Township of Southgate

Dundalk Wastewater Treatment Plant

2025 Annual Report

9.1.3 PW2026-008 - Dundalk Wastewater 2025 Annual Report

No. 2026-061

Moved By Councillor Ferguson
Seconded By Councillor Singh Soares

Be it resolved that Staff Report PW2026-008 be received for information; and
That; Council approve the Dundalk Wastewater Treatment Plant 2025 Annual Report.

Carried

Cory Henry

Public Works Manager – Water Operations

Dundalk Wastewater Treatment Plant
2025 Annual Report

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Overview:
The Dundalk Wastewater Treatment Plant (WWTP) provided treatment in 2025 with an annual average influent daily flow of 1,331 m³/day, a 6.19% decrease over the 2024 average influent daily flow of 1,419 m³/day.

Project Description:
The Dundalk WWTP is a four-cell waste stabilization pond facility flowing into an aeration cell pond with a chemical feed system and a flocculation tank with tertiary treatment consisting of sand filters.

Plant Facts:

Facilities: Waste Stabilization Ponds with Tertiary Treatment

Design Capacity: 1832 m³/day

Receiver Water: Foley Drain/Grand River

Environmental Compliance Approval: 5657-9D9LYE

Effluent Requirements:

	Ideal	Maximum	Maximum
Effluent Parameter	**Concentration Objective**	**Monthly Average Concentration (MAC)**	**Monthly Average Loading**
COBD5	5.0 mg/L	10.0 mg/L	18.32 kg/day
Total Suspended Solids (TSS)	5.0 mg/L	10.0 mg/L	18.32 kg/day
Total Phosphorous	0.30 mg/L + 5 degrees Celsius stream temperature 0.60 mg/L - 5 degrees Celsius stream temperature	0.40 mg/L + 5 degrees Celsius stream temperature 0.80 mg/L - 5 degrees Celsius stream temperature	0.73 kg/L + 5 degrees Celsius stream temperature 1.47 kg/L - 5 degrees Celsius stream temperature
Dissolved Oxygen	5.0 mg/L	4.0 mg/L	
Unionized Ammonia	0.05 mg/L	0.1 mg/L	
pH	6.5 to 8.5 at all times	6.0 to 9.5 at all times	

Sampling Requirements:

Sampling Criteria for this system is in accordance with Ministry Policy for the Environmental Compliance Approval (ECA) No. 5657-9D9LYE

Final Effluent:
A grab sample is taken twice a month and tested for CBOD, Suspended Solids, Total Phosphorus, Total Ammonia Nitrogen, Ecoli and pH.

On site testing is performed twice a week on final effluent for Total Ammonia to determine Unionized Ammonia through in-house testing of pH and temperature.

Raw Sewage:
A grab sample is taken monthly and tested for BOD, Suspended Solids, Total Kjeldahl Nitrogen and Total Phosphorus.

Effluent Flows:
The total effluent flow treated in 2025 was 493,826 m^3, which results in a 0.86% decrease of total effluent over 2024. The annual average daily flow while discharging was 1,554 m^3/day.

Raw Sewage Quality:
- Annual average raw sewage BOD concentration to the lagoon system was 165.9 mg/l.
- Annual average raw sewage suspended solids (TSS) concentration to the lagoon system was 281.0 mg/l.
- Annual average raw total phosphorus was 5.76 mg/l concentration to the lagoon system.
- Annual average Total Kjeldahl Nitrogen (TKN) concentration was 60.2 mg/l.

Plant Performance and Effluent Quality:
- Annual average effluent CBOD concentration was 4.88 mg/l.
- Annual average effluent total suspended solids (TSS) concentration was 5.4 mg/l day with a removal efficiency of 97.49% with an annual monthly average loading of 9.9 kg/day.
- Annual average effluent total phosphorus concentration was 0.13 mg/l day with a removal efficiency of 96.73% with an annual monthly average loading of 0.20 kg/day.
- Annual average effluent concentration for Ammonia-nitrogen was 9.29 mg/l.
- Annual average Unionized Ammonia was 0.054285 mg/l.
- Annual average pH was 7.97.
- Annual monthly average Ecoli was 1006 with the low being 2 and the high being 8396.
- The summary for 2025 of the data for the systems plant operation performance is enclosed in this report.

Maintenance and Calibration Activities:

Regular monthly preventative maintenance and calibration of test equipment and flow meters are performed by municipal staff and outside certified suppliers.

Third party annual calibrations were performed on October 16, 2025.

There was 0 by-pass events to report

The Township and Triton Engineering have developed a mitigation plan including enhanced monitoring and reporting to the MECP.

There were 6 operator shutdowns in 2025.

Please reference below table for shutdowns and limit exceedances for 2025.

2025 Wastewater effluent parameters compliance exceedances and shutdowns

	Monthly Average Effluent Concentration					Monthly Average Effluent Loading (kg/d)				
	COBD5	**TSS**	**TP**	**Unionized Ammonia**	**pH**	**COBD5**	**TSS**	**TP**	**Lagoon Shutdown Duration**	**Comments**
	Limit	Limit	Limit	Limit	Limit	Limit	Limit	Limit		
	10.0 mg/day	10.0 mg/L	0.4 mg/L - >5 C 0.8 mg/L - <5 C	0.05 mg/L = daily testing 0.13 mg/L = proactive shutdown 0.15 mg/L = shutdown	<6.0 or >9.5	18.32 kg/day	18.32 kg/day	0.73 kg/day >5 C 1.47 kg/day - <5 C		
JAN										
FEB	12	9.5				24	19		**16.2**	16.2 days >10 mg/L TSS 16.2 days TSS loading 16.2 days >10 mg/L CBOD 16.2 days CBOD loading
MAR	27.7	19				11.6	16.3		**25.5**	5.5 days >10 mg/L TSS 5.5 days TSS loading 5.5 days >10 mg/L CBOD 5.5 days CBOD loading
APR	4	4		0.131					**4.8**	1.4 days >10 mg/L TSS 3.4 days >0.15 UIA
MAY				0.0725					**1**	1 day > 0.15mg/L UIA
JUN										
JUL										
AUG										
SEP										
OCT										
NOV										
DEC										

Note: If daily testing for unionized ammonia occurs on a Friday we shut down for the weekend.

- Shutdown due to exceedance.

- Shutdown as a proactive measure due to approching an exceedance.

Note: There was an oversight of February CBOD exceedance. We should not have started up on February 25. This was realized on March 6th and immediatley shut down upon realization.

Note: MECP inspector interpretation of C of A, unioized ammonia limit, allows discharge of effluent with <0.15mg/L.

There were loading exceedances in February and March for effluent suspended solids and CBOD. We discharged for 11.8 days in February and 5.5 days in March.

Discussion:

The Dundalk Wastewater Treatment upgrades are awaiting Ministry approval of the ECA amendment for the Dundalk Sewage Works.

Upon issuance of the ECA amendment, Triton Engineering will release the tender documents, followed by award of the contract by Southgate Council. Construction is anticipated for 2026 for the first phase of the upgrades.

Installation of a new influent sewage pumping station to manage increased flow effectively. Additionally, enhancements such as incorporation of additional aeration and a floating cover in the final cell of the lagoons, will aid in algae removal, thus improving overall treatment efficiency.

A major component of this project is the construction of a 22m x 5.5m concrete tank utilizing advanced Moving Bed Biofilm Reactor (MBBR) technology, which will optimize ammonia reduction.

Upgrading the tertiary media filter to a state-of-the-art disk filter system will ensure effective removal of Total Suspended Solids.

Finally, implementing a new Ultraviolet (UV) disinfection system will play a critical role in reducing E.coli levels, thereby enhancing the quality of treated wastewater.

This expansion is expected to increase the treatment capacity of the facility by over 65% form 1832m3/day to 3025m3/day.

The Township of Southgate received from the MECP a Consolidated Linear Infrastructure – Environmental Compliance Approval (CLI-ECA) for the Municipal Sewage Collection System, ECA Number 110-W601, issued March 2, 2023.

Township of Southgate - Village of Dundalk

2025 General Wastewater Information

Plant # : 0-101006-67

ECA # : 5657-9D9LYE

Population: 2,864 (Village of Dundalk)

Flows

	Design		2025	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Capacity:	208,500															-	-	-	-	-
Influent Average Daily:	-	m^3	1,331	1,419	1,237	990	1,220	1,161	1,114	1,105	1,168	986	728	996	2,221	1,183	1,164	1,020	1,217	1,482
Annual Influent Flow:	668,600	m^3	486,821	518,945	450,793	360,770	446,719	425,922	405,664	401,279	424,727	360,118	265,878	364,601	808,274	434,232	425,447	372,117	444,350	542,455
Influent Maximum Daily:	-	m^3	7,827	5,736	4,017	3,247	6,740	4,510	3,989	9,022	6,362	4,820	2,458	2,873	3,991	3,926	4,453	4,390	4,258	4,577
Effluent Average Daily (days operating):	1,832	m^3	1,550	1,785	1,497	1,196	2,096	1,087	1,315	1,355	1,230	1,090	1,181	1,636	1,394	1,136	1,332	1,245	1,466	1,631
Annual Effluent Flow:	-	m^3	493,826	498,096	384,666	312,215	470,150	396,688	407,659	404,853	420,598	334,685	389,776	494,185	505,962	369,351	435,622	434,339	535,214	597,173
% Discharge vs. Total Capacity:	-		73.9%	74.5%	57.5%	46.7%	70.3%	59.3%	61.0%	60.6%	62.9%	50.1%	58.3%	73.9%	75.7%	55.2%	65.2%	65.0%	80.0%	89.3%
Influent Decrease 2025 over 2024:	-		-6.19%	15.12%	24.95%	-19.24%	4.88%	4.99%	1.09%	-5.52%	17.94%	35.44%	-27.08%	-54.89%	86.14%	2.06%	14.33%	-16.26%	-18.09%	35.54%
Effluent Decrease 2025 over 2024:	-		-0.86%	29.49%	23.21%	-33.59%	18.52%	-2.69%	0.69%	-3.74%	25.67%	-14.13%	-21.13%	-2.33%	36.99%	-15.21%	0.30%	-18.85%	-10.38%	62.28%

Township of Southgate
Loading Report - Dundalk Wastewater Plant

Municipality: Township of Southgate Year: 2025
Plant: Dundalk Wastewater Treatment Lagoons & Collection System
Plant # : 0-101006-67
Works # : 110001471
System Description : Faculative Lagoons & Sand Filters

	Loading Influent			Effluent Loading		
Month	BOD kg/day	SS kg/day	T Phos. kg/day	Effluent CBOD kg/day	Effluent SS kg/day	Effluent T Phos. kg/day
January	165.3	288.2	6.0	14.5	15.6	0.44
February	158.5	294.3	4.7	24.0	19.0	0.62
March	396.0	446.7	9.8	27.7	38.9	1.17
April	286.3	346.9	5.8	8.1	8.1	0.28
May	232.8	324.4	7.0	6.5	7.6	0.04
June	164.3	265.0	6.9	6.3	6.3	0.08
July	170.8	291.8	6.9	5.5	7.3	0.08
August	168.3	284.3	7.5	3.7	3.7	0.06
September	152.8	309.9	4.6	2.8	2.8	0.08
October	152.2	261.6	7.3	1.9	2.2	0.04
November	188.2	350.9	5.2	2.2	2.9	0.02
December	195.0	403.2	5.9	4.4	4.4	0.06
Total	2430.5	3867.1	77.8	107.7	118.9	2.97
Average	202.5	322.3	6.5	9.0	9.9	0.25
Maximum	396.0	446.7	9.8	27.7	38.9	1.17

PS = Plant Shutdown
= loading exceedance

Township of Southgate

Performance Report - Dundalk Wastewater Plant

Municipality: Township of Southgate
Plant: Dundalk Wastewater Treatment Lagoons & Collection System
Plant # : 0-101006-67
Works # : 110001471
System Description : Faculative Lagoons & Sand Filters

Year: 2025
Receiver: Foley Drain - Grand River
Design Average Day Flow (m3): 1832

	Flows				Discharge	Bio-Chemical Oxygen Demand			Suspended Solids			Phosphorus			E Coli	Temperature	Nitrogen Series			Loading		
	Raw			Effluent	Duration	Avg. Raw	Avg Effluent	Percent	Avg. Raw	Avg. Effluent	Percent	Avg. Raw	Avg. Effluent	Percent	average	< 5 C.	TKN	Avg. Effluent	Unionized	Effluent	Effluent	Effluent
Month	Total Flow m3	Avg. Flow m3	Max. Flow m3	Total Flow m3	Days	BOD mg/l	CBOD mg/l	Removal	SS mg/l	SS mg/l	Removal	T. Phos mg/l	T. Phos mg/l	Removal	Effluent Count	or > 5 C.	mg/l	$NH_3 + NH_4$ mg/l	Ammonia mg/l	CBOD kg/day	SS kg/day	T Phos. kg/day
January	45366	1463.00	2655.00	64390	31	113.0	7.0	93.81%	197.0	7.5	96.19%	4.10	0.21	94.88%	8396	0.2	48.8	18.65	0.066188	14.5	15.6	0.4
February	30187	1078.00	1438.00	23967	12	147.0	12.0	91.84%	273.0	9.5	96.52%	4.40	0.31	92.95%	1068	0.5	44.2	24.65	0.129465	24.0	19.0	0.6
March	98201	3168.0	6594.0	13124	5.5	125.0	11.6	90.7%	141.0	16.3	88.4%	3.1	0.49	84.2%	2509	1.7	32.4	29.16	0.105100	27.7	38.9	1.2
April	72770	2426.00	7827.00	52800	26.2	118.0	4.0	96.61%	143.0	4.0	97.20%	2.40	0.14	94.17%	53	7.2	25.4	17.30	0.131900	8.1	8.1	0.3
May	39432	1272.00	1685.00	65316	30	183.0	3.0	98.36%	255.0	3.5	98.63%	5.50	0.02	99.64%	3	14.3	59.7	4.64	0.072532	6.5	7.6	0.0
June	31800	1060.00	1292.00	63215	30	155.0	3.0	98.06%	250.0	3.0	98.80%	6.50	0.04	99.38%	2	20.5	65.1	0.05	0.003788	6.3	6.3	0.1
July	29421	949.00	1361.00	56946	31	180.0	3.0	98.33%	307.5	4.0	98.70%	7.30	0.05	99.38%	3	24.6	68.0	0.05	0.002133	5.5	7.3	0.1
August	24614	794.00	1079.00	38328	31	212.0	3.0	98.58%	358.0	3.0	99.16%	9.50	0.05	99.47%	3	22.0	106.4	1.45	0.002179	3.7	3.7	0.1
September	21711	724.00	864.00	28410	30	211.0	3.0	98.58%	428.0	3.0	99.30%	6.40	0.08	98.75%	2	17.9	98.0	0.07	0.007960	2.8	2.8	0.1
October	22045	711.00	775.00	19885	31	214.0	3.0	98.60%	368.0	3.5	99.05%	10.30	0.06	99.42%	5	12.5	60.0	1.02	0.010577	1.9	2.2	0.0
November	30683	1023.00	1521.00	21703	30	184.0	3.0	98.37%	343.0	4.0	98.83%	5.10	0.03	99.41%	2	3.2	68.1	3.4	0.032402	2.2	2.9	0.0
December	40591	1309.00	2422.00	45742	31	149.0	3.0	97.99%	308.0	3.0	99.03%	4.50	0.04	99.11%	27	0.7	46.6	11.02	0.087193	4.4	4.4	0.1
Total	486821			493826	318.7																	
Average	40568	1331		41152		165.9	4.88	96.65%	281.0	5.4	97.49%	5.76	0.13	96.73%	1006	10.4	60.2	9.29	0.054285	9.0	9.9	0.2
Maximum	98201	3168	7827	65316		214.0	12.0		428.0	16.3		10.30	0.49		8396	24.6	106.4	29.16	0.131900	27.7	38.9	1.2

PS = Plant Shutdown

Township of Southgate

Annual Report - Dundalk Wastewater Plant

Plant: Dundalk Wastewater Treatment Lagoons & Collection System
Works: 110001471
Year: 2025
Location Type: Final Effluent Discharge Report

Month	Discharge Duration Days	Total Effluent m^3	Total Coagulant Used (kg)	Average Coagulant Dosage (mg/l)	Average CBOD mg/l	Average SS mg/l	Average T. Phos. mg/l	Average $NH_3 + NH_4$ as N (mg/l)	E Coli average Count	Average pH Reports	Average Temp. C	Average D.O. mg/l
January	31	64390	1.55	15.6	7.0	7.5	0.21	18.65	8396	7.86	0.20	10.19
February	12	23967	0.60	16.3	12.0	9.5	0.31	24.65	1068	8.15	0.50	8.69
March	5.5	13124	0.28	13.6	11.6	16.3	0.49	29.16	2509	7.76	1.70	10.79
April	26.2	52800	1.31	16.1	4.0	4.0	0.14	17.30	53	8.03	7.20	10.42
May	30	65316	1.50	14.9	3.0	3.5	0.02	4.64	3	7.55	14.30	7.66
June	30	63215	1.50	15.4	3.0	3.0	0.04	0.05	2	7.71	20.50	6.81
July	31	56946	1.55	17.7	3.0	4.0	0.05	0.05	3	8.10	24.60	7.50
August	31	38328	1.55	26.3	3.0	3.0	0.05	1.45	3	7.88	22.00	22.00
September	30	28410	1.50	34.3	3.0	3.0	0.08	0.07	2	8.44	17.90	9.92
October	31	19885	1.55	50.7	3.0	3.5	0.06	1.02	5	8.14	12.50	10.83
November	30	21703	1.50	44.9	3.0	4.0	0.03	3.38	2	7.88	3.20	11.32
December	31	45742	1.55	22.0	3.0	3.0	0.04	11.02	27	8.08	0.70	13.73
Total	318.7	493826	15.94									
Average		41152	1.33	23.99	4.88	5.36	0.13	9.29	1006	7.97	10.44	10.82
Maximum		65316			12	16.3	0.49	29.16	8396	8.44	24.60	22.00

PS = Plant Shutdown

Township of Southgate - Village of Dundalk

Annual Report - Dundalk Wastewater Plant

Plant: Dundalk Wastewater Treatment Lagoons & Collection System
Works: 110001471
Classification: Class 1 Wastewater Collection & Class 1 Wastewater Treatment
Receiver Foley Drain to Grand River

Year: 2025
Population Served: 2864

Raw Sewage Parameters		January	February	March	April	May	June	July	August	September	October	November	December	Summary
	Average	113	147	119	118	183	155	180	212	211	214	184	149	165
BOD	Minimum	63	140	54	106	169	149	147	193	165	182	138	131	136
mg/l	Maximum	163	153	184	130	197	160	213	230	256	245	229	167	194
Suspended	Average	197	273	143	143	255	250	308	358	428	368	343	308	281
Solids	Minimum	190	260	66	126	210	154	275	285	285	320	280	285	228
mg/l	Maximum	204	285	220	160	300	345	340	430	570	415	405	330	334
	Average	48.5	44.2	38.0	25.4	59.7	65.1	68.0	106.4	98.0	60.5	68.0	46.5	60.7
TKN	Minimum	36.0	39.6	14.2	17.4	58.2	63.1	64.6	72.8	78.9	38.0	53.0	32.0	47.3
mg/l	Maximum	61.0	48.8	61.8	33.4	61.2	67.1	71.3	140.0	117.0	83.0	83.0	61.0	74.1
Total	Average	4.06	4.37	3.37	2.38	5.56	6.47	7.25	9.46	6.40	10.29	5.11	4.52	5.77
Phosphorus	Minimum	2.23	3.74	1.45	1.48	5.41	5.42	7.11	6.82	5.85	5.97	1.50	2.90	4.16
mg/l	Maximum	5.89	5.00	5.29	3.27	5.71	7.52	7.39	12.10	6.95	14.60	8.71	6.13	7.38

PS = Plant Shutdown

Township of Southgate - Village of Dundalk

Annual Report - Dundalk Wastewater Plant

Plant: Dundalk Wastewater Treatment Lagoons & Collection System
Works: 110001471
Classification: Class 1 Wastewater Collection & Class 1 Wastewater Treatment
Receiver Foley Drain to Grand River

Year: 2025
Population Served: 2803

Final Effluent Parameters		January	February	March	April	May	June	July	August	September	October	November	December	Summary
	Average	7.0	12.0	12.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.9
CBOD	Minimum	6.0	8.0	7	3	3.0	3.0	3	3.0	3.0	3.0	3.0	3.0	3.0
mg/l	Maximum	8.0	16.0	17	5	3.0	3.0	3	3.0	3.0	3.0	3.0	3.0	17.0
Suspended	Average	7.5	9.5	15.5	4.0	3.5	3.0	4.0	3.0	3.0	3.5	4.0	3.0	5.3
Solids	Minimum	7.0	7.0	12	4	3.0	3.0	3	3.0	3.0	3.0	3.0	3.0	3.0
mg/l	Maximum	8.0	12.0	19	4	4.0	3.0	5	3.0	3.0	4.0	5.0	3.0	19.0
	Average	18.7	24.7	29.2	17.3	4.6	0.1	0.1	0.1	0.1	1.0	3.4	11.0	9.17
NH3 + NH4	Minimum	17.30	22.40	28.6	12.3	7.19	0.05	0.05	0.05	0.05	0.10	3.30	6.40	0.05
mg/l	Maximum	20.00	26.90	29.8	22.3	2.08	0.05	0.05	0.07	0.08	1.90	3.50	15.60	29.80
	Average	22.60	30.40	35.80	19.30	5.90	0.90	1.15	1.45	1.45	2.75	4.90	14.80	11.78
TKN	Minimum	20.90	30.40	31	13.7	2.60	0.90	1	1.40	1.40	1.80	4.90	8.70	0.90
mg/l	Maximum	24.30	30.40	40.6	24.9	9.20	0.90	1.3	1.50	1.50	3.70	4.90	20.90	40.60
Total	Average	0.21	0.31	0.50	0.14	0.02	0.04	0.05	0.06	0.08	0.06	0.03	0.04	0.13
Phosphorus	Minimum	0.20	0.29	0.37	0.04	0.02	0.04	0.04	0.04	0.07	0.04	0.03	0.02	0.02
mg/l	Maximum	0.21	0.32	0.62	0.24	0.02	0.04	0.05	0.07	0.08	0.07	0.03	0.05	0.62
	Average	8396.00	3192.00	3418.00	53.00	3.00	2.00	3.00	3.00	2.00	8.00	2.00	50.00	1261
Ecoli	Minimum	392	184	36	2	2	2	2	2	2	2	2	8	2
	Maximum	16400	6200	6800	104	4	2	4	4	2	14	2	92	16400
pH Lab Results	Average	7.86	7.90	7.75	8.03	7.56	7.71	8.10	7.88	8.44	8.14	7.88	8.08	7.94
(In-house testing	Minimum	7.81	7.88	7.65	8.02	7.21	7.46	8.09	7.81	8.37	8.04	7.82	7.99	7.21
not included)	Maximum	7.90	7.92	7.85	8.04	7.90	7.96	8.11	7.94	8.51	8.23	7.93	8.16	8.51
	Average	10.60	9.25	10.00	10.35	7.65	6.55	6.85	9.20	10.00	10.55	11.70	13.10	9.65
DO	Minimum	8.70	6.80	6.4	8.3	6.20	4.70	5.3	8.40	9.30	8.20	9.40	11.70	4.70
mg/l	Maximum	12.50	11.70	13.6	12.4	9.10	8.40	8.4	10.00	10.70	12.90	14.00	14.50	14.50
Unionized	Average	0.073001	0.080400	0.130250	0.149450	0.085150	0.004550	0.005450	0.002655	0.008750	0.011761	0.040964	0.084413	0.056399
Ammonia	Minimum	0.040143	0.027100	0.035100	0.024600	0.002900	0.000200	0.000300	0.000310	0.000900	0.000348	0.021247	0.034848	0.000200
mg/l	Maximum	0.105858	0.133700	0.225400	0.274300	0.167400	0.008900	0.010600	0.005000	0.016600	0.023173	0.060680	0.133977	0.274300

PS = Plant Shutdown