: 2022.09.16 09:27:59 -03'00'

Cathie O'Toole, MBA, FCPA, FCGA, ICD.D
General Manager

DATE: September 16, 2022

SUBJECT: **Capital Expenditures for the five months ended August 31, 2022**

ORIGIN

The Corporate Balanced Scorecard identifies the percentage of capital budget spent by the end of the fiscal year as a critical success factor and sets a target of 70-80%.

BACKGROUND

The Halifax Regional Water Commission (Halifax Water) Board is required to review periodic financial information throughout the year. Halifax Water's 2019 *Integrated Resource Plan* (IRP) identifies a 30-year capital investment plan valued at $2.7 Billion (net present value). In relation to the IRP, the capital budget program focuses on providing required infrastructure for asset renewal, regulatory compliance, and growth. The IRP calls for delivery of an average of $135 million in capital projects per year. Halifax Water's annual capital budget, and capability to deliver capital projects, has not yet reached this level.

DISCUSSION

Below is the breakdown by asset class and project status of the expenditures for the five months ended August 31, 2022. Halifax Water has spent $79.0 million to date on active projects, of which $27.0 million was spent during the five months ended August 31, 2022. Approximately $10.6 million of the $27.0 million relates to the 2022/23 capital budget of $106.5 million, resulting in a year-to-date delivery rate of 10.0%. There were several significant projects in last year's capital budget for which construction has been delayed

or extended into the next construction season for reasons including, construction market conditions, land acquisition, planning consideration or issues that arose during the planning phase which required a scope change.

Halifax Water is trying to improve on annual Integrated Resource Plan (IRP) execution and can measure progress through the number of projects completed annually (close-outs), the dollar value of projects completed as a % of total available capital spend, and the % of capital projects completed within the fiscal year they are budgeted. For 2022/23, Halifax Water is targeting a 5% increase in the % of capital projects completed within the fiscal year compared to prior year, and a 5% reduction in total available capital remaining to be spent.

Currently there are 662 active projects, compared to 527 at this point last year. The average capital spend per month compared to prior year has increased from $4.3 million to $4.7 million. Achievement of the targets for improvement this year is at risk however, due to the timing of several large projects – the Cogswell Redevelopment, the Burnside Depot, the Fairview Cove Trunk Sewer and the Bio-Solids Processing facility upgrade.

Capital Expenditure Report

Budget Category	Total Budget Available	Expenditures to March 31, 2022	Expenditures April 1, 2021 to August 31, 2022	Total Expenditures to August 31, 2022	Remaining Budget Available as of August 31, 2022	Total Forecasted Expenditures to March 31, 2023	Total Forecasted Expenditures to the End of the Project	Remaining Budget Available	Total Expenditures to August 31, 2022 as a Percentage of Total Budget Available	Total Expenditures to August 31, 2022 as a Percentage of Total Forecasted Expenditures to the End of
Active										
Water	$ 148,541,236	$ 27,830,199	$ 16,053,046	$ 43,883,245	$ 104,657,991	$ 80,202,742	$ 163,745,561	$ (15,204,325)	29.5%	26.8%
Wastewater	124,843,636	21,676,926	9,371,097	31,048,023	93,795,613	55,644,405	104,901,623	19,942,013	24.9%	29.6%
Stormwater	14,577,079	2,454,742	1,582,712	4,037,454	10,539,625	8,215,000	10,397,947	4,179,132	27.7%	38.8%
	287,961,951	**51,961,867**	**27,006,855**	**78,968,722**	**208,993,229**	**144,062,147**	**279,045,131**	**8,916,820**	**27.4%**	**28.3%**
Pending										
Water	11,382,277	27,888	-	27,888	11,354,389	-	-	11,382,277	0.2%	0.0%
Wastewater	21,986,627	4,627	-	4,627	21,982,000	407,000	1,307,000	20,679,627	0.0%	0.4%
Stormwater	784,238	-	-	-	784,238	-	-	784,238	0.0%	0.0%
	34,153,142	**32,515**	**-**	**32,515**	**34,120,627**	**407,000**	**1,307,000**	**32,846,142**	0.1%	2.5%
	$ 322,115,093	**$ 51,994,382**	**$ 27,006,855**	**$ 79,001,237**	**$ 243,113,856**	**$ 144,469,147**	**$ 280,352,131**	**$ 41,762,962**	24.5%	28.2%

The Total Budget Available of $322.1 million represents total approved budgets for pending, active, and closed projects as at the end of August 31, 2022.

Total Expenditures to August 31, 2022 of $79.0 million include expenditures of $52.0 million incurred prior to April 1, 2022 and expenditures of $27.0 million in the current fiscal year. This results in a Remaining Budget Available as of August 31, 2022 of $243.1 million.

In the Pending project category, there is $28.4 million that has been deferred or cancelled. This funding is available to be reallocated to existing projects, if required, or used to fund future capital budgets.

ATTACHMENT

Capital Expenditure Report August 31, 2022

Report prepared by: Alicia Scallion

Digitally signed by Alicia Scallion
Date: 2022.09.16 09:47:47 -03'00'

Alicia Scallion, CPA, CA, Manager, Finance, (902)-497-9785

Capital Expenditure Report
For the Period Ending August 31/22

Status	Service	Asset Category	Total Budget Available	Expenditures to March 31, 2022	Expenditures April 1, 2022 to August 31, 2022	Total Expenditures to August 31, 2022	Remaining Budget Available as of August 31, 2022	Total Forecasted Expenditures to March 31, 2023	Total Forecasted Expenditures to the End of the Project	Remaining Budget Available
Status	Service	Asset Category								
Active	W	Water - Land	555,000	44,796	-	44,796	510,204	40,000	40,000	515,000
		Water - Transmission	23,421,400	1,227,177	550,199	1,777,376	21,644,024	5,434,000	19,809,000	3,612,400
		Water - Distribution	14,446,814	178,215	2,087,606	2,265,821	12,180,993	11,850,006	13,693,000	753,814
		Water - Energy	400,000	-	-	-	400,000	-	-	400,000
		Water - Structures	27,796,000	8,156,230	3,314,177	11,470,407	16,325,593	13,295,790	17,624,445	10,171,555
		Water - Treatment Facilities	12,594,900	537,270	924,857	1,462,127	11,132,773	2,168,199	6,349,948	6,244,952
		Water - Security	125,000	-	15,120	15,120	109,880	-	-	125,000
		Water - Equipment	13,134,000	3,039,191	4,098,534	7,137,725	5,996,275	11,563,587	11,938,000	1,196,000
		Water - Corporate Projects	56,058,122	14,647,320	5,056,260	19,703,580	36,354,542	35,851,160	94,291,168	(38,233,046)
	W Total		**148,531,236**	**27,830,199**	**16,046,753**	**43,876,952**	**104,654,284**	**80,202,742**	**163,745,561**	**(15,214,325)**
	WW	Wastewater - Trunk Sewers	17,776,963	602,786	1,367	604,153	17,172,810	628,000	18,103,000	(326,037)
		Wastewater - Collection System	39,465,806	7,956,801	5,394,373	13,351,174	26,114,632	25,930,064	33,955,000	5,510,806
		Wastewater - Forcemains	3,930,000	1,532,774	1,258,855	2,791,629	1,138,371	3,275,000	3,930,000	-
		Wastewater - Structures	23,866,570	6,168,301	846,933	7,015,234	16,851,336	11,586,000	29,294,000	(5,427,430)
		Wastewater - Treatment Facility	23,129,024	3,517,082	1,612,865	5,129,947	17,999,077	10,225,320	14,598,665	8,530,359
		Wastewater - Energy	1,339,000	60,958	-	60,958	1,278,042	255,500	739,000	600,000
		Wastewater - Security	475,000	129,514	22,091	151,605	323,395	-	-	475,000
		Wastewater - Equipment	592,000	104,973	19,170	124,143	467,857	336,536	524,760	67,240
		Wastewater - Corporate Projects	14,154,273	1,495,634	215,443	1,711,077	12,443,196	3,370,197	3,692,198	10,462,075
		Wastewater - Unregulated	115,000	108,103	-	108,103	6,897	37,788	45,000	70,000
	WW Total		**124,843,636**	**21,676,926**	**9,371,097**	**31,048,023**	**93,795,613**	**55,644,405**	**104,881,623**	**19,962,013**
	SW	Stormwater - Pipes	4,853,000	435,340	114,586	549,926	4,303,074	1,281,000	3,116,947	1,736,053
		Stormwater - Culverts/Ditches	6,424,000	1,614,582	1,411,221	3,025,803	3,398,197	6,331,000	6,454,000	(30,000)
		Stormwater - Structures	1,190,000	43,661	10,840	54,501	1,135,499	101,000	295,000	895,000
		Stormwater - Corporate Projects	2,110,079	361,159	46,065	407,224	1,702,855	502,000	532,000	1,578,079
	SW Total		**14,577,079**	**2,454,742**	**1,582,712**	**4,037,454**	**10,539,625**	**8,215,000**	**10,397,947**	**4,179,132**
Active Total			**287,951,951**	**51,961,867**	**27,000,562**	**78,962,429**	**208,989,522**	**144,062,147**	**279,025,131**	**8,926,820**
Pending	W	Water - Land	580,000	-	-	-	580,000	-	-	580,000
		Water - Transmission	1,237,400	-	-	-	1,237,400	-	-	1,237,400
		Water - Distribution	34,000	-	-	-	34,000	-	-	34,000
		Water - Energy	455,000	-	-	-	455,000	-	-	455,000
		Water - Structures	2,300,000	-	-	-	2,300,000	-	-	2,300,000
		Water - Treatment Facilities	2,434,000	-	-	-	2,434,000	-	-	2,434,000
		Water - Corporate Projects	4,341,877	27,888	-	27,888	4,313,989	-	-	4,341,877
	W Total		**11,382,277**	**27,888**	**-**	**27,888**	**11,354,389**	**-**	**-**	**11,382,277**
	WW	Wastewater - Collection System	4,750,000	-	-	-	4,750,000	-	-	4,750,000
		Wastewater - Forcemains	60,000	-	-	-	60,000	-	-	60,000
		Wastewater - Structures	7,678,627	4,627	-	4,627	7,674,000	207,000	207,000	7,471,627
		Wastewater - Treatment Facility	7,580,500	-	-	-	7,580,500	200,000	1,100,000	6,480,500
		Wastewater - Energy	1,662,500	-	-	-	1,662,500	-	-	1,662,500
		Wastewater - Security	100,000	-	-	-	100,000	-	-	100,000
		Wastewater - Equipment	150,000	-	-	-	150,000	-	-	150,000
		Wastewater - Corporate Projects	5,000	-	-	-	5,000	-	-	5,000
	WW Total		**21,986,627**	**4,627**	**-**	**4,627**	**21,982,000**	**407,000**	**1,307,000**	**20,679,627**
	SW	Stormwater - Pipes	381,238	-	-	-	381,238	-	-	381,238
		Stormwater - Culverts/Ditches	280,000	-	-	-	280,000	-	-	280,000
		Stormwater - Structures	93,000	-	-	-	93,000	-	-	93,000
		Stormwater - Corporate Projects	30,000	-	-	-	30,000	-	-	30,000
	SW Total		**784,238**	**-**	**-**	**-**	**784,238**	**-**	**-**	**784,238**
Pending Total			**34,153,142**	**32,515**	**-**	**32,515**	**34,120,627**	**407,000**	**1,307,000**	**32,846,142**
Closed 22/23	W	Water - Distribution	-	-	6,293	6,293	(6,293)	6,293	6,293	(6,293)
		Water - Corporate Projects	10,000	-	-	-	10,000	-	-	10,000
	W Total		**10,000**	**-**	**6,293**	**6,293**	**3,707**	**6,293**	**6,293**	**3,707**
Closed 22/23 Total			**10,000**	**-**	**6,293**	**6,293**	**3,707**	**6,293**	**6,293**	**3,707**
Grand Total			**322,115,093**	**51,994,382**	**27,006,855**	**79,001,237**	**243,113,856**	**144,475,440**	**280,338,424**	**41,776,669**

Halifax Water
Halifax Regional Water Commission

ITEM # 4.3
HRWC Board
September 22, 2022

TO: Chair, and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: Digitally signed by Louis de Montbrun Date: 2022.09.15 16:13:40 -03'00'

Louis de Montbrun, CPA, CA, Director, Corporate Services/CFO

APPROVED: Digitally signed by Cathie O'Toole Date: 2022.09.15 19:16:54 -03'00'

Cathie O'Toole, MBA, FCPA, FCGA, ICD.D, General Manager

DATE: September 12, 2022

SUBJECT: **2022 Fall Debenture**

ORIGIN

Halifax Regional Water Commission (Halifax Water) participation in the Fall 2022 Municipal Finance Corporation (MFC) debenture issue to secure debt financing for re-financing of balloon payments on existing debt.

RECOMMENDATION

It is recommended that the Halifax Water Board:

1. Approve the re-financing of $7,664,675 with a ten-year amortization term and financing over ten years, with an all-inclusive rate not to exceed 6.0%.

BACKGROUND

Halifax Water is legally required to borrow through the MFC. The borrowing proposed in this report is estimated using the Five-Year Business Plan, the approved Operating and Capital Budgets for 2022/23, and the rate schedule approved by the Nova Scotia Utility and Review Board.

DISCUSSION

Long term debt issued for capital projects has historically been amortized for a period of twenty years based on the life of the assets being financed. Traditionally the market for twenty-year financing in Canada has been more expensive than ten-year financing. To take

advantage of the lower ten-year rates, debt is amortized over twenty years and financed for ten years and then a balloon payment is used to refinance the balance for the remaining ten years. Though a lower interest rate cost is secured for the first ten years, there is a risk that interest rates will be higher at the time the balloon payments are due for refinancing.

In 2021/22, Halifax Water reviewed the useful lives of the assets being brought into service and determined that the useful lives were more than 20 years. To better match the debt to the useful lives, Halifax Water is recommending that the amortization period for new debt be 30 years, rather than 20 years, and there to be three 10-year financing terms. The 2022/23 Operating Budget has been developed using this assumption.

The 2022/23, Operating Budget was prepared based on issuing new debt of $15.7 million to finance water and stormwater additions to utility plant in service, amortized over 30 years, refinance $17.2 million in Spring 2022, and refinance $7.7 million in Fall 2022. The $15.7 million was obtained with an all-inclusive rate of 3.82% and the $17.2 million was refinanced with an all-inclusive rate of 3.63%.

The balloon payment due this Fall of $7.7 million relates to debt issued in fiscal 2012/13 of $15.3 million which was acquired to fund water and wastewater capital expenditures. The debenture of $15,329,345 was issued November 9, 2012, for a ten-year term with twenty-year amortization and an all-inclusive rate of 2.75%. Halifax Water's current Weighted Average Cost of Debt is 2.97%. It is anticipated that the new debt issue can be expected to have a higher interest rate than the original debt issue.

In the recommendation, Halifax Water uses a rate of 6.0% as recommended by MFC. This would be the upper limit that Halifax Water can finance debt. If the actual interest rate is greater than 6.0%, a revised report will be required for the Board. If the actual interest rate is lower than 6.0%, a revised report is not required.

The final interest rates and timing of the debt issues will not be known with certainty until MFC concludes the formal debenture process.

Halifax Water's debt is covered by a blanket guarantee approved by Halifax Regional Municipality (HRM) Council in September 2014. The blanket guarantee will apply to all Halifax Water debt with a condition that Halifax Water must maintain a debt service ratio of 35% or less. Halifax Water's debt service ratio is 19.92% as of July 31, 2022. The debt service ratio is calculated as the cost of debt interest, principal and discount payments divided by the total Operating Revenue as found on the income statement (NSUARB format).

Halifax Water's outstanding debt on July 31, 2022 (including the current portion) was $233.4 million, and debt is projected to be $221.0 million on March 31, 2023.

BUDGET IMPLICATIONS

The 2022/23 budget includes $28.5 million in debt servicing costs. Halifax Water's capital financing strategy is designed to maintain a debt service ratio of 35% or less; and to use a mixture of infrastructure funding, development related charges (reserves), depreciation, and debt.

With the Spring debenture all-inclusive rate of 3.82% on new debt, 3.63% on the refinanced Spring debt, and the expectation the refinancing of the Fall debt to be similar, debt servicing costs will be higher than budget. The budget was based on an all-inclusive rate of 2.5% on new debt and approximately 4.0% on refinanced debt. Including the Spring debenture, if interest rates continue to be approximately 4.0%, debt servicing costs would increase by $0.1 million in 2022/23 and $0.4 million in 2023/24.

ALTERNATIVE

1. Halifax Water could choose to not refinance the Fall balloon payment. This would lower debt servicing expenditures by $0.1 million in 2022/23 and $0.2 million in 2023/24, specifically related to the Fall debenture, but would lower cash balance by $7.7 million. Halifax Water has chosen to refinance the balloon payment due to several factors. These include demand on cash throughout the fall relating to capital work in progress expenditures and uncertainty relating to the timing of the Fall debenture. The Fall 2020 debenture was delayed by the MFC due to the demand for debt being higher than they anticipated and funds were not received until May 2021. Halifax Water does not want to risk another delay.

   Attachment 2 provides a cash flow estimate for the 2022/23 fiscal year and April and May of the 2023/24 fiscal year, the next expected debenture issue date. The model estimates capital expenditures for the year to be $78.6 million based on spending patterns and current projects in progress. The model does not consider any potential increases in cash due to an increase in rates.

ATTACHMENTS

1. Borrowing Resolution for $7.7 million of debt.
2. Cash Flow Model for 2022/23 based on approved Operating and Capital Budgets and anticipated cash flow.

Report prepared by: Alicia Scallion

Digitally signed by Alicia Scallion
Date: 2022.09.15 15:29:59 -03'00'

Alicia Scallion, CPA, CA, Manager, Finance, 902-497-9785

HALIFAX REGIONAL WATER COMMISSION
BORROWING RESOLUTION

WHEREAS the Halifax Regional Water Commission (Halifax Water), is incorporated under the provisions of the *Halifax Regional Water Commission Act*, Ch. 55 of the Acts of 2007 (the "Act");

AND WHEREAS the Act provides that Halifax Water has power to borrow such sums as may be authorized and approved by the Board of the Commission for the purposes of the Commission, subject to the approval of the Nova Scotia Utility and Review Board;

AND WHEREAS Halifax Water wishes to borrow $7,664,675 for the purpose of refinancing balloon payments for their remaining 10 year amortization period;

AND WHEREAS a blanket guarantee for Halifax Water Debt was approved by the Halifax Regional Municipality on September 23, 2014;

BE IT RESOLVED THAT:

1. Under the authority of Section 16 of the *Act*, Halifax Water borrow from the Municipal Finance Corporation, for the purpose set forth above, a sum or sums not exceeding $7,664,675 with a ten-year amortization term and finance over ten years. The maximum all-inclusive rate is not to exceed 6.0% percent;

2. The sum noted above be borrowed by the issue of debentures of Halifax Water to such an amount as Halifax Water deems necessary and that the debentures be arranged with the Nova Scotia Municipal Finance Corporation, with interest to be paid semi-annually and principal payments made annually; and

3. This resolution remains in force for a period of not more than 12 months from the passing of this resolution.

I certify the above to be a true copy of a Resolution approved at a meeting of the Halifax Water Board of Directors held on September 22, 2022.

_____
Heidi Schedler, K.C.
General Counsel and Corporate Secretary

Halifax Regional Water Commission
Cash Projection

	Annual Forecast to March 31, 2023	Actual Results to July 31, 2022	Remaining Forecast to March 31, 2023	Forecast Results April 2023	Forecast Results May 2023
Operating					
Operating revenues					
Total revenues	141,750	47,358	94,392	11,840	11,840
Fire Protection	7,628	2,636	7,628	-	-
HRM SW Right of Way	3,996	1,534	3,996	-	-
	153,374	51,528	106,016	11,840	11,840
Operating expenditures					
Total expenditures	98,063	30,335	67,728	7,584	7,584
	98,063	30,335	67,728	7,584	7,584
Financial and other revenues					
Interest and other revenues	780	280	500	70	70
	780	280	500	70	70
Financial and other expenditures					
Dividend/grant in lieu of taxes	6,524	2,155	6,524	-	-
Other	146	43	103	11	11
	6,670	2,198	6,627	11	11
Earnings for the year	49,421	19,275	32,161	4,315	4,315
Changes in working capital					
Receivables, customer charges and contractual			938	104	104
Receivables, unbilled service revenues			(555)	(62)	(62)
Receivable from Halifax Regional Municipality			1,050	117	117
Payables and accruals, HRM				-	-
Inventory			(113)	(13)	(13)
Prepaids			(525)	(58)	(58)
Payables and accruals, trade			369	41	41
Accrued interest on long term debt			(38)	(4)	(4)
Contractor and customer deposits			405	45	45
Unearned revenue			(188)	(21)	(21)
	-	-	1,344	149	149
Financing					
Proceeds from issuance of long term debt	-			-	-
Capital cost contributions	-		-	-	-
Regional development charges	19,539	6,456	13,084	1,614	1,614
Principal repayments on long term debt	-	-	(23,159)	-	(4,720)
Interest repayments on long term debt	-	-	(3,864)	-	(2,276)
	19,539	6,456	(13,939)	1,614	(5,382)
Investing					
Proceeds from sale of utility plant in service	-			-	-
Purchase of capital work in progress	(78,566)	(18,808)	(59,758)	(4,702)	(4,702)
Receipt of government funding	-			-	-
Purchase of utility plant in service and intangible assets	-			-	-
	(78,566)	(18,808)	(59,758)	(4,702)	(4,702)
Net increase (decrease) in cash and cash equivalents			(40,192)	1,376	(5,620)
Cash and cash equivalents,end of period		69,616	29,424	30,800	25,180

Halifax Water
Halifax Regional Water Commission

ITEM #4.4
Halifax Water Board
September 22, 2022

TO: Chair, and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: Digitally signed by Louis de Montbrun Date: 2022.09.15 16:01:40 -03'00'

Louis de Montbrun, CPA, CA
Director, Corporate Services/CFO

APPROVED: Digitally signed by Cathie O'Toole Date: 2022.09.15 19:20:26 -03'00'

Cathie O'Toole, MBA, FCPA, FCGA, ICD.D
General Manager

DATE: September 12, 2022

SUBJECT: **Appointment of Auditors**

ORIGIN

The Halifax Water Corporate Governance Manual requires the Halifax Water Board to approve the appointment of auditors.

At the September 8, 2022, Halifax Water Audit and Finance Committee meeting the following report was reviewed and a motion was passed to recommend to the Halifax Water Board to appoint Grant Thornton LLP as auditors for the Halifax Regional Water Commission financial statements for the year ended March 31, 2023, and the Halifax Regional Water Commission Employees' Pension Plan for the year ended December 31, 2022.

RECOMMENDATION

It is recommended the Halifax Water Board appoint Grant Thornton LLP as auditors for the Halifax Regional Water Commission financial statements for the year ended March 31, 2023, and the Halifax Regional Water Commission Employees' Pension Plan for the year ended December 31, 2022.

DISCUSSION

In December 2021, the contract with the existing auditors, Grant Thornton LLP, expired and Halifax Water went through a procurement process to procure external audit services for Halifax

Water. The contract was awarded to Grant Thornton LLP for a one-year term, ending December 31, 2022, with an option to renew for four additional one-year terms.

Based on the positive experience with Grant Thornton LLP during the last audits and the competitive contract price for year two of the contract of $53,000, for both entities, it is recommended that Grant Thornton LLP be appointed as auditors for the Halifax Water financial statements for the year ended March 31, 2023, and the Halifax Regional Water Commission Employees' Pension Plan for the year ended December 31, 2022.

ALTERNATIVE

Halifax Water could choose to not renew the contract and go back to the market for Audit Services. This approach is not recommended.

Report prepared by: 

Alicia Scallion, CPA, CA, Manager, Finance, (902) 497-9785

Halifax Water
Halifax Regional Water Commission

ITEM # 5.1
Halifax Water Board
September 22nd, 2022

TO: Collen Rollings, P.Eng., PMP, Chair, and
Members of the Halifax Regional Water Commission Board

SUBMITTED BY: Digitally signed by Reid Campbell
Date: 2022.09.16 14:50:36 -03'00'

Reid Campbell, P. Eng.
Director, Engineering & Technology Services

APPROVED BY: Digitally signed by Cathie O'Toole
Date: 2022.09.16 14:52:18 -03'00'

Cathie O'Toole, MBA, FCPA, FCGA, ICD.D
General Manager

DATE: September 22nd, 2022

SUBJECT: **Cogswell District Project**
Water, Wastewater and Stormwater Infrastructure
Capital Approval

ORIGIN

1. HALIFAX Council - 11.1.6 First Reading Proposed By-law S-316, Amending By-law S-300, Respecting Streets and Award - Tender No. 21-003, Cogswell District Project September 14, 2021
2. Halifax Water Capital Budgets and Five-Year Business Plan

RECOMMENDATION

It is recommended that the Halifax Water Board approve the Cogswell District capital project at a total project cost of $19,500,000, which includes:

1. Execution of a cost sharing agreement with the Halifax Regional Municipality wherein $15,496,782 is the net Halifax Water share of the overall $95,663,634 construction costs,

2. Halifax Water staff time for supervision and management of the project in the amount of $1,000,000,

3. Contingency allowance costs related to unknown conditions and conflicts that may arise during construction in the amount of $3,000,000, and

4. Application to the Nova Scotia Utility and Review Board for project approval.

BACKGROUND

The Cogswell District Project is a city building initiative intended to transform the Cogswell interchange located in downtown Halifax. The Cogswell District Project will involve the restructuring and relocation of several downtown streets. A significant amount of utility infrastructure (i.e., power, gas, telecommunications, water, sewer, storm) will therefore need to be removed, relocated or added to support this development. The completion of the Cogswell project is expected to span fiscal years 2021-22 to 2024-25 and cost approximately $122.6 million (gross).

Halifax Water was engaged in the concept design pertaining to two distinct areas. First, Halifax Water is proposing the design, construction and operation of a District Energy System (DES); and second, Halifax Water has a significant volume of existing and proposed water, wastewater and stormwater infrastructure to be relocated or constructed within the project limits. The DES portion of the Cogswell District Project was addressed in Item #5.2 of the March 24, 2022, sitting of the Halifax Water Board.

Halifax Water provided design review comments to the Municipality in May, August and November 2019. The Municipality tendered and awarded a lump sum contract to Dexter Construction Limited at $95,663,634 (net HST included) to complete this work on September 14th, 2021. Construction has been underway for approximately ten months.

A map of the Cogswell District Project is provided below.

DISCUSSION

The tender award of the Cogswell District Project includes the demolition and removal of the existing roads, structures, and utility infrastructure, which includes power, telecoms, gas, water, wastewater and stormwater systems. The tender award also includes the construction of the district energy piping system for Halifax Water's Cogswell District Ambient Temperature District Energy System (ATDES). Halifax Water cost sharing with the municipality regarding the ATDES was approved at the March 24, 2022, Halifax Water Board meeting (Item 5.2) and the NSUARB public hearing to approve this project is in progress (NSUARB Matter M10525).

The Municipality began the demolition/construction in the fall of 2021. To date, demolition/construction has started on Phase 1 to install 3 detour sections (Barrington to Upper Water Street, Upper Water Street to Hollis Street, and Cogswell Street). The latest construction schedule includes the milestones shown in Table 1.

Table 1 - Cogswell Redevelopment Project Milestone Schedule

Phase and Location Description	Start Date	Completion
Ph 1 – Detour 1 – Barrington	October 2021	December 2022
Ph 1 – Detour 2 – Hollis Street	January 2022	December 2022
Ph 1 – Detour 3 – Cogswell Street	February 2022	December 2022
Ph 1 – Demolitions & Underground	January 2022	August 2023

Ph 2 – Cogswell, Upper Water & Hollis	July 2023	July 2024
Ph 3 – Barrington, Poplar, Lower Water	August 2024	August 2025

Infrastructure Work

The Cogswell District Project will result in a significant amount of water, wastewater and stormwater work. As a public utility, Halifax Water must comply with the requirements of the Public Utilities Act as well as Rules and Regulations, Orders and Decisions issued to Halifax Water by the Nova Scotia Utility and Review Board under the authority of the Public Utilities Act. Halifax Water must also operate in compliance with the by-laws of Halifax Regional Municipality, specifically By-Law S-300, the Streets By-Law, which establishes requirements for utilities with infrastructure in the public right-of-way. The Order of the Engineer pursuant to By-Law S-300 is provided as Attachment A.

In general terms, Halifax Water is only permitted to expend rate base funds towards maintaining or replacing its existing infrastructure for the benefit of its current ratepayers. Infrastructure work that benefits a party other than existing ratepayers must be funded by another party. This includes work such as systems expansion.

Further, in 2007, Halifax Water assumed responsibility for Halifax Regional Municipality's wastewater and stormwater systems when the assets were transferred to Halifax Water. A transfer agreement dated June 12, 2007, approved by HRM Council and the NSUARB both approved this transfer agreement. The transfer agreement established a basis to ensure there was no cross subsidization between the two organizations and provided specific direction related to combined sewer and storm sewer work to deal with legacy issues related to systems that were substandard at the time of transfer.

Through its tendering process for the Cogswell District Project, HRM has identified Approximately $33.5 million of the project cost is related to infrastructure work. This infrastructure work can be classified as follows:

1. Infrastructure that is being replaced for asset renewal purposes or which is being upgraded to ensure required capacity or resilience. This work is the responsibility of Halifax Water.

2. By-law S-300 requires any utility with infrastructure on HRM property to relocate the infrastructure at its expense when relocation is required by the municipality for municipal purposes. This work is the responsibility of Halifax Water.

3. Infrastructure that is detailed in the project design but is net new infrastructure. This work is the responsibility of HRM.

4. Combined sewer and storm sewer work which is specifically attributed to either HRM or Halifax Water under the terms of the transfer agreement.

The following table summarizes the total infrastructure under each category:

Table 2 – Cogswell Halifax Water Infrastructure Summary (metres)

Infrastructure Category	Water Transmission	Water Distribution	Wastewater Collection	Combined Wastewater	Stormwater Collection
Existing	676	739	1212	894	1472
Abandoned	-	81	574	561	442
Design	854	1034	1250	-	1936
Renewed	676	658	638	-	1030
Net New	178	376	612	-	906

BUDGET IMPLICATIONS

HRM tendered the Cogswell District project as a lump sum public tender. As such, it is difficult to determine with certainty the contractors' costs for the various categories of infrastructure work. As the design was developed, however, Halifax Water staff reviewed and estimated the various components of the infrastructure work. Based on Halifax Water knowledge of how the design was developing and experience in conducting similar work in similar environments, Halifax Water made provision for this work in its 5-year capital budget, consistent with the regulatory framework under which Halifax Water operates.

Halifax Water has budgeted $15 million over the next three years in its 5-year capital budget to cover Halifax Water's responsibilities for infrastructure construction and replacement. As the project has evolved and considering such factors as the recent construction market, the complexity of the project, and the final tender price of $95.6 million compared to HRM pre-tender estimate of $84 million, it is probable that the true cost of Halifax Water infrastructure work exceeds the budgeted amount of $15 million and may be as high as $20 million.

The Municipality has proposed a 50/50 approach to the costs associated with the installation of water, wastewater, and stormwater (Attachment B – Cost Sharing Proposal) which is summarized in Table 3.

Table 3 – Municipality Cost Sharing Proposal

Category	Halifax Water	Municipality	Total Cost
Water	$ 4,197,196	$ 4,197,196	$ 8,394,393
Wastewater	$ 4,284,075	$ 4,284,075	$ 8,568,150
Stormwater	$ 4,568,217	$ 4,568,217	$ 9,136,434
Surface Runoff	$ -	$ 2,627,776	$ 2,627,776

Reinstatement	$	1,590,795	$	1,590,795	$	3,181,590
Subtotal	**$**	**14,640,283**	**$**	**17,268,060**	**$**	**31,908,343**
Overhead 1.5%	$	219,604	$	-	$	219,604
Net HST 4.286%	$	636,895	$	740,109	$	1,377,004
Total	**$**	**15,496,782**	**$**	**18,008,169**	**$**	**33,504,951**

Halifax Water staff believe that the proposal by HRM represents fair value to Halifax Water ratepayers, is consistent with Halifax Water's responsibilities as a public utility and is as true an estimate as can reasonably be obtained under a lump sum tender arrangement. As such it is recommended that the HRM proposal be accepted as the basis for Halifax Water's responsibility for its infrastructure under this project.

During construction, situations in the field have arisen that required repair to existing Halifax Water systems that were outside the scope of the Cogswell District Project. These repairs would meet Halifax Water's "No Regrets, Un-Avoidable Needs" criteria. The Municipality proceeded with the repairs to the systems with technical approval from Halifax Water and understanding that the costs would be reimbursed to the municipality subject to Halifax Water Board and NSUARB approval. Halifax Water is proposing the costs of the repairs be reimbursed to the Municipality as part of the cost sharing agreement. The costs of these repairs to date are:

Table 4 – Work Extra to the Contract

Change Order	Description	Category	Total	
9	MH 3051 Replacement	Wastewater	$	155,705
10	Outfall Abandonment	Stormwater	$	44,065
11	Water Main Renewal	Water	$	67,350
		Subtotal	**$**	**267,120**
		Overhead 1.5%	$	4,007
		Net HST 4.286%	$	11,620
		Total	**$**	**282,747**

As this represents approximately one year of a four-year construction project Halifax Water staff recommend that a contingency of $3,000,000 be included in the project.

The complexities of multiple construction sites within the Cogswell District Project running concurrently coupled with the required redesign to overcome unknown subterrain conditions warrants the assignment of a full time Halifax Water project engineer and a project technologist conducting field inspections. Unique situations involving maintaining a large transmission main's water supply to the downtown core often require lengthy consultation with operations. Staff costs incurred to date suggest annual Halifax Water staff time to support the project going forward is projected to be approximately $250,000

per year. The water system complexities are such it is estimated to require more staff time than the wastewater and stormwater systems ($100,000/year water, $75,000/year wastewater and $75,000/year stormwater).

From a risk perspective, one of the higher project risks is associated with unknown conditions beneath the surface which would be outside the scope of the Cogswell District Project. As these situations arise, the extra work must be assessed from a funding perspective, identifying the party responsible to pay for the extra work. The extra work cost causer may be one of, or a combination of, the following stakeholders:

1. Halifax Water as infrastructure owner (deteriorated infrastructure requiring replacement, record information produced by owner where there wasn't a reasonable expectation of the Design Engineer in their due diligence to properly locate the infrastructure during design.)

2. Design Engineer (due diligence in locating existing infrastructure in design and constructability of proposed designed infrastructure)

3. Municipality as project owner (due diligence in locating existing infrastructure design and constructability of proposed designed infrastructure)

4. Contractor (ease of construction phasing)

It is anticipated Halifax Water will incur unprojected costs to the project where connection to the existing Halifax Water systems have been proposed to be made to infrastructure in need of repair to facilitate the connection. Considering the extras to date, Halifax Water can project approximately $250,000/year/system over the next four years for wok associated with repairing existing systems, for a total proposed contingency of $3,000,000

Table 5 – Projected Capital Spending (includes projected staff time & extras)

Category	2022/23	2023/24	2024/25	2025/26	Total
Water	$ 1,450,000	$ 2,560,000	$ 1,830,000	$ 490,000	$ 6,330,000
Wastewater	$ 1,540,000	$ 2,580,000	$ 1,840,000	$ 470,000	$ 6,430,000
Stormwater	$ 1,490,000	$ 2,710,000	$ 1,930,000	$ 470,000	$ 6,600,000
Total	**$ 4,480,000**	**$ 7,850,000**	**$ 5,600,000**	**$ 1,430,000**	**$ 19,360,000**

The cost sharing proposed by the municipality does not include any provision for extra costs associated with rock-breaking or transportation of contaminated fill. These sorts of extra costs would be dealt with between the municipality and their contractor under the provisions of the lumpsum contract arrangement.

Funding in the amount of $5,205,000 (3.399 Cogswell Interchange – Water Transmission Main Realignments), $1,070,000 (2.692 Cogswell Redevelopment – Sewer Relocation), and $900,000 (1.188 Cogswell Redevelopment – Stormwater Sewer Relocation) are available from the 2020/21 and 2022/23 Capital Budgets. The balance of the funding required will be included in the 2023/24, 2024/25 and 2025/26 capital budgets.

The proposed expenditure meets the "NO REGRETS- UNAVOIDABLE NEEDS" approach of the 2012 Integrated Resource Plan. The proposed work meets the NR-UN criteria of "Required to ensure infrastructure system integrity and safety", and/or "Directly supports the implementation of the Asset Management program". The project meets these criteria based on the following: The current equipment is failing due to age and end of life (Asset Management), causing treatment performance/operational issues (Infrastructure System Integrity), and regulatory compliance failures (Firm Regulatory Requirement).

ALTERNATIVES

There are no alternatives. Failure to approve this motion would also have detrimental financial, schedule and reputational impacts on the Municipality's Cogswell Redevelopment project currently underway.

ATTACHMENTS

A. S-300 Order of the Engineer
B. Cost Sharing Agreement Proposal

Report Prepared by: Digitally signed by Reid Campbell Date: 2022.09.16 14:49:15 -03'00'

Reid Campbell, P. Eng.
Director, Engineering & Technology Services

Financial Reviewed by: Digitally signed by Louis de Montbrun Date: 2022.09.16 15:15:23 -03'00'

Louis de Montbrun, CPA, CA
Director, Corporate Services/CFO

March 2, 2022

Halifax Water
PO Box 8388, RPO CSC
Halifax, Nova Scotia B3K 5M1
Attn: Kevin Gray, P.Eng., Manager, Engineering Approvals, Halifax Water

Re: Cogswell District Project – Removal & Relocation of Halifax Water Infrastructure

Dear Kevin,

As Halifax Water (HW) is aware, Halifax Regional Municipality (HRM) is undertaking a redevelopment of the Cogswell District over the next 4-5 years. This is a major civil infrastructure project for the Municipality that will involve a full reconfiguration of the streets in the area. By necessity, the project requires the removal and/or relocation of existing utility infrastructure from the affected streets, including infrastructure owned by HW.

Therefore, HW is hereby formally ordered and required to remove or relocate its facilities from the affected streets in the Cogswell District project area, and to facilitate the removal or relocation of any third-party infrastructure that is currently attached to HW's. These instructions are provided in accordance with section 17 of HRM's *Streets By-Law*.

> ***HRM Streets By-Law (S-300)***
> *17. Where in the opinion of the Engineer the location of any facility shall interfere with any works or undertakings of the Municipality, the facility shall be changed or altered and, wherever necessary removed; whenever the Engineer orders such changes of location or removal, it shall be done by the utility without unnecessary delay and at its expense, or it may be done by the Engineer at the expense of the utility.*

HW's use of HRM streets or other property for temporary servicing requirements during the project, and HW's installation of new or relocated facilities in the newly created streets are subject

to the terms and conditions of applicable legislation, by-laws and municipal access agreements. HW will be responsible for all costs associated with its facilities including any removal, relocation or “workaround” costs incurred by HRM or HRM’s contractor.

Please contact HRM Cogswell District Project Director, John Spinelli (902-293-8567 or spinelj@halifax.ca) to coordinate HW’s works with those of the Municipality. It is anticipated that some HW facilities will need to be removed or relocated as early as May 31, 2022. Other HW facilities may not need to be relocated until months or years later, as the project progresses.

HRM appreciates your diligent attention to this matter.

Sincerely,

Christopher Davis, P.Eng.,
Manager, Right of Way Services
Traffic Management, Transportation & Public Works
Halifax Regional Municipality

Tel 902.490.7462
Email davisc@halifax.ca

cc. John Spinelli, Cogswell District Project Director
Donna Davis, Cogswell District Project Manager
Sandy McClearn, Cogswell District Project Manager
Jen Richardson, Project Engineer, Cogswell District Project, Halifax Water

September 8, 2022

BY EMAIL **WITHOUT PREJUDICE**

Cathie O'Toole, MBA, FCPA, FCGA, ICD.D
General Manager
Halifax Regional Water Commission
PO Box 8388, RPO CSC
Halifax, NS B3K 5M1

Dear Cathie:

RE: Cogswell District Project – HRM/HRWC Cost Sharing Agreement

This letter is in reply to various conversations, work sessions and meetings between HRM and HRWC related to proposed cost sharing options for utility infrastructure within the Cogswell District Project. While it is critical that HRM and HRWC finalize a cost sharing agreement (especially now that the project is well underway), for the reasons set out herein, HRM cannot support several of the interpretations and assumptions upon which we understand HRWC's most recent proposal to be based.

HRM calculates the total cost of all water, wastewater and stormwater infrastructure for the project to be approximately **$28,726,752.86** plus road reinstatement and contract administration fees. While HRM believes there is a compelling argument that HRWC should be responsible for most of these costs, HRM also appreciates that the Cogswell District Project is unique, and that Halifax Water has constraints as a public utility and needs to reach an agreement that can ultimately be supported by the Utility and Review Board.

To that end, HRM attaches a revised proposal that is predicated on HRM assuming all surface water costs (i.e. catch basins and leads), and splitting the remaining water, wastewater and stormwater costs with HRWC 50/50. This would ultimately result in HRWC contributing approximately **$15,496,782.31** as set out below:

	Total Infrastructure	Municipality	Halifax Water
Water	8,394,392.54	4,197,196.27	4,197,196.27
Wastewater	8,568,149.97	4,284,074.99	4,284,074.99
Stormwater	9,136,434.05	4,568,217.03	4,568,217.03
Surface Water	2,627,776.30	2,627,776.30	
Reinstatement		1,590,795.00	1,590,795.00
Subtotal	**28,726,752.86**	**17,268,059.58**	**14,640,283.28**
Overhead (1.5%)			219,604.25
Net HST (4.286%)		740,109.03	636,894.78
Total		**18,008,168.61**	**15,496,782.31**

HRM feels this revised proposal is a principled one that HRWC can justify to the UARB and which fairly allocates costs to the taxpayers of HRM and ratepayers of HRWC.

HRWC's Previous Commitments

This proposed cost sharing arrangement is closely aligned with HRWC's own Five-Year Business Plan which projected that HRWC's portion of water, wastewater and stormwater costs for the Cogswell Project would be approximately **$15 million**. The Five-Year Business Plan was approved by HRWC's Board on January 30, 2020. In each year since, HRWC has presented an Annual Business Plan to Halifax Regional Council for endorsement and specifically assured Regional Council through that process that the Annual Business Plans reflect the strategic direction in the Five-Year Business Plan. Halifax Regional Council continues to rely in good faith upon HRWC's assurances and projected contributions.

The approved Five-Year Business Plan describes HRWC's projected contributions to the Cogswell Project as follows:

> ***Project***: *HRM Cogswell Redevelopment*
>
> ***Asset Class***: *Water, Wastewater, and Stormwater*
>
> ***Description***: *The municipality is currently finalizing the design phase of the Cogswell Redevelopment Project. The municipality plans to proceed to the tender phase of the project in late 2019 or early 2020 with approximate three year construction phase. There will be many impacts to the utility's water, wastewater and stormwater infrastructure. All net new infrastructure required to provide service to new buildings*

> *would be part of the municipal project cost. However, the relocation of existing infrastructure, required due to road alignment changes would be the responsibility of Halifax Water, based on the municipal Streets By-law. The estimated infrastructure investment for Halifax Water is $15 M.*

Applicable Prices

As set out in the attached spreadsheet, the actual cost of all water, wastewater and stormwater infrastructure for the project is approximately $**28,726,752.86** plus road reinstatement fees. It is imperative that a cost sharing agreement between HRM and HRWC addresses these actual project costs, not theoretical unit price costs.

The project was tendered as a stipulated price CCDC 18 contract, which is an appropriate project delivery method for a complex civil infrastructure project of this nature. Applying HRWC's proposed unit rates instead of the actual pricing provided by the contractor would result in HRM taxpayers subsidizing HRWC ratepayers, which contravenes the principle of cost neutrality described in section 4(c) of the June 12, 2007 Transfer of Assets Agreement between HRM and HRWC:

> *4. This Agreement shall be interpreted and implemented in accordance with its purposes which are:*
>
> *… (c) to evolve the operation and administration of municipal waste water services and municipal storm-water services towards a system whereby the general taxpayer of HRM does not subsidize the utility rate payer of HRWC and the utility rate payer of HRWC does not subsidize the general taxpayer of HRM …*

HRM acknowledges that the initial cost breakdown provided by the contractor does not provide the degree of granularity that HRWC is accustomed to when tendering its own projects using a Unit Price Tender format. It is, however, possible to extrapolate and/or estimate reasonable cost allocations in order to develop a cost sharing agreement that will withstand scrutiny at the UARB. HRM's revised cost summary is set out in the attached spreadsheet.

Legislative Framework

It is not sufficient to only consider HRWC's financial obligations for this project through the lens of HRWC's *Schedule of Rates, Rules and Regulations for Water, Wastewater and Stormwater Services* as approved by the UARB. HRWC is also subject to section 78 of the *Public Utilities Act* which allows HRM to set the terms upon which the municipality is willing to consent to HRWC's use of its streets:

> ***78***. *No public utility shall, in any city or town, erect or place in, upon, along, under or across any street, road or highway, any pole, wire, conduit or pipe, without first obtaining the consent of the council of such city or town, and the council may give such consent on such terms, including the rate or amount of taxation to be paid by such public utility, or may refuse its consent, as it deems fit, and if the council refuses or neglects to give such consent within one month after such application has been received by the mayor or clerk of such city or town or agrees to give it only on terms which the company will not accept, the matter shall be referred to the Board, and the Board may make an order directing on what terms any such work shall be undertaken, or may refuse to make any order.*

The terms upon which HRM consents to HRWC making use of the realigned streets for HRWC's water, wastewater and stormwater infrastructure include HRWC assuming the costs associated therewith. HRM's consent is also subject to the application of HRM's Streets By-Law, S-300. This is acknowledged by the parties in section 8 of the June 12, 2007 Transfer of Assets Agreement between HRM and HRWC:

> ***8.*** *HRM agrees HRWC may make reasonable use of municipal road rights-of-way for municipal waste water services or municipal storm water services purposes. After April 1, 2008, HRWC's use shall be subject to the Streets By-law as amended from time to time.*

HRM has ordered HRWC, in accordance with section 17 of By-Law S-300, to remove or relocate its facilities from the existing streets in the Cogswell District project area and relocate them to the to-be-created streets:

> ***17***. *Where in the opinion of the Engineer the location of any facility shall interfere with any works or undertakings of the Municipality, the facility shall be changed or altered and, wherever necessary removed; whenever the Engineer orders such changes of location or removal, it shall be done*

by the utility without unnecessary delay and at its expense, or it may be done by the Engineer at the expense of the utility.

HRM is not a Developer

HRM disagrees with HRWC's characterization that the Cogswell District Project "should be treated similar to any other large-scale development where the developer incurs costs which are ultimately recovered through the land sales." HRM is not a developer, nor is it acting as one. HRM is exercising its legislative authority over the use of its streets pursuant to the *HRM Charter* and the *Public Utilities Act*. In this context, the distinction between asset renewal and new infrastructure within the street right-of-way is moot.

The creation and sale of development lots is a potential *by-product* of the project, not the purpose. The primary *purpose* of the project is to renew aging civil infrastructure and to realign the streets in order to improve traffic and pedestrian flows. While the sale of some adjacent properties may help HRM pay for its portion of the project costs, there is no guarantee that Halifax Regional Council will in fact choose to sell any/all of the parcels for highest value revenues.

Additionally, unlike street construction in Burnside, HRM is not expanding the service boundary. With the Cogswell District Project, HRM is simply realigning its streets within the existing serviced area to be more similar to the manner in which they existed prior to the construction of the interchange in the 1960s.

Notwithstanding the above, in its previous proposal HRM had identified and offered to pay for certain infrastructure that would significantly (but not exclusively) benefit potential development lots. HRM believes this offer was generous, as in some instances this infrastructure would also have an ancillary benefit for existing HRWC ratepayers. HRM's previous proposal was, however, predicated on HRWC assuming 100% of all other water, wastewater and stormwater infrastructure costs (which HRWC has declined). HRM's new proposal therefore abandons the concept of trying to identify which party will benefit most from a specific piece of infrastructure – and is instead based on HRM and HRWC splitting *all* infrastructure costs 50/50 regardless of the primary beneficiary.

Stormwater Infrastructure

HRM will not agree with any proposal in which HRWC does not significantly contribute towards the cost of installing any new or renewed stormwater infrastructure. HRWC has

always contributed to stormwater costs on joint civil infrastructure projects. Additionally, HRWC specifically projected in its Five-Year Business Plan that it would be contributing approximately $3.655 million towards stormwater costs on the Cogswell Project.

HRM has agreed that it will assume all $2.6 million of surface water infrastructure throughout the project area required to channel water to HRWC's stormwater system. There is, however, no reasonable basis upon which HRM should be required to pay for the relocation or construction of HRWC's entire stormwater infrastructure within the project area. To do so would be inconsistent with the legislative principles referenced above, HRWC's previously stated intentions, as well as the past practice of the parties.

Schedule E, section 1.1 of the January 20, 2016 Service Level Agreement between HRM and HRWC does not indicate or imply that HRM will assume *all* of HRWC's stormwater costs when realigning streets. It only states that "*HRWC will not be charged for catch basin adjustments or relocation of catch basins as a result of a change in road right-of-way alignment."* As stated above, HRM agrees to absorb the cost of catch basins – but the storm sewer system as a whole remains HRWC's responsibility and HRM will continue to pay the associated "HRM ROW Charge" to HRWC for collecting and managing stormwater from the street right of way.

Reinstatement Costs

All utilities, including HRWC, are required to contribute to road reinstatement costs. HRM calculates HRWC's proportionate share of reinstatement costs to be $1,590,795.

Conclusion

HRM anticipates that HRWC will uphold its previous assurances to Halifax Regional Council that it will make significant contributions towards the water, wastewater, and stormwater costs of the Cogswell Project. In 2020 HRWC projected its portion of the costs would be approximately $15 million. Since that time construction costs have increased substantially and many public sector entities have had to upwardly adjust their estimates.

As set out above, there is a strong argument that HRWC should be responsible to contribute at least $22 million and assume all water, wastewater & stormwater costs (other than surface water costs to be paid for by HRM). In an effort to find a mutually agreeable solution and given the unique nature of the project, HRM is willing to split the costs. While this proposal is not intended to form a precedent for future cost-shared projects, HRM believes it would be a fair outcome for both parties in this instance and should be supported by the UARB.

Please advise if Halifax Water intends to advance this proposal to the UARB, or if you would like to set up a meeting to discuss.

Yours truly,

John Spinelli, CET, PQS, C.Mgr., PMP, LEED-AP
Director Cogswell District Project
Halifax Regional Municipality

Cell (902) 293-8567
Email spinelj@halifax.ca

c.c.: Brad Anguish, P.Eng., Executive Director, Public Works
Donna Davis, Project Manager, Cogswell District Project
Colin Taylor, Solicitor, HRM Legal Services

ITEM # 6
Halifax Water Board
September 22, 2022

TO: Becky Kent, B.A., Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: Reid Campbell
Digitally signed by Reid Campbell
Date: 2022.06.15 15:17:16 -03'00'

Reid Campbell, M.Eng., P. Eng., Director, Engineering & Technology Services

APPROVED: Cathie O'Toole
Digitally signed by Cathie O'Toole
Date: 2022.06.17 15:42:02 -03'00'

Cathie O'Toole, MBA, FCPA, FCGA, ICD.D, General Manager

DATE: June 8, 2022

SUBJECT: **Asset Management Policy**

ORIGIN

Asset Management Roadmap
June 9, 2022 Halifax Water Board Audit and Finance Committee

RECOMMENDATION

It is recommended that the Halifax Water Board approve the Asset Management Policy #9.2 as revised on June 9, 2022.

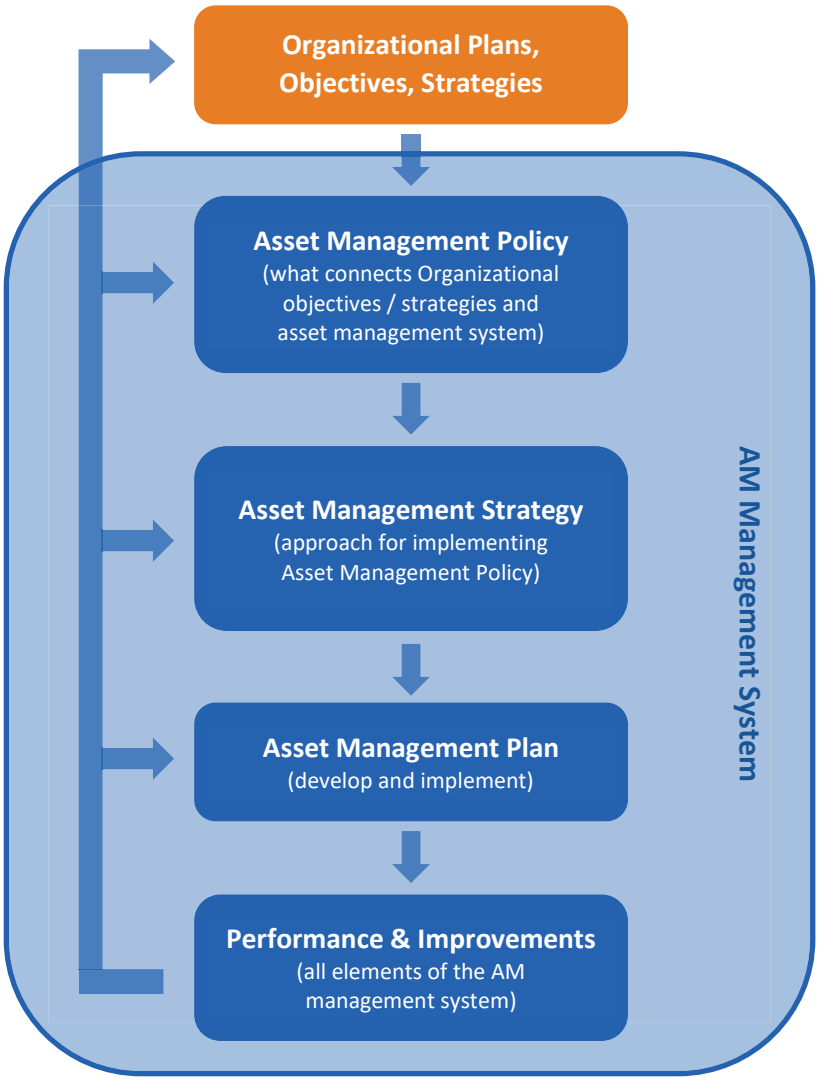
BACKGROUND

In 2013, Halifax Water staff prepared a draft asset management (AM) policy. At the time, the policy was not formally adopted and staff focused on implementation of the initial 2011 AM Roadmap recommendations. Halifax Water staff completed an asset management program reassessment in 2021/22 resulting in an updated AM Roadmap. The AM Roadmap defines a program of implementation activities to be undertaken over the next five years. One of the early activities identified was to update the AM Policy and approve as a formal Halifax Water policy.

The policy review commenced in January 2022 involving a workshop and interviews to review the values, priorities to be incorporated into principles for the policy. The updated draft policy was presented at a second workshop to confirm the main themes and key words for each. The final draft updated AM policy was reviewed at the senior staff level and consistent with Halifax Water's policy and procedures for new policies, the policy is being shared with the Labour Management

Committees for CUPE locals 1431 and 227. The updated Asset Management Policy was presented to the Halifax Water Board's Audit and Finance Committee on June 9, 2022, with a recommendation for it to be sent to Halifax Water Board for approval.

DISCUSSION



An AM Policy is part of the overall AM management system. The AM management system is a set of interrelated and interacting elements of an organization that include the policy (asset management objectives and principles) and the strategy and plan (the processes needed to achieve the AM objectives and principles). The AM management system is the set of tools, policies, plans, business processes, and information systems that are integrated to ensure the AM principles will be implemented.

The AM Policy connects the organization's strategic objectives to the asset management system. It outlines the intentions and direction of the organization through defined AM principles aimed at ensuring effective service delivery that meets organizational objectives.
The AM Policy provides Halifax Water's commitment to asset management and demonstrates that the policy is integrated throughout the utility in a coordinated, cost-effective, and organizationally sustainable way. It is also an indicator to ratepayers that the Halifax Water Board follows good stewardship principles and aims to deliver affordable services that consider the legacy to future ratepayers.

The Roadmap recommends developing and approving an updated AM Policy that will inform the development of an Asset Management Strategy. The strategy will identify how the policy

principles will be implemented. A report on the AM Strategy project will be brought forward to the Halifax Water Board through the Audit and Finance Committee once complete.

BUDGET IMPLICATIONS

The development of the Asset Management Policy was incorporated into the 2021/22 Asset Management Program Roadmap Update – Implementation line item in the capital budget. The policy is expected to be reviewed every two years with a nominal amount of staff effort needed for the review and any updates and with no anticipated additional capital costs.

ALTERNATIVES

There are no applicable alternatives.

ATTACHMENT

Attachment 1 – Proposed Asset Management Policy

Report Prepared by: Digitally signed by Valerie Williams Date: 2022.06.15 10:40:44 -03'00'

Valerie Williams, P. Eng.
Manager, Asset Management & Capital Planning

Financial Reviewed by: Louis de Montbrun Digitally signed by Louis de Montbrun Date: 2022.06.15 20:43:59 -03'00'

Louis de Montbrun, CPA, CA
Director, Corporate Services/CFO

Intent:
To commit to asset management as an integrated management system aimed at service delivery. This policy defines the scope of the asset management system and connects to Halifax Water's mission, vision, and values.

Definitions:
Common asset management related terms, definitions, and references are available on the Halifax Water Asset Management Team intranet site.

Scope:
This policy applies to:

i. Board commissioners and employees that manage or influence service delivery.
ii. All services provided by the utility.
iii. All core infrastructure assets owned or operated by the utility.

Halifax Water will strive for the expansion of the scope to include all assets that have actual or potential value to the organization including natural assets, data and information, knowledge, and people.

This policy will guide the development of Halifax Water's Asset Management Strategy.

Guiding Documents and Integration:
This policy compliments and aligns with the following corporate policies, strategies, and plans:

- Five-Year Business Plan and the corporate vision, mission, and values
- Annual Business Plan
- Integrated Resource Plan (IRP)
- Enterprise Risk Management (ERM)
- Asset management-related Board guidance

Principles:

1) **Strategic and Forward Looking**
Halifax Water will make decisions and provisions that enable its assets to meet future challenges, including changing demographics and population, customer expectations, legislative requirements, and technological and environmental factors including climate change.

2) **Evidence-Based Decision Making**
Halifax Water will continuously review and improve data, data structures, and data accessibility to make evidence-based decisions that consider the balance of service levels, whole life cost, and risk. Halifax Water will take a holistic approach to decision making to consider all assets in a service context and the interrelationships between different assets to optimize service continuity.

DRAFT

3) **Quality and Service Focused**
Halifax Water will strive to deliver reliable, high-quality service that is efficient, cost-effective, and based on defined levels of service that balance community expectations and regulatory requirements with risk, affordability, and available resources.

4) **Communication and Stakeholder Engagement**
Halifax Water will encourage the sharing of data, information, and knowledge between departments to support the improvement of asset management practices and culture across service areas. Halifax Water will establish a stakeholder engagement strategy to enable transparent communications on the state of assets, levels of service, and the cost of service delivery.

5) **Fiscal Responsibility**
Halifax Water will approach service delivery and asset management in a way that is financially responsible, choosing practices, interventions, and operations that aim to reduce the cost of asset ownership, while satisfying defined levels of service, and risk thresholds.

6) **Continuous Improvement**
Halifax Water will continually improve its service delivery approach by systematically reviewing the asset management program processes, procedures, and tools. Halifax Water will stay informed on leading asset management and service delivery industry practices and will seek to be recognized as an industry thought leader.

7) **Environment and Sustainability**
Halifax Water will strive to be environmentally, and economically sustainable into the long term by incorporating triple bottom line considerations into long term planning, climate change, and infrastructure resiliency actions.

Procedure:

AM Strategy – Halifax Water commits to developing and maintaining an asset management strategy that will identify the practices and processes needed to implement the asset management policy principles and reciprocally integrate with the organization's other policies, strategies, management systems, business plans, and processes.

Culture – Halifax Water is committed to creating a service delivery culture where employees and commissioners consider asset management as part of delivery decisions.

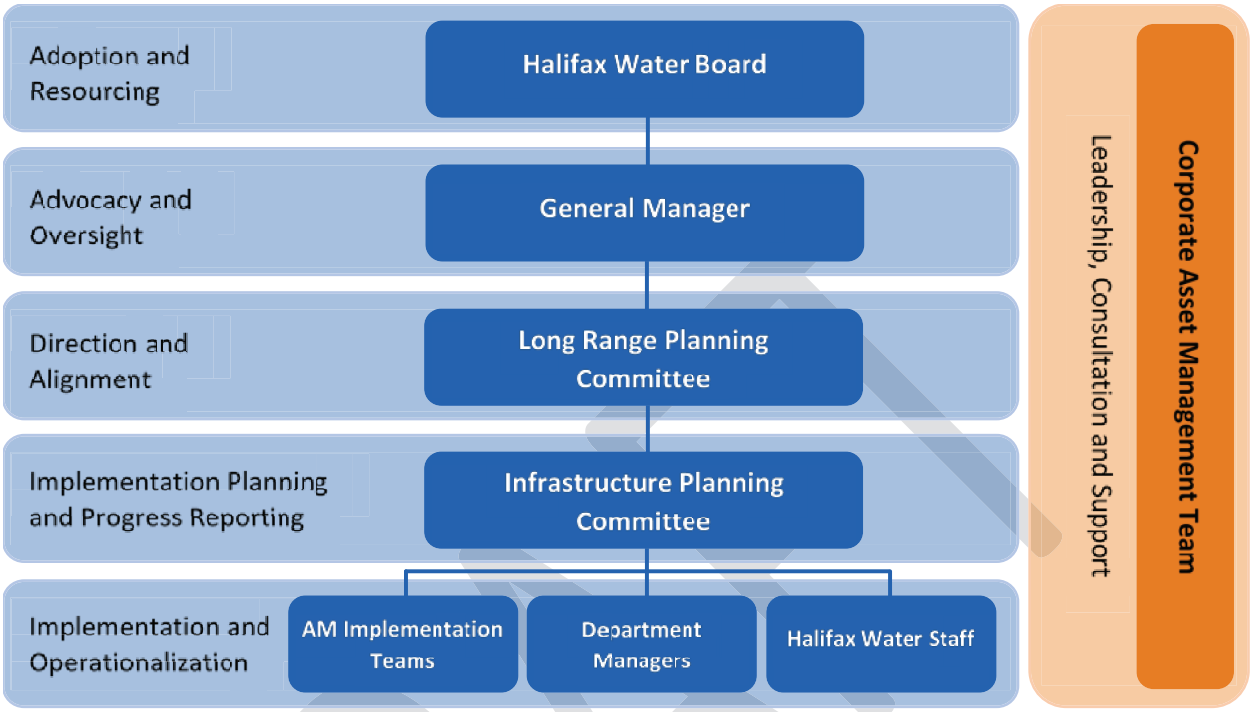
Policy Review – Halifax Water will formally review the policy every 2 years.

Training – Halifax Water is committed to providing training, developing knowledge, and building capacity in asset management throughout the organization and for the Board commissioners.

DRAFT

STRAIGHT from the SOURCE

Accountability:



Halifax Water Board of Commissioners is responsible for adopting this policy and supporting the allocation of resources for the implementation of the asset management program.

General Manager is responsible for advocacy and oversight of the asset management program and communicating the value of asset management to the rest of the organization.

Long Range Planning Committee is responsible for aligning the asset management program with the overall strategic direction of the organization.

Infrastructure Planning Committee is responsible for implementation planning for the asset management and infrastructure planning programs in alignment with other relevant corporate programs and projects to achieve the organizational service objectives identified by the Long Range Planning Committee. This includes reporting on program progress.

Corporate Asset Management Team provides utility-wide leadership in and consultation on asset management practices and concepts and consolidates asset management data from across the organization for enhanced decision making. The Corporate Asset Management Team supports the Asset Management Implementation Teams.

STRAIGHT from the SOURCE

Asset Management Implementation Teams (AMITs) are the links between Operations and Engineering and support day to day operational functions that meet customer service delivery expectations. AMITs are established to work towards coordinated and integrated decisions about assets, the value and services they provide, and the expenditures needed to meet agreed levels of service.

Department Managers are responsible for advocating asset management within their respective departments. This includes participating in or supporting the AMITs wherever possible and communicating to departmental staff about AMITs' role in asset management.

Halifax Water Staff will consider how their decisions impact service delivery and whether their actions are aligned with the principles identified in this policy. This may include embracing new business processes, technology, and tools necessary to be effective at asset management.

Revision: 20220609

DRAFT

STRAIGHT from the SOURCE

ITEM #7
Halifax Water Board
September 22, 2022

TO: Colleen Rollings, P.Eng., PMP., Chair, and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: Susheel Arora
Digitally signed by Susheel Arora
Date: 2022.09.16 08:06:30 -03'00'

Susheel Arora, M.A.Sc., P.Eng. Director of Operations

APPROVED: Cathie O'Toole
Digitally signed by Cathie O'Toole
Date: 2022.09.16 09:29:39 -03'00'

Cathie O'Toole, MBA, FCPA, FCGA, ICD.D, General Manager

DATE: **September 12, 2022**

SUBJECT: **Duffus Street Pumping Station Failure**

INFORMATION REPORT

BACKGROUND

The Duffus Street Pump Station experienced a total shutdown on July 19, 2022. This shutdown resulted in the release of wastewater into the Halifax Harbour from the combined sewer system. A coordinated emergency response was activated utilizing the incident command structure to return the station to normal operation.

DISCUSSION

The Duffus Street Wastewater Pumping Station pumps a combination of wastewater and stormwater to the Halifax Wastewater Treatment Facility (HWWTF). The Duffus Street Pump Station was constructed in 1971 by the City of Halifax, rebuilt in 1996, and upgraded again in 2008 as part of the Halifax Harbour Solutions Project. It was then transferred from HRM to Halifax Water.

First Incident

The station experienced a functional loss of service at approximately 9:00am on Tuesday, July 19, 2022. There was only one pump in service at the time due to a previous pump failure on June 18, 2022. The pump that provides redundancy was out for service at the time of the incident due to a failure on June 18, 2022. The repair was expected to take 8 to 14 weeks meaning the station would be operating with no redundancy for that period.

A pump previously used at the Dartmouth WWTF was examined to determine if it was suitable to meet the hydraulic needs of the pump station. Once this was confirmed by Halifax Water staff, the pump was re-purposed for use at the Duffus Street Pump Station. A third party was engaged to retrofit the pump to the required configuration for the new installation. The pump required a longer power and monitoring cable for use in this application. The only readily available cable was shipped from Montreal and received on July 22, 2022. The pump was installed that same day.

During this time a second pump was being prepared for installation in the station to reinstate redundancy. This installation required another power cable and it was sourced internationally for delivery to Halifax.

Second Incident

- The pump installed on July 22, 2022, failed on July 31, 2022. The cause of the failure is yet to be determined. This was replaced with another modified pump, and service was restored on August 3, 2022. Halifax Water staff had been working on getting this pump ready to serve as a backup in the previous week. The restoration of service was delayed 24 hours because of pump clogging with wipes and rags on August 2, 2022.

A second pump was put in service on August 9, restoring redundancy.

CONTRIBUTING FACTORS

STATION CONFIGURATION

The Duffus Street Pump Station is the only Harbour Solutions pump station that was designed to deliver five times the Average Dry Weather Flow (ADWF). All other pump stations were designed and constructed to convey four times the ADWF. Further, in normal operation the system requirement is approximately 30% of the design flow rate. This resulted in much larger equipment being installed than is currently required at the station and this has led to several operational complexities at the station.

This over design led to the duplex mode of operation as the third pump was not required to meet operational redundancy. Under normal operation a single pump exceeds station demand, with a second pump providing redundancy in case of a pump failure.

The general arrangement of the station was originally intended for a much smaller capacity station. The Harbour Solutions upgrade resulted in significantly larger pumping infrastructure. The larger infrastructure was installed in the original wet well and this larger infrastructure makes the station very difficult to operate and maintain. Notable complexities include:

- Typically stations of this capacity are designed as a wet well/drywell station
- Extreme wet well depth
- Offset rigging arrangement to pull pumps

- In air transfer from one overhead crane to a hand chain fall is required in the wet well due to clearances

Further compounding the problem is the fact that the station configuration is not conventional in many other aspects. The station's electrical and mechanical building is located on the corner of a busy arterial road with the pump station located below the centerline of Barrington Street.

The electrical and mechanical building and the pump station are connected via a horizontal tunnel. This makes access difficult, as the pumps are too tall to fit in the tunnel with the overhead hoist arrangement. The lifting point is not directly above two of the pump locations, and this requires a special offset pulley arrangement to hoist the pumps. The pumps must be hoisted from the pump station (confined space) and then transported horizontally using another hoist to the location of the electrical/mechanical building. The pumps then need to be hoisted again vertically to be removed from the tunnel. See Figure 1, Figure 2, and Figure 3, representing the complicated nature of the station configuration.

Figure 1

Figure 2

Figure 3

MAINTENANCE

There are Operation and Maintenance (O&M) manuals for each Harbour Solutions station, however there is little detail specific to pump maintenance. The pump manufacture supplied O&M manual was limited in detail and Halifax Water requested more detail from the pump manufacturer; however, more concise O&M details were not available.

The submersible pumps in this station are operated in a run to failure model. Visual inspections of submersible pumps installed in this configuration provide little predictive information on remaining life to failure. Consistent with other submersible pump stations, when pumps from this station experience a failure, it is usually related to mechanical seal and bearing failure. As stated above, excessive rags and debris also causes issues at this station.

To rebuild a pump at this station requires that the pump be taken out of service, removed from the chamber, and shipped to an offsite location to be serviced. Due to the size and classification of the electric motors there are limited local facilities certified to complete the repairs. This typically takes 8 to 14 weeks as the pump first needs to be dismantled to determine the cause of failure so that parts can be ordered. Longer turnaround times have been experienced since the pandemic.

CURRENT STATUS

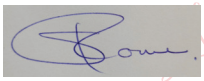
As of publishing this report the station has two pumps installed and operational with a third pump ready for installation (if required).

CORRECTIVE ACTION PLAN

Following the incidents, a risk review was conducted and the following recommendations for corrective actions were developed to mitigate future risk:

1. Develop an operation and maintenance schedule for the pumps at the Duffus Street Pump Station (mechanical and electrical),
2. Increase pump inventory to have two pumps in service while one pump is being repaired or in the shelf ready condition,
3. Create, and keep current, an inventory of spare parts or utilize an existing inventory. Ensure all supervisors/managers are aware of the inventory and how to access it,
4. Advance the engineering study to improve Duffus Street Pump Station. Upgrade electrical and move electrical connections to an accessible area outside of confined space (where possible),
5. Conduct risk assessments of all major pump station/CSO's in the system beginning with West Region,
6. Implement a risk escalation process for operations to raise appropriate concern relating to operational risks or compromised critical infrastructure.

Report Prepared by:



Digitally signed by Shawn Rowe
Date: 2022.09.16 11:37:32 -03'00'

Shawn Rowe, Sr Manager WW/SW Collections, (902) 490-6719

ITEM # 8
Halifax Water Board

September 22, 2022

TO: Colleen Rollings, P. Eng., PMP, Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: Digitally signed by Rochelle Bellemare Date: 2022.09.16 13:01:21 -03'00'

Rochelle Bellemare, Manager of Human Resources

APPROVED: Digitally signed by Cathie O'Toole Date: 2022.09.16 13:15:41 -03'00'

Cathie O'Toole, MBA, FCPA, FCGA, ICD.D, General Manager

DATE: **September 16, 2022**

SUBJECT: **Institutional Capacity**

ORIGIN

M10468 Halifax Water General Rate Application 2022

BACKGROUND

Halifax Water's institutional capacity to deliver existing programs and services as well as increased capital investment under the Integrated Resource Plan was an issue discussed during the 2022 rate application process.

In response to suggestions made by Nova Scotia Utility and Review Board (NSUARB) consultants James Goldstein and William Brown, Halifax Water committed to report annually to the NSUARB on efforts to increase institutional capacity. Halifax Water had suggested a start date of September 2023 for this reporting, to allow for any additional feedback or direction that may result from the release of the NSUARB's Decision on the general rate application, which is expected Fall of 2022.

The need to increase institutional capacity is a matter of interest to the Halifax Water Board and is a key strategic objective in the 2021/22 business plan; therefore, an update is being provided to reflect progress made to date in 2022/23 and expected activities for the remainder of the year.

DISCUSSION

Full Time Equivalent Positions (FTE's)

At the end of last fiscal year, March 31, 2022, Halifax Water had 547 FTE's. The 2022/23 Business Plan and Budgets anticipated hiring 24 new positions during the year. There were an additional 9 positions included in the 547 a combination of long-standing terms which have subsequently been made permanent and some positions planned for 22/23 or 23/24 that were advanced to help address institutional capacity issues. The targeted staffing complement is currently 571 FTE's (547+24). Some FTE's are filled by permanent employees, and some are filled by term employees.

Actual Employee Numbers

As of August 31, 2022, Halifax Water has 550 employees. Halifax Water has hired a total of 16 new employees year to date, however there have been 22 departures, which is concerning as employees are exiting at a faster rate than Halifax Water is able to replace them.

	March 31, 2022	August 31, 2022	Change
Permanent employees	524	527	+3
Term employees	23	23	0
Total:	547	550	+3

March 31, 2022, FTE employees	547
Plus new hires to Halifax Water	+16
Less departures	-22
Positions filled internally	+9
	550

The break-down of changes in actual employee numbers by department is shown below:

	March 31, 2022	August 31, 2022	Change
Administration	18	20	+2
Corporate Services	73	72	-1
Engineering & Technology Services	118	120	+2
Operations	292	289	-3
Regulatory Services	46	49	+3
Total:	547	550	+3

Turnover

The current turnover rate at Halifax Water is 4.01% which is an increase by 3% from previous years. Year to date, there have been 5 terminations, 6 employees leaving to accept employment

elsewhere, and 11 retirements, for a total of 22 departures.

Succession Planning and Retirements

Several experienced managers and employees have retired over the past five months. There are currently 38 employees or 6.91% of the workforce eligible to retire as of August 31, 2022. The percentage that are eligible to retire over the next 5 years, as of August 31, 2022, is: 9.45%.

Halifax Water has a Talent Management program to help employees develop and progress their careers at Halifax Water. Some of the initiatives we are doing this year to help ensure there are internal candidates ready to take on new roles include:

- Relaunching an employee development guide that was launched in the spring of 2019. The effectiveness of the initial launch was impacted by the fact that it had to be done virtually due to COVID-19 public health restrictions.
- We have expanded supervisory training "Performance Matters" to include unionized employees that have potential to move into supervisory roles in future.
- Promoting the Training and Life-Long Learning programs.

Recruitment - Human Resources have posted 86 competitions since April 1st, and successfully concluded 70. The majority of these are to fill existing positions that have become vacant. There were twenty-four net new positions included in the 2022/23 Operating Budget. Of those 24, 9 have been filled, 6 are currently in progress, and the balance will be posted during the fall.

Attraction of new employees – Halifax Water has engaged third party recruitment services to assist with recruitment on difficult to fill positions as required. To date, Halifax Water has not experienced any insurmountable attraction issues, however we are beginning to notice some skills gaps in the marketplace for certain positions (Engineer Technologists and Customer Care Representatives), where there are many candidates, but few that have all the necessary skills, experience and qualifications. Consideration may be given to adjusting hiring standards to allow for more flexibility to accept applicants that do not meet all qualifications with longer probationary periods to allow for skills development. There was one new position positive for a FOIPOP Specialist, where Halifax Water was unable to find a suitable candidate and is now revisiting the strategy to fulfil this role.

Retention of existing employees – Halifax Water maintaining a competitive total compensation package. Some initiatives this year to help ensure total compensation remains competitive include:

- Introducing an expanded mental health benefit
- Introducing optional life and critical illness insurance offerings
- Updating and re-evaluating some job descriptions as required and benchmarking compensation against market

BUDGET IMPLICATIONS

Budget implications associated with timing of staffing, Human Resource processes and compensation and benefits are reflected in Halifax Water's projections. Halifax Water has opted to advance the hiring of one position that was not intended to be filled until 2023/24. This position is funded primarily though capital so there is minimal impact on the operating budget.

Report Prepared by: Rochelle Bellemare Digitally signed by Rochelle Bellemare Date: 2022.09.16 13:01:42 -03'00'

Rochelle Bellemare, Manager of Human Resources, 902-490-4807

Financial Reviewed by: Digitally signed by Louis de Montbrun Date: 2022.09.16 12:32:04 -03'00'

Louis de Montbrun, CPA, CA
Director, Corporate Services/CFO, 902-490-3685

Halifax Water

ITEM # 9
HRWC Board
September 22, 2022

TO: Chair and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: Digitally signed by Reid Campbell Date: 2022.09.16 12:43:09 -03'00'

Reid Campbell, M.Eng., P.Eng.
Director, Engineering and Technology Services

APPROVED: Digitally signed by Cathie O'Toole Date: 2022.09.16 11:54:41 -03'00'

Cathie O'Toole, MBA, CPA, CGA, ICD.D
General Manager

DATE: September 16, 2022

SUBJECT: **Capital Project Spending Summary – 2021/22**

ORIGIN

Nova Scotia Utility and Review Board (NSUARB) requirement for reconciliation of Capital Budget expenditures.

BACKGROUND

The Halifax Water Board approves annual Capital Budget plans for capital projects and equipment. The specific funding for individual projects is further approved by the General Manager, Halifax Water Board, and the NSUARB as required based on total project cost, as per the Capital Funding Approval Policy.

RECOMMENDATION

It is recommended the Halifax Water Board approve for filing with the Nova Scotia Utility and Review Board the capital project spending summary for the period April 1, 2021, to March 31, 2022, and the capital project spending over $1,000,000 summary for the period April 1, 2021, and March 31, 2022.

DISCUSSION

During the 2021/22 fiscal year, a series of capital projects were completed, placed in service, and "closed out" from a fiscal work order perspective. These projects were funded from the 2021/22 Capital Budget, previous years' capital budgets for projects with multi-year delivery timelines, and surpluses from previously closed projects or projects that have been deferred or cancelled. Approvals for projects drawing funding from the surpluses were obtained in accordance with the Capital Funding Approval Policy, but these draws are not reflected in the total Project Budget amounts in the Attachments.

The first attached report entitled, "Capital Spending Summary, "April 1, 2021, to March 31, 2022", identifies all capital projects funded from the Halifax Water Capital Budget that were completed prior to March 31, 2022. For water projects, the total expenditure for these completed projects totals $16,263,127 with an aggregate net surplus of $1,460,638 (8.24%) relative to the total funding approvals. For wastewater projects, the total expenditure for these completed projects totals $20,467,036, with an aggregate net surplus of $3,650,519 (15.14%). For stormwater projects, the total expenditure for these completed projects totals $8,245,936, with an aggregate net surplus of $930,064 (10.14%). Stormwater project "Culvert Repl – Cole Harbour Road, near 1560 had an approved project budget of $806,000. During construction additional costs were incurred related to disposal of unforeseen contaminated materials, schedule delays related to the disposal of the contaminated materials, extra costs related to road closure and public communications. The final cost of the project was $63,247 above the NSUARB approval limit of $1,000,000. As result, Halifax Water will be requesting NSUARB approval for the project.

The second attached report entitled, "Capital Project Spending Summary – Projects Over $1,000,000, April 1, 2021, to March 31, 2022", identifies all capital projects funded from the Halifax Water Capital Budget that were completed prior to March 31, 2022, that required specific NSUARB approval based on the $1,000,000 threshold. For water projects, the total expenditure for these completed projects totals $2,581,284, with an aggregate net surplus of $935,216. For wastewater projects, the total expenditure for these completed projects totals $12,183,205, with an aggregate net surplus of $1,849,019. For stormwater projects, the total expenditure for these completed projects totals $4,359,131, with an aggregate net deficit of $188,378. The "Projects Over $1,000,000" will be forwarded to the NSUARB as part of our annual financial reporting requirements.

Halifax Water's Capital Funding Policy requires all material funding increases for capital projects to be approved at the time of the funding need. This process promotes fiscal accountability and improves management of available funds. It should be noted that the threshold for NSUARB approval increased from $250,000 to $1,000,000 on October 30, 2019.

The net surpluses will be utilized as a capital funding source in future years, and for funding adjustment to projects as required, subject to the required Halifax Water Board and NSUARB approvals.

ATTACHMENTS

Attachment 1 - Capital Project Spending Summary, April 1, 2021 – March 31, 2022

Attachment 2 - Capital Project Spending over $1,000,000, April 1, 2021 - March 31, 2022

Financial Review By: Digitally signed by Louis de Montbrun Date: 2022.09.16 12:07:34 -03'00'

Louis de Montbrun, CPA, CA
Director, Corporate Services/CFO (902) 490-3685

Capital Project Spending Summary

April 1, 2021 - March 31, 2022

Project Number	Project Name	NSUARB Approval Date	Amount Spent: Cumulative to March 31/22	Project Budget	Over Budget	(Under Budget)
300002318	WATER TRANS CONDITION ASSESSMENT PROG	N/A	$ 11,730.79	$ 50,000.00	$ -	$ (38,269.21)
300002593	VTS ALARM SYSTEM UPGRADE	N/A	$ 6,125.19	$ 7,000.00	$ -	$ (874.81)
300002595	SLIDE GATE ACTUATORS TO LAGOONS	N/A	$ 29,624.39	$ 44,000.00	$ -	$ (14,375.61)
300002610	BLOWER VENT-LAKE MAJOR	N/A	$ 10,985.80	$ 35,000.00	$ -	$ (24,014.20)
300002742	JDK REPLACE CO2 FEEDERS	N/A	$ 636,048.97	$ 657,000.00	$ -	$ (20,951.03)
300002749	M REPLACE RAW WATER PS - DESIGN	N/A	$ -	$ -	$ -	$ -
300002753	LM NEW ALUM AND FLUORIDE TANKS	N/A	$ 633,434.83	$ 611,000.00	$ 22,434.83	$ -
300002808	COSGWELL INFRASTRUCTURE DESIGN REVIEW	N/A	$ 4,063.89	$ 5,000.00	$ -	$ (936.11)
300002817	INFRASTRUCTURE & IT OPS GOVERNANCE	4-Oct-18	$ 1,465,806.51	$ 1,466,500.00	$ -	$ (693.49)
300002835	AT PARK FIRE FLOW/DISTRIBUTION SYS ASSES	N/A	$ 46,996.76	$ 60,000.00	$ -	$ (13,003.24)
300002837	METER REPL-SOUTH PARK ST & BILBY ST	N/A	$ 19,902.45	$ 20,000.00	$ -	$ (97.55)
300002909	CRITICAL VALVE REPLACEMENTS 19/20	N/A	$ 77,980.45	$ 78,000.00	$ -	$ (19.55)
300002926	PROCESS UPGRADES-JDK 19/20	N/A	$ 576,420.95	$ 587,500.00	$ -	$ (11,079.05)
300002927	LOW LIFT STN CRANE RENEWAL-JDK 19/20	N/A	$ 44,365.49	$ 49,000.00	$ -	$ (4,634.51)
300002937	REPLACE FLOC TANK VALVE - JDK	N/A	$ 18,463.17	$ 35,000.00	$ -	$ (16,536.83)
300002948	OVERALL PROCESS & DESIGN STUDY - LM	N/A	$ 580,593.41	$ 567,500.00	$ 13,093.41	$ -
300002953	SURGE ANTICIPATOR VALVES REPL - BENNERY	N/A	$ 135,241.33	$ 191,000.00	$ -	$ (55,758.67)
300003085	JDK WSP-RAW WATER PS HVAC CONTROLS	N/A	$ 156,712.95	$ 170,000.00	$ -	$ (13,287.05)
300003102	DRUMMOND CRT / LEAMAN ST WM REN'L	N/A	$ 853,243.12	$ 718,000.00	$ 135,243.12	$ -
300003118	CRITICAL VALVE REPL PROGRAM-2020/21	N/A	$ -	$ -	$ -	$ -
300003119	CHAIN CONTROL VALVE UPGRADE PROGRAM	N/A	$ 56,511.79	$ 56,600.00	$ -	$ (88.21)
300003136	SOUTH ST CN BRIDGE WM INSTALLATION	N/A	$ 377,383.72	$ 375,000.00	$ 2,383.72	$ -
300003140	SPRING GARDEN RD - MAIN RENEWAL - DESIGN	N/A	$ 723,278.27	$ 671,000.00	$ 52,278.27	$ -
300003147	LAKE MAJOR DAM - SITE IMPROVEMENTS	N/A	$ 187,337.11	$ 450,000.00	$ -	$ (262,662.89)
300003154	JDK - LOW LIFT PUMP REPLACEMENTS	N/A	$ 298,328.26	$ 307,000.00	$ -	$ (8,671.74)
300003155	JDK-REPL WESTINGHOUSE ELECTRICAL PANELS	N/A	$ 21,760.99	$ 40,000.00	$ -	$ (18,239.01)
300003161	LM - PH 1-NEW CLARIFIERS & PRE-TREATMENT	N/A	$ -	$ 1,050,000.00	$ -	$ (1,050,000.00)
300003163	LM - PH 1-RAW WATER PUMP STATION	N/A	$ -	$ 265,000.00	$ -	$ (265,000.00)
300003175	BOMONT EQUIPMENT UPGRADE	N/A	$ 141,768.05	$ 150,000.00	$ -	$ (8,231.95)
300003213	SECURITY PROJECTS	N/A	$ 194,493.07	$ 190,000.00	$ 4,493.07	$ -
300003221	ENGINEERING DRAWING DATABASE	N/A	$ 233,400.24	$ 260,000.00	$ -	$ (26,599.76)
300003222	VULNERABILITY TO CLIMATE CHNG RISK ASSES	N/A	$ -	$ 135,000.00	$ -	$ (135,000.00)
300003245	FARNHAM GATE PRV CHAMBER - CSE RETROFIT	N/A	$ 74,613.95	$ 69,000.00	$ 5,613.95	$ -
300003260	ZINCK AVE PRV CHAMBER UPGRADES	N/A	$ 237,946.22	$ 175,000.00	$ 62,946.22	$ -
300003265	COLES RD WM IP 20/21	N/A	$ 374,547.47	$ 340,000.00	$ 34,547.47	$ -
300003269	LSL REP PROG SERVICE CARD CONSOLID GIS	N/A	$ 75,000.00	$ 75,000.00	$ -	$ -
300003282	ASSET MGMT PROGRAM 20/21	N/A	$ 117,771.27	$ 115,000.00	$ 2,771.27	$ -
300003289	ASHDALE ST 21/22 WM RENEWAL	N/A	$ 729,037.14	$ 800,000.00	$ -	$ (70,962.86)
300003290	CORK STREET 20/21 WM RENEWAL (PRE-LIM)	N/A	$ 876,233.87	$ 627,000.00	$ 249,233.87	$ -
300003292	RENFREW ST 20/21 WM RENEWAL (PRE-LIM)	N/A	$ 776,361.84	$ 800,000.00	$ -	$ (23,638.16)
300003295	HOWLAND AVE 20/21 WM RENEWAL (PRE-LIM)	N/A	$ 570,119.74	$ 621,000.00	$ -	$ (50,880.26)
300003304	CYBER SECURITY PROGRAM	N/A	$ 130,177.98	$ 110,000.00	$ 20,177.98	$ -
300003321	CRITICAL VALVE REPLACEMENT PROGRAM 21/22	N/A	$ -	$ -	$ -	$ -
300003325	CITYWORKS UPGRADE	N/A	$ 24,921.57	$ 200,000.00	$ -	$ (175,078.43)
300003334	WATER DISTR - MAIN RENEWAL PROGRAM 21/22	N/A	$ -	$ -	$ -	$ -
300003336	VALVE RENEWALS 21/22	N/A	$ 163,626.63	$ 125,000.00	$ 38,626.63	$ -
300003337	HYDRANT RENEWALS 21/22	N/A	$ 27,971.70	$ 75,000.00	$ -	$ (47,028.30)
300003338	SERVICE LINE RENEWALS 21/22	N/A	$ 103,340.06	$ 100,000.00	$ 3,340.06	$ -
300003339	LEAD SERVICE LINE RENEWALS 21/22	18-Jun-21	$ 1,115,477.56	$ 1,000,000.00	$ 115,477.56	$ -
300003352	AEROTECH BOOSTER STN - PUMP REPAIRS	N/A	$ 32,813.15	$ 17,000.00	$ 15,813.15	$ -
300003360	DAM SAFETY REVIEW-POCKWOCK DAM-CAPITAL	N/A	$ -	$ -	$ -	$ -
300003361	DAM SAFETY REVIEW-CAPITAL IMPLEM PROG	N/A	$ -	$ -	$ -	$ -
300003367	JDK - UPGRADES TO THE PROCESS WW LAGOONS	N/A	$ -	$ 30,000.00	$ -	$ (30,000.00)
300003368	JDK - ROOF REPLACEMENT -VENT HOUSE	N/A	$ 22,882.91	$ 50,000.00	$ -	$ (27,117.09)
300003369	JDK - SPECTROPHOTOMETER	N/A	$ 12,905.68	$ 16,000.00	$ -	$ (3,094.32)
300003370	JDK - REPL DIESEL GENERATOR DAY TANK	N/A	$ -	$ 9,000.00	$ -	$ (9,000.00)
300003375	JDK - FLUORIDE TANK LINER REPLACEMENT	N/A	$ 107,549.79	$ 79,000.00	$ 28,549.79	$ -
300003379	AEROTECH BOOSTER STN REPLACEMENT-DESIGN	N/A	$ -	$ -	$ -	$ -
300003388	SECURITY UPGRADE PROGRAM 21/22 WATER	N/A	$ 63,412.00	$ 50,000.00	$ 13,412.00	$ -
300003389	MISC EQUIPMENT REPLACEMENT 21/22 (W)	N/A	$ 36,895.88	$ 50,000.00	$ -	$ (13,104.12)
300003392	RIVER ROAD WM RENEWAL IP 21/22	N/A	$ 590,275.47	$ 590,000.00	$ 275.47	$ -
300003407	ANNUAL ASSET MGMT PLAN UPDATE	N/A	$ 10,397.60	$ 10,000.00	$ 397.60	$ -
300003427	GPS UNITS - REPLACEMENT	N/A	$ 34,723.20	$ 40,000.00	$ -	$ (5,276.80)
300003430	METERS 21/22 (NEW AND REPLACEMENT)	N/A	$ 415,486.90	$ 415,000.00	$ 486.90	$ -
300003431	FLEET 21/22 (WATER)	N/A	$ 245,551.28	$ 503,665.28	$ -	$ (258,114.00)
300003441	SPRY AVENUE WATERMAIN RENEWAL	N/A	$ 404,785.57	$ 416,000.00	$ -	$ (11,214.43)
300003442	PORT WALLACE TM - ADDIT'L COSTS	N/A	$ 2,319.16	$ -	$ 2,319.16	$ -
300003449	COBEQUID TRANSMISSION MAIN EMERG REPL	N/A	$ 986,256.86	$ 900,000.00	$ 86,256.86	$ -
300003463	DATA REVIEWER IMPLEMENTATION PROJECT	N/A	$ 12,584.92	$ 15,000.00	$ -	$ (2,415.08)
300003531	WSP Equipment Overhauls	N/A	$ 209,524.77	$ -	$ 209,524.77	$ -

Capital Project Spending Summary

April 1, 2021 - March 31, 2022

ITEM # 9
HRWC BOARD
September 22, 2022
ATTACHMENT 1

Project Number	Project Name	NSUARB Approval Date	Amount Spent: Cumulative to March 31/22	Project Budget	Over Budget	(Under Budget)
300003533	SCADA PI Visualization single sign on	N/A	$ 135,613.30	$ -	$ 135,613.30	$ -
Water Capital Difference			**$ 16,263,127.39**	**$ 17,723,765.28**	**$ 1,255,310.43**	**$ (2,715,948.32)**
					Net Water	***$ (1,460,637.89)***

Capital Project Spending Summary

April 1, 2021 - March 31, 2022

Project Number	Project Name	NSUARB Approval Date	Amount Spent: Cumulative to March 31/22	Project Budget	Over Budget	(Under Budget)
600000714	BLT WWTF OPTIMIZATION 13/14	N/A	$ 75,802.27	$ 25,000.00	$ 50,802.27	$ -
600000851	BLT WWTF UPGRADES 14/15	N/A	$ 98,918.96	$ 5,000.00	$ 93,918.96	$ -
600001325	Bedford West Collection System CCC	N/A	$ 16,329.29	$ 19,800.00	$ -	$ (3,470.71)
600001334	Pumping Station Standard	N/A	$ 205,873.11	$ 230,000.00	$ -	$ (24,126.89)
600001480	KEARNEY LAKE RD WW SEWER UPGRADES/FM EXT	N/A	$ 181,061.51	$ 610,000.00	$ -	$ (428,938.49)
600001672	AUBURN AVE SANITARY SEWER	N/A	$ 25,362.66	$ 25,000.00	$ 362.66	$ -
600001688	ROMANS & FEDERAL AVES - SEWER SEPARATION	25-Apr-18	$ 2,649,461.32	$ 2,600,000.00	$ 49,461.32	$ -
600001698	PS CONTROL PANEL/ELECTRICAL REPLACEMENT	25-Apr-18	$ 1,745,219.56	$ 1,775,000.00	$ -	$ (29,780.44)
600001843	WW SYSTEM TRENCHLESS REHAB PROG 19/20	3-May-19	$ 2,404,206.93	$ 2,349,000.00	$ 55,206.93	$ -
600001848	SEWER RELOCATION AT SOUTH ST CN BRIDGE	N/A	$ 353,875.76	$ 475,000.00	$ -	$ (121,124.24)
600001866	FISH HATCHERY FM-ARV CHAMBER WATER PROOF	N/A	$ 21,703.20	$ 25,000.00	$ -	$ (3,296.80)
600001870	DUFFUS PS CSO-MODIFICATION	N/A	$ -	$ -	$ -	$ -
600002025	PARKLAND DR SEWER RELOCATION	N/A	$ 113,342.86	$ 150,000.00	$ -	$ (36,657.14)
600002036	ODOUR LEVEL OF SERVICE/OPTIMIZATION FLOW	N/A	$ 8,641.78	$ 100,000.00	$ -	$ (91,358.22)
600002039	WW SYSTEM-TRENCHLESS REHAB PROG 2020-21	24-Aug-20	$ 2,465,557.10	$ 3,000,000.00	$ -	$ (534,442.90)
600002063	PUMPING STATION OIL TANK REPLACEMENTS	N/A	$ 59,537.29	$ 60,000.00	$ -	$ (462.71)
600002067	WW PS COMPONENT REPLACEMENT PROG-WEST	N/A	$ -	$ 200,000.00	$ -	$ (200,000.00)
600002068	WW PS Component Replacement Program - East	N/A	$ 141,194.02	$ 200,000.00	$ -	$ (58,805.98)
600002075	PS CONTROL PANEL/ELECTRICAL REPLACEMENT	N/A	$ -	$ -	$ -	$ -
600002077	AUTOPORT PLEASANT ST PS REPLACEMENT	N/A	$ -	$ -	$ -	$ -
600002080	WINDMILL RD PS REPLACEMENT	N/A	$ -	$ -	$ -	$ -
600002083	DUFFUS PS CSO - MODIFICATION	N/A	$ -	$ -	$ -	$ -
600002093	HWWTF - RAW WATER PUMP REFURBISHMENT	N/A	$ 47,221.09	$ 50,000.00	$ -	$ (2,778.91)
600002103	DWWTF-NEW PERFORATED PLATE SCREENS	19-Oct-20	$ 1,508,114.02	$ 1,477,500.00	$ 30,614.02	$ -
600002111	DWWTF-INDUSTRIAL WATER SYSTEM REPL	N/A	$ -	$ -	$ -	$ -
600002119	HCWWTF-INDUSTRIAL WATER SYSTEM REPL	N/A	$ -	$ -	$ -	$ -
600002120	EPWWTF - SECONDARY LAUNDER COVERS	N/A	$ -	$ -	$ -	$ -
600002124	ATWWTF - CENTRIFUGE - REBUILD	N/A	$ 49,574.36	$ 50,000.00	$ -	$ (425.64)
600002125	Timberlea WWTF - Grit System - Chain & Bucket Repl	N/A	$ 36,672.29	$ 50,000.00	$ -	$ (13,327.71)
600002130	BIOSOLIDS PROC FAC - DRYER UPGRADES	N/A	$ 50,156.83	$ 70,000.00	$ -	$ (19,843.17)
600002181	HC PUMPING STN PUMP REPLACEMENTS	N/A	$ -	$ -	$ -	$ -
600002182	HWWTF AUTO COARSE SCREENS-SCRAPER REPL	N/A	$ 73,872.28	$ 30,000.00	$ 43,872.28	$ -
600002203	COLES RD WW IP 20/21	N/A	$ 198,135.87	$ 340,000.00	$ -	$ (141,864.13)
600002221	SHORE DR GRAVITY MAIN REHAB	N/A	$ 6,414.72	$ -	$ 6,414.72	$ -
600002227	AWWTF BACKPULSE BYPASS AIR SCOUR MODS	N/A	$ 30,065.07	$ 80,000.00	$ -	$ (49,934.93)
600002245	DWWTF BACKUP GENERATORS RADIATOR REPLACE	N/A	$ 36,289.03	$ 250,000.00	$ -	$ (213,710.97)
600002247	COMBINED SEWER REPL - CHISHOLM AVE	N/A	$ -	$ 100,000.00	$ -	$ (100,000.00)
600002248	WW TRENCHLESS REHAB PROGRAM 21/22	18-Jun-21	$ 1,410,645.85	$ 2,000,000.00	$ -	$ (589,354.15)
600002250	LADY HAMMOND RD SEWER REPLACEMENT	N/A	$ -	$ 50,000.00	$ -	$ (50,000.00)
600002262	INTEGRATED WW PROJECTS PROGRAM 21/22		$ -	$ 830,724.03	$ -	$ (830,724.03)
600002265	COLES RD SEWER REPLACEMENT	N/A	$ -	$ -	$ -	$ -
600002266	RENFREW ST SEWER REPLACEMENT	N/A	$ 655,128.15	$ 650,000.00	$ 5,128.15	$ -
600002267	HOWLAND DR/HOWLAND CRT SEWER REPL	N/A	$ 285,042.76	$ 284,867.01	$ 175.75	$ -
600002273	WHIMSICAL/DINGLE/CRESC MAINLINE LINING	N/A	$ 530,412.68	$ 500,000.00	$ 30,412.68	$ -
600002274	OLD CLAYTON PK LATERAL LINING-TOP HAT RD	N/A	$ 496,297.77	$ 485,000.00	$ 11,297.77	$ -
600002278	WW PS COMPONENT REPL PROG EAST 21/22	N/A	$ 172,074.73	$ 200,000.00	$ -	$ (27,925.27)
600002279	WW PS COMPONENT REPL PROG CENTRAL 21/22	N/A	$ 279,770.16	$ 250,000.00	$ 29,770.16	$ -
600002286	EMERGENCY WWTF EQUIPMENT REPL 21/22	N/A	$ 165,197.44	$ 127,000.00	$ 38,197.44	$ -
600002287	HWWTF DUCT WORK REPLACEMENT 21/22	N/A	$ 168,348.33	$ 100,000.00	$ 68,348.33	$ -
600002288	HWWTF - RAW WATER PUMP REFURBISHMENT	N/A	$ 85,897.03	$ 92,983.19	$ -	$ (7,086.16)
600002290	HWWTF - DENSADEGS-MIXER GEARBOX REBUILDS	N/A	$ 27,016.81	$ 27,016.81	$ -	$ -
600002293	HWWTF - NEW TRUCK BAY DOOR	N/A	$ 42,658.19	$ 30,000.00	$ 12,658.19	$ -
600002296	HWWTF-DENSADEG INLET GATE ACTUATORS	N/A	$ 69,054.85	$ 75,000.00	$ -	$ (5,945.15)
600002299	DWWTF - DUCT WORK REPLACEMENT 21/22	N/A	$ 124,100.34	$ 100,000.00	$ 24,100.34	$ -
600002300	DWWTF - ROOF REPLACEMENT	N/A	$ 698,434.15	$ 720,000.00	$ -	$ (21,565.85)
600002304	DWWTF-SLUDGE EXTRACTION SOLIDS ANALYZERS	N/A	$ 140,923.03	$ 150,000.00	$ -	$ (9,076.97)
600002305	DWWTF - NEW DENSADEG DRAIN LINES	N/A	$ 26,466.63	$ 85,000.00	$ -	$ (58,533.37)
600002306	HCWWTF - DUCT WORK REPL PROGRAM 21/22	N/A	$ -	$ 50,000.00	$ -	$ (50,000.00)
600002307	HCWWTF-DENSADEGS-LAMELLA TUBE SETTLER	N/A	$ -	$ -	$ -	$ -
600002310	HCWWTF - BUILDING SEALING	N/A	$ 42,564.19	$ 100,000.00	$ -	$ (57,435.81)
600002313	HCWWTF-EPOXY SEAL TRUCK & POLY BAY FLOOR	N/A	$ 28,601.00	$ 50,000.00	$ -	$ (21,399.00)
600002314	HCWWTF-NEW HOIST OVER SLUDGE TANK MIXERS	N/A	$ 16,805.22	$ 15,000.00	$ 1,805.22	$ -
600002315	HCWWTF - UV HOIST UPGRADES	N/A	$ 38,651.54	$ 25,000.00	$ 13,651.54	$ -
600002316	HCWWTF - DENSADEG INLET GATE ACTUATORS	N/A	$ 25,268.32	$ 75,000.00	$ -	$ (49,731.68)
600002317	HCWWTF-DENSADEG GATE COVER MODIFICATIONS	N/A	$ 17,091.96	$ 10,000.00	$ 7,091.96	$ -
600002318	MCWWTF - ADMIN BLDG ROOF REPLACEMENT	N/A	$ 62,910.53	$ 75,000.00	$ -	$ (12,089.47)
600002319	MCWWTF-CARBON SCRUBBERS-NEW CARBON MEDIA	N/A	$ -	$ 125,000.00	$ -	$ (125,000.00)
600002320	MCWWTF-HEADWORKS-COMPACTOR CONVEYOR SPAR	N/A	$ 49,956.52	$ 50,000.00	$ -	$ (43.48)
600002321	MCWWTF-DEWATERING-CENTRIFUGE REBUILD PRO	N/A	$ 133,890.81	$ 155,000.00	$ -	$ (21,109.19)
600002322	MCWWTF-SOUTH RAS PUMP RELOCATION	N/A	$ -	$ 100,000.00	$ -	$ (100,000.00)
600002324	EPWWTF-PAVING BEHIND SECONDARY CLARIFIER	N/A	$ 24,274.03	$ 30,000.00	$ -	$ (5,725.97)
600002325	ATWWTF - ROAD REPAIRS	N/A	$ 18,221.89	$ 20,000.00	$ -	$ (1,778.11)

Capital Project Spending Summary

April 1, 2021 - March 31, 2022

ITEM # 9
HRWC BOARD
September 22, 2022
ATTACHMENT 1

Project Number	Project Name	NSUARB Approval Date	Amount Spent: Cumulative to March 31/22	Project Budget	Over Budget	(Under Budget)
600002328	SPRINGFIELD LK WWTF - NEW OVERFLOW SYS	N/A	$ -	$ 25,000.00	$ -	$ (25,000.00)
600002331	BPF-SERPENTIX CONVEYOR REFURBISHMENT	N/A	$ -	$ 30,000.00	$ -	$ (30,000.00)
600002332	BPF-OLD LOADER ELECTRICAL UPGRADES	N/A	$ -	$ 25,000.00	$ -	$ (25,000.00)
600002339	I&I REDUC (SIR) PROG FLOW METERS/EQUIP	N/A	$ -	$ 25,000.00	$ -	$ (25,000.00)
600002341	HCWWTF OUTFALL REPAIRS	N/A	$ 30,866.36	$ 60,000.00	$ -	$ (29,133.64)
600002343	WW SEWER CONDITION ASSESSMENT	N/A	$ 245,990.63	$ 250,000.00	$ -	$ (4,009.37)
600002345	CSO REPORTING ENHANCEMENT	N/A	$ 15,000.00	$ 40,000.00	$ -	$ (25,000.00)
600002348	FLEET 21/22 (WW)	N/A	$ 451,430.99	$ 536,254.13	$ -	$ (84,823.14)
600002350	LANGLEY AVENUE WW IP	N/A	$ 132,702.00	$ -	$ 132,702.00	$ -
600002351	SPRINGFIELD LAKE WWTF AERATION SYS UPG	N/A	$ 27,931.13	$ 25,000.00	$ 2,931.13	$ -
600002354	DWWTF SLUDGE STORAGE TANK MIXING UPG	N/A	$ 436,216.27	$ 395,000.00	$ 41,216.27	$ -
600002356	MCWWTF - CLARIFIERS - SCUM TROUGHS	N/A	$ 57,572.99	$ 30,000.00	$ 27,572.99	$ -
600002365	MOUNT EDWARD RD WW IP 21/22	N/A	$ 68,017.41	$ 68,000.00	$ 17.41	$ -
600002366	ASHDALE / MAPLE ST WW IP 21/22	N/A	$ 165,827.28	$ 164,868.14	$ 959.14	$ -
600002368	SPRY AVE WW IP 21/22	N/A	$ 88,094.01	$ -	$ 88,094.01	$ -
600002370	BLINK BON/ FLINN / PATRICIA WW IP 21/22	N/A	$ 26,687.91	$ 26,540.82	$ 147.09	$ -
600002374	EPWWTF - ACCUSINE MODIFICATIONS	N/A	$ 11,631.90	$ 28,000.00	$ -	$ (16,368.10)
600002375	COSTS RE SALE/DECOMMIS OF MANN ST PROP	N/A	$ 5,488.85	$ 45,000.00	$ -	$ (39,511.15)
600002401	DARTMOUTH WWTF - DENSADEG INLET GATE ACT	N/A	$ 35,914.99	$ 75,000.00	$ -	$ (39,085.01)
600002402	DARTMOUTH WWTF - RAW WATER PUMP VFD REPL	N/A	$ 21,084.73	$ 30,000.00	$ -	$ (8,915.27)
600002404	AEROTECH BPF - BIOFILTER FAN - EMERG IMP	N/A	$ 110,705.90	$ 125,000.00	$ -	$ (14,294.10)
600002421	HALIFAX WWTF - EMERG VFD REPLACEMENT	N/A	$ 97,564.15	$ 130,000.00	$ -	$ (32,435.85)
Wastewater Capital Difference			**$ 20,467,035.59**	**$ 24,117,554.13**	**$ 866,930.73**	**$ (4,517,449.27)**
					Net Wastewater	***$ (3,650,518.54)***

Capital Project Spending Summary

April 1, 2021 - March 31, 2022

Project Number	Project Name	NSUARB Approval Date	Amount Spent: Cumulative to March 31/22	Project Budget	Over Budget	(Under Budget)
700000566	CLEMENT ST BERM REHAB SW CONTROL	N/A	$ 131,891.80	$ 100,000.00	$ 31,891.80	$ -
700001320	CORONET AVE DR CULVERT REPL PROJECT	N/A	$ 614,151.75	$ 652,000.00	$ -	$ (37,848.25)
700001434	THISTLE ST STORM DRAINAGE SYS UPGRADE	N/A	$ 933,478.41	$ 833,000.00	$ 100,478.41	$ -
700001441	CULVERT REPL-COLE HARBOUR RD, near 1560	N/A	$ 1,063,247.05	$ 820,000.00	$ 243,247.05	$ -
700001447	ELLENVALE RUN RETAINING WALL - PH 4	16-Oct-20	$ 2,122,867.65	$ 2,273,000.00	$ -	$ (150,132.35)
700001493	PRINCE ALBERT RD SW IP 20/21	N/A	$ 254,761.93	$ 285,000.00	$ -	$ (30,238.07)
700001541	KILLARNEY DRIVE SW IP	N/A	$ 86,181.13	$ 85,108.02	$ 1,073.11	$ -
700001543	INTEGRATED SW PROJECTS 21/22	N/A	$ -	$ 456,507.10	$ -	$ (456,507.10)
700001544	PRINCE ALBERT RD INTEGRATED SW SYS REN'L	N/A	$ -	$ 375,000.00	$ -	$ (375,000.00)
700001554	LADY HAMMOND RD STORM REPLACEMENT	N/A	$ -	$ 40,000.00	$ -	$ (40,000.00)
700001555	NATIONAL DISASTER MITIGATION PROGRAM	N/A	$ -	$ 50,000.00	$ -	$ (50,000.00)
700001574	18 MELVILLE AVE, HALIFAX	N/A	$ 26,683.73	$ 28,000.00	$ -	$ (1,316.27)
700001575	3 MELVILLE AVE, HALIFAX	N/A	$ 27,056.83	$ 28,000.00	$ -	$ (943.17)
700001576	32 MELVILLE AVE, HALIFAX	N/A	$ 26,688.24	$ 28,000.00	$ -	$ (1,311.76)
700001577	LOCKVIEW RD, near civic 450	N/A	$ -	$ 75,000.00	$ -	$ (75,000.00)
700001578	KINCLAVEN ST	N/A	$ -	$ 75,000.00	$ -	$ (75,000.00)
700001582	ELLENVALE RUN RETAINING WALL PH 5	12-May-21	$ 2,236,263.77	$ 2,155,000.00	$ 81,263.77	$ -
700001587	STORM SEWER CONDITION ASSESSMENT 21/22	N/A	$ 107,556.18	$ 110,000.00	$ -	$ (2,443.82)
700001589	FLEET UPGRADE PROGRAM 21/22 SW	N/A	$ -	$ 82,000.00	$ -	$ (82,000.00)
700001590	DRIFTWOOD CRESCENT SW IP	N/A	$ 48,365.54	$ 49,000.00	$ -	$ (634.46)
700001604	RENFREW ST SW IP 21/22	N/A	$ -	$ 5,300.00	$ -	$ (5,300.00)
700001606	LANGLEY AVE SW IP 21/22	N/A	$ 12,411.96	$ 13,000.00	$ -	$ (588.04)
700001607	SMITH AVE SW IP 21/22	N/A	$ -	$ 4,200.00	$ -	$ (4,200.00)
700001609	ASHDALE/MAPLE ST SW IP 21/22	N/A	$ 147,303.01	$ 146,642.49	$ 660.52	$ -
700001611	BLINK BON/ FLINN / PATRICIA SW IP 21/22	N/A	$ 29,722.15	$ 28,911.18	$ 810.97	$ -
700001612	CORK ST SW IP 21/22	N/A	$ 18,738.83	$ 19,000.00	$ -	$ (261.17)
700001616	COLES RD SW IP 21/22	N/A	$ 23,742.73	$ 23,469.70	$ 273.03	$ -
700001617	HOWLAND DR / COURT SW IP 21/22	N/A	$ 143,929.02	$ 143,861.51	$ 67.51	$ -
700001660	CROSS ROAD CULVERT RENEWALS - BROOK ST	N/A	$ 190,894.65	$ 206,000.00	$ -	$ (15,105.35)
					$ -	$ -
Stormwater Capital Difference			**$ 8,245,936.36**	**$ 9,190,000.00**	**$ 459,766.17**	**$ (1,403,829.81)**
					Net Stormwater	***$ (944,063.64)***
Net Difference			**$ 44,976,099.34**	**$ 51,031,319.41**	**$ 2,582,007.33**	**$ (8,637,227.40)**
					Net Total	***$ (6,055,220.07)***

Capital Project Spending Summary

April 1, 2021 - March 31, 2022

ITEM # 9
HRWC BOARD
September 22, 2022
ATTACHMENT 2

Tab #	Project Number	Project Name	NSUARB Approval Date	Amount Spent: Cumulative to March 31/22	Total Project Budget	Project Adjustments	Revised Total Project Budget	Over Budget	(Under Budget)
1	300002817	INFRASTRUCTURE & IT OPS GOVERNANCE	4-Oct-18	$ 1,465,806.51	$ 1,266,500.00	$ 200,000.00	$ 1,466,500.00	$ -	$ (693.49)
2	300003161	LM - PH 1-NEW CLARIFIERS & PRE-TREATMENT	N/A	$ -	$ 1,770,000.00	$ (720,000.00)	$ 1,050,000.00	$ -	$ (1,050,000.00)
3	300003334	WATER DISTR - MAIN RENEWAL PROGRAM 21/22	*	$ -	$ 3,800,000.00	$ (3,800,000.00)	$ -	$ -	$ -
4	300003339	LEAD SERVICE LINE RENEWALS 21/22	18-Jun-21	$ 1,115,477.56	$ 1,000,000.00	$ -	$ 1,000,000.00	$ 115,477.56	$ -
		Water Capital Difference		**$ 2,581,284.07**	**$ 7,836,500.00**	**$ (4,320,000.00)**	**$ 3,516,500.00**	**$ 115,477.56**	**$ (1,050,693.49)**
							Net Water	***$***	***(935,215.93)***
5	600001688	ROMANS & FEDERAL AVES - SEWER SEPARATION	25-Apr-18	$ 2,649,461.32	$ 2,600,000.00	$ -	$ 2,600,000.00	$ 49,461.32	$ -
6	600001698	PS CONTROL PANEL/ELECTRICAL REPLACEMENT	25-Apr-18	$ 1,745,219.56	$ 1,050,000.00	$ 725,000.00	$ 1,775,000.00	$ -	$ (29,780.44)
7	600001843	WW SYSTEM TRENCHLESS REHAB PROG 19/20	3-May-19	$ 2,404,206.93	$ 2,870,000.00	$ (521,000.00)	$ 2,349,000.00	$ 55,206.93	$ -
8	600002039	WW SYSTEM-TRENCHLESS REHAB PROG 2020-21	24-Aug-20	$ 2,465,557.10	$ 3,000,000.00		$ 3,000,000.00	$ -	$ (534,442.90)
9	600002103	DWWTF-NEW PERFORATED PLATE SCREENS	19-Oct-20	$ 1,508,114.02	$ 1,800,000.00	$ (322,500.00)	$ 1,477,500.00	$ 30,614.02	$ -
10	600002248	WW TRENCHLESS REHAB PROGRAM 21/22	18-Jun-21	$ 1,410,645.85	$ 2,000,000.00		$ 2,000,000.00	$ -	$ (589,354.15)
11	600002262	INTEGRATED WW PROJECTS PROGRAM 21/22	N/A	$ -	$ 1,200,000.00	$ (369,275.97)	$ 830,724.03	$ -	$ (830,724.03)
		Wastewater Capital Difference		**$ 12,183,204.78**	**$ 14,520,000.00**	**$ (487,775.97)**	**$ 14,032,224.03**	**$ 135,282.27**	**$ (1,984,301.52)**
							Net Wastewater	***$***	***(1,849,019.25)***
12	700001447	ELLENVALE RUN RETAINING WALL - PH 4	16-Oct-20	$ 2,122,867.65	$ 1,900,000.00	$ 373,000.00	$ 2,273,000.00	$ -	$ (150,132.35)
13	700001582	ELLENVALE RUN RETAINING WALL PH 5	12-May-21	$ 2,236,263.77	$ 4,025,000.00	$ (1,870,000.00)	$ 2,155,000.00	$ 81,263.77	$ -
14	700001441	CULVERT REPL-COLE HARBOUR RD, near 1560	N/A	$ 1,063,247.05	$ 700,000.00	$ 120,000.00	$ 820,000.00	$ 243,247.05	$ -
		Stormwater Capital Difference		**$ 4,359,131.42**	**$ 7,125,000.00**	**$ (1,866,275.97)**	**$ 5,258,724.03**	**$ 324,510.82**	**$ (150,132.35)**
							Net Stormwater	***$***	***174,378.47***

* The 2021/22 Water Distribution Main Renewal Program budget was reallocated to individual projects, none of which required NSUARB approval due to their budgets not exceeding one million.

TO: Colleen Rollings, P.Eng., PMP., Chair, and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: Digitally signed by Susheel Arora Date: 2022.09.14 10:27:58 -03'00'

Susheel Arora, M.A.Sc., P.Eng. Director, Operations

Kenda Signature Digitally signed by Kenda Signature Date: 2022.09.14 12:00:19 -03'00'

Kenda MacKenzie, P.Eng. Director, Regulatory Services

APPROVED: Digitally signed by Cathie O'Toole Date: 2022.09.15 19:29:11 -03'00'

Cathie O'Toole, MBA, FCPA, FCGA, ICD.D, General Manager

SUBJECT: **Operational Performance Information Report**

INFORMATION REPORT

ORIGIN:

Regular update.

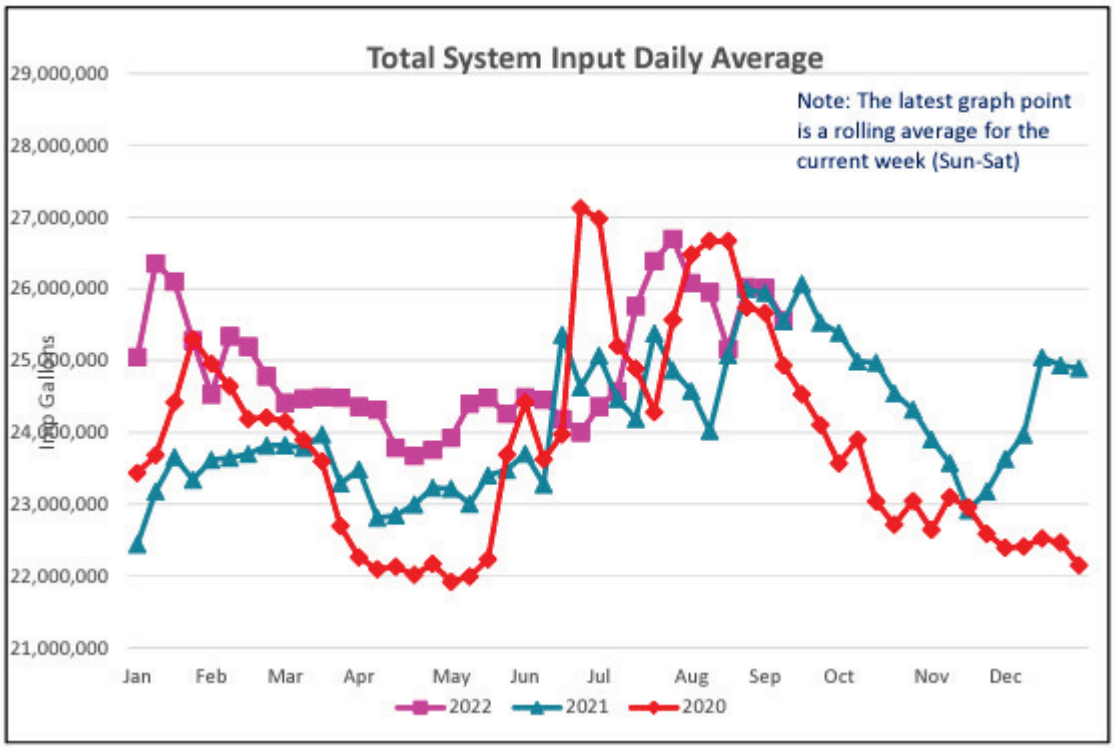
This report provides a high level overview of operational performance for the utility. The safety statistics results are first, followed by indicators and statistics for water and wastewater.

SAFETY STATISTICS – April 1, 2022 to June 30, 2022 (unless stated otherwise)

Organizational Metrics	Results	CBS 2022/23 Target
Lost Time Incident Reporting (Lost Time Cases x 200,000 / Total Employee Hours Worked)	0.94	3.5
Safe Driving (Number of traffic accidents per 1,000,000 km driven – reported quarterly)	8	4
Workplace inspections conducted	48	Score
Safety Talks conducted (reported at the end of each quarter)	20%	80-90%
Near misses reported	21	N/A
Employees on accommodation or gradual return to work	13	N/A
WCB claims	4	N/A
Work refusals	0	N/A
Incidents with written compliance orders	0	0-2
Employees trained or recertified before due date	423*	80-90%
• Courses Taken	879*	

* Percentage Data generated at year end due to variants in system data (ie. multiple certifications required for one employee)

AVERAGE DAILY WATER PRODUCTION



Regional Water Main Break/Leak Data		
Year	**Total Breaks/Leaks**	**Current 12 Month Rolling Total** ***(up to August 2022)***
2021/22	232	**226**
2020/21	179	
2019/20	191	
2018/19	226	
2017/18	206	
Total	**1034**	
Yr. Avg.	**206.8**	

Water Accountability
Losses per Service Connection/Day (International Water Association Standard)
Period Ending June 30, 2022
Real Losses: 225 litres CBS Target: 160 - 170

Water Safety Plan Objectives 2022-2023 Q1				
Objective	Total Sites	% Sites Achieving Target	All Sites: 90th Percentile < 15 µg/L	CBSC Awarded Points
Disinfection	63	100%	---	20
Total Trihalomethanes	25	72%	---	0
Haloacetic Acids	21	100%	---	20
Particle Removal	5	100%	---	20
Corrosion Control	101	---	3.4	20
Summary Total				80

Score: 80/100

Bacteriological Results (% Samples absent of Total Coliforms) 99.88%

In this report each facility is assessed using monthly or quarterly averages, depending on the averaging period specified in its Approval to Operate.

Wastewater Treatment Facility Monthly Compliance Summary

Wastewater Treatment Facility	April-22								May-22								June-22								Toxicity
	$CBOD_5$ (mg/L)		TSS (mg/L)		E. coli (counts/ 100mL)		pH		$CBOD_5$ (mg/L)		TSS (mg/L)		E. coli (counts/ 100mL)		pH		$CBOD_5$ (mg/L)		TSS (mg/L)		E. coli (counts/ 100mL)		pH		
	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	
Halifax	50	32	40	18	5000	0	6-9	6.7	50	42	40	19	5000	1,426	6-9	7.0	50	37	40	17	5000	2,205	6-9	6.9	Not acutely lethal
Dartmouth	50	41	40	27	5000	0	6-9	6.7	50	49	40	16	5000	38	6-9	6.6	50	45	40	22	5000	21	6-9	6.7	Not acutely lethal
Herring Cove	50	19	40	9	5000	0	6-9	6.7	50	31	40	24	5000	740	6-9	7.0	50	21	40	14	5000	31	6-9	7.1	Not acutely lethal
Eastern Passage	25	7	25	7	200	0	6-9	7.1	25	7	25	11	200	61	6-9	7.0	25	5	25	8	200	16	6-9	7.0	Not acutely lethal
Mill Cove	25	18	25	19	200	15	6-9	6.6	25	15	25	14	200	23	6-9	6.5	25	11	25	17	200	10	6-9	6.7	Not acutely lethal

Wastewater Treatment Facility Quarterly Compliance Summary
Q2 - April, May, June 2022

Wastewater Treatment Facility	$CBOD_5$ (mg/L)		TSS (mg/L)		E. coli (counts/ 100mL)		pH		Ammonia (mg/L)		Phosphorous (mg/L)		TRC (mg/L)		Dissolved Oxygen (mg/L)		Toxicity
	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	NSE Limit	Avg.	
Springfield	20	5	20	6	200	19	6-9	7.0	-		-		-		-		-
Frame	20	4	20	1	200	10	6-9	6.7	-		-		-		-		-
Middle Musq.	20	7	20	15	200	67	6-9	7.2	-		-		-		-		-
Uplands	20	6	20	12	200	10	6-9	7.1	-		-		-		-		-
Aerotech	5	2	5	1	200	10	6-9	6.9	5.7 W 1.2 S	0.1	0.13	0.07	-		6.5	7.7	Not acutely lethal
North Preston	10	7	10	3	200	10	6-9	6.6	3	0.3	1.5	0.5	-		-		-
Lockview	20	6	20	12	200	10	6.5-9	6.8	8.0 S	6.3	1.2 S	0.4	-		-		-
Steeves (Wellington)	20	3	20	2	200	10	6.5-9	7.2	14.4 S	0.1	1.0 S	0.1	-		-		-
BLT	15	5	20	19	200	12	6-9	7.0	5 W 3 S	2	3 W 1 S	1	0.02 *	0.11	-		Not acutely lethal

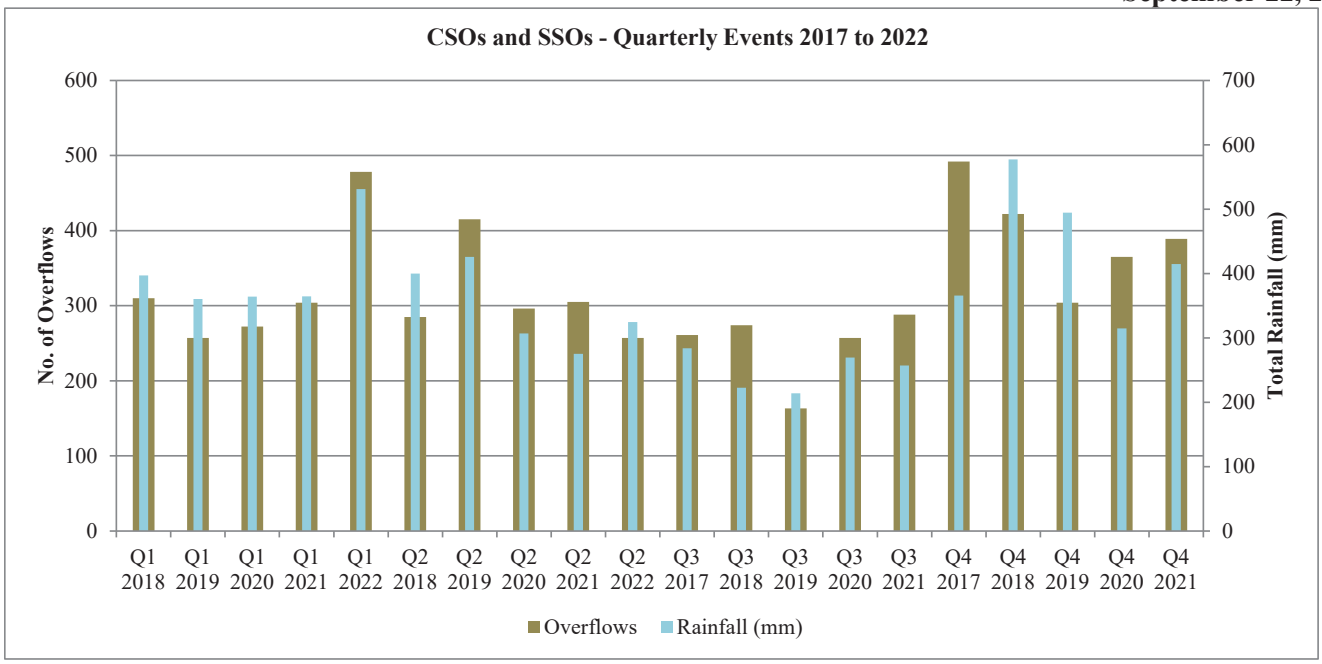
NOTES & ACRONYMS:
$CBOD_5$ - Carbonaceous 5-Day Biochemical Oxygen Demand
TSS - Total Suspended Solids
* TRC - Total Residual Chlorine - Maxxam can only measure 0.10 mg/L residual; results of 0.1 mg/L are compliant
BDL - Below Detection Limit
W / S - Winter / Summer compliance limits
NSECC requires monthly averages be less than the NSECC Compliance Limit for each parameter at Dartmouth, E'n Passage, Halifax, Herring Cove, Mill Cove
NSECC requires quarterly averages be less than the NSECC Compliance Limit for each parameter at Aerotech, Lockview, Middle Musquodoboit, Frame, BLT, Uplands and Springfield Lake
NSECC requires annual averages be less than the NSECC Compliance Limit for each parameter at North Preston and Steeves

LEGEND
NSECC Compliant
NSECC Non-Compliant

SEASONAL RULES:

BLT NH_3: shall not exceed 3 mg/L between May 1 and October 30; otherwise, shall not exceed 5 mg/L
BLT P (total): shall not exceed 1 mg/L between May 1 and October 30; otherwise, shall not exceed 3 mg/L
Aerotech NH_3: shall not exceed 1.2 mg/L between May 1 and October 30; otherwise, shall not exceed 5.7 mg/L
Lockview NH_3: shall not exceed 8 mg/L between May 1 and October 30
Lockview P (total): shall not exceed 1.2 mg/L between May 1 and October 30
Wellington NH_3: shall not exceed 14.4 mg/L between May 1 and October 30
Wellington P (total): shall not exceed 1.0 mg/L between May 1 and October 30

Elevated TRC at BLT was a result of a malfunction in the lime dosing equipment and the sample taken for TRC was impacted by the additional lime.



NOTES & ACRONYMS: CSO - Combined Sewer Overflow SSO - Sanitary Sewer Overflow

Rainfall data is from Halifax Water's rain gauge at the Halifax WWTF.

There were 17 overflows in Q2 on days when there was no recorded rainfall, as follows:

1. April 13: The CSOs at Lyle St CSO and Chain Rock PS & CSO were due to blockages caused by debris.
2. May 2: The CSOs at Chain Rock PS & CSO and Pier A PS & CSO were due to a shutdown of pumps at Pier A PS & CSO to facilitate a planned forcemain repair.
3. May 7: The CSO at Cuisack St CSO was due to a blockage caused by debris.
4. May 26: The CSO at Upper Water St CSO was due to a blockage caused by debris.
5. May 29: The CSOs at Upper Water St CSO were due to blockages caused by debris. The SSO at Mill Cove Surge Tank was due rain on the previous day.
6. May 30: The CSOs at Upper Water St CSO were due to blockages caused by debris. The SSO at Herring Cove PS was due to a SCADA communication failure.
7. June 3: The CSO at Lyle St CSO was due to a blockage caused by debris.
8. June 11: The CSOs at Duffus St PS were due to pump restriction by the HWWTF.
9. June 19: The CSO at Old Ferry Road PS & CSO was due to a blockage caused by debris.

ITEM # 2-I
Halifax Water Board
September 22, 2022

Halifax Water Compliance Statement
Quarterly Certification

For the period of April 1, 2022 to June 30, 2022

We hereby certify that the Halifax Regional Water Commission is current in making all statutory remittances for payroll taxes, Harmonized Sales Tax and other remittances as required under the laws of the Government of Canada and its Provinces (the significant remittances are noted in the appendix) and that all significant legal claims have been disclosed.

Cathie O'Toole, MBA, FCPA, FCGA, ICD.D
General Manager

Louis de Montbrun, CPA, CA
Director, Corporate Services/CFO and Corporate Treasurer

Heidi Schedler
General Counsel and Corporate Secretary

Dated:

September 15, 2022

Halifax Water Compliance Statement
Quarterly Certification
Appendix I

Significant statutory remittances for payroll taxes, Harmonized Sales Tax and other remittances as required under the laws of the Government of Canada and its Provinces for the Halifax Regional Water Commission.

Statutory Payroll Remittances

- **Canada Revenue Agency (CRA) -** Statutory employee payroll deductions and employer related contributions for:
  - Income Tax
  - Canada Pension Plan (CPP)
  - Employment Insurance (EI)

- **Workers' Compensation Board of Nova Scotia (WCB)** – Employer remittance based on employee payroll

Other Payroll Remittances

- **Northern Trust -** Employee payroll deductions and employer contributions to Halifax Water and HRM defined benefit pension plans

- **Industrial Alliance** – employer and employee contributions to defined contribution pension plan

- **Medavie Blue Cross & SSQ** – employee payroll deductions and employer related contributions for Health & dental, LTD, and Life benefit coverage, and payroll deductions for AD&D

- **Canadian Union of Public Employees** – Employee payroll deductions of union dues
  - CUPE Local 227
  - CUPE Local 1431

HST and Other Remittances

- **Canada Revenue Agency (CRA) -** Harmonized Sales Tax (HST) is filed online and a refund issued as HST paid is greater than HST collected

- **Workers' Compensation Board of Nova Scotia (WCB)** – Remittance for sub-contractors

ITEM # 2-I
HRWC BOARD
September 22, 2022

Quarterly Remittance Certification

Appendix II

Period: **April to June** **2022**

Vendor	Vendor #	Items Remitted	Total remitted	Exceptions
Statutory Payroll Remittances				
CRA	174	Tax, CPP, EI, WCB	$3,842,605.63	
Other Payroll				
Northern Trust	1215	HW Pension Plan	$ 2,082,652.25	
Northern Trust	1216	HRM Pension Plan	$ 261,611.52	
Manulife Financial	1171	Bedford Pension Plan	$ 2,144.66	
Industrial Alliance	2971	DCPP	$ -	
Medavie Blue Cross	340, 3101	Health, Dental, Life, LTD	$ 896,151.57	
SSQ Insurance	429	AD&D	$ 5,418.71	
CUPE	160	Union Dues 1431	$ 45,661.62	
CUPE	3517	Union Dues 227	$ 79,539.78	
HST and Other				
CRA	N/A	HST (refunds)	$ (2,408,410.23)	
Receiver General	210	WCB subcontractors	$ 127.26	

Other payroll items remitted in accordance with stated requirements:

United Way, Credit Union, Garnishments (WCB, CRA, Family Court, Sherriff's Office), Water for People, Salvation Army, Racially Visible Caucus

Exceptions, errors and/or late remittances

ITEM # 3-I
Halifax Water Board
September 22, 2022

TO: Colleen Rollings, P. Eng., PMP, Chair, and Members of the Halifax Regional Water Commission Board as Trustees of the Halifax Regional Water Commission Employees' Pension Plan

SUBMITTED BY: Digitally signed by Louis de Montbrun Date: 2022.09.16 09:52:16 -03'00'

Louis de Montbrun, CPA, CA,
Director, Corporate Services / CFO

APPROVED: Digitally signed by Cathie O'Toole Date: 2022.09.16 09:28:23 -03'00'

Cathie O'Toole, MBA, FCPA, FCGA, ICD.D
General Manager

DATE: September 9, 2022

SUBJECT: **Halifax Regional Water Commission Employees' Pension Plan Financial Report Second Quarter, 2022**

ORIGIN

Financial reporting for the Halifax Regional Water Commission Employees' Pension Plan (the "Plan").

BACKGROUND

The Board is required to review the periodic (quarterly) financial results of the Plan throughout the year.

DISCUSSION

The attached Statement of changes in net assets available for benefits (Appendix A) outlines the annual budget for the Plan and actual financial performance for the Second Quarter (January 1 to June 30, 2022). Favourable or unfavourable variances reported compare actual results to pro-rated budget amounts, for the six (6) month period ending June 30, 2022. Year-end audited results for 2020 and 2021 are shown for comparative purposes.

As shown on the Statement of changes in net assets available for benefits, net assets available for benefits have decreased by $10.3 million for the six (6) month period ending June 30, 2022. The budget for the period forecasted an increase in net assets available of $8.1 million. Actual results for the period is a decrease in net assets available for benefits of $10.3 million as compared to the pro-rated budget of an $8.1 million increase, an unfavourable variance of $18.4 million.

The annual budget forecasted revenue of $15.2 million. Revenue for the period was a loss of $11.4 million, which when compared to the pro-rated revenue budget of $7.6 million results in an unfavourable variance of $19.0 million. Performance of the HRM Master Trust directly drives the revenue figures reported and change in the fair value of investment assets tends to be more volatile compared to contributions and expenses of the Plan. This variance is attributed directly to a decrease in the fair value of investment assets of $12.7 million. Investment income for the period was $1.5 million compared to a pro-rated budget of $1.7 million, resulting in an unfavourable variance of $0.2 million or -12%.

Contributions of $3.7 million are over the pro-rated budget of $3.5 million by $0.2 million. This results in a favourable variance of 6% and is mostly due to a transfer in from another pension plan.

Expenses of $2.7 million for the period are lower than the pro-rated budget of $3.0 million by $0.3 million or -11%. The main contributor to this variance is termination payments which are lower than the pro-rated budget estimate by $0.3 million. The remainder of the variance is due to the timing of expenses. Benefit payments for the period are comparable to budget.

SERVICE STANDARDS

Tracking of Regulatory Filing Requirements, Administrative Reporting Requirements and Service Standards for actuarial calculation requests is ongoing. The reports for Regulatory Filing Requirements and Administrative Reporting Requirements are attached as Appendix B and Appendix C respectively, and document administrative compliance within the various levels of reporting for the period.

Service Standard results for the Second Quarter (January 1st to June 30th, 2022) have been attached as Appendix D. The primary purpose of the service standard report is to report on the administrative compliance with the Pension Benefits Act of Nova Scotia (the "Act") respecting the timing of statements or notifications required under the Act, such as:

- Retirement statement to member;
- Notification of options to retiring member;
- Death benefits statement; and
- Statement on termination

A secondary purpose of the report is to provide performance reporting respecting the Plan's actuaries, for required deliverables based on pre-determined standards. These standards are internal in nature, and mutually agreed upon by the actuary and Halifax Water.

Second Quarter results reported in Appendix D show, out of 3 requests submitted for retirement estimates (with options), the retirement package was provided to the member within the prescribed timelines under the Act, 60 days prior to the Member's intended retirement date. There were 7 terminations during the period, with the terminated employee provided a termination package (with options) within the prescribed timelines under the Act, within 60 days after their termination date.

Performance of the actuary, also reported in Appendix D, shows out of 10 requests in total, the actuary met the pre-determined standard in 3 instances, with average response times for retirement and termination calculation estimates of 15 days and 12 days respectively. The Manager of Client Administration at Eckler contacted our office directly to advise of expected delays with some retirement and termination calculation requests. The advance notice was provided as the team dedicated to our account was focused on preparing all calculations, analysis and reports for the Actuarial Valuation as at January 1, 2022. The response time of the actuaries is continuously monitored to ensure required service standards are maintained.

ATTACHMENTS

APPENDIX A – Financial Report:
Statement of changes in net assets available for benefits, for the six (6) month period ended June 30, 2022

APPENDIX B – Regulatory Filing Requirements – Q2 2022

APPENDIX C – Administrative Reporting Requirements – Q2 2022

APPENDIX D – Service Standards Report – Q2 2022

Report Prepared by: Heather Britten

Digitally signed by Heather Britten
Date: 2022.09.15 14:04:55 -03'00'

Heather Britten, Quality Assurance Officer (902) 201-6132

Halifax Regional Water Commission Employees' Pension Plan
Statement of changes in net assets available for benefits
For the six (6) month period ended June 30, 2022
Benchmark *50%*

	June 30, 2022						
			Prorated	Actual versus Budget		Actual	Actual
	2022		Budget	Change		(Audited)	(Audited)
	Budget	**Actual**	50%	$	%	2021	2020
Revenue							
Net investment income:							
Total investment income	**$3,400,000**	$1,494,168	$1,700,000	($205,832)	(12%)	$3,657,805	$3,763,614
Investment manager fees	**($200,000)**	($144,569)	($100,000)	($44,569)	45%	($301,176)	($194,968)
Increase (decrease) in the fair value of investment assets	**$12,000,000**	($12,708,434)	$6,000,000	($18,708,434)	(312%)	$15,414,684	$8,630,589
	$15,200,000	**($11,358,836)**	$7,600,000	($18,958,836)	**(249%)**	$18,771,312	$12,199,235
Contributions							
Participants:							
Current service (including Additional Voluntary Contributions)	**$3,569,500**	$1,805,832	$1,784,750	$21,082	1%	$3,391,324	$3,310,113
Reciprocal Transfer	**$0**	$166,938	$0	$166,938		$0	$0
Sponsors:							
Current service	**$3,472,000**	$1,757,110	$1,736,000	$21,110	1%	$3,301,346	$3,230,131
	$7,041,500	**$3,729,879**	$3,520,750	$209,129	**6%**	$6,692,670	$6,540,244
Expenses							
Benefit payments:							
Benefit payments	**$5,071,000**	$2,503,938	$2,535,500	($31,562)	(1%)	$4,739,794	$4,552,474
Termination payments	**$700,000**	$98,378	$350,000	($251,622)	(72%)	$783,885	$677,237
Death benefit payments	**$0**	$0	$0	$0	n/a	$63,848	$0
Administrative:							
Actuarial & consulting fees	**$130,000**	$16,175	$65,000	($48,825)	(75%)	$83,773	$42,143
Audit & accounting fees	**$9,000**	$3,129	$4,500	($1,371)	(30%)	$10,027	$8,648
Bank custodian fees	**$30,450**	$10,481	$15,225	($4,744)	(31%)	$27,576	$30,479
Insurance	**$9,700**	$0	$4,850	($4,850)	(100%)	$10,600	$9,636
Miscellaneous	**$22,050**	$11,524	$11,025	$499	5%	$18,083	$16,724
Professional fees	**$33,000**	$22,437	$16,500	$5,937	36%	$43,529	$23,151
Registration fees	**$2,940**	$0	$1,470	($1,470)	(100%)	$2,662	$2,645
Training (Trustees/ Administration/ Pension Committee)	**$1,000**	$0	$500	($500)	(100%)	$0	$0
	$6,009,140	**$2,666,062**	$3,004,570	($338,508)	**(11%)**	$5,783,778	$5,363,136
Increase in net assets available for benefits	**$16,232,360**	**($10,295,019)**	$8,116,180	($18,411,199)	**(227%)**	$19,680,205	$13,376,343
Net assets available for benefits, beginning of period	**$174,636,360**	**$174,636,360**				**$154,956,156**	**$141,579,813**
Increase (decrease) in net assets available for benefits	**$16,232,360**	**($10,295,019)**				**$19,680,205**	**$13,376,343**
Net assets available for benefits, end of period	**$190,868,720**	**$164,341,342**				**$174,636,360**	**$154,956,156**

Expenses on this statement are reported on a cash basis.

Halifax Regional Water Commission Employees' Pension Plan
Regulatory Filing Requirements - 2022
as at June 30, 2022

	Report	Regulatory Body	Filing Deadline	Date last filed		Comments
1	Annual Form 3 - Summary of Contributions	Superintendent of Pensions	60 days after the beginning of each fiscal year	August 8, 2022	DB Plan	Revised Summary of Contributions - Filed directly with the Trustee, Northern Trust, for the DB Plan. Revision necessary due to contribuiton rate change as a result of Actuarial Valuation conducted at January 1, 2022.
				February 22, 2022	DC Plan	Filed directly with the Trustee, Industrial Alliance, for the DC Plan.
2	Pension Plan Income Tax Return (T3)	Canada Revenue Agency	March 31st	March 3, 2022	DB Plan	CRA requires Northern Trust as the custodian to prepare and file T3 Income Tax Returns each year. Information obtained from HRM Pension Plan quarterly report.
3	Pension Plan Audited Financial Statements	Superintendent of Pensions	6 months after the Plan's fiscal year end	July 11, 2022	DB Plan	Audited financial statements were completed and approved by the HW Board on June 23rd, 2022. (Superintendent of Pensions was notified that the Financial Statements would be sent once approved by the Halifax Water Board.)
				June 7, 2022	DC Plan	Audited financial statements are not prepared for this pension plan. However, Industrial Alliance provides a Financial Report detailing all pertinent details of the plan. This report is submitted to the regulatory body prior to June 30th each year.
4	Annual Information Returns (AIR)	Superintendent of Pensions	June 30th	June 7, 2022	DB Plan	
				June 7, 2022	DC Plan	
5	Actuarial Valuation*	Superintendent of Pensions Canada Revenue Agency	September 30th	September 27, 2019 September 27, 2019		Actuarial Valuation was conducted as of January 1, 2022 and will be filed with the Superintendent of Pensions and CRA in September by Eckler Partner's Ltd.
6	Plan Amendments	Superintendent of Pensions	60 days after the amendment approved by the Board	March 10, 2022	DB Plan	Plan Rules were Amended and Consolidated effective January 1, 2021 and approved by the Halifax Water Board on January 27, 2022. This included amendments 9 through 12, implemented since 2011.
		Canada Revenue Agency		March 10, 2022		
		Superintendent of Pensions Canada Revenue Agency	60 days after the amendment approved by the Board	n/a	DC Plan	All documents relating to the registration of the DC Plan were received by the Superintendent October 6, 2017.

* Actuarial Valuations are required at a minimum every three (3) years.
** Notional Agreements were implemented during 2017 with an effective date for January 1, 2017. Notional Agreements are not registered therefore not subject to reporting requirements to a regulatory body.

Halifax Regional Water Commission Employees' Pension Plan
Administrative Reporting Requirements - 2022
as at June 30, 2022

	Report	Filing Deadline/ Recurrence	Date last filed/ Performed		Comments
1	Pensioners' Payroll	Monthly	September 1, 2022		Pensioners are paid the 1st of each month; no exceptions to report for the Second Quarter 2022.
2	Contributions to the Trustee	Monthly	September 7, 2022	DB Plan	Remittances due to Northern Trust within 30 days of month end; no exceptions to report for Second Quarter 2022.
			August 30, 2022	DC Plan	Remittances due to Industrial Alliance within 30 days of month end; no exceptions to report for Second Quarter 2022.
			n/a	Notional Agreement*	
3	Pension Plan Financial Statements	Quarterly	September 22, 2022	DB Plan	Second Quarter (January - June 2022)
			n/a	DC Plan	Quarterly statements are not prepared for the Defined Contribution (DC) Plan. A financial report is prepared by Industrial Alliance and that report is filed with the Annual Information Return (AIR) to the regulator annually.
			n/a	Notional Agreement*	Financial statements not required.
4	Investment Performance Review & Compliance with SIP&P	Quarterly	June 9, 2022	DB Plan	First Quarter (January - March 2022) Report prepared quarterly by administration staff for the HW Board of Directors, in conjunction with the quarterly HRM Pension Plan Committee meeting documentation. Statement of Investment Policies & Procedures (SIP&P) is reviewed annually and was last reviewed and approved on December 9, 2021.
5	Annual Pension Statements to Members	June 30th	June 23, 2022	DB Plan	Statements issued annually by June 30th.
			June 23, 2022	DC Plan	Statements issued annually in conjunction with the Defined Benefit (DB) Plan statements. Members also have access to online, real-time reporting.
			June 23, 2022	Notional Agreement*	Statements issued annually in conjunction with the DB Plan statements.
6	Fiduciary Liability Insurance	Annually	October 20, 2021	DB Plan	Reviewed and renewed annually by administration staff. The policy period expires November 30 each year.

* Notional Agreements were implemented during 2017 with an effective date for January 1, 2017. Notional Agreements are not registered therefore not subject to reporting requirements to a regulatory body.

Halifax Regional Water Commission Employees' Pension Plan
Service Standards Report - 2022

Quarter 2 (as at June 30, 2022)

Transaction	Actuary					HW Staff			
	Standard	Total # Completed	# Past Standard	% within Standard	Average Service Days	Total # Completed	Average Service Days	Total Average Service Days	Compliance with PBA
Retirement Estimates	11 Business Days	3	2	33%	15	3	20	35	Yes
Marriage Breakdown Calculations	15 Business Days								
Post-Retirement Death Letter	15 Business Days								
Pre-Retirement Death Benefit	15 Business Days								
Termination Estimate Calculations - Standard	11 Business Days	7	5	29%	12	7	12	24	Yes
- Non Standard (Incl RTAs)	15 Business Days								
	Total for Actuary	10	7	30%		10			

21-22

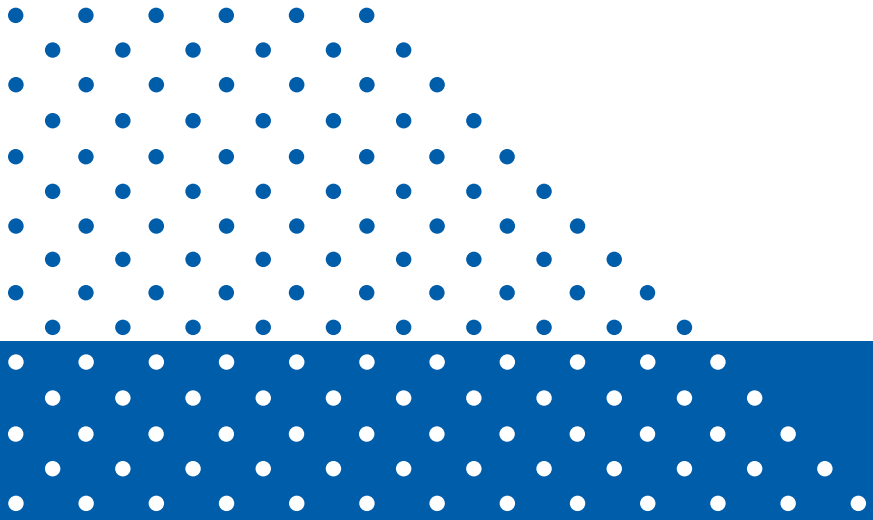
Twenty Sixth

Annual Report

March 31, 2022

STRAIGHT from the SOURCE

Halifax Water



21-22

Twenty Sixth

Annual Report

March 31, 2022

STRAIGHT from the SOURCE

Halifax Water

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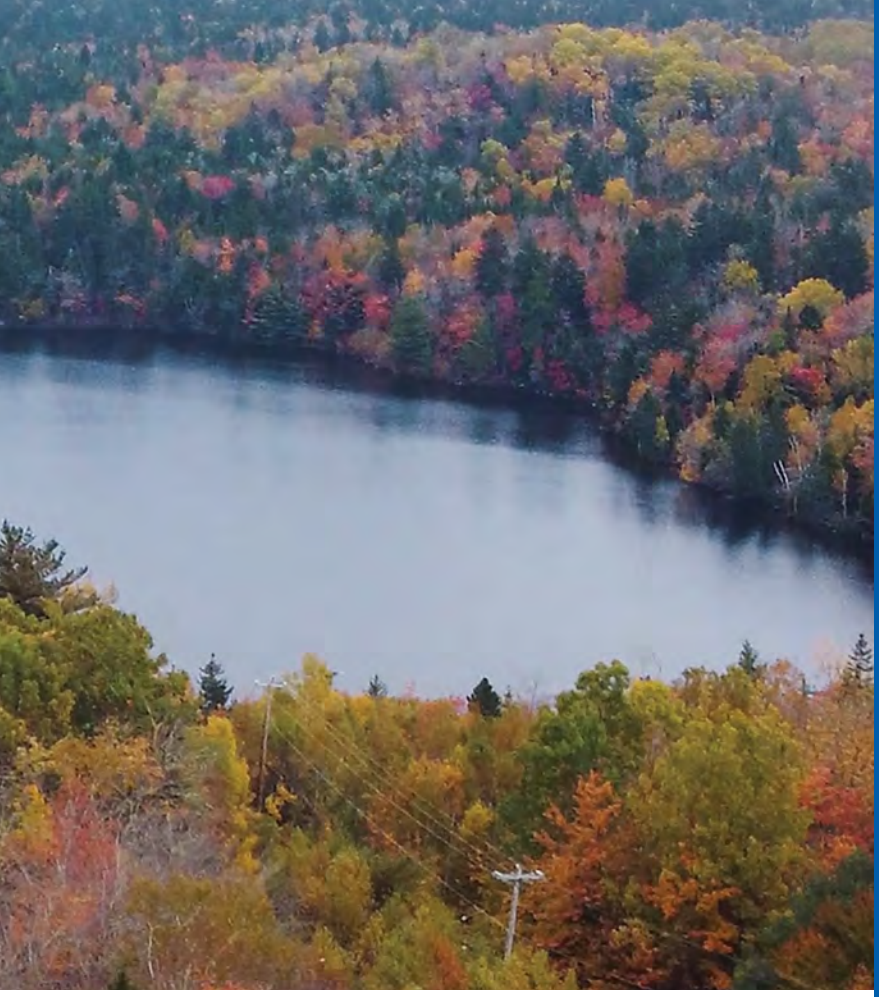


Halifax Water

Get in touch!

24-Hour Emergency Line:

902-420-9287

Customer Care Centre:

902-420-9287

customercare@halifaxwater.ca

Office Hours:

Monday - Friday

8:30 AM - 4:30 PM

450 Cowie Hill Road

Halifax, NS

Website:

halifaxwater.ca

Social Media:

@HalifaxWater

@HalifaxWater

@HalifaxWater

HalifaxWater

Our Mission, Vision & Values

Our Mission

To provide world-class services for our customers and our environment.

Our Vision

We will provide our customers with high quality water, wastewater, and stormwater services.

Through adoption of best practices, we will place the highest value on public health, customer service, fiscal responsibility, workplace safety and security, asset management, regulatory compliance, and stewardship of the environment.

We will fully engage employees through teamwork, innovation, and professional development.

Our Values

Relationships

We nurture relationships with our customers, our team members and the environment. We are engaged in the neighbourhoods we serve and we support continual learning across our team.

Innovation

We are among the top utilities across the continent and we are known on the global stage. We always ask, "how can we improve efficiency, sustainability, creativity and the customer experience?"

Accountability

We refuse to cut corners. We check in with our excellence standards regularly and look to one another for support. Safety steers our decision-making. We are driven to make our policies, decisions and projects as clear as our drinking water.

Protection

Halifax Water protects the health and well-being of our population. We exist to guard natural resources, finding ways to sustain our communities and environment.

Our Leaders

Board of Commissioners March 31, 2022

Colleen Rollings
P.Eng., PMP
Chair

Councillor Becky Kent
Vice Chair

Brad Anguish
MBA, P.Eng.
Commissioner

Councillor Cathy Deagle Gammon
Commissioner

Councillor Pam Lovelace
Commissioner

Councillor Patty Cuttell
Commissioner

Mimi Kolomyytsev
Commissioner

Kostia Zaharov
P.Eng., PMP, MBA
Commissioner

Executive Staff March 31, 2022

Cathie O'Toole
MBA, FCPA, FCGA, ICD.D
General Manager

Louis de Montbrun
CPA, CA
Director, Corporate Services/CFO

Kenda MacKenzie
P.Eng.
Director, Regulatory Services

Reid Campbell
M.Eng., P.Eng.
Director, Engineering
& Technology Services

Susheel Arora
M.A.Sc., P.Eng.
Director, Operations

Heidi Schedler
General Counsel & Corporate Secretary

Message from the Chair

As Board Chair during 2021/22, I want to recognize the continuing importance of Halifax Water's mission of providing world-class services for our customers and our environment and the progress made during the year.

This year saw some changes at the Halifax Water Board, including adding two new members of the public due to the term expirations for some existing Board members. The Halifax Water Board and Executive Team demonstrate gender balance and diversity, and Halifax Water is committed to building an increasingly diverse organization that is representative of the customers we serve.

This year also saw changes within the utility as some organizational changes were made to support the vision of "One Team, One Water." On April 1, 2021, Halifax Water implemented a new organizational structure that merged our operations groups into one department and aligned all information services and technology groups into one department. The intent was to increase focus on integrated planning and implementation to manage the full water cycle on behalf of our customers and the environment.

As an essential service provider, last year, Halifax Water focused on safely maintaining services, employment, and capital work.

Halifax Water employs approximately 550 employees, and the $126.2 million capital budget and $162.8 million operating budget in 2021/22 provided a significant local economic benefit that, in turn, benefits Halifax Water customers.

Halifax Water works hard to balance competing interests, such as the need to maintain and upgrade critical infrastructure, meet environmental requirements, and prudently plan for capacity to support further growth while maintaining high-quality services that are affordable for customers.

Water, wastewater, and stormwater services are vital to the residents and businesses of our region. With investments now and into the future, we will all benefit from the infrastructure that helps provide the economic and environmental backbone for current and future generations.

On behalf of the Halifax Water Board, I wish to convey to customers our continued commitment to providing responsible governance and oversight in the provision of water, wastewater and stormwater service by Halifax Water. I want to extend my sincere appreciation to the employees of Halifax Water, particularly the front-line workers, for your ongoing commitment and service to the community.

Colleen Rollings
Chair of the Board

Message from the General Manager

The challenges of managing, operating, and maintaining water and wastewater systems require continued dedication and perseverance at Halifax Water. Through a shared resolve, our employees continue to focus on providing high-quality services to our customers as we meet the challenges of aging infrastructure, increasingly stringent environmental compliance regulations and a growing population.

Through our collective efforts, Halifax Water meets all of its obligations under the Halifax Regional Water Commission Act (HRWC Act) and the Public Utilities Act. In addition to legislation obligations, the utility is also in compliance with all of its operating permits for its water and wastewater systems for the fiscal year ending March 31, 2022.

In fiscal 2021/22, our team continued to address the increasing challenges of managing source water quality. Halifax Water initiated a Water Supply Enhancement Program (WSEP) to see the utility spend $250 million over ten years to enhance and upgrade aging assets and dated treatment processes at the Lake Major Water Supply Plant in Dartmouth and the J.D. Kline Water Supply Plant on Pockwock Lake. In 2021/22, as part of the WSEP program, Halifax Water replaced one of two clarifiers at the Lake Major Water Supply Plant. This very significant undertaking was successfully carried out with minimal impact on customers.

For our wastewater systems, achieving compliance is an ongoing challenge balancing weather influences, equipment efficiency, and customer compliance with Halifax Water Rules and Regulations. We achieved 96% sample compliance with Nova Scotia Environment and Climate Change (NSECC) requirements at our wastewater treatment facilities, an improvement compared to 93% the prior year.

In February 2022, Halifax Water filed a two-year general rate application with the Nova Scotia Utility and Review Board (NSUARB) for increases in water, wastewater, and stormwater rates, because Halifax Water's current rates are not sufficient to cover the annual cost of providing the service or fund continuing investment in infrastructure. This rate application was filed to help prevent further deterioration of the utility's financial health and to protect our ongoing ability to serve customers.

Pending approval, this will be the first increase in water rates since 2016 and the first increase in stormwater rates since 2017. Wastewater rates were adjusted as part of the rate application filed in 2020. Halifax Water is a municipal utility that operates on a break-even basis, and no profit component is built into the rates.

We recognize that any rate increase is unwelcome at any time, particularly now when customers are experiencing more inflationary pressures. Halifax Water actively works to contain costs, which is one of the reasons we have been able to defer rate increases for several years. We will continue to deliver cost-effective service.

Thank you to all Halifax Water employees for their ongoing commitment to serving customers and protecting the environment!

Cathie O'Toole
General Manager

High Quality Water

Lead Service Line Replacement Program

Removing legacy lead service lines is a top priority for Halifax Water. Halifax Water has had an evolving lead service line replacement program in place since the 1970s, and lead service lines exist in both central Halifax and Dartmouth.

Our current "Get the Lead Out" lead service line replacement program was approved in October 2020 by the NSUARB. This program allows Halifax Water to cover the cost (up to $10,000) of replacing private lead service lines.

2020/21 was the first year of the Get the Lead Out program. As part of this, Halifax Water launched a new website (halifaxwater.ca/get-the-lead-out) to help simplify the process. This site allows property owners to apply for the program online.

The first year was successful, with a total of 185 private lead service lines and 105 public lead service lines being replaced, which exceeded our first-year goal of 150 private and 100 public replacements, respectively. Most of these replacements were coordinated with HRM's street paving and renewal schedule to minimize disruption to communities and be cost-efficient for our ratepayers. However, a limited number were completed based on customers most at-risk from lead exposure.

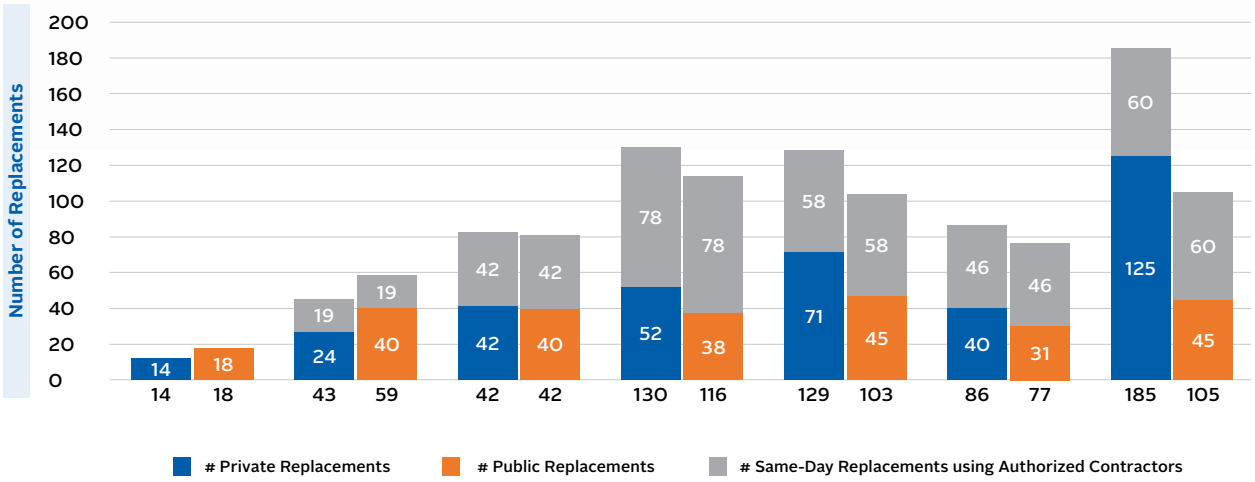
The Get the Lead Out program aims to replace all lead service lines by 2038 or earlier. This timeline is achievable as Halifax Water no longer needs to wait for the property owner to replace their portion before replacing the public portion. Work can be planned rather than reactive.

We continue to fine-tune the program. For example, identifying where lead service lines exist is a challenge because they are underground. Currently, Halifax Water relies on historical records and excavating a small hole around the service box to verify that the water service line is lead before planning a replacement. However, records are not always accurate, and excavation is time-consuming and costly.

To make this process more efficient, in 2021, Halifax Water engaged a third-party vendor to develop a predictive modelling method that uses historical records, property records, past construction practices, and other available information. The first model output was received this year and will be tested in planning for the 2023/24 construction season.

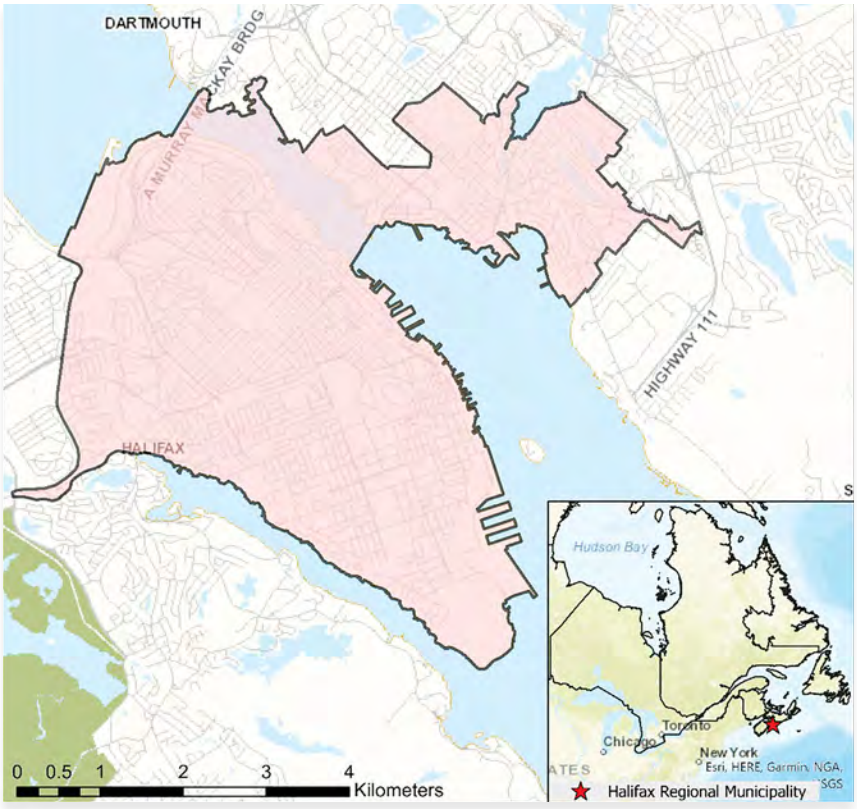
In recognition of our Get the Lead Out Program, Halifax Water was the recipient of the 2022 Water's Next Award in the Drinking Water Category. This recognition is a testament to the program's value and its importance to us and the industry. With the first year behind us and some lessons learned, combined with improving our inventory through innovative programs, we are well on our way toward eliminating lead service lines by 2038!

Public and Private Lead Service Line Replacements



Number of public (orange) and private (blue) service lines replaced by fiscal 2021-2022. Grey bars indicate residents who used the same-day authorized contractor program to renew both public and private service lines on the same day.

Halifax Water's Lead Service Line Boundary



Halifax Water's lead service line boundary contains areas of the distribution system that would have been served by a centralized water system before 1960.

Source Water Quality Monitoring

Halifax Water is committed to providing high-quality drinking water to our customers every day. Meeting that commitment requires a lot of work behind the scenes to ensure that the water sources remain healthy and safe.

We have industry-leading seasonal and long-term source water monitoring approaches to monitor pH, taste and odour (geosmin), colour, and algal activity. This includes testing for harmful algal blooms caused by cyanobacteria (blue-green algae).

Long-term monitoring has been in place for many years and enables us to plan appropriately to ensure that we have the robust treatment processes needed to manage future water quality.

The seasonal algal monitoring program has been developing over the past five years based on industry best practices. It allows us to respond quickly to changing water quality to ensure the delivery of high-quality, safe drinking water.

Understanding the dynamics of source water quality and monitoring for harmful algal blooms is an evolving field. It requires a multi-prong approach to provide tools and knowledge for risk-based decision-making. Halifax Water reviews its approach annually and participates in industry-leading research projects to ensure our approach aligns with best practices. Each source of water is unique in its water quality and biology. Thus long-term and seasonal source water monitoring programs are in place in Halifax Water's surface water sources.

In 2021/22, Halifax Water participated in three Water Research Foundation projects focused on source water monitoring. These three projects focused on developing tools to predict harmful algal blooms, utility responses to cyanobacterial/cyanotoxin events,

Our Lakes Are Changing

Many lakes in Nova Scotia are changing due to lake recovery and climate change.

Lake recovery is the process by which improved air emissions standards have reduced acid rain, and as a result, lakes in Nova Scotia and Atlantic Canada are recovering from historical acidification.

As a result, there is an increase in the potential for hydrogen (pH level) and greater natural organic matter. Other changes can be biological and may include changes to the types of plants and animals that lakes can support.

In addition, changing temperature and precipitation patterns, including timing and frequency, can also play a role in changing source water quality.

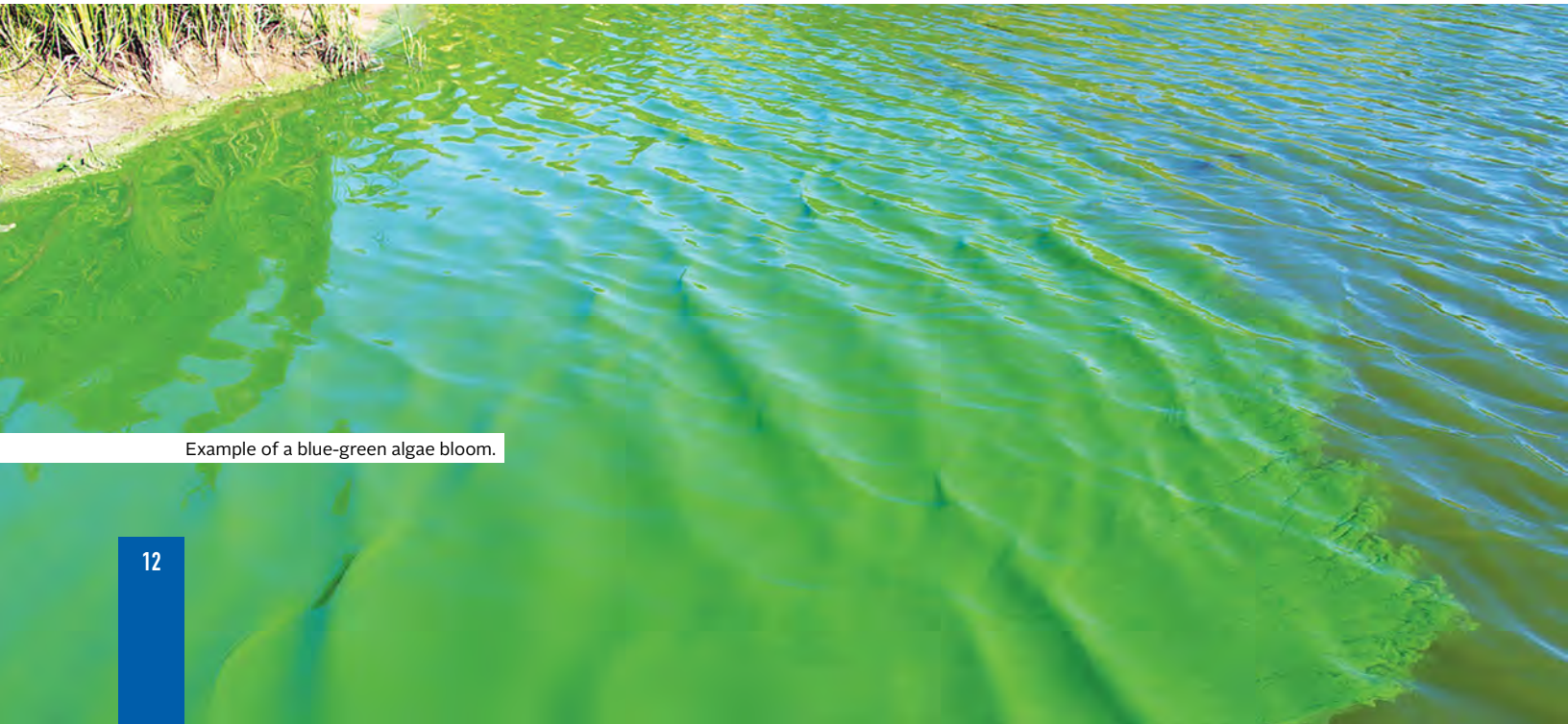
and a tailored collaboration project on developing a decision support framework for water utilities experiencing lake recovery. Through these projects, Halifax Water has developed tools to better use and understand source water data. The seasonal algal monitoring program has been adapted to reflect emerging industry best practices.

Lake recovery research through the Dalhousie/Halifax Water NSERC Industrial Research Chair in 2021/22 focused on the development of cyanotoxin analytical quantification tools. This was combined with the development of new and innovative passive sampling approaches that will enable us to gather more chemical and biological water quality data in our lakes and watersheds, feeding into Halifax Water's source water dataset to allow for both short-term and long-term decision making.

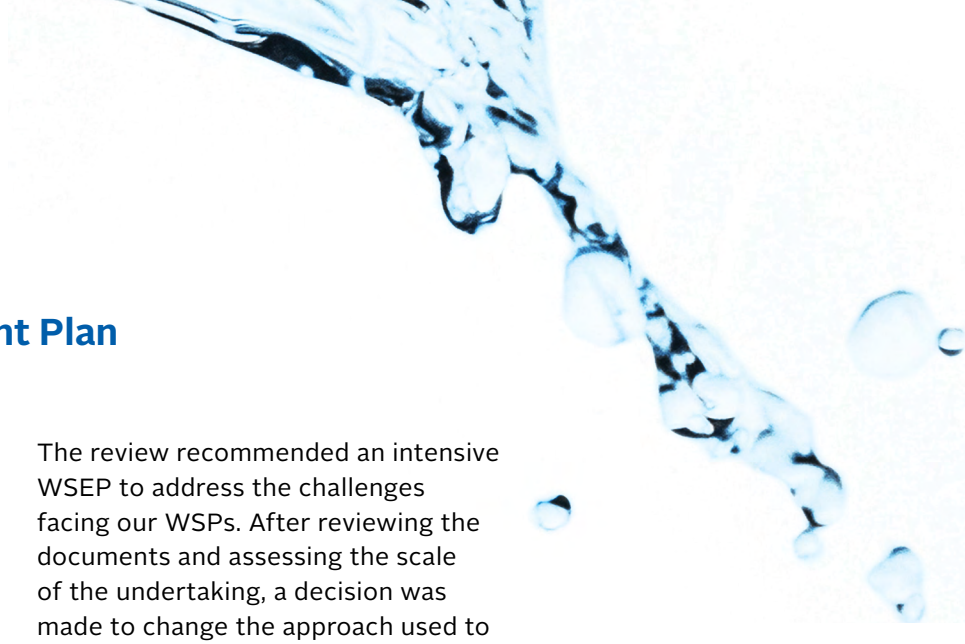
Halifax water has used a modelling tool to evaluate the ability of each surface water treatment facility to remove cyanobacteria cells and cyanotoxins. We have conducted exercises on various bloom scenarios and evaluated how treatment adjustments influence the degradation of cyanotoxins. This modelling tool provides an assessment of current and future treatment options.

In 2021/22, Halifax Water incorporated a genetic tool for assessing the presence of cyanobacteria and the likelihood that a population can produce cyanotoxins. This tool enables us to develop trigger points for further sampling and investigation and provides us with baseline data on algae in our lakes. This is one of several tools that can be deployed quickly if there are shifts in water quality. This tool, combined with visual inspections of our source water; routine monitoring at intakes for chemical and biological parameters; continuous monitoring for algal populations; and continuous monitoring of the treatment process, enable us to identify changes quickly and adjust treatment processes proactively.

The evolution of Halifax Water's source water protection and seasonal algal monitoring programs ensures Halifax Water has industry-leading tools in place to assess risk and respond quickly to water quality changes and ensure continued delivery of high-quality drinking water.



Example of a blue-green algae bloom.



Water Supply Enhancement Plan

The J.D. Kline and Lake Major Water Supply Plants (WSPs) have provided high-quality water to Halifax Water customers for many years. However, a combination of aging infrastructure, changes in source water conditions, and climate impacts have made the treatment processes at both WSPs more challenging.

This is especially pronounced at the J.D. Kline (JDK) WSP, where there is no clarification step in the treatment process. In addition to the adverse impacts on JDK's performance, geosmin has been detected in Pockwock Lake over the past few years. Although geosmin has no health impact, it can cause an earthy or musky taste/odour, which can impact consumer confidence in the quality of the water.

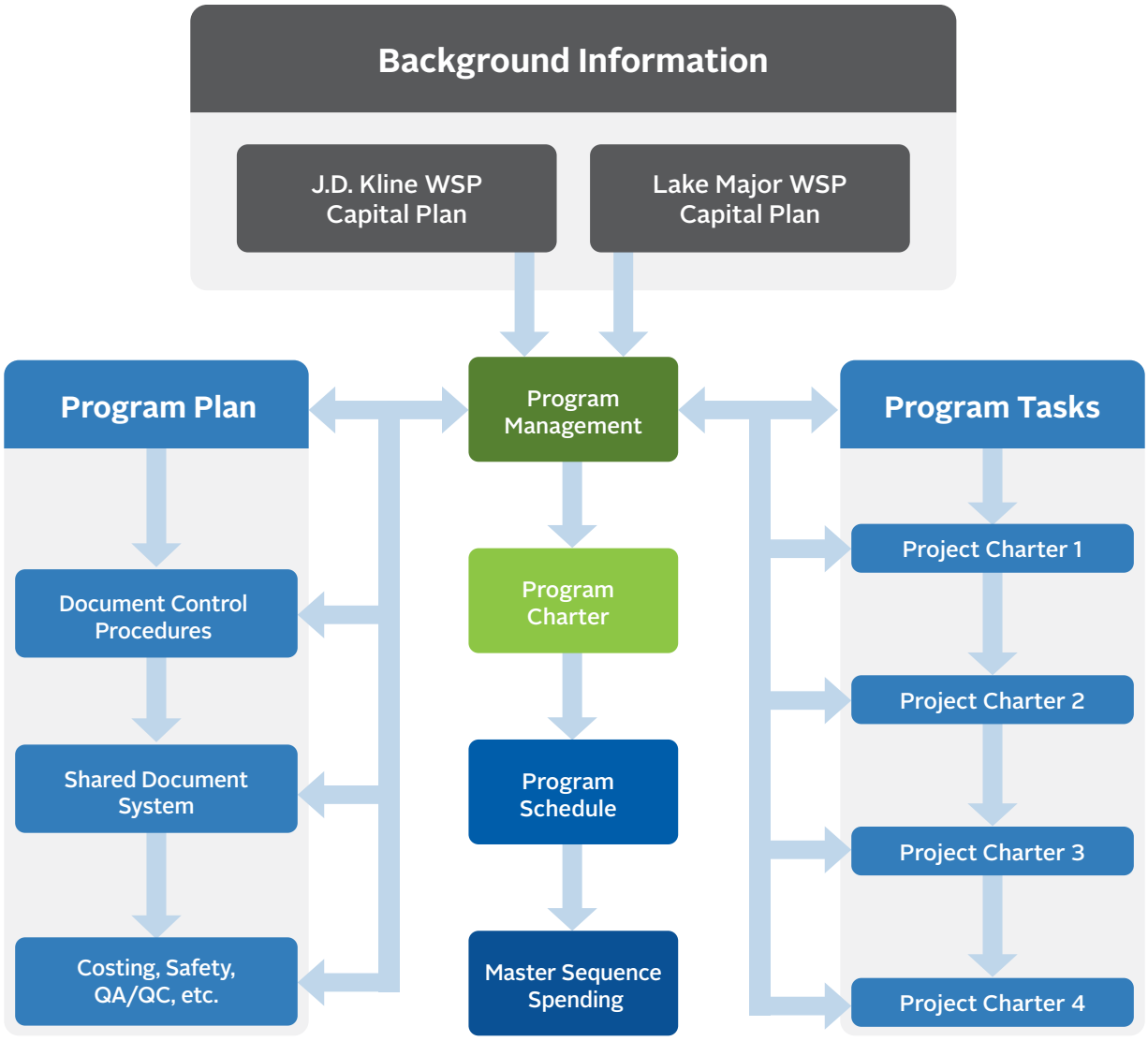
These dynamic source water changes leave both WSPs operating outside what they were designed for. This presents an elevated risk for maintaining high-quality water, increasing operational costs and inefficiencies, and negatively impacting customer service.

To ensure the continued reliable supply of safe, high-quality drinking water and to remain compliant with current and future regulatory requirements, Halifax Water began looking at capital upgrade strategies for J.D. Kline and Lake Major Water Supply Plants in 2019. Working with a third-party consultant, several workshops were held with different internal stakeholders to develop a complete list of risks and opportunities added to the Water Supply Enhancement Program (WSEP).

The review recommended an intensive WSEP to address the challenges facing our WSPs. After reviewing the documents and assessing the scale of the undertaking, a decision was made to change the approach used to complete the recommended upgrades. This change in direction will integrate capital investment and construction decisions in line with the Integrated Master Plan, the Asset Management Program, and the Water Engineering Capital Plan.

This integrated approach is intended to ensure that capital projects are executed in phases considering the WSEP-specific projects and others related to water treatment and distribution systems. This will help minimize any potential impacts on our services and our customers. This approach has also enabled the utility to adapt projects, such as advanced oxidation, to address emerging source water quality issues, including algal blooms, potential algal toxins, and other biological changes.

Initial design work has been completed. The team is now working on the design concept for new clarification technology, which will immediately improve the resilience of both WSPs. The WSEP will not only see more resilience built into the WSPs but the distribution system as well. These are the first steps into the estimated (2018) $250 million, 10-year WSEP, allowing the utility to construct infrastructure to address the challenges of an unpredictable world.



AI Intelligent Water

To better serve our customers, Halifax Water is exploring opportunities to take advantage of emerging digital technology. This could allow the utility to automate various functions and apply artificial intelligence and machine learning to the data we currently possess and generate. Our goal would be to automate certain activities, improve operations, and provide a higher level of service to customers.

As part of this, Halifax Water completed an intelligent water opportunities assessment. This assessment looked at all areas of Halifax Water operations and identified areas where there is room for improvement. It then paired those opportunities with intelligent water products and services currently in the marketplace to identify the most cost-effective options to improve service or to reduce costs through automation. This assessment will guide our next five-year IT plan.

Halifax Water is now taking advantage of these opportunities by establishing several pilot projects:

Transmission Main Monitoring Pilot

By installing listening sensors on a length of Halifax Water transmission main, it provides the ability to listen for sounds in the water column that could indicate a small leak occurring in a large transmission main. The system identifies the type and location of the potential leak. It transmits an alert to operators who may be able to repair a small leak before interrupting service to our customers.

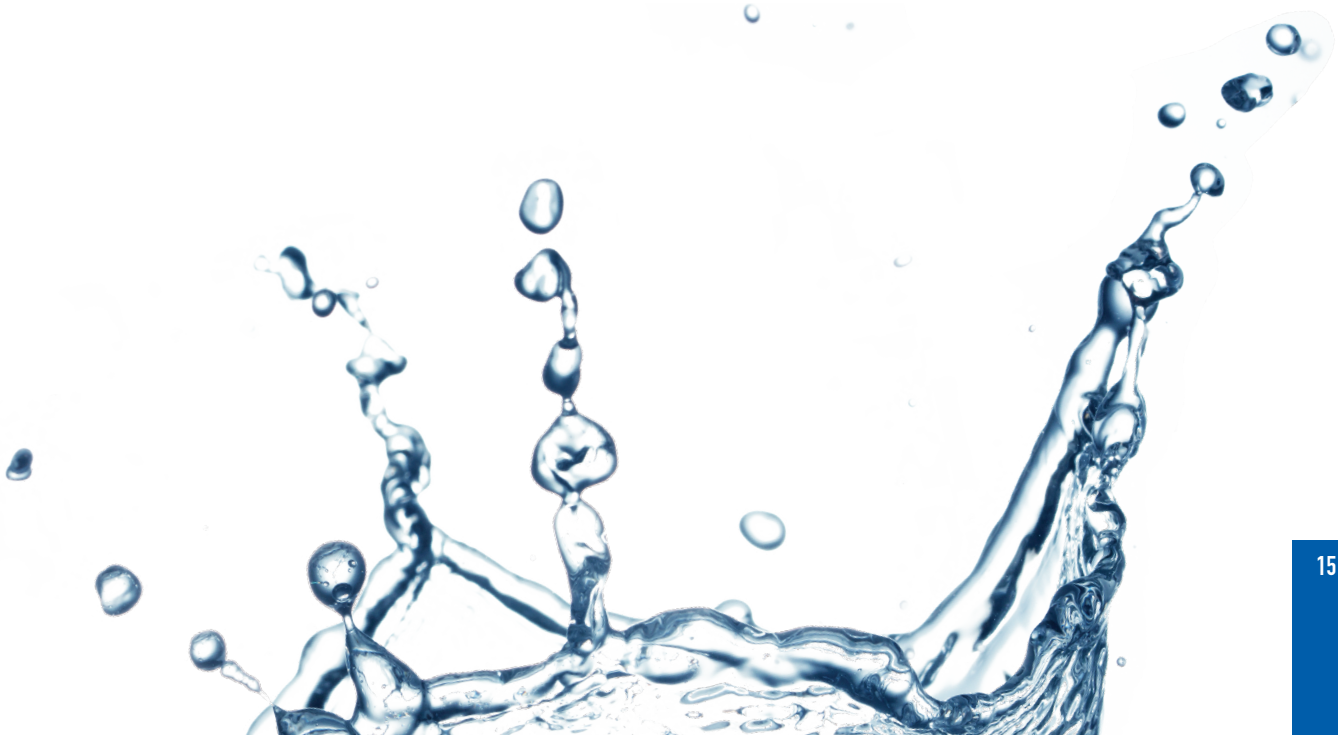
Central Event Management

By monitoring real-time operational data in the water distribution system and applying artificial intelligence, it can identify flow and pressure anomalies that may indicate a problem in the water distribution system. Similarly, alerts are then transmitted to operators to address the anomaly before it leads to a service interruption.

Lead Inventory Analysis

One of the issues in replacing lead service lines is the lack of data on where lead services are located. Without records, it takes costly excavation to verify that a lead service line exists. Halifax Water is working with a third-party vendor called Blue Conduit, which applies artificial intelligence to Halifax Water records and other publicly available data sets to predict where lead service lines are likely to exist. Improving our awareness of where lead service lines are will enable us to better protect public health with our Get the Lead Out program.

Upon completion, each pilot will be evaluated to determine if broader use across Halifax Water's systems is appropriate.



Responsible Financial Management

Annual Financial Results

Halifax Water received a clean audit opinion on the financial statements for the fiscal year ended March 31, 2022. The financial statements are presented in accordance with International Financial Reporting Standards (IFRS). Halifax Water also produces financial information in the format required by the Nova Scotia Utility and Review Board (NSUARB) in accordance with the NSUARB Water Utility Accounting and Reporting Handbook (Handbook).

The financial statements prepared under IFRS are used primarily for consolidation with the Halifax Regional Municipality's financial statements. In contrast, the financial information prepared under the Handbook is used for setting water, wastewater and stormwater rates.

Summary financial information is presented on page 32 under IFRS and under the Handbook on page 33.

The financial statements contain the independent auditor's report issued by Grant Thornton, IFRS statements and schedules containing financial information prepared in accordance with the Handbook. The financial statements can be located at halifaxwater.ca/publications-reports.

Statement of Earnings

Table 1 - Summarized Statement of Earnings Comparison to Budget

	Budget 2021/22 '000	Actual 2021/22 '000	Actual 2020/21 '000	2021/22 Budget/ Actual $ Variance	2021/22 Budget/ Actual % Variance
Operating revenues	**$ 150,467**	**$ 150,502**	$ 136,569	$ 35	0.0%
Operating expenditures	**125,379**	**122,521**	114,376	(2,858)	(2.3%)
Earnings from operations	**25,088**	**27,981**	22,193	2,893	11.5%
Financial and other revenues	**722**	**796**	963	74	10.2%
Financial and other expenditures	**37,460**	**35,159**	33,727	(2,301)	(6.1%)
Loss for the year	**$ (11,650)**	**$ (6,382)**	$ (10,571)	$ 5,268	(45.2%)

The key differences between the IFRS and Handbook financial statements are related to reporting requirements for the recognition of various expenditures as follows:

- The full actuarial liability of employee future benefits is not considered an expense for the Handbook and could result in either positive or negative impacts on earnings.
- Principal payments on long-term debt are an expense for the Handbook but not under IFRS.
- Depreciation expense on contributed assets is not an expense for the Handbook, and amortization of contributed capital is not considered revenue under the Handbook.
- Various depreciation adjustments, including the add-back of losses on the disposal of utility plant in service, componentization of assets and shorter useful lives, result in higher depreciation under IFRS than under the Handbook.

Table 2 - Reconciliation IFRS to Handbook Results

	2021/22 '000	2020/21 '000
IFRS comprehensive earnings (loss)	**$ 45,594**	$ (919)
Add non-cash pension expense	9,229	7,086
Subtract debt principal payments	(21,477)	(20,379)
Add depreciation expense on contributed assets	18,592	18,810
Subtract amortization of contributed capital	(18,592)	(18,810)
Add various depreciation adjustments	1,179	412
Add (subtract) OCI loss (gain)	(40,907)	3,229
NSUARB Loss	$ (6,382)	$ (10,571)

Under IFRS, the comprehensive earnings are $45.6M. After the adjustments described above, the loss for the year under the Handbook is $6.4M. From a budget perspective, the loss was less than the budget due to operating expenses and debt servicing being less than expected.

The water services loss of $3.4M as compared to earnings of $0.5M in the prior year and $1.8M less than budget. The primary difference from the budget was lower debt service costs.

The wastewater services' earnings of $0.4M increased over the prior year's loss by $7.5M and was $1.9M more than budget. The primary difference from the budget relates to lower depreciation and debt services costs.

The stormwater services loss of $3.3M decreased from the prior year's loss by $0.6M and was $1.6M less than budget. The difference from the budget relates to reduced costs being experienced in expenditure categories such as contract services and traffic control and associated reduction in wages and overtime.

Table 3 - Operating Results by Service

	Budget 2021/22 '000	Actual 2021/22 '000	Actual 2020/21 '000	2021/22 Budget/ Actual $ Variance	2021/22 Budget/ Actual % Variance	Actual/ Actual $ Change	Actual/ Actual % Change
Water	**$ (5,221)**	**$ (3,428)**	$ 493	$ 1,793	(34.3%)	$ (3,921)	(795.3%)
Wastewater	**(1,517)**	**389**	(7,110)	1,906	(125.6%)	7,499	(105.5%)
Stormwater	**(4,912)**	**(3,343)**	(3,954)	1,569	(31.9%)	611	(15.5%)
Loss	**$ (11,650)**	**$ (6,382)**	$ (10,571)	$ 5,268	(45.2%)	$ 4,189	(39.6%)

Revenue

Operating revenues increased from last year by $13.9M. Consumption increased by 1.2% on a volumetric basis resulting in an increase in consumption revenue. Base charge revenue remained consistent with the prior year. Overall, the main contributing factor to the increase in operating revenues was the wastewater discharge rate increase effective April 1, 2021, from $1.753 per cubic meter to $2.073.

The wastewater rebate, which is available to certain large customers whose wastewater is a lower proportion of their consumed water, increased $0.5M from the prior year due to new customers in the current year and existing customers increasing their discharge into our system due to operational requirements post COVID-19.

Stormwater site generated charge revenue is $1.2M more than the prior year. The increase relates to the impervious area satellite imagery update.

Fire protection revenues are $0.6M higher than the prior year due to an approved rate increase effective October 1, 2020.

Table 4 - Operating Revenues

	2021/22 '000	2020/21 '000	$ Change	% Change
Consumption revenue	**$ 96,497**	$ 84,538	$ 11,959	14.1%
Base charge revenue	**33,635**	33,544	91	0.3%
Wastewater rebate	**(1,297)**	(846)	(451)	53.3%
Metered sales total	**128,835**	117,236	11,599	9.9%
Stormwater site generated charge	**6,294**	5,127	1,167	22.8%
Stormwater right of way	**3,835**	3,835	0	0.0%
Public fire protection	**7,628**	7,336	292	4.0%
Private fire protection	**1,270**	1,001	269	26.9%
Other operating revenue	**2,640**	2,034	606	29.8%
Operating revenue total	**$ 150,502**	$ 136,569	$ $13,933	10.2%

Expenditures

Operating Expenditures

Operating expenditures for 2021/22 are $122.5M, an increase of $8.1M or 7.1% compared to the prior year. The drivers of the increase include depreciation and amortization expense, salaries and benefits, higher prices for chemicals, and increases related to software licenses and network costs.

Table 5 - Operating Expenditures

	2021/22 '000	2020/21 '000	$ Change	% Change
Water supply and treatment	**$ 10,760**	$ 9,987	$ 773	7.7%
Water transmission and distribution	**11,316**	10,960	356	3.2%
Wastewater collection	**12,988**	12,710	278	2.2%
Stormwater collection	**4,566**	4,700	(134)	(2.9%)
Wastewater treatment	**21,774**	20,623	1,151	5.6%
Engineering and technology services	**13,719**	11,171	2,548	22.8%
Regulatory services	**4,392**	3,981	411	10.3%
Customer services	**4,811**	5,081	(270)	(5.3%)
Corporate services	**3,062**	0	3,062	0.0%
Administration services	**5,359**	7,067	(1,708)	(24.2%)
Depreciation and amortization	**29,774**	28,096	1,678	6.0%
Operating expenditures total	**$ 122,521**	$ 114,376	$ 8,145	7.1%

Financial & Other Expenditures

Reported financial and other expenditures totalled $35.2M in 2021/22, an increase of $1.4M or 4.2% compared to the prior year. The increase was attributed to debt servicing costs, mainly long-term debt repayments, and the dividend/grant in lieu of taxes which increased due to the proration of the expense in the prior year as the three-year agreement with HRM to pay a dividend of 0.25% on wastewater and stormwater rate-based assets came into effect October 1, 2020.

Table 6 - Financial & Other Expenditures

	Budget 2021/22 '000	Actual 2021/22 '000	Actual 2020/21 '000	2021/22 Budget/Actual $ Variance	2021/22 Budget/Actual % Variance	Actual/Actual $ Change	Actual/Actual % Change
Interest on long-term debt	**$ 7,603**	**$ 6,859**	$ 7,118	$ (744)	(9.8%)	$ (259)	(3.6%)
Repayment on long-term debt	**22,716**	**21,477**	20,379	(1,239)	(5.5%)	1,098	5.4%
Amortization of debt discount	**258**	**228**	209	(30)	(11.6%)	19	9.1%
Dividend/grant in lieu of taxes	**6,837**	**6,466**	5,951	(371)	(5.4%)	515	8.7%
Other	**46**	**129**	70	83	180.4%	59	84.3%
Financial and other expenditures total	**$ 37,460**	**$ 35,159**	$ 33,727	$ (2,301)	(6.1%)	$ 1,432	4.2%

Regulated & Unregulated Activities

Regulated Activities

Activities regulated by the NSUARB show a loss of $6.9M, representing a decrease of $4.5M compared to the prior year.

Unregulated Activities

Earnings from unregulated activities decreased by $0.3M from the prior year due to an increase in operating costs for wastewater treatment and allocation of administrative costs.

Table 7 - Results by Activity

	Budget 2021/22 '000	Actual 2021/22 '000	Actual 2020/21 '000	2021/22 Budget/ Actual $ Variance	2021/22 Budget/ Actual % Variance	Actual/ Actual $ Change	Actual/ Actual % Change
Regulated activities	**$ (12,175)**	**$ (6,889)**	$ (11,397)	$ 5,286	(43.4%)	$ 4,508	(39.6%)
Unregulated activities	**525**	**507**	826,000	(18,000)	(3.4%)	(319)	(38.6%)
Loss	**$ (11,650)**	**$ (6,382)**	$ (10,571)	$ 5,268	(38.05%)	$ 4,189	(39.6%)

Statement of Financial Position

Cash and cash equivalents

Cash and cash equivalents balance of $65.6M is higher than the prior year by $17.4M due to new debt and net receipts of Regional Development Charges (RDC), reduced by debt repayments and spend on capital.

The liquidity on the balance sheet (ratio of current assets divided by current liabilities) is 1.33 (per NSUARB Handbook reporting).

Assets

Utility plant in services assets, net of accumulated depreciation, are $1,277.4M and is $2.9M or 0.2% lower than last year. The total of new assets capitalized in the fiscal year was $48.9M. At the end of the fiscal year, there was $51.0M in capital work in progress, compared to $30.9M last year.

Table 8 - Additions to Utility Plant in Service and Intangibles

	Cumulative '000
Wastewater System Trenchless Rehabilitation	$ 4,870
Romans and Federal Avenues Sewer Separation	2,862
Ellenvale Run Retaining Wall Phase 4	2,123
Ellenvale Run Retaining Wall Phase 5	2,236
Pump Station Control Panel/Electrical Replacement	1,745
	13,836
All other projects:	
Water	16,560
Wastewater	13,026
Stormwater	5,485
	35,071
Total additions	$ 48,907

Table 9 - Capital Work in Progress

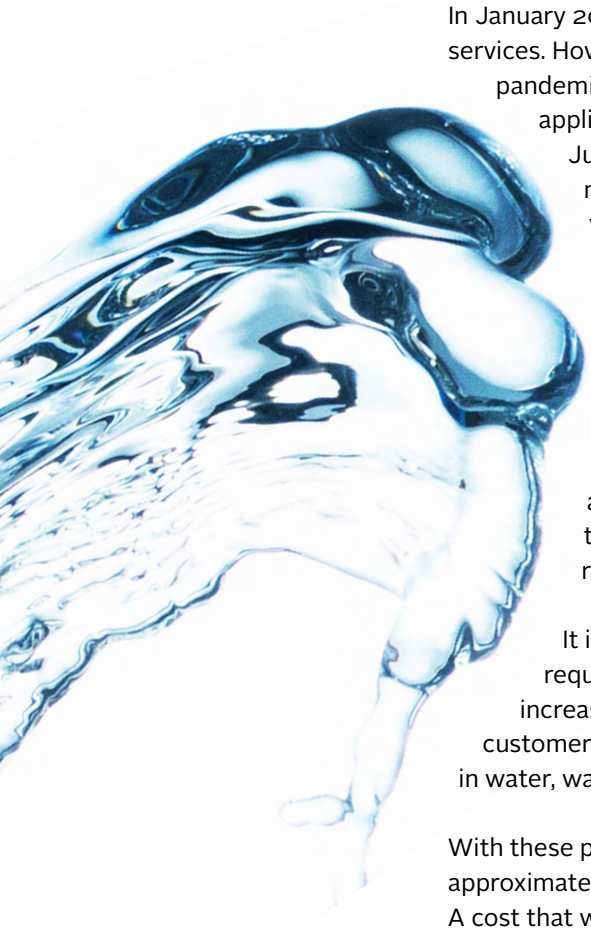
	Cumulative '000
Bedford South Reservoir	$ 5,865
ERP Replacement Project	5,600
Russell Lake Pumping Station	1,560
Morris Lake Pumping Station	1,533
Bedford to Halifax Trunk Sewer Upgrade	1,422
	15,980
All other projects:	
Water	16,394
Wastewater	16,184
Stormwater	2,455
	35,033
Capital work in progress	$ 51,013

Debt

Debt continues to be an important funding source for Halifax Water's capital program. Total long-term debt is $224.2M. New debt of $20.0M was received in May 2021, and repayments during the year were $20.6M.

The debt service ratio of 18.98% is well below the maximum 35.00% ratio allowed under the blanket guarantee agreement with HRM.

2022 General Rate Application



In January 2020, Halifax Water proposed rate increases in water and wastewater services. However, given the sensitivities and uncertainties created by the COVID-19 pandemic for our customers, the utility changed its approach and revised its application. The NSUARB approved Halifax Water's revised rate application in June 2020, with no increase in water and wastewater rates for 2019/20, no increase in rates for water services for 2020/21 and an increase in the volumetric rate for wastewater effective April 1, 2021.

As a result of this change in approach, Halifax Water has incurred a deficit of $9.9M in 2020/21 and a further deficit of $6.4M in 2021/22. Halifax Water has utilized accumulated surpluses and special reserves to make up the shortfall. However, this approach is not sustainable in the long term.

To help address this, in February 2022, Halifax Water filed a general rate application to adjust the water, wastewater and stormwater rates. If approved, the proposed rates would see the average water, wastewater and stormwater residential bill increase by 3.6% in 2022/23 and a further 3.6% in 2023/24.

It is important to recognize that Halifax Water's budgets and revenue requirements are developed on a break-even basis. These proposed rate increases will allow Halifax Water to maintain the current level of service to customers, recognize additions to utility plants in service, and continue investment in water, wastewater and stormwater infrastructure.

With these proposed increases, the median residential customer in Halifax would pay approximately 1.2% of their income for water, wastewater and stormwater services. A cost that would continue to be below the average benchmark for comparable communities across Canada.

Cost Comparison

Providing our customers with good value for our services is vital. We compare our rates to a number of comparable utilities across Canada to ensure that we continue to provide water, wastewater and stormwater services at a reasonable price.

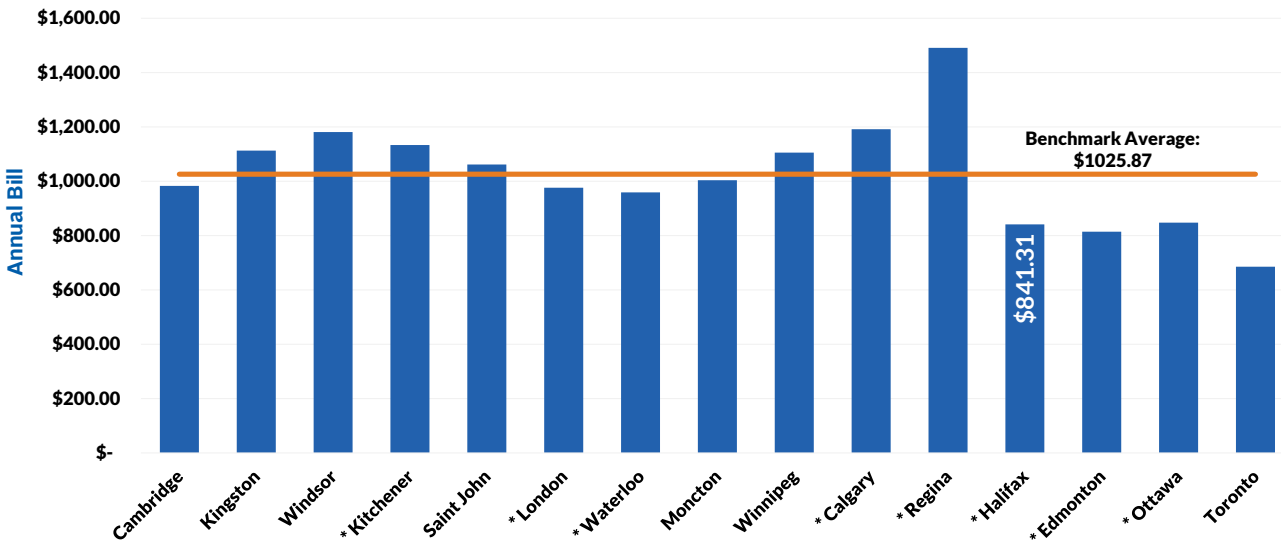
The median household income in the Halifax Census Metropolitan Area is $73,400 based on Statistics Canada, Canadian Income Survey 2012-2019. The median household income, if increased by CPI, would be expected to be $74,564 in 2021. The average family currently pays $841.31 for water, wastewater and stormwater services. The average bill equates to 1.2% of median household income, indicating that Halifax Water's rates benchmark favourably with the rate affordability threshold. Halifax Water rates also benchmark favourably with other comparable Canadian utilities.

As of the most recent benchmarking in 2020/21, the average residential bill for combined water, wastewater and stormwater service for the 14 benchmark cities was $1,025.87. With the proposed rate increases in 2022/23 and 2023/24, Halifax Water's total residential bills will remain below the 2020/21 average.

Halifax Water's rates for other meter sizes also benchmark well with other cities. The comparison based on current rates shows Halifax Water for all meter sizes, other than 10", was less than the average of the benchmark cities.

Benchmarking of Estimated Annual Residential Cost

(5/8" - 15mm Meter)



* Includes Water, Wastewater and Stormwater; all others are Water and Wastewater only

Cost Containment

Cost containment continues to be a focus for Halifax Water and contributes to our ability to maintain affordable rates. A formal cost containment program has been in place since 2013. Cost containment initiatives have had the most significant impact in the areas of Human Resources and Facilities/Process Strategies. The pension plan re-design initiated in 2015/16 is one of the main contributors to cost containment savings for the current year. Annual savings related to pension plan re-design are approximately $1.7M.

Facilities/Process Strategies initiatives vary; however, Halifax Water's Energy Efficiency Program is a significant contributor. Projects under this program represent approximately $1.4 million for 2021/22 and include energy savings programs such as:

- The renewable natural gas (RNG) utilized at the Mill Cove and Timberlea Wastewater Treatment Facilities (WWTFs) ($0.3M).
- The annual shutdown of the ultraviolet disinfection systems at the Harbour Solutions and Eastern Passage WWFTs ($0.2M).
- Heat recovery processes at the Harbour Solutions WWTFs ($0.1M).
- Lighting upgrades at various other facilities.

New cost containment initiatives implemented during 2021/22 resulted in one-time and ongoing cost savings amounting to $0.6 million. Significant initiatives during 2021/22 were:

Procurement Strategies

Procurement strategies from a capital perspective have led to much of the cost savings realized in the current year. For example, the 2019 Municipal Auditor General (MAG) Fleet Use Audit led to a reduction in the Fleet Upgrade Capital Program in 2021/22 of $1.1M, resulting in cost savings associated with depreciation expenses of approximately $0.2M annually. Adjustments were also made in the Sewer Jet Replacement Program, where $0.3M was trimmed from the capital budget by choosing to replace the chassis and perform modifications on an existing vehicle rather than purchase a new unit again, resulting in depreciation savings of an estimated $0.1M annually.

Facilities/Process Strategies

Cost savings are being experienced at the Mill Cove and Timberlea WWTFs, where anaerobic digesters are being used to produce biogas or RNG, which is then used to heat the digesters and all facility buildings. Cost savings are an estimated $0.3M annually.

Pension Plan

All Halifax Water employees are members of one of two defined benefit pension plans.

Employees that transferred from HRM, of which 49 remain, are members of the HRM Pension Plan. Halifax Water is obligated to make contributions for these employees' service to the HRM Pension Plan.

Halifax Water maintains the Halifax Regional Water Commission Employees' Pension Plan (the Plan) for all other employees. An actuarial valuation of the Plan is required every three (3) years to determine its financial health and future contribution rate and to meet statutory filing requirements. This valuation was conducted as of January 1, 2022, and abbreviated results are shown below:

Table 10 - Going Concern Financial Position

	January 1, 2022 '000's	January 1, 2019 '000's
Value of assets	$ 172,968	$ 126,429
Liabilities	(135,207)	(124,371)
Provision for Adverse Deviation (PFAD)	(9,405)	N/A
Going Concern Excess	$ 28,356	$ 2,058
Funded Ratio	**119.6%**	**101.7%**

The Plan's funded ratio has increased from 101.7% to 119.6% since the last valuation on January 1, 2019. The increase is primarily related to higher-than-expected revenues and a change in the discount rate. Effective January 1, 2022, employee and employer contribution rates will reduce from 10.34% to 9.6% as a result. The next valuation is due no later than January 1, 2025.

Table 11 - HRWC Employees' Pension Plan

Abbreviated Financial Position at December 31

	2021 '000	2020 '000
Net assets available for benefits	$ 174,636	$ 154,956
Pension obligation	144,612	141,763
Surplus	**$ 30,024**	**$ 13,193**

In 2021, the net assets available for benefits increased to $174.6M from $155.0M. The increase was primarily due to an increase in the fair value of investment assets of $15.4M. Over the same period, the pension obligation increased to $144.6M from $141.8M.

The financial statements for the Plan are audited by Grant Thornton LLP and can be located at halifaxwater.ca/publications-reports. The financial statements contain the independent auditor's report issued by Grant Thornton.

Table 12 - HRWC Employees' Pension Plan

Abbreviated change in net assets available for benefits at the Year Ended December 31

	2021 '000	2020 '000
Revenue	$ 18,771	$ 12,199
Contributions	6,693	6,540
Expenses	5,784	5,363
Increase in net assets available for benefits	**$ 19,680**	**$ 13,376**

Enterprise Resource Planning (ERP) Solution Project

Improving operational efficiencies helps Halifax Water lower operating costs and provide better customer service. The Enterprise Resource Planning (ERP) platform holds Halifax Water's key financial, customer and business records in one system and supports numerous business activities.

Currently, Halifax Water is in the process of replacing our ERP software platform through the ERP Solution Project.

The new platform, called Cayenta, is an integrated system that will provide real-time access to customer and financial information and enhanced tools to support decision-making and better manage infrastructure, services, programs, and capital delivery; as well as help improve our ability to meet the growing expectations of our customers.

Cayenta will provide dashboards and enhanced reporting tools for greater insight into daily activities. The modern design and workflows will automate many

manual processes and reduce the reliance on spreadsheets for analysis. With accessibility from any work device, Halifax Water staff will find a variety of business functions consolidated in one place.

The Cayenta Customer Information System module will enhance the business processes used by the Customer Care Centre, Billing and Metering departments. It will ensure Halifax Water stays connected with customers and integrate customer billing and metering information. New dashboards and reports will provide insight to see trends in real-time.

The Financial Management System module will power Halifax Water's insight into operations and financial resources. This includes managing budgets, funding, inventory, procurement and vendor management. Halifax Water will be able to improve spending decisions, optimize budgets, better forecast our cash, debt requirements and surpluses, track and manage operational and capital project expenses, process payments to suppliers efficiently, and align resources where they are needed at the right time.

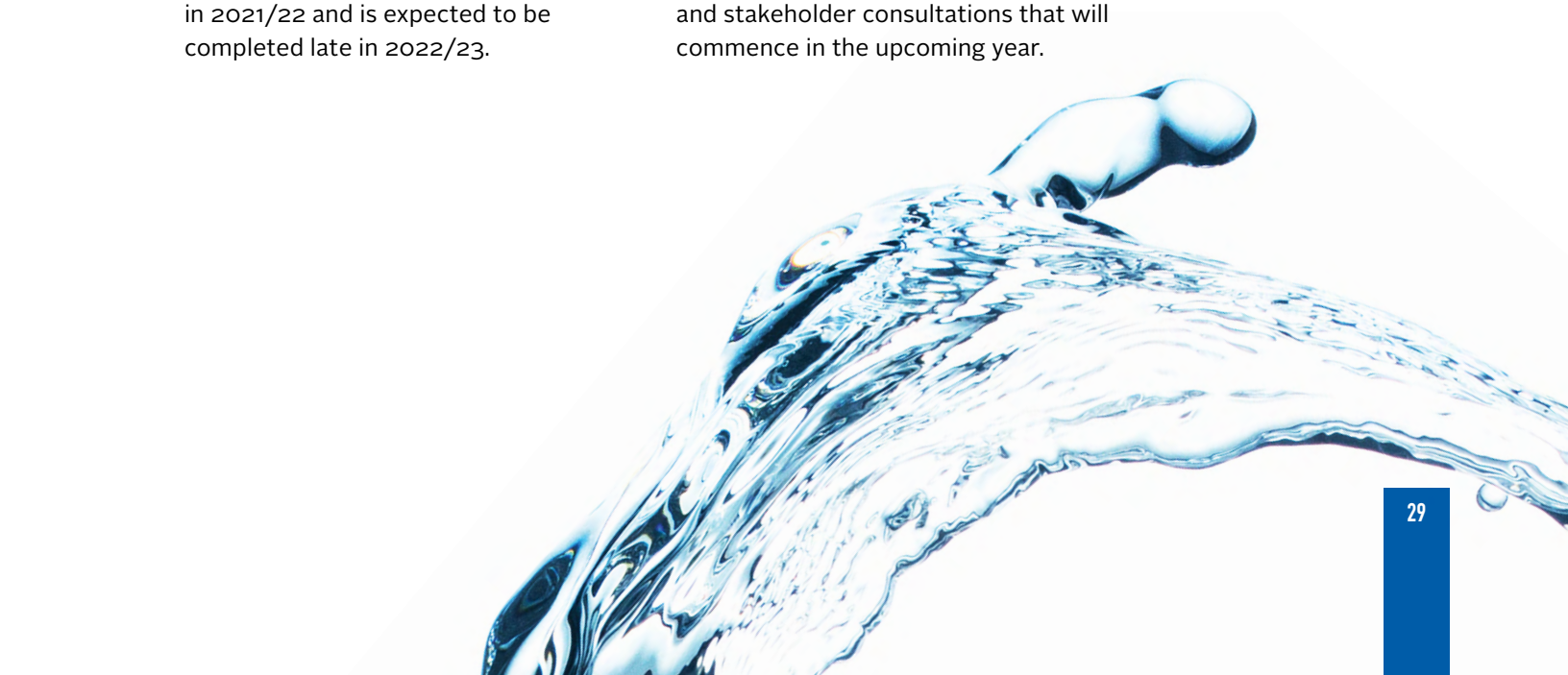
The ERP Solution Project began early in 2021/22 and is expected to be completed late in 2022/23.

Regional Development Charge

The application to update the Regional Development Charge (RDC) was submitted to the Nova Scotia Utility and Review Board (NSUARB) in November 2019, with the associated hearing occurring in June 2020. The proposed RDC was based on the 2019 Infrastructure Master Plan, which determined the water and wastewater infrastructure required to support the projected growth within HALIFAX in the next 20 years.

Using this information, a charge per new residential dwelling unit or non-residential floor area was created. Halifax Water is committed to regular reviews of the RDC and to identify interim changes and impacts based on the new and best information that may result in a 15% +/- change to the RDC. In consultation with HALIFAX staff, a proposed deferral of the RDC charges to assist Affordable Housing initiatives with their financing was introduced and subsequently approved by the NSUARB.

The NSUARB issued a decision in October 2020 with an ultimate final order in April 2021. The decision outlined a number of annual reports and stakeholder consultations that will commence in the upcoming year.



Financial Overview

Abbreviated Financial Overview (IFRS)

	March 31, 2022 '000	March 31, 2021 '000	$ Change	% Change
ASSETS				
Current				
Cash and cash equivalents	$ 65,586	$ 48,228	$ 17,358	36.0%
Receivables	35,589	38,112	(2,523)	(6.6%)
Inventory and prepaids	4,450	3,573	877	24.5%
Total current assets	$ 105,625	$ 89,913	$ 15,712	17.5%
Utility plant in services				
Cost	1,607,243	1,562,720	44,523	2.8%
Accumulated depreciation	(329,883)	(282,437)	(47,446)	16.8%
Net utility plant in service	1,277,360	1,280,283	(2,923)	(0.2%)
Intangible assets	20,805	20,588	217	1.1%
Capital work in progress	51,013	30,908	20,105	65.0%
Total non-current assets	1,349,178	1,331,779	17,399	1.3%
Regulatory deferral account	2,428	2,620	(192)	(7.3%)
Total assets and regulatory deferral account	**$ 1,457,231**	**$ 1,424,312**	**$ 32,919**	**2.3%**
LIABILITIES AND EQUITY				
Payables, deposits and unearned revenue	$ 33,138	$ 23,121	$ 10,017	43.3%
Long term debt	224,182	224,665	(483)	(0.2%)
Deferred contributed capital	908,589	898,952	9,637	1.1%
Employee benefit obligations	41,950	73,796	(31,846)	(43.2%)
Total liabilities	1,207,859	1,220,534	(12,675)	(1.0%)
Total equity	249,372	203,778	45,594	22.4%
Total liabilities and equity	**$ 1,457,231**	**$ 1,424,312**	**$ 32,919**	**2.3%**

	2022 '000	2021 '000	$ Change	% Change
EARNINGS AND COMPREHENSIVE EARNINGS				
Operating revenues	$ 150,502	$ 136,569	$ 13,933	10.2%
Operating expenditures (excluding depreciation and amortization)	(101,976)	(93,366)	(8,610)	9.2%
Depreciation and amortization	(49,572)	(48,607)	(965)	2.0%
Loss from operations	(1,046)	(5,404)	4,358	(80.6%)
Financial and other revenues	19,607	19,773	(166)	(0.8%)
Financial and other expenditures	(13,682)	(11,867)	(1,815)	15.3%
Earnings for the year	4,879	2,502	2,377	95.0%
Regulatory deferral account depreciation	(192)	(192)	0	0.0%
Re-measurement on defined benefits plans	40,907	(3,229)	44,136	(1366.9%)
Total comprehensive earnings (loss) for the year	**$ 45,594**	**$ (919)**	**$ 46,513**	**(5061.3%)**

Abbreviated Financial Overview (NSUARB Handbook)

	March 31, 2022 '000	March 31, 2021 '000	$ Change	% Change
ASSETS				
Current				
Cash and cash equivalents	$ 65,586	$ 48,228	$ 17,358	36.0%
Receivables	35,589	38,112	(2,523)	(6.6%)
Inventory and prepaids	4,450	3,573	877	24.5%
Total current assets	$ 105,625	$ 89,913	$ 15,712	17.5%
Utility plant in services				
Cost	1,924,866	1,877,874	46,992	2.5%
Accumulated depreciation	(590,704)	(543,355)	(47,349)	8.7%
Net utility plant in service	1,334,162	1,334,519	(357)	(0.0%)
Capital work in progress	51,013	30,908	20,105	65.0%
Total non-current assets	1,385,175	1,365,427	19,748	1.4%
Regulatory deferral account	2,428	2,620	(192)	(7.3%)
Total assets and regulatory deferral account	**$ 1,493,228**	**$ 1,457,960**	**$ 35,268**	**2.4%**
LIABILITIES AND EQUITY				
Payables, deposits and unearned revenue	$ 33,138	$ 23,121	$ 10,017	43.3%
Long term debt	224,182	224,665	(483)	(0.2%)
Deferred contributed capital	69,140	56,155	12,985	23.1%
Total liabilities	326,460	303,941	22,519	7.4%
Total equity	1,166,768	1,154,019	12,749	1.1%
Total liabilities and equity	**$ 1,493,228**	**$ 1,457,960**	**$ 35,268**	**2.4%**

	2022 '000	2021 '000	$ Change	% Change
EARNINGS AND COMPREHENSIVE EARNINGS				
Operating revenues	$ 150,502	$ 136,569	$ 13,933	10.2%
Operating expenditures (excluding depreciation and amortization)	(92,747)	(86,281)	(6,466)	7.5%
Dividend/grant in lieu of taxes	(6,466)	(5,951)	(515)	8.7%
Depreciation and amortization	(29,774)	(28,095)	(1,679)	6.0%
Earnings from operations	21,515	16,242	5,273	32.5%
Financial and other revenues	796	963	(167)	(17.3%)
Financial and other expenditures	(28,693)	(27,776)	(917)	3.3%
Loss for the year	**$ (6,382)**	**$ (10,571)**	**$ 4,189**	**(39.6%)**

Service Excellence

Customer Care Centre

Performance was down this year due to staffing shortages and an increase in call volume of 16%. The volume increase was related to the high uptake on Customer Connect, our online customer portal with customers requiring assistance with registrations and the result of a more proactive approach to collecting overdue customer accounts.

Improvement in Customer Care Centre performance continues by utilizing the insights from our state-of-the-art telephony system. Customer Care is enhancing the resource plan to ensure staff are available as required to ensure all service levels are achieved in the coming year. Customer Care is also planning to introduce the ability to web chat with customers in the coming year as another communication option for our customers.

	Calls Offered	Calls Answered	Calls Abandoned	Abandon Rate	Calls Answered Within 20 Seconds	The Average Speed Of Answer
2021/2022	73,336	67,871	5,465	7%	60%	106 seconds
2020/2021	63,336	60,880	2,446	4%	71%	56 seconds
2019/2020	86,871	67,360	19,494	22%	32%	260 seconds

Enhancing our online Customer Experience Through Customer Connect

As part of our ongoing commitment to meet the needs of our customers, Halifax Water continues to develop and improve Customer Connect, our online customer portal. At the end of fiscal 2021/22:

- 29% of our total customer base had registered for Customer Connect.
- Approximately 62% of those registered opted for paperless billing, with an estimated savings of approximately $88,000 a year.
- A leak and high consumption alert system was introduced in December 2021 and was welcomed by customers.
- 960 leak alerts and 1,132 high consumption alerts have been sent to customers.
- 20,000 customer logins per month.

Effective Asset Management

Contractors nearing the completion of the Cobequid Road Water Main Replacement.

Providing high-quality water, wastewater and stormwater services to a region of our size relies on infrastructure (assets) that is well maintained and performing as intended.

Similar to our vehicles or homes, these assets require regular maintenance but will deteriorate over their expected life span. Some maintenance activities are based on a schedule; others may be completed on an as-needed basis to extend that asset's life cost-effectively. However, eventually, it must be replaced.

Depending on the potential impact on our ability to provide services to our customers, different types of assets have different priorities regarding maintenance. For example, Halifax Water has a lower tolerance for service disruptions associated with water transmission mains due to the magnitude of the impact on our customers.

In our most recent Integrated Resource Plan (IRP), Halifax Water requires a $4,054M program over 30 years of investment in its infrastructure. Approximately 68% or $2,748M of this total amount has been identified for asset renewal (refer to Figure 1 – 2019 IRP Costs by Driver).

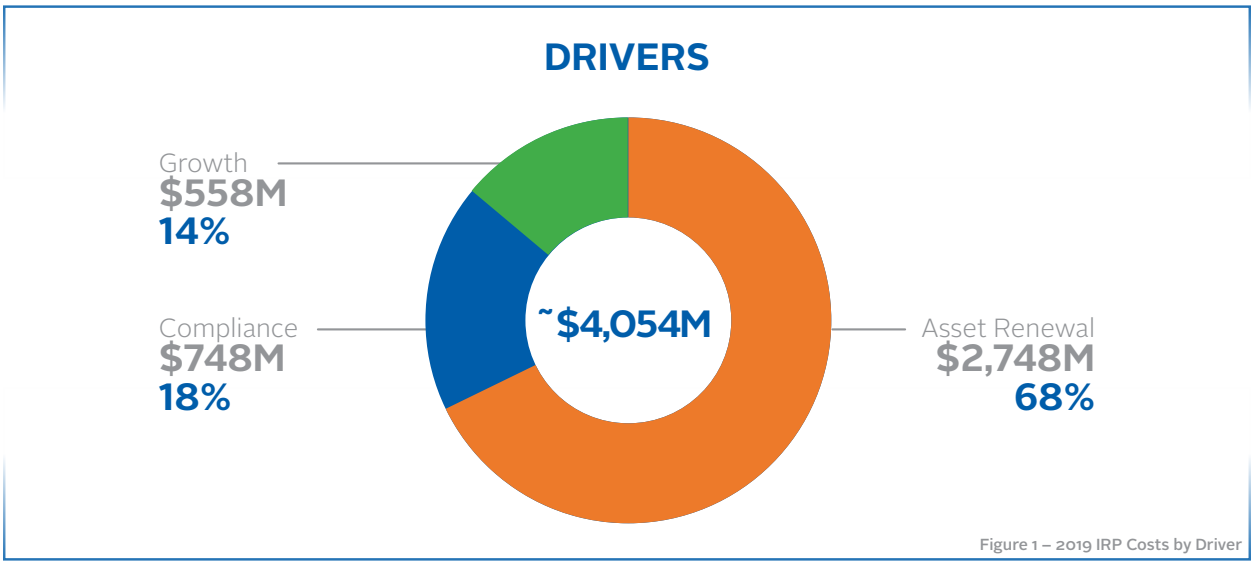


Figure 1 – 2019 IRP Costs by Driver

To ensure effective asset management, Halifax Water has an ongoing program to gather accurate information about its infrastructure's condition, how it performs, and whether it is fit for the purpose. This data helps inform Halifax Water as it decides what work is needed, when, and how much.

Information collected about the assets, institutional knowledge about these assets and service levels, and integration considerations (e.g., different assets in the same corridor, integration with HRM, coordination with projects driven by growth or compliance) are reviewed as capital budgets are prepared.

Asset management is a dynamic system that adapts to allow a continuous improvement cycle. Each iteration of data collection improves Halifax Water's collective understanding of the assets and their impact on service delivery. It enhances the accuracy of the information and enables collaboration amongst the various departments through internal knowledge sharing of reliable data and information that creates a foundation for decision making.

The success of this process is further enhanced by layering in risk, climate change, and operability factors when selecting what assets need reinvestment. All aimed at continuously improving service delivery for our customers.

Capital Infrastructure Projects

Water Capital Infrastructure

2021/22 was another challenging year due to the impacts of the pandemic and supply chain disruptions.

The Water Capital Group continued to develop and implement the recommendations of Halifax Water's Integrated Resource Plan, which identifies key capital upgrades required to accommodate the anticipated short-term and long-term growth in HRM.

Some milestones for 2021/22 included the tender and award of contracts for the construction of transmission main segments, including St Michaels Avenue, Windgate Drive, Cork Street, and Phase 1 of the Burnside-Bedford Connector.

Water Supply Enhancement Program (WSEP)

Halifax Water continues to refine project charters, concept plans and program details for the Water Supply Enhancement Program (WSEP). This is a multi-year capital upgrade and process improvement program for our two largest water supply plants, J.D. Kline (West/Central Regions) and Lake Major (East Region).

In addition to the long-term WSEP work, Halifax Water carried out a number of discrete capital projects within its water supply plants, including the Carbon Dioxide Supply System Replacement and the Low Lift Pump Replacement at the J.D. Kline WSP, the Alum Tank replacement at the Lake Major WSP, and control valve replacements at the Bennery Lake WSP.

Integrated Capital Work with HRM

Wherever practical, Halifax Water integrates the renewal of its water, wastewater, and stormwater assets with HRM's planned capital work. This HRM/Halifax Water integration provides coordinated, cost-effective project delivery for both partners and helps to reduce traffic and community disruptions.

Halifax Water continued its water main renewal program in cooperation with HRM's Streets Capital Upgrade Program. A number of the integrated water main renewal projects were located within the Lead Service Line (LSL) boundary, and Halifax Water was able to make very good progress in getting the lead out of our system through the HRM/Halifax Water Integrated Program.

One of these integrated projects involved HRM's Spring Garden Road Redevelopment project. In partnership with HRM, Halifax Water completed

capital upgrades to our utility infrastructure as part of this project. Work included key water system valve and service replacements and structurally lining the existing wastewater main.

In partnership with HRM and CN Rail, Halifax Water installed a new water main and wastewater mains across the South Street CN Rail Bridge. This represents the fourth project where water and wastewater assets have been renewed as part of the CN Rail Bridge Rehabilitation Program along the rail-cut on peninsular Halifax.

Water Storage Reservoirs

The construction of the new Hemlock Reservoir continued through 2021. The reservoir has become a landmark along the Bicentennial Highway and a symbol of Halifax's exciting growth. Completion is scheduled for the summer of 2022.

The contract to replace the old Cowie Hill Reservoir at 450 Cowie Hill Road was tendered and awarded in 2021. Demolition of the old Cowie reservoir was carried out in early 2022. Project completion is expected later in 2022.

The demolition of the old Cowie Reservoir in preparation for the construction of a new reservoir in its place.

Water Storage Reservoir Inspections

Halifax Water continues to work on the inspection and reinvestment planning for all of its water storage reservoirs as part of a utility-wide asset management approach. In 2021/22, a comprehensive assessment of all seven water supply-related dams owned and maintained by Halifax Water was completed. This assessment, carried out in accordance with the Canadian Dam Association guidelines, is also part of Halifax Water's ongoing asset management program.

Improving Worker Safety

As part of its commitment to improving worker safety, Halifax Water carried out capital upgrades to the Zinck Avenue Pressure Reducing Valve (PRV) Chamber and the Farnham Gate PRV Chamber. This work is part of a long-term program to eliminate the confined space entry risks at key underground control chambers. This will enable staff to quickly and safely enter these chambers to serve our customers better.

Lake Major Clarifier Project – Phase 1

Halifax Water has two primary water supply plants (WSPs) that must operate efficiently and effectively to ensure our customers with a high level of service. J.D. Kline WSP and the Lake Major WSP have provided high-quality water to our customers for many years.

Commissioned in 1999, the Lake Major WSP is equipped with dual train Degremont Ultrapulsators clarifiers. These clarifiers help remove solids after chemical mixing and before the water flows through filters.

However, changing source water conditions and the need for higher chemical doses to maintain high-quality water have put excess demands on the clarifiers. Ultimately, more solids are being processed, which adds additional strain on the clarifiers. Given the age and high strain on these units, Halifax Water began to have concerns about the structures that posed an unacceptable risk to the water supply.

Based on the development of the 2019 capital upgrade strategy, it was determined that this clarification technology was no longer suitable for ensuring current and future compliance with regulatory standards and customer expectations. As a result, it was determined that this clarification technology should be replaced with a new clarification process as part of the ongoing Water Supply Enhancement Program (WSEP). To facilitate the $250M WSEP capital upgrades at J.D. Kline and Lake Major WSPs, the consultants, engineering, and operations groups decided that the clarifier hardware at Lake Major should be replaced.

The replacement of clarifier #1 at Lake Major WSP began in October 2021. There were no interruptions to the water supply in terms of quality or quantity throughout the project, and it was completed within the planned time period.

The challenges encountered for this project can be broadly classified into three themes, as shown below, along with the mitigation efforts to lower the impact or concern posed by that challenge:

Theme	Challenge	Corrective Action Plan
Water Quantity	◤ During the replacement, capacity constraints meant that only 70% of average daily demand could be supplied by the Lake Major Plant. ◤ Lyle Street Booster Station posed a single point of failure as there was no redundant pump to deliver the remaining 30% of the water from Halifax to Dartmouth.	◤ Supplement the remaining 30% capacity from the Halifax system via the MacDonald Bridge line through Lyle Street Booster Station. Additionally, the project was executed in November when the water demand from customers was historically at its lowest. ◤ Engage the Distribution Operations and Technical Services departments to overhaul the pump, install a new VFD and test it in almost a full-scale setup to optimize operations prior to project start-up.
Water Quality	◤ Bringing water from Halifax into Dartmouth meant that there were areas in Dartmouth where the normal direction of flow would have to be reversed, risking discoloured water. ◤ Bringing a new water source into an existing system provides a different taste profile which customers are not used to.	◤ An aggressive flushing program (customer calls #s) was executed in the Dartmouth water system prior to the commencement of this project to lower the risk of discoloured water complaints. ◤ The finished water quality between the two plants was optimized and matched up as close as possible prior to the project commencement.
Constructability	◤ As we could not guarantee the structural integrity of the clarifiers once the water was drained from them, it was deemed that from an occupational health and safety perspective, contractors could not enter from the bottom of the tank to clean or demolish the clarifiers. Hence, all work had to be performed top-down.	◤ A strict scope of work with defined timelines was tendered. The successful proponent was selected based on their capabilities to do the work using ropes. This was a specialized team of 14 experienced rope technicians working around the clock at the start of the project until all demolition was complete. After that, they were split into individual day shifts.
General Reputational Risk to Halifax Water	◤ This was a high-risk project for Halifax Water, given that water quality and quantity could have been seriously disrupted. If either item suffered, Halifax Water ran the risk of losing customer confidence, regulatory censure, and negative media coverage. There were few contingency options.	◤ The project was managed through the Incident Command System and was given priority from all levels of the organization.. Dedicated resources from water treatment, distribution operations, water quality, regulatory services, communications, corporate services, and technical services were allocated to the project to ensure a greater level of emphasis and availability for its execution.

The comprehensive planning and the ICS structure allowed the team to adapt and remain effective until the project was completed. The project was also a success from an inter-departmental collaboration as it involved large parts of the organization.

Wastewater Capital Infrastructure

Trenchless Wastewater Main Lining Program

Over the past eight years, Halifax Water has successfully conducted an annual mainline sewer rehabilitation program using trenchless cure-in-place pipe (CIPP) lining methods. This proven rehabilitation method does not require excavation and causes much less disruption to customers and their neighbourhood streets. In addition, CIPP lining results in a long-term complete structural rehabilitation of the sewer that has also been instrumental in controlling pipe infiltration and ex-filtration.

The primary goals of CIPP are:

- To restore the structural integrity of ageing and compromised sewer mains prone to disruptions.
- To provide and restore flow capacity.

The 2021-22 program included two groups of wastewater mains to be rehabilitated to address:

- Wet weather impacts on the wastewater system.
- Asset renewal pipe rehabilitation.

Contractor installing CIPP liner in a wastewater main.

In addition, residual linings from the previous year's program were also completed in 2021-22. The sewer lengths lined and investments in this infrastructure from 2021-22 are listed in the table below.

The 2021-22 program took place in streets throughout areas of Halifax, Dartmouth and Bedford. The sewers ranged from 200 mm to 900 mm in diameter and included both circular and non-circular pipes. The average cost of lining completed in 2021-22 was approximately $530.00/m.

2021-22 CIPP Wastewater Main Lining

Lining Programs	Length of Sewers Lined (m)	Cost
2020-21 - Structural (residual)	2,230	$1,712,376.12
2021-22 - Infiltration Reduction	1,383	$553,237.23
2021-22 - Structural	3,415	$1,471,110.46
Total	**7,028**	**$3,736,723.81**
Average cost/m	**$530.00**	

Russell Lake Pumping Station Upgrades

The Russell Lake Wastewater Pumping Station is in Dartmouth and was constructed in the mid-1980s as a duplex submersible station. The station did not have backup power and required operational intervention to prevent overflows to Russell Lake during power outages. The existing cinderblock building housed electrical and control systems that were in poor condition and did not meet current electrical codes. The existing valve chamber was challenging to enter during maintenance activities and there was no forcemain redundancy.

This pumping station upgrade project included the installation of a backup power source, constructing a small building to house new electrical, instrumentation and control systems, a new valve chamber and an interconnection of the Russell Lake PS to the Morris Lake PS forcemain to provide redundancy.

Construction of this project is mostly complete, with final commissioning expected in mid-2022.

Morris Lake wastewater forcemain prepared for the installation of a replacement elbow.

Morris Lake wastewater forcemain replacement elbow being installed.

Integrated Capital Projects

To provide our customers with high levels of service for good value, Halifax Water proactively replaces and rehabilitates wastewater, water and stormwater infrastructure in conjunction with municipal street reconstruction projects. Working with the HRM to complete this work together reduces project costs and disruptions to the public. Significant integrated projects completed in 2021/2022 include the following:

Coles Road, SACKVILLE

Wastewater System Replacement
(230 m of main & 2 manholes)

Water System Replacement
(300 m of main)

Stormwater System Replacement
(10 m of main & catchbasin leads)

Howland Drive & Howland Court, SACKVILLE

Wastewater System Replacement
(300 m of main, six manholes & 1 lateral)

Water System Replacement
(470 m of main & 3 hydrants)

Stormwater System Replacement
(70 m of main, three manholes, two catchbasins & 30 m of catchbasin leads)

Renfrew Street, DARTMOUTH

Wastewater System Replacement
(430 m of main, 14 manholes & 29 laterals)

Water System Replacement
(230 m of main)

Stormwater System Replacement
(10 m of catchbasin leads)

Morris Lake Pumping Station & Russell Lake Pumping Station - Forcemain Repairs

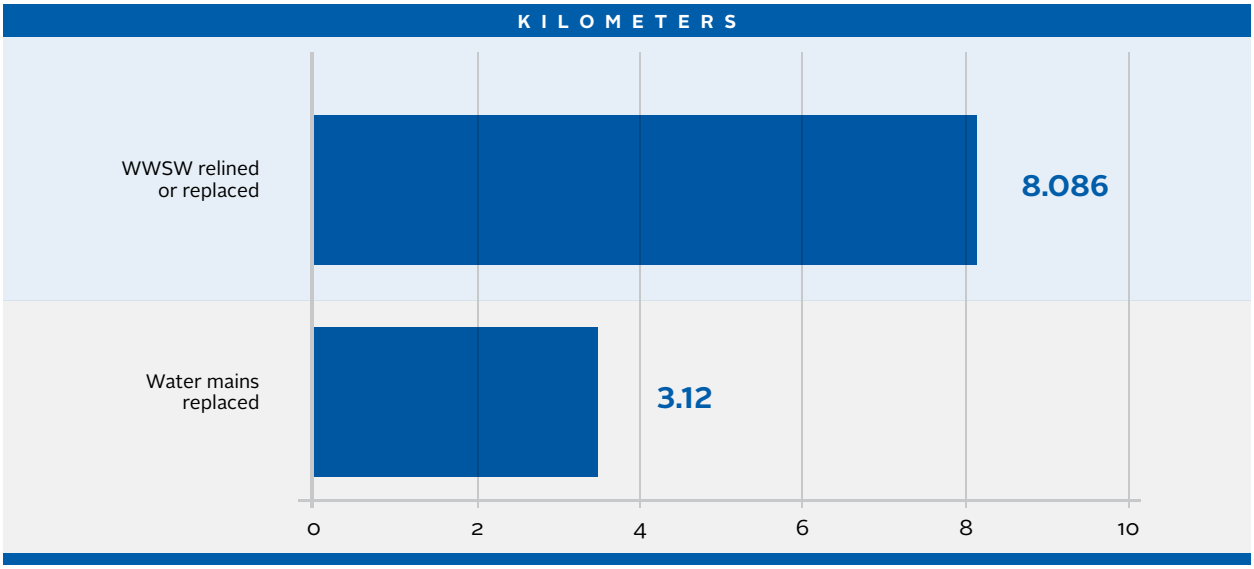
The Morris Lake and Russell Lake pumping stations and forcemains are a critical part of the wastewater collection system in this community. They collect wastewater from thousands of customers in the surrounding area and pump it to the nearby Dartmouth Wastewater Treatment Facility.

Halifax Water staff completed a number of repairs on the Morris Lake Pumping Station (PS) forcemain (circa 1986-87) over the past several years. It appeared that the issues being experienced were primarily a result of deficiencies in the material thickness of the pipe bends, poor pipeline fusing practices or the corrosion and metal loss at pipe flange locations.

The Morris Lake PS forcemain is a 600 mm polyethylene pipe approximately 2.5 km long. Since the Russell Lake PS forcemain was of the same vintage and travelled parallel to the Morris Lake PS forcemain, Halifax Water considered repairs to the joints and bends on this forcemain.

The Russell Lake PS forcemain is a 350 mm diameter polyethylene pipe approximately 1.2 km long. The project included the replacement of bends and flanged joint connections at 13 locations along the length of both forcemains. It also had a complex bypass arrangement to keep the system operational during construction.

Water & Wastewater Main Renewals & Linings in 2020/2021



Stormwater Capital Infrastructure

Halifax Water has an inventory of more than 900 km of stormwater gravity sewers. Through our Asset Management Plan and in collaboration with our Stormwater Collection Operations groups, storm sewers are prioritized for capital renewal annually to ensure the proper ongoing operation of the stormwater system.

For 2021/22, there were two significant infrastructure projects as part of that planning:

Ellenvale Run Project

As a stormwater channel that allows stormwater to flow from Lemont Lake to Morris Lake, Ellanvale Run is a watercourse that has been significantly urbanized over the years. It was a constructed channel in many places instead of a natural stream, with formed retaining walls in varying need of repair or replacement.

This project involves the replacement of these assets. It includes features that make the channel more similar to a natural stream, including natural stone on the bottom of the channel liner to stabilize the channel walls, ‘naturalize’ the channel, and reestablish or improve the natural habitat. These improvements reduce water flow speed, create pools, and meanders, and help improve fish passage.

The past year saw two additional sections of Ellenvale Run completed near Waltdale Drive and Wanda Lane. Each section was replaced with concrete channel liners with textured faces and naturalized bottoms. Construction was challenging due to the proximity of the adjacent private properties. Our contractor, consultant, and staff had to work collaboratively with the property owners to complete the project and ensure that reinstatement was satisfactory.

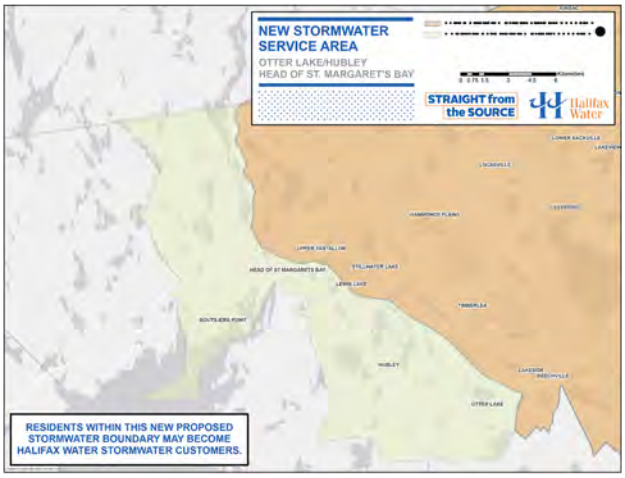
Rehabilitated section of Ellenvale Run.

Thistle Street Project

Located in central Dartmouth, the Thistle Street stormwater sewer was at the end of its service life and was prioritized for replacement in 2021. The project involved the replacement of approximately 200 metres of 450 mm diameter pipe, including associated catchbasins and maintenance holes.

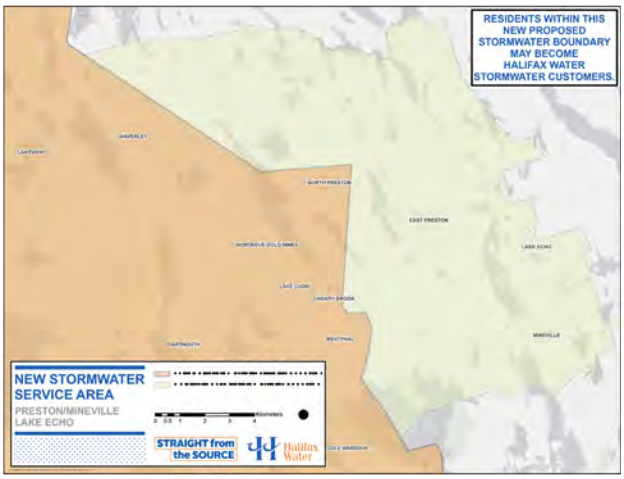
Stormwater Service Expansion

In July 2021, HALIFAX Council agreed to enter into a transfer of road assets from the Province. This transfer was set to take place in June 2022. In keeping with the 2007 agreement between the Municipality and Halifax Water, the responsibility for providing stormwater service for the two expansion areas was transferred to the utility, pending Nova Scotia Utility and Review Board (NSUARB) approval.



Area 1

Included the communities of Boutiliers Point, Ingramport, Head of St Margarets Bay, Lewis Lake, Hubley and Upper Tantallon.



Area 4

Included the communities of East Preston, Lake Echo, Mineville, and parts of Lawrencetown.

In October 2021, Halifax Water formally applied to the NSUARB to approve this expansion of its stormwater services in these two areas.

In addition, Halifax Water began a comprehensive community engagement and communications process with property owners and residents in these two areas. The goal was to inform and engage residents in an open and transparent process that allowed us to gather input for the future delivery of stormwater services. Topics covered included information about the regulatory process, the level of service that Halifax Water would provide if approved, and also offer property owners that could be potentially impacted an opportunity to ask any questions and to provide Halifax Water will feedback.

Information was made publicly available on our website, and Halifax Water hosted several public information sessions (in person and virtual) between November 2021 and January 2022. During this time, staff were collecting data to confirm details on the assets that would be transferred and which properties would be serviced should the NSUARB approve the expansion.

The NSUARB held a paper hearing regarding the stormwater service expansion in February 2022. Pending approval, Halifax Water will commence providing service to the expansion areas on June 1 and provide further communications to the residents as to whether they will become customers of Halifax Water and when they could anticipate receiving their first stormwater bill.

Temporary road installed for emergency traffic and school buses.

The new culvert installed beneath Cole Harbour Road.

Cole Harbour Road Culvert Replacement Project

The stormwater system protects public and private property from issues caused by uncontrolled stormwater flows. As part of this system, cross culverts enable stormwater to flow beneath a street without washing it out. The locations can vary from minor to significant stormwater systems within watercourses and fish habitats, which require coordination and approval with regulatory authorities. As a result, the regulations of Nova Scotia Environment & Climate Change (NSECC) and Fisheries and Oceans Canada (DFO) must be met.

Halifax Water has an inventory of more than 2,500 crossroad culverts and manages an annual crossroad culvert renewal program as part of its overall asset management plan. As a result, crossroad culverts are prioritized for capital renewal annually.

In the 2021/22 fiscal year, one of the more challenging replacement projects was on Cole Harbour Road near Glazerbrook Lane. This culvert had reached the end of its service life and was prioritized for capital renewal in 2021. During preliminary design, it was determined that this culvert is within a provincial watercourse which included a fish habitat and discharged directly into Cole Harbour. In accordance with NSECC and DFO rules and regulations, the replacement culvert accommodates the 1-in-100-year storm event capacity and re-establishes fish passage. All design elements were completed by Halifax Water staff.

Following a competitive procurement process, the contract was awarded to Cumberland Paving and Contracting Ltd., and construction began in August 2021. Given the heavy traffic flow, the Cole Harbour Road culvert replacement presented particular challenges concerning traffic control. As a result, a temporary traffic diversion lane was constructed adjacent to the project site per HRM requirements to ensure local residents had continued access to emergency and school bus services.

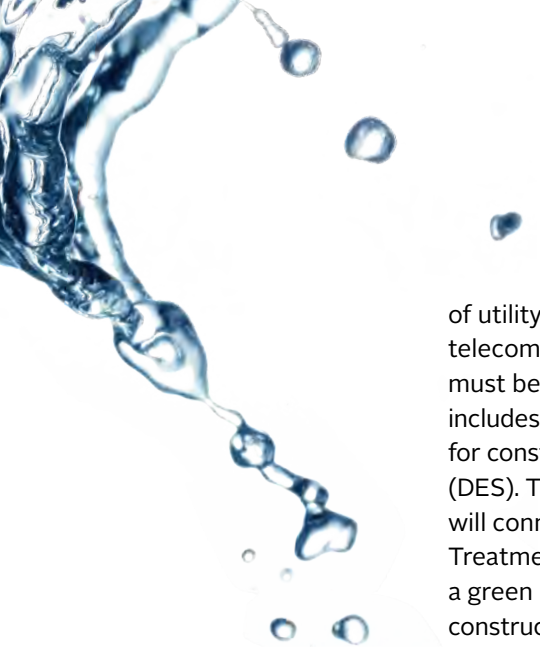
Based on the impact this work would have on traffic and residents, this project required increased public awareness and communication. It also provided excellent learning opportunities, including discovering a relatively large volume of contaminated soils. This resulted from creosote timbers from the previous culvert leaching into the surrounding soils. This required the safe removal of soil from the site so it could be sent to a specialized facility that accepts and remediates contaminated material.

Throughout the project, Halifax Water staff carried out full-time inspection services. The culvert was successfully replaced by collaborating with the contractor, achieving environmental permit requirements in October 2021.

Cogswell Redevelopment Project

The Cogswell District Redevelopment Project (CDRP) is a municipal-led initiative that will transform the Cogswell interchange into a more vibrant urban neighbourhood in the heart of downtown Halifax.

The project will convert 16 acres of road infrastructure into a mixed-use neighbourhood, extending the downtown entrance northwards and reuniting communities separated by the interchange lands. The urban street grid will be reinstated as part of the plan to create development blocks capable of supporting new residential and commercial environments for 2,500 people. As a result, a significant amount



of utility infrastructure (i.e. power, gas, telecommunications, water, sewer, storm) must be removed and relocated. This includes the necessary infrastructure work for constructing a District Energy System (DES). This ambient heat recovery system will connect to the Halifax Wastewater Treatment Facility (WWTF) and provide a green energy source for buildings constructed within the Cogswell District.

Following a competitive procurement process, the tender for the CDRP was awarded to Dexter Construction on September 14, 2021, and construction is now underway. With an estimated cost of approximately $122.6M, the CDRP is expected to span fiscal years 2021-22 to 2024-25.

Cost sharing from Bell Aliant, Halifax Water, Heritage Gas and Nova Scotia Power is expected to offset the project construction cost. However, the amounts of those contributions are not yet finalized. Contributions from Halifax Water and Nova Scotia Power will require the approval of the Nova Scotia Utility and Review Board.

Halifax Water is currently working with the Municipality to develop a prudent cost-sharing arrangement for our customers.

Operational Highlights

One Team, One Water – Fostering more collaboration between Water and Wastewater/ Stormwater Operation

Over many years, through multiple municipal amalgamations and the resulting integration of services, Halifax Water has acquired and developed a broad range of unique abilities. As a result, the utility has experience in a wide range of operational and construction activities that allow us to provide a high-level service to our customers.

For many years, the water and wastewater/stormwater departments had operated in separate groups and used different processes. This created inconsistent policies and procedures that could lead to staff morale and labour management issues. It also meant that some equipment and fleet vehicles were underutilized, creating opportunities for standardized work procedures and improved operational efficiency.

As Halifax Water continues to mature and grow, there was an opportunity to address these issues, gain operational efficiency, and improve customer service. This represents a significant cultural change for Halifax Water. Still, it is also an opportunity to engage staff, supervisors, and managers and develop a more collaborative approach to problem-solving our historically segmented approach to service delivery.

The One Water operation approach was introduced in 2021 and represented the best practice for effective utility management. It is designed to create efficiencies in service delivery across the previously siloed department and business units. Focusing on resilience and reliability through an integrative decision-making approach, it considers the entire water cycle and larger infrastructure systems.

Through this approach, Halifax Water is now using a more integrated approach to delivering operational services, using ALL of our highly skilled workforces. This

approach is critical as we move towards the creation of a new integrated operations depot in Dartmouth, which will combine four different collections and distribution teams into one centralized operational facility.

Through the managers' collaboration, several operational initiatives were delivered in 2021/22 that were fostered from our 'One Team, One Water' approach and enabled us to serve our customers better. They represent a broad range of assignments; some were planned events, and others were emergency response support.

These include:

Cobequid Road Water Main Repairs

A section of the 600 mm diameter water main failed in the summer of 2021, impacting water service for customers in parts of nearby communities and disrupting an essential roadway in the Lower Sackville community. The water distribution staff took the lead on the repair to stabilize the situation and reinstate service. They quickly realized that additional resources were required to address the problem and subsequently engaged wastewater/stormwater collection services staff to assist at the repair site. This integrated delivery allowed the response team to direct our own resources as required in the response.

Water and Wastewater/Stormwater Operations groups working together to serve our customers.

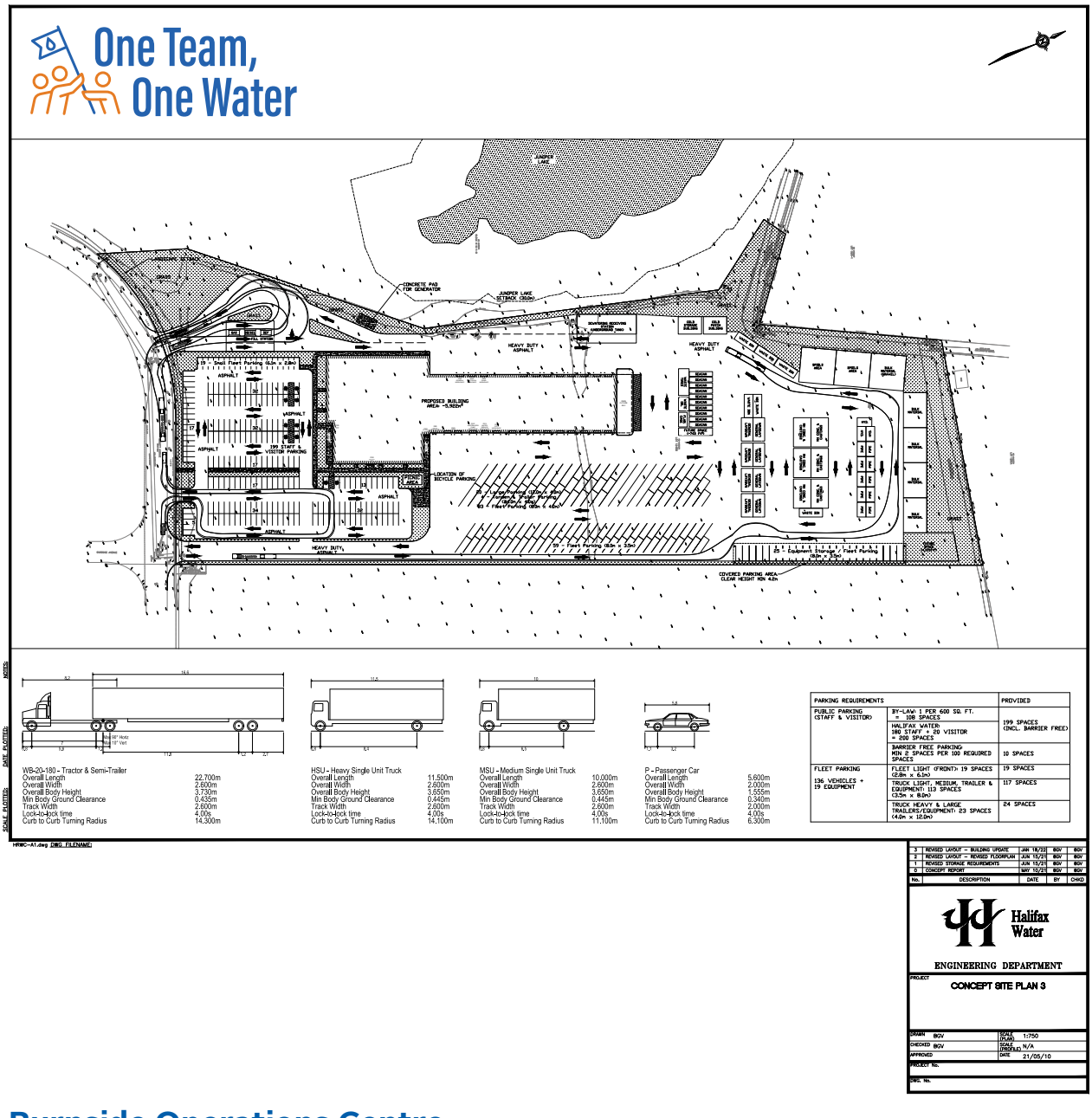
Temporary Housing Servicing

In response to the housing crisis within our municipality, HALIFAX constructed a new temporary housing development in Dartmouth. The project required water and wastewater services for the multi-unit facility. The city engaged Halifax Water to install these service connections. Halifax Water operations took the lead on the project with a joint delivery between East Region water distribution and wastewater/stormwater collections services. The servicing was completed on schedule in preparation for delivery of the housing units.

Barrington Street/Inglis Street Sewer Separation

This project involved the sewer separation of a section of Barrington Street that will result in an estimated flow reduction of 18 million litres per year from the Pier A sewer shed. The project was multi-disciplined with the challenge of aligning three separate mains (water, wastewater, and stormwater) in a section of the street that is already densely packed with buried infrastructure. Construction sequencing was critical to maintaining wastewater, stormwater and water services for the project's duration. A joint operations team from West Region water distribution and wastewater/stormwater collection services successfully completed this complex project and minimized service disruptions to our customers.

The One Water approach involved the coordination of efforts of senior managers. Still, it was primarily driven by the water distribution and wastewater/stormwater collection managers, their respective supervisors, frontline staff, support clerks and administrative staff.



Burnside Operations Centre

Throughout 2021/22, extensive internal stakeholder engagement was completed to develop and further refine the concept design for the new Burnside Operations Centre. The project team recognized the importance of listening and taking deliberate actions to involve all user groups in the future depot design. As part of the engagement process, the goal was to understand the needs, workflows, and operational challenges of consolidating the four depots - East and Central Region Water, Wastewater & Stormwater Operations.

The project team, in collaboration with EastPoint Engineering's consulting team, met with Halifax Water staff to gather input for the facility design; to identify and understand the type of spaces needed; functional requirements of yard design and alignment between inside and outside. This also considered the flow of people and work, especially at the beginning and end of the day; important amenities to better serve employee needs; positive environmental impact/stewardship desired; and application of lessons learned from other buildings and projects (i.e. 455 Cowie Hill Road Depot).

Input was facilitated through the development of three concept design options for the building and lot layout, three energy and building performance options, and cost estimates for each. The feedback provided enabled the selection and progression of one of the concepts, Concept #3. This concept was then further refined and rolled out for added engagement and additional feedback to all affected groups that would be moving into the new facility.

At the end of the fiscal year, we had a well-defined concept building floor plan and lot layout. This is the result of a strong engagement plan and is very close to achieving the desired functionality required for our operational teams. Through the consultation process, we've also generated and sustained interest in the building and the potential for future improvements to business processes from the staff. There is excitement in the air for the move into this new consolidated depot anchored on a One Team, One Water culture.

Construction costs and schedule estimation have been challenging throughout the pandemic, creating increased risk and uncertainty with forecasting. As a result, the project team is moving forward with an Integrated Project Delivery methodology to achieve the best possible value in this volatile marketplace. The procurement for an IPD team will be executed in 2022/23, with the design and construction of the new facility anticipated for completion in 2025. Ongoing engagement and feedback will continue throughout this time as well.

IT Strategic Plan Process

In 2018, Halifax Water adopted a 5-year IT strategic plan to address critical gaps in the utility's IT capabilities related to its service provision to customers. Since then, the team has been advancing the plan as scheduled. In 2021, some key accomplishments included:

- Completion of the deployment of Customer Connect,the advanced metering infrastructure program.
- The use of advanced metering data to support the launch of Customer Connect, a customer portal to allow customers to receive bills electronically, get information on their hourly water consumption and receive alerts to high consumption and suspected leaks.
- Adoption of software platforms that improve customer service by automating processes such as water quality monitoring, environmental permit compliance, asset management and work order processing.

The IT Strategic Plan is now in its fifth and final year, with two significant initiatives remaining. This includes a multi-phase program to modernize and upgrade Halifax Water's cybersecurity capabilities, with the goal of protecting customer data and maintaining our ability to deliver service. The second is the adoption of a new modern Enterprise Resource Planning system and customer relationship system.

Regulatory Compliance

Engineering Approvals

The Engineering Approvals group is focused on adherence to the Halifax Water Design Specifications, the Supplementary Standard Specification and the Schedule of Rates, Rules and Regulations with respect to connections to and expansions of the Halifax Water systems. The administration of the new service connections includes the administration of the Regional Development Charge.

In 2021/22, the Engineering Approvals group processed:

Application Type	2021/2022	2020/2021	2019/2020
Water Permit Reviews	3,538		
Water Permit Approvals	1,223	1,226	1,338
Subdivision Approvals	166	199	273
Metres of New Water Main	3,185	2,175	2,205
Metres of New Wastewater Main	4,037	1,861	2,191
Metres of New Stormwater Main	3,247	1,582	2,509
Demolition Permits	154	167	118
Clearance Letters	30	18	40
Tender Reviews	85	80	83
New Backflow Prevention Applications	115	122	112
Backflow Prevention Devices Active	5,812	7,204	7,182

Regional Development Charge

Halifax Water oversees the development and collection of water and wastewater Regional Development Charges (RDCs). These funds are used to upgrade regional water and wastewater systems to facilitate projected population growth. The 2019 application to update the RDC was approved in April 2021. The new approval allows annual adjustments for the Consumer Price Index (CPI), with five-year updates submitted to the NSUARB.

The table below shows the cumulative accounting of all Regional Development Charges received and invested in infrastructure at the end of the fiscal year on March 31, 2022. The Regional Development Charge program is cost-neutral, fulfilling the desired need to provide central services for the projected growth of the Halifax Regional Municipality (HRM). Halifax Water is coordinating with HRM on updating the infrastructure requirements to support projected growth as they update the Regional Plan.

Collections and Expenditures

Regional Development Charge	Regional Development Charges Collected	Interest	RDC Funds Invested in Infrastructure	Remaining RDC Funds available for Future Investment in Infrastructure
Water	$6,899,082	$94,250	$3,729,740	$3,263,592
Wastewater	$85,803,897	$1,080,107	$23,031,126	$63,852,878
Grand Total	**$92,702,978**	**$1,174,357**	**$26,760,866**	**$67,116,469**

Environmental Engineering

During the year, Environmental Engineering continued to use Cityworks, Halifax Water's computerized maintenance monitoring system (CMMS), in new and innovative ways to track and manage Pollution Prevention (P2) and Inflow and Infiltration (I&I) Program cases. This year, parts of the field programs were impacted by COVID-19 when restrictions were placed on customer interactions.

The P2 and I&I Program staff are responsible for regulating the quantity and quality of discharge from customer connections to the wastewater and stormwater systems.

P2 is responsible for managing situations where a private wastewater system is inadvertently cross-connected to a stormwater system. P2 successfully resolved seven wastewater to stormwater cross-connections and completed 235 audit inspections of industrial/commercial/institutional customers over the past year. Staff also responded to a number of spills and non-compliant discharges, including silt discharge into wastewater and stormwater systems. P2 is also working with HRM on two lake quality studies

– Lake MicMac/Lake Banook and First Lake – and helping to identify possible sources of water quality impairment.

The I&I Reduction Program identifies and resolves private property connections where stormwater enters the wastewater system. Staff completed over 2,300 private property assessments on a priority basis across the municipality and worked closely with the Wet Weather Management Program team to reduce I&I in target areas from public and private properties. These assessments included 15.6 km of smoke testing involving non-harmful smoke being blown into wastewater systems to look for leaks or illegal cross-connections.

The I&I group also works on other I&I initiatives, such as a Downspout Disconnection Program, with the aim of redirecting stormwater flows from downspouts away from the wastewater system. The I&I group also advanced work on a Campus Customer Pilot Program which involves the compliance of larger private properties, identifying thirteen properties for the pilot. The collected data will be used to develop a program manual and guidelines. Work continued with the New Service Account Compliance Program (NSAC), which will link private property I&I compliance with the creation of a new service account with Halifax Water.

Water Quality

Providing our customers with safe, reliable, affordable, high-quality drinking water requires investment in infrastructure, research, and robust quality assurance/ quality control programs. Halifax Water has made considerable investments in all of these areas.

In order to ensure quality control is optimized, we maintain ISO 14001 Environmental Management System Registration at the J. D. Kline (Halifax), Lake Major (Dartmouth), and Bennery Lake (Halifax Airport) and smaller community water supply plants.

Halifax Water undertakes a comprehensive water testing program with bacteriological testing done weekly at 63 locations within the urban core and at each of the small systems.

Approximately 3,250 tests are conducted each year for Total Coliform bacteria and E.coli. Halifax Water consistently achieves results where 99.9% of samples are absent of bacteria, as shown below:

Drinking Water Compliance Summary
Total Coliform Sample Results
April 2021 - March 2022

Systems	% Absent	# of Samples
Pockwock	99.9%	884
Pockwock Central	100.0%	520
Lake Major	99.9%	1206
Bennery	100.0%	156
Five Islands	100.0%	121
Silver Sands	100.0%	104
Middle Musquodoboit	100.0%	104
Collins Park	100.0%	104
Bomont	100.0%	104
TOTAL	**99.9%**	**3303**
Absent (A)	99.9%	3301
Present (P)	0.1%	2

Additional testing of drinking water includes:

- Chlorine residual, pH, and turbidity of treated water leaving each plant as well as multiple locations within the plant to monitor and optimize the treatment process.
- Quarterly sampling of treated water at 2-3 locations within the distribution system for approximately 40 chemical parameters.
- Quarterly sampling of raw lake water and water from contributing streams for approximately 40 chemical parameters.
- Bi-annual sampling of all raw and treated water for all parameters in the Guidelines for Canadian Drinking Water Quality (Health Canada).
- Bi-annual testing and sampling for giardia and cryptosporidium for treated and raw water for all surface water systems.

Water test results are reported to Nova Scotia Environment & Climate Change (NSECC) and the Nova Scotia Medical Officer of Health (NSMOH) on a regular basis. Protocols have been established between Halifax Water and the provincial Health and Environment departments to clearly delineate roles and responsibilities in advance of the unlikely event of a disruption in water quality. During the COVID-19 pandemic, some of the dedicated sampling locations were not accessible, and the group had to locate other suitable sites that could be safely accessed and provide a representative sample within the system. These adjustments were reported weekly to NSECC.

Wastewater Treatment Facility Compliance

As a provider of wastewater services, part of Halifax Water's role is protecting the environment. This includes ensuring that the treated effluent released into the environment meets the regulatory requirements outlined in our operating permits.

Wastewater treatment facilities (WWTFs) in Nova Scotia are regulated by Nova Scotia Environment and Climate Change (NSECC). They set effluent discharge limits for all wastewater facilities. The limits define maximum concentrations of parameters such as Carbonaceous Biochemical Oxygen Demand (CBOD – a measure of the amount of material in water which will consume oxygen as it decomposes), Total Suspended Solids (TSS – a measure of the amount of particulate matter in the water), and E.Coli (bacteria associated with wastewater). For some facilities, parameters such as nutrients (nitrogen and phosphorus, which cause excess growth of algae and plants) or pH (a measure of acidity) are also regulated.

Halifax Water oversees five large Harbour WWTFs and nine smaller, community-based WWTFs.

Compliance for the Harbour WWTFs is measured on monthly averages. There has been a significant improvement in the compliance at the five Harbour WWTFs, with Herring Cove, Eastern Passage and Mill Cove being fully compliant for the year. Operational improvements have been underway at Halifax and Dartmouth and have been the reason for some of the non-compliance results throughout the year.

Wastewater Treatment Facility Compliance Summary

Monthly Performance - April 2019 to March 2020

Wastewater Treatment Facility	April 21					May 21					June 21				
	CBOD5	TSS	E.coli	pH	Toxicity Pass	CBOD5	TSS	E.coli	pH	Toxicity Pass	CBOD5	TSS	E.coli	pH	Toxicity Pass
Halifax	33	23	N/A	7	YES	36	21	996	7	YES	36	20	4,421	7	YES
Herring Cove	23	20	N/A	7	N/A	38	24	20	7	YES	31	23	14	7	N/A
Dartmouth	40	40	N/A	7	YES	45	21	55	7	YES	44	18	89	7	YES
Eastern Passage	8	6	N/A	7	N/A	7	8	24	7	YES	7	8	10	7	N/A
Mill Cove	16	18	22	7	N/A	17	18	17	7	YES	11	15	10	7	N/A
	July 21					August 21					September 21				
	CBOD5	TSS	E.coli	pH	Toxicity Pass	CBOD5	TSS	E.coli	pH	Toxicity Pass	CBOD5	TSS	E.coli	pH	Toxicity Pass
Halifax	47	16	2,496	7	YES	54	27	18,230	7	YES	56	44	131,628	7	NO
Herring Cove	35	20	10	7	N/A	21	15	13	7	YES	25	13	16	7	N/A
Dartmouth	55	13	135	7	YES	26	8	23	7	YES	56	14	26	7	YES
Eastern Passage	6	7	19	7	N/A	7	6	29	7	YES	9	17	115	7	N/A
Mill Cove	11	16	10	7	N/A	11	14	17	7	YES	10	10	12	7	N/A
	October 21					November 21					December 21				
	CBOD5	TSS	E.coli	pH	Toxicity Pass	CBOD5	TSS	E.coli	pH	Toxicity Pass	CBOD5	TSS	E.coli	pH	Toxicity Pass
Halifax	58	45	62,492	7	YES	41	41	N/A	7	YES	24	21	N/A	7	YES
Herring Cove	40	18	12	7	N/A	18	14	N/A	7	YES	24	22	N/A	7	N/A
Dartmouth	68	17	114	7	YES	45	35	N/A	7	YES	44	42	N/A	7	YES
Eastern Passage	7	9	34	7	N/A	8	7	N/A	7	YES	9	16	N/A	7	N/A
Mill Cove	11	14	22	7	N/A	10	15	23	7	YES	11	17	33	7	N/A
	January 22					February 22					March 22				
	CBOD5	TSS	E.coli	pH	Toxicity Pass	CBOD5	TSS	E.coli	pH	Toxicity Pass	CBOD5	TSS	E.coli	pH	Toxicity Pass
Halifax	33	21	N/A	7	YES	33	19	N/A	7	YES	32	29	N/A	7	YES
Herring Cove	19	12	N/A	7	N/A	30	15	N/A	7	YES	19	13	N/A	7	N/A
Dartmouth	37	39	N/A	7	YES	37	26	N/A	7	YES	38	25	N/A	7	N/A
Eastern Passage	17	12	N/A	7	N/A	8	8	N/A	7	YES	10	11	N/A	7	N/A
Mill Cove	11	14	12	7	N/A	19	19	12	7	YES	25	23	20	7	N/A

Performance assessments for the nine smaller WWTFs are based upon quarterly averages. Results for April 2021 to March 2022 are presented below:

Wastewater Treatment Facility Compliance Summary

Q1 – April to June 2021

Wastewater Treatment Facility	Averaging Period Compliance per Parameter								
	CBOD5	TSS	E.coli	Phosphorus	Ammonia	pH	Dissolved Oxygen	Chlorine	Toxicity Pass
Aerotech	2	1	10	0.1	0.1	7.4	8.2	N/A	YES
Frame	5	1	10	N/A	N/A	6.5	N/A	N/A	N/A
Lakeside-Timberlea	5	17	10	1	1	6.9	N/A	0.10	YES
Lockview-MacPherson	7	9	10	0.3	12	6.9	N/A	N/A	N/A
Middle Musquodoboit	5	17	46	N/A	N/A	7.2	N/A	N/A	N/A
North Preston	4	3	10	0.7	0.1	6.4	N/A	N/A	N/A
Springfield	5	7	63	N/A	N/A	7.4	N/A	N/A	N/A
Steeves (Wellington)	3	1	10	0.1	0.5	7.2	N/A	N/A	N/A
Uplands Park	4	12	10	N/A	N/A	6.6	N/A	N/A	N/A

Q2 – July to September 2021

Wastewater Treatment Facility	Averaging Period Compliance per Parameter								
	CBOD5	TSS	E.coli	Phosphorus	Ammonia	pH	Dissolved Oxygen	Chlorine	Toxicity Pass
Aerotech	2	1	10	0.05	0.1	7.7	7.1	N/A	YES
Frame	5	1	5	N/A	N/A	6.0	N/A	N/A	N/A
Lakeside-Timberlea	5	15	11	0	1	6.9	N/A	0.10	YES
Lockview-MacPherson	5	4	14	0.3	1	6.9	N/A	N/A	N/A
Middle Musquodoboit	7	7	10	N/A	N/A	7.4	N/A	N/A	N/A
North Preston	5	3	10	1.6	0.1	6.6	N/A	N/A	N/A
Springfield	8	32	22	N/A	N/A	6.6	N/A	N/A	N/A
Steeves (Wellington)	5	1	10	0.1	0.06	7.1	N/A	N/A	N/A
Uplands Park	7	10	23	N/A	N/A	6.5	N/A	N/A	N/A

Seven of the smaller community WWTFs, Aerotech, Frame, Lakeside-Timberlea, Middle Musquodoboit, North Preston, Steeves and Uplands Park, were fully compliant for the year.

Wastewater Treatment Facility Compliance Summary

Q3 – October to December 2021

Wastewater Treatment Facility	Averaging Period Compliance per Parameter								
	CBOD5	TSS	E.coli	Phosphorus	Ammonia	pH	Dissolved Oxygen	Chlorine	Toxicity Pass
Aerotech	2	1	10	0.06	0.1	7.6	8.9	N/A	YES
Frame	8	1	10	N/A	N/A	6.7	N/A	N/A	N/A
Lakeside-Timberlea	5	16	10	1	1	6.9	N/A	0.10	YES
Lockview-MacPherson	6	13	10	0.5	1	6.9	N/A	N/A	N/A
Middle Musquodoboit	5	4	10	N/A	N/A	7.3	N/A	N/A	N/A
North Preston	4	5	10	0.6	0.5	6.5	N/A	N/A	N/A
Springfield	5	5	14	N/A	N/A	6.7	N/A	N/A	N/A
Steeves (Wellington)	5	1	10	0.1	01	7.2	N/A	N/A	N/A
Uplands Park	8	7	27	N/A	N/A	6.7	N/A	N/A	N/A

Q4 – January to March 2022

Wastewater Treatment Facility	Averaging Period Compliance per Parameter								
	CBOD5	TSS	E.coli	Phosphorus	Ammonia	pH	Dissolved Oxygen	Chlorine	Toxicity Pass
Aerotech	2	1	10	0.1	0.2	7.0	10.3	N/A	YES
Frame	7	1	10	N/A	N/A	6.9	N/A	N/A	N/A
Lakeside-Timberlea	9	19	23	1	2	6.8	N/A	0.10	YES
Lockview-MacPherson	8	15	30	0.4	13	6.4	N/A	N/A	N/A
Middle Musquodoboit	6	4	10	N/A	N/A	7.3	N/A	N/A	N/A
North Preston	7	9	10	0.7	0.9	6.5	N/A	N/A	N/A
Springfield	6	5	10	N/A	N/A	6.8	N/A	N/A	N/A
Steeves (Wellington)	10	1	10	0.1	0.1	7.1	N/A	N/A	N/A
Uplands Park	9	6	10	N/A	N/A	7.1	N/A	N/A	N/A

Environmental Sustainability

Two hundred twenty-six solar PV panels on the roof of the Halifax Wastewater Treatment Facility with a peak capacity of 75kW.

Staff holding the ISO 14001 certification in front of the Mill Cove Wastewater Treatment Facility.

Environmental Management System

An Environmental Management System (EMS) is an internationally accepted system of procedures, records and processes to manage environmental issues and assist with regulatory compliance. It also makes day to day operations more sustainable and engages employees in these operational activities. The EMS program is audited against ISO 14001 standards, and if found to comply, it receives certification through the International Organization for Standardization (ISO).

Staff have successfully obtained certification for the J. D. Kline, Lake Major, Bennery Lake and Small Systems Water Supply Plants (WSPs) and the Herring Cove, Dartmouth, Halifax, Eastern Passage, Mill Cove, Aerotech and Community Wastewater Treatment Facilities (WWTFs). An expansion of scope audit is scheduled for May 2022; at that time, Beechville-Lakeside-Timberlea WWTF and the facilities at 450 & 455 Cowie Hill Road and some shared services will be audited. Once the expansion of scope audit is completed, all water and wastewater facilities and supporting services at Halifax Water will be ISO 14001-2015 certified by SGS Canada.

With this expansion of scope audit at the facilities at 450 & 455 Cowie Hill Road, corporate expansion is underway. Shared resources such as Regulatory Compliance, Human Resources and Procurement are now working within the system. Looking ahead, operational teams, water distribution, and wastewater/stormwater collections will be included, and other shared resources such as Customer Care, Engineering, IT and Asset Management will be brought into the system.

The Regulatory Compliance group also completed implementing a new software system, KLIR, which will be used to store all Halifax Water quality data and regulatory compliance obligations in one system. KLIR will provide a central storage location for quality data previously stored in several locations and is sometimes challenging to access. KLIR will also track regulatory compliance documents and provide reminder alerts to staff before a task is due. The Regulatory compliance group also began to roll out a revised regulatory compliance system to facility and collections staff. This system aims to ensure consistent and reliable reporting of releases from Halifax Water infrastructure to our Regulators.

Wet Weather Management Program

In older sections of the municipality, HRM, stormwater and wastewater flow into a combined system and enter a wastewater treatment facility. As a result, the stormwater adds additional strain

to the wastewater system and unnecessarily takes up capacity, chemicals, and energy used in the treatment process. By reducing the amount of stormwater, we can regain lost capacity in the wastewater treatment system and delay unnecessary upgrades to treatment facilities, as well as the associated costs for our customers.

Through its Wet Weather Management Program (WWMP), Halifax Water continues to build on previous successes and learn from past experiences. In 2021/22, we formalized a reporting structure associated with Decision Matrix Reports (DMRs) that were prepared for six WWMP areas in the Fish Hatchery sewershed. And the benefits of the report were immediately apparent. These reports summarize all activity within a WWMP sewershed and will support decision making, capital project selection, private side investigations and preparation of the WWMP Annual Report.

Priority Sewersheds

The WWMP continues to follow the direction of the 2019 Infrastructure Master Plan (IMP) and is concentrating the majority of activity in the priority sewersheds of Fish Hatchery, Ellenvale, Loon Lake, and Eastern Passage are the focus of the program over the next several years.

Sanitary Sewer Evaluation Survey (SSES) activities identify system deficiencies and characterize sources of I/I within the collection system. They include but are not limited to flow monitoring, CCTV inspections of mainline and laterals, smoke testing and private side inspections. In 2021/22, 49 WWMP contract flow meters were in place, focusing on monitoring the IMP priority Sewersheds. This flow data prioritizes areas and supports future RDII reduction projects.

Approximately 23,000m of CCTV inspections were completed in 2021/22, focusing on several Priority Sewersheds, including Ellenvale, Fish Hatchery PS and Eastern Passage. In 2021/22, approximately 13,300 m of wastewater main smoke testing investigations were completed in the Fish Hatchery PS Sewershed. Smoke testing assists in identifying public and private defects and leads to repairs or further investigation.

Community Sewersheds

The WWMP monitors six of Halifax Water's small community wastewater treatment facilities (WWTF) systems: Wellington, Frame, Uplands, North Preston, Springfield Lake and Fall River sewersheds. These WWTF flows are monitored with the intent to identify trends of increasing flows within each system. When issues become apparent, the WWMP investigates the sewershed following the decision matrix to identify defects for repair or rehabilitation.

In 2020/21, continued high flows in the North Preston and Springfield Lake WWTF sewersheds prompted the WWMP to investigate further any defects that may be present in the system. Through an extensive review of SSES and coordination with Operations, several public side repairs were identified and repaired in Springfield Lake WWTF sewershed.

Eastern Passage Wastewater Treatment Facility

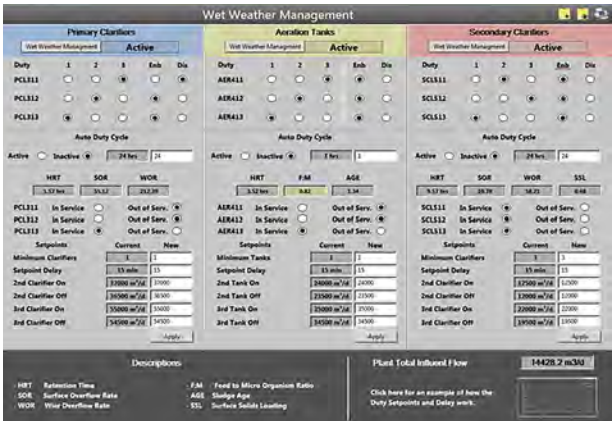
Wet weather presents challenges at wastewater treatment facilities (WWTFs) when precipitation rapidly increases incoming plant flow above the average treatment capacity of online vessels. Standby treatment trains are needed to come into immediate service to deal with a sudden change in flow. However, not all facilities are staffed 24/7, so an automated response is required. New automated tools often involve the integration of planning, design, and operation of the wastewater treatment system.

Staff at the Eastern Passage WWTF have improved the management of wet weather treatment issues in two ways. First, Process Technicians assessed and compared plant treatment train performance to engineered design guidelines across various flow conditions. Eastern Passage staff then worked alongside their colleagues in Technical Services to develop an automated Supervisory Control & Data Acquisition (SCADA) program to open and close actuated gates to bring additional tankage online and offline at the right time in response to changing flows.

A second problem would quickly manifest in a biological, secondary treatment plant such as EPWWTF's activated sludge process if it were not for the staff's diligence to proactively prepare our treatment organisms before a wet weather event. Unlike additional vessels that can be easily opened or closed or chemical feeds that can quickly be increased, activated sludge organisms take time to acclimatize and adjust to extreme variations. By closely monitoring the health of our offline biological organisms through evaluating various online sensors, water quality parameters and microscopy in our lab, Process Technicians will condition the aeration tanks by reintroducing healthy activated sludge with food (primary effluent), air and alkalinity adjustments to prepare and grow our microorganisms before a wet weather event. Once the microorganisms are conditioned, SCADA can readily bring tankage online or offline as flows dictate without detrimental impacts on our effluent quality. Lessons learned from the long, iterative process of tuning a plant to respond to significant variations in flow have been documented in our Wet Weather Manual for continual improvement and compliance optimization.

Three aeration tanks where microorganisms are conditioned to good health before fully coming online to treat high wet weather flows.

Secondary clarifiers automatically come online and offline according to defined flow ranges.



SCADA wet weather management Human-Machine Interface.

Wastewater Treatment Facility Enhancement & NSERC Wastewater Research

Harbour Solutions WWTF – Technology Upgrade – Fine Screen

Mechanical treatment is indispensable as the first step in preliminary wastewater treatment. The existing Halifax Harbour Treatment Plants (HHSPs) were initially equipped with unidirectional bar-type screening technology that frequently did not capture inert materials in the process chain, creating operational and maintenance issues downstream in the plants. The goal of this capital project was threefold: Improve the performance of downstream processes, sludge quality and the overall appearance of the final effluent; therefore, bidirectional screening technology use perforations were selected (Figure 1). Additionally, the upgrade would reduce expenditures related to poorly functioning treatment systems due to debris carryover, minimize maintenance and operational costs associated with damages to downstream processes and avoid non-compliance in permits to operate.

In January 2020, Halifax Water tendered requests for quotations to supply fine screen and compactor technology to replace all the existing screens in the HHSPs. Halifax Water received five submissions, and through an evaluation process, Veolia Water Technologies Canada was awarded the goods and services contract for $2.67M for all three treatment facilities to be implemented one at a time.

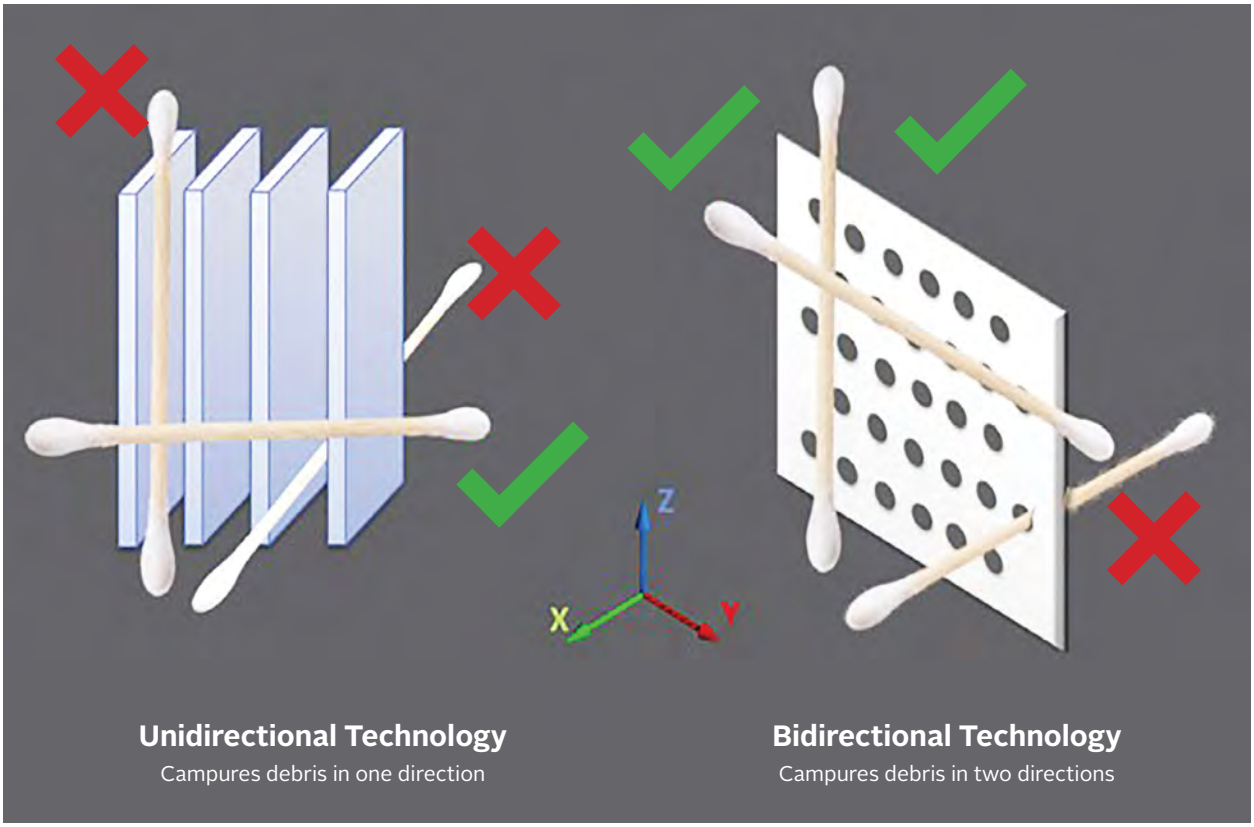


Figure 1: Screening types (IMAGE COURTESY OF VEOLIA WATER).

The selected fine screening technology will remove nearly all inorganic debris at the headworks and provide tremendous benefits for the facility. The first plant to receive the screening upgrade was the Dartmouth WWTF. The construction tender was awarded to Black & McDonald; work began in January 2021 and was completed in April 2021.

Using a fine screen with 6mm perforated plate technology allows the facility to run more efficiently — the savings aren't obvious, but over time they add up. One visible sign of the fine screen's success is the increased tonnage of screenings hauled to the landfill and minimal debris retained on the UV lamps compared to facilities yet to be upgraded (See figures 3-5).

Currently, work is underway at the Halifax WWTF to replace the screens at that facility, and engineering is underway for the Herring Cove Plant for implementation in the 2022/23 fiscal year.

Overall capital costs are approximately $4.65M and include equipment, construction, commissioning, and project overhead; and is broken down as follows:

- Halifax WWTF - $ 1.75M
- Dartmouth WWTF - $ 1.55M
- Herring Cove WWTF - $ 1.35M

Some construction photos of the project are shown in Figures 6-8.

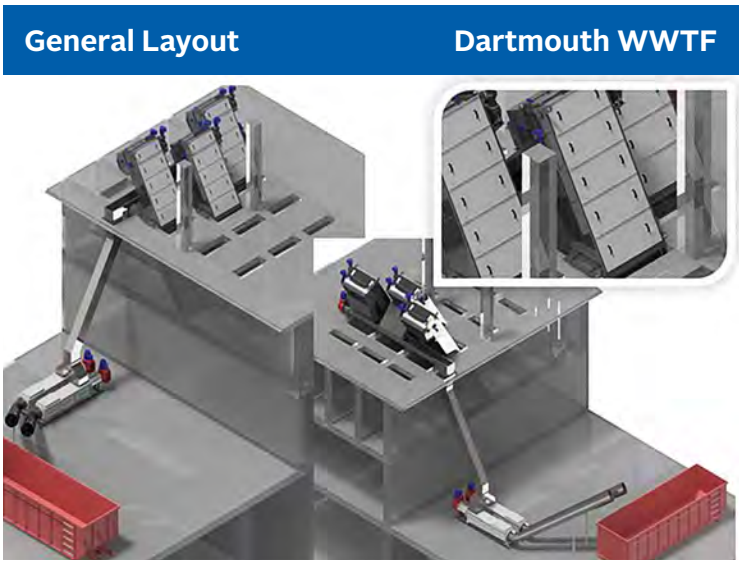


Figure 2: General layout arrangement of DWWTF (IMAGE COURTESY OF VEOLIA WATER).

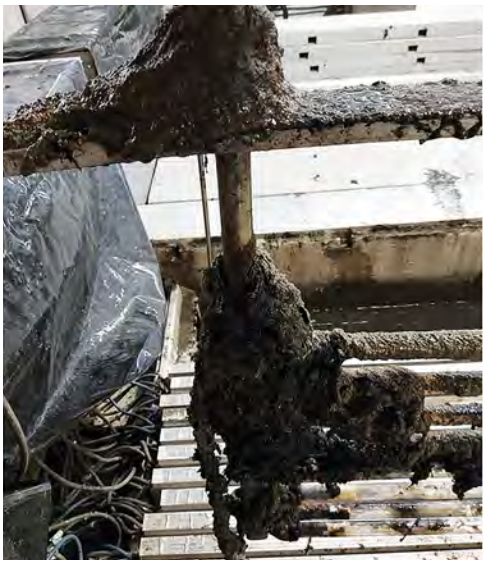


Figure 3: UV lamps pre-screen upgrades covered in debris.

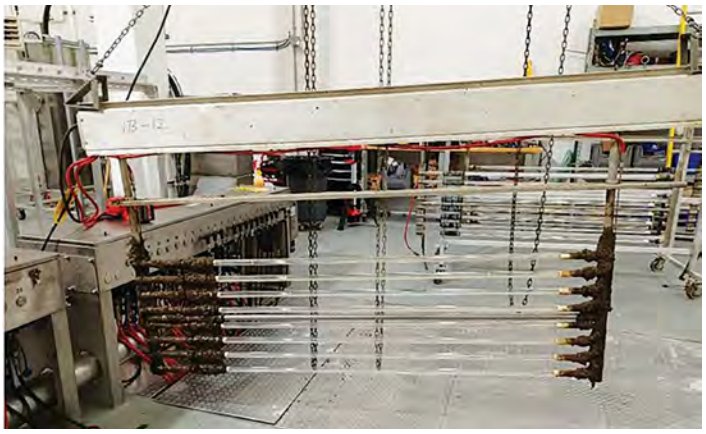


Figure 4: UV lamps post-screen upgrade showing significant improvements.

Figure 7: Installing Fine Screen No. 3 at DWWTF.

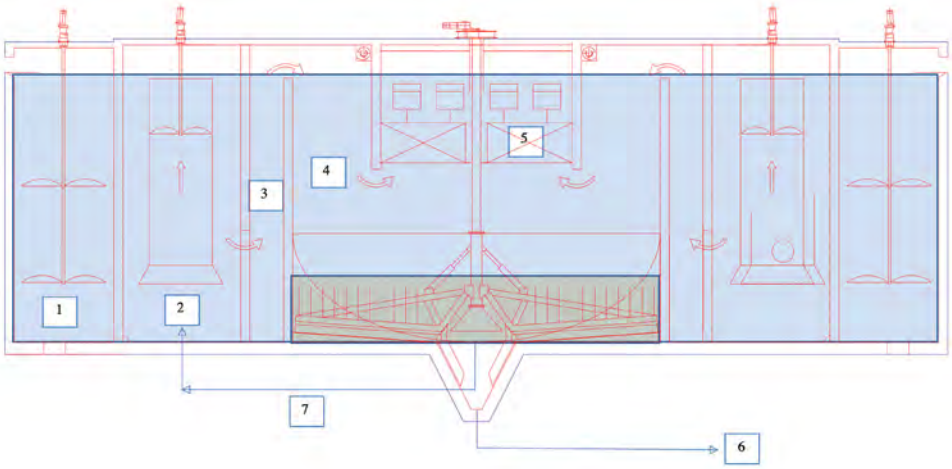
Figure 8: Completed screens installed at DWWTF.

Figure 5: Compacted and dewatered screenings from DWWTF.

Figure 6: Construction Phots at DWWTF.

Harbour Solutions WWTF - Densadeg Lamella Clarifier Inclined Tube Settler Replacement

The Harbour Solution Wastewater Treatment Facilities (WWTFs) located in Halifax, Dartmouth and Herring Cove were constructed to improve water quality in Halifax Harbour, as part of the Harbour Solutions Project. The facilities were commissioned between 2007-2009 and consist of chemically enhanced preliminary treatment designed by Suez utilizing their high rate physical/chemical solid contact primary clarification process known as Densadeg. The overall schematic of the treatment process is illustrated here:



1. Flash Mixing (Chemical Addition)
2. Mechanical Flocculation
3. Hindered Flocculator
4. Settling Tank
5. Lamella Inclined Tubes
6. Sludge Extraction
7. Sludge Recirculation

As part of the ongoing process optimization enhancement initiatives, some of the clarification equipment was underperforming due to the amount of manual labour required to clean the units to maintain optimal performance. It was decided that the best option was to replace the clarification modules referred to as inclined tubular hexagonal lamella modules.

The lamella modules are designed to increase the surface area within the clarifier to remove particulates from liquids. By placing the hexagonal modules within the clarifier, we can increase the equivalent settling area by over ten times, when compared to tanks without these installed. As a result, it reduces the clarifiers' footprint and significantly minimizes the danger of fouling while providing a large equivalent settling area. Enhanced cleaning capabilities were added to the treatment process by adding a lamella cleaning system that injects compressed air through the lamella pack via perforated PVC pipes affixed to supports beneath the lamella pack, known as air scour. The shock of the air bubbles on the lamella produces vibrations, releasing the accumulated sludge stuck to the sides of the hexagonal modules. Previously the only way to remove the accumulated sludge was to drain the tanks and hose them down with a fire hose from the top, which proved ineffective. Now process technicians can complete the cleaning tasks in 1 hour vs 4-6 per tank previously.

The overall capital costs associated with this project are $2.45M, broken down as follows:

- Halifax WWTF - $ 1.1M
- Dartmouth WWTF - $0.775M
- Herring Cove WWTF - $ 0.575M

The equipment was tendered in Q1 2020 and was awarded to Veolia Water Canada, whereas the construction tender for DWWTF was awarded to Black & McDonald Limited in Aug 2020, with work commencing September 2020 - December 2020. Material for HWWTF and HCWWTF arrived in July 2021, work at HWWTF started on the same date. The project ran into some complications with material quality, but one treatment train was completed, and HW continues to work on resolving the materials issues.

These projects also allowed additional work to be carried out while 50% of the plant underwent construction. Some of the other work included: Overhauling the sludge scraper system, install of additional blades to the coagulant mixer in each reactor, replacing reactor drain lines, replacing the automatic extraction pump inlet valve and the clean-out pipework, and concrete and hydraulic modifications.

Horizon 2040: Wastewater Treatment Innovation for Continuous Improvement of Effluent Quality

Halifax Water continues to build on the partnership with Dalhousie University through a Natural Science and Engineering Council of Canada (NSERC) Collaborative Research & Development (CRD) Grant to improve effluent quality from the three chemically enhanced primary treatment Wastewater Treatment Facilities in Halifax, Dartmouth and Herring Cove.

A summary of the work completed thus far is discussed below, including an overview of future activities.

Bench Scale and Pilot Scale Testing

Students from Dalhousie University and Halifax Water staff have conducted over 200 bench-scale jar tests since Fall 2020 to identify optimal conditions for improving effluent standards related to permit requirements (BOD and TSS) and determine what chemistry is required to achieve optimal removal efficiencies at the Dartmouth WWTF. Work also includes analyzing historical operational data and water quality data to identify patterns in operations such as sludge recirculation and impact on clarifier performance and mapping out ideal operating ranges for chemical dosing and sludge recirculation rates under variable influent conditions. Ongoing activities include purchasing a large-scale pilot to be built at the Dartmouth Wastewater Treatment Facility.

Turbidity Reduction

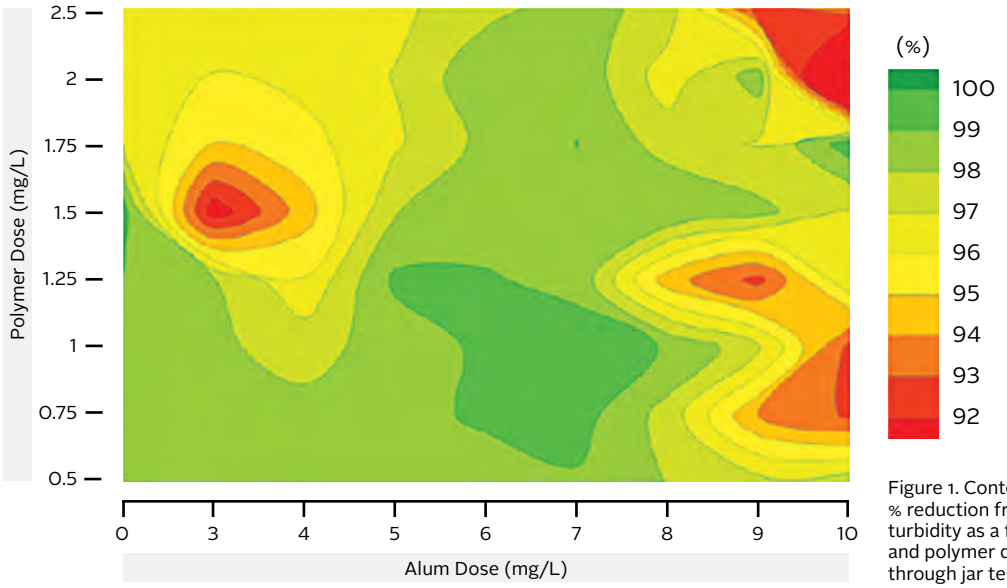
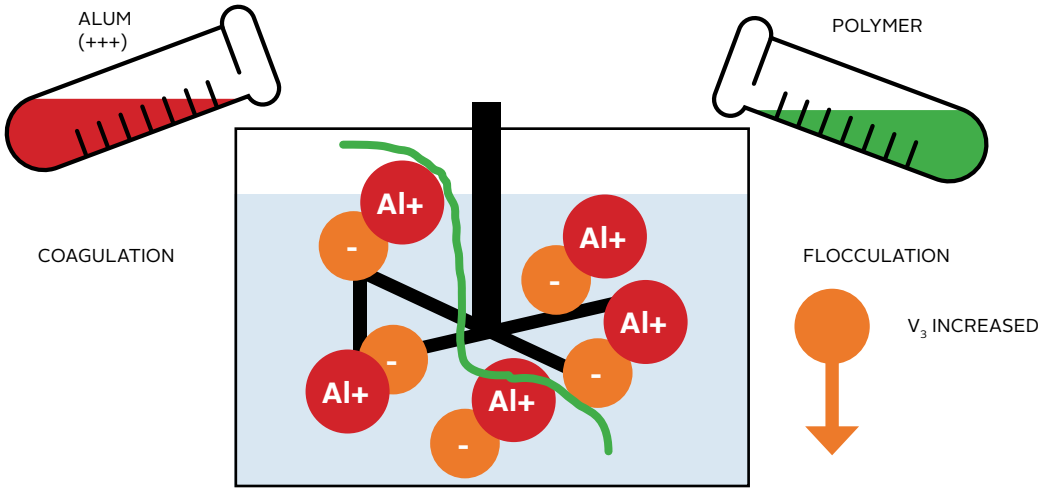
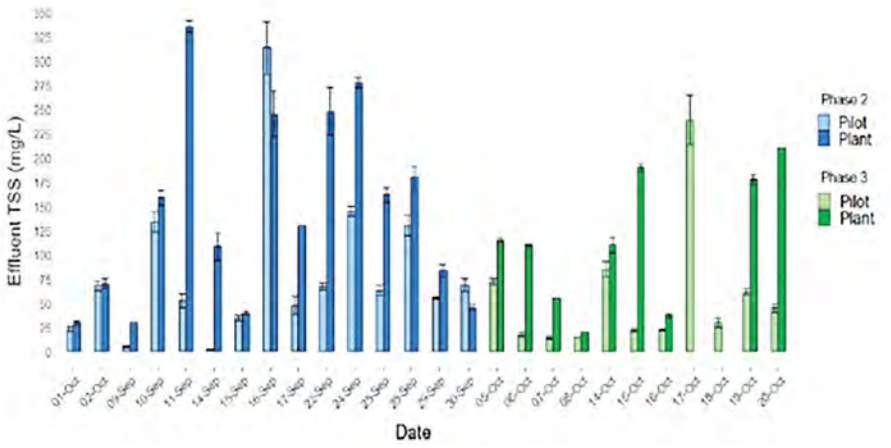


Figure 1. Contour plot showing % reduction from influent turbidity as a function of alum and polymer dose, determined through jar testing.



Pilot Scale - Optimization at the Dartmouth Wastewater Treatment Facility

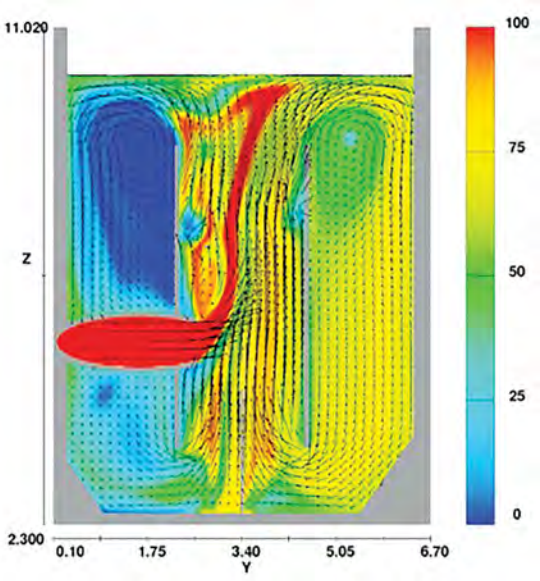
A pilot scale alternative ballasted media clarification system was tested at the Dartmouth WWTF in the Summer/Fall of 2020. Preliminary findings indicated that ballasted media clarification system outperformed existing technology and provided improved performance in wet weather events due to fast settling velocities of particles and may be helpful for future expansion to meet enhanced treatment requirements.



Average effluent TSS of pilot (light shade) and plant (dark shade) where blue bars represent Phase 2 and green bars represent Phase 3.

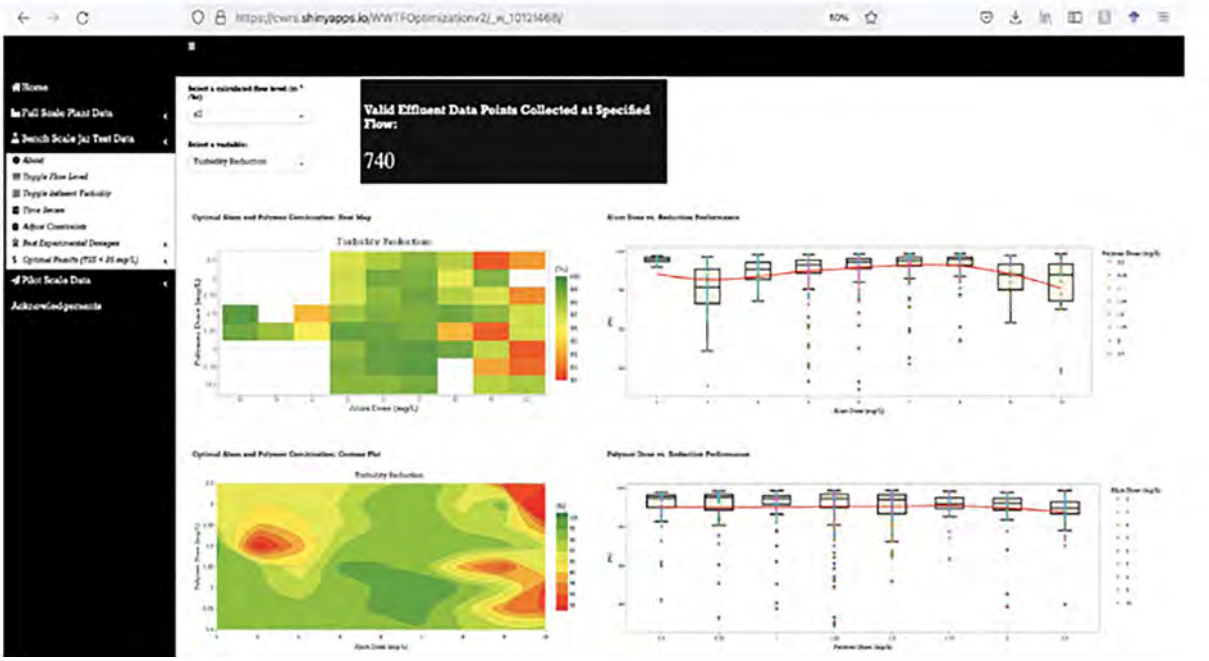
Computer Modeling

Polymer and Sludge Recirculation Modeling of Piston Reactors using Computational Fluid Dynamic Modeling revealed unfavourable hydraulic mixing in existing configuration and clarified existing operational challenges to remediate.



Online Computer Dashboard at the Dartmouth Wastewater Treatment Facility

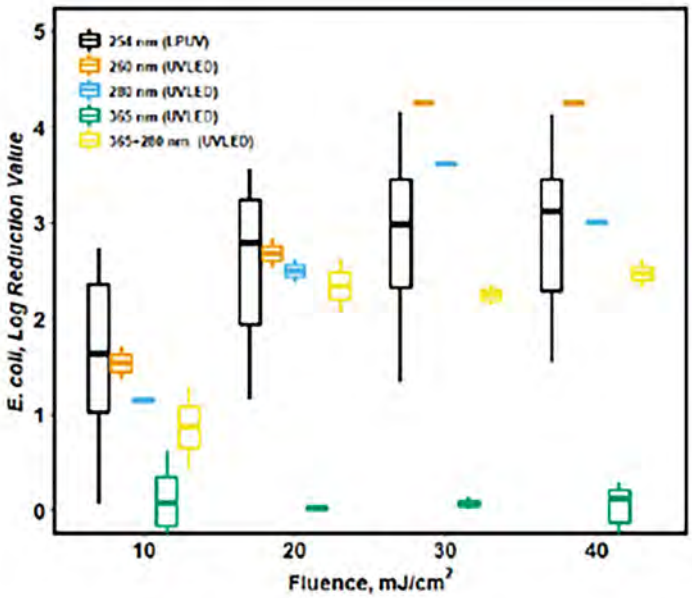
Many of our wastewater projects generate very large and complex datasets that can often be difficult to manage and visualize. Dalhousie worked on amalgamating the vast data sets generated to date from bench, pilot, and full-scale optimization projects at the Dartmouth WWTF to an online database.



Desktop version of Dartmouth wastewater data dashboard showing bench-scales jar testing data.

UV Disinfection Optimization at Dartmouth WWTF

Utilized instrumentation to develop dose-response curves at a bench-scale to determine the inactivation rates for a given species (e.g., E. coli) in wastewater samples and examined the effectiveness of LED UV technology for disinfection compared to conventional low-pressure lamps. Results indicate that LED UV technology can achieve the same disinfection results as conventional technology in reducing power consumption.



Log Reduction Values for E. Coli in Dartmouth Wastewater Treatment Facility Effluent for Various UV Sources.

Contaminants of Emerging Concern

Developing methods to detect microplastics and nanoplastics in wastewater will be used to establish treatment approaches and remove these contaminants of emerging concern to our environment.

Additional Research – SARS-CoV2

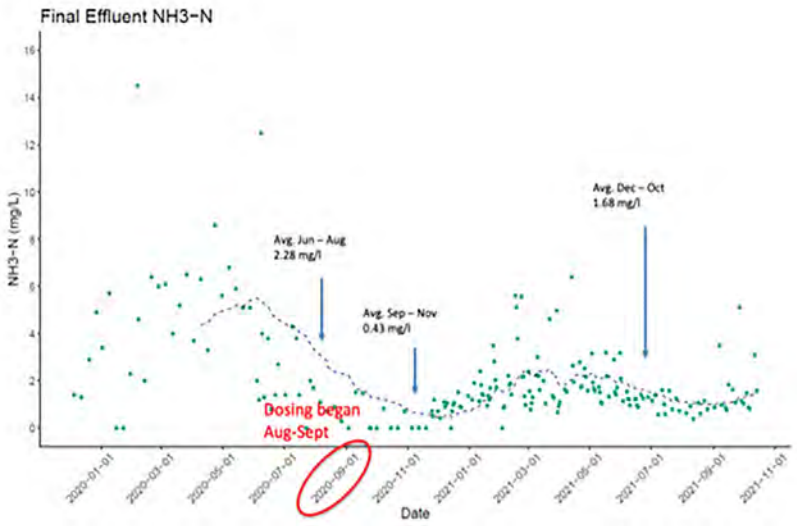
Environmental surveillance of SARS-CoV-2 in wastewater has the potential to support understanding of COVID-19 occurrence and transmission in communities. As such, wastewater may be monitored for SARS-CoV-2 to determine the prevalence of COVID-19 infections in a given population through wastewater-based epidemiology.

Over 200 samples (consisting of wastewater and biosolids from Halifax Water and other partners) have been received and analyzed by Dalhousie's staff.

Additional Research – Bioaugmentation

Dosing microorganisms in strategic locations in the Timberlea Sewershed causes the network to act as a bioreactor, and the wastewater is treated before entering the treatment facility itself.

This technology could help Halifax Water meet national effluent quality standards and potentially avoid the cost associated with extensive upgrades.



Decreases in effluent ammonia concentration since bioaugmentation dosing began in late Summer 2021.

Future Activities

The Dalhousie and Halifax Water collaboration continues with a 5-year Research Alliance grant that will focus on improving water and wastewater quality under climate change pressures through advancing science and technology.

Cogswell District Energy System

As the city of Halifax continues its redevelopment of the Cogswell district, Halifax Water will take the opportunity to design and install the distribution piping system required for the Cogswell District Energy System (DES).

Pending approval by the Nova Scotia Utility and Review Board (NSUARB), the Cogswell DES will enable the transfer of thermal energy from the Halifax WWTF effluent stream. This transfer will provide heating and cooling for six mixed-use high-rise commercial/residential developments proposed for the Cogswell redevelopment area.

This project aligns very well with Halifax Water's mission, vision, and strategic and environmental objectives. It will significantly contribute to the goals of HALIFAX's "HalifACT 2050" initiative, providing long-term energy and GHG emission reductions within the downtown core.

On June 30, 2021, the Federal and Provincial governments announced $10.1M of cost-shared funding for this project, citing it as one of the "first systems of its kind in eastern Canada." The funds will offset the capital costs of the DES for Halifax Water.

So far for the DES, Halifax Water has:

- Completed an initial feasibility study for the DES.
- Assisted HALIFAX city charter changes to allow district energy within HRM.
- Assisted HALIFAX with the enactment of By-Law D-500, Respecting District Energy.
- Completed the 100% detailed design of the linear infrastructure.
- Developed a draft financial model and business case analysis for the new utility.
- Evaluated the business case based on several operating and ownership scenarios.
- Completed a by-law review of other Canadian jurisdictions that have implemented similar district energy utilities.
- Completed a stakeholder/developer information document to better inform our stakeholders and potential developers on the DES.
- Submitted an application to the Nova Scotia Utility and Review Board (NSUARB) for approval of related capital expenditures and establishing a regulated district energy service within Halifax Water based on the established business case.
- Drafted a cost-sharing agreement for the DES distribution piping system with HALIFAX, pending NSUARB approval.

The key utility development activities yet to be undertaken include:

- Completion of a DES cost of service study and rate structure model.
- Development of operating procedures and business processes.
- Establishment of the DES utility regulations.
- Enhancement of the business case analysis to align with the cost-of-service model and rate structure.
- Complete detailed designs and construct the remaining DES infrastructure, including the DES Energy Center (located at the Halifax WWTF), and the Energy Transfer Stations (located in each new building).

Biosolids Processing Facility Expansion

The Aerotech Biosolids Processing Facility (BPF) is situated in the Aerotech Industrial Park in Goffs, NS. The facility receives and processes dewatered sludge, or biosolids, from all of Halifax Water's wastewater treatment facilities. Biosolids are currently processed using the N-Viro alkaline stabilization process to produce a Canadian Food Inspection Agency (CFIA) registered fertilizer that is subsequently used on non-food bearing crops.

The Infrastructure Master Plan (IMP) completed in 2019, along with subsequent analyses by Halifax Water staff, identified a 204% increase in biosolids production by 2046 due to population growth within the HRM, as well as the implementation of new secondary treatment processes at the Halifax, Dartmouth, and Herring Cove wastewater treatment facilities. This forecast exceeds the current production capacity of the BPF.

Work completed to date includes the completion of a third-party study to validate and confirm the earlier work conducted by Halifax Water and the start of the procurement process to execute a "Design, Build, Operate and Maintain" (DBOM) agreement for the design, construction and long-term operation of the new facility. A request for "Expressions of Interest" (EOI) was completed in June 2021. A "Request for Qualifications" (RFQ) was completed in April 2022 and resulted in three respondents being invited to submit proposals during the upcoming "Request for Proposal" (RFP) process.

The next steps include the development of the RFP documents, as well as the draft project agreement. The RFP process is expected to be completed early in 2023, and a new long-term DBOM contract will be in place by mid-2023.

The new facility is expected to include provisions for enhanced resource recovery. Biosolids will be used to produce fertilizer and recover renewable natural gas (RNG) via anaerobic digestion that will be exported and sold into the North American natural gas distribution system. The facility is anticipated to produce more than 35,000 tonnes/year of fertilizer and over 200,000 GJ/year of RNG at full capacity.

Water Loss Control

The American Water Works Association (AWWA) utilizes the water balance to account forall water in a piped water network.

Ultimately, water is categorized as revenue waterornon-revenue water. There are three main subsets of non-revenue water

1. Unbilled Authorized consumption
2. Apparent losses
3. Real Losses

Water Loss Control primarily focuses on managing the real losses through various strategies and tactics.

Halifax Water ratepayers bear the cost of the supply and treatment of water. As a result, it is imperative that any water utility work to aggressively reduce real water losses.

Beyond the immediate financial benefits, there are societal, environmental, and engineering advantages to water loss control.

Halifax is fortunate to have an abundant fresh water supply. However, many areas of the world either do not have the same access to fresh water or have seen their water source significantly depleted; therefore, we cannot take our resources for granted.

From an environmental perspective, leakage directly increases supply plant production, which places a higher demand on chemicals and energy consumption.

As a result, the industry, through the American Water Works Association (AWWA), has developed strategies in engineering and asset management to manage a water utility efficiently. Ignoring leakage would lead to an overall decay of the system, leaving a monumental burden for future generations.

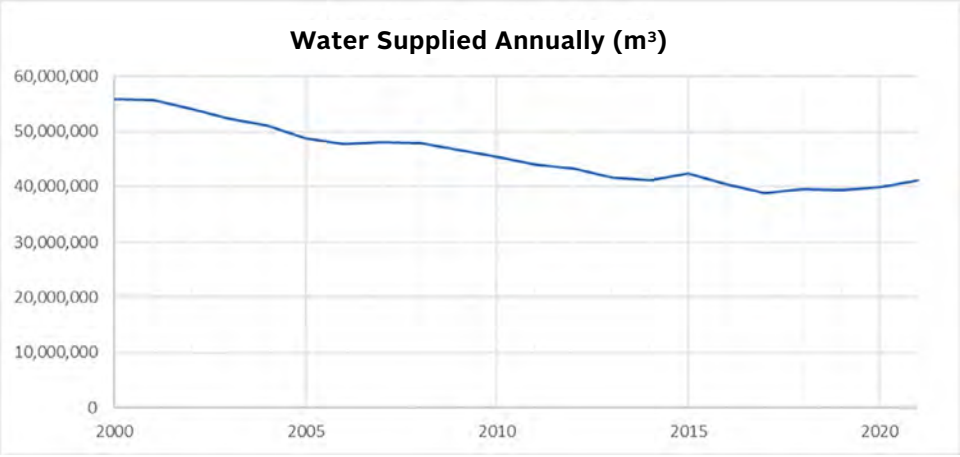
AWWA's Manual, M36, the industry standard in Water Loss Control, segments the challenge into four pillars. Halifax Water has active and planned initiatives in all of these categories.

- Speed and Quality of Repair
- Pressure Management
- Active Leakage Control
- Pipeline and Asset Management Selection, Installation, Renewal and Replacement

While the efficient operation of the water system and rapid and efficient response to leakage lies with Water Services, an effective water loss control program takes the collective effort of the entire Utility. Technical Services maintains the data historian backbone, Engineering designs and delivers the system upgrades; Corporate Services manages the metering inputs and customer education. Regulatory Services maintains policies and controls new connections to and expansion of the system.

The program's success can be measured in several ways. The combined treated water output is used as a metric to track the internal effectiveness of the program. It is estimated that the utility saves $600,000 a year due to the reduced production since the program began. The Infrastructure Leakage Index (ILI) and calculating the Real Loss/service connection/day are two AWWA metrics Halifax Water tracks which can also be used to benchmark against other utilities.

The graph below shows the water supplied from both water supply plants since 2000. The water supplied has plateaued in recent years; this may be a function of approaching the Economic Level of Leakage – the point where costs to reduce leakage exceed what is saved. A rising population will also begin to increase production.



Solar & Energy Efficiency Projects

Solar Energy Projects

In July 2020, Halifax Water successfully applied for funding from the Investing in Canada Infrastructure Program (ICIP) under the climate change mitigation sub-stream for four multi-facility Community Solar PV projects, as follows:

PROJECT LOCATION	SIZE	TOTAL COST	FED/PROV PORTION (73.33%)	HALIFAX WATER PORTION (26.67%)	YEAR 1 ESTIMATED REVENUES	SIMPLE PAYBACK
Aerotech Wastewater Treatment Facility	125 KW_{AC}	$526,384	$385,997	$140,387	$23,214	6.3 years
450 Cowie Hill Road Administration Building	100 KW_{AC}	$382,990	$280,847	$102,143	$13,870	7.7 years
455 Cowie Hill Road West Operations Facility	100 KW_{AC}	$382,990	$280,847	$102,143	$13,870	7.7 years
New East Operations Facility	100 KW_{AC}	$382,990	$280,847	$102,143	$15,105	7.1 years
Totals	**425 KW_{AC}**	**$1,675,355**	**$1,228,537**	**$446,817**	**$66,059**	**7.1 years**

The first project, located at the Aerotech WWTF, was awarded in May 2022 and will be constructed and operational in the Fall of 2022. The two Cowie Hill Road projects are anticipated to be awarded early in 2023, for construction by the Fall of 2023. The new East Operations Building solar project will be included in the scope of work for the design, construction and commissioning of this new facility, with an anticipated completion sometime in 2025.

The Halifax Water Community Solar PV projects will see the installation of approx. 425 kW_{AC} of solar capacity, will offset Halifax Water's current electrical use with a renewable energy source, will reduce GHG emissions by over 6,975 tonnes of CO_{2e}, and will reduce the Utility's operating costs by over $1.6 million over the expected life of the project, directly benefiting all of Halifax Water's rate base.

Energy Efficiency

Energy use in delivering water and wastewater services in Halifax has grown steadily. It will continue to increase over the coming years as our population grows, and more stringent water quality and wastewater treatment regulations are needed. Halifax Water is continually trying to control and reduce energy consumption and carbon footprint through more efficient energy management and emission reduction practices. These practices help achieve operational, financial and environmental benefits for Halifax Water and the communities we serve.

Some of these improvements in the 2021/22 fiscal year include:

- Upgrades to equipment and infrastructure, as well as several ongoing annual operating initiatives resulting in over 8,670,000 kilowatt hours equivalent (kWh_e) in annual energy savings, over $720,000 in cost savings or cost avoidance, and over 3,000 tonnes carbon dioxide equivalent (CO_{2e}) greenhouse gas (GHG) reductions.
- Development of an Ambient Temperature District Energy System. This system will be part of the Cogswell interchange development. It will extract heat from the wastewater travelling through the plant and use the energy to heat buildings contained within the new development. The system will also provide cooling in summer.
- Working with building designers to achieve LEED silver certification for the new Burnside Operations Centre. This will help ensure that the building's carbon and energy footprints are consistent with current best practices.
- A submission of an expression of interest in the anticipated provincial Green Choice Program was completed in 2021/22. It is anticipated that full enrollment in this program will be approved in 2022/23, leading to the eventual supply of almost 100% of our annual electrical energy use from renewable resources, eliminating nearly all indirect GHG emissions from utility operations.
- Continuously pursuing funding opportunities for alternate energy projects and greenhouse gas reduction efforts.

For 2021/22, the utility saw an overall decrease of 1.6% in energy use, a 10.0% reduction in energy intensity, an increase of 9.23% in water and wastewater flows, and a decrease of 5.1% in GHG emissions, compared to 2020/21. During 2021/22, direct GHG emissions were 2,194 tonnes CO_{2e}, while indirect emissions were 32,604 tonnes CO_{2e}.

Focusing on further energy efficiency, operational improvements within our existing infrastructure, and completing energy use inventories in all our facilities in the coming years will allow Halifax Water to continue optimizing energy use and build upon these results.

Safety & Security

Halifax Water and its Employees remain committed to providing a healthy and safe work environment. One that works to prevent occupational illness and injury and promotes mental wellness. This commitment is based upon our understanding that health and safety is a core business function for our organization and is treated as a priority in our work. Halifax Water continues to evaluate, develop and improve safety and security initiatives across the organization to ensure this commitment.

Halifax Water tracks key lead-and-lag indicators to benchmark the safety program's success. Safety audits are conducted in the field to ensure employees are delivering our services safely. This past year the average score on internal safety audits was up from the previous year to 96.7%, along with a reduction in motor vehicle accidents from 5.5 to 3.4/1,000,000 km driven. Also, this past year, lost time incidents increased slightly at 2.0 per 100 employees.

With COVID-19 still present within our community and the requirement to provide essential services to our customers, we continued to adapt how services were provided, guidance on PPE and distancing requirements, gathering limits, and overall awareness of safety recommendations from Nova Scotia Public Health were provided to employees.

This past year, Halifax Water reviewed the overall safety program and identified a three-to-five-year plan to enhance the program and improve the safety culture. As a result, three additional resources were required. In the last quarter, the process commenced to hire a Safety and Training Specialist, and a Fire and Security Advisor working within the Regulatory Services department, and an Occupational Health and Hygienist, working within the Human Resources department.

Some near-term highlights of the safety program for implementation this coming year include:

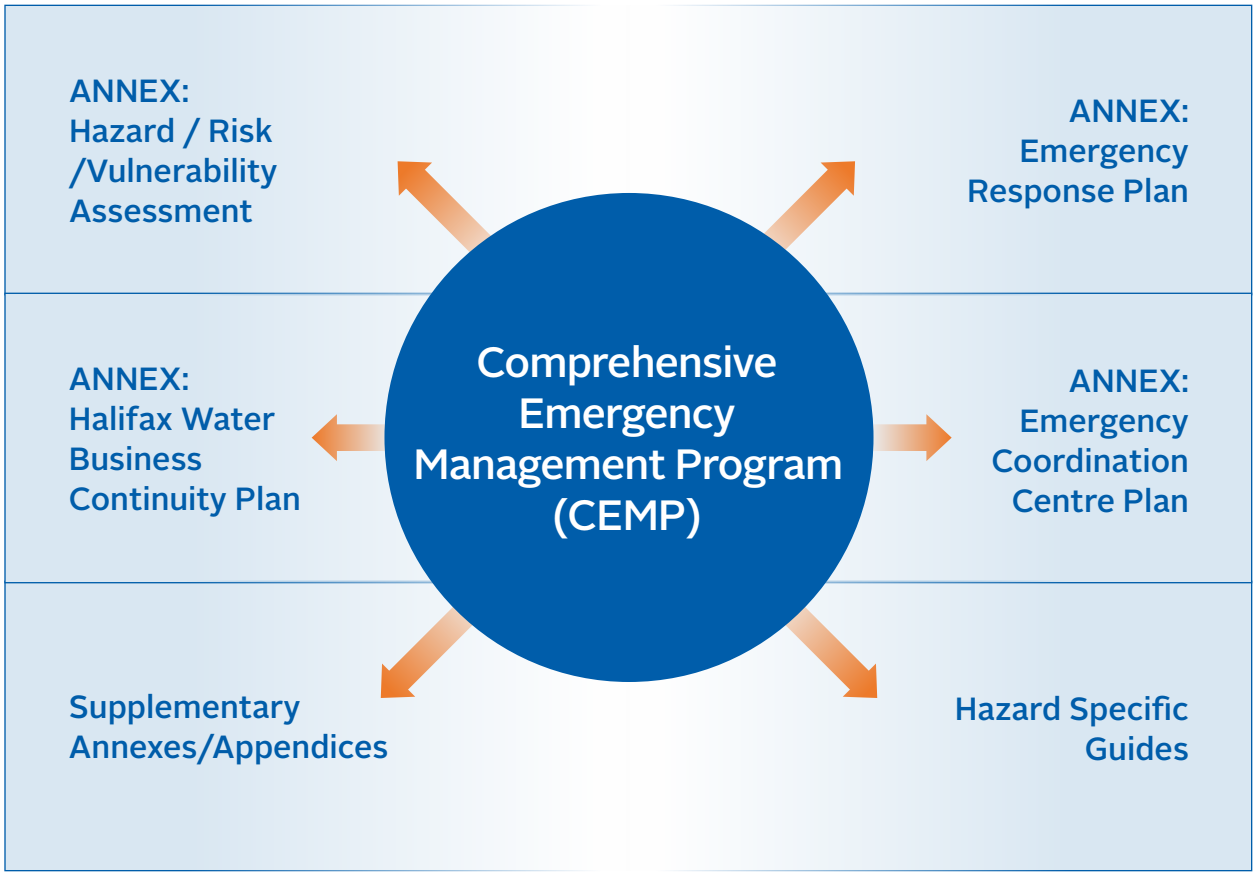
- Safety 101 Leadership Training for Supervisors/Managers/Directors and Safety Representatives
- Commence the transition of the current Occupational Health Safety Manual to a Safety Management System
- Transitioning the external safety worksite inspection/audits process to build on internal resources capabilities
- Review and update fire safety plans for all facilities

Incident Command System

The Incident Command System (ICS) is a standardized approach to the command, control, and coordination of emergency response. ICS provides a common hierarchy within which responders from multiple agencies can be effective. Halifax Water continues to utilize the ICS when managing water main and forcemain breaks and as a planning tool for larger multi-faceted projects. Halifax Water enacted ICS with the Lake Major Clarifier replacement project.

Emergency Management Program

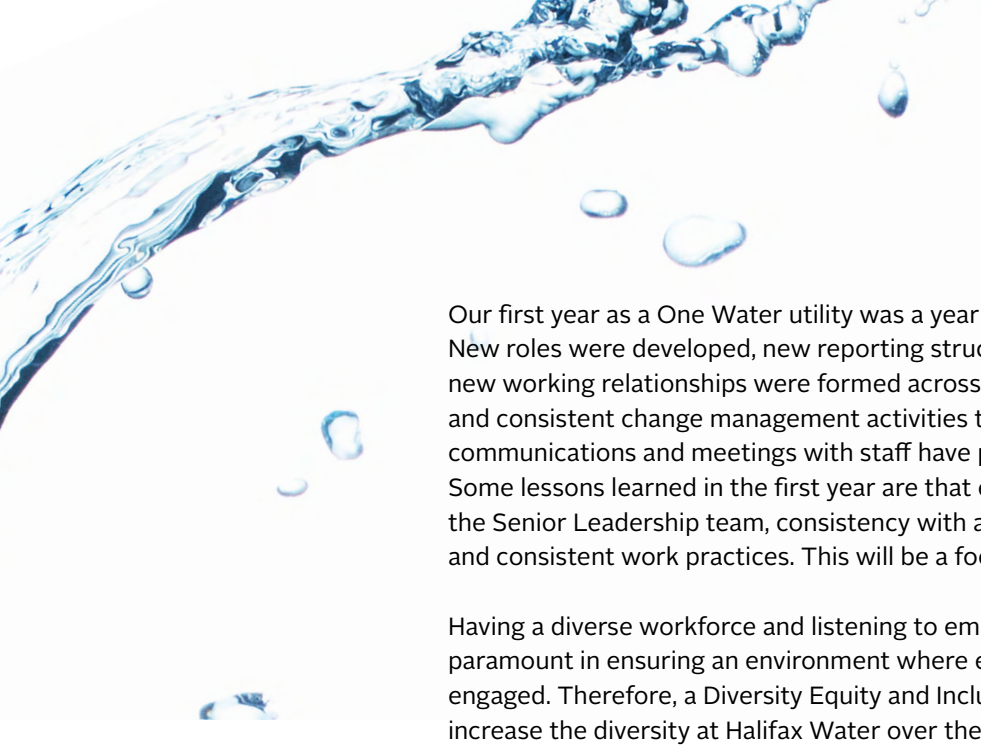
The review of the Emergency Response Plan (EMP) and Business Continuity Plan, a collaboration with the Enterprise Risk Manager, commenced resulting in the development of the framework for a Comprehensive Emergency Management Plan (CEMP), comprised of:



In the coming year, the focus will be on updating the EMP to enhance the strategies for appropriate responses within the first 24 to 48 hours of an event and build upon those to strengthen our Business Continuity Plans.

Motivated & Satisfied Employees

Crews testing a water valve on Windmill Road, Dartmouth.



Our first year as a One Water utility was a year of many changes for employees. New roles were developed, new reporting structures were embraced, and many new working relationships were formed across all departments. The preparation and consistent change management activities that involved many forms of communications and meetings with staff have proven to make this change successful. Some lessons learned in the first year are that employees want more interaction from the Senior Leadership team, consistency with accountability across all departments, and consistent work practices. This will be a focus in the coming years.

Having a diverse workforce and listening to employees' different perspectives is paramount in ensuring an environment where employees feel safe, valued and engaged. Therefore, a Diversity Equity and Inclusion framework was developed to increase the diversity at Halifax Water over the next three years.

The proposed objectives are:

- Increase the percentage of employees who agree that the workplace reflects a diverse cultural background to 75% by the end of the three-year period.
- Increase customers' recognition of Halifax Water's Corporate Social Responsibility by 10% by the end of the three-year period.
- Work towards gender equality and increase employee perception that the workplace reflects gender equality as measured by the employee survey.
- Increase accessibility at primary Halifax Water work locations compared to the status quo.
- Expand employee knowledge and inclusion of the LBGTQ2S+ community and measure awareness via the employee survey.

In 2021-22 we successfully trained all employees on Unconscious Bias, which laid the foundation for successfully implementing this robust Diversity plan.

Talent Management is another pillar in employee satisfaction and ensuring that Halifax Water has continued successors to fill key roles. Last year the framework to train employees who aspire to be in a leadership role was implemented, and the first year of this training will start in 2022-23. Halifax Water also implemented the new Learning Management Module in the Human Resource Information System, ViP. This new module will ensure that all employees have all required training before expiration and track CEUs required to maintain certification.

Ensuring that policies are up to date and in line with legislation and current market trends is important as these provide the guidelines for day-to-day operations while ensuring compliance with laws and regulations. A new policy framework was implemented to ensure that all policies are reviewed and updated promptly. This will assist all employees with better decision-making and streamline internal processes.

Halifax Water staff at the Bruce Street Pump Station Replacement project. Left to right: Sanjoli Tagra, Stormwater Engineer; Cathie O'Toole, General Manager; and Renée Roberge, Wastewater Infrastructure Engineer.

2021 Service Awards List

35 Years of Service	
Sandra Hood	Administration
Brian Gazeley	Operations
Rick Reid	Operations

30 Years of Service	
Dave Dort	Operations
Laurie Sperry	Operations
Tim Dewolfe	Operations

25 Years of Service	
Dawn Slaunwhite	Administration
Karen Kearney	Administration
Tanya Shatford	Administration
Michael Campbell	Engineering & Technology Services
Rudy Thomas	Engineering & Technology Services
Andrea LeGassie	Operations
Chris Weeks	Operations
Evan Beaton	Operations
Gary McPherson	Operations
Heather Shea	Operations
Mark Stevens	Operations
Richard Masters	Operations
Robert Cohoon	Operations
Robert Wyman	Operations
Charlie Lloyd	Regulatory Services
Ian Guppy	Regulatory Services

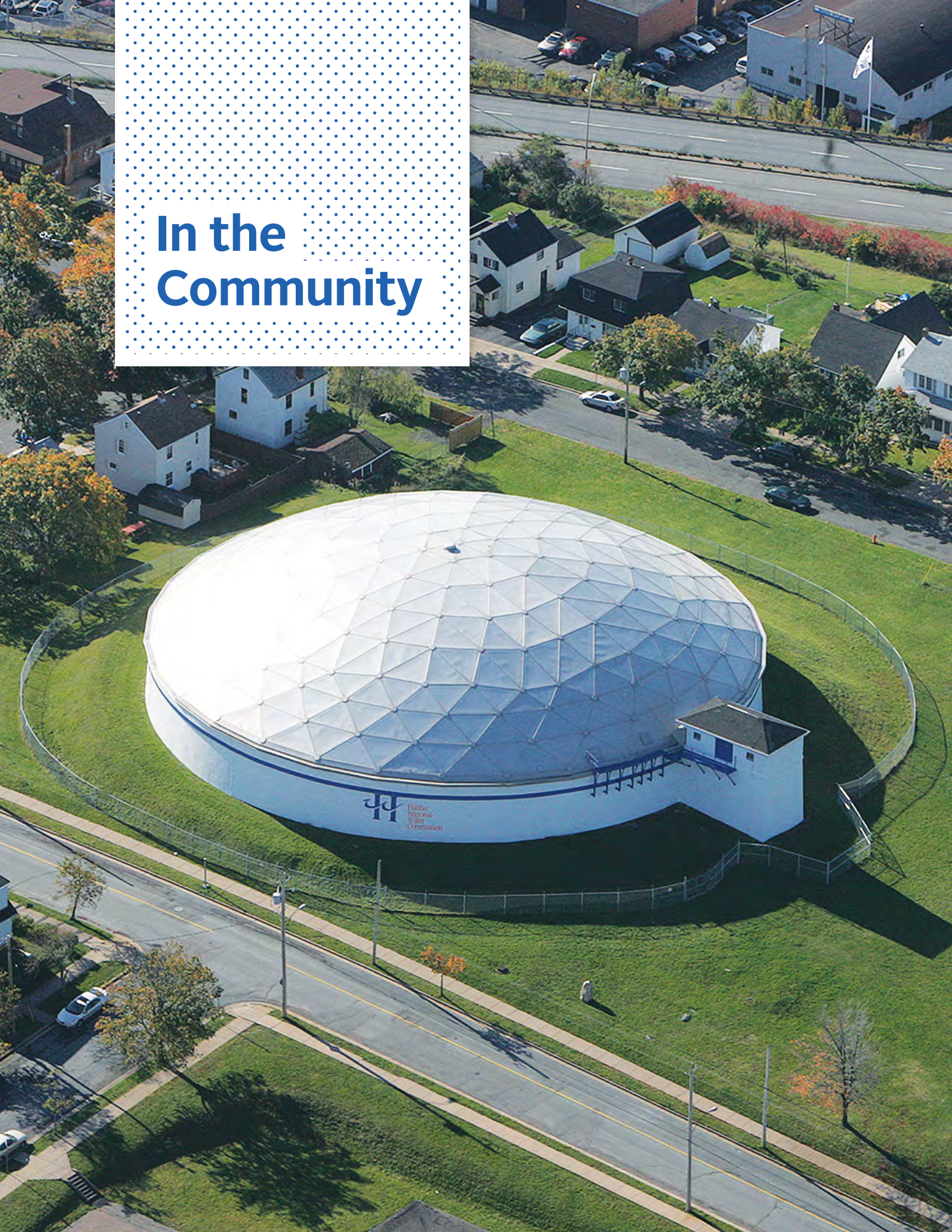
20 Years of Service	
Bernardino Amaral	Engineering & Technology Services
Melissa O'Grady	Engineering & Technology Services
Tom Gorman	Engineering & Technology Services
Karen Amaral	Operations
Mike Clements	Operations
Craig Campbell	Regulatory Services

15 Years of Service	
Amanda Richards	Engineering & Technology Services
Paul Taylor	Engineering & Technology Services
Valerie Williams	Engineering & Technology Services
Barry Geddes	Operations
Daniel Englehutt	Operations
Hannah MacKay	Operations
James Bruce	Operations
Jerry MacDonald	Operations
Tracy Hatch	Operations
Andrew Driscoll	Regulatory Services

10 Years of Service (Continued)	
Cathie O'Toole	Administration
Jessica Haley	Corporate Services
Tracy Philpott	Corporate Services
Ashley Ward	Engineering & Technology Services
Christopher Solomon	Engineering & Technology Services
Jeffrey Knapp	Engineering & Technology Services
John White	Engineering & Technology Services
Robert Gillis	Engineering & Technology Services
Andrew Crowe	Operations
Anna McCarron	Operations
Brian Chinn	Operations
Jason Fraughton	Operations
Jeffrey Englehutt	Operations
Kara Baisley	Operations
Lyle Morash	Operations
Mark Payzant	Operations
Mark Sellon	Operations
Matthew Tufts	Operations
Michael Englehutt	Operations
Patrick Miller	Operations
Robert Oakley	Operations
Todd Cameron	Operations
Amanda O'Brien	Regulatory Services
Andrew Livingston	Regulatory Services
Joel Haley	Regulatory Services
Kimberly Murphy	Regulatory Services
Patricia Isnor	Regulatory Services
Patricia Jodrey	Regulatory Services

5 Years of Service (Continued)	
Jeffery McAulay	Administration
Anna Thibault	Corporate Services
Christopher McNeil	Corporate Services
Jennifer Wilson	Corporate Services
Melissa Levangie	Corporate Services
Merissa Campbell	Corporate Services
Shannon Cowan	Corporate Services
Alexander McLeod	Engineering & Technology Services
Daniel Levesque	Engineering & Technology Services
Jayesh Patel	Engineering & Technology Services
Mark Kennedy	Engineering & Technology Services
Myra Davis	Engineering & Technology Services
Stewart Green	Engineering & Technology Services
Zachary Galbraith	Engineering & Technology Services
Aaron Chisholm	Operations
Adam Foy	Operations
Cameron Wadden	Operations
Cameron Corey	Operations
Corey Sullivan	Operations
James Mosher	Operations
Jason Lillington	Operations
Jordan Stark	Operations
Lisa Misener	Operations
Matthew Vautour	Operations
Shayne Speight	Operations
Timothy MacEachern	Operations
Leah Pottie	Operations

In the Community



Supporting Diversity, Equity & Inclusion (DE&I) at Halifax Water

Halifax Water is committed to having a more diverse workplace founded on ensuring we are equitable and inclusive to everyone currently on our team and new employees.

aIn 2021/22, we established a Diversity, Equity & Inclusion (DE&I) Framework, which set goals along with a 3-year roadmap. To support this framework, we launched the following initiatives over the fiscal year:

- DE&I questions were added to our annual employee satisfaction survey so we can gather feedback.
- All Halifax Water employees completed Unconscious Bias Training.
- A self-identification option was added to our job applications, and we now encourage new employees to self-identify on either their form or in their cover letters.
- Reviewed and expanded our contact lists for career opportunities to ensure we have captured as many relevant organizations as possible and associations that share our DE&I goals.
- A specific DE&I subcommittee on supporting and attracting more Women in Non-Traditional Trades was formed.
- Corporate Social Responsibility Committee continued, with participation from Union Presidents.
- Recognized and encouraged our employees to reflect on the meaning of National Truth and Reconciliation Day.
- Incorporated the use of the "Diversity Moment" topic in our monthly employee newsletters.

With his permission, we were proud to share the talent of Anthony Riley, Water Utility Maintenance, with all Halifax Water employees, as he sang the Black National Anthem, Lift Every Voice, during the opening ceremonies of the African Heritage Month Opening Night - hosted by the Black Cultural Centre for Nova Scotia and Halifax Public Libraries.

- Worked with NSCC to optimize the Scholarship and Bursary Program for African Nova Scotians.
- Provided Indigenous Cultural Training.
- Senior women leaders hosted coffee breaks to recognize International Women's Day.
- Shared examples, with their permission, of our employees celebrating their history and culture with the entire organization.

As an organization, Halifax Water recognizes that we are on a journey to ensure we have a workforce that better reflects the diverse communities we serve. We believe that our 3-year framework will continue to help us advance our goals.

Employee Donations

H_2O Fund
$5,755.00
(Employee payroll deductions only)

Water for People
$10,402.00

Amount for United Way
$4,428.00

Angel Tree
For 102 children
All received a special toy, and a hat, mitts and/or scarf. Children were from newborn to 11 years old.

Fundraising & Volunteering

Halifax Water employees take great pride in the communities we live and serve. Employees can get involved in several different fundraising events, volunteer groups and community causes throughout the year.

United Way Halifax

Halifax Water employees have been helping support United Way Halifax for over 23 years. This year's campaign was 100% virtual, and employees could donate through a payroll deduction plan. Halifax Water employees proudly pitched in and raised a total of $4,218.00!

Water for People

Halifax Water employees donated $10,402 to Water for People. These funds support the digging of wells to provide clean drinking water for approximately 4 million people in nine different countries.

Festival of Trees in support of the Mental Health Foundation

The utility provided a corporate donation of $1,500 to the Festival of Trees in support of the Mental Health Foundation of NS. The Mental Health Foundation of NS is a charity, not a mental health provider. Through the help of their generous donors, Nova Scotians living with mental disorders have access to support where they need it when they need it.

Angel Tree Toy Drive

For more than ten years, it has been a tradition for Halifax Water employees to continue the Angel Tree Program to provide gifts for children in need in our community.

We had a total of 102 children, from newborns to 11 years old, and thanks to the giving spirit of Halifax Water employees, they will get something special on Christmas Morning!

Special Olympics

Halifax Water fleet operators showed pride in their trucks as they volunteered to participate in the Special Olympics Nova Scotia Truck Convoy.

The Truck Convoy is a way to raise money for the Special Olympics NS; this year, a record amount was increased. Halifax water was a Silver Level Sponsor of the event and was proud to have seven of its fleet involved again this year.

Purple Ribbon Campaign

In recognition and support of The Purple Ribbon Campaign, a movement to raise awareness of violence against women, Halifax Water employees came together and donated a total of $750 worth of gift cards. These gift cards were given to the women at the Transition House Association of Nova Scotia, transitional homes empowering women to get the things they need to move forward.

Christmas Families Fundraising

The generosity of Halifax Water employees is beyond compare. Giving back to the communities we serve gives Halifax Water employees a sense of belonging. The holiday season can be challenging for some to get through, but our employees rallied and were able to raise the following

Final totals for the cash portion of this year's fundraising:

Feed NS (Metro Food Bank)-$1000
Halifax Transition House (Bryony House)-$100
Hope Cottage-$100
Souls Harbour Rescue Mission-$100
Salvation Army-$480

H2O Fund

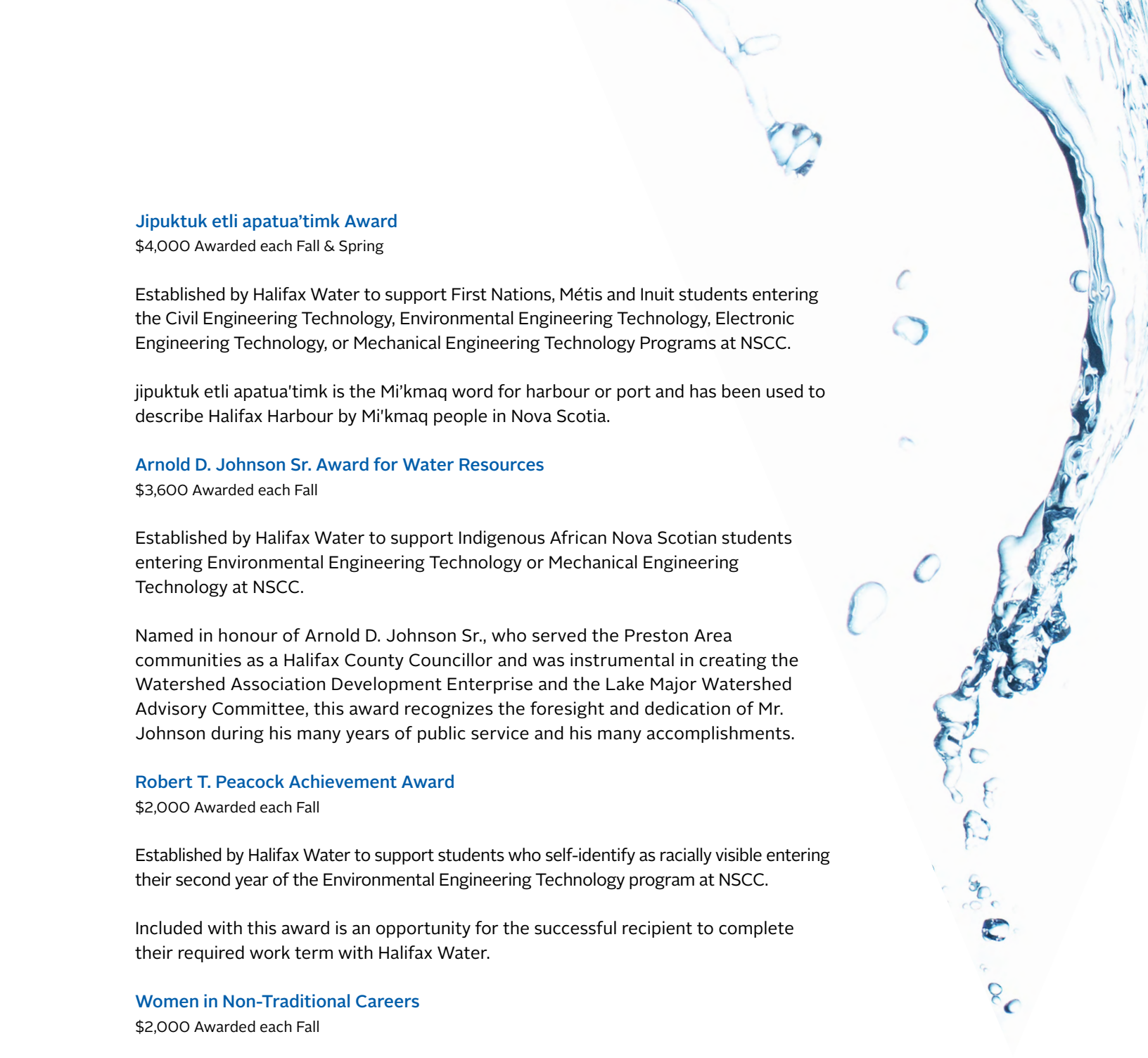
The H2O (Help to Others) Fund is a water, wastewater, and stormwater assistance fund that can be used by Halifax Water residential customers who are having difficulty making their bill payments.

Approved applicants will receive assistance once in a 24-month period to a maximum of $275.00. This program is administered by the Salvation Army on behalf of Halifax Water.

Halifax Water's H2O Fund is funded by donations from Halifax Water employees throughout the year. Halifax Water matches these donations to a maximum of $25,000 annually. These funds are used to help Halifax Water customers who are having a hard time paying their bill. This year, Halifax Water employees donated $5,755.00 through payroll deductions.

Scholarships

Halifax Water is an active supporter of the educational growth of our community through scholarships provided to the Nova Scotia Community College. Since 2008 Halifax Water has offered over $111,000 in scholarships for NSCC students, with accompanying work-terms. The scholarships not only benefit the community and recipients, they have provided Halifax Water with many highly skilled and motivated employees over the years:



Jipuktuk etli apatua'timk Award

$4,000 Awarded each Fall & Spring

Established by Halifax Water to support First Nations, Métis and Inuit students entering the Civil Engineering Technology, Environmental Engineering Technology, Electronic Engineering Technology, or Mechanical Engineering Technology Programs at NSCC.

jipuktuk etli apatua'timk is the Mi'kmaq word for harbour or port and has been used to describe Halifax Harbour by Mi'kmaq people in Nova Scotia.

Arnold D. Johnson Sr. Award for Water Resources

$3,600 Awarded each Fall

Established by Halifax Water to support Indigenous African Nova Scotian students entering Environmental Engineering Technology or Mechanical Engineering Technology at NSCC.

Named in honour of Arnold D. Johnson Sr., who served the Preston Area communities as a Halifax County Councillor and was instrumental in creating the Watershed Association Development Enterprise and the Lake Major Watershed Advisory Committee, this award recognizes the foresight and dedication of Mr. Johnson during his many years of public service and his many accomplishments.

Robert T. Peacock Achievement Award

$2,000 Awarded each Fall

Established by Halifax Water to support students who self-identify as racially visible entering their second year of the Environmental Engineering Technology program at NSCC.

Included with this award is an opportunity for the successful recipient to complete their required work term with Halifax Water.

Women in Non-Traditional Careers

$2,000 Awarded each Fall

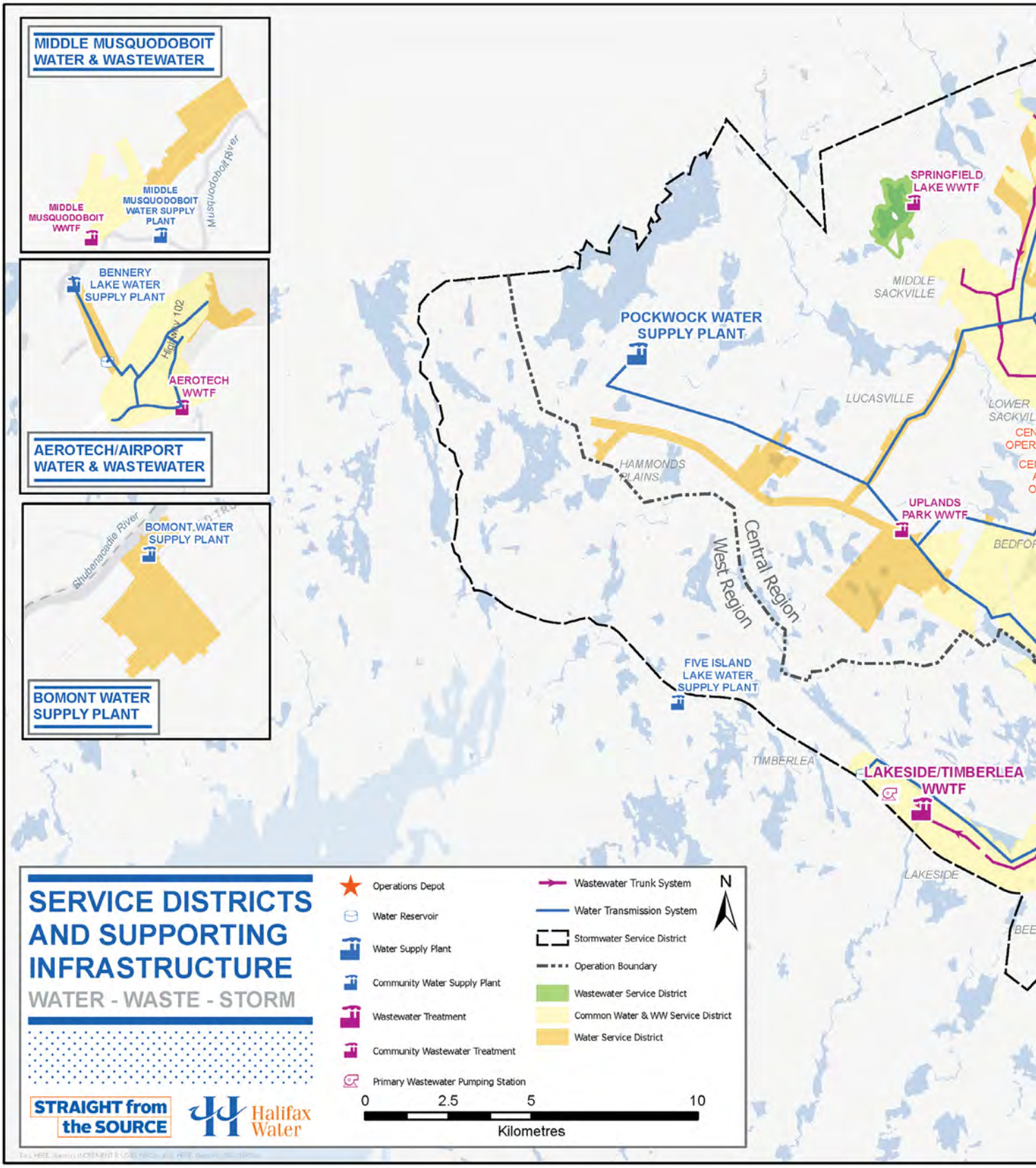
This award is open to women in non-traditional careers that are entering one of the eligible NSCC programs listed. Included with this award is an opportunity for the successful recipient to complete their required work placement with Halifax Water as well as an opportunity for summer employment with Halifax Water.

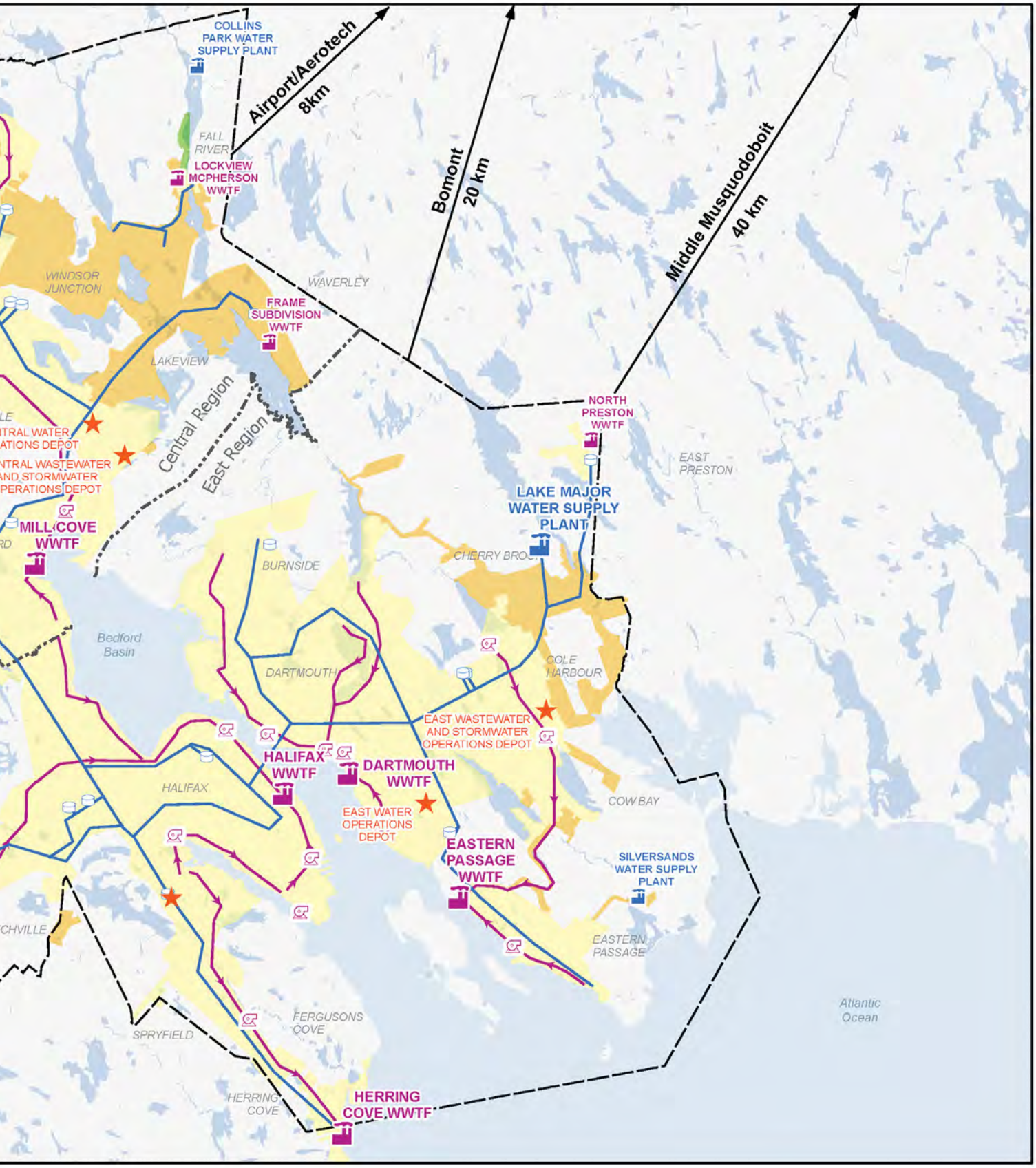
Halifax Water Achievement Award

$2,000 Awarded each Fall

This award is open to any student enrolled full-time in the Civil Engineering Technology program at NSCC. Included with this award is an opportunity for the successful recipient to complete their required work term with Halifax Water.

Service Area Map




COLLINS PARK WATER SUPPLY PLANT
Airport/Aerotech 8km
Bomont 20 km
Middle Musquodoboit 40 km
FALL RIVER
LOCKVIEW MCPHERSON WWTF
WINDSOR JUNCTION
WAVERLEY
FRAME SUBDIVISION WWTF
LAKEVIEW
Central Region
East Region
NORTH PRESTON WWTF
EAST PRESTON
LAKE MAJOR WATER SUPPLY PLANT
CHERRY BROOK
BURNSIDE
MILL COVE WWTF
Bedford Basin
DARTMOUTH
COLE HARBOUR
EAST WASTEWATER AND STORMWATER OPERATIONS DEPOT
HALIFAX WWTF
DARTMOUTH WWTF
EAST WATER OPERATIONS DEPOT
HALIFAX
COW BAY
EASTERN PASSAGE WWTF
SILVERSANDS WATER SUPPLY PLANT
EASTERN PASSAGE
FERGUSONS COVE
SPRYFIELD
HERRING COVE
HERRING COVE WWTF
Atlantic Ocean

Water Infrastructure as of March 31, 2022

WATER SUPPLY PLANT	WATER SOURCE	TREATMENT PROCESS	AVERAGE FLOWS/DAY	FILTER QUANTITY & CAPACITY/DAY	MAXIMUM FLOW RATE	DESIGN CAPACITY/DAY
J. D. Kline	Pockwock Lake	Dual Media Direct Filtration & Manganese Removal	84 039	8 Filters 143 m^2/filter	0.137 m^3/m^2 per minute	227 000 m^3
Lake Major	Lake Major	Upflow Clarification, Iron & Manganese Removal	31 756	4 Filters 85 m^2/filter	0.192 m^3/m^2 per minute	94 000 m^3
Bennery Lake	Bennery Lake	Sedimentation, Dual Media Filtration & Manganese Removal	705	2 Filters 26.65 m^2/filter	0.10 m^3/m^2 per minute	7 950 m^3
Middle Musquodoboit	Musquodoboit River	Raw Water Infiltration Gallery, Ultra/Nano Filtration	48	2 Ultra Filters 1 Nano Filter	0.139 m^3/min 0.264 m^3/min	260 m^3
Collins Park	Lake Fletcher	Ultra/Nano Filtration	68	2 Ultra Filters 1 Nano Filter	0.111 m^3/min 0.145 m^3/min	160 m^3
Bomont	Shubenacadie River	Nano Filtration/Ionic Exchange Resin	2	N/A	0.0132 m^3/min	38 m^3
Silver Sands	2 Wells	Green Sand Pressure Filters, Iron & Manganese Removal	18	2 Filters	0.378 m^3/min	30 m^3
Five Island Lake	1 Well	UV Disinfection	14	N/A	0.016 m^3/min	N/A

SOURCE WATER	WATERSHED AREA	SAFE YIELD/DAY
Pockwock Lake	5 661 ha	145 500 m^3
Chain Lake	206 ha	4 500 m^3
Lake Major	6 944 ha	65 900 m^3
Lake Lemont/Topsail	346 ha	4 500 m^3
Bennery Lake	644 ha	2 300 m^3

SOURCE WATER	RAINFALL IN 2021-22	SNOWFALL IN 2021-22
Pockwock Lake	1 521.8	219.7
Lake Major	1 606.9	120.2

Halifax Water by the Numbers

WATER SUPPLY	WATER PRODUCTION IN 2021-22 (M^3)
Pockwock Lake	30 674 399
Lake Major	11 590 820
Bennery Lake	257 233
Small Systems	55 272
Total	**42 577 724**

TRANSMISSION & DISTRIBUTION SYSTEM	
Size of Water Mains	19 mm - 1 500 mm
Total Water Mains	1 574 km
Main Valves	15 702
Fire Hydrants	8 496
Distribution Pumping (Booster) Stations	20
Pressure Control & Flow Meter Chambers	143

WATER SERVICES & METERS	
Water Sprinkler Systems (25 mm - 300 mm)	2 280
Supply Services (10 mm - 400 mm)	86 797
Water Meters (15 mm - 250 mm)	86 497

POPULATION SERVED	
Halifax Municipality Est. Population Served	381 000
Consumption per Capita	238.18 litres/day

RESERVOIR	ELEVATION ABOVE SEA LEVEL	CAPACITY
Lake Major	60 m	9 092 m^3
Pockwock	170 m	13 600 m^3
Geizer 158	158 m	36 400 m^3
Geizer 123	123 m	31 800 m^3
Cowie	113 m	11 400 m^3
Robie	82 m	15 900 m^3
Lakeside	119 m	5 455 m^3
Mount Edward 1	119 m	22 728 m^3
Mount Edward 2	119 m	22 728 m^3
Akerley Blvd.	119 m	37 727 m^3
North Preston	125 m	1 659 m^3
Meadowbrook	95 m	9 091 m^3
Sampson	123 m	12 273 m^3
Stokil	123 m	23 636 m^3
Waverley	86 m	1 364 m^3
Middle Musq.	81 m	275 m^3
Aerotech	174 m	4 085 m^3
Beaver Bank	156 m	6 937 m^3
Total	N/A	259 213 m^3

Wastewater & Stormwater Infrastructure as of March 31, 2022

WASTEWATER TREATMENT FACILITY	TREATMENT PROCESS	DESIGN AVERAGE FLOWS/DAY	AREA(S) SERVED	RECEIVING WATER	VOLUME TREATED IN 2021–22
Halifax	Enhanced Primary UV	139 900 m^3	Halifax	Halifax Harbour	34 239 295
Dartmouth	Enhanced Primary UV	83 800 m^3	Dartmouth	Halifax Harbour	18 973 938
Herring Cove	Enhanced Primary UV	28 500 m^3	Halifax & Herring Cove	Halifax Harbour	4 094 748
Mill Cove	Secondary UV/Pure Oxygen Activated Sludge	28 400 m^3	Bedford & Sackville	Bedford Basin	10 319 296
Eastern Passage	Secondary UV/Conventional Activated Sludge	25 000 m^3	Cole Harbour & Eastern Passage	Halifax Harbour	5 375 533
Timberlea	Secondary Sodium Hypochlorite/RBC	4 540 m^3	Lakeside & Timberlea	Nine Mile River	1 060 133
Aerotech	Tertiary UV/Membrane Bioreactors	3 000 m^3	Aerotech Park & Airport	Johnson River	293 162
Springfield Lake	Secondary UV/Activated Sludge	543 m^3	Springfield Lake	Lisle Lake	157 766
Fall River	Tertiary UV/Activated Sludge & Post Filtration	454.5 m^3	Lockview Road & McPherson Road	Lake Fletcher	58 520
North Preston	Tertiary UV/SBR & Engineered Wetland	680 m^3	North Preston	Winder Lake	234 153
Middle Musquodoboit	UV/RBC	114 m^3	Middle Musquodoboit	Musquodoboit River	53 948
Uplands Park	Secondary UV/Trickling Filter & Wetland	91 m^3	Uplands Park	Sandy Lake	45 392
Wellington	Tertiary UV/Activated Sludge/ Reed Bleed	68 m^3	Wellington	Grand Lake	6 083
Frame Subdivision	Tertiary UV/Membrane Reactor	80 m^3	Frame Subdivision	Lake William	9 095

Wastewater & Stormwater Collection System

Size of Pipes	50 mm - 3 000 mm	Total Ditch Length	Approx. 602 KM
Total Collection System Length	2 311 km	Holding Tanks & Retention Ponds	45
Wastewater Services	83 020	Cross Culverts	2 511
Total Manholes	39 104	Driveway Culverts	14 409
Total Pumping Stations	165	Catchbasins	25 029

Corporate Balanced Scorecard Results

Since 2001, Halifax Water has been measuring organizational performance using a Corporate Balanced Scorecard (CBS). The CBS ensures that all employees are focused on strategic outcomes. The Critical Success Factors shown below are developed in support of the Halifax Water mission: to provide world-class services to our customers and our environment. The CBS has a proven track record of driving performance within the organization.

Critical Success Factor	2020/21 RESULTS	2021/22 TARGET	2021/22 RESULTS	2022/23 TARGET
Adherence with 5 objectives of Water Quality Master Plan for all water systems: Percentage of sites achieving targets	76	80	70	80
Bacteriological tests: Percentage free from Total Coliform	100%	99.9%	99.94%	99.9%
Customer satisfaction about water quality: Percentage from customer survey	84%	85%	89%	85%
Customer satisfaction with service: Percentage from customer survey	96%	95%	96%	95%
Water service outages: Number of connection hours/1000 customers	3612.62	200	192.42	200
Wastewater service outages: Number of connection hours/1000 customers	0.92	4	0.93	4
Average speed of answer: Percentage of calls answered within 20 second	71%	70%	60.4%	70%
Operating expense/revenue ratio percentage	81.5%	82%	81.19%	83%
Annual cost per customer connection: Water	$498	$543	$540	%543
Annual cost per customer connection: Wastewater	$724	$758	$741	$782
Water leakage control: Target leakage allowance of 160 litres/service connection/ day *Note 1	193	160-170	220	160-170
I&I reduction: Number of inspections to identify private property discharge of stormwater into the wastewater system *Note 2	1316*	900	1502	1200
Peak flow reduction from wet weather management capital projects *Note 3	70 l/sec	5-10 l/sec	N/A	5-10 l/sec
Percentage of time GIS and Cityworks are available	100%	96-98%	99.99%	96-98%
Capital budget expenditures: Percentage of budget spend by end of fiscal year	30.78%	70-80%	28.62%	70-80%
Average score on internal safety audits	94.5%	85-95%	96.7%	85-95%

NS Labour and Advanced Education compliance: # of Incidents with written compliance orders	0	0-2	0	0-2
Lost time accidents: Number of accidents resulting in lost time per 100 employees *Note 4	0.59	1.5-2.0	2.0	3.5
Safe driving: Number of traffic Accidents per 1,000,000 km driven (maximum of 5)	5.5	4	3.36	4
Training: Number of employees trained or re-certified before due date	59%	80-90%	70%	80-90%
Percentage of completed safety talks	86%	80-90%	58%	80-90%
Percentage of public health and environmental regulatory infractions resulting in a summary offense	0	0-2	0	0-2
Percentage of WWTFs complying with NSE approval permits (Project for 20/21 at end of February)	93%	95-100%	96.2%	95-100%
Number of ICI properties inspected by Pollution Prevention each year	356	500	361	250
Energy management kwh/m3 reduction associated with capital projects	+8%	3%	7.76%	3%
Bio-solids residual handling: Percentage of sludge meeting bio-solids concentration targets	98.6%	92-97%	98.5%	92-97%
Number of arbitrations divided by total number of grievances	0	0	0	0
Percentage of jobs filled with internal candidates	75%	80%	68%	80%
Employee satisfaction survey result	B+	A	B+	A
Average number of days absenteeism	7.54	<7	7.16	<7

Corporate Balanced Scorecard Notes

01 Water leakage control - The final results are not available until year-end,but current data indicates this target will not be met for 2021/22.

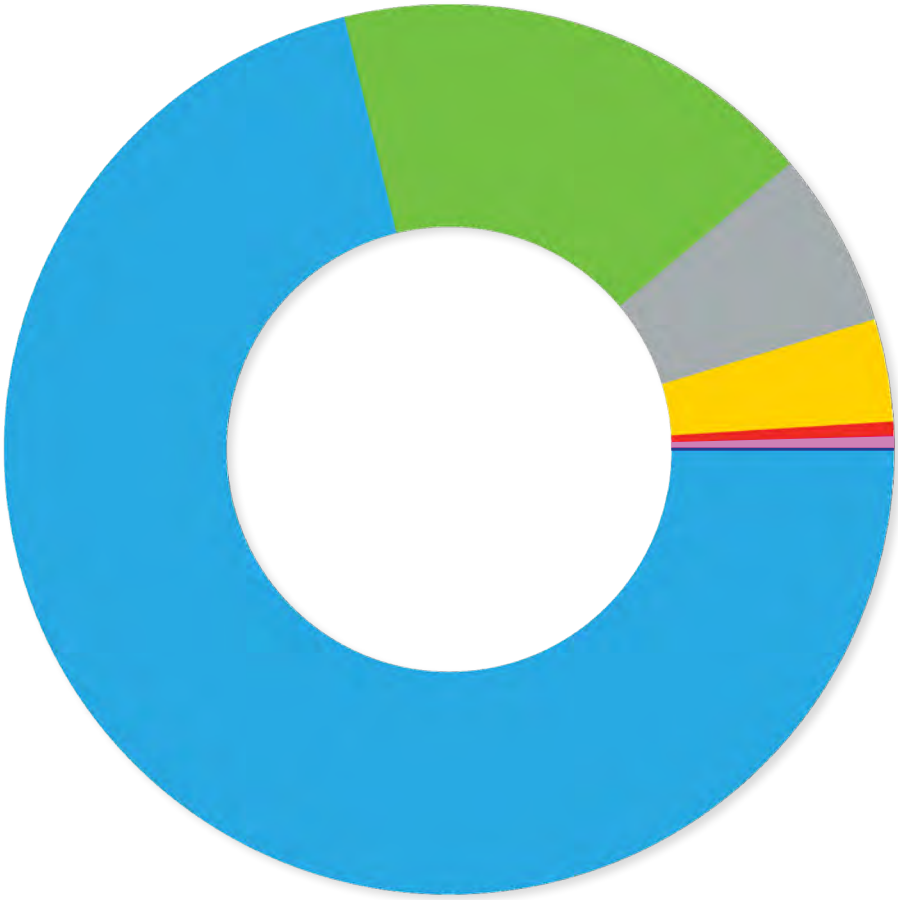
02 I&I inspections - The target is proposed to increase to 1200 next year, and the methodology is under review for additional change. Environmental Engineering will be tracking inspections and requests for inspections in greater detail this year to propose a new metric in 2023/24.

03 Peak flow reduction - The Crescent Avenue lining program start was delayed due to a longer than normal NSUARB approval process. As a result, the program was completed in October, 2021, after the start of the calendar year Q4 data collection through flow monitoring. As a result, it is recommended that this target carry forward to 2022/23 so that a complete Q4 data is available to measure the peak flow reduction.

04 Lost Time Incidents Rate (LTIR) - The measurement of Lost Time Incidents will change to align with industry standards. Lost time Cases x 200,000/Total Employee Hours Worked (The number 200,000 equates to approx. 100 employees, working 40 hours per week, and 50 weeks per year with two weeks leave average.) We are recommending targeting a 0.5 reduction each year for the next four years, and our ultimate goal is eventually have a target of 0.5 or less lost time incidents, consistent with world class companies.

Customers by Service Type

Halifax Water provides one or more of the following to our customers: water, wastewater and/or stormwater services. Those services support an estimated population of 381,000 people, and numerous visitors to the region.



Customer Numbers by Type		
	Number of Accounts	Percentage of Total
Water, Wastewater & Stormwater	75,559	71.11%
Stormwater Only	18,769	17.66%
Water & Wastewater	6,765	6.37%
Water & Stormwater	3,952	3.72%
Wastewater & Stormwater	540	0.51%
Water Only	520	0.49%
Wastewater Only	156	0.15%
Total of All Types	**106,261**	**100%**

Typical Water Analysis

TYPICAL ANALYSIS OF SMALL SYSTEMS 2021 - 2022
(in milligrams per litre unless shown otherwise)
Note: All Regulatory Compliance Analysis are Processed by Third Party Laboratories

PARAMETERS	BENNERY LAKE		BOMONT		GUIDELINES FOR CANADIAN DRINKING WATER QUALITY	
	Raw Water	Treated Water	[A]Raw Water	Treated Water	Maximum Acceptable Concentration	Aesthetic Objective Concentration
Alkalinity (as $CaCO_3$)	5.9	30.0	-	22.0	-	-
Aluminum	0.130	0.019	-	0.026	-	0.1
Ammonia (N)	< 0.05	< 0.05	-	< 0.05	-	-
Arsenic	< 0.001	< 0.001	-	< 0.001	0.010	-
Calcium	2.4	15.4	-	6.7	-	-
Chloride	6.4	9.5	-	10.0	-	≤250
Chlorate	0.5	0.2	-	0.1	1.0	-
Chlorite	0.5	< 0.1	-	< 0.1	1.0	-
Colour (True Colour Units)	42.0	< 5.0	-	< 5.0	-	≤15.0
Conductivity (µS/cm)	38	140	-	97	-	-
Copper (Total)	0.1550	0.0200	-	< 0.0005	2.0	≤1.0
Fluoride	< 0.1	< 0.1	-	< 0.1	1.5	-
Hardness (as $CaCO_3$)	8.0	42.0	-	18.0	-	-
HAA_5 (avg.)	-	0.029	-	0.041	0.080	-
Iron (Total)	0.72	< 0.05	-	< 0.05	-	≤0.3
Lead (Total) (µg/l)	< 0.5	< 0.5	-	< 0.5	5.0	-
Magnesium	0.5	0.6	-	0.4	-	-
Manganese (Total)	0.447	0.060	-	0.006	0.12	≤0.02
Mercury (µg/l)	< 0.013	< 0.013	-	< 0.013	1.0	-
Nitrate (as N)	< 0.05	< 0.05	-	< 0.05	10.0	-
Nitrite (as N)	< 0.01	< 0.01	-	< 0.01	1.0	-
pH (pH Units)	6.4	7.5	-	7.5	-	7.0 - 10.5
Potassium	0.2	0.3	-	0.3	-	-
Sodium	4.0	12.0	-	12.0	-	≤200
Solids (Total Dissolved)	30	93	-	50	-	≤500
Sulphate	2.8	30.0	-	11.0	-	≤500
Turbidity (NTU)	1.0	0.1	-	0.2	[B]0.2/1.0; C5.0	-
Total Organic Carbon (TOC)	5.5	1.9	-	2.0	-	-
THM's (avg.)	-	0.049	-	0.039	0.100	-
Uranium (µg/l)	< 0.1	< 0.1	-	< 0.1	20.0	-
Zinc (Total)	< 0.005	0.042	-	0.124	-	≤5.0
PCB (µg/l)	-	-	-	-	-	-
Gross Alpha / Gross Beta (Bq/L)	< 0.1 / <0.1	< 0.1 / <0.1	-	< 0.1 / <0.1	0.5 / 1.0	-

[A] Raw water samples were not collected from the Bomont raw water source this past year. Treated water was supplied from either the Lake Major or Pockwock water systems.
[B] The Bennery Lake plant analyzes turbidity immediately post-filtration and must produce water with a turbidity of <0.2 NTU 95% of the time and <1.0 NTU 100% of the time.
[C] Filtered turbidity values are not reported due to the fact that the Bomont Water Supply Plant was not treating raw water. Instead, treated water turbidity is reported and calculated from clearwell monitoring and must be less than 5.0 NTU as required by Provincial Permit.

TYPICAL ANALYSIS - SMALL SYSTEMS 2021 - 2022

(in milligrams per litre unless shown otherwise)

Note: All Regulatory Compliance Analysis are Processed by Third Party Laboratories

PARAMETERS	COLLINS PARK		MIDDLE MUSQUODOBOIT		GUIDELINES FOR CANADIAN DRINKING WATER QUALITY	
	Raw Water	Treated Water	Raw Water	Treated Water	Maximum Acceptable Concentration	Aesthetic Objective Concentration
Alkalinity (as $CaCO_3$)	15.0	15.0	40.0	107.0	-	-
Aluminum	0.064	< 0.005	0.036	0.004	-	0.1
Ammonia (N)	< 0.05	< 0.05	0.06	< 0.05	-	-
Arsenic	0.003	< 0.001	< 0.001	< 0.001	0.010	-
Calcium	6.9	0.2	13.3	3.4	-	-
Chloride	36.0	8.9	9.4	8.2	-	≤250
Chlorate	< 0.1	0.2	< 0.1	0.1	1.0	-
Chlorite	< 0.1	< 0.1	< 0.1	< 0.1	1.0	-
Colour (True Colour Units)	21.0	< 5.0	3.6	< 5.0	-	≤15.0
Conductivity (µS/cm)	160	37	130	200	-	-
Copper (Total)	0.0010	< 0.0005	0.0005	0.0006	2.0	≤1.0
Fluoride	< 0.1	< 0.1	< 0.1	< 0.1	1.5	-
Hardness (as $CaCO_3$)	22.0	< 1.0	50.0	13.6	-	-
HAA_5 (avg.)	-	< 0.005	-	< 0.005	0.080	-
Iron (Total)	0.12	< 0.05	< 0.05	< 0.05	-	≤0.3
Lead (Total) (µg/l)	< 0.5	< 0.5	< 0.5	< 0.5	5.0	-
Magnesium	1.0	< 0.1	4.8	1.2	-	-
Manganese (Total)	0.068	< 0.002	< 0.002	< 0.002	0.12	≤0.02
Mercury (µg/l)	< 0.013	< 0.013	< 0.013	< 0.013	1.0	-
Nitrate (as N)	0.07	< 0.05	0.57	0.48	10.0	-
Nitrite (as N)	< 0.01	< 0.01	< 0.01	< 0.01	1.0	-
pH (pH Units)	7.2	7.1	6.7	7.9	-	7.0 - 10.5
Potassium	0.9	0.2	0.9	0.5	-	-
Sodium	22.0	8.1	5.9	51.0	-	≤200
Solids (Total Dissolved)	92	25	78	170	-	≤500
Sulphate	7.1	< 2.0	10.2	< 2.0	-	≤500
Turbidity (NTU)	1.4	0.1	0.23	0.1	[B]0.2/1.0; C5.0	-
Total Organic Carbon (TOC)	4.8	< 0.5	0.78	< 0.5	-	-
THM's (avg.)	-	<0.001	-	0.001	0.100	-
Uranium (µg/l)	< 0.1	< 0.1	< 0.1	< 0.1	20.0	-
Zinc (Total)	< 0.005	0.069	< 0.005	0.049	-	≤5.0
PCB (µg/l)	-	-	-	-	-	-
Gross Alpha / Gross Beta (Bq/L)	< 0.1 / <0.1	< 0.1 / <0.1	< 0.1 / <0.1	< 0.1 / <0.1	0.5 / 1.0	-

[A] AUltra-filtration membrane plants must produce water with turbidity of <0.1 NTU 99% of the time and <0.3 NTU 100% of the time, as required by Provincial Permit. Treated water turbidity is calculated from clearwell monitoring.

TYPICAL ANALYSIS OF POCKWOCK LAKE & LAKE MAJOR WATER

(in milligrams per litre unless shown otherwise)

Note: All Regulatory Compliance Analysis are Processed by Third Party Laboratories

PARAMETERS	(Halifax) POCKWOCK		(Dartmouth) LAKE MAJOR		GUIDELINES FOR CANADIAN DRINKING WATER QUALITY	
	Raw Water	Treated Water	Raw Water	Treated Water	Maximum Acceptable Concentration	Aesthetic Objective Concentration
Alkalinity (as $CaCO_3$)	< 5.0	18.0	< 5.0	22.0	-	-
Aluminum	0.102	0.033	0.190	0.016	-	[A]0.20/0.10
Ammonia (N)	< 0.05	< 0.05	< 0.05	< 0.05	-	-
Arsenic	< 0.001	< 0.001	< 0.001	< 0.001	0.010	-
Calcium	0.9	5.8	1.0	16.5	-	-
Chloride	6.3	8.0	6.4	8.2	-	≤250
Chlorate	< 0.1	< 0.1	< 0.1	< 0.1	1.0	-
Chlorite	< 0.1	< 0.1	< 0.1	< 0.1	1.0	-
Colour (True Colour Units)	17.0	< 5.0	40.0	< 5.0	-	≤15.0
Conductivity (µS/cm)	31	83	34	140	-	-
Copper (Total)	0.0430	< 0.0005	0.0440	0.0008	2.0	≤1.0
Fluoride	< 0.1	[B]0.2	< 0.1	[B]< 0.1	1.5	-
Hardness (as $CaCO_3$)	4.1	16.0	4.3	42.0	-	-
HAA_5 (avg.)	-	0.016	-	0.027	0.080	-
Iron (Total)	0.06	< 0.05	0.10	< 0.05	-	≤0.3
Lead (Total) (µg/l)	< 0.5	< 0.5	< 0.5	< 0.5	5.0	-
Magnesium	0.4	0.6	0.4	0.4	-	-
Manganese (Total)	0.038	0.010	0.037	0.003	0.12	≤0.02
Mercury (µg/l)	< 0.013	< 0.013	< 0.013	< 0.013	1.0	-
Nitrate (as N)	< 0.05	< 0.05	< 0.05	< 0.05	10.0	-
Nitrite (as N)	< 0.01	< 0.01	< 0.01	< 0.01	1.0	-
pH (pH Units)	6.0	7.3	5.9	7.3	-	7.0 - 10.5
Potassium	0.2	0.3	0.2	0.2	-	-
Sodium	4.3	11.0	4.1	12.0	-	≤200
Solids (Total Dissolved)	24.5	54.0	27.5	91.0	-	≤500
Sulphate	3.3	11.0	2.6	34.0	-	≤500
Turbidity (NTU)	0.29	0.05	0.59	0.04	[C]0.15/0.2	-
Total Organic Carbon (TOC)	3.4	1.9	5.3	1.7	-	-
THM's (avg.)	-	0.028	-	0.041	0.100	-
Uranium (µg/l)	< 0.1	< 0.1	< 0.1	< 0.1	20.0	-
Zinc (Total)	< 0.005	0.168	0.011	0.190	-	≤5.0
PCB (µg/l)	-	-	-	-	-	-
Gross Alpha / Gross Beta (Bq/L)	< 0.1 / <0.1	< 0.1 / <0.1	< 0.1 / <0.1	< 0.1 / <0.1	0.5 / 1.0	-

[A]Aluminum objective is related to type of plant filtration; the aluminum objective for direct filtration (Pockwock) is <0.20 mg/l and conventional filtration (Lake Major) is <0.10 mg/l.
[B]Fluoride was not being added to the finished water at the Pockwock WSP and Lake Major WSP approximately 40% and 100% of the time respectively due to system maintenance.
[C]The Pockwock and Lake Major plants analyze turbidity immediately post-filtration. Each filter must produce water with a turbidity of <0.15 NTU 95% of the time at the Pockwock Water Supply Plant and <0.2 NTU 95% of the time at the Lake Major Water Supply Plant. Both Water Supply Plants must produce water with a turbidity <1.0 NTU 100% of the time, as required by Provincial Permit.

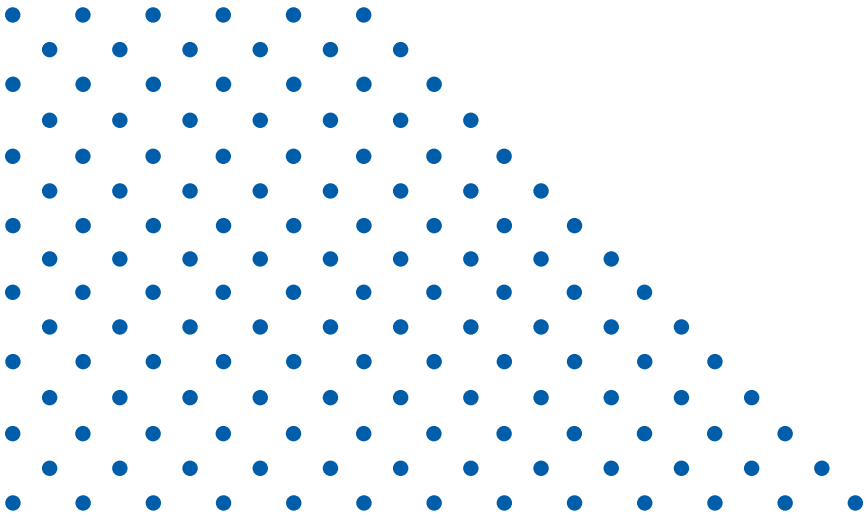
TYPICAL ANALYSIS OF SMALL SYSTEMS 2021 - 2022

(in milligrams per litre unless shown otherwise)

Note: All Regulatory Compliance Analysis are Processed by Third Party Laboratories

PARAMETERS	FIVE ISLAND LAKE		SILVER SANDS		GUIDELINES FOR CANADIAN DRINKING WATER QUALITY	
	Raw Water	Treated Water	Raw Water	Treated Water	Maximum Acceptable Concentration	Aesthetic Objective Concentration
Alkalinity (as $CaCO_3$)	30.0	36.0	66.0	67.0	-	-
Aluminum	0.007	< 0.005	< 0.005	< 0.005	-	0.2
Ammonia (N)	< 0.05	< 0.05	< 0.05	< 0.05	-	-
Arsenic	0.004	0.004	0.002	< 0.001	0.010	-
Calcium	9.0	8.7	37.0	37.0	-	-
Chloride	6.4	7.6	63.0	69.0	-	≤250
Chlorate	< 0.1	0.1	< 0.1	0.4	1.0	-
Chlorite	< 0.1	< 0.1	< 0.1	< 0.1	1.0	-
Colour (True Colour Units)	9.3	< 5.0	8.8	< 5.0	-	≤15.0
Conductivity (µS/cm)	79	82	350	380	-	-
Copper (Total)	0.0020	0.0094	< 0.0005	0.0670	2.0	≤1.0
Fluoride	0.4	0.4	0.2	0.2	1.5	-
Hardness (as $CaCO_3$)	27.0	26.0	110.0	110.0	-	-
HAA_5 (avg.)	-	< 0.005	-	< 0.005	0.080	-
Iron (Total)	< 0.05	< 0.05	0.95	< 0.05	-	≤0.3
Lead (Total) (µg/l)	< 0.5	< 0.5	< 0.5	< 0.5	5.0	-
Magnesium	1.1	1.1	5.1	5.1	-	-
Manganese (Total)	< 0.002	< 0.002	1.071	0.007	0.12	≤0.02
Mercury (µg/l)	< 0.013	< 0.013	< 0.013	< 0.013	1.0	-
Nitrate (as N)	0.065	0.060	< 0.05	< 0.05	10.0	-
Nitrite (as N)	< 0.01	< 0.01	< 0.01	< 0.01	1.0	-
pH (pH Units)	7.0	7.7	7.7	7.7	-	7.0 - 10.5
Potassium	0.5	0.5	1.0	0.9	-	-
Sodium	6.1	7.1	26.0	29.0	-	≤200
Solids (Total Dissolved)	56	50	200	210	-	≤500
Sulphate	2.1	3.0	18.0	18.0	-	≤500
Turbidity (NTU)	0.3	0.2	14.0	0.1	[A]1.0	-
Total Organic Carbon (TOC)	< 0.5	< 0.5	< 0.5	< 0.5	-	-
THM's (avg.)	-	0.001	-	< 0.001	0.100	-
Uranium (µg/l)	10.0	9.7	< 0.1	< 0.1	20.0	-
Zinc (Total)	< 0.005	0.006	< 0.005	< 0.006	-	≤5.0
PCB (µg/l)	< 0.05	< 0.05	-	-	-	-
Gross Alpha / Gross Beta (Bq/L)	0.3 / 0.5	0.4 / < 0.1	< 0.1 / < 0.1	< 0.1 / <0.1	0.5 / 1.0	-

[A] The Five Island Lake and Silver Sands Water Supply Plants must produce water with turbidity of <1.0 NTU 95% of the time, as required by Provincial Permit. Treated water turbidity is calculated from clearwell monitoring.




Halifax
Water

STRAIGHT from the SOURCE

ITEM #5-I
Halifax Water Board
September 22, 2022

TO: Chair, and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: Digitally signed by Louis de Montbrun Date: 2022.09.16 09:58:56 -03'00'

Louis de Montbrun, CPA, CA
Director, Corporate Services/CFO

APPROVED: Digitally signed by Cathie O'Toole Date: 2022.09.16 09:30:58 -03'00'

Cathie O'Toole, MBA, CPA, CGA, ICD.D
General Manager

DATE: September 16, 2022

SUBJECT: **2022/23 Cost Containment Initiatives**

INFORMATION REPORT

ORIGIN

- The Cost Containment Process as approved by the Halifax Regional Water Commission (HRWC) Board, October 3, 2013.
- April 14, 2015, Nova Scotia Utility and Review Board (NSUARB) Decision - HRWC General Rate Application (M06540).

BACKGROUND

The process for cost containment as approved by the Halifax Water Board on October 3, 2013, called for the implementation of a number of recommended actions that would assist Halifax Water in addressing the Nova Scotia Utility and Review Board's (NSUARB) request for a more rigorous approach to cost containment. One key recommendation was the establishment of a reporting structure whereby, "*on a quarterly basis, the monthly financial report of the HRWC Board will also include an update on Cost Containment Initiatives*".

In the decision on the 2015 rate hearing, the NSUARB directed Halifax Water to file annual reports on its efforts to contain operating costs of the utility, with this report to be filed no later than June 30th of each year.

DISCUSSION

A Summary Report - Cost Containment Initiatives for 2022/23 is attached, with updated information as at August 31, 2022. This report shows the cost containment initiatives effecting operations for 2022/23 as a result of new initiatives implemented during the year and ongoing initiatives from fiscal years 2013/14 to 2021/22 inclusive. The inclusion of initiatives and amounts from prior years reflects an intentional focus on sustainable results over the long term. Estimated cost savings for 2022/23 are $6.6 million as outlined by category in Figure #1 below:

Figure #1

Procurement Strategies	$1,165,242	17.8%
Human Resource Strategies	$2,833,966	43.2%
Information Technology Strategies	$108,700	1.7%
Facilities/Process Strategies	$2,307,343	35.2%
Reduce Paper and Printing Costs	$33,611	0.5%
Technology and Business Process Changes	$112,138	1.7%
	$6,561,000	100.0%

As shown above, cost containment initiatives are impacted most in the areas of Human Resource, and Facilities/Process and Procurement Strategies. Under Human Resource Strategies, the effects of pension plan re-design initiated in 2015/16 is one of the main contributors to cost containment savings in the current year. Annual savings related to pension plan re-design approximates $1.7 million, which represents 60.0% of the savings within Human Resource Strategies and 25.9% of the total projected cost savings for 2022/23. In addition, effective January 1, 2022, the contribution rate for the pension plan decreased from 10.34% to 9.60% resulting in annual cost savings of approximately $0.3 million.

Facilities/Process Strategies contain initiatives of varying nature, however one of the main contributors in this category is Halifax Water's Energy Efficiency Program. Projects under this Program account for approximately $1.4 million of projected savings for the current year, representing 59.1% of savings within the category and 20.8% of the total projected savings for 2022/23.

New cost containment initiatives implemented thus far during the 2022/23 fiscal year result in projected cost savings of approximating $0.4 million and are highlighted for ease of reference on the Summary Report - Cost Containment Initiatives attached. Cost savings from these initiatives are of an on-going nature, and fall within the following categories:

- Procurement Strategies, and
- Human Resource Strategies.

Procurement strategies from a capital perspective have led to other cost savings realized in the current year. For example, two valves were replaced using internal staff instead of a contractor resulting in savings of $0.1 million, which is recognized through cost savings associated with depreciation expense of approximately $0.01 million annually. In addition, the capital budget for 2021/22 included $0.8 million for the supply and installation of a new mechanical bar screen for the Jamieson Street Pumping Station. Three bar screens were replaced at the Dartmouth Wastewater treatment facility (DWWTF) and two of these units were re-constructed to form one single screen suitable for Jamieson Street. Halifax Water staff engineered the modifications and contracted to fabricate and install the repurposed screens and compactor from the DWWTF at a cost of $0.2 million resulting in cost savings of $0.6 million, which is recognized through cost savings associated with depreciation expense of approximately $0.03 million annually.

BUDGET IMPLICATIONS

Available information on cost containment initiatives were taken into consideration in developing the 2022/23 budget. Initiatives that impact future fiscal periods will be incorporated into budget cycles and processes of these future periods.

ATTACHMENTS

Summary Report – Cost Containment Initiatives

Report Prepared by: Alicia Scallion

Digitally signed by Alicia Scallion
Date: 2022.09.16 10:02:57 -03'00'

Alicia Scallion, CPA, CA
Manager, Finance, (902) 497-9785

Halifax Water
Summary Report - Cost Containment Initiatives
2022/2023
Fiscal Year

#	Initiative	Comments	Year Initiated	2022/23 Cost Savings
1	**General Budget Strategies**			
	Sub-total			$0
2	**Procurement Strategies**			
	Customer account collections	Coordination of collection services related to closed customer accounts in conjunction with the Provincial Public Procurement Act, rather than outsourcing to private organizations	2014/15	$10,000
	Lab Testing	Savings as a result of contract tendering	2013/14	$60,000
	NSPI rate reclassification	Eastern Passage Wastewater Treatment Facility (WWTF)	2014/15	$16,000
	NSPI rate reclassification	Duffus Street Pumping Station	2015/16	$15,000
	Chemical purchasing	Able to purchase a corrosion inhibitor with a higher concentration of active ingredient, thus foregoing additional costs that would have resulted under current dosage requirements	2015/16	$400,000
	Garbage collection - JD Kline Plant	A request for proposal (RFP) was put out to consolidate the garbage collection, which resulted in a cost savings with respect to internal man-hours and use of HW vehicles.	2016/17	$1,370
	Utilizing HW staff to setup excavations sites	Using trained HW staff as TWS for job sites, unless outside traffic control personal are required	2016/17	$50,000
	RFP for biosolids transport	As a result of a RFP, the is expected to be an approximate 33% cost reduction related to transporting biosolids from the Halifax, Dartmouth, Herring Cove and Eastern Passage WWTF	2017/18	$220,000
	Equipment calibration	Internal staff are now able to calibrate fixed gas detectors instead of outsourcing this to a MSA technician service provider.	2019/20	$3,000
	In-house training	Developed in-house method to purge primary sludge discharge line from primary gallery to the sludge holding tank. As a result and external contractor is no longer required to perform this work. This is on a 3-year cycle.	2019/20	$4,500
	Reduction in sampling	Reduced the amount of lab testing over the year as greater reliance and confidence was placed on the new, in-line analyzers.	2019/20	$5,000
	Elimination of a customer satisfaction survey	HW performs 2 customer surveys annually, the Forth Quarter Urban Report and the Atlantic Quarterly Survey. Upon review it was determined there was a redundancy in question asked between the 2 surveys therefore, it was decided to consolidate the questioning into the Forth Quarter Urban Report.	2020/21	$5,319
	Reduction in fleet repair costs	Savings associated with the removal of 16 units from the fleet as a direct result of the Municipal Auditor General's audit of fleet in 2019, and subsequent action taken by Fleet Utilization Management for Halifax Water, for units that did not meet the minimum fleet utilization standards.	2020/21	$41,500
	Reduction in depreciation costs related to Fleet	As recommended in the 2019 MAG Fleet Use Audit, the Fleet Upgrade Capital Program was reduced in 2021/22 by $1.1 million resulting in savings associated with depreciation costs over the next 5-years estimated at $0.2 million per year.	2021/22	$218,000
	Reduction in depreciation costs related to discounted meter purchase	As the AMI metering project was concluding, an opportunity to purchase AMI meters in bulk became available, to take advantage of significant price savings from a capital perspective.	2021/22	$1,254
	Reduction in depreciation costs related to Fleet	An adjustment was made to the Sewer Jet Replacement Program whereby, rather than replace an existing unit, it was decided to replace the truck chassis along with a complete rebuild of the tank, pumps and body assembly. Cost of a new unit would approximate $550 thousand compared to a budgeted cost of $275 thousand for the alternative chosen.	2021/22	$55,000
	Operational cost savings related to purchase of a single axle, hydro excavation unit	After an successful pilot with a single axle, hydro excavation unit, it was decided to purchase the rental unit. It is expected the savings as a result of purchasing the unit versus outsourcing the work will be in the range of $28-$42 thousand per year, net of depreciation over a 7-year period.	2021/22	$28,000
	Procurement of annual audit fees	Reduction in the annual audit fees through a request for proposal (RFP) process. The contract term is for a 5-year period, and assuming an inflation factor of 2% over fees of the prior year, potential savings over the term could approximate $41,000.	2021/22	$6,300
	Reduction in license fees	Renewal of AutoCAD license contract for 3 years to avoid annual increases of 2.5% per year for a savings of $12k over the three years. Also dropped two more expensive licenses for an immediate savings of $21k. These actions result in cost savings of $25k in 2022/23 and $4k in subsequent two years.	2022/23	$25,000
	Sub-total			$1,165,243

Halifax Water
Summary Report - Cost Containment Initiatives
2022/2023
Fiscal Year

#	Initiative	Comments	Year Initiated	2022/23 Cost Savings
3	**Human Resource Strategies**			
	Heavy Truck and Equipment Service	the addition of a new Heavy Equipment Technician provides in-house maintenance service capabilities for the HW fleet.	2013/14	$100,000
	Beeper Pay	Elimination of an inconsistency between Water and Wastewater Services, as Water Services staff do not receive beeper pay. This involves 10 non-union staff in total.	2013/14	$75,000
	Workload, labor force assessment	A reduction in number of staff in Development Approvals. The volume of work did not warrant 6 planning technologists, and as a result this number has been reduced to 4.	2015/16	$140,000
	Pension plan re-design	Through the collective bargaining process, HW was able to negotiate pension plan re-design to make the plan more sustainable. It is estimated the employer's share contributions will decrease from the current 12.95% to 9.85% effective January 1, 2015.	2015/16	$1,700,000
	Re-structuring within the organization to create a new "Corporate Services" sector	January 1, 2016 saw the elimination of two (2) full time positions and a re-design of several other jobs.	2015/16	$35,000
	Workload, labor force assessment	January 1, 2016 saw the elimination the administrative assistant within Regulatory Services.	2015/16	$57,000
	Workload, labor force assessment	November, 2016 saw the elimination of a Compliance Sampling position as a result of a reduction in sampling requirements.	2016/17	$81,966
	Overtime reductions	Overtime has been reduced at the Harbour Solutions Plants with respect to sick leaves, vacation, etc. when weather conditions allow and operational needs are met. Also, Halifax WWTF staff are responding to after hours calls at the Dartmouth and Herring Cove facilities in an effort to minimize the need for overtime call-outs.	2016/17	$40,000
	Modifications to the Pre-Retirement Leave Program	In June 2019, employees were given the opportunity to withdraw their accrued benefit under the Pre-Retirement Leave Program in the form of a lump-sum payment, rather than continuing to accrue a benefit under a modified program. The Pre-Retirement Leave Program had been closed to new, non-union employees hired after March 31, 2018, and is now effectively closed for all other employees hired after June 7, 2018.	2019/20	$260,000
	Pension plan contribution rate	Through the 2022 actuarial valuation, the pension plan contribution rate decreased from 10.34% to 9.60% effective January 1, 2022.	2022/23	$250,000
	Re-structuring within Wastewater Treatment	Due to the reorganization of the Wastewater Treatment section of the Operations department, one full time Supervisor position was eliminated. One supervisor is now responsible for the management of two plants (Herring Cove and Timberlea).	2022/23	$95,000
		Sub-total		$2,833,966
4	**Information Technology Strategies**			
	Xerox managed print solutions	Rationalization and replacement of photocopiers and printers	2013/14	$20,000
	Network	Change in cost model by Eastlink, giving HW the new pricing	2013/14	$80,000
	Telephone land lines	Rationalization of services and eliminate duplication of resources as required	2013/14	$8,700
		Sub-total		$108,700
5	**Facilities/Process Strategies**			
	Chlorine Utilization - Pockwock	Discontinuation of the pre-chlorination process	2013/14	$40,000
	Lab Testing	Price benefits from purchasing product from a different source mainly affecting the Harbour Solution Plants	2013/14	$105,000
	Pumper Truck Utilization	pilot project to be scheduled initially for stormwater customers only as a test	2013/14	$130,000
	Waste oil boiler system - Herring Cove WWTF	new system to allow the use of waste oil from Metro Transit as an alternative heating source	2014/15	$13,250
	System sampling for HPC's	sampling was reduced from weekly to monthly	2014/15	$8,025
	Decommissioning of the Bedford South pumping station	The developer driven system expansion will permit the use of gravity and pressure reduction rather than the pumping station	2014/15	$15,000
	Lighting upgrades - Bennery Lake WSP		2014/15	$4,793
	Insulation upgrades - Bennery Lake WSP		2014/15	$36,000
	Lighting upgrades - Eastern Passage WWTF		2014/15	$7,880
	Lighting upgrades - Dartmouth WWTF		2014/15	$22,542
	Lighting upgrades - Herring Cove WWTF		2014/15	$13,744
	Lighting upgrades - Halifax WWTF		2014/15	$29,845
	Lighting upgrades - Aerotech BPF		2014/15	$19,109
	HVAC upgrades - Eastern Passage WWTF		2014/15	$20,711
	HVAC upgrades - Roach's Pond pumping station		2014/15	$13,500
	MCC 190 cooling and heat recovery - Halifax WWTF		2014/15	$13,164
	Aeration system upgrades - Eastern Passage WWTF		2014/15	$76,382
	Orchard Park in-line turbine project		2014/15	$24,479

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#	Initiative	Comments	Year Initiated	2022/23 Cost Savings
	Wind farm - Pockwock WSP		2014/15	$130,399
	Biogas CHP system - Mill Cove		2014/15	$86,000
	Disposal of water treatment plant solid residual material	A new location for the disposal of the residual material was found	2014/15	$36,000
	Advanced investigative tool for leaks and structural condition of pipes	The current program has been halted as a cost containment initiative and as a result of the information received.	2014/15	$150,000
	E-delivery	Transitioning from traditional billing methods to e-delivery	2014/15	$20,000
	Change in Recycling Pickups	By changing the schedule for recycling pickups from bi-weekly to every three (3) weeks, the anticipated annual savings will range from $2,500 to $2,700.	2015/16	$2,700
	Highway #7 Booster Station Upgrade	Expected energy savings	2015/16	$14,300
	Dartmouth WWTF - UV Channel Isolation	Expected energy savings	2015/16	$59,460
	Halifax WWTF - Fixed Compressed Air Leaks	Expected energy savings	2015/16	$2,293
	Halifax WWTF - UV Channel Isolation	Expected energy savings	2015/16	$62,115
	Herring Cove WWTF - MCC 190 Cooling/Heat Recovery	Expected energy savings	2015/16	$8,496
	Sampling	Using internal staff at the Mill Cove facility to perform the required daily sampling at the facility, rather than the compliance staff, limiting their site visits to once a week.	2015/16	$4,160
	Process alternative	A centrifuge was rented for the Mill Cove WWTF (with the option to purchase) on a trial basis to dewater liquid sludge that typically would be transported to the Aerotech WWTF. The transport of the liquid sludge resulted overtime costs, as well as reducing the time available for HW truck to service other facilities. This process assisted the Aerotech in reaching its compliance goals and reduced overtime costs by an estimated 50%. This equipment will enable HW proceed with a digester clean out project, which would otherwise be sub-contracted at a cost of $200,000.	2015/16	$40,000
	Process change	It was decided that flanges for meter sizes greater than 2" would be the responsibility of the customer, since when meters are replaced, the flanges are not replaced.	2015/16	$4,854
	UV disinfection shutdown - HHSP and Eastern Passage WWTFs	Annual shutdown of UV disinfection system resulted in cost savings associated with electrical energy savings, peak demand reduction,	2016/17	$234,268
	Halifax WWTF - Carbon Scrubber By-Pass	Implemented April, 2016	2016/17	$59,386
	Tools developed internally	Tools developed internally to install new operating nuts on buried valves. Previously nuts were lost on buried valves resulting in a need to excavate the valve and install new nuts. Cost savings are achieved regarding excavation and reinstatement.	2016/17	$20,000
	Spruce Hill transmission main	Two long term leaks were discovered in the transmission main resulting in cost savings from the perspective of water loss control.	2016/17	$3,000
	Utilization of industrial water	A new filter system was installed at the Eastern Passage WWTF that provides the capability to use the current industrial water system rather than potable water to deliver water to the polymer feed systems.	2016/17	$26,000
	Cost reductions (material transport)	Modifications to the screening/grit skip eliminated the need to purchase 2 new screening compactors, which also resulted in the amount of material transported of approximately 28 metric tonnes.	2017/18	$2,000
	Herring Cove WWTF - Carbon Scrubber By-Pass	Implemented April, 2017	2017/18	$12,177
	Servicing oxygen monitors in-house	Technical Service staff have been trained by the manufacturer to service the fleet of personal gas monitors in-house, specifically the replacement of the oxygen sensor. These monitors, 165 in total, are used by all operation and treatment departments throughout the organization.	2018/19	$30,000
	Pumping Station Starters (4160V)	The pumping station starters were upgraded to vacuum starters, thus eliminating the need for annual servicing of the starters to be outsourced. Any maintenance can now be handled by in-house industrial electricians.	2018/19	$1,500
	Automated Flushing Stations	Automated flushing stations are now used to ensure the proper chorine residuals are achieved in all areas of the transmission and distribution system. Previously this operation was performed manually on a daily basis from approximately June to September. As a result labor and vehicle costs have been reduced accordingly.	2018/19	$8,000
	Corrosion Sampling	Corrosion sampling in the distribution system was reduced from bi-weekly to monthly in June, 2018, since enough baseline data has been collected and there are no immediate plans to change corrosion control in the near future.	2018/19	$12,600
	Alternative product	An alternative timing belt was introduced to replace the normal v-belt/sheave configuration, which reduced slippage between the v-belts and sheaves resulting in a reduction in power demand. The product has been installed at both the Halifax and Herring Cove WWTF, with the expectation of implementation at other wastewater and water facilities.	2018/19	$40,000
	Dosage Optimization	Desiccant filters were fitted to the polymer totes to prevent warm, moist air from contaminating the polymer dosed to thicken centrifuge and drum thickener solids. The polymer no longer reacts early with water before being dosed, thus allowing the optimization of the dose and preventing polymer waste, leading to reduced consumption.	2019/20	$20,000
	Building maintenance	Installed new weather stripping in the overhead door in the truck bay at the AeroTech plant to reduce heating costs	2019/20	$1,500

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	Polymer optimization	Began polymer optimization in an effort to ensure good quality biosolids as well as a good quality centrate without having excess amounts of polymer. Were able to reduce the feed rate from 60% to 21%.	2019/20	$15,000
	Improvements to aeration train	Installed a curtain in the aeration train to enable better mixing of the microorganisms with the chemical, thereby reducing chemical costs and providing better quality treatment.	2019/20	$15,000
	Optimization of polymer dosing (Mill Cove)	By implementing daily jar testing to determine the startup dose setpoint, polymer dosing was optimized.	2019/20	$14,000
	Belt drive change-out (Mill Cove)	Replacing the belt drive with a synchronous chain drive on a 30 horsepower blower resulted in a cost savings associated with energy consumption.	2019/20	$1,275
	Upgrading equipment (Mill Cove)	Upgrading the water flow meter used in the dilution of polymer resulted in lowering water usage in the process by approximately 20,000 litres per day.	2019/20	$12,000
	Fan belt/ pulley replacements - Mill Cove WWTF	Expected energy savings - based on 12,750 kWh	2019/20	$1,300
	Fan belt/ pulley replacements - Dartmouth WWTF	Expected energy savings - based on 177,980 kWh	2019/20	$20,000
	Preventative maintenance program established	A preventative maintenance program was created in conjunction with HW operations staff to clean centrifuge centrate lines weekly at a cost of $235. Clogging of centrate in the centrate lines were being experienced resulting in a backup in the centrifuge drum and bio-solids bin. Every 2-3 weeks it was costing approximately $1,000 to remove obstructions by an outside contractor, in addition to internal staff time and equipment.	2020/21	$10,000
	Centrifuge adjustments	Adjustments to the weir plate on both centrifuges at the dewatering facility allows more water to escape during the dewatering process, resulting in a product that is 6% dryer on average. Having a more compacted product results is fewer trucks going to the N-Viro facility saving on tipping fees. In addition, solids in the resulting product is now over 28% which is subject to a reduced rate, a savings of approximately $12/ tonne.	2020/21	$15,000
	Chemical substitution	Carbon source (Micro C) is a proprietary compound used as a food supply for micro-organisms in the denitrification process at the Aerotech WWTF, which is effective but quite expensive. HW has been able to source beer wort from a local brewery as a substitute for Micro C. Beer wort is a waste product in brewing beer which is high in carbon.	2020/21	$85,000
	Reduction in heating fuel costs	The installation of a 18,000 BTU heat pump in the admin area of the Leachate Facility, coupled with repairs to an existing unit in the lab area, resulted in heating fuel savings.	2020/21	$5,000
	Solar PV - COMFIT/ Renewable Energy Generation	Operational at the Halifax WWTF for the period January - March 2021	2020/21	$28,593
	Fan belt/ pulley replacements - Eastern Passage WWTF	Expected energy savings - based on 118,348 kWh	2020/21	$13,366
	Harbour Solution Plants - Ventilation Air Heat Recovery	Expected energy savings for the Halifax, Dartmouth and Herring Cove WWTF	2015/16	$92,358
	Utilizing alternative assets to perform similar duties	Rather than using vacuum trucks to get loads of digested waste from Mill Cove on days when they are unable to centrifuge, the 2 new dump trucks from AeroTech are used. This will be done a initially during long weekends and holidays when no dumping is available through the RE Group, at an estimated daily savings of $750.	2021/22	$8,250
	The production of biogas used to heat the digesters, and all facility buildings	Both the Mill Cove and Timberlea WWTF's have anaerobic digesters which produce biogas or renewable natural gas (RNG) which is used to heat the digesters as well as all the facility buildings.	2021/22	$256,569
	Reduction in the usage of caustic	The pH set point was reduced from 7.1 to 6.8 in order to reduce the amount of caustic consumed, while still enduring nitrification in the bioreactors. Usage was monitored over a 6-week period, and the savings are estimated to be in the range of 30%	2021/22	$30,000
	Sub-total			$2,307,343
6	**Reduce Paper and Printing Costs**			
	Electronic HRWC Board Packages	Send Board packages out electronically rather than issuing hard copies	2013/14	$7,500
	Stewardship Report	The Stewardship Report will be published electronically only, with no hard copies	2013/14	$3,000
	Changes to document archiving	Transitioning file storage from outside contractor to public resources	2013/14	$3,175
	Changes to document archiving	Transitioning file storage from outside contractor to public resources	2016/17	$9,000
	Cost reduction associated with off-site storage	There has been an effort to reduce the number of boxes (documents) stored in facilities such as Iron Mountain, by sorting and purging documents in accordance with the document retention policy of the Commission.	2018/19	$10,000
	Cost reduction associated with the 23rd Annual Report (General Manager's office)	The annual report for the year ended March 31, 2019 saw the number of copies produced drop from 275 copies in the previous year to 150 copies. This represents not only a cost savings but also an environmental benefit associated with paper reduction.	2019/20	$936
	Sub-total			$33,611

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7	**Technology and Business Process Changes**			
	Workload, labor force assessment	Through the utilization of technology, such as a Customer Relationship Management (CRM) system, a budgeted addition (customer service representative) has been removed.	2015/16	$47,605
	Workload, labor force assessment	Re-structuring by management within the advanced metering infrastructure (AMI) project as a result of technological efficiencies anticipated.	2015/16	$64,533
		Sub-total		$112,138
				$6,561,000