Presentation to the Regional Public Works Committee at its Meeting on October 8, 2024 on behalf of 1218691 Ontario Inc.

Re: Report PW26-2024

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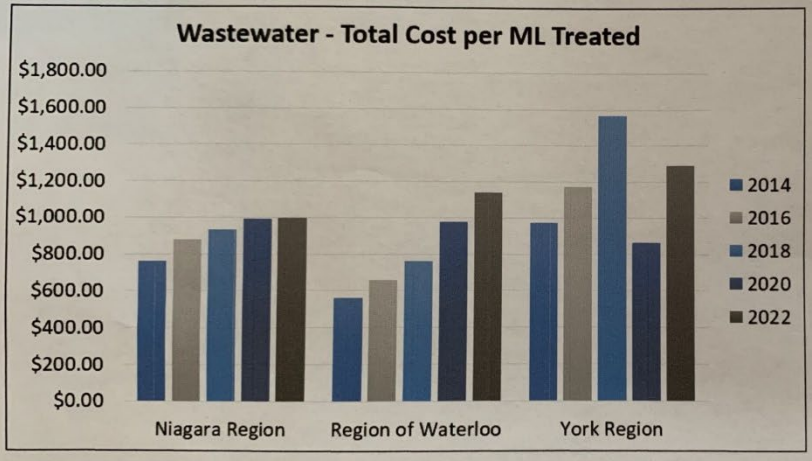
2024 Budget Outcomes
Wastewater Treatment Costs



Municipal Benchmarking Network of Canada (MBNC) Report, 2014-2022

Wastewater total cost for 2022 is lower relative to Municipal comparators

Niagara Region

2024 Recommended Budget

Water & Wastewater 2024 Budget Summary	Water ($)	Wastewater ($)	Total ($)
2023 Net Requisition	51,042	92,150	143,192
2024 Budget:			
Total Operating Expenses	25,920	57,759	83,680
Business Support	2,377	3,890	6,268
Reserve Transfer & Debt Charges	25,301	38,512	63,813
2024 Base Gross Budget Total	53,598	100,162	153,760
Less: Revenues	(1,190)	(3,851)	(5,042)
2024 Net Base Budget	52,408	96,311	148,718
% Change	**2.67%**	**4.52%**	**3.85%**
Enhanced Capital Financing (4.1%)	899	4,966	5,864
2024 Net Requisition	**53,306**	**101,276**	**154,583**
Percentage Change	**4.44%**	**9.90%**	**7.95%**

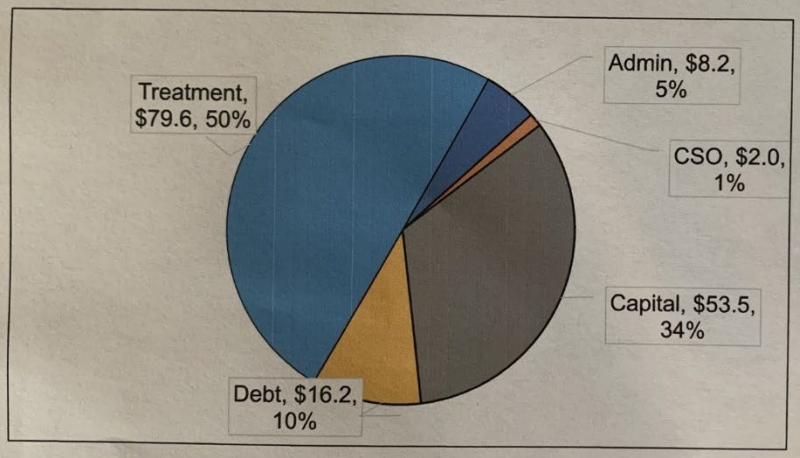
Proposed Budget of 7.95% ($11.4 M increase)

- 3.85% or $5.5 M for base operating costs
- 4.10% or $5.9 M for enhanced capital funding

Niagara Region

2024 Water & Wastewater Operating Budget

Where does the money go? Gross = $160M



Discretionary spending in Admin and CSO is less than 6%

Niagara Region

PROJECT NO 131-24117-00

HAULED SEWAGE RATE REVIEW

FINAL REPORT

DECEMBER 2014

WSP

The approach currently in place at the Region is considered consistent with practices at other nearby municipalities.

4 ALTERNATIVE HAULED SEWAGE RATE SETTING APPROACHES

Alternative approaches to determine the hauled sewage rate were considered given the fact that the Region's rate is considerably lower than the average for the municipalities consulted. These are explained below.

4.1 ALTERNATIVE APPROACH 1

This approach is based on achieving full cost recovery for the treatment of BOD, TSS, TP and TKN. Data for all plants for the past 5 years (i.e. 2009-2013) is summarized below in Table 4-1. The fraction of each parameter relative to the total mass of pollutants is also noted in the table.

Table 4-1: Historical Pollutant Removal Data from the Region's WWTPs

YEAR	BOD (kg)	TSS (kg)	TP (kg)	TKN (kg)	TOTAL kg REMOVED	% BOD	% TSS	% TP	% TKN
2009	11,139,256	13,893,973	268,061	1,382,529	26,683,819	41.7%	52.1%	1.0%	5.2%
2010	10,575,808	13,190,507	253,172	1,413,710	25,433,196	41.6%	51.9%	1.0%	5.6%
2011	11,219,406	14,071,314	264,563	1,432,388	26,987,671	41.6%	52.1%	1.0%	5.3%
2012	10,635,489	13,012,662	248,172	1,490,302	25,386,626	41.9%	51.3%	1.0%	5.9%
2013	12,775,442	15,572,714	272,147	1,610,574	30,230,878	42.3%	51.5%	0.9%	5.3%
AVERAGE						**41.8%**	**51.8%**	**1.0%**	**5.4%**

$$Mass\ Fraction_{BOD} = \frac{Total\ BOD\ Mass\ Removed}{Total\ BOD\ Mass\ Removed + Total\ TSS\ Mass\ Removed + Total\ TP\ Mass\ Removed + Total\ TKN\ Mass\ Removed}$$

A cost per kg removed (denoted R_1) was calculated using the annual gross capital wastewater costs and the annual total mass removed of BOD, TSS, TP and TKN at all of the Region's wastewater treatment plants. The cost data was obtained from the Region's annual operating statements for "5000C Wastewater Systems".

$$R_1 = \frac{Total\ Operations\ Cost\ \text{for all}\ Treatment\ Plants + Total\ Operations\ Costs\ for\ Garner\ Road\ Facility}{Total\ BOD\ Removed + Total\ TSS\ Removed + Total\ TP\ Removed + Total\ TKN\ Removed}$$

Table 4-2: Unit Removal Cost

YEAR	WASTEWATER OPERATIONS COST (GROSS CAPITAL)	TOTAL kg REMOVED	COST/ TOTAL kg REMOVED
2009	$47,656,713.23	26,683,819	$1.79
2010	$38,099,851.36	25,433,196	$1.50
2011	$44,683,556.26	26,987,671	$1.66
2012	$40,629,659.03	25,386,626	$1.60
2013	$42,781,364.19	30,230,878	$1.42
Average (R_1)			**$1.59**

Alternative Approach 1 assumes that the ratio of the mass of each parameter over the total mass of pollutants removed is the same as the ratio of the removal cost of the parameter over the total removal cost for all parameters.

$$Cost\ Fraction_{BOD} = \frac{Cost\ per\ Kg\ of\ BOD\ Removed}{Cost\ per\ Kg\ of\ BOD\ Removed + Cost\ per\ Kg\ of\ TSS\ Removed + Cost\ per\ Kg\ of\ TP\ Removed + Cost\ per\ Kg\ of\ TKN\ Removed}$$

All of the samples from all of the haulers were analyzed to obtain average concentrations of BOD, TSS, TP and TKN in the hauled sewage. The complete list of hauler test results used to determine the average sample concentrations for each parameter are included in Appendix B.

To determine the corresponding hauled sewage rate the following formula was used.

$$R = C_{BOD} \cdot Cost\ Fraction_{BOD} + C_{TSS} \cdot Cost\ Fraction_{TSS} + C_{TP} \cdot Cost\ Fraction_{TP} + C_{TKN} \cdot Cost\ Fraction_{TKN} \cdot R_1$$

Where,

R = Hauled sewage rate per unit volume
C_{BOD} = Average concentration of BOD from all hauler samples
C_{TSS} = Average concentration of TSS from all hauler samples
C_{TP} = Average concentration of TP from all hauler samples
C_{TKN} = Average concentration of TKN from all hauler samples
and the other terms are as defined in the formulas above.

The corresponding fee would be calculated per:

$$Hauled\ Sewage\ Fee = V \times R$$

The new hauled sewage rate based on full cost recovery for BOD, TSS, TP and TKN is shown below in Table 4-3.

Table 4-3: Hauled Sewage Rate Calculation – Approach 1

	BOD (mg/L)	TSS (mg/L)	TP (mg/L)	TKN (mg/L)
Average Sample Concentration (mg/L)	5,790	11,170	76	426
Average Sample Concentration (kg/1000 gallons)	26.32	50.78	0.35	1.94
Cost Fraction (per Table 4-1)	41.8%	51.8%	1.0%	5.4%
R_1 ($/kg removed)	$1.59			
New Hauled Sewage Rate ($/1000 gallons)	**26.32 X 41.8% + 50.78 X 51.8% + 0.35 X 1% + 1.94X5.4% = $59.51**			
New Hauled Sewage Rate	**$13.09/m³ or $59.51/1000 gallons**			

The hauled sewage rate obtained using Alternative Approach 1 is greater than the existing rate in use at the Region ($13.09/$m^3$ vs. $8.80/$m^3$) and thus would result in higher surcharge fees. However, the rate is still slightly below the average for the other municipalities compared.

This approach takes into account different kinds of discharges with varying concentrations of BOD, TSS, TP and TKN. However, this approach has disadvantages:

- The approach to calculating the cost fractions of each parameter (based on percentages of the total mass removed) does not take into account the relative cost of removal of the various parameters – TSS removal is cheaper than BOD, TKN, and TP removal even when there might be more TSS in the influent.
- The concentrations of the various parameters for all samples and all haulers were averaged. This means that some haulers (those with lower pollutant loading) may be overcharged, while others (winery waste haulers) may be undercharged.

4.2 ALTERNATIVE APPROACH 2

All of the fees applied at other municipalities (and Alternative Approach 1) are based on the following formula:

$$Hauled\ Sewage\ Fee = V \cdot R$$

Thus, the fee is a function of the volume discharged. Alternative Approach 1 attempts to take into consideration the differences in the cost of treatment for discharges with varying concentrations of BOD, TSS, TP and TKN. However, the above approach uses an average of all the samples from the haulers to determine the surcharge rate R. As noted above, a disadvantage of this approach is the potential overcharging or undercharging to haulers with hauled sewage of different strengths. The above approach does not take into account variations in the strength of sewage discharged by haulers at different times (some haulers may discharge septage at certain times and sometimes may discharge winery waste). Furthermore, some of the discharges greatly exceed the by-law limits for BOD, TSS, TKN and TP. The average hauled sewage sample concentrations are compared in Table 4-4 below to the Region's sewer discharge by-law limits for BOD, TSS, TP and TKN.

Table 4-4: Average Sample Concentrations vs By-law Limits

	BOD (mg/L)	TSS (mg/L)	TP (mg/L)	TKN (mg/L)
Average Sample Concentration	5,790	11,170	76	426
By-law Limit	300	350	10	100

Industrial surcharge fees are only applicable for users that have entered a surcharge agreement and which have demonstrated that they cannot economically change their processes to reduce concentrations of BOD, TSS, TKN and/or TP, below the Region's discharge limits (WSP, 2014). Alternative Approach 3 under Section 4.3 considers the cost at which hauled sewage would be charged if it were discharged under an industrial surcharge agreement instead of at a hauled sewage disposal station.

This is not the case for haulers, which have no restriction on the amount of hauled sewage they can discharge. In fact, per conversations with Region staff, the Region's Water and Wastewater Master Plan takes into consideration hauled sewage when determining the capacity requirements for the different treatment facilities (AECOM, 2011).The volume of hauled sewage is small, but the impact on plant loadings will be greater than residential sewage as hauled sewage is more concentrated.

Capacity upgrades to treatment plants are triggered by population growth and the funding for these upgrades is derived from development charges. Development charges are assigned on a development unit basis, i.e. the total cost of infrastructure required to service the development is divided by the number of development units.

However, capacity at the treatment plants is also taken up by hauled sewage, and therefore the corresponding costs (those related to operations and maintenance and also those related to capacity expansions) should be covered through hauled sewage rates.

The hauled sewage fee using Alternative Approach 2 therefore includes two components: a capital cost component (derived from Development Charges) and a O&M cost component (derived from the Region's O&M budget).

The calculation for the capital component is based on the following assumptions:

- New units of development are required to cover the cost of wastewater services through development charges. The development charge per unit is $3,226/dwelling unit (Niagara Region, 2012).
- A per capita BOD loading of 75 g/cap/day (MOE, 2008) was assumed.
- A value of 2.3 people per unit was assumed.
- Therefore, the unit equivalent BOD loading is 75 g/cap/day times 2.3 people per unit = 0.1725 kg/d/unit.
- This approach assumes that the average useful life of a treatment plant is 25 years. So the total BOD load per unit over the life time of the treatment plant is 0.1725 kg/d/unit times 365 days/year times 25 years = 1574 kgBOD/unit.
- The development charge per unit is $3,226, which covers the capital cost of the WWTP over the 25 years.

The capital component of the hauled sewage fee is then obtained using the following formula:

$$Capital\ Component = Volume\ Discharged \cdot Concentration\ of\ Discharge \cdot \frac{Development\ Charge\ per\ Unit}{BOD\ Load\ per\ Unit\ over\ 25\ years}$$

$$Capital\ Component = V \cdot C_{BOD} \cdot \frac{\$3{,}226/unit}{1{,}574\ kgBOD/unit}$$

The calculation for the O&M component is based on the following assumptions:

- The total cost of wastewater operations (the operating budget) is divided by the total flow to all of the treatment facilities in the Region.
- Per the 2014 Wastewater Requisition slide presentation (included as part of the 2014 Budget Process) we see that the net 2014 budget was $64,928,122.
- From data we received from the Region, the total flows from all municipalities in 2013 were 79,893.965 ML.
- The total budget divided by the total flow corresponds to a cost per sewage volume of $0.81/m^3.
- A per capita BOD loading of 75 g/cap/day (MOE, 2008) was assumed.
- From the Region's 2011 Master Plan the per capita flow design criteria is 365 L/cap/day (AECOM, 2011).
- Therefore, a one-person load equivalent is 75 g/cap/day divided by 365 L/cap/day = 206 mg/L.

The O&M component of the hauled sewage fee is obtained using the following formula:

$$O\&M\ Component = Volume\ Discharged \cdot Cost\ per\ Volume \cdot Person\ Equivalents$$

$$O\&M\ Component = V \cdot \$0.81/m^3 \cdot \frac{BOD\ Concentration}{206\ mg/L}$$

The overall hauled sewage fee per Alternative Approach 2 is calculated as follows:

$$Hauled\ Sewage\ Fee = Capital\ Component + O\&M\ Component$$

$$Hauled\ Sewage\ Fee = \frac{V \cdot C_{BOD}}{1{,}000} \cdot \frac{\frac{\$3{,}226}{unit}}{1{,}574\frac{kgBOD}{unit}} + V \cdot \frac{\$0.81}{m^3} \cdot \frac{C_{BOD}}{206\ mg/L}$$

$$Hauled\ Sewage\ Fee = V \cdot C_{BOD} \cdot \frac{1\ kg \cdot L}{1{,}000\ m^3 \cdot mg} \cdot \frac{\frac{\$3{,}226}{unit}}{1{,}574\frac{kgBOD}{unit}} + \frac{\$0.81}{m^3} \cdot \frac{1}{206\ mg/L}$$

$$Hauled\ Sewage\ Fee = V \cdot C_{BOD} \cdot R$$

Where,

V = Volume of discharge (m^3)
C_{BOD} = Average concentration of BOD for a given source/hauler (mg/L)
R = 0.00598 ($/mgBOD)

This approach requires that samples from a given hauler be regularly tested to determine the average BOD concentration. Each hauler would thus have a different rate depending on the type of discharge so highly loaded discharges would incur greater fees. Alternatively, a rate for each type of hauled sewage source (i.e. winery waste, septic, industrial wastewater) could be developed and charged based on the type of hauled sewage the truck is disposing.

The above approach uses a different formula than that used by the Region or that used in Alternative Approach 1. As shown in Section 4.4 the resulting hauled sewage fees are generally greater than those obtained using the approach in use at the Region, and closer in magnitude to the average fees from the other municipalities compared.

This approach takes into account the impact hauled sewage has on the capacity of the facilities and accounts for the corresponding capital cost as well as operating and maintenance costs resulting from treating sewage with higher organic loadings. Unlike other approaches, this method accounts for differences in BOD concentration quantitatively. However, this approach has disadvantages:

- This approach does not take into consideration the concentrations of TSS, TP and TKN in the hauled sewage. Thus, a discharge with high concentrations of TSS, TP and/or TKN, but relative low concentrations of BOD would be undercharged.
- This approach is more complex than Alternative Approach 1. Adding the TSS, TP and TKN components would increase the complexity of the calculation.
- This method requires regular testing (the Region currently tests two samples per plant per month) and regular monitoring of the BOD concentrations. A suggested approach would be to develop a rate for each type of hauled sewage source.
- This approach does not take into consideration trucks that haul sewage from multiple different sources, and it would be impractical in such situations

4.3 ALTERNATIVE APPROACH 3

This approach is based on the Region's existing industrial surcharge rate (WSP, 2014). There are currently wineries in the Region with industrial surcharge agreements that are also hauling winery waste to the Region's disposal stations. This approach considers the cost that hauled sewage would be charged if it were discharged under an industrial surcharge agreement instead of at a hauled sewage disposal station.

The Region's formula for determining surcharge fees is shown below.

$$S = R \cdot Q \cdot \ 0.45\ C - L\ _{BOD} + 0.45\ C - L\ _{TSS} + 0.1(C - L)_{TP}$$

Where,

S = Surcharge fee payable during a given time period
R = Cost factor
Q = Volume of discharge of wastewater flow for the period being billed
C = Average concentration of the parameter during the time period
L = Concentration limit of the parameter listed in the by-law

The formula assumes that BOD removal corresponds to 45% of the total cost of treatment, while TSS and TP correspond to 45% and 10% of the costs, respectively. The cost factor (expressed in $/kg) is obtained by dividing the three-year average of the total operational costs for all of the Region's wastewater treatment plants (WWTPs) by the sum of the total mass of five-day carbonaceous biochemical oxygen demand at 20°C ($cBOD_5$ henceforth referred to as BOD), total suspended solids

(TSS) and total phosphorus (TP) removed at the plants. The value of the cost factor R currently used is $1.46/kg.

This approach requires that samples from a given hauler be regularly tested to determine the average BOD, TSS and TP concentrations. Each hauler would thus have a different rate depending on the type of discharge so highly loaded discharges would incur greater fees. Alternatively, a concentration profile including BOD, TSS and TP for each type of hauled sewage source (i.e. winery waste, septic, industrial wastewater) could be developed and charged based on the type of hauled sewage the truck is disposing.

This approach has disadvantages:

- This approach does not take into consideration the concentration of TKN in the hauled sewage.
- This approach requires regular testing (the Region currently tests two samples per plant per month) and regular monitoring of BOD, TSS and TP. A suggested approach would be to develop a concentration profile including BOD, TSS and TP for each type of hauled sewage source/hauler.

4.4 COMPARISON OF ALTERNATIVE APPROACHES

The hauled sewage fees for each source profile were calculated using the various municipalities approaches and compared to the Region's current approach and the alternative methods discussed above.

The same six hauled sewage source profiles discussed in Section 3.1.2 were applied to the different municipalities' surcharge calculations. The discharge profiles are repeated in Table 3-5 below for easy reference.

Table 4-5: Source Profiles Used for Benchmarking

HAULED SEWAGE SOURCE	VOLUME (m^3)	VOLUME (gallons)	TYPE OF HAULED SEWAGE	BOD Concentration (mg/L)
Source 1	4.54	998.66	Holding Tank Waste	1,500
Source 2	15.9	3,497.51	Mixed Waste	2,500
Source 3	22.7	4,993.3	Septic Tank Waste	3,500
Source 4	36.3	7,984.88	Septic Tank Waste	3,000
Source 5	45.4	9,986.6	Holding Tank Waste	1,000
Source 6	10.0	2,199.69	Winery Waste	5,800

The corresponding hauled sewage fees are shown in Table 4-6 and in Figure 4-1 below.

Table 4-6: Surcharge Fee Comparison

MUNICIPALITY	OTHER MUNICIPALITIES AVERAGE	NIAGARA – EXISTING APPROACH	ALTERNATIVE APPROACH 1	ALTERNATIVE APPROACH 2	ALTERNATIVE APPROACH 3
Source 1	$58.76	$39.95	$59.43	$40.80	$35.90
Source 2	$195.91	$139.92	$208.13	$238.16	$136.16
Source 3	$348.25	$199.76	$297.14	$476.02	$209.31
Source 4	$574.42	$319.44	$475.17	$652.47	$322.79
Source 5	$676.00	$399.78	$594.68	$272.19	$344.28
Source 6	$135.90	$88.00	$130.90	$347.51	$107.32
TOTAL	**$1,989.24**	**$1,186.85**	**$1,765.45**	**$2,027.15**	**$1,155.76**

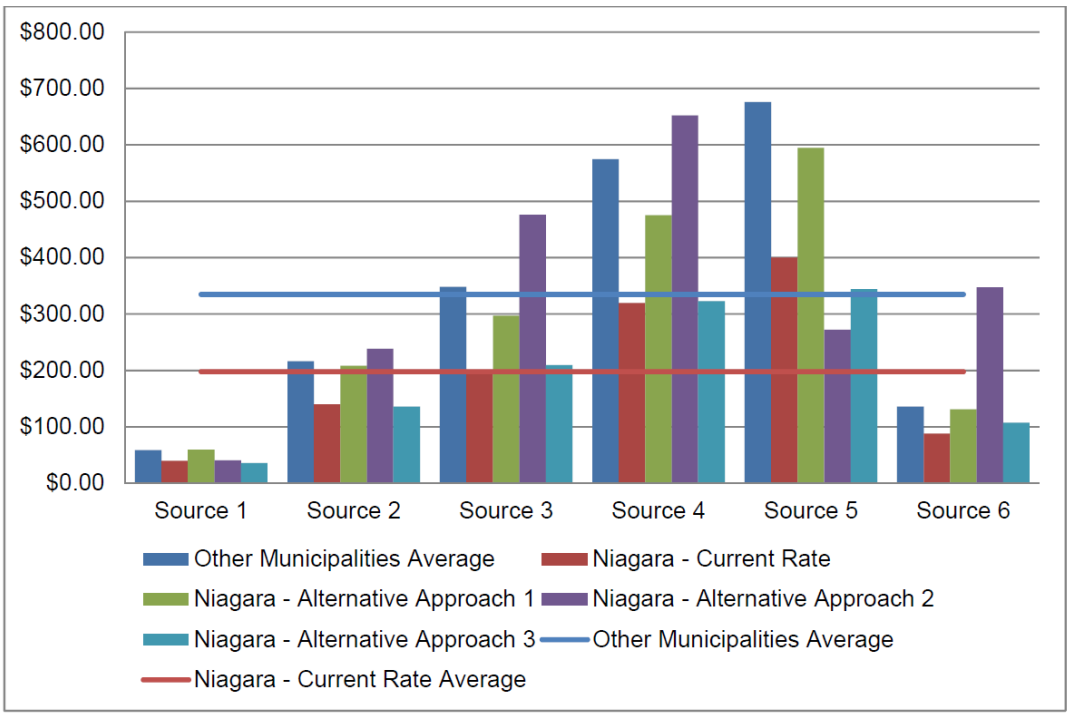


Figure 4-1 Comparison of Alternative Approaches for Surcharge Calculation

Alternative Approach 1 generally results in fees slightly lower than the average of the other municipalities reviewed. However, for smaller discharge volumes (i.e. Sources 1, 2 and 3 which are under 22.7 m^3), Alternative Approach 1 produces hauled sewage fees that are very similar to the average of the other municipalities. The disadvantage of this approach is that it does not take into consideration the strength of the sewage (septic tank waste is charged the same as winery waste on a per volume basis).

Alternative Approach 2 uses a different approach to determine haulage fees as it seeks to capture the true cost of treatment of the hauled sewage. It takes into account the capacity that hauled sewage takes up at the various treatment plants and how this capacity results in a reduced ability to service new development. The formula also takes into account differences in BOD concentration so stronger sewage results in higher fees than lower strength discharges.

Figure 4-1 shows that the fees obtained using this approach are generally within the average for other municipalities. However, this approach results in higher charges for sewage sources with higher concentrations.

Alternative Approach 3 is based on the Region's existing industrial surcharge rate and seeks to capture the cost that hauled sewage would be charged if it were discharged under an industrial surcharge agreement instead of at a hauled sewage disposal station. It results in fees significantly lower than the average of the other municipalities reviewed.

Table 4-7 below shows a qualitative evaluation of the Region's current rate and the alternative approaches.

Table 4-7: Hauled Sewage Rate Summary

ITEM	CURRENT RATE	ALTERNATIVE APPROACH 1	ALTERNATIVE APPROACH 2	ALTERNATIVE APPROACH 3
Parameters subject to rate determination	Unknown	BOD, TSS, TP, TKN	BOD	BOD, TSS, TP
Cost Recovery	It is believed that the current approach does not lead to cost recovery	Captures O&M costs related to treatment. However, it does not take into account the strength of the sewage.	Captures treatment cost since it considers the total operating costs at all facilities and BOD concentrations specific to sources	Does not explicitly consider TKN. Full cost recovery – calculation of parameter surcharge rates based on the total operating costs at all facilities
Cost Similarity to Other Municipalities	Significantly lower than average	Slightly lower than average	Close to average of other municipalities. Results in higher charges for higher concentrations sewage.	Significantly lower than average
Simplicity	Unknown	Somewhat Complicated Requires plant loading data to determine mass fractions for each parameter, breakdown of operating costs and hauler loading data	Complicated Requires regular testing of samples from various haulers to determine average BOD concentration	Somewhat Complicated Requires plant loading data and total operating costs C = **operations cost** ($) / total kg removed (kg)

5 CONCLUSIONS AND RECOMMENDATIONS

A review of the Region's hauled sewage rate was conducted to examine whether it reflects the costs associated with the treatment of the wastewater and leads to cost recovery. The review also involved a comparison of the rates used at other municipalities.

HAULED SEWAGE RATE

There is no information on the approach followed to establish the Region's current rate, $40/1000 imperial gallons.

The majority of the other municipalities considered use a higher hauled sewage rate than the Region. Five discharge profiles (variations of discharge volume based on the ranges that the City of Hamilton uses to distinguish which rate is applied) were used to calculate the hauled sewage fees that would apply at each of the municipalities compared. It was found that the Region's current rate results in surcharge fees that would be significantly less than the other municipalities.

Three alternative approaches were evaluated. Alternative Approach 1 results in a volumetric rate of $59.51/1000 gallons. Alternative Approach 2 involves the use of a formula that includes the volume and concentration of the discharge. Alternative Approach 3 involves the use of the formula currently used to calculate the Region's industrial surcharge fees.

Alternative Approach 2 results in fees slightly higher than the average for neighboring municipalities. We believe this approach has a better technical basis.

It is recommended that the Region adopt the formula corresponding to Alternative Approach 2 on a cost recovery basis. However, Alternative Approach 2 is not practical for the Region to implement at this time as it requires regular testing of the hauled sewage. Alternative Approach 3 would also require regular testing of the hauled sewage. Therefore, it is recommended that the Region implement Alternative Approach 1 corresponding to a new hauled sewage rate of $13.09/m³ or $59.51/1000gal.

VOLUME USED FOR FEE CALCULATION

There is insufficient information to determine whether charging for 80% truck capacity guarantees that the Region is neither overcharging nor undercharging for the volumes of hauled sewage disposed. Based on Region's staff, this approach is believed to be a fair approach.

NON-COMPLIANCE

The review revealed that many hauled discharges exceed the Region's by-law limits for heavy metals including copper and zinc. The Region should consider treating such discharges as industrial surcharges and thus make them subject to Industrial Surcharge Agreements. The following enforcement policy could be utilized to discourage non-compliance:

- First Violation – Suspension of discharge privileges for 10 consecutive days
- Second Violation – Suspension of discharge privileges for 30 consecutive days
- Third Violation – Revocation of permit

Penalties specific to haulers are outlined in the Region's Sewage Hauler Manual (Niagara Region, 2011). This includes penalties for non-payment of fees, disposal of a non-approved source, disposal without a valid permit, failure to leave a hauled sewage sample, failure to submit a Hauled Sewage Record and failure to adequately complete a Hauled Sewage Record. However, there are no penalties specific to hauled sewage generators and non-compliance with by-law limits for metals.

RECREATIONAL VEHICLE SEWAGE DISPOSAL

A survey was undertaken to determine whether other municipalities accept sewage disposal from recreational vehicles (RVs). Half of the municipalities consulted accept sewage disposal from RVs. With the exception of the City of Hamilton, these municipalities do not apply a charge for RV sewage disposal.

There are policies for RV sewage disposal at some of the municipalities. Some municipalities specify that only residents may dispose sewage from RVs. Furthermore, RV owners must call to get access to the disposal facility if the gate is locked.

This last approach was recently adopted at the Region's facilities.

OTHER RECOMMENDATIONS

The following also is recommended:

→ It is recommended that the Sewage Hauler Manual (Niagara Region, 2011) be updated to reflect the new hauled sewage rate, $13.09/m³ or $59.51/1000gal, if the Region chooses to adopt Alternative Approach 1.

- It is recommended that the Region regularly test hauled sewage samples for BOD or COD as the concentration of BOD or COD is used to determine the hauled sewage rate for all alternative approaches.
- It is recommended that the hauled sewage rate be reviewed at least every 5 years to ensure they continue to reflect the Region's operating costs.
- It is also recommended that the hauled sewage rate be reviewed again when the new Niagara-on-the-Lake WWTP has been fully operational for two years to account for any additional operational costs and ensure full cost recovery.
- It is recommended that the hauled sewage rate review be coordinated with the Water and Wastewater Master Planning Process and Development Charges Review.

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