
TOWNSHIP OF RUSSELL PUBLIC UTILITIES



2025

**WATER & SANITARY SYSTEMS
ANNUAL OPERATIONS REPORT**

TOWNSHIP OF RUSSELL



DRINKING WATER SYSTEM

Waterworks #260092014

MDWL # 184-101

2025

ANNUAL OPERATIONS REPORT

TOWNSHIP OF RUSSELL PUBLIC UTILITIES



2025

WATER SYSTEMS ANNUAL OPERATIONS REPORT

Township of Russell Annual Operations Report

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Township of Russell

Annual Summary report – 2025

Owner and Operating Authority

The Township of Russell is the Owner and Operating Authority of a drinking Water System that includes:

- Four storage tanks (three elevated towers and one above ground reservoir);
- A distribution network and its associated appurtenances.

Water Source

Treated water is supplied by the City of Ottawa through a connection to its distribution system from Mitch Owens Road and Bank Street to Embrun Reservoir.

Existing Water Works - Distribution System

The water system for Township of Russell is currently a Class 2 distribution system and serves approximately 19,881 people. This number is calculated referencing number of services.

Treated water is pumped from the City of Ottawa through a 450 mm feeder main to the Embrun Reservoir where chlorine and ammonia are added. From there it is pumped to the Embrun Tower and to the Russell Water tower and then to the Marionville booster pumping station and then pumped to the Marionville tower.

The distribution system consists of PVC and Polyethylene pipes ranging from 19 mm (5/8 inch) service connections to a 406 mm (16 inch) piping. Piping in the local distribution networks in the communities of Embrun, Russell and Marionville consist largely of 150 mm, 200 mm, 250 mm, 300 mm and 350 mm PVC pipes. The municipal distribution system also contains fire hydrants, standard service connections, gate valves, valve chambers, isolation and interconnection valves, blow-off points, drain valve chambers, and air release chambers.

Facilities:

- 450mm diameter connection to Russell Feedermain (from City of Ottawa) at Embrun Reservoir site;
- connection to Russell watermain (toward community of Russell) at Embrun Reservoir site;
- connection to Marionville watermain (replacement of modulating control valve by a pipe section, between Marionville Booster Station and Marionville, on MacDonald Road).
- Embrun Reservoir (re-chlorination facility)
- 3 Water Towers (Embrun, Russell, Marionville)
- 724 Hydrants (383 Embrun, 305 Russell, 36 Marionville)
- 887 Isolation valves (480 Embrun, 375 Russell, 32 Marionville)

2025 Capital Improvements, maintenance and studies

In the past year standard maintenance was completed. This includes exercising all isolation valves, flushing all hydrants and performing inspection and upkeep on all hydrants. 10 isolation valves and 4 fire hydrant valves were excavated for replacement or maintenance. 4 Hydrants were replaced due to failure or age. This is only slightly higher than previous year(2024) which was 10 valves, 1 valve replacement, 4 hydrants and 1 replaced hydrant & hydrant valve. This has resulted in decreased water loss. A study was undertaken to check the status and structural integrity of the Water Towers. Embrun tower was found to have issues that required taking the tower out of service to allow for revitalization work. This work will be completed in 2026. The water filling station was installed beside the reservoir to allow for increased commercial water taking with improved water tracking.

Planned Alterations, Extension and Replacements

In 2026 the valve maintenance program will continue with excavations. Expansion of the distribution system is being looked in to for new subdivisions as well as older subdivision not currently serviced. Further leak detection and standpost maintenance is to be pursued to verify the integrity of the system. Replacement of the storm along Notre-Dame Street will coincide with replacement/upgrade of the watermain. An upgrade to the storage capacity of the Reservoir is expected to start.

Township of Russell : Water Maintenance 2025
Reservoir, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Test run back-up generator	Weekly		
Analyzer Calibration	Bi-Weekly		
Semi Annual Generator Inspection	Semi-Annually		
Alarm Testing	Annually		
Flow Meter Calibration	Annually		
Chart Recorder Calibration	Annually		
Pressure Transmitter Calibration	Annually		
Level Transmitter Calibration	Annually		
Change Genset Oil, oil filter	Annually		
Generator Inspection			
Double Check valve inspection and cert.	Annually		
Inspection of Vents and Top	Annually		
Replace Batteries in Milltronics	Every 3 years		
Chemical Pump Maintenance	Quarterly	4 Mar	Replace tubing on pumps in service
Chemical Pump Maintenance	Quarterly	10 July	Replace tubing on pumps in service
Chemical Pump Maintenance	Quarterly	3 Dec	Replace tubing on pumps in service
Corrective Maintenance			
Chemical Injection Line Repair		13 Jan	Replace elbow in Cl ₂ intake line
Ammonia Pump blockage clear		27 Jan	
Chemical Injection Line Repair		11 Feb	
Cl ₂ Analyzer Maintenance, Intermed.		16 Feb	Replace electrolyte
Replace Radio and Antenna		27 Feb	Antenna determined to be not working, some water in cover
Install Embrun HL 3		4 Mar	Repairs completed
Cl ₂ Injection air release repair		5 Mar	Replace leaking components
Ammonia Pump blockage clear		11 Mar	
Replace Ammonia chemical pump #1,		17 Mar	Previous pump damaged by power surge
Replace entire Cl ₂ injection line		15 Apr	Change from a soft plastic to hard plastic
Cl ₂ Analyzer Maintenance, WW.		12 May	Replace electrolyte
Cl ₂ Analyzer Maintenance, WW.		22 May	Replace cap
OFM valve maintenance		22 May	Replace O-rings on stem
Cl ₂ Injection air release repair		3 June	Replace leaking components, O-rings
Chemical Injection Line Repair		27 June	Pump #2 suction line
Cl ₂ Chemical Pump leak repair		9 Aug	Leak on pump intake line
Replace Soft start, Russell HL #1		12 Aug	Soft start failure
Cl ₂ Analyzer Maintenance, Intermed.		14 Aug	Replace electrolyte
Cl ₂ Injection air release repair		26 Sept	Replace leaking components
Cl ₂ Injection air release repair		15 Oct	Replace leaking components
Cl ₂ Analyzer Maintenance, Intermed.		27 Oct	Replace electrolyte
Cl ₂ Chemical Pump leak repair		2 Dec	Leak downstream of pressure regulator

Township of Russell : Water Maintenance 2025
Embrun Water Tower, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Analyzer Calibration	Bi-Weekly		
Run Generator,	Weekly		
Alarm Testing	Annually		
Level Transmitter Calibration	Annually		
Pressure Transmitter Calibration	Annually		
Inspection of Vents and Top			
Generator Maintenance			
Tank Inspection		10 May	Engineer Inspection
Corrective Maintenance			
Removed from service to allow for full evaluation and maintenance		29 Oct	

Embrun Distribution, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Hydrant Flushing	Annually		
Hydrant Inspections	Annually		Valve exercise, Grease and Drain
Gate Valve Exercise	Annually		
Fall hydrant inspection	Annually		
Flush New subdivisions	As Needed		
Corrective Maintenance			

Russell Water Tower, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Analyzer Calibration	Bi-Weekly		
Run Generator,	Weekly		
Alarm Testing	Annually		
Level Transmitter Calibration	Annually		
Pressure Transmitter Calibration	Annually		
Inspection of Vents and Top	Annually		
Tank Inspection		9 June	
Corrective Maintenance			
Cl ₂ Analyzer Maintenance		4 Nov	Replace electrolyte

Russell Distribution, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Hydrant Flushing	Annually		
Hydrant Inspections	Annually		Valve exercise, Grease and Drain
Gate Valve Exercise	Annually		
Fall hydrant inspection	Annually		
Flush New subdivisions	As Needed		

Township of Russell : Water Maintenance 2025

Corrective Maintenance			

Marionville Water Tower, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Analyzer Calibration	Bi-Weekly		
Run Generator,	Weekly		
Alarm Testing	Annually		
Level Transmitter Calibration	Annually		
Pressure Transmitter Calibration	Annually		
Inspection of Vents and Top	Annually		
Tank Inspection		10 June	Engineer inspection
Corrective Maintenance			
Thaw overflow/drain line		24 Jan	
Cl ₂ Analyzer Maintenance		7 July	Replace electrolyte
PLC Failure, Replacement		17 Dec	

Marionville Distribution, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Hydrant Flushing	Annually		
Hydrant Inspections	Annually		Valve exercise, Grease and Drain
Gate Valve Exercise	Annually		
Fall hydrant inspection	Annually		
Corrective Maintenance			

Marionville Booster, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Alarm Testing	Annually		
Flow Meter calibration	Annually		
Change Genset Oil, oil filter	Annually		
Generator Inspection	Annually		
Corrective Maintenance			

Ottawa Feedermain, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Valve Chamber Inspection	Annually		
Corrective Maintenance			

		Ottawa					
Month	Days	Consumption (m3)	Calculated				
			Ottawa	Embrun	Russell	MV	
JAN	31	120,292	356,569	124,354	75,479	48,365	2,194
FEB	28	120,055	354,123	110,357	65,116	44,575	2,043
MAR	31	116,222	-0.69%	119,412	68,678	49,871	2,220
APR	30	117,956	375,014	116,763	66,813	49,178	2,263
MAY	31	124,508	375,230	127,321	72,575	54,035	2,357
JUN	30	132,550	0.06%	131,146	74,509	56,277	2,928
JUL	31	128,438	401,502	135,804	78,243	57,996	5,326
AUG	31	146,261	407,511	146,220	82,756	63,796	5,741
SEP	30	126,803	1.47%	125,487	68,837	56,411	5,406
OCT	31	121,485	351,544	123,117	66,704	56,242	4,663
NOV	30	114,438	355,973	113,793	69,932	47,824	3,539
DEC	31	115,621	1.24%	119,063	73,108	49,466	2,530
Total		1,484,629		1,492,837	1,537,996		

Quarterly Consumption (m3)							
Reservoir		Houses	w.Flush			M3/day	L/s
209,273	Embrun	157,069	157,199	52,074	25%	579	6.7
6,457	MV	5,320	5,482	975	15%	11	0.1
142,811	Russell	106,994	107,919	34,892	24%	388	4.5
213,897	Embrun	161,081	162,073	51,824	24%	569	6.6
7,548	MV	5,764	5,967	1,581	21%	17	0.2
159,490	Russell	112,081	113,615	45,875	29%	504	5.8
229,836	Embrun	188,190	188,426	41,410	18%	450	5.2
16,473	MV	8,896	13,562	2,911	18%	32	0.4
178,203	Russell	128,659	129,607	48,596	27%	528	6.1
209,744	Embrun	160,125	160,292	49,452	24%	538	6.2
10,732	MV	5,667	8,480	2,252	21%	24	0.3
153,532	Russell	111,878	112,448	41,084	27%	447	5.2
Total	1,537,996	1,151,724	1,165,069	372,927.3		1021.7	11.8
			System wide Loss		24%		
					22%	876	10.1

Calculated per MOE Procedure D-5-1
TOWNSHIP OF RUSSELL WATER SYSTEM UNCOMMITTED HYDRAULIC RESERVE CAPACITY
As of December 31, 2025

Average Daily Flow		Maximum Day Flow		Maximum Day Peaking Factor	Serviced Population	Per Capita Average Daily Flow		Source
2025	4,228 m ³ /d	2025	6,904 m ³ /d	2025	1.63	2025	0.203 m ³ /cap/d	Township data
2024	4,407 m ³ /d	2024	6,326 m ³ /d	2024	1.44	2024	0.222 m ³ /cap/d	Township data
2023	4,105 m ³ /d	2023	7,528 m ³ /d	2023	1.83	2023	0.215 m ³ /cap/d	Township data
2022	3,543 m ³ /d	2022	5,443 m ³ /d	2022	1.54	2022	0.192 m ³ /cap/d	Township data
2021	3,531 m ³ /d	2021	5,652 m ³ /d	2021	1.60	2021	0.202 m ³ /cap/d	Township data

Total Serviced Population as of 2025:	20,872 people
Average per capita flow for the last five years:	0.207 m ³ /cap/d
Maximum day flow for the last five years:	7,528 m ³ /d
Maximum day flow per capita for the last five years:	0.361 m ³ /cap/d
Maximum day flow peaking factor (five years):	1.83

Average Calculated Daily Flow			Source:	
ADF	0.207 m ³ /cap/d	X	20,872 =	4,317 m ³ /d
	Max Day Peaking Factor		1.83	
D _C	Maximum Day Supply from Ottawa (Design Capacity)		11,860 m ³ /d	Ottawa Supply Agreement
MDF	Max Daily Flow = ADF X Max Daily Peaking Factor		7,917 m ³ /d	
Cr	Max Daily Supply (D _C) - Max. Daily Flow (MDF)		3,943 m ³ /d	
P	Existing Residential Population Connected		20,872 people	Annual Report
H	No. of Connected Residential unit equivalents		7,236 lots	From Planning Department
F	Maximum Daily Flow Per Capita		0.379 m ³ /cap/d	

	Committed Lots Russell	178 Lots	From Planning Department
	Committed Lots Embrun	572 Lots	From Planning Department
	Committed Lots Marionville	34 Lots	From Planning Department
L	No. of Committed or Approved Lots	785 Lots	

$$Cu = Cr - \frac{L \cdot F \cdot P}{H}$$

Cu =	3084 m ³ /d	Uncommitted Reserve Hydraulic Capacity based on available supply from Ottawa
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LU No. of Uncommitted Lots Remaining

$$LU = \frac{Cu}{F \cdot P}$$

LU	2818 Lots
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Notes:

1. The actual per capita flows are below the projected per capita flows per the Master Plan and GMP. It is recommended that the Master Plan per capita flows continue to be used for planning.
2. The above calculation is based on the Ottawa supply agreement daily limit. It does not take into account any limitations in the water supply and distribution system.
3. A detailed capacity assessment of the water facilities is recommended to ascertain the true capacity of the infrastructure.

2024 Master Plan Average Daily Flow			Source:	
ADF	0.250 m ³ /cap/d	X	20,872 =	5,218 m ³ /d
	Max Day Peaking Factor		1.83	
D _C	Maximum Day Supply from Ottawa (Design Capacity)		11,860 m ³ /d	Based on past 5 years Ottawa Supply Agreement
MDF	Max Daily Flow = ADF X Max Daily Peaking Factor		9,569 m ³ /d	
Cr	Max Daily Supply (D _C) - Max. Daily Flow (MDF)		2,291 m ³ /d	
P	Existing Residential Population Connected		20,872 people	
H	No. of Connected Residential unit equivalents		8,349 lots	Based on Master Plan Assumed 2.5 persons per unit
F	Maximum Daily Flow Per Capita		0.458 m ³ /cap/d	

	Committed Lots Russell	178 Lots	From Planning Department
	Committed Lots Embrun	572 Lots	From Planning Department
	Committed Lots Marionville	34 Lots	From Planning Department
L	No. of Committed or Approved Lots	785 Lots	

$$Cu = Cr - \frac{L \cdot F \cdot P}{H}$$

Cu =	1391 m ³ /d	Uncommitted Reserve Hydraulic Capacity based on available supply from Ottawa
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PPU 2.5 persons per lot Based on Master Plan Design Criteria

LU No. of Uncommitted Lots Remaining

$$LU = \frac{Cu}{PPU \cdot F}$$

LU	1214 Lots
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Annual Summary - Water Distribution Flows and Transfer
Waterworks Name: Township of Russell Distribution

Year: 2025
DWS# 260092014

MONTH	EMBRUN TREATED WATER FLOW			MARIONVILLE TREATED WATER FLOW			RUSSELL TREATED WATER FLOW			TOTAL TREATED WATER FLOW		
	AVERAGE DAY (1000 m ³)	MAXIMUM DAY (1000 m ³)	MONTHLY TOTAL (1000 m ³)	AVERAGE DAY (1000 m ³)	MAXIMUM DAY (1000 m ³)	MONTHLY TOTAL (1000 m ³)	AVERAGE DAY (1000 m ³)	MAXIMUM DAY (1000 m ³)	MONTHLY TOTAL (1000 m ³)	AVERAGE DAY (1000 m ³)	MAXIMUM DAY (1000 m ³)	MONTHLY TOTAL (1000 m ³)
JAN	2.435	2.959	75.479	0.071	0.110	2.194	1.560	1.805	48.365	4.066	4.874	126.038
FEB	2.326	3.071	65.116	0.073	0.136	2.043	1.592	2.153	44.575	3.991	5.360	111.734
MAR	2.215	2.778	68.678	0.072	0.122	2.220	1.609	2.092	49.871	3.896	4.992	120.769
APR	2.227	2.664	66.813	0.075	0.134	2.263	1.639	2.316	49.178	3.942	5.114	118.254
MAY	2.341	2.798	72.575	0.076	0.118	2.357	1.743	2.052	54.035	4.160	4.968	128.967
JUN	2.484	3.181	74.509	0.098	0.220	2.928	1.876	2.496	56.277	4.457	5.897	133.714
JUL	2.524	3.092	78.243	0.172	0.453	5.326	1.871	2.084	57.996	4.567	5.629	141.565
AUG	2.670	3.975	82.756	0.185	0.440	5.741	2.058	2.541	63.796	4.913	6.956	152.293
SEP	2.295	3.186	68.837	0.180	0.376	5.406	1.880	2.319	56.411	4.355	5.881	130.654
OCT	2.152	2.697	66.704	0.150	0.353	4.663	1.814	2.955	56.242	4.116	6.005	127.609
NOV	2.331	2.903	69.932	0.118	0.363	3.539	1.594	2.032	47.824	4.043	5.298	121.295
DEC	2.358	2.694	73.108	0.082	0.127	2.530	1.596	1.828	49.466	4.036	4.649	125.104
TOTAL			862.750			41.210			634.036	50.541		1537.996
AVERAGE	2.363			0.113			1.736			4.212		128.166
MAXIMUM		3.975			0.453			2.955			6.956	152.293

CHEMICAL PROCUREMENT						
DATE	PRODUCT	QTY DRUMS	Litres	TOTAL Litres	COST/ Litre	TOTAL COST
4-Feb-25	SODIUM HYPOCHLORITE	10	205	2,050	1.39	2,849.50
29-Apr-25	"	10	205	2,050	1.39	2,849.50
26-Jun-25	"	10	205	2,050	1.39	2,849.50
19-Aug-25	"	13	205	2,665	1.39	3,704.35
10-Sep-25	"	4	205	820	1.95	1,599.00
14-Oct-25	"	14	205	2,870	1.39	3,989.30
9-Dec-25	"	14	205	2,870	1.39	3,989.30
TOTAL		75		15,375		\$21,830.45
DATE	PRODUCT	QTY BAGS	KG/BAG	TOTAL	COST/ KG	TOTAL COST
	SODIUM THIOSULPHATE		25	0	2.28	\$0.00
						\$0.00
						\$0.00
TOTAL		0		0		\$0.00
DATE	PRODUCT	Bags	KG	TOTAL	COST/ bag	TOTAL COST
17-Jan-25	Ammonium Sulfate	15	22.68	340	106.28	\$1,594.20
10-Jun-25		16	22.68	363	106.28	\$1,700.48
24-Sep-25		16	22.68	363	106.28	\$1,700.48
25-Nov-25	"	16	22.68	363	106.28	\$1,700.48
TOTAL		63		1,089		\$6,695.64

Embrun			
Date	Complaint	Address	Resolution
10-Feb	Low Pressure	Geneva	Blocked meter
28-Apr	low pressure	Cologne	blockage found in meter
28-Apr	low pressure	Marseille	meter checked, determined to be internal
06-May	Low Pressure	Chateauguay	internal issue
22-May	Low Pressure	Albert	Internal issue
02-Jun	Coloured water	Namur	Internal issue
15-Aug	No Water	Coureur Court	New house accidentally turned off by developer
21-Aug	Low Pressure	St Malo	Replace water meter
26-Sep	Low Pressure	Moisson	Internal, unknown open
09-Oct	Low Pressure	Pilon	Internal issue
21-Nov	Low Pressure	Richelieu	Damage at standpost, repaired by developer

Russell			
Date	Complaint	Address	Resolution
03-Jan	Low Pressure	Sunset	Internal issue
07-Nov	Low Pressure	Boxcar	Internal issue
02-Dec	Low Pressure	Azure	Issue was partially closed standpost by developer
04-Dec	Low Pressure	Station Trail	Internal issue

Marionville			
Date	Complaint	Address	Resolution
13-Feb	no water	Marionville	frozen service, thawed
11-Aug	Low Pressure	Route 500	Internal issue

Annual Summary - Water Distribution Flows**Year: 2025****Waterworks Name: Township of Russell Distribution****DWS# 260092014**

Month	Ottawa Feedermain Flow (M³)	Embrun Distribution Flow (M³)	Russell Distribution Flow (M³)	Marionville Distribution (M³)	Days	Daily Average Embrun (M³)	Daily Average Russell (M³)	Daily Average Marionville (M³)
Jan	124,354	75,479	48,365	2,194	31	2,435	1,560	71
Feb	110,357	65,116	44,575	2,043	28	2,326	1,592	73
Mar	119,412	68,678	49,871	2,220	31	2,215	1,609	72
Apr	116,763	66,813	49,178	2,263	30	2,227	1,639	75
May	127,321	72,575	54,035	2,357	31	2,341	1,743	76
Jun	131,146	74,509	56,277	2,928	30	2,484	1,876	98
Jul	135,804	78,243	57,996	5,326	31	2,524	1,871	172
Aug	146,220	82,756	63,796	5,741	31	2,670	2,058	185
Sep	125,487	68,837	56,411	5,406	30	2,295	1,880	180
Oct	123,117	66,704	56,242	4,663	31	2,152	1,814	150
Nov	113,793	69,932	47,824	3,539	30	2,331	1,594	118
Dec	119,063	73,108	49,466	2,530	31	2,358	1,596	82
Total	1,492,837	862,750	634,036	41,210	365	2,363	1,736	113

Annual Summary - Water Distribution Flows

Year: 2025

Waterworks Name: Township of Russell Distribution

DWS# 260092014

Month	Russell Flow M ³	Daily Average M ³	Population	Days	Average Person/Day (M3)	Max Flow M ³
Jan	48,365	1,560	8,770	31	0.178	1,805
Feb	44,575	1,592	8,770	28	0.182	2,153
Mar	49,871	1,609	8,770	31	0.183	2,092
Apr	49,178	1,639	8,770	30	0.187	2,316
May	54,035	1,743	8,770	31	0.199	2,052
Jun	56,277	1,876	8,770	30	0.214	2,496
Jul	57,996	1,871	8,770	31	0.213	2,084
Aug	63,796	2,058	8,770	31	0.235	2,541
Sep	56,411	1,880	8,770	30	0.214	2,319
Oct	56,242	1,814	8,770	31	0.207	2,955
Nov	47,824	1,594	8,770	30	0.182	2,032
Dec	49,466	1,596	8,770	31	0.18	1,828

Month	Embrun Flow M ³	Daily Average M ³	Population	Days	Average Person/Day (M3)	Max Flow M ³
Jan	75,479	2,435	11,639	31	0.209	2,959
Feb	65,116	2,326	11,639	28	0.200	3,071
Mar	68,678	2,215	11,639	31	0.190	2,778
Apr	66,813	2,227	11,639	30	0.191	2,664
May	72,575	2,341	11,639	31	0.201	2,798
Jun	74,509	2,484	11,639	30	0.213	3,181
Jul	78,243	2,524	11,639	31	0.217	3,092
Aug	82,756	2,670	11,639	31	0.229	3,975
Sep	68,837	2,295	11,639	30	0.197	3,186
Oct	66,704	2,152	11,639	31	0.185	2,697
Nov	69,932	2,331	11,639	30	0.200	2,903
Dec	73,108	2,358	11,639	31	0.20	2,694

Annual Summary - Water Distribution Flows**Year: 2025****Waterworks Name: Township of Russell Distribution****DWS# 260092014**

Month	Marionville Distribution M³	Daily Average M³	Population	Days	Average Person/Day (M3)	Max Flow M³
Jan	2,194	71	463	31	0.153	110
Feb	2,043	73	463	28	0.158	136
Mar	2,220	72	463	31	0.155	122
Apr	2,263	75	463	30	0.163	134
May	2,357	76	463	31	0.164	118
Jun	2,928	98	463	30	0.211	220
Jul	5,326	172	463	31	0.371	453
Aug	5,741	185	463	31	0.400	440
Sep	5,406	180	463	30	0.389	376
Oct	4,663	150	463	31	0.325	353
Nov	3,539	118	463	30	0.255	363
Dec	2,530	82	463	31	0.18	127

Annual Summary - Ottawa F.M. In-House Testing
 Waterworks Name: Township of Russell Distribution

Year: 2025
 DWS# 260092014

Ottawa Feedermain	Chlorine Reading								
	Total			Free			Combined		
	Max	Min	Average	Max	Min	Average	Max	Min	Average
January	1.73	1.32	1.54	0.09	0.01	0.05	1.71	1.29	1.49
February	1.57	1.38	1.49	0.11	0.01	0.06	1.53	1.29	1.43
March	1.58	1.36	1.48	0.07	0.01	0.04	1.54	1.33	1.44
April	1.73	1.32	1.54	0.09	0.01	0.05	1.52	1.34	1.47
May	1.57	1.38	1.49	0.11	0.01	0.06	1.51	1.39	1.46
June	1.58	1.36	1.48	0.07	0.01	0.04	1.54	1.34	1.45
July	1.73	1.32	1.54	0.09	0.01	0.05	1.42	1.33	1.38
August	1.57	1.38	1.49	0.11	0.01	0.06	1.43	1.15	1.28
September	1.58	1.36	1.48	0.07	0.01	0.04	1.31	0.99	1.18
October	1.73	1.32	1.54	0.09	0.01	0.05	1.22	1.02	1.15
November	1.57	1.38	1.49	0.11	0.01	0.06	1.35	0.99	1.19
December	1.58	1.36	1.48	0.07	0.01	0.04	1.56	1.30	1.43

Annual Summary - Reservoir Disinfectant Residual
 Waterworks Name: Township of Russell Distribution

Year: 2025
 DWS# 260092014

	Reservoir Wet Well Chlorine								
	Total			Free			Combined		
	Max	Min	Average	Max	Min	Average	Max	Min	Average
January	2.38	1.92	2.12	0.12	0.01	0.05	2.33	1.90	2.08
February	2.38	1.85	2.08	0.10	0.02	0.05	2.36	1.75	2.02
March	2.26	1.97	2.08	0.09	0.01	0.04	2.23	1.90	2.04
April	2.38	1.92	2.12	0.12	0.01	0.05	2.22	2.01	2.08
May	2.38	1.85	2.08	0.10	0.02	0.05	2.18	2.00	2.10
June	2.26	1.97	2.08	0.09	0.01	0.04	2.38	2.03	2.09
July	2.38	1.92	2.12	0.12	0.01	0.05	2.34	2.20	2.27
August	2.38	1.85	2.08	0.10	0.02	0.05	2.44	2.10	2.30
September	2.26	1.97	2.08	0.09	0.01	0.04	2.54	2.20	2.35
October	2.38	1.92	2.12	0.12	0.01	0.05	2.57	2.06	2.36
November	2.38	1.85	2.08	0.10	0.02	0.05	2.68	2.08	2.44
December	2.26	1.97	2.08	0.09	0.01	0.04	2.47	2.04	2.24
Total	2.38	1.85	2.09	0.12	0.01	0.05	2.68	1.75	2.20

Annual Summary - Embrun Distribution Disinfectant Residual

Year: 2025

Waterworks Name: Township of Russell Distribution

DWS# 260092014

	Embrun Chlorine								
	Total			Free			Combined		
	Max	Min	Average	Max	Min	Average	Max	Min	Average
January	2.17	1.12	1.77	0.10	0.01	0.04	2.14	1.05	1.72
February	2.15	1.19	1.88	0.11	0.01	0.04	2.13	1.12	1.84
March	2.19	1.63	1.91	0.11	0.02	0.05	2.15	1.58	1.86
April	2.17	1.12	1.77	0.10	0.01	0.04	2.16	1.43	1.89
May	2.15	1.19	1.88	0.11	0.01	0.04	2.13	1.22	1.82
June	2.19	1.63	1.91	0.11	0.02	0.05	2.17	1.57	1.85
July	2.17	1.12	1.77	0.10	0.01	0.04	2.31	0.85	1.74
August	2.15	1.19	1.88	0.11	0.01	0.04	2.33	1.01	1.71
September	2.19	1.63	1.91	0.11	0.02	0.05	2.27	0.63	1.63
October	2.17	1.12	1.77	0.10	0.01	0.04	2.17	0.61	1.72
November	2.15	1.19	1.88	0.11	0.01	0.04	2.55	0.66	1.70
December	2.19	1.63	1.91	0.11	0.02	0.05	2.47	1.15	1.80
Total	2.19	1.12	1.85	0.11	0.01	0.05	2.55	0.61	1.77

Annual Summary - Russell Distribution Disinfectant Residual
 Waterworks Name: Township of Russell Distribution

Year: 2025
 DWS# 260092014

	Russell Chlorine								
	Total			Free			Combined		
	Max	Min	Average	Max	Min	Average	Max	Min	Average
January	2.32	1.68	1.97	0.11	0.01	0.05	2.26	1.64	1.92
February	2.19	1.57	2.01	0.09	0.01	0.04	2.18	1.53	1.97
March	2.16	1.86	2.03	0.10	0.01	0.03	2.15	1.79	1.99
April	2.32	1.68	1.97	0.11	0.01	0.05	2.12	1.34	1.97
May	2.19	1.57	2.01	0.09	0.01	0.04	2.07	0.89	1.83
June	2.16	1.86	2.03	0.10	0.01	0.03	2.17	1.68	1.97
July	2.32	1.68	1.97	0.11	0.01	0.05	2.29	1.59	2.01
August	2.19	1.57	2.01	0.09	0.01	0.04	2.32	0.64	1.89
September	2.16	1.86	2.03	0.10	0.01	0.03	2.37	0.84	1.87
October	2.32	1.68	1.97	0.11	0.01	0.05	2.27	0.66	1.58
November	2.19	1.57	2.01	0.09	0.01	0.04	2.67	0.68	1.85
December	2.16	1.86	2.03	0.10	0.01	0.03	2.40	0.54	1.99
Total	2.32	1.57	2.00	0.11	0.01	0.04	2.67	0.54	1.90

Annual Summary - Marionville Distribution Disinfectant Residual

Year: 2025

Waterworks Name: Township of Russell Distribution

DWS#

260092014

	Marionville Chlorine								
	Total			Free			Combined		
	Max	Min	Average	Max	Min	Average	Max	Min	Average
January	1.92	0.86	1.65	0.13	0.01	0.07	1.85	0.78	1.58
February	1.95	0.76	1.57	0.10	0.01	0.05	1.91	0.73	1.52
March	1.92	0.97	1.53	0.11	0.02	0.05	1.88	0.92	1.48
April	1.92	0.93	1.68	0.13	0.01	0.05	1.91	0.89	1.62
May	1.95	0.76	1.57	0.10	0.01	0.05	1.80	1.05	1.41
June	1.92	0.97	1.53	0.11	0.02	0.05	1.82	0.88	1.26
July	1.92	0.61	1.19	0.13	0.01	0.04	2.04	0.58	1.16
August	1.95	0.76	1.57	0.10	0.01	0.05	2.00	0.64	1.06
September	1.92	0.97	1.53	0.11	0.02	0.05	1.81	0.54	0.94
October	1.92	0.50	1.06	0.13	0.01	0.04	1.77	0.49	1.02
November	1.95	0.76	1.57	0.10	0.01	0.05	2.00	0.67	1.21
December	1.92	0.97	1.53	0.11	0.02	0.05	1.98	0.87	1.38
Total	1.95	0.50	1.50	0.13	0.01	0.05	2.04	0.49	1.30

Monthly Summary - Ottawa Feedermain, Pumpage
Waterworks Name: Township of Russell Distribution

Year: 2025

DWS# 260092014

Jan	Daily Flow M³	Litres of Ammonia	KG of Ammonia	M3 /1000	Mg/L	Litres of Cl2	% of Cl2	KG of Cl2	Mg/L
1	4,779	23.324	0.70	4.78	0.15	32.93	10.10	3.33	0.70
2	3,547	16.464	0.49	3.55	0.14	20.24	10.10	2.04	0.58
3	3,663	18.522	0.56	3.66	0.15	24.35	10.10	2.46	0.67
4	4,519	24.353	0.73	4.52	0.16	25.73	10.10	2.60	0.57
5	3,431	18.522	0.56	3.43	0.16	21.27	10.10	2.15	0.63
6	4,324	22.638	0.68	4.32	0.16	30.87	10.10	3.12	0.72
7	3,979	21.266	0.64	3.98	0.16	27.10	10.10	2.74	0.69
8	3,940	20.237	0.61	3.94	0.15	28.13	10.10	2.84	0.72
9	4,231	22.981	0.69	4.23	0.16	29.50	10.10	2.98	0.70
10	3,633	18.865	0.57	3.63	0.16	26.07	10.10	2.63	0.72
11	4,529	23.667	0.71	4.53	0.16	31.90	10.10	3.22	0.71
12	3,916	21.266	0.64	3.92	0.16	27.78	10.10	2.81	0.72
13	4,152	21.952	0.66	4.15	0.16	30.18	10.10	3.05	0.73
14	3,843	17.836	0.54	3.84	0.14	26.75	9.80	2.62	0.68
15	3,651	18.179	0.55	3.65	0.15	24.70	9.80	2.42	0.66
16	4,178	20.237	0.61	4.18	0.15	29.16	9.80	2.86	0.68
17	3,862	17.836	0.54	3.86	0.14	25.04	9.80	2.45	0.64
18	4,028	18.179	0.55	4.03	0.14	26.41	9.80	2.59	0.64
19	3,798	17.15	0.51	3.80	0.14	24.01	9.80	2.35	0.62
20	4,162	20.923	0.63	4.16	0.15	29.50	9.80	2.89	0.69
21	3,883	20.58	0.62	3.88	0.16	30.87	9.80	3.03	0.78
22	4,094	21.609	0.65	4.09	0.16	33.27	9.70	3.23	0.79
23	3,962	22.638	0.68	3.96	0.17	33.27	9.70	3.23	0.81
24	3,901	20.923	0.63	3.90	0.16	30.53	9.70	2.96	0.76
25	3,824	20.237	0.61	3.82	0.16	29.50	9.70	2.86	0.75
26	4,761	24.696	0.74	4.76	0.16	35.33	9.70	3.43	0.72
27	3,915	20.237	0.61	3.92	0.16	28.13	9.70	2.73	0.70
28	4,041	16.121	0.48	4.04	0.12	30.53	9.70	2.96	0.73
29	4,003	15.435	0.46	4.00	0.12	30.87	9.90	3.06	0.76
30	4,145	17.493	0.52	4.15	0.13	31.90	9.90	3.16	0.76
31	3,660	13.72	0.41	3.66	0.11	27.44	9.90	2.72	0.74

Max	4779								
Average	4011				0.15				0.70
Sum Total		618.09	18.54	124.35		883.23		87.49	

Monthly Summary - Ottawa Feedermain, Pumpage
Waterworks Name: Township of Russell Distribution

Year: 2025

DWS# 260092014

Feb		Daily Flow M³	Litres of Ammonia	KG of Ammonia	M3 /1000	Mg/L	Litres of Cl2	% of Cl2	KG of Cl2	Mg/L
	1	3,502	15.44	0.46	3.50	0.13	20.24	9.90	2.00	0.57
	2	4,810	23.67	0.71	4.81	0.15	27.10	9.90	2.68	0.56
	3	3,957	19.55	0.59	3.96	0.15	21.27	9.90	2.11	0.53
	4	3,964	22.64	0.68	3.96	0.17	24.35	9.90	2.41	0.61
	5	3,609	21.27	0.64	3.61	0.18	27.78	9.90	2.75	0.76
	6	4,001	24.35	0.73	4.00	0.18	31.90	9.30	2.97	0.74
	7	4,027	24.01	0.72	4.03	0.18	33.27	9.30	3.09	0.77
	8	4,102	24.01	0.72	4.10	0.18	34.99	9.30	3.25	0.79
	9	4,737	27.78	0.83	4.74	0.18	41.16	9.30	3.83	0.81
	10	3,504	20.92	0.63	3.50	0.18	30.18	9.30	2.81	0.80
	11	3,941	22.98	0.69	3.94	0.17	34.99	9.30	3.25	0.83
	12	3,749	21.95	0.66	3.75	0.18	29.50	9.30	2.74	0.73
	13	3,432	20.58	0.62	3.43	0.18	29.16	9.30	2.71	0.79
	14	4,593	26.41	0.79	4.59	0.17	39.79	9.30	3.70	0.81
	15	3,767	21.61	0.65	3.77	0.17	32.93	9.30	3.06	0.81
	16	3,231	18.18	0.55	3.23	0.17	27.78	9.30	2.58	0.80
	17	4,937	28.81	0.86	4.94	0.18	43.90	9.30	4.08	0.83
	18	3,265	16.46	0.49	3.27	0.15	25.38	9.30	2.36	0.72
	19	4,536	23.32	0.70	4.54	0.15	33.96	9.10	3.09	0.68
	20	3,560	17.15	0.51	3.56	0.14	27.44	9.10	2.50	0.70
	21	3,924	19.89	0.60	3.92	0.15	29.16	9.10	2.65	0.68
	22	3,648	18.87	0.57	3.65	0.16	28.47	9.10	2.59	0.71
	23	3,527	17.84	0.54	3.53	0.15	25.38	9.10	2.31	0.65
	24	4,764	22.64	0.68	4.76	0.14	34.99	9.10	3.18	0.67
	25	3,983	19.21	0.58	3.98	0.14	30.18	9.10	2.75	0.69
	26	4,231	20.24	0.61	4.23	0.14	28.13	9.80	2.76	0.65
	27	3,412	16.46	0.49	3.41	0.14	22.98	9.80	2.25	0.66
	28	3,644	18.18	0.55	3.64	0.15	23.32	9.80	2.29	0.63

Max	4937									
Average	3941					0.16				0.71
Sum Total		594.42	17.83	110.36		839.66		78.77		

Monthly Summary - Ottawa Feedermain, Pumpage

Year: 2025

Waterworks Name: Township of Russell Distribution

DWS#

260092014

March		Daily Flow M³	Litres of Ammonia	KG of Ammonia	M3 /1000	Mg/L	Litres of Cl2	% of Cl2	KG of Cl2	Mg/L
	1	3,815	19.551	0.59	3.82	0.15	25.73	9.80	2.52	0.66
	2	3,658	18.865	0.57	3.66	0.15	27.10	9.80	2.66	0.73
	3	4,911	26.068	0.78	4.91	0.16	35.33	9.80	3.46	0.70
	4	3,761	19.894	0.60	3.76	0.16	28.13	9.80	2.76	0.73
	5	3,390	21.952	0.66	3.39	0.19	25.04	9.50	2.38	0.70
	6	4,259	22.638	0.68	4.26	0.16	35.33	9.50	3.36	0.79
	7	3,671	23.667	0.71	3.67	0.19	37.73	9.50	3.58	0.98
	8	3,803	26.068	0.78	3.80	0.21	32.93	9.50	3.13	0.82
	9	4,030	27.44	0.82	4.03	0.20	32.59	9.50	3.10	0.77
	10	3,638	24.696	0.74	3.64	0.20	32.59	9.50	3.10	0.85
	11	3,578	24.01	0.72	3.58	0.20	26.75	9.50	2.54	0.71
	12	3,793	18.522	0.56	3.79	0.15	28.47	10.90	3.10	0.82
	13	3,721	24.01	0.72	3.72	0.19	24.70	10.90	2.69	0.72
	14	3,139	19.208	0.58	3.14	0.18	20.58	10.90	2.24	0.71
	15	4,436	25.382	0.76	4.44	0.17	31.21	10.90	3.40	0.77
	16	4,614	25.039	0.75	4.61	0.16	31.56	10.90	3.44	0.75
	17	2,531	13.377	0.40	2.53	0.16	17.84	10.90	1.94	0.77
	18	4,153	15.435	0.46	4.15	0.11	29.16	10.90	3.18	0.77
	19	4,106	14.406	0.43	4.11	0.11	28.47	10.90	3.10	0.76
	20	3,510	17.836	0.54	3.51	0.15	25.38	10.90	2.77	0.79
	21	3,816	22.981	0.69	3.82	0.18	30.53	10.90	3.33	0.87
	22	3,922	22.638	0.68	3.92	0.17	25.04	10.90	2.73	0.70
	23	3,741	22.295	0.67	3.74	0.18	24.70	10.90	2.69	0.72
	24	4,259	25.725	0.77	4.26	0.18	32.59	10.90	3.55	0.83
	25	3,757	22.638	0.68	3.76	0.18	26.41	10.90	2.88	0.77
	26	3,703	22.295	0.67	3.70	0.18	26.75	10.90	2.92	0.79
	27	3,695	22.295	0.67	3.70	0.18	27.78	10.90	3.03	0.82
	28	3,741	21.952	0.66	3.74	0.18	26.41	10.60	2.80	0.75
	29	4,262	26.411	0.79	4.26	0.19	31.56	10.60	3.34	0.78
	30	4,355	26.411	0.79	4.36	0.18	32.24	10.60	3.42	0.78
	31	3,644	21.266	0.64	3.64	0.18	25.73	10.60	2.73	0.75

Max	4911								
Average	3852				0.17				0.77
Sum Total		684.97	20.55	119.41		886.31		91.86	

Monthly Summary - Ottawa Feedermain, Pumpage

Year: 2025

Waterworks Name: Township of Russell Distribution

DWS#

260092014

Apr	Daily Flow M³	Litres of Ammonia	KG of Ammonia	M3 /1000	Mg/L	Litres of Cl2	% of Cl2	KG of Cl2	Mg/L
1	3,188	19.21	0.58	3.19	0.18	22.64	10.60	2.40	0.75
2	3,972	24.01	0.72	3.97	0.18	26.41	10.60	2.80	0.70
3	3,824	20.58	0.62	3.82	0.16	28.81	10.60	3.05	0.80
4	4,136	25.38	0.76	4.14	0.18	31.21	10.30	3.21	0.78
5	2,896	16.12	0.48	2.90	0.17	20.58	10.30	2.12	0.73
6	4,291	22.98	0.69	4.29	0.16	26.75	10.30	2.76	0.64
7	4,106	21.61	0.65	4.11	0.16	29.84	10.30	3.07	0.75
8	3,758	20.58	0.62	3.76	0.16	25.38	10.30	2.61	0.70
9	3,720	20.24	0.61	3.72	0.16	28.47	10.30	2.93	0.79
10	3,975	21.95	0.66	3.98	0.17	27.78	10.30	2.86	0.72
11	3,360	19.89	0.60	3.36	0.18	23.32	10.30	2.40	0.71
12	4,124	21.95	0.66	4.12	0.16	29.50	10.10	2.98	0.72
13	4,490	23.67	0.71	4.49	0.16	31.21	10.10	3.15	0.70
14	4,097	21.27	0.64	4.10	0.16	28.47	10.10	2.88	0.70
15	3,759	19.55	0.59	3.76	0.16	26.07	10.10	2.63	0.70
16	3,893	20.58	0.62	3.89	0.16	33.61	10.10	3.40	0.87
17	3,655	20.24	0.61	3.66	0.17	27.10	10.10	2.74	0.75
18	4,449	23.32	0.70	4.45	0.16	33.96	9.81	3.33	0.75
19	4,303	22.64	0.68	4.30	0.16	31.90	9.80	3.13	0.73
20	3,581	20.24	0.61	3.58	0.17	28.47	9.80	2.79	0.78
21	5,321	28.13	0.84	5.32	0.16	43.22	9.80	4.24	0.80
22	2,095	12.01	0.36	2.10	0.17	19.89	9.80	1.95	0.93
23	4,354	24.35	0.73	4.35	0.17	31.90	9.80	3.13	0.72
24	3,487	21.95	0.66	3.49	0.19	27.78	9.80	2.72	0.78
25	3,767	17.49	0.52	3.77	0.14	27.44	9.80	2.69	0.71
26	4,221	21.95	0.66	4.22	0.16	31.56	9.80	3.09	0.73
27	4,098	22.98	0.69	4.10	0.17	29.84	9.80	2.92	0.71
28	3,934	20.58	0.62	3.93	0.16	29.50	9.80	2.89	0.73
29	4,519	24.01	0.72	4.52	0.16	32.59	9.80	3.19	0.71
30	3,390	19.55	0.59	3.39	0.17	26.07	9.80	2.55	0.75

Max	5321								
Average	3892				0.16				0.75
Sum Total		639.01	19.17	116.76		861.27		86.63	

Monthly Summary - Ottawa Feedermain, Pumpage
Waterworks Name: Township of Russell Distribution

Year: 2025
DWS# 260092014

May		Daily Flow M³	Litres of Ammonia	KG of Ammonia	M3 /1000	Mg/L	Litres of Cl2	% of Cl2	KG of Cl2	Mg/L
	1	3,961	19.55	0.59	3.96	0.15	30.87	9.80	3.03	0.76
	2	3,608	19.21	0.58	3.61	0.16	26.75	9.80	2.62	0.73
	3	3,717	19.21	0.58	3.72	0.16	29.84	9.20	2.75	0.74
	4	4,261	22.64	0.68	4.26	0.16	34.64	9.20	3.19	0.75
	5	4,659	25.38	0.76	4.66	0.16	36.70	9.20	3.38	0.72
	6	3,995	21.27	0.64	4.00	0.16	33.27	9.20	3.06	0.77
	7	3,773	20.92	0.63	3.77	0.17	32.59	9.20	3.00	0.79
	8	4,536	25.73	0.77	4.54	0.17	40.82	9.20	3.76	0.83
	9	3,002	16.12	0.48	3.00	0.16	26.07	9.20	2.40	0.80
	10	4,027	21.61	0.65	4.03	0.16	30.53	9.50	2.90	0.72
	11	4,351	24.01	0.72	4.35	0.17	34.64	9.50	3.29	0.76
	12	4,908	26.41	0.79	4.91	0.16	39.79	9.50	3.78	0.77
	13	4,463	23.67	0.71	4.46	0.16	37.04	9.50	3.52	0.79
	14	4,591	25.04	0.75	4.59	0.16	39.45	9.50	3.75	0.82
	15	4,409	23.67	0.71	4.41	0.16	36.02	9.50	3.42	0.78
	16	4,245	22.30	0.67	4.25	0.16	30.87	9.50	2.93	0.69
	17	4,179	20.24	0.61	4.18	0.15	33.96	9.50	3.23	0.77
	18	3,996	21.27	0.64	4.00	0.16	31.56	9.50	3.00	0.75
	19	3,948	21.61	0.65	3.95	0.16	31.21	9.50	2.97	0.75
	20	3,891	19.89	0.60	3.89	0.15	30.53	9.50	2.90	0.75
	21	4,179	21.95	0.66	4.18	0.16	33.27	9.50	3.16	0.76
	22	3,895	20.58	0.62	3.90	0.16	30.87	9.50	2.93	0.75
	23	3,695	18.52	0.56	3.70	0.15	28.47	9.30	2.65	0.72
	24	3,701	18.87	0.57	3.70	0.15	28.81	9.30	2.68	0.72
	25	3,608	17.84	0.54	3.61	0.15	28.47	9.30	2.65	0.73
	26	4,733	25.04	0.75	4.73	0.16	37.39	9.30	3.48	0.73
	27	4,518	23.67	0.71	4.52	0.16	36.02	9.30	3.35	0.74
	28	4,373	22.64	0.68	4.37	0.16	36.02	9.30	3.35	0.77
	29	4,373	21.61	0.65	4.37	0.15	35.67	9.30	3.32	0.76
	30	3,883	20.58	0.62	3.88	0.16	30.18	9.20	2.78	0.72
	31	3,843	20.92	0.63	3.84	0.16	30.18	9.20	2.78	0.72

Max	4908								
Average	4107				0.16				0.75
Sum Total		671.94	20.16	127.32		1022.48		95.96	

Monthly Summary - Ottawa Feedermain, Pumpage
Waterworks Name: Township of Russell Distribution

Year: 2025
DWS# 260092014

June		Daily Flow M³	Litres of Ammonia	KG of Ammonia	M3 /1000	Mg/L	Litres of Cl2	% of Cl2	KG of Cl2	Mg/L
	1	3,342	18.87	0.57	3.34	0.17	27.10	9.20	2.49	0.75
	2	4,283	21.27	0.64	4.28	0.15	32.24	9.20	2.97	0.69
	3	4,211	23.32	0.70	4.21	0.17	32.93	9.20	3.03	0.72
	4	4,297	22.30	0.67	4.30	0.16	32.24	10.60	3.42	0.80
	5	4,917	27.44	0.82	4.92	0.17	32.24	10.60	3.42	0.70
	6	4,177	23.32	0.70	4.18	0.17	30.18	10.60	3.20	0.77
	7	4,058	23.32	0.70	4.06	0.17	31.21	10.60	3.31	0.82
	8	4,716	28.81	0.86	4.72	0.18	35.67	10.60	3.78	0.80
	9	6,005	36.70	1.10	6.01	0.18	44.93	10.60	4.76	0.79
	10	3,267	20.58	0.62	3.27	0.19	25.38	10.60	2.69	0.82
	11	4,160	26.07	0.78	4.16	0.19	34.99	9.70	3.39	0.82
	12	4,120	26.41	0.79	4.12	0.19	38.42	9.70	3.73	0.90
	13	4,086	25.38	0.76	4.09	0.19	35.67	9.70	3.46	0.85
	14	5,041	29.50	0.88	5.04	0.18	42.19	9.70	4.09	0.81
	15	5,080	26.07	0.78	5.08	0.15	37.73	9.70	3.66	0.72
	16	4,623	24.35	0.73	4.62	0.16	33.96	9.70	3.29	0.71
	17	4,844	26.07	0.78	4.84	0.16	37.04	9.70	3.59	0.74
	18	4,632	26.07	0.78	4.63	0.17	31.56	10.30	3.25	0.70
	19	4,622	23.32	0.70	4.62	0.15	32.24	10.30	3.32	0.72
	20	4,255	27.78	0.83	4.26	0.20	32.24	10.30	3.32	0.78
	21	4,530	26.75	0.80	4.53	0.18	33.61	10.30	3.46	0.76
	22	4,331	25.38	0.76	4.33	0.18	32.93	10.30	3.39	0.78
	23	4,562	28.13	0.84	4.56	0.18	34.99	10.30	3.60	0.79
	24	4,723	30.18	0.91	4.72	0.19	38.76	10.20	3.95	0.84
	25	4,747	32.59	0.98	4.75	0.21	44.59	10.20	4.55	0.96
	26	3,988	26.75	0.80	3.99	0.20	36.02	10.20	3.67	0.92
	27	3,847	23.32	0.70	3.85	0.18	32.93	10.20	3.36	0.87
	28	4,022	24.70	0.74	4.02	0.18	31.56	10.00	3.16	0.78
	29	3,516	22.30	0.67	3.52	0.19	29.84	10.00	2.98	0.85
	30	4,144	26.07	0.78	4.14	0.19	36.02	10.00	3.60	0.87

Max	6005								
Average	4372				0.18				0.79
Sum Total		773.12	23.19	131.15		1031.40		103.91	

Monthly Summary - Ottawa Feedermain, Pumpage
Waterworks Name: Township of Russell Distribution

Year: 2025

DWS# 260092014

July	Daily Flow M ³	Litres of Ammonia	KG of Ammonia	M3 /1000	Mg/L	Litres of Cl2	% of Cl2	KG of Cl2	Mg/L
1	4,500	29.50	0.88	4.50	0.20	42.88	10.00	4.29	0.95
2	3,558	24.35	0.73	3.56	0.21	33.96	10.00	3.40	0.95
3	4,066	27.10	0.81	4.07	0.20	37.73	10.00	3.77	0.93
4	4,094	27.44	0.82	4.09	0.20	39.45	10.00	3.94	0.96
5	3,707	24.01	0.72	3.71	0.19	37.04	9.80	3.63	0.98
6	3,941	26.41	0.79	3.94	0.20	39.10	9.80	3.83	0.97
7	3,946	26.07	0.78	3.95	0.20	38.42	9.80	3.76	0.95
8	4,196	29.84	0.90	4.20	0.21	42.19	9.80	4.13	0.99
9	3,717	25.04	0.75	3.72	0.20	36.36	9.80	3.56	0.96
10	4,400	30.53	0.92	4.40	0.21	42.88	9.80	4.20	0.95
11	4,544	36.70	1.10	4.54	0.24	49.05	9.30	4.56	1.00
12	4,594	38.07	1.14	4.59	0.25	48.71	9.30	4.53	0.99
13	4,203	34.30	1.03	4.20	0.24	44.25	9.30	4.11	0.98
14	4,326	33.96	1.02	4.33	0.24	44.93	9.30	4.18	0.97
15	4,871	37.04	1.11	4.87	0.23	50.42	9.30	4.69	0.96
16	4,774	35.67	1.07	4.77	0.22	48.71	9.20	4.48	0.94
17	4,606	34.99	1.05	4.61	0.23	49.05	9.20	4.51	0.98
18	4,046	29.84	0.90	4.05	0.22	44.25	9.20	4.07	1.01
19	4,140	29.50	0.88	4.14	0.21	39.10	9.80	3.83	0.93
20	4,280	32.93	0.99	4.28	0.23	39.45	9.80	3.87	0.90
21	4,302	31.21	0.94	4.30	0.22	41.50	9.80	4.07	0.95
22	4,096	31.56	0.95	4.10	0.23	38.76	9.80	3.80	0.93
23	4,288	31.90	0.96	4.29	0.22	42.19	9.80	4.13	0.96
24	5,357	41.50	1.25	5.36	0.23	50.76	9.80	4.97	0.93
25	3,823	29.84	0.90	3.82	0.23	37.04	9.90	3.67	0.96
26	4,448	35.33	1.06	4.45	0.24	43.56	9.90	4.31	0.97
27	4,653	36.36	1.09	4.65	0.23	45.96	9.90	4.55	0.98
28	4,990	38.76	1.16	4.99	0.23	48.02	9.90	4.75	0.95
29	4,991	38.76	1.16	4.99	0.23	49.39	9.90	4.89	0.98
30	5,558	42.88	1.29	5.56	0.23	57.62	9.50	5.47	0.98
31	4,789	39.10	1.17	4.79	0.24	50.76	9.50	4.82	1.01

Max	5558								
Average	4381				0.22				0.96
Sum Total		1010.48	30.31	135.80		1353.48		130.81	

Monthly Summary - Ottawa Feedermain, Pumpage

Year: 2025

Waterworks Name: Township of Russell Distribution

DWS# 260092014

Aug		Daily Flow M³	Litres of Ammonia	KG of Ammonia	M3 /1000	Mg/L	Litres of Cl2	% of Cl2	KG of Cl2	Mg/L
1		4,351	33.61	1.01	4.35	0.23	46.31	9.50	4.40	1.01
2		6,904	63.80	1.91	6.90	0.28	69.63	9.70	6.75	0.98
3		4,225	34.99	1.05	4.23	0.25	41.50	9.70	4.03	0.95
4		4,736	38.42	1.15	4.74	0.24	49.05	9.70	4.76	1.00
5		4,371	33.27	1.00	4.37	0.23	43.56	9.70	4.23	0.97
6		5,087	42.53	1.28	5.09	0.25	44.25	9.70	4.29	0.84
7		4,962	44.59	1.34	4.96	0.27	51.79	11.00	5.70	1.15
8		5,230	47.33	1.42	5.23	0.27	57.97	11.00	6.38	1.22
9		5,665	52.82	1.58	5.67	0.28	56.60	11.00	6.23	1.10
10		4,945	45.28	1.36	4.95	0.27	53.85	11.00	5.92	1.20
11		6,198	55.91	1.68	6.20	0.27	67.57	11.00	7.43	1.20
12		5,390	49.74	1.49	5.39	0.28	74.43	9.00	6.70	1.24
13		5,223	46.99	1.41	5.22	0.27	72.03	9.00	6.48	1.24
14		4,413	38.07	1.14	4.41	0.26	57.62	9.10	5.24	1.19
15		4,792	41.50	1.25	4.79	0.26	64.83	9.10	5.90	1.23
16		4,773	41.50	1.25	4.77	0.26	64.14	9.00	5.77	1.21
17		5,350	47.33	1.42	5.35	0.27	72.72	9.00	6.54	1.22
18		3,556	33.27	1.00	3.56	0.28	46.31	9.00	4.17	1.17
19		4,490	37.73	1.13	4.49	0.25	64.48	9.00	5.80	1.29
20		4,483	41.50	1.25	4.48	0.28	65.86	9.00	5.93	1.32
21		3,634	34.30	1.03	3.63	0.28	54.19	9.00	4.88	1.34
22		4,917	45.62	1.37	4.92	0.28	72.72	9.00	6.54	1.33
23		4,277	40.82	1.22	4.28	0.29	62.43	9.00	5.62	1.31
24		4,816	44.93	1.35	4.82	0.28	73.06	9.00	6.58	1.37
25		4,385	41.16	1.23	4.39	0.28	64.48	8.80	5.67	1.29
26		4,693	48.02	1.44	4.69	0.31	72.37	8.80	6.37	1.36
27		4,330	39.79	1.19	4.33	0.28	65.17	8.80	5.73	1.32
28		3,947	36.36	1.09	3.95	0.28	49.74	10.00	4.97	1.26
29		4,204	38.42	1.15	4.20	0.27	51.45	10.00	5.15	1.22
30		4,084	38.07	1.14	4.08	0.28	47.68	10.50	5.01	1.23
31		3,789	35.33	1.06	3.79	0.28	48.71	10.50	5.11	1.35

Max	6904								
Average	4717				0.27				1.20
Sum Total		1313.00	39.39	146.22		1826.48		174.28	

Monthly Summary - Ottawa Feedermain, Pumpage

Year: 2025

Waterworks Name: Township of Russell Distribution

DWS# 260092014

Sept	Daily Flow M³	Litres of Ammonia	KG of Ammonia	M3 /1000	Mg/L	Litres of Cl2	% of Cl2	KG of Cl2	Mg/L
1	4,022	39.10	1.17	4.02	0.29	51.79	10.50	5.44	1.35
2	4,809	45.96	1.38	4.81	0.29	62.43	10.50	6.55	1.36
3	4,521	43.90	1.32	4.52	0.29	57.62	10.50	6.05	1.34
4	3,754	33.96	1.02	3.75	0.27	44.93	10.50	4.72	1.26
5	4,209	41.50	1.25	4.21	0.30	53.85	10.20	5.49	1.31
6	3,899	36.36	1.09	3.90	0.28	48.36	10.20	4.93	1.27
7	4,548	41.50	1.25	4.55	0.27	55.57	10.20	5.67	1.25
8	3,908	35.67	1.07	3.91	0.27	46.99	10.20	4.79	1.23
9	4,018	38.42	1.15	4.02	0.29	50.76	10.20	5.18	1.29
10	4,220	41.16	1.23	4.22	0.29	55.22	10.20	5.63	1.33
11	4,184	39.10	1.17	4.18	0.28	53.17	10.20	5.42	1.30
12	4,308	41.85	1.26	4.31	0.29	54.54	10.20	5.56	1.29
13	5,044	49.74	1.49	5.04	0.30	64.48	10.20	6.58	1.30
14	4,342	42.19	1.27	4.34	0.29	55.22	10.20	5.63	1.30
15	3,679	35.67	1.07	3.68	0.29	47.33	10.20	4.83	1.31
16	4,895	46.99	1.41	4.90	0.29	65.51	10.20	6.68	1.37
17	4,223	41.16	1.23	4.22	0.29	54.54	10.10	5.51	1.30
18	4,281	41.16	1.23	4.28	0.29	56.94	10.10	5.75	1.34
19	5,103	49.39	1.48	5.10	0.29	67.91	10.10	6.86	1.34
20	3,042	30.18	0.91	3.04	0.30	40.47	10.10	4.09	1.34
21	4,820	46.65	1.40	4.82	0.29	63.80	10.10	6.44	1.34
22	4,154	40.82	1.22	4.15	0.29	56.94	10.10	5.75	1.38
23	4,091	39.10	1.17	4.09	0.29	56.94	10.10	5.75	1.41
24	4,470	43.22	1.30	4.47	0.29	61.05	10.10	6.17	1.38
25	3,101	31.56	0.95	3.10	0.31	45.96	10.10	4.64	1.50
26	3,800	39.79	1.19	3.80	0.31	56.94	10.10	5.75	1.51
27	3,654	37.73	1.13	3.65	0.31	58.65	9.40	5.51	1.51
28	4,121	44.25	1.33	4.12	0.32	67.23	9.40	6.32	1.53
29	4,458	48.36	1.45	4.46	0.33	75.46	9.40	7.09	1.59
30	3,809	42.19	1.27	3.81	0.33	65.17	9.40	6.13	1.61

Max	5103								
Average	4183				0.29				1.36
Sum Total		1228.63	36.86	125.49		1695.79		170.93	

Monthly Summary - Ottawa Feedermain, Pumpage
Waterworks Name: Township of Russell Distribution

Year: 2025
DWS# 260092014

Oct	Daily Flow M³	Litres of Ammonia	KG of Ammonia	M3 /1000	Mg/L	Litres of Cl2	% of Cl2	KG of Cl2	Mg/L
1	4,460	48.36	1.45	4.46	0.33	77.18	9.40	7.25	1.63
2	4,198	47.33	1.42	4.20	0.34	69.63	9.80	6.82	1.63
3	4,032	46.65	1.40	4.03	0.35	66.89	9.80	6.55	1.63
4	4,676	51.45	1.54	4.68	0.33	74.43	9.10	6.77	1.45
5	4,816	51.79	1.55	4.82	0.32	78.89	9.10	7.18	1.49
6	3,460	35.33	1.06	3.46	0.31	53.51	9.10	4.87	1.41
7	4,211	43.22	1.30	4.21	0.31	72.03	8.50	6.12	1.45
8	4,088	43.90	1.32	4.09	0.32	69.97	8.50	5.95	1.45
9	3,246	32.93	0.99	3.25	0.30	57.97	8.50	4.93	1.52
10	3,876	44.25	1.33	3.88	0.34	73.75	8.50	6.27	1.62
11	3,751	43.56	1.31	3.75	0.35	66.20	9.00	5.96	1.59
12	3,742	43.22	1.30	3.74	0.35	67.91	9.00	6.11	1.63
13	4,327	47.33	1.42	4.33	0.33	75.80	9.00	6.82	1.58
14	4,086	40.47	1.21	4.09	0.30	63.11	9.00	5.68	1.39
15	3,644	38.07	1.14	3.64	0.31	47.68	10.90	5.20	1.43
16	5,623	57.97	1.74	5.62	0.31	73.40	10.90	8.00	1.42
17	4,872	50.08	1.50	4.87	0.31	60.37	10.80	6.52	1.34
18	3,119	32.24	0.97	3.12	0.31	39.45	10.80	4.26	1.37
19	4,328	44.25	1.33	4.33	0.31	54.88	10.80	5.93	1.37
20	4,029	41.16	1.23	4.03	0.31	51.11	10.80	5.52	1.37
21	3,738	38.07	1.14	3.74	0.31	47.33	10.80	5.11	1.37
22	3,463	34.99	1.05	3.46	0.30	37.39	11.40	4.26	1.23
23	3,966	38.42	1.15	3.97	0.29	41.16	11.40	4.69	1.18
24	3,569	36.02	1.08	3.57	0.30	39.45	11.40	4.50	1.26
25	3,957	42.19	1.27	3.96	0.32	47.33	11.40	5.40	1.36
26	3,581	38.42	1.15	3.58	0.32	42.53	11.40	4.85	1.35
27	4,026	44.25	1.33	4.03	0.33	49.74	11.40	5.67	1.41
28	3,725	40.13	1.20	3.73	0.32	45.96	11.40	5.24	1.41
29	3,799	43.56	1.31	3.80	0.34	45.96	11.40	5.24	1.38
30	3,425	38.07	1.14	3.43	0.33	41.85	11.40	4.77	1.39
31	3,284	35.67	1.07	3.28	0.33	40.82	11.40	4.65	1.42

Max	5623								
Average	3972				0.32				1.44
Sum Total		1313.35	39.40	123.12		1773.65		177.10	

Monthly Summary - Ottawa Feedermain, Pumpage
Waterworks Name: Township of Russell Distribution

Year: 2025
DWS# 260092014

Nov	Daily Flow M³	Litres of Ammonia	KG of Ammonia	M3 /1000	Mg/L	Litres of Cl2	% of Cl2	KG of Cl2	Mg/L
1	3,330	37.73	1.13	3.33	0.34	41.50	11.50	4.77	1.43
2	4,584	51.79	1.55	4.58	0.34	55.57	11.50	6.39	1.39
3	4,512	52.82	1.58	4.51	0.35	63.11	11.50	7.26	1.61
4	3,213	36.70	1.10	3.21	0.34	41.50	11.50	4.77	1.49
5	3,961	45.96	1.38	3.96	0.35	53.17	10.90	5.79	1.46
6	3,350	38.76	1.16	3.35	0.35	46.65	10.90	5.08	1.52
7	3,893	41.85	1.26	3.89	0.32	54.19	10.90	5.91	1.52
8	3,845	41.16	1.23	3.85	0.32	49.39	11.10	5.48	1.43
9	3,100	33.27	1.00	3.10	0.32	39.10	11.10	4.34	1.40
10	4,666	49.05	1.47	4.67	0.32	56.60	11.10	6.28	1.35
11	3,704	40.13	1.20	3.70	0.33	45.28	11.10	5.03	1.36
12	3,464	37.04	1.11	3.46	0.32	43.90	11.10	4.87	1.41
13	3,668	39.10	1.17	3.67	0.32	47.33	10.40	4.92	1.34
14	3,574	38.42	1.15	3.57	0.32	46.99	10.40	4.89	1.37
15	3,944	42.19	1.27	3.94	0.32	54.54	10.40	5.67	1.44
16	3,092	31.21	0.94	3.09	0.30	41.50	10.40	4.32	1.40
17	4,299	43.22	1.30	4.30	0.30	56.94	10.40	5.92	1.38
18	4,164	42.88	1.29	4.16	0.31	54.54	10.10	5.51	1.32
19	3,350	34.64	1.04	3.35	0.31	45.28	10.10	4.57	1.37
20	4,222	43.22	1.30	4.22	0.31	55.91	10.10	5.65	1.34
21	3,536	39.10	1.17	3.54	0.33	50.76	10.10	5.13	1.45
22	4,952	55.22	1.66	4.95	0.33	62.77	10.80	6.78	1.37
23	3,217	35.67	1.07	3.22	0.33	39.45	10.80	4.26	1.32
24	4,369	48.71	1.46	4.37	0.33	59.34	10.80	6.41	1.47
25	3,447	40.13	1.20	3.45	0.35	46.31	10.80	5.00	1.45
26	3,543	39.45	1.18	3.54	0.33	48.02	10.30	4.95	1.40
27	4,005	45.28	1.36	4.01	0.34	54.88	10.30	5.65	1.41
28	3,133	31.90	0.96	3.13	0.31	41.50	10.30	4.27	1.36
29	3,452	36.70	1.10	3.45	0.32	45.96	10.40	4.78	1.38
30	4,204	41.85	1.26	4.20	0.30	53.51	10.40	5.56	1.32

Max	4952								
Average	3793				0.33				1.41
Sum Total		1235.14	37.05	113.79		1495.48		160.23	

Monthly Summary - Ottawa Feedermain, Pumpage
Waterworks Name: Township of Russell Distribution

Year: 2025

DWS# 260092014

Dec	Daily Flow M³	Litres of Ammonia	KG of Ammonia	M3 /1000	Mg/L	Litres of Cl2	% of Cl2	KG of Cl2	Mg/L
1	4,319	34.99	1.05	4.32	0.24	38.42	10.40	4.00	0.93
2	3,644	29.84	0.90	3.64	0.25	33.96	10.40	3.53	0.97
3	3,948	32.93	0.99	3.95	0.25	40.13	10.40	4.17	1.06
4	3,854	28.81	0.86	3.85	0.22	45.28	10.40	4.71	1.22
5	3,551	25.73	0.77	3.55	0.22	37.39	10.40	3.89	1.09
6	4,132	30.87	0.93	4.13	0.22	46.31	9.80	4.54	1.10
7	3,850	28.81	0.86	3.85	0.22	40.82	9.80	4.00	1.04
8	4,181	31.21	0.94	4.18	0.22	44.25	9.80	4.34	1.04
9	3,646	27.44	0.82	3.65	0.23	38.42	9.80	3.76	1.03
10	3,213	22.30	0.67	3.21	0.21	30.87	9.80	3.03	0.94
11	4,340	29.84	0.90	4.34	0.21	42.19	9.20	3.88	0.89
12	3,514	23.67	0.71	3.51	0.20	34.64	9.20	3.19	0.91
13	3,703	25.73	0.77	3.70	0.21	38.07	9.20	3.50	0.95
14	3,563	23.67	0.71	3.56	0.20	35.67	9.20	3.28	0.92
15	4,204	29.84	0.90	4.20	0.21	43.22	9.20	3.98	0.95
16	3,614	23.32	0.70	3.61	0.19	32.93	9.20	3.03	0.84
17	3,693	22.98	0.69	3.69	0.19	34.64	9.20	3.19	0.86
18	4,086	24.35	0.73	4.09	0.18	33.61	10.00	3.36	0.82
19	3,569	22.30	0.67	3.57	0.19	29.84	10.00	2.98	0.84
20	3,966	24.35	0.73	3.97	0.18	32.59	10.00	3.26	0.82
21	4,076	24.01	0.72	4.08	0.18	32.59	10.00	3.26	0.80
22	4,304	26.41	0.79	4.30	0.18	36.02	10.00	3.60	0.84
23	3,519	21.95	0.66	3.52	0.19	28.47	10.00	2.85	0.81
24	3,673	24.01	0.72	3.67	0.20	29.50	10.20	3.01	0.82
25	3,947	24.35	0.73	3.95	0.19	31.90	10.20	3.25	0.82
26	3,737	22.98	0.69	3.74	0.18	29.84	10.20	3.04	0.81
27	4,294	25.73	0.77	4.29	0.18	34.99	10.20	3.57	0.83
28	3,543	22.64	0.68	3.54	0.19	28.81	10.20	2.94	0.83
29	4,177	24.35	0.73	4.18	0.17	32.93	10.20	3.36	0.80
30	3,564	21.61	0.65	3.56	0.18	28.13	10.20	2.87	0.80
31	3,639	22.64	0.68	3.64	0.19	29.16	10.00	2.92	0.80

Max	4340								
Average	3841				0.20				0.91
Sum Total		803.65	24.11	119.06		1095.54		108.27	

Annual Summary - Ottawa Feedermain, Pumpage
Waterworks Name: Township of Russell Distribution

Year: 2025
DWS# 260092014

	Monthly Flow M ³	Litres of Ammonia	KG of Ammonia	M3 /1000	Mg/L	Litres of Cl2	KG of Cl2	Mg/L
January	124,354	618	18.54	124.354	0.15	883	87.49	0.70
February	110,357	594	17.83	110.357	0.16	840	78.77	0.71
March	119,412	685	20.55	119.412	0.17	886	91.86	0.77
April	116,763	639	19.17	116.763	0.16	861	86.63	0.74
May	127,321	672	20.16	127.321	0.16	1022	95.96	0.75
June	131,146	773	23.19	131.146	0.18	1031	103.91	0.79
July	135,804	1010	30.31	135.804	0.22	1353	130.81	0.96
August	146,220	1313	39.39	146.22	0.27	1826	174.28	1.19
September	125,487	1229	36.86	125.487	0.29	1696	170.93	1.36
October	123,117	1313	39.40	123.117	0.32	1774	177.10	1.44
November	113,793	1235	37.05	113.793	0.33	1495	160.23	1.41
December	119,063	804	24.11	119.063	0.20	1096	108.27	0.91
Total	1,492,837	10886	327	1493	0.22	14765	1466	0.98

Annual Summary - Reservoir In-House Testing

Year: 2025

Waterworks Name: Township of Russell Distribution

DWS# 260092014

Reservoir	Colour			pH		
	Max	Min	Average	Max	Min	Average
January	3	0	1	8.48	7.21	7.88
February	1	0	0	8.85	7.36	8.11
March	3	0	0	8.79	7.14	7.75
April	3	0	1	8.48	7.21	7.88
May	1	0	0	8.85	7.36	8.11
June	3	0	0	8.79	7.14	7.75
July	3	0	1	8.48	7.21	7.88
August	1	0	0	8.85	7.36	8.11
September	3	0	0	8.79	7.14	7.75
October	3	0	1	8.48	7.21	7.88
November	1	0	0	8.85	7.36	8.11
December	3	0	0	8.79	7.14	7.75
Total	3	0	0	8.85	7.14	7.91

Reservoir	Temperature (°C)			Turbidity		
	Max	Min	Average	Max	Min	Average
January	12.6	6.0	8.3	0.18	0.07	0.12
February	8.8	4.3	7.0	0.19	0.07	0.11
March	11.2	3.5	6.9	0.17	0.08	0.12
April	12.6	6.0	8.3	0.18	0.07	0.12
May	8.8	4.3	7.0	0.19	0.07	0.11
June	11.2	3.5	6.9	0.17	0.08	0.12
July	12.6	6.0	8.3	0.18	0.07	0.12
August	8.8	4.3	7.0	0.19	0.07	0.11
September	11.2	3.5	6.9	0.17	0.08	0.12
October	12.6	6.0	8.3	0.18	0.07	0.12
November	8.8	4.3	7.0	0.19	0.07	0.11
December	11.2	3.5	6.9	0.17	0.08	0.12
Total	12.6	3.5	7.4	0.19	0.07	0.11

Annual Summary - Embrun Distribution In-House Testing
Waterworks Name: Township of Russell Distribution

Year: 2025
DWS# 260092014

Embrun	Colour			pH		
	Max	Min	Average	Max	Min	Average
January	4	0	1	8.54	7.17	7.78
February	3	0	1	8.76	7.24	8.02
March	4	0	1	8.72	7.13	7.72
April	4	0	1	8.54	7.17	7.78
May	3	0	1	8.76	7.24	8.02
June	4	0	1	8.72	7.13	7.72
July	4	0	1	8.54	7.17	7.78
August	3	0	1	8.76	7.24	8.02
September	4	0	1	8.72	7.13	7.72
October	4	0	1	8.54	7.17	7.78
November	3	0	1	8.76	7.24	8.02
December	4	0	1	8.72	7.13	7.72
Total	4	0	1	8.76	7.13	7.84

Embrun	Temperature (°C)			Turbidity		
	Max	Min	Average	Max	Min	Average
January	9.7	5.5	8.1	0.35	0.09	0.17
February	13.1	5.1	7.4	0.25	0.08	0.14
March	10.8	4.8	6.3	0.54	0.09	0.18
April	9.7	5.5	8.1	0.35	0.09	0.17
May	13.1	5.1	7.4	0.25	0.08	0.14
June	10.8	4.8	6.3	0.54	0.09	0.18
July	9.7	5.5	8.1	0.35	0.09	0.17
August	13.1	5.1	7.4	0.25	0.08	0.14
September	10.8	4.8	6.3	0.54	0.09	0.18
October	9.7	5.5	8.1	0.35	0.09	0.17
November	13.1	5.1	7.4	0.25	0.08	0.14
December	10.8	4.8	6.3	0.54	0.09	0.18
Total	13.1	4.8	7.3	0.54	0.08	0.16

Annual Summary - Russell Distribution In-House Testing

Year: 2025

Waterworks Name: Township of Russell Distribution

DWS# 260092014

	Colour			pH		
Russell	Max	Min	Average	Max	Min	Average
January	2	0	0	8.35	7.30	7.81
February	4	0	0	8.60	7.37	8.02
March	4	0	1	8.71	7.01	7.70
April	2	0	0	8.35	7.30	7.81
May	4	0	0	8.60	7.37	8.02
June	4	0	1	8.71	7.01	7.70
July	2	0	0	8.35	7.30	7.81
August	4	0	0	8.60	7.37	8.02
September	4	0	1	8.71	7.01	7.70
October	4	0	0	8.35	7.30	7.81
November	4	0	0	8.60	7.37	8.02
December	4	0	1	8.71	7.01	7.70
Total	4	0	0	8.71	7.01	7.85

	Temperature (°C)			Turbidity		
Russell	Max	Min	Average	Max	Min	Average
January	12.3	5.1	8.3	0.26	0.09	0.15
February	11.0	2.9	6.9	0.25	0.08	0.15
March	10.1	4.1	5.9	0.43	0.10	0.18
April	12.3	5.1	8.3	0.26	0.09	0.15
May	11.0	2.9	6.9	0.25	0.08	0.15
June	10.1	4.1	5.9	0.43	0.10	0.18
July	12.3	5.1	8.3	0.26	0.09	0.15
August	11.0	2.9	6.9	0.25	0.08	0.15
September	10.1	4.1	5.9	0.43	0.10	0.18
October	12.3	5.1	8.3	0.26	0.09	0.15
November	11.0	2.9	6.9	0.25	0.08	0.15
December	10.1	4.1	5.9	0.43	0.10	0.18
Total	12.3	2.9	7.04	0.4	0.08	0.16

Annual Summary - Marionville Distribution In-House Testing
Waterworks Name: Township of Russell Distribution

Year: 2025
DWS# 260092014

Marionville	Colour			pH		
	Max	Min	Average	Max	Min	Average
January	3	0	1	8.39	7.37	7.84
February	3	0	0	8.49	7.33	7.99
March	4	0	1	8.55	7.14	7.71
April	3	0	1	8.39	7.37	7.84
May	3	0	0	8.49	7.33	7.99
June	4	0	1	8.55	7.14	7.71
July	3	0	1	8.39	7.37	7.84
August	3	0	0	8.49	7.33	7.99
September	4	0	1	8.55	7.14	7.71
October	3	0	1	8.39	7.37	7.84
November	3	0	0	8.49	7.33	7.99
December	4	0	1	8.55	7.14	7.71
Total	4	0	1	8.55	7.14	7.85

Marionville	Temperature (°C)			Turbidity		
	Max	Min	Average	Max	Min	Average
January	8.9	1.8	6.9	0.45	0.12	0.24
February	6.9	1.1	4.9	0.47	0.09	0.20
March	6.9	1.4	5.2	0.46	0.12	0.23
April	8.9	1.8	6.9	0.45	0.12	0.24
May	6.9	1.1	4.9	0.47	0.09	0.20
June	6.9	1.4	5.2	0.46	0.12	0.23
July	8.9	1.8	6.9	0.45	0.12	0.24
August	6.9	1.1	4.9	0.47	0.09	0.20
September	6.9	1.4	5.2	0.46	0.12	0.23
October	8.9	1.8	6.9	0.45	0.12	0.24
November	6.9	1.1	4.9	0.47	0.09	0.20
December	6.9	1.4	5.2	0.46	0.12	0.23
Total	8.9	1.1	5.7	0.47	0.09	0.22

OPTIONAL ANNUAL REPORT

Drinking-Water System Number:	W260092014
Drinking-Water System Name:	Township of Russell Distribution
Drinking-Water System Owner:	Township of Russell
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1 to December 31, 2025

<u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u> Does your Drinking-Water System serve more than 10,000 people? Yes ☒ No ☐ Is your annual report available to the public at no charge on a web site on the Internet? Yes ☒ No ☐ www.russell.ca Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection. Township of Russell Public Utilities 851 Route 400 and 717 Notre-Dame St. Embrun ON K0A 1W1	<u>Complete for all other Categories.</u> Number of Designated Facilities served: n/a Did you provide a copy of your annual report to all Designated Facilities you serve? Yes ☐ No ☐ n/a Number of Interested Authorities you report to: n/a Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes ☐ No ☐ n/a
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Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
n/a	

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

Yes ☐ No ☐ n/a

Indicate how you notified system users that your annual report is available, and is free of charge.

- ☒ Public access/notice via the web
☐ Public access/notice via Government Office
☐ Public access/notice via a newspaper
☐ Public access/notice via Public Request
☐ Public access/notice via a Public Library
☐ Public access/notice via other method _____

Describe your Drinking-Water System

Owner and Operating Authority

The Township of Russell is the Owner and Operating Authority of a drinking Water System that includes:

- Four storage tanks (three elevated towers and one above ground reservoir);
- A distribution network and its associated appurtenances.

Water Source

Treated water is supplied by the City of Ottawa through a connection to its distribution system from Mitch Owens Road and Bank Street to Embrun Reservoir.

Existing Water Works - Distribution System

The water system for Township of Russell is currently a Class 2 distribution system and serves approximately 16,484 people.

Treated water is pumped from the City of Ottawa through a 450 mm feeder main to the Embrun Reservoir where chlorine and ammonia are added. From there it is pumped to the Embrun Tower and to the Russell Water tower and then to the Marionville booster pumping station and then pumped to the Marionville tower.

The distribution system consists of PVC and Polyethylene pipes ranging from 19 mm (5/8 inch) service connections to a 406 mm (16 inch) piping. Piping in the local distribution networks in the communities of Embrun, Russell and Marionville consist largely of 150 mm, 200 mm, 250 mm, 300 mm and 350 mm PVC pipes. The municipal distribution system also contains fire hydrants, standard service connections, gate valves, valve chambers, isolation and interconnection valves, blow-off points, drain valve chambers, and air release chambers.

Facilities:

- 450mm diameter connection to Russell Feedermain (from City of Ottawa) at Embrun Reservoir site;
- connection to Russell watermain (toward community of Russell) at Embrun Reservoir site;
- connection to Marionville watermain (replacement of modulating control valve by a pipe section, between Marionville Booster Station and Marionville, on MacDonald Road).
- Embrun Reservoir (re-chlorination facility)

List all water treatment chemicals used over this reporting period

Sodium hypochlorite, Ammonium Sulfate

Were any significant expenses incurred to?

- ☒ Install required equipment
- ☒ Repair required equipment
- ☒ Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred

CAPITAL EXPENDITURES

Office Renovations - \$75,000

Water Tower Cleaning/Painting - \$400,000

Water Fill Station - \$100,000

Water Reservoir Upgrade –\$296,000

Continued (from the previous year. The project is identified as a 2021 project but some work (actual design started in 2025.)

Notre-Dame Rehabilitation - \$2,500,000.

This is the total amount for the rehabilitation and replacement of storm and watermain in the Notre-Dame corridor.

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	AWQI#	Result	Unit of Measure	Corrective Action	Corrective Action Date
16 April, 2025	Nitrosodimethylamine (NDMA)	167866	0.0096	µg/L	Flush and resample. Result 0.0063 µg/L.	25 April 2025

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)

Distribution					
Embrun	155	0	0	155	0 – 170
Marionville	104	0	0	104	0 – 7
Russell	156	0	0	156	0 – 480

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

	Number of Grab Samples	Range of Results (min #)-(max #)
Turbidity	1823	0.07 – 0.54
Chlorine - Combined	2141	0.49 – 2.68
Fluoride (If the DWS provides fluoridation)	n/a	

***NOTE:** For continuous monitors use 8760 as the number of samples.*

***NOTE:** Record the unit of measure if it is **not** milligrams per litre.*

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument. Summary of lead testing under Schedule 15.1 during this reporting period

(applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

Date of legal instrument issued	Parameter	Date Sampled	Result mg/L	pH
	Alkalinity			
	Embrun	January 13, 2025	33	7.61
	Embrun	January 13, 2025	34	7.56
	Russell	January 13, 2025	34	7.38
	Marionville	January 13, 2025	33	7.84
	Lead			
	Embrun	January 15, 2024	<0.001	8.89
	Embrun	January 15, 2024	<0.001	8.92
	Russell	January 15, 2024	<0.001	8.90
	Marionville	January 15, 2024	<0.001	8.92
	Alkalinity			
	Embrun	July 7, 2025	29	8.38
	Embrun	July 7, 2025	31	8.51
	Russell	July 7, 2025	32	8.53
	Marionville	July 7, 2025	32	8.56

	Lead			
	Embrun	July 7, 2025	<0.001	8.38
	Embrun	July 7, 2025	<0.001	8.51
	Russell	July 7, 2025	<0.001	8.53
	Marionville	July 7, 2025	<0.001	8.56

Summary of Inorganic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Aluminum(Al)	July 24, 2017	0.03	mg/L	NO
Antimony(Sb)	July 4, 2017	<0.0005	mg/L	NO
Arsenic(As)	July 4, 2017	<0.001	mg/L	NO
Barium(Ba)	July 4, 2017	0.01	mg/L	NO
Boron(B)	July 4, 2017	<0.01	mg/L	NO
Cadmium(Cd)	July 4, 2017	<0.0001	mg/L	NO
Calcium(Ca)	July 24, 2017	13	mg/L	NO
Chromium(Cr)	July 4, 2017	<0.001	mg/L	NO
Copper(Cu)	July 24, 2017	<0.001	mg/L	NO
Iron(Fe)	July 24, 2017	<0.03	mg/L	NO
Magnesium	July 24, 2017	3	mg/L	NO
Manganese	July 24, 2017	<0.01	mg/L	NO
Mercury(Hg)	July 4, 2017	<0.0001	mg/L	NO
Selenium(Se)	July 4, 2017	<0.001	mg/L	NO
Sodium(Na)	July 8, 2024	19	mg/L	NO
Uranium(U)	July 4, 2017	<0.001	mg/L	NO
Zinc(Zn)	July 24, 2017	<0.01	mg/L	NO
Fluoride(F)	July 24, 2017	0.57	mg/L	NO
Nitrite : Embrun Marionville Russell	Oct 14, 2025	<0.10	mg/L	NO
	Oct 14, 2025	0.10	mg/L	NO
	Oct 14, 2025	<0.10	mg/L	NO
Nitrate: Embrun Marionville Russell	Oct 14, 2025	0.29	mg/L	NO
	Oct 14, 2025	0.39	mg/L	NO
	Oct 14, 2025	0.20	mg/L	NO

For more recent results City of Ottawa test results can be found here:

<https://ottawa.ca/en/residents/water-and-environment/drinking-water/drinking-water-quality-annual-reports-and-test-results>

Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
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Conductivity	July 24, 2017	187	µS/cm	N/A
Total Dissolved Solids (TDS)	July 24, 2017	120	mg/L	N/A
Hardness as CaCO ₃	July 24, 2017	45	mg/L	NO
Total Kjeldahl Nitrogen	July 24, 2017	0.4	mg/L	NO
Alachlor	July 4, 2017	<0.5	µg/L	NO
Aldrin	July 4, 2017	<0.006	µg/L	NO
Atrazine + N-dealkylated metabolites	July 4, 2017	<0.2	µg/L	NO
Azinphos-methyl	July 4, 2017	<2.0	µg/L	NO
Bendiocarb	July 4, 2017	<2.0	µg/L	NO
Benzene	July 4, 2017	<0.5	µg/L	NO
Benzo(a)pyrene	July 4, 2017	<0.01	µg/L	NO
Bromoxynil	July 4, 2017	<0.5	µg/L	NO
Carbaryl	July 4, 2017	<5	µg/L	NO
Carbofuran	July 4, 2017	<5	µg/L	NO
Carbon Tetrachloride	July 4, 2017	<0.2	µg/L	NO
Chlordane (a)	July 4, 2017	<0.006	µg/L	NO
Chlordane (g)	July 4, 2017	<0.006	µg/L	NO
Chlordane (oxy)	July 4, 2017	<0.006	µg/L	NO
Chlorpyrifos	July 4, 2017	<1.0	µg/L	NO
De-Ethylated atrazine	July 4, 2017	<1.0	µg/L	NO
Diazinon	July 4, 2017	<1.0	µg/L	NO
Dieldrin	July 4, 2017	<0.006	µg/L	NO
Dicamba	July 4, 2017	<1.0	µg/L	NO
1,2-Dichlorobenzene	July 4, 2017	<0.4	µg/L	NO
1,4-Dichlorobenzene	July 4, 2017	<0.4	µg/L	NO
Dichlorodiphenyltrichloroethane (DDT) + metabolites	July 4, 2017	<0.024	µg/L	NO
1,2-Dichloroethane	July 4, 2017	<0.2	µg/L	NO
1,1-Dichloroethylene (vinylidene chloride)	July 4, 2017	<0.5	µg/L	NO
Dichloromethane	July 4, 2017	<4.0	µg/L	NO
2-4 Dichlorophenol	July 4, 2017	<0.5	µg/L	NO
2,4-Dichlorophenoxy acetic acid (2,4-D)	July 4, 2017	<1.0	µg/L	NO
Diclofop-methyl	July 4, 2017	<0.9	µg/L	NO
Dimethoate	July 4, 2017	<2.5	µg/L	NO
Diquat	July 4, 2017	<5	µg/L	NO
Diuron	July 4, 2017	<10	µg/L	NO
Glyphosate	July 4, 2017	<10	µg/L	NO
Haloacetic Acids (Running Average)	Oct 14, 2025	40.85	µg/L	NO
Malathion	July 4, 2017	<5.0	µg/L	NO
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	July 4, 2017	<10.0	µg/L	NO
Metolachlor	July 4, 2017	<1.0	µg/L	NO
Metribuzin	July 4, 2017	<5.0	µg/L	NO
Monochlorobenzene	July 4, 2017	<0.2	µg/L	NO

Nitrosodimethylamine (NDMA)	Oct 14, 2025	0.0060	µg/L	No
Paraquat	July 4, 2017	<1	µg/L	NO
Pentachlorophenol	July 4, 2017	<0.5	µg/L	NO
Phorate	July 4, 2017	<0.5	µg/L	NO
Picloram	July 4, 2017	<5.0	µg/L	NO
Polychlorinated Biphenyls(PCB)	July 4, 2017	<0.1	µg/L	NO
Prometryne	July 4, 2017	<0.25	µg/L	NO
Simazine	July 4, 2017	<1.0	µg/L	NO
SO ₄	July 24, 2017	33	mg/L	NO
THM (NOTE: show latest annual average)	Oct 14, 2025	48.98	µg/L	NO
Embrun	Oct 14, 2025	48.53	µg/L	NO
Marionville	Oct 14, 2025	48.68	µg/L	NO
Russell	Oct 14, 2025	48.68	µg/L	NO
Terbufos	July 4, 2017	<0.4	µg/L	NO
Tetrachloroethylene	July 4, 2017	<0.3	µg/L	NO
2,3,4,6-Tetrachlorophenol	July 4, 2017	<0.5	µg/L	NO
Triallate	July 4, 2017	<1	µg/L	NO
Trichloroethylene	July 4, 2017	0.3	µg/L	NO
2,4,6-Trichlorophenol	July 4, 2017	<0.5	µg/L	NO
Trifluralin	July 4, 2017	<1.0	µg/L	NO
Vinyl Chloride	July 4, 2017	<0.2	µg/L	NO

For more recent results City of Ottawa test results can be found here:

<https://ottawa.ca/en/residents/water-and-environment/drinking-water/drinking-water-quality-annual-reports-and-test-results>

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	Date of Sample
Chloramine (combined)	Max Value: 2.68	mg/L	Jan - Dec
Nitrosodimethylamine (NDMA)	0.0096	µg/L	16 April 2025
Nitrosodimethylamine (NDMA)	0.0063	µg/L	25 April 2025
Nitrosodimethylamine (NDMA)	0.006	µg/L	14 Oct, 2025

Total Township					
WATER FLOWS AND CONSUMPTION					
2025					
DATE	FLOW (m³)	DAILY AVERAGE (m³)	POPULATION	DAYS	AVERAGE PERSON/DAY (m³)
JAN	126,038	4066	20,872	31	0.195
FEB	111,734	3991	20,872	28	0.191
MAR	120,769	3896	20,872	31	0.187
APR	118,254	3942	20,872	30	0.189
MAY	128,967	4160	20,872	31	0.199
JUNE	133,714	4457	20,872	30	0.214
JULY	141,565	4567	20,872	31	0.219
AUG	152,293	4913	20,872	31	0.235
SEP	130,654	4355	20,872	30	0.209
OCT	127,609	4116	20,872	31	0.197
NOV	121,295	4043	20,872	30	0.194
DEC	125,104	4036	20,872	31	0.193
TOTAL	1,537,996	4,228	20,872	365	0.202
2024	1,613,301	4,433	19,881	366	0.222
2023	1,498,785	4,103	19,050	365	0.215
2022	1,284,192	3,543	18,434	365	0.191
2021	1,282,600	3,531	17,453	365	0.201
2020	1,205,520	3,634	16,484	366	0.200
2019	1,150,503	3,160	15,456	365	0.204
2018	1,030,259	2,833	14,366	365	0.196
2017	922,696	2,546	13,656	365	0.185
2016	972,983	2,675	13,131	366	0.201
2015	1,003,637	2,758	12,620	365	0.216
2014	917,449	2,505	12,181	365	0.206
2013	889,653	2,437	11,768	365	0.207
2012	921,351	2,512	11,451	366	0.225
2011	917,334	2,527	11,133	365	0.225

TOWNSHIP OF RUSSELL PUBLIC UTILITIES



EMBRUN WATER SYSTEM

Waterworks #220004297

2025 ANNUAL OPERATIONS REPORT

Embrun
Water Capacity Report
January 1, 2026

Water Capacity	
Residential Units	3165 x 3 = 9495
Apartment Units	822 x 2 = 1644
Commercial Units	206 x 1 = 206
Retirement Home w/ kitchen	69 x 1 = 69
Retirement Home no kitchen	126 x 1 = 126
In-Law Suites	1 x 1 = 1
Schools	3 = 98
Total Population Served	11639

Meter Reading from school, divided by 200 school days, divided daily average

NOTE: AVERAGE PERSONS PER HOUSEHOLD = 3.0 (STATISTICS CANADA 2006 CENSUS)
SCHOOLS POPULATION BASIS: @ 40% RURAL ~ 3 (8 HR SCHOOL DAY)
@ 60% URBAN ~ 3 (8 HR SCHOOL DAY)
considering actual water meter readings

EMBRUN WATER FLOWS AND CONSUMPTION 2025					
DATE	FLOW (m³)	DAILY AVERAGE (m³)	POPULATION	DAYS	AVERAGE PERSON/DAY (m³)
JAN	75,479	2435	11,639	31	0.209
FEB	65,116	2326	11,639	28	0.200
MAR	68,678	2215	11,639	31	0.190
APR	66,813	2227	11,639	30	0.191
MAY	72,575	2341	11,639	31	0.201
JUNE	74,509	2484	11,639	30	0.213
JULY	78,243	2524	11,639	31	0.217
AUG	82,756	2670	11,639	31	0.229
SEP	68,837	2295	11,639	30	0.197
OCT	66,704	2152	11,639	31	0.185
NOV	69,932	2331	11,639	30	0.200
DEC	73,108	2358	11,639	31	0.203
TOTAL	862,750	2,364	11,639	365	0.203
2024	942,039	2,574	11,003		0.234
2023	902,632	2,473	10,491		0.236
2022	798,530	2188	10,136		0.216
2021	776,036	2126	9,583		0.222
2020	717,395	1960	9,068		0.216
2019	689,596	1889	8,517		0.222
2018	628,595	1722	8,034		0.214
2017	566,781	1553	7,530		0.206
2016	610,974	1669	7,227		0.231
2015	667,025	1827	6,916		0.264
2014	590,648	1618	6,717		0.241
2013	555,548	1522	6,629		0.23
2012	574,605	1570	6,590		0.238
2011	576,853	1587	6,548		0.241
2010	589,818	1615	6,490		0.249
2009	639,407	1753	6,589		0.266
2008	653,995	1787	6,423		0.278
2007	650,921	1782	6,155		0.290
2006	611,150	1673	5,861		0.285
2005	607,248	1663	5,497		0.303

ANNUAL SUMMARY - DISTRIBUTION SYSTEM BACTERIOLOGICAL DATA

WATER WORKS NAME:

EMBRUN

YEAR:

2025

SERVICED POPULATION:

LABORATORIES WHICH PERFORMED ANALYSES:

ACCUTEST LABORATORIES

CFU/100 mL

MONTH	TOTAL COLIFORM				E. COLI.			HPC		
	NO. OF SAMPLES COLLECTED	NO. OF SAMPLES SAFE	NO. OF SAMPLES UNSAFE	NO. OF SAMPLES DETERIORATING	NO. OF SAMPLES COLLECTED	NO. OF SAMPLES SAFE	NO. OF SAMPLES UNSAFE	NO. OF SAMPLES COLLECTED	NO. OF SAMPLES SAFE	NO. OF SAMPLES DETERIORATING
JAN	12	12	0	0	12	12	0	12	12	5
FEB	12	12	0	0	12	12	0	12	12	5
MAR	15	15	0	0	15	15	0	15	15	4
APR	12	12	0	0	12	12	0	12	12	5
MAY	12	12	0	0	12	12	0	12	12	7
JUN	15	15	0	0	15	15	0	15	15	0
JUL	12	12	0	0	12	12	0	12	12	5
AUG	12	12	0	0	12	12	0	12	12	5
SEP	15	15	0	0	15	15	0	15	15	5
OCT	11	11	0	0	11	11	0	11	11	4
NOV	12	12	0	0	12	12	0	12	12	3
DEC	15	15	0	0	15	15	0	15	15	9
TOTAL	155	155	0	0	155	155	0	155	155	57

CFU = colony forming units

Monthly Summary - Embrun Distribution Flows

Year: 2025

Waterworks Name: Township of Russell Distribution

DWS# 260092014

	Daily Flows					
	Jan	Feb	Mar	Apr	May	Jun
1		2159	2036	2138	2281	1998
2	2269	2551	2388	2193	2043	2368
3	1943	2559	2775	2062	2103	2418
4	2746	2369	2160	2233	2391	2529
5	2367	2072	2236	2036	2798	2624
6	2493	2390	2359	2215	2229	2522
7	2453	2292	2191	2553	2232	2468
8	2222	2118	2277	2053	2555	2682
9	2477	3071	2232	2203	1869	3181
10	2476	2052	2266	2107	1945	1800
11	2652	2259	2023	2006	2657	2517
12	2413	2421	2127	2497	2782	2430
13	2440	2107	2100	2379	2445	2138
14	2322	2585	1923	2363	2667	2987
15	2256	2128	2778	2118	2310	2774
16	2499	2027	2448	2124	2439	2570
17	2344	2876	1630	2024	2265	2574
18	2258	1882	2110	2638	2294	2729
19	2580	2724	2224	2559	2130	2351
20	2514	1925	2135	2167	2435	2565
21	2356	2370	2111	2664	2403	2528
22	2551	1931	2031	1454	2067	2351
23	2310	2407	2253	2403	2266	2711
24	2191	2680	2573	1927	2241	2768
25	2540	2402	2168	2010	2129	2526
26	2678	2459	1945	2572	2635	2463
27	2511	2131	2199	2257	2549	2167
28	2559	2169	2147	2370	2338	2259
29	2271		2393	2571	2551	2193
30	2453		2636	1917	2341	2318
31	2376		1804		2185	
Max	2959	3071	2778	2664	2798	3181
Average	2435	2326	2215	2227	2341	2484

Monthly Summary - Embrun Distribution Flows

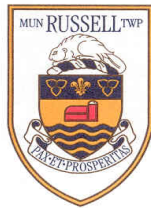
Year: 2025

Waterworks Name: Township of Russell Distribution

DWS# 260092014

	Daily Flows					
	Jul	Aug	Sep	Oct	Nov	Dec
1	2530	2688	2263	2362	2049	2622
2	2298	3975	2651	2319	2670	2298
3	2320	2378	2693	2088	2632	2321
4	2272	2642	2048	2610	2120	2316
5	2073	2334	2177	2697	2328	2267
6	2439	2827	2289	1718	2178	2528
7	2271	3002	2272	2241	2340	2279
8	2119	3010	2253	2524	2345	2428
9	2357	3234	2370	1532	1974	2250
10	2502	2726	2315	2168	2662	2130
11	2575	3361	2235	1945	2333	2434
12	2880	3094	2169	2237	2232	2246
13	2565	3231	3186	2171	2333	2298
14	2299	2333	2385	2381	2291	2248
15	2730	2735	2072	2049	2422	2551
16	2879	2662	2606	2128	1954	2296
17	2637	3177	2161	2097	2626	2281
18	2051	1881	2382	2032	2392	2373
19	2602	2487	2626	2273	2217	2257
20	2568	2490	1592	2350	2434	2456
21	2383	2270	2690	1922	2209	2423
22	2360	2883	2241	2053	2903	2694
23	2507	2188	2213	2117	2023	2320
24	2872	2819	2378	1975	2687	2336
25	2279	2393	1759	2264	2228	2355
26	2655	2718	1923	2111	2266	2261
27	2695	2303	2138	2243	2320	2580
28	2733	2366	2238	2055	2185	2221
29	3028	2164	2345	2054	2032	2487
30	3092	2132	2167	1873	2547	2276
31	2672	2253		2115		2276
Max	3092	3975	3186	2697	2903	2694
Average	2524	2670	2295	2152	2331	2358

TOWNSHIP OF RUSSELL PUBLIC UTILITIES



RUSSELL WATER SYSTEM

Waterworks #220004297

2025

ANNUAL OPERATIONS REPORT

Russell
Water Capacity Report
January 1, 2026

Water Capacity	
Residential Units	2481 x 3 = 7443
Apartment Units	416 x 2 = 832
Commercial Units	60 x 1 = 60
Retirement Home w/ kitchen	30 x 1 = 30
Retirement Home no kitchen	102 x 1 = 102
In-Law Suites	1 x 1 = 1
Schools	5 = 302
Total Population Served	8770

Meter Reading from school, divided by 200 school days, divided daily average

NOTE: AVERAGE PERSONS PER HOUSEHOLD = 3.0 (STATISTICS CANADA 2006 CENSUS)
SCHOOLS POPULATION BASIS: @ 40% RURAL ~ 3 (8 HR SCHOOL DAY)
@ 60% URBAN ~ 3 (8 HR SCHOOL DAY)
considering actual water meter readings

RUSSELL
WATER FLOWS AND CONSUMPTION
2025

DATE	FLOW (m³)	DAILY AVERAGE (m³)	POPULATION	DAYS	AVERAGE PERSON/DAY (m³)
JAN	48,365	1560	8,770	31	0.178
FEB	44,575	1592	8,770	28	0.182
MAR	49,871	1609	8,770	31	0.183
APR	49,178	1639	8,770	30	0.187
MAY	54,035	1743	8,770	31	0.199
JUNE	56,277	1876	8,770	30	0.214
JULY	57,996	1871	8,770	31	0.213
AUG	63,796	2058	8,770	31	0.235
SEP	56,411	1880	8,770	30	0.214
OCT	56,242	1814	8,770	31	0.207
NOV	47,824	1594	8,770	30	0.182
DEC	49,466	1596	8,770	31	0.182
TOTAL	634,036	1,737	8,770	365	0.198
2024	635,253	1,736	8,454		0.205
2023	562,418	1,541	8,169		0.189
2022	453,917	1,244	7,922		0.157
2021	471,469	1,292	7,506		0.172
2020	460,490	1,258	7,052		0.178
2019	436,416	1,196	6,578		0.182
2018	370,212	1,014	5,971		0.170
2017	326,029	893	5,755		0.155
2016	331,034	904	5,546		0.163
2015	309,122	847	5,343		0.159
2014	300,313	823	5,102		0.161
2013	306,600	840	4,776		0.176
2012	319,579	873	4,501		0.194
2011	310,489	849	4,242		0.200
2010	332,343	910	3,898		0.234
2009	370,257	1015	3,910		0.260
2008	387,876	1060	3,718		0.285
2007	392,273	1074	3,642		0.295
2006	384,006	1051	3,636		0.289
2005	403,583	1105	3,621		0.305

ANNUAL SUMMARY - DISTRIBUTION SYSTEM BACTERIOLOGICAL DATA

WATER WORKS NAME:

RUSSELL

YEAR:

2025

SERVICED POPULATION:

LABORATORIES WHICH PERFORMED ANALYSES:

ACCUTEST LABORATORIES

MONTH	TOTAL COLIFORM				E. COLI			HPC		
	NO. OF SAMPLES COLLECTED	NO. OF SAMPLES SAFE	NO. OF SAMPLES UNSAFE	NO. OF SAMPLES DETERIORATING	NO. OF SAMPLES COLLECTED	NO. OF SAMPLES SAFE	NO. OF SAMPLES UNSAFE	NO. OF SAMPLES COLLECTED	NO. OF SAMPLES SAFE	NO. OF SAMPLES DETERIORATING
JAN	12	12	0	0	12	12	0	12	12	2
FEB	12	12	0	0	12	12	0	12	12	4
MAR	15	15	0	0	15	15	0	15	15	5
APR	12	12	0	0	12	12	0	12	12	2
MAY	12	12	0	0	12	12	0	12	12	3
JUN	15	15	0	0	15	15	0	15	15	2
JUL	12	12	0	0	12	12	0	12	12	3
AUG	12	12	0	0	12	12	0	12	12	2
SEP	15	15	0	0	15	15	0	15	15	0
OCT	12	12	0	0	12	12	0	12	12	5
NOV	12	12	0	0	12	12	0	12	12	2
DEC	15	15	0	0	15	15	0	15	15	1
TOTAL	156	156	0	0	156	156	0	156	156	31

Monthly Summary - Russell Distribution Flows

Year: 2025

Waterworks Name: Township of Russell Distribution

DWS# 260092014

	Daily Flows					
	Jan	Feb	Mar	Apr	May	Jun
1		1292	1489	1158	1534	1222
2	2269	2153	1423	1582	1576	1752
3	1943	1146	1888	1568	1501	1639
4	2746	1484	1541	1663	1487	1744
5	2367	1600	1162	1026	1922	2207
6	2493	1406	1618	1876	1657	1602
7	2453	1629	1562	1569	1562	1547
8	2222	1734	1390	1462	1669	1951
9	2477	1524	1570	1581	1394	2496
10	2476	1495	1369	1515	1799	1320
11	2652	1590	1357	1504	1546	1678
12	2413	1303	1615	1456	2052	1619
13	2440	1311	1654	1983	1925	1889
14	2322	1686	971	1680	1842	1907
15	2256	1598	1697	1485	1846	2172
16	2499	1202	2092	1558	1704	1944
17	2344	1849	913	1575	1951	1910
18	2258	1393	1791	1600	1354	1909
19	2580	1633	1683	1702	1768	1924
20	2514	1508	1413	1466	1390	1856
21	2356	1534	1561	2316	1765	1816
22	2551	1501	1644	782	1641	1766
23	2310	1178	1593	1667	1397	1854
24	2191	1959	1634	1608	1510	1954
25	2540	1510	1514	1532	1382	2038
26	2678	1514	1536	1570	1954	1354
27	2511	1350	1516	1822	1718	1510
28	2559	1450	1489	1377	2042	1729
29	2271		1703	1703	1681	1235
30	2453		1559	1529	1419	1805
31	2376		1704		1690	
Max	1805	2153	2092	2316	2052	2496
Average	1489	1519	1537	1564	1667	1778

Monthly Summary - Russell Distribution Flows

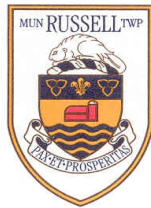
Year: 2025

Waterworks Name: Township of Russell Distribution

DWS# 260092014

	Daily Flows					
	Jul	Aug	Sep	Oct	Nov	Dec
1	1816	1824	1368	1776	1294	1651
2	1256	2355	1951	1772	1941	1412
3	1763	1860	1809	1665	1793	1553
4	1529	1871	1515	1876	1132	1507
5	1719	1910	1777	1906	2032	1382
6	1258	1879	1444	1466	824	1711
7	1534	1967	1982	1894	1630	1513
8	1814	2006	1356	1676	1462	1599
9	1282	2183	1716	1343	1178	1397
10	1654	2044	1592	1552	1849	1295
11	1645	2541	1756	1454	1531	1701
12	1711	1981	1833	1351	1239	1335
13	1671	1921	1835	1997	1428	1437
14	1670	1990	1744	1564	1358	1411
15	1898	1803	1537	1665	1599	1739
16	1935	2044	1891	2955	1110	1429
17	1861	1896	1758	2728	1790	1482
18	1691	1564	1864	1055	1665	1607
19	1476	1819	2319	1737	1306	1415
20	1757	1924	1199	1620	1594	1479
21	1678	1323	1912	1578	1289	1762
22	1493	1857	1705	1531	1809	1580
23	1752	1728	1799	1518	1316	1443
24	2032	2015	1815	1512	1747	1319
25	1545	1576	1299	1550	1232	1655
26	1596	1928	1720	1475	1412	1320
27	1777	1811	1414	1648	1549	1828
28	1914	1641	1746	1416	1239	1483
29	1976	1546	1929	1533	1148	1695
30	2084	1687	1420	1526	1789	1378
31	1883	1561		1240		1418
Max	2084	2541	2319	2955	2032	1828
Average	1699	1873	1700	1664	1476	1514

TOWNSHIP OF RUSSELL PUBLIC UTILITIES



MARIONVILLE WATER SYSTEM

Waterworks #220004297

2025

ANNUAL OPERATIONS REPORT

Marionville
Water Capacity Report
January 1, 2026

Water Capacity	
Residential Units	140 x 3 = 420
Apartment Units	3 x 2 = 6
Commercial Units	1 x 1 = 1
Retirement Home w/ kitchen	22 x 1 = 22
Retirement Home no kitchen	x 1 = 0
In-Law Suites	x 1 = 0
Schools	1 = 14
Total Population Serviced	463

Meter Reading from school, divided by 200 school days, divided daily average

NOTE: AVERAGE PERSONS PER HOUSEHOLD = 3.0 (STATISTICS CANADA 2006 CENSUS)
SCHOOLS POPULATION BASIS: @ 40% RURAL ~ 3 (8 HR SCHOOL DAY)
@ 60% URBAN ~ 3 (8 HR SCHOOL DAY)
considering actual water meter readings

MARIONVILLE
WATER FLOWS AND CONSUMPTION
2025

DATE	FLOW (m³)	DAILY AVERAGE (m³)	POPULATION	DAYS	AVERAGE PERSON/DAY (m³)
JAN	2,194	71	463	31	0.153
FEB	2,043	73	463	28	0.158
MAR	2,220	72	463	31	0.155
APR	2,263	75	463	30	0.163
MAY	2,357	76	463	31	0.164
JUNE	2,928	98	463	30	0.211
JULY	5,326	172	463	31	0.371
AUG	5,741	185	463	31	0.400
SEP	5,406	180	463	30	0.389
OCT	4,663	150	463	31	0.325
NOV	3,539	118	463	30	0.255
DEC	2,530	82	463	31	0.176
TOTAL	41,210	113	463	365	0.244
2024	36,009	98	424		0.232
2023	33,735	92	390		0.237
2022	31,745	87	376		0.231
2021	35,095	96	364		0.264
2020	27,635	76	364		0.207
2019	24,491	67	361		0.186
2018	31,452	86	361		0.239
2017	29,886	82	361		0.227
2016	30,975	85	358		0.236
2015	27,490	75	361		0.209
2014	26,488	73	362		0.200
2013	27,505	75	363		0.208
2012	27,167	74	360		0.206
2011	29,992	81	343		0.235
2010	54,031	147	341		0.431
2009	35,455	97	341		0.284
2008	40,520	111	341		0.325
2007	37,221	102	352		0.289
2006	34,084	94	349		0.270
2005	33,011	90	349		0.259

ANNUAL SUMMARY - DISTRIBUTION SYSTEM BACTERIOLOGICAL DATA

WATER WORKS NAME:

MARIONVILLE

YEAR:

2025

SERVICED POPULATION:

LABORATORIES WHICH PERFORMED ANALYSES:

ACCUTEST LABORATORIES

ct/100 mL

MONTH	TOTAL COLIFORM				E. COLI			HPC		
	NO. OF SAMPLES COLLECTED	NO. OF SAMPLES SAFE	NO. OF SAMPLES UNSAFE	NO. OF SAMPLES DETERIORATING	NO. OF SAMPLES COLLECTED	NO. OF SAMPLES SAFE	NO. OF SAMPLES UNSAFE	NO. OF SAMPLES COLLECTED	NO. OF SAMPLES SAFE	NO. OF SAMPLES DETERIORATING
JAN	8	8	0	0	8	8	0	8	8	3
FEB	8	8	0	0	8	8	0	8	8	0
MAR	10	10	0	0	10	10	0	10	10	2
APR	8	8	0	0	8	8	0	8	8	1
MAY	8	8	0	0	8	8	0	8	8	2
JUN	10	10	0	0	10	10	0	10	10	0
JUL	8	8	0	0	8	8	0	8	8	0
AUG	8	8	0	0	8	8	0	8	8	2
SEP	10	10	0	0	10	10	0	10	10	1
OCT	8	8	0	0	8	8	0	8	8	2
NOV	8	8	0	0	8	8	0	8	8	1
DEC	10	10	0	0	10	10	0	10	10	3
TOTAL	104	104	0	0	104	104	0	104	104	17

Monthly Summary - Marionville Distribution Flows
Waterworks Name: Township of Russell Distribution

Year: 2025
DWS# 260092014

	Daily Flows					
	Jan	Feb	Mar	Apr	May	Jun
1		40	45	0	86	96
2	2269	104	53	115	0	55
3	1943	106	105	82	118	48
4	2746	77	42	85	103	87
5	2367	58	64	93	98	94
6	2493	88	54	91	88	147
7	2453	64	79	13	0	22
8	2222	95	105	88	113	93
9	2477	136	64	82	88	220
10	2476	54	52	97	83	0
11	2652	70	49	0	0	95
12	2413	20	69	103	103	82
13	2440	67	76	86	90	78
14	2322	68	71	89	82	102
15	2256	76	88	0	104	133
16	2499	72	76	134	77	131
17	2344	99	0	78	87	113
18	2258	50	122	89	84	179
19	2580	88	89	86	101	156
20	2514	64	90	83	0	104
21	2356	69	100	53	94	79
22	2551	49	92	44	80	87
23	2310	55	35	93	103	81
24	2191	104	41	89	1	93
25	2540	80	90	107	101	116
26	2678	66	90	0	88	138
27	2511	50	100	101	91	45
28	2559	74	0	98	96	90
29	2271		97	103	20	81
30	2453		87	81	93	83
31	2376		95		85	
Max	110	136	122	134	118	220
Average	71	73	72	75	76	98

Monthly Summary - Marionville Distribution Flows
Waterworks Name: Township of Russell Distribution

Year: 2025
DWS# 260092014

	Daily Flows					
	Jul	Aug	Sep	Oct	Nov	Dec
1	89	96	298	317	242	112
2	119	342	239	166	98	127
3	116	1	94	70	186	95
4	77	261	139	351	33	95
5	111	218	121	272	135	105
6	105	193	354	41	92	66
7	195	214	257	120	103	109
8	349	203	93	134	118	87
9	92	225	92	118	83	121
10	185	233	352	102	111	86
11	174	221	131	330	128	81
12	140	207	193	136	101	87
13	94	216	2	189	89	89
14	165	190	226	111	93	88
15	276	187	176	94	108	81
16	195	191	376	353	94	25
17	187	203	203	155	107	65
18	87	83	136	43	114	93
19	122	160	161	134	98	83
20	148	92	97	142	127	79
21	261	151	350	112	363	0
22	114	157	126	110	178	82
23	160	165	135	104	17	79
24	208	174	162	104	114	68
25	93	247	95	132	99	78
26	323	180	89	126	95	84
27	145	141	268	119	150	77
28	274	126	114	113	79	71
29	93	440	232	124	80	73
30	453	108	95	114	104	74
31	176	116		127		70
Max	453	440	376	353	363	127
Average	172	185	180	150	118	82

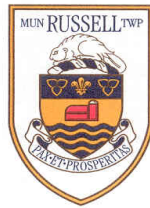
TOWNSHIP OF RUSSELL PUBLIC UTILITIES



2025

SANITARY SYSTEMS ANNUAL OPERATIONS REPORT

TOWNSHIP OF RUSSELL PUBLIC UTILITIES



EMBRUN SANITARY SEWER SYSTEM

WORKS #120002004

2025 ANNUAL OPERATIONS REPORT

Embrun
Sanitary Capacity Report
January 1, 2026

Water Capacity	
Residential Units	3066 x 3 = 9198
Apartment Units	818 x 2 = 1636
Commercial Units	203 x 1 = 203
Retirement Home w/ kitchen	69 x 1 = 69
Retirement Home no kitchen	126 x 1 = 126
In-Law Suites	1 x 1 = 1
Schools	3 = 98
Total Population Served	11331

Meter Reading from school, divided by 200 school days, divided daily average

NOTE: AVERAGE PERSONS PER HOUSEHOLD = 3.0 (STATISTICS CANADA 2006 CENSUS)
SCHOOLS POPULATION BASIS: @ 40% RURAL ~ 3 (8 HR SCHOOL DAY)
@ 60% URBAN ~ 3 (8 HR SCHOOL DAY)

Calculated per MOE Procedure D-5-1

TOWNSHIP OF RUSSELL - EMBRUN WASTEWATER SYSTEM UNCOMMITTED HYDRAULIC RESERVE CAPACITY

As of December 31, 2025

Average Daily Flow		Serviced Population	Per Capita Flow	Source:
2025	2,159 m ³ /d	2025 11,331	2025 0.191 m ³ /cap/d	Provided by Township
2024	2,242 m ³ /d	2024 10,686	2024 0.210 m ³ /cap/d	Provided by Township
2023	2,217 m ³ /d	2023 10,157	2023 0.218 m ³ /cap/d	Provided by Township
2022	2,038 m ³ /d	2022 9,814	2022 0.208 m ³ /cap/d	Provided by Township
2021	1,980 m ³ /d	2021 9,267	2021 0.214 m ³ /cap/d	Provided by Township

Total Serviced Population as of 2025: 11,331
Average per capita flow for the last five years: 0.208 m³/cap/d

Average Calculated Daily Flow			Source:
ADF	0.208 m ³ /cap/d	X 11,331 =	2356.72 m ³ /d
D _C	Design Capacity (rated)		3865 m ³ /d
D _{C1}	Hydraulic Restrictions Capacity		3,271 m ³ /d
Cr	Design Capacity(DC) - Av. Daily Flow (ADF)		1508 m ³ /d
P	Existing Residential Population Connected		11,331
H	No. of Connected Residential Units		4,048
F	Average Daily Flow Per Capita		0.208 m ³ /cap/d
L	No. of Committed Approved Lots		579 Lots
			Water Allocation Spreadsheet Provided by Planning Department

$$Cu = Cr - \frac{L \cdot F \cdot P}{H}$$

Cu =	1171 m³/d	Uncommitted Reserve Hydraulic Capacity
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LU No. of Uncommitted Lots Remaining

$$LU = \frac{Cu}{\frac{P}{H} \cdot F}$$

LU	2011 Lots
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Uncommitted Reserve Hydraulic Capacity & Uncommitted Lots considering hydraulic restriction capacity specified in 2024 Master Plan

Cu = 577 m³/d
LU = 991 Lots

Notes:

- The actual per capita flows are below the projected per capita flows per the Master Plan and GMP. It is recommended that the Master Plan per capita flows continue to be used for planning.
- The above calculation is based on the rated capacity reported. It does not take into account any limitations in the wastewater collection and treatment system. As part of the Master Plan, CIMA+ completed a preliminary capacity assessment of the Embrun WWTP. The plant was determined to be hydraulically limited. Based on the capacity assessment, operational challenges at the Embrun WWTP, due to storage limitations, are expected when influent flows reach approximately 3,271 m³/d (~85% of the ECA rated capacity). 80% of the ECA rated capacity is typically when the planning and design phase of upgrades to WWTPs is triggered. A detailed capacity assessment is recommended to confirm the rated capacity of the lagoon facility.

2024 Master Plan Average Daily Flow			Source:
ADF	0.250 m ³ /cap/d	X 11,331 =	2832.75 m ³ /d
D _C	Design Capacity (rated)		3865 m ³ /d
Cr	Design Capacity(DC) - Av. Daily Flow (DF)		1032 m ³ /d
P	Existing Residential Population Connected		11,331
H	No. of Connected Residential Units		4532
F	Average Daily Flow Per Capita		0.250 m ³ /cap/d
L	No. of Committed Approved Lots		579 Lots
			Water Allocation Spreadsheet Provided by Planning Department

$$Cu = Cr - \frac{L \cdot F \cdot P}{H}$$

Cu =	670 m³/d	Uncommitted Reserve Hydraulic Capacity
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PPU 2.5 persons per unit Based on Master Plan Design Criteria
LU No. of Uncommitted Lots Remaining

$$LU = \frac{Cu}{PPU \cdot F}$$

LU	1072 Lots
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EMBRUN SANITARY FLOWS AND CONSUMPTION 2025					
DATE	MONTHLY FLOW (m³)	DAILY AVERAGE (m³)	POPULATION	DAYS	AVERAGE PERSON/DAY (m³)
JAN	65,039	2,098	11,331	31	0.185
FEB	51,953	1,791	11,331	28	0.158
MAR	83,682	2,699	11,331	31	0.238
APR	89,089	2,970	11,331	30	0.262
MAY	68,957	2,224	11,331	31	0.196
JUNE	63,131	2,104	11,331	30	0.186
JULY	63,032	2,033	11,331	31	0.179
AUG	56,768	1,831	11,331	31	0.162
SEP	54,784	1,826	11,331	30	0.161
OCT	58,093	1,874	11,331	31	0.165
NOV	67,778	2,259	11,331	30	0.199
DEC	65,828	2,123	11,331	31	0.187
AVG m³	65,678				
TOTAL m³	788,134	2,159	11,331	365	0.191
YEAR	TOTAL YEARLY m³	AVERAGE MONTHLY m³	AVERAGE DAILY	POP	AVERAGE SEWAGE PERSON/DAY (m³)
2024	821,181	68,432	2,250	10,686	0.211
2023	809,175	67,431	2,217	10,157	0.218
2022	743,729	61,977	2,038	9,814	0.208
2021	721,808	60,151	1,978	9,267	0.213
2020	693,783	57,815	1,901	8,760	0.217
2019	656,487	54,707	1,799	7,981	0.225
2018	646,655	53,888	1,772	7,497	0.236
2017	699,070	58,253	1,915	6,988	0.274
2016	576,819	46,068	1,577	6,720	0.235
2015	552,799	46,067	1,513	6,390	0.237
2014	502,926	43,614	1,435	6,260	0.229
2013	542,911	54,291	1,489	6,203	0.24
2012	494,058	41,171	1,350	6,195	0.220
2011	533,413	44,451	1,460	6,129	0.238
2010	615,075	51,256	1,685	6,131	0.275
2009	667,471	55,623	1,828	6,131	0.298

EMBRUN SEWAGE TREATMENT SYSTEM 2025 ANNUAL PERFORMANCE REPORT

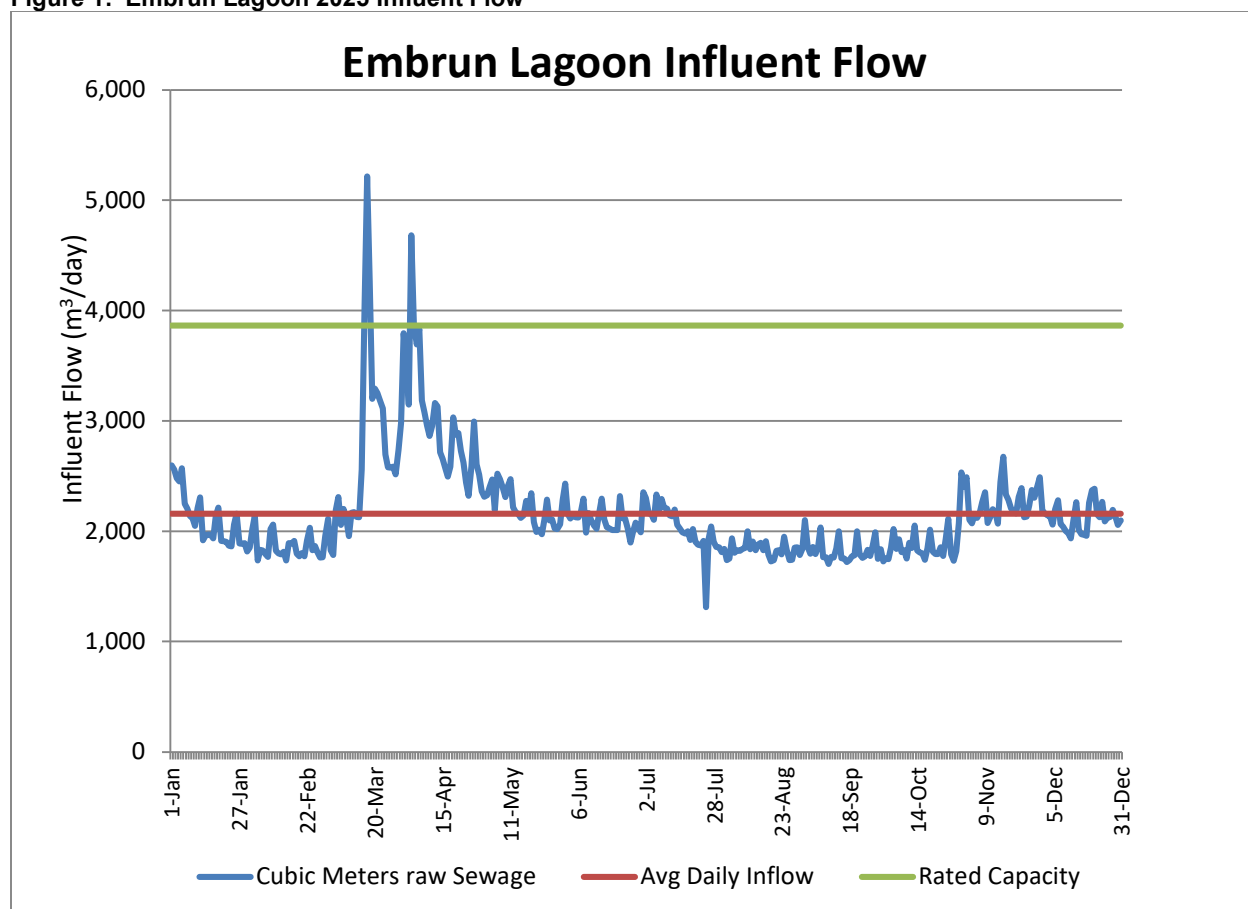
Executive Summary

The Embrun Sewage Treatment System provides sewage treatment for the community of Embrun in the Township of Russell. The sewage treatment system operated under the authority of Environmental Compliance Approval (ECA) #2449-BNYJZC issued on December 16, 2022, ECA 5774-CFZNL3, this returned operations to a seasonal discharge.

The Embrun Sewage Treatment System currently consists of an eight cell lagoon treatment facility that operates to receive an annual average day influent flow not exceeding 3,865 cubic meters and is discharged twice a year in the Spring and Fall. These 2 discharge windows are defined by the MECP as Spring being May 1st to October 31st (183 days) and Fall being November 1st to April 30th.

In 2025 the annual average daily inflow of raw sewage was 2,159 m³/day (Figure 1) representing 56% of the rated capacity (3,865 m³/day). The peak day flow of 5,218 m³/day occurred on March 17, 2025 as a result of a rainfall event and snow melt.

Figure 1: Embrun Lagoon 2025 Influent Flow



The ECA effluent compliance limits were not met for the fall treated effluent discharge events.. Fall saw an average concentration exceedance of Ammonia though no exceedance of average loading.

EMBRUN SEWAGE TREATMENT SYSTEM 2025 ANNUAL PERFORMANCE REPORT

Table 1 describes the ECA spring discharge effluent quality limits and the actual final effluent quality.

Table 1: ECA Spring Discharge Effluent Quality Limits and 2025 Actual Quality

	ECA Limits	Actual
Discharge volume	773,000 m ³	338,841 m ³
Discharge period		April 10 - Apr 30
Dilution ratio (river flow : effluent flow)		39.9 to 306 avg. 161.8:1
cBiochemical Oxygen Demand	30 mg/L	2.14 mg/L
	23,190 kg	634 kg
Suspended solids	30 mg/L	18.24 mg/L
	23,190 kg	6,278 kg
Total phosphorous	0.56 mg/L	0.40 mg/L
	433 Kg (790kg/year)	130 kg
Total Ammonia + Ammonia N	10 mg/L	9.35 mg/L
	7,730 kg	2,917 kg
Hydrogen Sulphide	0.1 mg/L	0.00 mg/L
		0 kg
pH	6.0 to 9.5	7.10 to 8.74 avg: 7.99
Dissolved Oxygen	>2.0 mg/L	11.19 mg/L

The spring discharge volume was the final effluent produced by the sewage treatment system after processing raw sewage received from October 1, 2024 to April 10, 2025. When a discharge event begins, raw sewage is diverted to isolated cells that are not to be discharged. This avoids the risk of influent sewage short-circuiting to the discharge. The fall 2025 discharge event began on October 6 and was completed on November 14, 2025.

The spring discharge profile and accumulated discharge volume are shown in **Figure 2**.

EMBRUN SEWAGE TREATMENT SYSTEM 2025 ANNUAL PERFORMANCE REPORT

Figure 2: Embrun Lagoon 2025 Spring Discharge

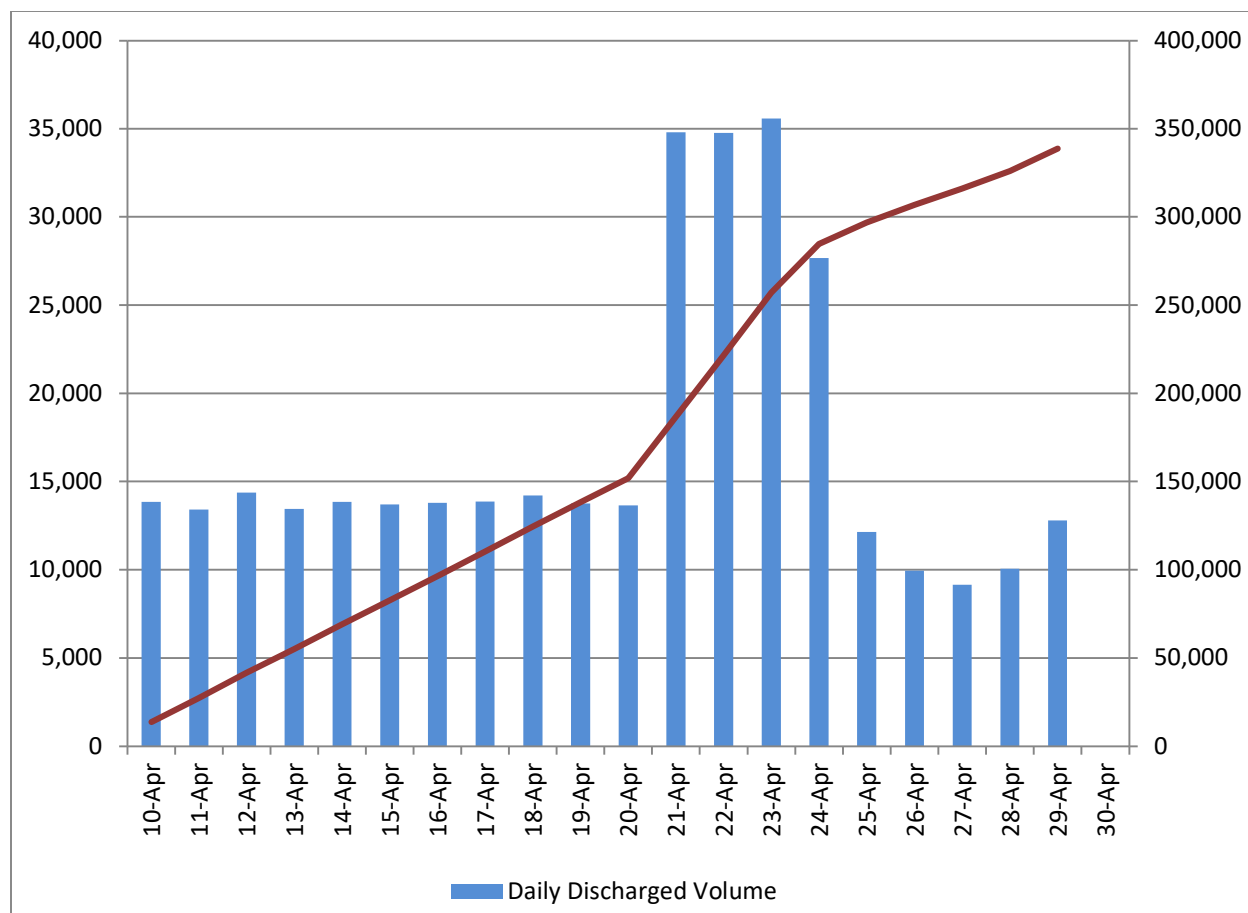


Table 2 describes the ECA fall discharge effluent quality limits and the actual final effluent quality.

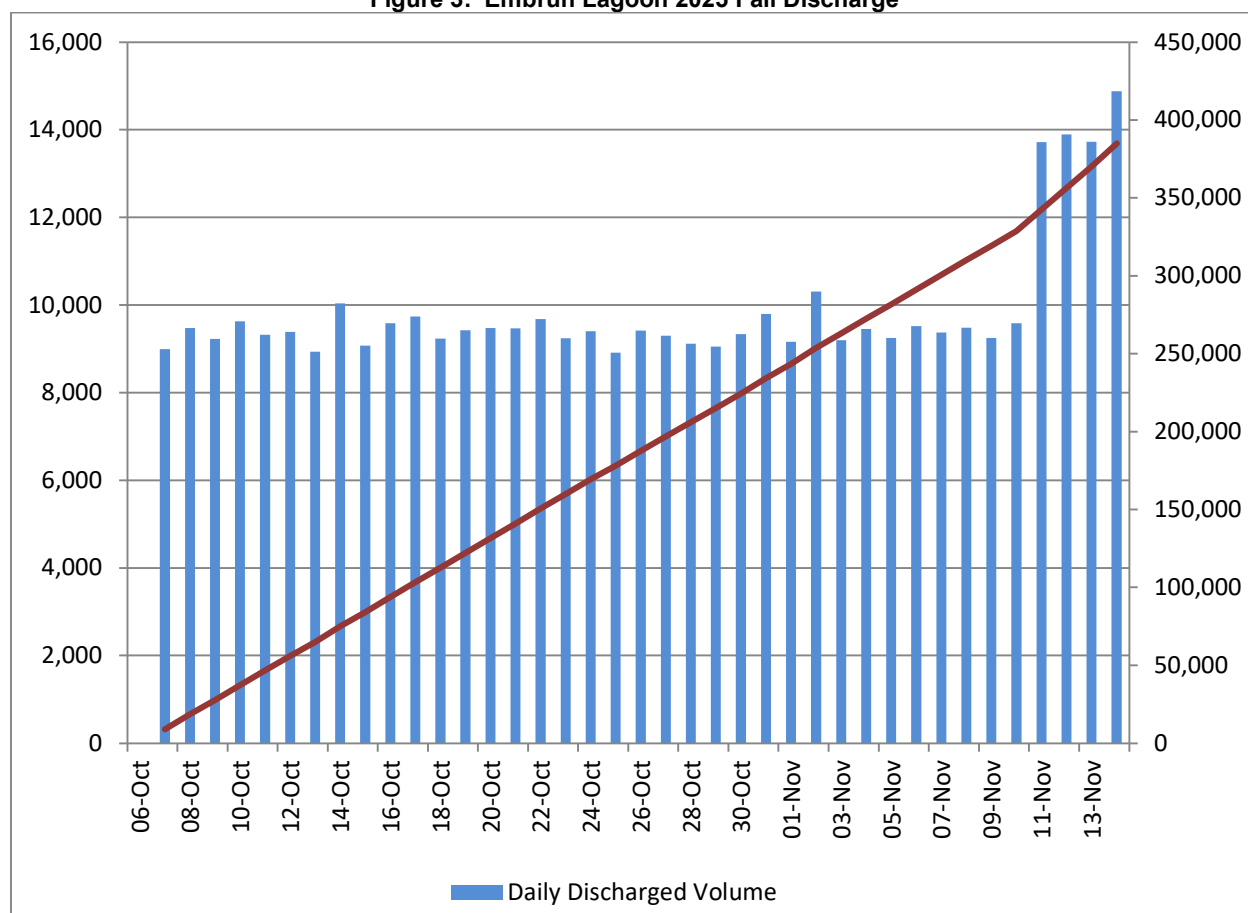
Table 2: ECA Fall Discharge Effluent Quality Limits and 2025 Actual Quality

	ECA Limits	Actual
Discharge volume	637,725 m ³	384,987 m ³ Seasonal Total
Discharge period		Oct 6 – Nov 14
Dilution ratio (river flow : effluent flow)		19.2:1 to 105.7:1 avg 70.2:1
cBiochemical Oxygen Demand	30 mg/L	5.25 mg/L
	19,132 kg	2,140 kg
Suspended solids	30 mg/L	19.136 mg/L
	19,132 kg	7,342 kg
Total phosphorous	0.56 mg/L	0.48 mg/L
	357 Kg	181 kg
Total Ammonia + Ammonia N	2 mg/L	2.13 mg/L
	1,275 kg	798 kg
Hydrogen Sulphide	Non-detect	0.0 mg/L
pH	6.0 to 9.5	6.82 to 7.84 with an avg. 7.37
Dissolved Oxygen	>2.0 mg/L	10.1 mg/L

EMBRUN SEWAGE TREATMENT SYSTEM 2025 ANNUAL PERFORMANCE REPORT

The fall discharge volume was the final effluent produced by the sewage treatment system after processing raw sewage received from April 10, 2025 to October 6, 2025. The fall discharge profile and accumulated discharge volume are shown in **Figure 3**.

Figure 3: Embrun Lagoon 2025 Fall Discharge



During both the spring and fall discharge events a sample of the final effluent was collected and acute lethality tests were performed using the samples. The spring discharge had 0 mortality for daphnia magna and 40% mortality for rainbow trout exposed to 100% concentration. Fall discharge had a zero mortality in both rainbow trout exposed to 100% concentration for 96 hours and 0% mortality in Daphnia Magna exposed for 48 hours.

The 2025 complaint log listed four (4) complaints related to the Embrun sewage collection and treatment system. Township staff responded to these complaints, assessed the source of the problem, and initiated corrective action.

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1.0 Sewage Treatment System Overview

The Embrun sewage treatment system consists of nine (9) pumping stations, a chemical addition system, an eight (8) cell lagoon treatment system and a hydrograph controlled effluent release system.

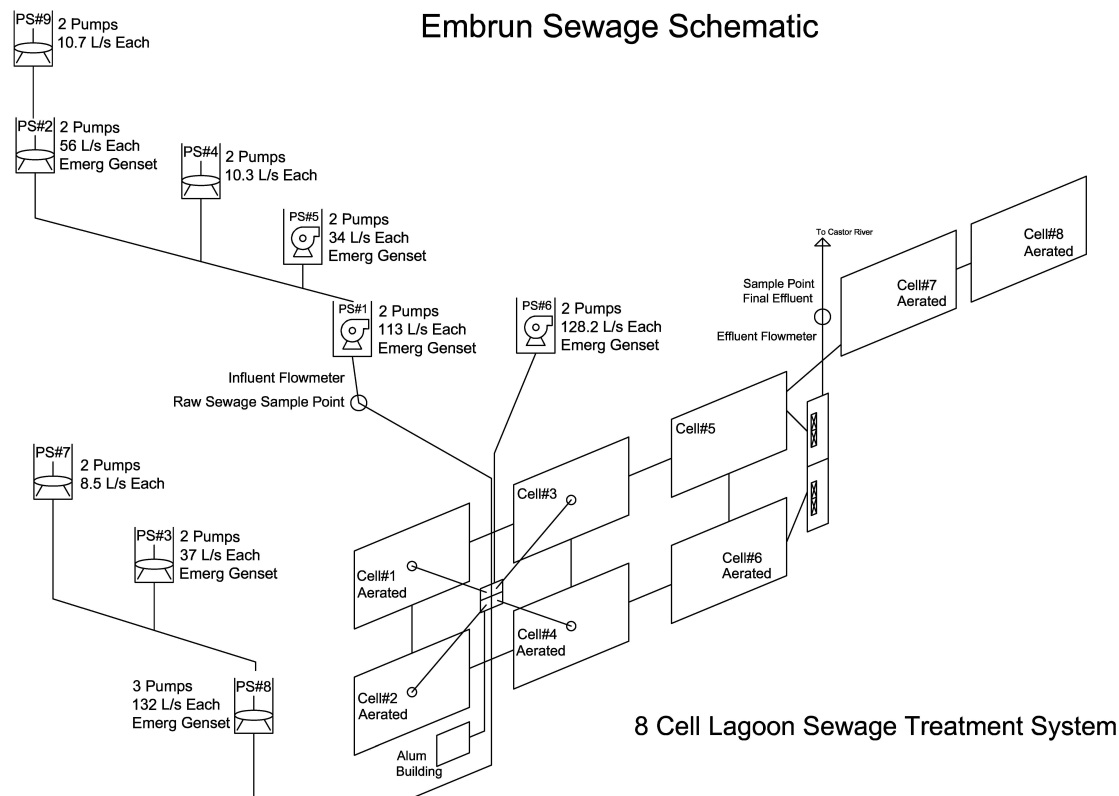
Pump stations 2, 4, & 5 all discharge to trunk sewers that convey sewage to pump station 1 whereas pump stations 7 and 3 discharge to trunk sewers to convey sewage to pump station 8. Pump station 9 discharges to a trunk sewer that conveys sewage to pump station 2. Pump stations 1, 6 and 8 pump all collected sewage directly to the lagoon treatment system. Alum is continuously injected into the sewage lagoon influent flow to aid in phosphorous removal. The pump discharge flows are metered and the meter readings are used to report the treatment system influent flow rates. Six of the eight lagoon cells are aerated. Treated effluent is discharged to the Castor River. The effluent flow is continuously monitored during discharge and a sampling program is in place to ensure chemical and physical parameters are met for discharge.

The sewage treatment system operates under the authority of ECA 5774-CFZNL3. The Sewage collection system is now operated under ECA# 184-W601 which is the new combined ECA that includes the collection systems for both the villages of Embrun and Russell.

Figure 4 is a schematic that outlines the sewage collection and treatment system. The schematic includes details that illustrate the location of the treatment system influent and effluent flow measurement devices, as well it also identifies the raw sewage influent and treated effluent sample points.

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Figure 4: Embrun Sewage Collection and Treatment System



1.1 OPERATIONS AND MONITORING

Grab samples of raw sewage are collected once per month from station number 1 and analyzed for the parameters prescribed by the ECA. The samples are analyzed to determine conductivity and pH, as well as the concentrations of carbonaceous biochemical oxygen demand (cBOD₅), total suspended solids (TSS), ammonia–nitrogen (N-NH₃), nitrite-nitrogen (N-NO₂), nitrate-nitrogen (N-NO₃), total Kjeldahl nitrogen (TKN), reactive phosphorous (RP) and total phosphorous (TP). No tBOD₅ tests were done on the lagoon influent in 2025.

In advance of treated effluent discharge events, grab samples of the lagoon contents are collected from various locations throughout the lagoon treatment system and analyzed for the same suite of parameters listed for raw sewage analysis. Temperature, dissolved oxygen (DO) and hydrogen sulfide (H₂S) concentrations of the lagoon contents are also determined. The results from the analytical work are used to confirm the suitability of the treated effluent for release to the Castor River.

During the final effluent discharge events grab samples of the final effluent are collected and analyzed. The final effluent is analyzed for the same suite of parameters as are the lagoon

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contents prior to discharge (pH, conductivity, cBOD₅, TSS, N-NH₃, N-NO₂, N-NO₃, TKN, RP, TP, DO, pH, temperature and H₂S). The effluent is sampled at the beginning of each discharge event, at the end of each discharge event, and, as a minimum, at 25%, 50% and 75% of the total lagoon draw down.

The Castor River is also sampled upstream and downstream during the discharge events and analyzed for the same suite of parameters (pH, conductivity, cBOD₅, TSS, N-NH₃, N-NO₂, NNO₃, TKN, RP, TP, DO, temperature, and H₂S).

Flow measurement data is collected by the sewage treatment SCADA system and verified by regular inspections by operating staff. Flow measurement of the raw sewage influent is accomplished using a magnetic flow meter located in the discharge piping of pump station 1, 6 and 8. The flow from the pump stations is conveyed directly to the lagoon treatment system and is the treatment system influent flow. The final effluent discharge flow is measured using a Parshall flume in combination with an ultrasonic level sensing device. The collected flow measurements and the results from the analytical work performed on all the collected samples are used to verify the effectiveness of the sewage collection and treatment system and compliance with the terms and conditions of the ECA.

The ECA effluent compliance limits were met for the spring treated effluent discharge event. The ECA effluent compliance limits were not met for the fall treated effluent discharge event, an exceedance was tracked for N-NH₃ (Ammonia). In the appendices of this report are tables of data that have been compiled and used to track and evaluate the performance of the sewage treatment system.

Table 3: Spring Final Effluent Characteristics and Sewage Treatment Removal Efficiencies

	Limits		Objectives	Results				
	Con. (mg/L)	Mass (kg)	Con. (mg/L)	Effluent Conc. (mg/L)	Effluent Mass (kg/day)	Total Effluent Mass(kg)	Influent Mass (kg)	Mass Removed
cBOD	30	23,190	20	2.20	30.2	634	116,704	99.3%
TSS	30	23,190	20	18.20	299	6,278	67,135	90.6%
TP	0.56	433	0.5	0.39	6.17	130	2,996	95.7%
	(790 kg/year)							
N-NH ₃	10	7,730	5	9.52	138.9	2,917	47,394	93.8%
H ₂ S	0.1	0	0.1	0			n/a	
DO(min)	>2.0	544		11.19				
Flow	773,000 m ³			338,841 m ³				

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Table 4: Fall Final Effluent Characteristics and Sewage Treatment Removal Efficiencies

	Limits		Objectives	Results				
	Con. (mg/L)	Mass (kg)	Con. (mg/L)	Effluent Conc. (mg/L)	Effluent Mass (kg/day)	Total Effluent Mass(kg)	Influent Mass (kg)	Mass Removed
cBOD	30	19,132	20	5.25		2,140	355,787	99.4%
TSS	30	19,132	20	19.13		7,342	136,041	94.6%
TP	0.56	357	0.5	0.48		181	12,667	98.6%
	790 kg/year							
N-NH ₃	2	1,275	1	2.13		798	141,209	99.4%
H ₂ S	0	0		0			n/a	
DO(min)	>2.0	36		10.15				
Flow	637,725 m ³			384,987 m ³				

The sewage collection and treatment system performed relatively reliably and there were no environmental spills or sewage bypasses that occurred in 2025.

During both the spring and fall discharge events, samples of the final effluent were collected and acute lethality tests were performed. The samples were collected on April 21, 2025 and October 9, 2025. The spring sample had a mortality of 0 *Daphnia magna* after 48 hours and 4 Rainbow trout in the 96 hour test, which is within acceptable standards as this was with 100% concentration. Fall samples had a 0% toxicity for both the rainbow trout and *Daphnia Magna* despite the elevated ammonia concentration.

Analytical results from Castor River samples taken during the spring and fall discharge events are included in Appendix D.

The quantity of sludge generated in 2025 by the sewage treatment system is based on 60 grams of sludge generated per capita day. The estimated quantity of sludge generated in 2025 is 248,149 kg dry solids. Assuming a 2% growth in population, the amount of sewage likely to be generated in 2026 will be approximately 253,120 kg of dry solid. The total estimated amount of sludge in Embrun Lagoon as of the end of 2025 is calculated to be 62,536 m³, this represents 7.2% of the total volume of the lagoon (It is estimated that 50kg of sludge use 1 m³ of space in the lagoon).

1.1.1 Public Complaints

There were four (4) public complaints related to the operation of the sewage collection and treatment system in 2025. **Table 6** summarizes the nature of the complaints and the action taken to resolve the concerns expressed by the public.

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Table 5: 2025 Public Complaint Summary

Date 2025	Address	Complaint	Action Taken*
10 Jan	Lucerne	Excess odour	Internal issue, p-trap dry/sink removed but pipe not sealed.
12 May	St Augustin	Sewer - Repair	Storm manhole, riser repaired
6 June	Castlebeau	Excess odour	Recent main flush, advise to refill p trap
17 July	Notre-Dame	Sewage Backup	build up of grease on private side

1.1.2 2025 Capital Improvements and Studies

The collection system has expanded into new subdivisions. Station #5 underwent a pump replacement.

1.1.3 Planned Alterations, Extension and Replacements

A wastewater QMS is still in development. Replacement of the obsolete parts of the radio SCADA system will continue. The aeration of 1 cell at Embrun lagoon is in need of replacement to return treatment back to capacity. A survey of sludge volume is planned in 2026 to evaluate capacity lost to sludge.

1.1.4 2025 Maintenance Activities Summary

In 2025 all trunk sewers were flushed and cleaned using contracted services. **Tables 7** through **Table 17** summarize the routine and corrective maintenance activities performed by Township staff and contracted service providers on the collection and treatment facilities.

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Table 6 : Pump Station 1, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Back-Up Generator checks	Weekly		
SCADA system checks	Weekly		
Building sump optn/level checks	Weekly		
Building lights, HVAC, etc..	Weekly		
Wet Well / Dry Well Inspection	Weekly		
Meter Readings	Weekly		
Totalizer Readings	Monthly		
Test Run Backup Generator	Weekly		Auto test by SCADA
Change Genset Oil, oil & fuel filter	Annually		
Grease Pumps 1 & 2	Annually		
Instrument and Alarm Test Calibration	Annually	6 Oct	
Regular Genset Service/Inspection	Annually	9 Apr	
Gas Detector Calibration	Semi-Annually		
Gas Detector Calibration	Semi-Annually		
Corrective Maintenance			
Swab inflow line		25 Feb	
Swab inflow line		12 Mar	
Clean Wet well and basket		12 Mar	
Clear rags from Pump #2		12 Mar	
Reinforce winch beam with new plate		2 Apr	Pump #1
Clean Wet Well and Basket		21 May	
Swab inflow line		21 May	
Clear rags from Pump 1		21 June	
Clear rags from Pump 1		23 June	
Clean Wet Well and Basket		31 July	
Clear rags from Pump 1		31 July	
Clear rags from Pump 2		31 July	
Clear rags from Pump 1		4 Aug	
Clear rags from Pump 1		27 Aug	
Clear rags from Pump 1		6 Sept	
Clean wet well		16 Sept	
Clear rags from Pump 1		23 Oct	
Swab inflow line		23 Oct	
Replace UPS		26 Nov	
Clear rags from Pump 1		28 Nov	
Clear rags from Pump 1		8 Dec	
Clear rags from Pump 1		16 Dec	
Clean Wet Well		22 Dec	
Clear rags from Pump 1		22 Dec	
Clear rags from Pump 2		22 Dec	
Clear rags from Pump 2		22 Dec	2 nd entry

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Table 7 : Pump Station 2, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Backup Generator Checks	Weekly		
SCADA System checks	Weekly		
Building Lights, HVAC, etc.	Weekly		
Wet well inspection	Weekly		
Meter Readings	Weekly		
Test run backup generator	Weekly		Auto Test by SCADA
Regular Genset service/ inspection	Annually	14 Apr	
Change genset oil, oil & fuel filter	Annually		
Instrument calibration	Annually	6 Oct	
Alarm Test	Annually	6 Oct	
Change battery in Milltronics	Every 3 years		
Calibrate Gas Monitor	Semi-Annually		
Calibrate Gas Monitor	Semi-Annually		
Corrective Maintenance			
Clean wet well and basket	25 Feb		
Clean wet well and basket	17 Nov		

Table 8 : Pump Station 3, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Backup Generator Checks	Weekly		
SCADA System checks	Weekly		
Building Lights, HVAC, etc.	Weekly		
Wet well inspection	Weekly		
Meter Readings	Weekly		
Test run backup generator	Weekly		Auto Test by SCADA
Regular Genset service/ inspection	Annually		
Change genset oil, oil & fuel filter	Annually	26 Jun	
Instrument & Alarm test/calibration	Annually	6 Oct	
Change battery in Milltronics	Every 3 years		
Calibrate Gas Monitor	Semi-Annually		
Calibrate Gas Monitor	Semi-Annually		
HVAC Maintenance		18 Sept	
Corrective Maintenance			
Clean wet well and basket		20 Feb	
Clean wet well and basket		5 May	
Clean wet well and basket		21 May	
Clean wet well and basket		20 June	
Clean wet well and basket		17 July	

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Clean wet well and basket		19 Aug	
Clean wet well and basket		11 Sept	
Clean wet well and basket		16 Oct	
Clean wet well and basket		18 Dec	

Table 9 : Pump Station 4, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
UPS System checks	Weekly		
SCADA system checks	Weekly		
Wet well inspection	Weekly		
Meter Readings	Weekly		
Instrument & Alarm Test Calibration	Annually	7 Oct	
Change battery in Milltronics	Every 3 years		
Corrective Maintenance			
Clean wet well and basket		25 Feb	
Skim wet well		3 Oct	

Table 10 : Pump Station 5, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Pump Engine Drive Checks	Weekly		
SCADA System checks	Weekly		
Building Lights, HVAC, etc.	Weekly		
Wet well inspection	Weekly		
Meter Readings	Weekly		
Test run pump engine drive	Weekly		Performed Manually
Pump engine inspection	Semi-Annual		
Engine Inspection, Change pump engine oil & oil filter	Annually	7 Apr	
Instrument & Alarm test/calibration	Annually	7 Oct	
Double Check Valve inspection	Annually	13 Mar	
Corrective Maintenance			
Clean Wet Well		8 Jan	
Generator Maintenance		5 Feb	Relay replacement
Clean Wet Well		25 Feb	
Clear rag from P#1		21 Mar	
Clean probe/transducer		27 Mar	
Clean wet well		3 Apr	
Clean basket and wet well		21 May	

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Clean wet well and basket		17 Jul	
Clean wet well and basket		19 Aug	
Clean wet well		28 Aug	
Clean wet well and basket		16 Oct	
Replace P#1		11 Dec	
Replace P#2		15 Dec	
Clean wet well and basket		18 Dec	

Table 11 : Pump Station 6, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
UPS System checks	Weekly		
SCADA system checks	Weekly		
Wet well inspection	Weekly		
Meter Readings	Weekly		
Regular Genset service/ Load test	Annually		
Regular Genset service/ inspection	Annually	22 Apr	
Instrument and Alarm test calibration	Annually	7 Oct	
Flowmeter Calibration	Annually	15 Sept	
HVAC Maintenance		13 Sept	
Corrective Maintenance			
Clean wet well and basket		12 Mar	

Table 12 : Pump Station 7, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
UPS System checks	Weekly		
SCADA system checks	Weekly		
Wet well inspection	Weekly		
Meter Readings	Weekly		
Instrument and Alarm test calibration	Annually	7 Oct	
Flowmeter Calibration	Annually	15 Sept	
Regular Genset service/ inspection	Annually	3 Jul	
Corrective Maintenance			
Clean wet well and basket		21 May	

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Table 13 : Pump Station 8, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
UPS System checks	Weekly		
SCADA system checks	Weekly		
Wet well inspection	Weekly		
Meter Readings	Weekly		
Instrument and Alarm test calibration	Annually	6 Oct	
Flowmeter Calibration	Annually	15 Sept	
Double Check Valve Inspection	Annually	13 Mar	
Regular Genset service/ inspection	Annually	23 Jan	
Generator Oil Change/Inspection	Annually		
HVAC Maintenance		19 Aug	
Corrective Maintenance			
Swab inflow line		8 Jan	
Temp battery for generator		22 Jan	
Swab inflow line		27 Jan	
Swab inflow line		20 Feb	
Clean wet well and basket		21 May	
P#1 maintenance		12 Mar	Reset and tighten impeller
Clean wet well and basket		12 Mar	
Swab Inflow line		12 Mar	
Swab Inflow line		3 Apr	
Swab Inflow line		23 Apr	
Swab inflow line		14 May	
P#2 maintenance		22 May	Reset and tighten impeller
Swab inflow line		27 May	
Swab inflow line		20 June	
Swab inflow line		9 July	
Clean wet well and basket		31 July	
Swab inflow line		19 Aug	
Swab inflow line		11 Sep	
Swab inflow line		30 Sep	
Clean wet well and basket		16 Oct	
Swab inflow line		23 Oct	
Swab inflow line		17 Nov	
Swab inflow line		3 Dec	
Clean wet well and basket		22 Dec	

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Table 14 : Pump Station 9, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
UPS System checks	Weekly		
SCADA system checks	Weekly		
Wet well inspection	Weekly		
Meter Readings	Weekly		
Instrument & Alarm Test Calibration	Annually		
Change battery in Milltronics	Every 3 years		
Corrective Maintenance			
Clean rag from P#2		27 Jan	
Clean rag from P#2		27 Feb	
Clean Wet Well		12 Mar	
Clean rag from P#2		1 Apr	
Clean rag from P#2		26 Aug	
Replace milltronics with transducer		16 Oct	

Table 15 : Alum Building, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Building Lights, HVAC, etc.	Weekly		
Meter Readings	Weekly		
UPS System checks	Weekly		
Instrument and Alarm test calibration	Annually		
Install Portable Eye wash			
HVAC Maintenance		17 Sept	
Corrective Maintenance			

Table 16 : Blower Building #1, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Building Lights, HVAC, etc.			
Meter Readings	Weekly		
Oil Change Blower 1,2,&3		6 Mar	
Oil Change Blower 1,2,&3		15 Aug	
Replace Air Filters			
Instrument and Alarm test calibration	Annually		
Corrective Maintenance			
Blower 2 removed due to motor short		4 Mar	
Oil change – blowers		6 Mar	
Replace Fuses Blower #1		1 Apr	
Oil Change – Blower		15 Aug	
Replace Blower belts		12 Dec	Blower #21 + #

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Table 17 : Blower Building #2, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Building Lights, HVAC, etc.			
Meter Readings	Weekly		
Oil Change Blower 4&5		6 Mar	
Oil Change Blower 4&5		13 Aug	
Blower Air Filter Change			
Instrument and Alarm test calibration	Annually		
Corrective Maintenance			
Oil change – blowers		6 Mar	

Table 18 : Kiosk Building, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Building Lights, HVAC, etc.	Weekly		
SCADA system, UPS check	Weekly		
Meter Readings	Weekly		
Valve & Chamber inspection	Weekly		
Instrument and Alarm test calibration	Annually		
Calibrated River Level Monitor	Annually		
Flow Meter calibration	Annually		
Change battery in Milltronics	Every 3 years		
Corrective Maintenance			

Table 19 : Collection, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Flushing	Annually		
Visual Inspection of Manhole chambers	Annually		
Corrective Maintenance			
Additional Flush of Maheu		14 Nov	

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MONTHLY INFLUENT DATA

Date Oct-24	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,789																		
2	1,790																		
3	1,804																		
4	1,803																		
5	1,840																		
6	2,038																		
7	1,806	332	4.12	47	0.14	0.1	56.3	6.21	372	897	6.91	599.592	7.44072	84.882	0.25284	0.1806	101.678	11.2153	671.832
8	1,768																		
9	1,762																		
10	1,763	1460	52.9	513	1	1	556	59.7	322	4460	7.1	2573.98	93.2627	904.419	1.763	1.763	980.228	105.251	567.686
11	1,828																		
12	1,898																		
13	1,875																		
14	2,014																		
15	1,794																		
16	1,723																		
17	1,739																		
18	1,713																		
19	1,875																		
20	1,977																		
21	1,752																		
22	1,719																		
23	1,726																		
24	1,705																		
25	1,729																		
26	1,889																		
27	2,009																		
28	1,710																		
29	1,809																		
30	1,753																		
31	1,713																		
Total	56,113	9,026																	
Average	1,810	896	28.51	280.0	0.57	0.55	306	33.0	347	2,679	7.01	1,586.79	50.35	494.65	1.01	0.97	540.95	58.23	619.76
Max	2,038	1,460	52.90	513.0	1.00	1.00	556	59.7	372	4,460	7.10	2,573.98	93.26	904.42	1.76	1.76	980.23	105.25	671.83
Min	1,705	332	4.12	47.0	0.14	0.10	56	6.2	322	897	6.91	599.59	7.44	84.88	0.25	0.18	101.68	11.22	567.69

Township of Russell
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Appendix A – 2025 Influent Summary

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Date Nov-24	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,795																		
2	1,938																		
3	2,140																		
4	1,770	259	4.21	43.4	0.12	0.1	66.4	5.34	198	888	7.09	458.43	7.4517	76.818	0.2124	0.177	117.528	9.4518	350.46
		2742	89.1	736	1	1	1000	96.5	796	7090	7.05	4853.34	157.707	1302.72	1.77	1.77	1770	170.805	1408.92
5	1,780																		
6	1,766																		
7	1,814																		
8	1,741																		
9	1,922																		
10	1,994																		
11	1,905																		
12	1,812																		
13	1,767																		
14	1,780																		
15	1,765																		
16	1,962																		
17	2,049																		
18	1,750																		
19	1,773																		
20	1,768																		
21	1,921																		
22	2,028																		
23	2,130																		
24	2,216																		
25	1,901																		
26	1,992																		
27	1,971																		
28	1,918																		
29	1,887																		
30	2,025																		
Total	56,980																		
Average	1,899	1,501	46.66	389.7	0.56	0.55	533	50.9	497	3,989	7.07	2,655.89	82.58	689.77	0.99	0.97	943.76	90.13	879.69
Max	2,216	2,742	89.10	736.0	1.00	1.00	1,000	96.5	796	7,090	7.09	4,853.34	157.71	1,302.72	1.77	1.77	1,770.00	170.81	1,408.92
Min	1,741	259	4.21	43.4	0.12	0.10	66	5.3	198	888	7.05	458.43	7.45	76.82	0.21	0.18	117.53	9.45	350.46

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Date Dec-24	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	2,158																		
2	1,924																		
3	1,955																		
4	1,898																		
5	1,846																		
6	1,847																		
7	2,026																		
8	2,142																		
9	1,917	302	3.5	44.1	0.11	0.1	55	6.03	226	1050	6.95	578.934	6.7095	84.5397	0.21087	0.1917	105.435	11.5595	433.242
10	1,908																		
11	2,235																		
12	2,341																		
13	2,207																		
14	2,325																		
15	2,412																		
16	2,112																		
17	2,627																		
18	2,564																		
19	2,513																		
20	2,399																		
21	2,529																		
22	2,439																		
23	2,260																		
24	2,251																		
25	2,116																		
26	2,122																		
27	2,046																		
28	2,109																		
29	2,238																		
30	2,601																		
31	2,548																		
Total	68,615																		
Average	2,213	302	3.50	44.1	0.11	0.10	55	6.0	226	1,050	6.95	578.93	6.71	84.54	0.21	0.19	105.44	11.56	433.24
Max	2,627	302	3.50	44.1	0.11	0.10	55	6.0	226	1,050	6.95	578.93	6.71	84.54	0.21	0.19	105.44	11.56	433.24
Min	1,846	302	3.50	44.1	0.11	0.10	55	6.0	226	1,050	6.95	578.93	6.71	84.54	0.21	0.19	105.44	11.56	433.24

Township of Russell
Embrun Sewage Treatment System
Appendix A – 2025 Influent Summary

Annual Performance Report 2025

Date Jan-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	2,596																		
2	2,560																		
3	2,481																		
4	2,450																		
5	2,569																		
6	2,247																		
7	2,206																		
8	2,138																		
9	2,121																		
10	2,048																		
11	2,207																		
12	2,305																		
13	1,917	297	4.1	42.8	0.14	0.1	60.6	5.63	222	1070	7.3	569.349	7.8597	82.0476	0.26838	0.1917	116.17	10.7927	425.574
14	1,962																		
15	1,970																		
16	1,967																		
17	1,936																		
18	2,139																		
19	2,214																		
20	1,913																		
21	1,910																		
22	1,904																		
23	1,868																		
24	1,863																		
25	2,060																		
26	2,157																		
27	1,888																		
28	1,886																		
29	1,892																		
30	1,815																		
31	1,850																		
Total	65,039																		
Average	2,098	297	4.10	42.8	0.14	0.10	61	5.6	222	1,070	7.30	569.35	7.86	82.05	0.27	0.19	116.17	10.79	425.57
Max	2,596	297	4.10	42.8	0.14	0.10	61	5.6	222	1,070	7.30	569.35	7.86	82.05	0.27	0.19	116.17	10.79	425.57
Min	1,815	297	4.10	42.8	0.14	0.10	61	5.6	222	1,070	7.30	569.35	7.86	82.05	0.27	0.19	116.17	10.79	425.57

Annual Performance Report 2025

Date Feb-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	2,017																		
2	2,140																		
3	1,736	367	1.66	43	0.13	0.1	55.1	5.8	253	1070	7.14	637.112	2.88176	74.648	0.22568	0.1736	95.6536	10.0688	439.208
4	1,832																		
5	1,826																		
6	1,792																		
7	1,767																		
8	2,020																		
9	2,060																		
10	1,821																		
11	1,800																		
12	1,791																		
13	1,813																		
14	1,735																		
15	1,891																		
16	1,888																		
17	1,913																		
18	1,795																		
19	1,772																		
20	1,803																		
21	1,773																		
22	1,914																		
23	2,030																		
24	1,828																		
25	1,864																		
26	1,806																		
27	1,762																		
28	1,764																		
29	0																		
Total	51,953																		
Average	1,791	367	1.66	43.0	0.13	0.10	55	5.8	253	1,070	7.14	637.11	2.88	74.65	0.23	0.17	95.65	10.07	439.21
Max	2,140	367	1.66	43.0	0.13	0.10	55	5.8	253	1,070	7.14	637.11	2.88	74.65	0.23	0.17	95.65	10.07	439.21
Min	1,735	367	1.66	43.0	0.13	0.10	55	5.8	253	1,070	7.14	637.11	2.88	74.65	0.23	0.17	95.65	10.07	439.21

Township of Russell
Embrun Sewage Treatment System
Appendix A – 2025 Influent Summary

Annual Performance Report 2025

Date Mar-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,955																		
2	2,113																		
3	1,829																		
4	1,784	231	0.88	44.8	0.10	0.10	55.2	4.86	317	1190	7.12	412.104	1.56992	79.9232	0.1784	0.1784	98.4768	8.67024	565.528
		641	20.9	816	1.00	1.00	832.0	23.7	101	6400	7.67	1143.544	37.2856	1455.744	1.784	1.784	1484.29	42.2808	180.184
5	2,189																		
6	2,309																		
7	2,056																		
8	2,202																		
9	2,105																		
10	1,955																		
11	2,167																		
12	2,174																		
13	2,128																		
14	2,126																		
15	2,559																		
16	4,050																		
17	5,218																		
18	4,259																		
19	3,199																		
20	3,291																		
21	3,253																		
22	3,185																		
23	3,113																		
24	2,696																		
25	2,579																		
26	2,576																		
27	2,584																		
28	2,516																		
29	2,735																		
30	2,982																		
31	3,795																		
Total	83,682																		
Average	2,699	436	10.89	430.4	0.55	0.55	443.60	14.3	209	3,795	7.40	777.82	19.43	767.83	0.98	0.98	791.38	25.48	372.86
Max	5,218	641	20.90	816.0	1.00	1.00	832	23.7	317	6,400	7.67	1,143.54	37.29	1,455.74	1.78	1.78	1,484.29	42.28	565.53
Min	1,784	231	0.88	44.8	0.10	0.10	55	4.9	101	1,190	7.12	412.10	1.57	79.92	0.18	0.18	98.48	8.67	180.18

Township of Russell
Embrun Sewage Treatment System
Appendix A – 2025 Influent Summary

Annual Performance Report 2025

Date Apr-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	3,534																		
2	3,148																		
3	4,683																		
4	3,876																		
5	3,693																		
6	3,831																		
7	3,186	75	0.322	29	0.1	0.1	35	3.47	184	1580	7.4	238.95	1.025892	92.394	0.3186	0.3186	111.51	11.0554	586.224
		359	14.6	340	1	1	849	16.5	187	3420	7.67	1143.774	46.5156	1083.24	3.186	3.186	2704.91	52.569	595.782
8	3,079																		
9	2,959																		
10	2,863																		
11	2,952																		
12	3,162																		
13	3,129																		
14	2,715																		
15	2,655																		
16	2,573																		
17	2,495																		
18	2,586																		
19	3,032																		
20	2,876																		
21	2,888																		
22	2,727																		
23	2,621																		
24	2,444																		
25	2,321																		
26	2,591																		
27	2,993																		
28	2,606																		
29	2,511																		
30	2,360																		
Total	89,089																		
Average	2,970	217	7.46	184.5	0.55	0.55	442.00	10.0	186	2,500	7.54	691.36	23.77	587.82	1.75	1.75	1,408.21	31.81	591.00
Max	4,683	359	14.60	340.0	1.00	1.00	849	16.5	187	3,420	7.67	1,143.77	46.52	1,083.24	3.19	3.19	2,704.91	52.57	595.78
Min	2,321	75	0.32	29.0	0.10	0.10	35	3.5	184	1,580	7.40	238.95	1.03	92.39	0.32	0.32	111.51	11.06	586.22

Township of Russell
Embrun Sewage Treatment System
Appendix A – 2025 Influent Summary

Annual Performance Report 2025

Date May-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	2,312																		
2	2,326																		
3	2,401																		
4	2,468																		
5	2,190	84 773	3.47 28.8	40.4 552	0.11 1.00	0.10 1.00	48 596	4.52 33.2	176 126	1160 5220	7.14 7.55	183.96 1692.87	7.5993 63.072	88.476 1208.88	0.2409 2.19	0.219 2.19	105.12 1305.24	9.8988 72.708	385.44 275.94
6	2,522																		
7	2,472																		
8	2,402																		
9	2,310																		
10	2,412																		
11	2,471																		
12	2,217																		
13	2,173																		
14	2,155																		
15	2,122																		
16	2,144																		
17	2,273																		
18	2,193																		
19	2,344																		
20	2,083																		
21	1,994																		
22	2,013																		
23	1,973																		
24	2,106																		
25	2,286																		
26	2,097																		
27	2,107																		
28	2,024																		
29	2,020																		
30	2,063																		
31	2,284																		
Total	68,957																		
Average	2,224	429	16.14	296.2	0.56	0.55	322.00	18.9	151	3,190.00	7.35	938.42	35.34	648.68	1.22	1.20	705.18	41.30	330.69
Max	2,522	773	28.80	552.0	1.00	1.00	596	33.2	176	5,220	7.55	1,692.87	63.07	1,208.88	2.19	2.19	1,305.24	72.71	385.44
Min	1,973	84	3.47	40.4	0.11	0.10	48	4.5	126	1,160	7.14	183.96	7.60	88.48	0.24	0.22	105.12	9.90	275.94

Township of Russell
Embrun Sewage Treatment System
Appendix A – 2025 Influent Summary

Annual Performance Report 2025

Date Jun-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	2,432																		
2	2,156	56	3.39	46	0.16	0.1	49.1	5.26	230	992	7.18	120.7	7.3	99.2	0.3	0.2	105.9	11.3	495.9
		717	51.8	735	1	1	748	85.7	206	6110	7.37	1545.9	111.7	1584.7	2.2	2.2	1612.7	184.8	444.1
3	2,115																		
4	2,155																		
5	2,125																		
6	2,124																		
7	2,176																		
8	2,295																		
9	1,988																		
10	2,163																		
11	2,101																		
12	2,052																		
13	2,022																		
14	2,165																		
15	2,294																		
16	2,107																		
17	2,037																		
18	2,025																		
19	2,009																		
20	2,010																		
21	2,010																		
22	2,318																		
23	2,118																		
24	2,116																		
25	2,029																		
26	1,898																		
27	1,995																		
28	2,077																		
29	2,030																		
30	1,989																		
Total	63,131																		
Average	2,104	387	27.60	390.5	0.58	0.55	398.55	45.5	218	3,551.00	7.28	833.29	59.49	841.92	1.25	1.19	859.27	98.05	470.01
Max	2,432	717	51.80	735.0	1.00	1.00	748	85.7	230	6,110	7.37	1,545.85	111.68	1,584.66	2.16	2.16	1,612.69	184.77	495.88
Min	1,898	56	3.39	46.0	0.16	0.10	49	5.3	206	992	7.18	120.74	7.31	99.18	0.34	0.22	105.86	11.34	444.14

Township of Russell
Embrun Sewage Treatment System
Appendix A – 2025 Influent Summary

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Date Jul-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	2,352																		
2	2,300																		
3	2,162																		
4	2,155																		
5	2,102																		
6	2,332																		
7	2,185	327 3860	3.71 54.2	43.4 790	0.1 10	0.12 10	78.4 958	5.69 70	236 430	1000 6650	7.29 7.66	714.495 8434.1	8.10635 118.427	94.829 1726.15	0.2185 21.85	0.2622 21.85	171.304 2093.23	12.4327 152.95	515.66 939.55
8	2,293																		
9	2,213																		
10	2,204																		
11	2,145																		
12	2,136																		
13	2,195																		
14	2,056																		
15	2,026																		
16	1,989																		
17	1,979																		
18	1,998																		
19	1,920																		
20	2,020																		
21	1,904																		
22	1,876																		
23	1,872																		
24	1,911																		
25	1,313																		
26	1,930																		
27	2,041																		
28	1,902																		
29	1,857																		
30	1,855																		
31	1,809																		
Total	63,032																		
Average	2,033	2,094	28.96	416.7	5.05	5.06	518.20	37.8	333	3,825	7.48	4,574.30	63.27	910.49	11.03	11.06	1,132.27	82.69	727.61
Max	2,352	3,860	54.20	790.0	10.00	10.00	958	70.0	430	6,650	7.66	8,434.10	118.43	1,726.15	21.85	21.85	2,093.23	152.95	939.55
Min	1,313	327	3.71	43.4	0.10	0.12	78	5.7	236	1,000	7.29	714.50	8.11	94.83	0.22	0.26	171.30	12.43	515.66

Township of Russell
Embrun Sewage Treatment System
Appendix A – 2025 Influent Summary

Annual Performance Report 2025

Date Aug-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,840																		
2	1,737																		
3	1,751																		
4	1,934																		
5	1,804																		
6	1,828																		
7	1,822																		
8	1,839																		
9	1,849																		
10	2,000																		
11	1,837	348 1800	4.38 71.5	40.4 694	0.14 1	0.1 1	56 732	6.53 76.8	447 734	855 6710	7.24 7.42	639.276 3306.6	8.04606 131.3455	74.2148 1274.878	0.25718 1.837	0.1837 1.837	102.872 1344.68	11.9956 141.082	821.139 1348.358
12	1,907																		
13	1,828																		
14	1,881																		
15	1,895																		
16	1,829																		
17	1,908																		
18	1,788																		
19	1,726																		
20	1,739																		
21	1,822																		
22	1,827																		
23	1,790																		
24	1,950																		
25	1,830																		
26	1,739																		
27	1,742																		
28	1,850																		
29	1,853																		
30	1,784																		
31	1,839																		
Total	56,768																		
Average	1,831	1,074	37.94	367.2	0.57	0.55	394.00	41.7	591	3,783	7.33	1,972.94	69.70	674.55	1.05	1.01	723.78	76.54	1,084.75
Max	2,000	1,800	71.50	694.0	1.00	1.00	732	76.8	734	6,710	7.42	3,306.60	131.35	1,274.88	1.84	1.84	1,344.68	141.08	1,348.36
Min	1,726	348	4.38	40.4	0.14	0.10	56	6.5	447	855	7.24	639.28	8.05	74.21	0.26	0.18	102.87	12.00	821.14

Annual Performance Report 2025

Date Sep-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	2,099																		
2	1,855	190	3.64	42.5	0.13	0.1	48.5	4.63	249	865	7.18	352.5	6.8	78.8	0.2	0.2	90.0	8.6	461.9
		1900	46.2	626	0.59	0.17	744	53.8	360	5690	7.5	3524.5	85.701	1161.23	1.09445	0.31535	1380.12	99.799	667.8
3	1,797																		
4	1,856																		
5	1,792																		
6	1,855																		
7	2,033																		
8	1,764																		
9	1,764																		
10	1,703																		
11	1,768																		
12	1,761																		
13	1,843																		
14	2,000																		
15	1,756																		
16	1,753																		
17	1,721																		
18	1,738																		
19	1,772																		
20	1,780																		
21	2,000																		
22	1,790																		
23	1,757																		
24	1,773																		
25	1,831																		
26	1,776																		
27	1,871																		
28	1,991																		
29	1,750																		
30	1,835																		
Total	54,784																		
Average	1,826	1,045	24.92	334.3	0.36	0.14	396.25	29.22	305	3,278	7.34	1,938	46.23	620.03	0.67	0.25	735.04	54.19	564.85
Max	2,099	1,900	46.20	626.0	0.59	0.17	744	53.8	360	5,690	7.50	3,525	85.70	1,161.23	1.09	0.32	1,380.12	99.80	667.80
Min	1,703	190	3.64	42.5	0.13	0.10	49	4.6	249	865	7.18	352	6.75	78.84	0.24	0.19	89.97	8.59	461.90

Township of Russell
Embrun Sewage Treatment System
Appendix A – 2025 Influent Summary

Annual Performance Report 2025

Date Oct-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,726																		
2	1,755																		
3	1,746																		
4	1,852																		
5	2,018																		
6	1,839																		
7	1,926																		
8	1,810																		
9	1,827																		
10	1,753																		
11	1,894																		
12	1,847																		
13	2,052																		
14	1,825	197	4.08	44.9	0.12	0.1	55.9	5.95	295	826	7.06	359.5	7.4	81.9	0.2	0.2	102.0	10.9	538.4
		1580	0.216	642	0.1	0.33	718	64.1	1080	6090	7.29	2883.5	0.3942	1171.65	0.1825	0.60225	1310.35	116.983	1971
15	1,807																		
16	1,798																		
17	1,742																		
18	1,846																		
19	2,012																		
20	1,814																		
21	1,792																		
22	1,793																		
23	1,855																		
24	1,776																		
25	1,929																		
26	2,112																		
27	1,790																		
28	1,733																		
29	1,820																		
30	2,071																		
31	2,533																		
Total	58,093																		
Average	1,874	889	2.15	343.45	0.11	0.22	386.95	35.0	688	3,458.00	7.18	1,621.51	3.92	626.80	0.20	0.39	706.18	63.92	1,254.69
Max	2,533	1,580	4.08	642.0	0.12	0.33	718	64.1	1,080	6,090	7.29	2,883.50	7.45	1,171.65	0.22	0.60	1,310.35	116.98	1,971.00
Min	1,726	197	0.22	44.9	0.10	0.10	56	6.0	295	826	7.06	359.53	0.39	81.94	0.18	0.18	102.02	10.86	538.38

Annual Performance Report 2025

Date Nov-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	2,401																		
2	2,489																		
3	2,103																		
4	2,071	226	0.121	44.3	0.1	0.1	48.7	4.81	281	1090	6.82	468.046	0.250591	91.7453	0.2071	0.2071	100.858	9.96151	581.951
5	2,145																		
6	2,122																		
7	2,163																		
8	2,263																		
9	2,352																		
10	2,075																		
11	2,127																		
12	2,200																		
13	2,172																		
14	2,067																		
15	2,445																		
16	2,675																		
17	2,333	1390	60.4	867	0.61	0.1	919	62.8	420	7010	6.99	3242.87	140.9132	2022.711	1.42313	0.2333	2144.03	146.512	979.86
18	2,282																		
19	2,208																		
20	2,177																		
21	2,162																		
22	2,308																		
23	2,390																		
24	2,125																		
25	2,131																		
26	2,235																		
27	2,372																		
28	2,303																		
29	2,394																		
30	2,488																		
Total	67,778																		
Average	2,259	808	30.26	455.65	0.36	0.10	483.85	33.8	351	4,050	6.91	1,855.46	70.58	1,057.23	0.82	0.22	1,122.44	78.24	780.91
Max	2,675	1,390	60.40	867.0	0.61	0.10	919	62.8	420	7,010	6.99	3,242.87	140.91	2,022.71	1.42	0.23	2,144.03	146.51	979.86
Min	2,067	226	0.12	44.3	0.10	0.10	49	4.8	281	1,090	6.82	468.05	0.25	91.75	0.21	0.21	100.86	9.96	581.95

Township of Russell
Embrun Sewage Treatment System
Appendix A – 2025 Influent Summary

Annual Performance Report 2025

Date Dec-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	2,184	17	3.89	38.3	0.14	0.1	53.7	4.33	148	1300	7.06	37.128	8.49576	83.6472	0.30576	0.2184	117.281	9.45672	323.232
2	2,161																		
3	2,145																		
4	2,135																		
5	2,060																		
6	2,198																		
7	2,280																		
8	2,066																		
9	2,038																		
10	2,003																		
11	1,982																		
12	1,935																		
13	2,098																		
14	2,262																		
15	2,010	3030	94.6	1150	1	1	1110	107	357	8860	7.17	6090.3	190.146	2311.5	2.01	2.01	2231.1	215.07	717.57
16	1,974																		
17	1,966																		
18	1,958																		
19	2,257																		
20	2,371																		
21	2,384																		
22	2,153																		
23	2,126																		
24	2,265																		
25	2,088																		
26	2,121																		
27	2,128																		
28	2,193																		
29	2,134																		
30	2,057																		
31	2,096																		
Total	65,828																		
Average	2,123	1,524	49.25	594.2	0.57	0.55	582	55.7	253	5,080	7.12	3,063.71	99.32	1,197.57	1.16	1.11	1,174.19	112.26	520.40
Max	2,384	3,030	94.60	1,150.0	1.00	1.00	1,110	107.0	357	8,860	7.17	6,090.30	190.15	2,311.50	2.01	2.01	2,231.10	215.07	717.57
Min	1,935	17	3.89	38.3	0.14	0.10	54	4.3	148	1,300	7.06	37.13	8.50	83.65	0.31	0.22	117.28	9.46	323.23

Annual Performance Report 2025

INFLUENT CHARACTERIZATION

Test Dates	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
07-10-2024	1,810	896	28.51	280.0	0.57	0.55	306.15	33.0	347	2678.5	7.005	1586.79	50.35	494.65	1.01	0.97	540.95	58.23	619.76
04-11-2024	1,899	1,501	46.66	389.7	0.56	0.55	533.2	50.9	497	3,989	7.07	2,655.89	82.58	689.77	0.99	0.97	943.76	90.13	879.69
09-12-2024	2,213	302	3.50	44.1	0.11	0.10	55.0	6.0	226	1,050	6.95	578.93	6.71	84.54	0.21	0.19	105.44	11.56	433.24
13-01-2025	2,098	297	4.10	42.8	0.14	0.10	60.6	5.6	222	1,070	7.30	569.35	7.86	82.05	0.27	0.19	116.17	10.79	425.57
03-02-2025	1,791	367	1.66	43.0	0.13	0.10	55.1	5.8	253	1,070	7.14	637.11	2.88	74.65	0.23	0.17	95.65	10.07	439.21
04-03-2025	2,699	436	10.89	430.4	0.55	0.55	443.6	14.3	209	3,795	7.40	777.82	19.43	767.83	0.98	0.98	791.38	25.48	372.86
07-04-2025	2,970	217	7.46	184.5	0.55	0.55	442.0	10.0	186	2,500	7.54	691.36	23.77	587.82	1.75	1.75	1,408.21	31.81	591.00
05-05-2025	2,224	429	16.14	296.2	0.56	0.55	322.0	18.9	151	3,190	7.35	938.42	35.34	648.68	1.22	1.20	705.18	41.30	330.69
02-06-2025	2,104	387	27.60	390.5	0.58	0.55	398.6	45.5	218	3,551	7.28	833.29	59.49	841.92	1.25	1.19	859.27	98.05	470.01
07-07-2025	2,033	2,094	28.96	416.7	5.05	5.06	518.2	37.8	333	3,825	7.48	4,574.30	63.27	910.49	11.03	11.06	1,132.27	82.69	727.61
11-08-2025	1,831	1,074	37.94	367.2	0.57	0.55	394.0	41.7	591	3,783	7.33	1,972.94	69.70	674.55	1.05	1.01	723.78	76.54	1,084.75
02-09-2025	1,826	1,045	24.92	334.3	0.36	0.14	396.3	29.2	305	3,278	7.34	1,938.48	46.23	620.03	0.67	0.25	735.04	54.19	564.85
14-10-2025	1,874	889	2.15	343.5	0.11	0.22	387.0	35.0	688	3,458	7.18	1,621.51	3.92	626.80	0.20	0.39	706.18	63.92	1,254.69
17-11-2025	2,259	808	30.26	455.7	0.36	0.10	483.9	33.8	351	4,050	6.91	1,855.46	70.58	1,057.23	0.82	0.22	1,122.44	78.24	780.91
01-12-2025	2,123	1,524	49.25	594.2	0.57	0.55	581.9	55.7	253	5,080	7.12	3,063.71	99.32	1,197.57	1.16	1.11	1,174.19	112.26	520.40
Total Characteristics																			
Average	2,117	818	21	308	0.7	0.7	358	28	322	3,091	7.22	1,620	43	624	1.5	1.4	744	56	633
Max	5,218	2,094	49	594	5.1	5.1	582	56	688	5,080	7.54	4,574	99	1,198	11	11	1,408	112	1,255
Min	1,313	217	2	43	0.1	0.1	55	6	151	1,050	6.91	569	2.88	75	0.20	0.17	96	10	331
STD DEV	336.7596	555	16	164	1.2	1.2	173	17	155	1,208	0.19	1,133	31	336	3	3	400	33	268
% of Avg	15.91%	67.83%	75.55%	53.28%	169.26%	180.70%	48.20%	60.37%	48.32%	39.09%	2.63%	69.96%	72.97%	53.83%	175.49%	187.16%	53.79%	59.35%	42.38%
2025 Characteristics																			
Average	2,159	797	20.11	324.9	0.79	0.75	373.6	27.8	313	3221	7.28	1623	41.82	674.1	1.72	1.63	797.5	57.1	630
Max	5,218	2094	49.25	594.2	5.05	5.06	581.9	55.7	688	5080	7.54	4574	99.32	1197.6	11.03	11.06	1408.2	112.3	1255
Min	1,313	217	1.66	42.8	0.11	0.10	55.1	5.6	151	1070	6.91	569	2.88	74.6	0.20	0.17	95.7	10.1	331
2025 Total	788,134																		

Annual Performance Report 2025

SPRING 2025 DISCHARGE LOADING

Loading Calculated by Monthly Influent Volumes

	Influent Stored (m3)	Monthly Influent Characteristics								Loadings							
		BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	BOD5 kg/mo	React P kg/mo	N-NH3 kg/mo	N-NO2 kg/mo	N-NO3 kg/mo	TKN kg/mo	TP kg/mo	TSS kg/mo
Oct-24		896	28.51	280.0	0.57	0.55	306.15	32.955	347	0	0	0	0.0	0.0	0	0	0
Nov-24	16,040	1,501	46.66	389.7	0.56	0.55	533.2	50.9	497	24068	748	6251	9.0	8.8	8553	817	7972
Dec-24	68,615	302	3.50	44.1	0.11	0.10	55.0	6.0	226	20722	240	3026	7.5	6.9	3774	414	15507
Jan-25	65,039	297	4.10	42.8	0.14	0.10	60.6	5.6	222	19317	267	2784	9.1	6.5	3941	366	14439
Feb-25	51,953	367	1.66	43.0	0.13	0.10	55.1	5.8	253	19067	86	2234	6.8	5.2	2863	301	13144
Mar-25	76,905	436	10.89	430.4	0.55	0.55	443.6	14.3	209	33531	837	33100	42.3	42.3	34115	1098	16073
Apr-25		217	7.46	184.5	0.55	0.55	442.0	10.0	186	0	0	0	0.0	0.0	0	0	0
Totals	278,552									116,704	2,179	47,394	75	70	53,245	2,996	67,135

Loading Calculated by Average Day Mass

	Days of Influent Stored	Daily Loading Characteristics								Loadings							
		BOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day	BOD5 kg/mo	React P kg/mo	N-NH3 kg/mo	N-NO2 kg/mo	N-NO3 kg/mo	TKN kg/mo	TP kg/mo	TSS kg/mo
Oct-24		1,587	50.35	494.7	1.01	0.97	541.0	58.2	620	0.0	0	0	0.0	0.0	0	0	0
Nov-24	8	2,656	82.58	689.8	0.99	0.97	943.8	90.1	880	21247	661	5518	7.9	7.8	7550	721	7038
Dec-24	31	579	6.71	84.5	0.21	0.19	105.4	11.6	433	17947	208	2621	6.5	5.9	3268	358	13431
Jan-25	31	569	7.86	82.0	0.27	0.19	116.2	10.8	426	17650	244	2543	8.3	5.9	3601	335	13193
Feb-25	28	637	2.88	74.6	0.23	0.17	95.7	10.1	439	17839	81	2090	6.3	4.9	2678	282	12298
Mar-25	29	778	19.43	767.8	0.98	0.98	791.4	25.5	373	22557	563	22267	28.5	28.5	22950	739	10813
Apr-25	0	691	23.77	587.8	1.75	1.75	1,408.2	31.8	591	0	0	0	0.0	0.0	0	0	0
Totals	127									97,240	1,756	35,040	58	53	40,048	2,435	56,771

△Totals (kg)	19464	423	12355	17.1	16.7	13197	562	10363
% Difference	16.7%	19.4%	26.1%	22.9%	24.0%	24.8%	18.7%	15.4%

2024 Spring Discharge: April 2 to April 30

2024 Fall Discharge: Oct 1 to Oct 28

2025 Spring Discharge: April 10 to April 30

Assume that each release includes influent from the first day of the previous release up to the first day of the current release.

Annual Performance Report 2025

FALL 2025 DISCHARGE LOADING

Loading Calculated by Monthly Influent Volumes

	Influent Stored (m3)	Monthly Influent Characteristics								Loadings							
		BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	BOD5 kg/mo	React P kg/mo	N-NH3 kg/mo	N-NO2 kg/mo	N-NO3 kg/mo	TKN kg/mo	TP kg/mo	TSS kg/mo
Mar-25	6,777	436	10.89	430.4	0.55	0.55	443.6	14.3	209	2955	74	2917	3.7	3.7	3006	97	1416
Apr-25	89,089	217	7.46	184.5	0.55	0.55	442.0	10.0	186	19332	665	16437	49.0	49.0	39377	890	16526
May-25	68,957	429	16.14	296.2	0.56	0.55	322.0	18.9	151	29548	1113	20425	38.3	37.9	22204	1301	10413
Jun-25	63,131	387	27.60	390.5	0.58	0.55	398.6	45.5	218	24400	1742	24653	36.6	34.7	25161	2871	13763
Jul-25	63,032	2,094	28.96	416.7	5.05	5.06	518.2	37.8	333	131957	1825	26265	318.3	318.9	32663	2385	20990
Aug-25	56,768	1,074	37.94	367.2	0.57	0.55	394.0	41.7	591	60969	2154	20845	32.4	31.2	22367	2365	33522
Sep-25	54,784	1,045	24.92	334.3	0.36	0.14	396.3	29.2	305	57249	1365	18312	19.7	7.4	21708	1601	16682
Oct-25	33,063	889	2.15	343.5	0.11	0.22	387.0	35.0	688	29376	71	11355	3.6	7.1	12794	1158	22731
Nov-25	808	30.26	455.7	0.36	0.10	483.9	33.8	351	0	0	0	0	0.0	0.0	0	0	0
Totals	428,824									355,787	9,008	141,209	502	490	179,280	12,667	136,041

Loading Calculated by Average Day Mass

	Days of Influent Stored	Daily Loading Characteristics								Loadings							
		BOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day	BOD5 kg/mo	React P kg/mo	N-NH3 kg/mo	N-NO2 kg/mo	N-NO3 kg/mo	TKN kg/mo	TP kg/mo	TSS kg/mo
March-25	2	778	19.43	767.8	0.98	0.98	791.4	25.5	373	1556	39	1536	2.0	2.0	1583	51	746
Apr-25	30	691	23.77	587.8	1.75	1.75	1,408.2	31.8	591	20741	713	17635	52.6	52.6	42246	954	17730
May-25	31	938	35.34	648.7	1.22	1.20	705.2	41.3	331	29091	1095	20109	37.7	37.3	21861	1280	10251
Jun-25	30	833	59.49	841.9	1.25	1.19	859.3	98.1	470	24999	1785	25258	37.5	35.6	25778	2942	14100
Jul-25	31	4,574	63.27	910.5	11.03	11.06	1,132.3	82.7	728	141803	1961	28225	342.1	342.7	35100	2563	22556
Aug-25	31	1,973	69.70	674.5	1.05	1.01	723.8	76.5	1,085	61161	2161	20911	32.5	31.3	22437	2373	33627
Sep-25	30	1,938	46.23	620.0	0.67	0.25	735.0	54.2	565	58154	1387	18601	20.0	7.5	22051	1626	16945
Oct-25	18	1,622	3.92	626.8	0.20	0.39	706.2	63.9	1,255	29187	71	11282	3.6	7.1	12711	1151	22584
Nov-25		1,855	70.58	1,057.2	0.82	0.22	1,122.4	78.2	781	0	0	0	0.0	0.0	0	0	0
Totals	201									366,692	9,211	143,556	528	516	183,768	12,940	138,540

△Totals (kg)	10,905	203	2,347	26.3	26.0	4,488	273	2,499
% Difference	3.1%	2.3%	1.7%	5.2%	5.3%	2.5%	2.2%	1.8%

2024 Fall Discharge: Oct 1 to Oct 28

2025 Spring Discharge: April 10 to April 30

2025 Fall Discharge: Oct 6 to Nov 14

Assume that each release includes influent from the first day of the previous release up to the first day of the current release.

Annual Performance Report 2025

Spring 2025 Pre-Discharge

Test Date	Cell Number	CBOD mg/L	Cond. µs/cm	React. P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	pH	TKN mg/L	TP mg/L	TSS mg/L	H2S mg/L	DO mg/L	Temp C°
2025-02-24	1	9	1550	0.741	33.8	0.10	0.10	6.74	38.1	0.485	17	2.25	2.31	0.9
	3	5	1440	0.01	24.7	0.10	0.10	6.72	31	0.985	21	2.25	2.8	0.5
	4	10	1430	0.01	55.9	0.10	0.10	6.96	60.4	0.686	29	2.25	2.1	0.5
	5	4	1230	0.633	22.2	0.10	0.10	6.79	25.7	0.85	7	2.25	3.39	0.4
	6	14	1440	0.102	47.3	0.10	0.10	6.73	50.8	0.634	25	2.25	3.03	0.5
	7	1	1180	0.224	10.7	0.1	1.14	6.66	12.8	0.302	2	0	9.76	0.4
	8	1	1070	1.21	2.18	0.10	0.34	6.78	3.77	1.24	2	0	9.91	0.3

Test Date	Cell Number	CBOD mg/L	Cond. µs/cm	React. P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	pH	TKN mg/L	TP mg/L	TSS mg/L	H2S mg/L	DO mg/L	Temp C°	Alkalinity
2025-03-17	3			0.06	24.3	0.1	0.2	7.12		0.61	18	2.25	3	4.6	173
	4			0.012	44.9	0.1	0.1	7.06		0.711	40	0	2.86	4.4	227
	5			0.127	18.6	0.1	0.14	7		0.624	35	0	7.6	4.8	146

Test Date	Cell Number	CBOD mg/L	Cond. µs/cm	React. P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	pH	TKN mg/L	TP mg/L	TSS mg/L	H2S mg/L	DO mg/L	Temp C°	Alkalinity
2025-03-27	1				26.1			7.38		0.39	17	0	4.09	5.3	
	3				23.2			7.46		0.952	27	0	2.97	5.8	
	4				12.5			7.79		0.358	23	0	4.96	5.8	
	5				13.6			7.74		0.404	20	0	13.55	5.7	
	6				35.1			6.86		0.579	20	0	5.26	5.5	
	7				3.08			7.00		0.228	5	0	7.31	7.0	

Test Date	Cell Number	CBOD mg/L	Cond. µs/cm	React. P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	pH	TKN mg/L	TP mg/L	TSS mg/L	H2S mg/L	DO mg/L	Temp C°
2025-04-08	5				23.4	0.1	0.1	7.01		0.521		0	12.6	5.7
	6				32.9	0.1	0.1	7.15		0.449		0	7.88	3.5

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Fall 2025 Pre-Discharge

Test Date	Cell Number	CBOD mg/L	Cond. µs/cm	React. P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	pH	TKN mg/L	TP mg/L	TSS mg/L	H2S mg/L	DO mg/L	Temp C°
2025-09-24	1	19	1120	0.01	29.2	0.23	0.27	8.09	42	1.09	95	0	6.09	19.9
	3	19	1070	0.01	7.84	1.56	0.81	8.08	17.2	0.784	52	0	7.51	19.4
	4	8	1070	0.075	0.232	0.10	0.14	8.39	3.94	0.41	17	0	8.25	19.3
	5	9	933	0.0357	0.036	0.10	0.10	9.7	5.39	0.703	38	0	8.45	18.6
	6	4	1020	0.468	1.47	0.10	0.20	7.76	5.2	0.611	7	0	6.31	19.4
	7	5	953	0.677	0.062	0.1	0.1	8.37	1.47	0.71	9	0	7.81	19.1
	8	9	818	0.638	0.061	0.10	0.10	8.41	1.49	0.7	2	0	7.67	19.3

Test Date	Cell Number	CBOD mg/L	Cond. µs/cm	React. P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	pH	TKN mg/L	TP mg/L	TSS mg/L	H2S mg/L	DO mg/L	Temp C°
2025-09-30	5				0.03					0.63	37			
	6				1.65					0.716	45			
	7				0.04					0.63	6			
	8				0.41					0.761	4			

Test Date	Cell Number	CBOD mg/L	Cond. µs/cm	React. P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	pH	TKN mg/L	TP mg/L	TSS mg/L	H2S mg/L	DO mg/L	Temp C°

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Note: Values in *orange italics* are averages of the preceeding and following test values

Township of Russell
Embrun Sewage Treatment System
Appendix B – 2025 Discharge Summary

Annual Performance Report 2025

Date	Discharge m³	CBOD mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH on site	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
6-Oct-25		2	0.405	0.56	0.10	0.10	5.14	0.693	18	980	7.84	0	0	0	0	0	0	0	0
7-Oct-25	8,992	2.5	0.431	1.17	0.10	0.10	4.92	0.66	11.5	990	7.67	22.48	3.88	10.53	0.90	0.90	44.24	5.89	103.41
8-Oct-25	9,473	2.5	0.431	1.17	0.10	0.10	4.92	0.66	11.5	990	7.67	23.68	4.08	11.09	0.95	0.95	46.61	6.20	108.94
9-Oct-25	9,226	2.5	0.431	1.17	0.10	0.10	4.92	0.66	11.5	990	7.67	23.07	3.98	10.80	0.92	0.92	45.39	6.04	106.10
10-Oct-25	9,629	2.5	0.431	1.17	0.10	0.10	4.92	0.66	11.5	990	7.67	24.07	4.15	11.27	0.96	0.96	47.37	6.31	110.73
11-Oct-25	9,324	2.5	0.431	1.17	0.10	0.10	4.92	0.66	11.5	990	7.67	23.31	4.02	10.91	0.93	0.93	45.87	6.11	107.23
12-Oct-25	9,384	2.5	0.431	1.17	0.10	0.10	4.92	0.66	11.5	990	7.67	23.46	4.04	10.98	0.94	0.94	46.17	6.15	107.92
13-Oct-25	8,931	2.5	0.431	1.17	0.10	0.10	4.92	0.66	11.5	990	7.67	22.33	3.85	10.45	0.89	0.89	43.94	5.85	102.71
14-Oct-25	10,034	3	0.457	1.78	0.10	0.10	4.70	0.617	5	1000	7.5	30.10	4.59	17.86	1.00	1.00	47.16	6.19	50.17
15-Oct-25	9,070	2.5	0.435	1.84	0.10	0.14	5.13	0.61	3.5	1000	7.5	22.68	3.94	16.64	0.91	1.22	46.48	5.56	31.75
16-Oct-25	9,584	3	0.435	1.84	0.10	0.14	5.13	0.61	4	1000	7	23.96	4.16	17.59	0.96	1.29	49.12	5.87	33.54
17-Oct-25	9,735	2.0	0.412	1.89	0.10	0.17	5.55	0.608	2	1000	7.46	19.47	4.01	18.40	0.97	1.65	54.03	5.92	19.47
18-Oct-25	9,233	5.0	0.402	2.09	0.10	0.22	5.59	0.54	9.5	979	7.4	46.17	3.71	19.30	0.92	2.03	51.61	5.02	87.71
19-Oct-25	9,420	5.0	0.402	2.09	0.10	0.22	5.59	0.54	9.5	979	7.4	47.10	3.79	19.69	0.94	2.07	52.66	5.12	89.49
20-Oct-25	9,474	5.0	0.402	2.09	0.10	0.22	5.59	0.54	9.5	979	7.4	47.37	3.81	19.80	0.95	2.08	52.96	5.15	90.00
21-Oct-25	9,466	5.0	0.402	2.09	0.10	0.22	5.59	0.54	9.5	979	7.4	47.33	3.81	19.78	0.95	2.08	52.91	5.15	89.93
22-Oct-25	9,675	5.0	0.402	2.09	0.10	0.22	5.59	0.54	9.5	979	7.4	48.38	3.89	20.22	0.97	2.13	54.08	5.26	91.91
23-Oct-25	9,239	5.0	0.402	2.09	0.10	0.22	5.59	0.54	9.5	979	7.4	46.20	3.71	19.31	0.92	2.03	51.65	5.03	87.77
24-Oct-25	9,404	8	0.392	2.29	0.10	0.27	5.63	0.48	17	957	7.41	75.23	3.69	21.54	0.94	2.54	52.94	4.51	159.87
25-Oct-25	8,910	5.5	0.276	2.27	0.10	0.29	5.05	0.41	11.5	989	7.4	49.01	2.46	20.18	0.89	2.58	44.95	3.62	102.47
26-Oct-25	9,419	5.5	0.276	2.27	0.10	0.29	5.05	0.41	11.5	989	7.405	51.80	2.60	21.33	0.94	2.73	47.52	3.83	108.32
27-Oct-25	9,301	5.5	0.276	2.27	0.10	0.29	5.05	0.41	11.5	989	7.405	51.16	2.57	21.07	0.93	2.70	46.92	3.78	106.96
28-Oct-25	9,117	5.5	0.276	2.27	0.10	0.29	5.05	0.41	11.5	989	7.405	50.14	2.52	20.65	0.91	2.64	46.00	3.71	104.85
29-Oct-25	9,048	3	0.160	2.24	0.10	0.31	4.46	0.333	6	1020	7.40	27.14	1.45	20.27	0.90	2.80	40.35	3.01	54.29
30-Oct-25	9,334	5.5	0.130	1.83	0.10	0.33	5.06	0.34	20	998	7.405	51.34	1.21	17.03	0.93	3.03	47.23	3.21	186.68
31-Oct-25	9,792	5.5	0.130	1.83	0.10	0.33	5.06	0.34	20	998	7.405	53.86	1.27	17.87	0.98	3.18	49.55	3.37	195.84
1-Nov-25	9,163	5.5	0.130	1.83	0.10	0.33	5.06	0.34	20	998	7.405	50.40	1.19	16.72	0.92	2.98	46.36	3.15	183.26
2-Nov-25	10,304	5.5	0.130	1.83	0.10	0.33	5.06	0.34	20	998	7.405	56.67	1.34	18.80	1.03	3.35	52.14	3.54	206.08
3-Nov-25	9,200	5.5	0.130	1.83	0.10	0.33	5.06	0.34	20	998	7.405	50.60	1.20	16.79	0.92	2.99	46.55	3.16	184.00
4-Nov-25	9,450	8	0.100	1.41	0.10	0.34	5.66	0.355	34	976	7.41	75.60	0.95	13.32	0.95	3.21	53.49	3.35	321.30
5-Nov-25	9,246	9.5	0.056	1.57	0.10	0.39	6.33	0.34	36	957	7.115	87.84	0.52	14.47	0.92	3.61	58.53	3.17	332.86
6-Nov-25	9,517	9.5	0.056	1.57	0.10	0.39	6.33	0.34	36	957	7.115	90.41	0.53	14.89	0.95	3.71	60.24	3.26	342.61
7-Nov-25	9,369	9.5	0.056	1.57	0.10	0.39	6.33	0.34	36	957	7.115	89.01	0.52	14.66	0.94	3.65	59.31	3.21	337.28
8-Nov-25	9,484	9.5	0.056	1.57	0.10	0.39	6.33	0.34	36	957	7.115	90.10	0.53	14.84	0.95	3.70	60.03	3.25	341.42
9-Nov-25	9,244	9.5	0.056	1.57	0.10	0.39	6.33	0.34	36	957	7.115	87.82	0.52	14.47	0.92	3.61	58.51	3.17	332.78
10-Nov-25	9,583	11	0.012	1.72	0.10	0.44	7.00	0.330	38	937	6.82	105.41	0.11	16.48	0.96	4.22	67.08	3.16	364.15
11-Nov-25	13,717	8	0.011	3.43	0.10	0.53	8.85	0.38	35.5	935	6.895	109.74	0.15	47.05	1.37	7.27	121.40	5.23	486.95
12-Nov-25	13,895	8	0.011	3.43	0.10	0.53	8.85	0.38	35.5	935	6.895	111.16	0.15	47.66	1.39	7.36	122.97	5.30	493.27
13-Nov-25	13,725	8	0.011	3.43	0.10	0.53	8.85	0.38	35.5	935	6.895	109.80	0.15	47.08	1.37	7.27	121.47	5.24	487.24
14-Nov-25	14,876	5	0.010	5.14	0.10	0.62	10.70	0.433	33	932	6.97	74.38	0.15	76.46	1.49	9.22	159.17	6.44	490.91
Total	384,987											2139.7	93	798.27	38.50	112	2295	180.51	7342.2
Average	9,871	5.25	0.24	2.13	0.10	0.29	6.11	0.48	19.13	975.25	7.37	53.49	2.33	19.96	0.96	2.81	57.37	4.51	183.55
Max	14,876	11	0.46	5.14	0.10	0.62	10.70	0.69	38	1,020	7.84	111.16	4.59	76.46	1.49	9.22	159.17	6.44	493.27
Min	8,910	2	0.01	0.56	0.10	0.10	4.46	0.33	2	932	6.82	19.47	0.11	10.45	0.89	0.89	40.35	3.01	19.47

Note: Values in *orange italics* are averages of the preceeding and following test values

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SPRING 2025 DISCHARGE COMPLIANCE AND EFFICIENCIES

	Effluent Limits		Effluent Objectives		Actual Discharge Ave.		% of Conc. Objective	%of Mass Limits
	Concentrations mg/L	Mass Kg	Concentrations mg/L	Mass* Kg	Concentrations mg/L	Mass Kg		
CBOD	30	23,190	20	6,777	2.20	634	9.4%	2.7%
TSS	30	23,190	20	6,777	18.20	6278	92.6%	27.1%
TP	0.56	433	0.5	169	0.39	130	76.5%	29.9%
N-NH3	10.00	7,730			9.52	2917		37.7%
H2S	0	0	0	0	0.00	0.00		
DO(min)	>2.0	678			11.19	3793		-
pH	6.0 - 9.5		6.5 - 8.5		7.1 to 8.74 with an avg. 7.99		-	
In-River Dilution	17.3 - 115		-	-	Max 306.34 Min 39.93 Average 161.8		High Dilution range	

*Objective mass is calculated based on max objective concentration

Removal Efficiencies

	Effluent Mass total kg	By Monthly Influent Volume		By Average Daily Mass	
		Influent Mass kg	Removal eff.	Influent Mass kg	Removal eff.
CBOD	634	116,704	99.5%	97,240	99.3%
TSS	6,278	67,135	90.6%	56,771	88.9%
TP	130	2,996	95.7%	2,435	94.7%
N-NH3	2,917	47,394	93.8%	35,040	91.7%

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FALL 2025 DISCHARGE COMPLIANCE AND EFFICIENCIES

	Effluent Limits		Effluent Objectives		Actual Discharge Ave.		% of Conc. Objective	% of Mass Limits
	Concentrations mg/L	Mass Kg	Concentrations mg/L	Mass* Kg	Concentrations mg/L	Mass Kg		
CBOD	30	19,132	20	7,700	5.25	2140	27.8%	11.2%
TSS	30	19,132	20	7,700	19.13	7342	95.4%	38.4%
TP	0.56	357	0.50	192	0.48	181	93.8%	50.6%
N-NH3	2.00	1,275	1	385	2.13	798	207.4%	62.6%
H2S	0	0			0.00	0.00	0.0%	0.0%
DO(min)	>2.0	770	-	-	10.15	3908		-
pH	6.0 - 9.5		6.5 - 8.5		7.77 to 8.36 with an avg. 7.99		-	
In-River Dilution	12.1:1 Oct - 7.9:1 Nov		-		9.3:1 to 241.4:1 Avg 99.3:1		High Dilution range	

*Objective mass is calculated based on max objective concentration

Removal Efficiencies

	Effluent Mass total kg	By Monthly Influent Volume		By Average Daily Mass	
		Influent Mass kg	Removal eff.	Influent Mass kg	Removal eff.
CBOD	2140	355,787	99.4%	366,692	99.4%
TSS	7342	136,041	94.6%	138,540	94.7%
TP	181	12,667	98.6%	12,940	98.6%
N-NH3	798	141,209	99.4%	143,556	99.4%

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[illegible]

SPRING 2025 DISCHARGE - RIVER WATER QUALITY

Location	Date	CBOD mg/L	Cond. µS/cm	React P. mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	pH on-site	TKN mg/L	TP mg/L	TSS mg/L	DO mg/L	Temp °C
U/S	10-Apr	1	668	0.013	0.155	0.10	3.99	6.57	1.22	0.038	25	10.77	3.2
	17-Apr	1	689	0.01	0.042	0.10	3.97	6.83	1.03	0.038	7	10.44	5.7
	21-Apr	1	615	0.01	0.049	0.10	4.3	6.75	1.03	0.023	11	9.75	8.3
	23-Apr	1	692	0.01	0.064	0.10	3.8	8.43	0.912	0.051	8	10.31	10.1
	30-Apr	1	713	0.019	0.068	0.10	3.36	6.93	0.803	0.045	15	9.05	13.5
D/S	10-Apr	1	667	0.01	0.064	0.10	4.23	6.51	1.01	0.036	15	11.25	3.1
	17-Apr	1	696	0.01	0.144	1.39	0.10	7.47	1.39	0.05	9	11	6.1
	21-Apr	1	619	0.01	0.08	0.1	4.27	7.42	1.07	0.027	15	10.01	8.5
	23-Apr	1	701	0.021	0.221	0.1	3.62	8.49	1.08	0.062	13	10.46	10.5
	30-Apr	1	729	0.01	0.088	0.1	3.64	7.68	0.941	0.02	12	10.08	13.3

Toxicity			
Date	Species	Test Length	Mortality
21-Apr	Daphnia Magna	48 hr	0
	Rainbow Trout	96 hr	4

FALL 2025 DISCHARGE

Date	Time	Meter Reading	Discharge Flow		Total	River Flow	Dilution	Lagoon DO	U/S River	D/S River	Effluent	Effluent	Temp
			L/s	m3/read	m3	m3/s	in River	mg/L	DO mg/L	DO mg/L	H2S	Quality	°C
6-Oct-25	10:07 AM	16897587	109.5			2.10	19.18	7.92	8.29	8.19	0.00		19.1
7-Oct-25		16906579	108.13	8,992	8,992	7.32	67.70						
8-Oct-25		16916052	105.8	9,473	18,465	8.20	77.50						
9-Oct-25		16925278	109.3	9,226	27,691	8.83	80.79						
10-Oct-25		16934907	105.8	9,629	37,320	8.07	76.28						
11-Oct-25		16944231	109.3	9,324	46,644	7.78	71.18						
12-Oct-25		16953615	106.7	9,384	56,028	7.88	73.85						
13-Oct-25		16962546	111.8	8,931	64,959	7.46	66.7						
14-Oct-25		16972580	108.6	10,034	74,993	7.32	67.40	7.94	6.8	7.5	0.00		14.1
15-Oct-25		16981650	111.3	9,070	84,063	7.02	63.1						
16-Oct-25		16991234	106.7	9,584	93,647	7.00	65.60						
17-Oct-25		17000969	109.5	9,735	103,382	5.80	53.0	8.16	8	7.36	0.00		11.3
18-Oct-25		17010202	106.4	9,233	112,615	7.39	69.5						
19-Oct-25		17019622	111.8	9,420	122,035	7.35	65.7						
20-Oct-25		17029096	113.3	9,474	131,509	7.87	69.5						
21-Oct-25		17038562	106.5	9,466	140,975	7.93	74.5						
22-Oct-25		17048237	106.59	9,675	150,650	8.24	77.3						
23-Oct-25		17057476	105.6	9,239	159,889	8.31	78.7						
24-Oct-25		17066880	107.1	9,404	169,293	7.80	72.8	9.14	7.63	8.64	0.00		10.9
25-Oct-25		17075790	105.93	8,910	178,203	8.07	76.2						
26-Oct-25		17085209	105.81	9,419	187,622	7.07	66.8						
27-Oct-25		17094510	107.7	9,301	196,923	5.63	52.3						
28-Oct-25		17103627	106.1	9,117	206,040	7.34	69.2						
29-Oct-25		17112675	107.6	9,048	215,088	6.94	64.5	9.73	9.1	9.62	0.00		8.8
30-Oct-25		17122009	106.7	9,334	224,422	7.27	68.1						
31-Oct-25		17131801	115.4	9,792	234,214	10.97	95.1						
1-Nov-25		17140964	111.01	9,163	243,377	11.29	101.7						
2-Nov-25		17151268	107.27	10,304	253,681	11.34	105.7						
3-Nov-25		17160468	107.5	9,200	262,881	10.69	99.4						
4-Nov-25		17169918	107.9	9,450	272,331	4.80	44.5	12.17	10.16	10.92	0.00		7
5-Nov-25		17179164	109.2	9,246	281,577	9.49	86.9						
6-Nov-25		17188681	108.3	9,517	291,094	5.62	51.9						
7-Nov-25		17198050	108.6	9,369	300,463	9.49	87.4						
8-Nov-25		17207534	109.6	9,484	309,947	5.25	47.9						
9-Nov-25		17216778	107.1	9,244	319,191	9.38	87.6						
10-Nov-25		17226361	112.63	9,583	328,774	9.07	80.5	11.97	11	11.79	0.00		2.8
11-Nov-25		17240078	157.7	13,717	342,491	8.74	55.4						
12-Nov-25		17253973	161.3	13,895	356,386	9.43	58.5						
13-Nov-25		17267698	154.8	13,725	370,111	9.51	61.4						
14-Nov-25	10:05 AM	17282574	164.81	14,876	384,987	9.22	55.9	14.18	12.72	13.47	0.00		2.7
Total	935.97			384,987									
Average			113.567	9871.462			70.2	10.15125	9.2125	9.68625	0		9.5875
Max			164.81	14876			105.7	14.18	12.72	13.47	0		19.1
Min			105.6	8910			19.2	7.92	6.8	7.36	0		2.7

FALL 2025 DISCHARGE - RIVER WATER QUALITY

Location	Date	CBOD mg/L	Cond. µS/cm	React P. mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	pH on site	TKN mg/L	TP mg/L	TSS mg/L	DO mg/L	Temp °C
U/S	6-Oct	4	1190	0.011	0.02	0.1	0.1	6.67	0.741	0.111	5	8.29	18.4
	14-Oct	4	1160	0.067	0.11	0.1	0.1	6.61	0.855	0.113	4	6.8	14
	17-Oct	1	1180	0.013	0.02	0.1	0.1	6.69	0.69	0.133	6	8	12.5
	24-Oct	3	1100	0.029	0.048	0.1	0.16	6.6	0.764	0.107	3	7.63	11.5
	29-Oct	5	1080	0.027	0.023	0.1	0.1	6.61	1	0.113	8	9.1	9.4
	4-Nov	4	1070	0.01	0.042	0.1	1.22	6.67	0.864	0.14	7	10.16	7
	10-Nov	2	1060	0.01	0.155	0.1	2.22	6.53	1.13	0.058	3	11	2.8
	14-Nov	1	1100	0.01	0.38	0.1	1.8	6.68	1	0.108	2	12.72	2.7
D/S	6-Oct	2	1150	0.016	0.02	0.1	0.1	7.34	0.814	0.128	9	8.19	18.1
	14-Oct	3	1120	0.079	0.194	0.1	0.10	7.11	1.28	0.167	12	7.5	14
	17-Oct	1	1100	0.098	0.301	0.1	0.1	7.18	1.32	0.208	2	7.36	12
	24-Oct	3	1130	0.068	0.277	0.1	0.21	6.99	1.38	0.14	7	8.64	11.8
	29-Oct	2	1080	0.064	0.316	0.1	0.2	7.07	1.4	0.142	3	9.62	8.8
	4-Nov	3	1070	0.01	0.074	0.1	0.81	7.06	0.88	0.137	11	10.92	7.1
	10-Nov	3	1010	0.01	0.158	0.1	1.78	6.57	1.14	0.078	5	11.79	2.3
	14-Nov	1	1080	0.01	0.59	0.1	1.99	6.68	1.79	0.135	10	13.47	3

Toxicity			
Date	Species	Test Length	Mortality
9-Oct	Daphnia Magna	48 hr	0
	Rainbow Trout	96 hr	0

TOWNSHIP OF RUSSELL PUBLIC UTILITIES



RUSSELL SANITARY SEWER SYSTEM WORKS #110001514

2025 ANNUAL OPERATIONS REPORT

Russell
Sanitary Capacity Report
January 1, 2026

Water Capacity	
Residential Units	2191 x 3 = 6573
Apartment Units	415 x 2 = 830
Commercial Units	59 x 1 = 59
Retirement Home w/ kitchen	30 x 1 = 30
Retirement Home no kitchen	102 x 1 = 102
In-Law Suites	0 x 1 = 0
Schools	5 = 302
Total Population Serviced	7896

Meter Reading from school, divided by 200 school days, divided daily average

NOTE: AVERAGE PERSONS PER HOUSEHOLD = 3.0 (STATISTICS CANADA 2006 CENSUS)
SCHOOLS POPULATION BASIS: @ 40% RURAL ~ 3 (8 HR SCHOOL DAY)
@ 60% URBAN ~ 3 (8 HR SCHOOL DAY)

Calculated per MOE Procedure D-5-1
TOWNSHIP OF RUSSELL - RUSSELL WASTEWATER SYSTEM UNCOMMITTED HYDRAULIC RESERVE CAPACITY
As of December 31, 2025

Average Daily Flow		Serviced Population		Per Capita Flow		Source:
2025	1,367 m ³ /d	2025	7,896	2025	0.173 m ³ /cap/d	Provided by Township
2024	1,495 m ³ /d	2024	7,584	2024	0.197 m ³ /cap/d	Provided by Township
2023	1,470 m ³ /d	2023	7,205	2023	0.204 m ³ /cap/d	Provided by Township
2022	1,309 m ³ /d	2022	6,954	2022	0.188 m ³ /cap/d	Provided by Township
2021	1,308 m ³ /d	2021	6,536	2021	0.200 m ³ /cap/d	Provided by Township

Total Serviced Population as of 2025: 7,896 people
Average per capita flow for the last five years: 0.193 m³/cap/d

Average Calculated Daily Flow				Source:
ADF	0.193 m ³ /cap/d X	7,896 =	1520.194 m ³ /d	Based on five-year historical average
D _c	Design Capacity (Rated)		2,675 m ³ /d	
D _{c1}	Hydraulic Restrictions Capacity		2,110 m ³ /d	2024 Master Plan (See Note 2)
D _{c2}	Maximum Operating Capacity before TPM		2,000 m ³ /d	
D _{c3}	Design Capacity Before TPM Plan is required		1,700 m ³ /d	
Cr	Design Capacity (Dc) - Av. Daily Flow (ADF)		1,155 m ³ /d	
P	Existing Residential Population Connected		7,896 people	From Planning Department
H	No. of Connected Residential Units		2,632 lots	
F	Average Daily Flow Per Capita		0.193 m ³ /cap/d	
L	No. of Committed Approved Lots		148 Lots	Water Allocation Spreadsheet Provided by Planning Department

$$Cu = Cr - \frac{L \cdot F \cdot P}{H}$$

Cu = 1069 m³/d Uncommitted Reserve Hydraulic Capacity

LU No. of Uncommitted Lots Remaining

$$LU = \frac{Cu}{P - F}$$

LU 1851 Lots

Uncommitted Reserve Hydraulic Capacity & Uncommitted Lots considering hydraulic restriction capacity specified in 2024 Master Plan

Cu = 504 m³/d
LU = 873 Lots

Uncommitted Reserve Hydraulic Capacity & Uncommitted Lots considering maximum operating capacity specified in 2012 ECA

Cu = 394 m³/d
LU = 682 Lots

Uncommitted Reserve Hydraulic Capacity & Uncommitted Lots before TPM needs to be implemented with South Nation Conservation

Cu = 94 m³/d
LU = 163 Lots

Notes:

- The actual per capita flows are below the projected per capita flows per the Master Plan and GMP. It is recommended that the Master Plan per capita flows continue to be used for planning.
- The above calculation is based on the rated capacity reported. It does not take into account any limitations in the wastewater collection and treatment system. As part of the Master Plan, CIMA+ completed a preliminary capacity assessment of the Russell WWTP. The plant was determined to be hydraulically limited. Based on the capacity assessment, operational challenges at the Russell WWTP, due to storage limitations, are expected when influent flows reach approximately 2,110 m³/d (~80% of the ECA rated capacity). This is also typically when the planning and design phase of upgrades to WWTPs is triggered. A detailed capacity assessment is recommended to confirm the rated capacity of the lagoon facility.
- Consultation with South Nation Conservation is recommended to eliminate restriction on Russell Lagoon ECA. According to reserve capacity calculation, minimal additional development should be approved in Russell until restriction in ECA is removed.

2024 Master Plan Average Daily Flow				Source:	
ADF	0.250 m ³ /d/c	X	7,896 =	1974 m ³ /d	Based on Master Plan Average Day Design Criteria for Russell. ECA 2012
D _c	Design Capacity			2,675 m ³ /d	
Cr	Design Capacity (Dc) - Av. Daily Flow (ADF)			701 m ³ /d	From Planning Department
P	Existing Residential Population Connected			7,896 people	
H	No. of Connected Residential Units			3,158 lots	
F	Average Daily Flow Per Capita			0.250 m ³ /cap/d	Water Allocation Spreadsheet Provided by Planning Department
L	No. of Committed Approved Lots			148 Lots	

$$Cu = Cr - \frac{L \cdot F \cdot P}{H}$$

Cu = 608 m³/d Uncommitted Reserve Hydraulic Capacity

PPU 2.5 persons per unit Based on Master Plan Design Criteria
LU No. of Uncommitted Lots Remaining

$$LU = \frac{Cu}{PPU \cdot F}$$

LU 973 Lots

RUSSELL SANITARY FLOWS AND CONSUMPTION 2025					
DATE	MONTHLY FLOW (m³)	DAILY AVERAGE (m³)	POPULATION	DAYS	AVERAGE
					PERSON/DAY (m³)
JAN	41,470	1,338	7,896	31	0.169
FEB	32,989	1,138	7,896	28	0.144
MAR	51,182	1,651	7,896	31	0.209
APR	58,413	1,947	7,896	30	0.247
MAY	45,072	1,454	7,896	31	0.184
JUNE	37,892	1,263	7,896	30	0.160
JULY	40,127	1,294	7,896	31	0.164
AUG	35,651	1,150	7,896	31	0.146
SEP	35,236	1,175	7,896	30	0.149
OCT	36,521	1,178	7,896	31	0.149
NOV	42,293	1,410	7,896	30	0.179
DEC	42,123	1,359	7,896	31	0.172
AVG m³	41,581				
TOTAL m³	498,969	1,367	7,896	365	0.173
YEAR	TOTAL YEARLY m³	AVERAGE MONTHLY m³	AVERAGE DAILY	POP	AVERAGE SEWAGE PERSON/DAY (m³)
2024	547,246	45,604	1,499	7,584	0.198
2023	538,120	44,843	1,474	7,205	0.205
2022	473,042	39,420	1,296	6,954	0.186
2021	476,952	39,746	1,303	6,536	0.199
2020	443,070	36,923	1,211	6,092	0.199
2019	416,199	34,683	1,140	5,606	0.203
2018	409,537	34,128	1,122	5,036	0.223
2017	431,706	35,976	1,183	4,796	0.247
2016	340,451	28,371	930	4,565	0.204
2015	311,705	26,761	880	4,364	0.202
2014	330,212	27,518	905	4,127	0.209
2013	331,131	27,594	908	3,867	0.235
2012	281,839	23,487	770	3,592	0.246
2011	323,301	26,842	886	3,137	0.282
2010	320,809	26,734	879	2,993	0.294
2009	333,982	27,832	915	2,984	0.307

RUSSELL SEWAGE TREATMENT SYSTEM 2025 ANNUAL PERFORMANCE REPORT

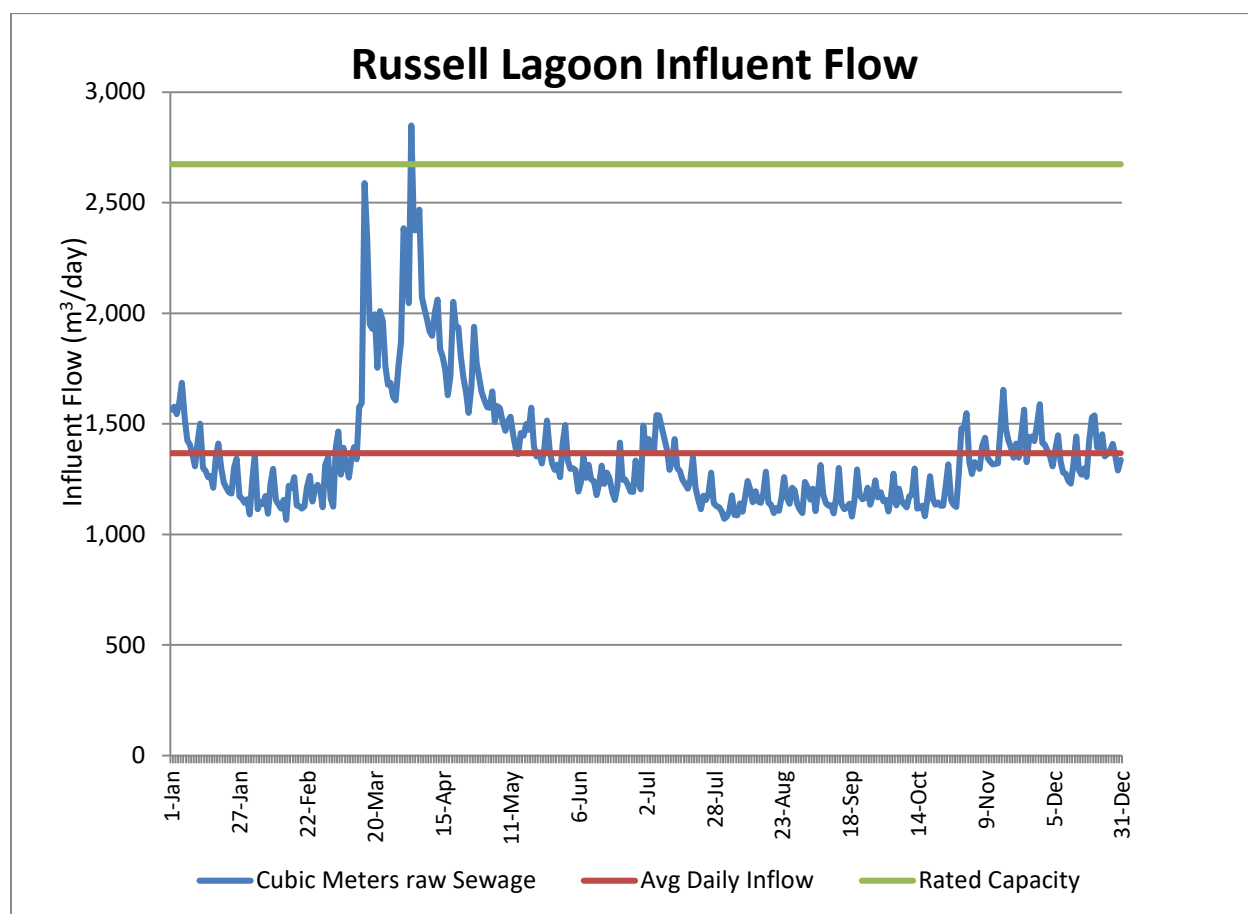
Executive Summary

The Russell Sewage Treatment System provides sewage treatment for the community of Russell in the Township of Russell. The sewage treatment system operates under the authority of Environmental Compliance Approval (ECA) number 3202-9XMPMQ issued August 21, 2015.

The Russell Sewage Treatment System currently consists of a five cell lagoon treatment facility that operates to receive an annual average day influent flow of 2,675 cubic meters and typically releases treated effluent twice annually. The annual releases must occur between January 1 and April 30 (Though the cells must be substantially free of ice cover) and between October 1 and December 15. There are no prescribed limits written into the ECA for either the spring or fall discharge volumes.

In 2025 the annual average day flow of raw sewage was 1,358 m³/day (**Figure 1**) representing 51% of the design annual average day flow (2,675 m³/day). The peak day flow of 2,850 m³/day occurred on April 3, 2025 and was a result of rainfall and snowmelt.

Figure 1: Russell Lagoon 2025 Influent Flow



RUSSELL SEWAGE TREATMENT SYSTEM 2025 ANNUAL PERFORMANCE REPORT

The ECA effluent compliance limits were met for the spring effluent discharge event. **Table 1** describes the ECA spring discharge effluent quality limits and compares those limits to the actual effluent quality characteristics of the 2025 spring discharge.

The ECA effluent compliance limits were met for the fall effluent discharge event. **Table 2** describes the ECA fall discharge effluent quality limits and compares those limits to the actual effluent quality characteristics of the 2025 fall discharge.

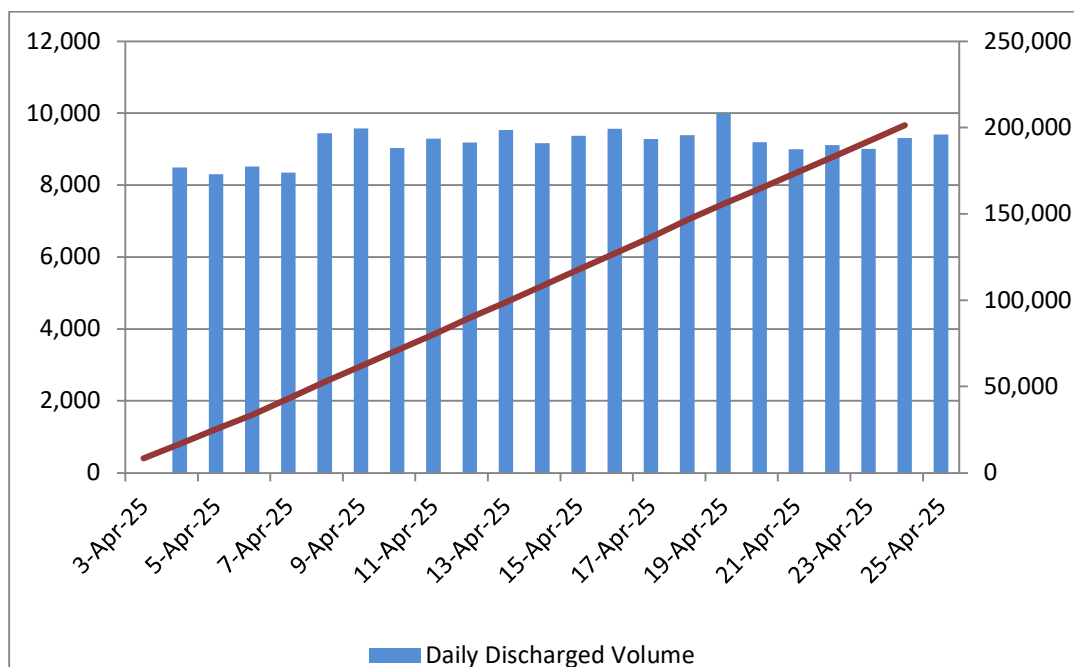
Table 1: ECA Spring Discharge Effluent Quality Limits and 2025 Actual Quality

Parameter	ECA Limits	Actual
Discharge volume	n/a	201,435 m ³
Discharge period	Mar 15 – Apr 30	Apr 3 – Apr 25
Dilution ratio (river flow : effluent flow)*	67:1	181.4:1
cBiochemical Oxygen Demand	30.0 mg/L	2.2 mg/L
Suspended solids	30.0 mg/L	7.6 mg/L
Total phosphorous	0.50 mg/L	0.13 mg/L
Total Ammonia Nitrogen	10.0 mg/L	5.11 mg/L
Hydrogen Sulphide	Non-detectable	0.0 mg/L
pH	6.0 to 9.5	7.04 – 8.30 ;avg. 7.68
Un-Ionized Ammonia	µg/L	38.31 µg/L

*Dilution Ratio is a ECA Objective, not a limit

The spring discharge volume was the final effluent produced by the sewage treatment system after processing raw sewage received from October 8, 2024 to April 3, 2025. The spring discharge profile and accumulated discharge volume are shown in **Figure 2**.

Figure 2: Russell Lagoon 2025 Spring Discharge



E.2

RUSSELL SEWAGE TREATMENT SYSTEM 2025 ANNUAL PERFORMANCE REPORT

Table 2 describes the ECA fall discharge effluent quality limits and the actual final effluent quality.

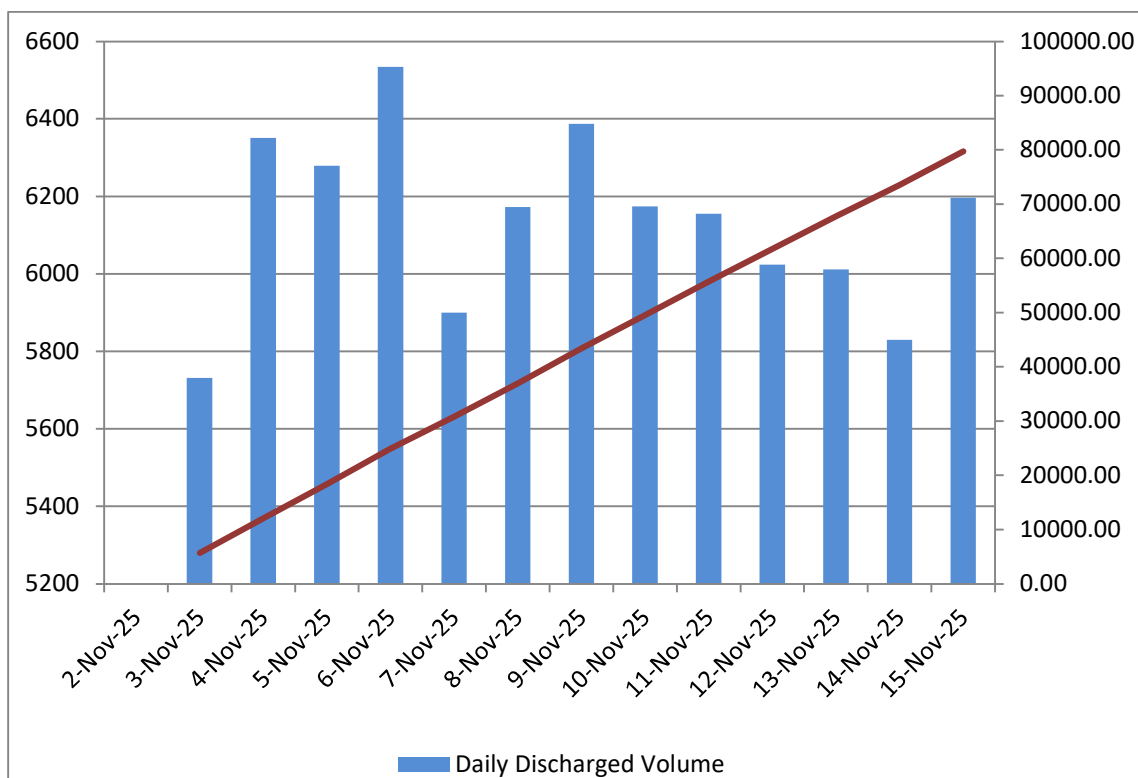
Table 2: ECA Fall Discharge Effluent Quality Limits and 2025 Actual Quality

Parameter	ECA Limits	Actual
Discharge volume	n/a	274,906 m ³
Discharge period	Oct 1 – Dec 15	Oct 6 – Nov 15
Dilution ratio (river flow : effluent flow)*	>13:1	51.1:1
cBiochemical Oxygen Demand	30.0 mg/L	2.72
Suspended solids	30.0 mg/L	5.11
Total phosphorous	0.5 mg/L	0.14
Total Ammonia Nitrogen	2.0 mg/L	1.05
Hydrogen Sulphide	Non-detectable	0.0 mg/L
pH	6.0 to 9.5	6.75 – 7.80 ;avg. 7.14
Un-Ionized Ammonia	µg/L	0.67 µg/L

*Dilution Ratio is a ECA Objective, not a limit

The fall discharge volume was the final effluent produced by the sewage treatment system after processing raw sewage received from April 3, 2025 to October 6, 2025. The fall discharge profile and accumulated discharge volume are shown in **Figure 3**.

Figure 3: Embrun Lagoon 2025 Fall Discharge



E.3

RUSSELL SEWAGE TREATMENT SYSTEM 2025 ANNUAL PERFORMANCE REPORT

During both the spring and fall discharge events a sample of the final effluent was collected and acute lethality tests were performed using the samples. For both samples zero mortality was observed when *Daphnia magna* were exposed to 100% final effluent for 48 hours. Also for both samples zero mortality was observed when rainbow trout were exposed to 100% final effluent for 96 hours.

There were six (6) public complaints related to the Russell sewage collection and treatment system logged in 2025. Staff responded to the complaints in a timely manner. Complaints were only for backup/blockages.

RUSSELL SEWAGE TREATMENT SYSTEM 2025 ANNUAL PERFORMANCE REPORT

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**RUSSELL SEWAGE TREATMENT SYSTEM
2025 ANNUAL PERFORMANCE REPORT**

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Appendix B	2025 Discharge Summary
Appendix C	2025 Removal Efficiencies
Appendix D	2025 Effluent Discharge

RUSSELL SEWAGE TREATMENT SYSTEM 2025 ANNUAL PERFORMANCE REPORT

1.0 Sewage Treatment System Overview

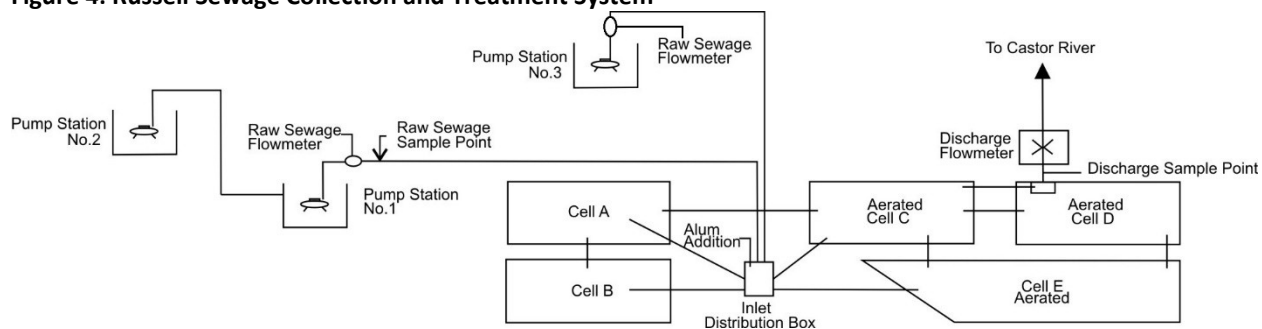
The Russell sewage treatment facility currently consists of three pumping stations and a five cell waste stabilization pond, an outlet chamber and an outfall pipe to the Castor River. The Phase 1 *Proposed Works* were completed in 2010 including a chemical addition system for phosphorous removal and an automatic effluent discharge control system.

Pump station 2 pumps sewage collected by a gravity system from a residential community to pump station 1. Pump station 1 receives sewage collected by gravity and from pump station 2 and then pumps the collected sewage to the lagoon treatment system. Pump station 3 collects sewage collected by gravity from a residential community and then pumps the collected sewage to the lagoon treatment system. The discharge flows from pump station 1 and 3 are metered and readings from the meter are used to report the treatment system influent flow rates. Alum is continuously injected into the sewage lagoon influent flow to aid in phosphorous removal. Treated effluent can be discharged to the Castor River twice a year: between January 1 and April 30 provided the cells are substantially free of ice cover, and between October 1 and December 15. The rate of the treated effluent discharge is proportional to the Castor River flow rate and is controlled to achieve prescribed dilution ratios.

The sewage treatment system operates under the authority of the Amended ECA No. 3202-9XMPMQ which was issued August 21, 2015.

Figure 4 is a schematic that outlines the sewage collection and treatment system. The schematic includes details that illustrate the location of the treatment system influent and effluent flow measurement devices. The schematic also identifies the raw sewage influent and treated effluent sample points.

Figure 4: Russell Sewage Collection and Treatment System



1.1 OPERATIONS AND MONITORING

Composite samples of raw sewage are collected once per month and analyzed for the parameters prescribed by the C of A or ECA with the exception of the influent tBOD₅. Influent samples were instead analyzed for CBOD₅. The samples were also analyzed to determine conductivity and pH, as well as the concentrations of total suspended solids (TSS), total ammonia-nitrogen (N-NH₃), nitrite-nitrogen (N-NO₂), nitrate-nitrogen (N-NO₃), total Kjeldahl nitrogen (TKN), reactive phosphorous (RP) and total phosphorous (TP).

RUSSELL SEWAGE TREATMENT SYSTEM 2025 ANNUAL PERFORMANCE REPORT

In advance of treated effluent discharge events, grab samples of the lagoon contents are collected from various locations throughout the lagoon treatment system and analyzed for the same suite of parameters listed for raw sewage analysis. The results from the analytical work are used to confirm the suitability of the treated effluent for release to the Castor River and to calculate the contaminant removal efficiencies of the lagoon system.

During the final effluent discharge events composite samples of the final effluent are collected and analyzed. The final effluent is sampled at least three times per week and analyzed for the required parameters (CBOD₅, TSS, TP, N-NH₃, H₂S, pH, and temperature). Additional readings of conductivity, RP, N-NO₂, N-NO₃, TKN, and DO are also taken during the sampling events. The Castor River is sampled upstream and downstream of the discharge during the events and analyzed for the same suite of parameters (CBOD₅, conductivity, RP, N-NH₃, N-NO₂, N-NO₃, pH, TKN, TP, DO, temperature, and H₂S) as was the lagoon final effluent.

Flow measurement data is collected by the sewage treatment SCADA system and verified by regular inspections by operating staff. Flow measurement of the raw sewage influent is accomplished using a magnetic flow meter located in the discharge piping of pump station 1. The flow from pump station 1 and 3 is conveyed directly to the lagoon treatment system and is the treatment system influent flow.

The final effluent discharge flow is measured using a flow meter. The collected flow measurements and the results from the analytical work performed on all the collected samples were used to verify the effectiveness of the sewage collection and treatment system and compliance with the terms and conditions of the ECA's.

The ECA effluent compliance limits were met for the spring and fall treated effluent discharge events. In the appendices of this report are tables of data that have been compiled and used to track and evaluate the performance of the sewage treatment system.

To ensure compliance with the performance criteria stipulated in the ECA the sewage treatment system was operated to meet the concentration objectives prescribed in the Terms and Conditions - Part 6. **Table 4** and **Table 5** describe the contaminant removal efficiencies of the sewage treatment system and provides for comparisons of the ECA concentration objectives and limits to 2025 actual conditions.

Table 3: Spring Final Effluent Characteristics and Sewage Treatment Removal Efficiencies

	Limits		Objectives		Results			
	Con. (mg/L)	Mass (kg)	Con. (mg/L)	Mass (kg)	Effluent Conc. (mg/L)	Effluent Mass (kg)	Influent Mass (kg)	Mass Removed
cBOD	30.0		20.0	5,266	2.20	430	38,799	98.9%
TSS	30.0		20.0	5,266	7.64	1,574	40,250	96.1%
TP	0.5	132	0.4	105	0.13	24	1,045	97.7%
N-NH ₃ -N	10.0		5.0	1,317	5.11	1,018	8,440	87.9%
H ₂ S	0.00				0.00			
pH	6.0-9.5		6.5-8.5		7.04 to 8.30 with an avg. 7.68			
In-River Dilution	67:1				77.7 to 395.8, avg. 181.4			

RUSSELL SEWAGE TREATMENT SYSTEM 2025 ANNUAL PERFORMANCE REPORT

Table 4: Fall Final Effluent Characteristics and Sewage Treatment Removal Efficiencies

	Limits		Objectives		Results			
	Con. (mg/L)	Mass (kg)	Con. (mg/L)	Mass (kg)	Effluent Conc. (mg/L)	Effluent Mass (kg)	Influent Mass (kg)	Mass Removed
cBOD	30.0		20.0	3,553	2.72	743	23,922	96.9%
TSS	30.0		20.0	3,553	5.11	1,810	33,396	94.6%
TP	0.50	89	<0.50	87	0.14	37	1,025	96.4%
N-NH ₃ -N	2		1	178	1.05	373	9,423	96.0%
H ₂ S	0		0	0	0	0	n/a	
pH	6.0 - 9.5		6.5 – 8.5		6.75 to 7.80 with an avg. 7.14			
In-River Dilution	>13:1				22.4 to 78.4, avg. 51.1:1			

The quantity of sludge generated in 2025 by the sewage treatment system is based on 60 grams of sludge generated per capita day. The estimated quantity of sludge generated in 2025 is 172,922 kg dry solids. With an estimated population growth of 2%, it is expected the sludge generated in 2026 will be approximately 176,361 kg of dry solids. As of the end of 2025 this leaves approximately 30,776 m³ of sludge, which represents a loss of 4.6%.

Effluent temperature, pH, and N-NH₃ readings were taken at the time of the spring and fall discharge sample collections, pH and temperature were taken on site while N-NH₃ were determined by a certified lab. These results were used to determine the un-ionized ammonia concentration of the final effluent as per “Ontario’s Provincial Water Quality Objectives” (July 1994). The final effluent un-ionized ammonia during the spring discharge event ranged from 6.19µg/L to 115.58 µg/L, averaging over the course of the discharge 48.75µg/L. The final effluent un-ionized ammonia during the fall discharge event ranged from 0.23µg/L to 7.89µg/L with an average of 2.47 µg/L. This is well under the 20µg/L objective. Total phosphor discharged over the course of the year was 61 kg, which is well under the annual limit of 365 kg/year (16.7%) as established by the ECA.

During both the spring and fall discharge events samples of the final effluent were collected and acute lethality tests were performed. The samples were collected on April 21, 2025 and October 9, 2025. Zero mortality was observed when *Daphnia magna* were exposed for 48 hours to 100% final effluent from both samples. Zero mortality was also observed for both samples when rainbow trout were exposed to 100% final effluent for 96 hours.

Analytical results from Castor River samples taken during the spring and fall discharge events are included in Appendix D.

¹ Dry solids have been calculated assuming three people per connection and 60g of solids accumulated per person per day. 2025 predicted dry solids = 365 days * 60 g/capita/day * (7,896 population)

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1.1.1 Public Complaints

There were six (6) public complaints related to the operation of the sewage collection and treatment system in 2025. Details of the complaint is summarized in **Table 6**.

Table 5: 2025 Public Complaint Summary

Date 2025	Address	Complaint	Action Taken
13 Jan	Solidex	Excess odour	determined to be storm.
17 Jan	Parkview Terrace	Excess odour	determined to be storm
12 Feb	Craig	Sewer-Repair	manhole cover repair
10 Mar	Pebblemill	Sewage Backup	mains checked, no blockage determined
29 May	First	Sewage Backup	camera and dye test of main, no blockage determined
29 Sept	Craig	Sewer - Repair	inspect indicated manhole chamber, no issues.

*For more information refer to specific ticket ID#

1.1.2 Alterations, Extension and Replacements in 2025

No major changes to the collection system in 2025 beyond the addition of new roads. Station #4 was completed and now services the subdivision along Church (Southwest).

1.1.3 Alterations, Extension and Replacements Planned for 2026

Construction of the three new subdivisions (Solidex, South West Park and Russell Trails) will continue. Work on a sanitary quality management system(QMS) will continue this year as well as an operations and maintenance manual to be implemented when complete. A survey of sludge in Russell Lagoon is to be undertaken to evaluate capacity loss.

1.1.4 2025 Maintenance Activities Summary

In 2025 all trunk sewers were meant to be flushed and cleaned using contracted services. The following tables summarize the routine and corrective maintenance activities performed by Township staff and contracted service providers on the collection and treatment facilities.

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Table 6 : Pump Station 1, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Back-Up Generator checks	Weekly		
Building Lights & HVAC	Weekly		
SCADA & UPS checks	Weekly		
Wet/Dry well inspection	Weekly		
Meter Readings	Weekly		
Test run back-up generator	Weekly		
Alarm Test and Flowmeter Calibration	Annually	15 Sept	
Generator Inspection, change generator oil and fuel filter	Annually	26 June	
Double Check Valve certification	Annually	13 Mar	
Replace Milltronics Battery	Every 3 Years		
HVAC Maintenance		17 Sept	
Corrective Maintenance			
Clear basket		7 Feb	
Clean basket and wet well		25 Feb	
Rake basket		28 Mar	
Clean basket		3 Apr	
Clean basket and wet well		5 May	
Replace P#2 with original repaired pump		15 May	
Clean basket and wet well		20 June	
Clean basket and wet well		17 July	
Clean grit chamber		17 July	
Clean basket		19 Aug	
Clean basket and wet well		17 Nov	
Clean grit chamber		17 Nov	
Clean basket		22 Dec	

Table 7 : Pump Station 2, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Pump Back-up Engine Drive Checks	Weekly		
Building Lights & HVAC	Weekly		
SCADA & UPS checks	Weekly		
Wet/Dry well inspection	Weekly		
Meter Readings	Weekly		
Test run pump engine drive	2/month		
Pump Engine service	Annual	26 June	
Instrument and Alarm test calibration	Annually	15 Sept	
Double Check Valve certification	Annually	13 Mar	
Replace Milltronics Battery	Every 3 Years		

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Corrective Maintenance			
Clean basket and wet well		3 Apr	
Replace gen battery		5 Sept	
Clean basket and wet well		11 Sept	

Table 8 : Pump Station 3, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Pump Back-up Engine Drive Checks	Weekly		
Building Lights & HVAC	Weekly		
SCADA & UPS checks	Weekly		
Wet well inspection	Weekly		
Meter Readings	Weekly		
Test run back-up generator	Weekly		Automated by SCADA
Generator Inspection, change generator oil and fuel filter	Annually		
Generator Annual Inspection	Annually	26 June	
Instrument and Alarm test calibration	Annually	7 Oct	
Flowmeter Calibration	Annually	15 Sept	
Double Check Valve certification	Annually	13 Mar	
Replace Milltronics Battery	Every 3 Years		
Install Emergency Generator connection		2 Sept	
Corrective Maintenance			
Clean wet well		Jan 8	
Generator Maintenance		6 Feb	
Clean Wet Well and basket		25 Feb	
Clean wet well and basket		3 Apr	
Clean wet well		5 May	
Clean wet well		20 June	
Clean wet well and basket		17 July	
Clean wet well and basket		19 Aug	
Clean wet well and basket		11 Sept	
Clean Wet Well		3 Oct	
Clean wet well and basket		19 Dec	
Transfer Switch Maintenance		31 Dec	

Table 9 : Pump Station 4, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Building Lights & HVAC	Weekly		
SCADA & UPS checks	Weekly		
Wet well inspection	Weekly		
Meter Readings	Weekly		
Test run back-up generator	Weekly		Automated by SCADA
Generator Inspection, change generator oil	Annually		

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and fuel filter			
Generator Annual Inspection	Annually		
Instrument and Alarm test calibration	Annually		
Flowmeter Calibration	Annually		
Double Check Valve certification	Annually		
Replace Milltronics Battery	Every 3 Years		
Corrective Maintenance			

Table 10 : Alum Building, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Building Lights, HVAC, etc.	Weekly		
Meter Readings	Weekly		
Alum Line Flush	Weekly/Monthly		Weekly during winter, monthly during other months
Instrument and Alarm test calibration	Annually		
Corrective Maintenance			

Table 11 : Blower Building, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Building Lights, HVAC, etc.	Weekly		
Meter Readings	Weekly		
Oil Change	1000 hrs	28 July	
Oil change	1000 hrs		
Grease Blower	Annually		1,2,3
Instrument and Alarm test calibration	Annually		
Clean Blower Air Filter			
Corrective Maintenance			

Table 12 : Kiosk Building, 2025 Maintenance History

Preventative Maintenance	Frequency	Date	Comments
Building Lights, HVAC, etc.	Weekly		
SCADA system, UPS check	Weekly		
Meter Readings	Weekly		
Valve & Chamber inspection	Weekly		
Flow Meter calibration	Annually		
Instrument and Alarm test calibration	Annually		
Flowmeter Calibration	Annually		

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Corrective Maintenance			

Table 13 : Collection System

Preventative Maintenance	Frequency	Date	Comments
Flushing	Annually		
Visual Inspection of Manhole chambers	Annually		
Corrective Maintenance			
Sewage back up, Castor, Dunlop		24 Nov	

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MONTHLY INFLUENT DATA

Date Oct-24	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,270																		
2	1,277																		
3	1,275																		
4	1,231																		
5	1,338																		
6	1,445																		
7	1,321	81	2.36	25.9	0.1	0.1	27.9	3.36	85	1080	7.26	107.001	3.11756	34.2139	0.1321	0.1321	36.8559	4.43856	112.285
8	1,293																		
9	1,251																		
10	1,248																		
11	1,242																		
12	1,310																		
13	1,331																		
14	1,380																		
15	1,226																		
16	1,221																		
17	1,201																		
18	1,149																		
19	1,251																		
20	1,343																		
21	1,193																		
22	1,210																		
23	1,166																		
24	1,169																		
25	1,090																		
26	1,191																		
27	1,279																		
28	1,151																		
29	1,203																		
30	1,170																		
31	1,076																		
Total	38,501	6,391																	
Average	1,242	81	2.36	25.9	0.10	0.10	28	3.4	85	1,080	7.26	107.00	3.12	34.21	0.13	0.13	36.86	4.44	112.29
Max	1,445	81	2.36	25.9	0.10	0.10	28	3.4	85	1,080	7.26	107.00	3.12	34.21	0.13	0.13	36.86	4.44	112.29
Min	1,076	81	2.36	25.9	0.10	0.10	28	3.4	85	1,080	7.26	107.00	3.12	34.21	0.13	0.13	36.86	4.44	112.29

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Date Nov-24	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,032																		
2	1,215																		
3	1,319																		
4	1,165	296	0.263	51.6	0.1	0.1	64.2	7.88	396	964	6.92	344.84	0.306395	60.114	0.1165	0.1165	74.793	9.1802	461.34
5	1,151																		
6	1,184																		
7	1,181																		
8	1,242																		
9	1,240																		
10	1,355																		
11	1,319																		
12	1,224																		
13	1,209																		
14	1,206																		
15	1,156																		
16	1,263																		
17	1,311																		
18	1,191																		
19	1,142																		
20	1,152																		
21	1,220																		
22	1,252																		
23	1,387																		
24	1,410																		
25	1,245																		
26	1,285																		
27	1,290																		
28	1,296																		
29	1,247																		
30	1,343																		
Total	37,232																		
Average	1,241	296	0.26	51.6	0.10	0.10	64	7.9	396	964	6.92	344.84	0.31	60.11	0.12	0.12	74.79	9.18	461.34
Max	1,410	296	0.26	51.6	0.10	0.10	64	7.9	396	964	6.92	344.84	0.31	60.11	0.12	0.12	74.79	9.18	461.34
Min	1,032	296	0.26	51.6	0.10	0.10	64	7.9	396	964	6.92	344.84	0.31	60.11	0.12	0.12	74.79	9.18	461.34

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Date Dec-24	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,417																		
2	1,308																		
3	1,248																		
4	1,251																		
5	1,282																		
6	1,240																		
7	1,351																		
8	1,404																		
9	1,252	206	2.9	38.7	0.14	0.1	49.7	5.07	253	1100	7.16	257.912	3.6308	48.4524	0.17528	0.1252	62.2244	6.34764	316.756
10	1,210																		
11	1,398																		
12	1,413																		
13	1,321																		
14	1,478																		
15	1,562																		
16	1,373																		
17	1,640																		
18	1,627																		
19	1,665																		
20	1,596																		
21	1,691																		
22	1,651																		
23	1,577																		
24	1,565																		
25	1,529																		
26	1,485																		
27	1,432																		
28	1,470																		
29	1,525																		
30	1,718																		
31	1,587																		
Total	45,266																		
Average	1,460	206	2.90	38.7	0.14	0.10	50	5.1	253	1,100	7.16	257.91	3.63	48.45	0.18	0.13	62.22	6.35	316.76
Max	1,718	206	2.90	38.7	0.14	0.10	50	5.1	253	1,100	7.16	257.91	3.63	48.45	0.18	0.13	62.22	6.35	316.76
Min	1,210	206	2.90	38.7	0.14	0.10	50	5.1	253	1,100	7.16	257.91	3.63	48.45	0.18	0.13	62.22	6.35	316.76

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Date Jan-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,564																		
2	1,577																		
3	1,543																		
4	1,597																		
5	1,685																		
6	1,524																		
7	1,425																		
8	1,406																		
9	1,361																		
10	1,308																		
11	1,414																		
12	1,500																		
13	1,301	285	3.96	43.1	0.14	0.1	62.3	5.63	245	1070	7.34	370.785	5.15196	56.0731	0.18214	0.1301	81.0523	7.32463	318.745
14	1,287																		
15	1,258																		
16	1,264																		
17	1,211																		
18	1,345																		
19	1,411																		
20	1,299																		
21	1,234																		
22	1,211																		
23	1,191																		
24	1,185																		
25	1,301																		
26	1,343																		
27	1,171																		
28	1,162																		
29	1,142																		
30	1,159																		
31	1,091																		
Total	41,470																		
Average	1,338	285	3.96	43.1	0.14	0.10	62	5.6	245	1,070	7.34	370.79	5.15	56.07	0.18	0.13	81.05	7.32	318.75
Max	1,685	285	3.96	43.1	0.14	0.10	62	5.6	245	1,070	7.34	370.79	5.15	56.07	0.18	0.13	81.05	7.32	318.75
Min	1,091	285	3.96	43.1	0.14	0.10	62	5.6	245	1,070	7.34	370.79	5.15	56.07	0.18	0.13	81.05	7.32	318.75

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Date Feb-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,246																		
2	1,360																		
3	1,114	173	2.82	38.4	0.1	0.1	42.3	3.99	86	1240	7.43	192.722	3.14148	42.7776	0.1114	0.1114	47.1222	4.44486	95.804
4	1,146																		
5	1,137																		
6	1,173																		
7	1,093																		
8	1,227																		
9	1,296																		
10	1,154																		
11	1,136																		
12	1,116																		
13	1,156																		
14	1,067																		
15	1,219																		
16	1,211																		
17	1,259																		
18	1,131																		
19	1,126																		
20	1,117																		
21	1,127																		
22	1,213																		
23	1,264																		
24	1,148																		
25	1,205																		
26	1,223																		
27	1,203																		
28	1,122																		
29	0																		
Total	32,989																		
Average	1,138	173	2.82	38.4	0.10	0.10	42	4.0	86	1,240	7.43	192.72	3.14	42.78	0.11	0.11	47.12	4.44	95.80
Max	1,360	173	2.82	38.4	0.10	0.10	42	4.0	86	1,240	7.43	192.72	3.14	42.78	0.11	0.11	47.12	4.44	95.80
Min	1,067	173	2.82	38.4	0.10	0.10	42	4.0	86	1,240	7.43	192.72	3.14	42.78	0.11	0.11	47.12	4.44	95.80

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Date Mar-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,314																		
2	1,348																		
3	1,161																		
4	1,125	86	2.74	39.9	0.10	0.10	48	4.09	112	1330	7.56	96.75	3.0825	44.8875	0.1125	0.1125	54	4.60125	126
5	1,393																		
6	1,466																		
7	1,270																		
8	1,392																		
9	1,307																		
10	1,257																		
11	1,346																		
12	1,395																		
13	1,339																		
14	1,576																		
15	1,593																		
16	2,588																		
17	2,340																		
18	1,950																		
19	1,930																		
20	1,995																		
21	1,754																		
22	2,009																		
23	1,963																		
24	1,760																		
25	1,677																		
26	1,685																		
27	1,621																		
28	1,606																		
29	1,764																		
30	1,873																		
31	2,385																		
Total	51,182																		
Average	1,651	86	2.74	39.9	0.10	0.10	48	4.1	112	1,330	7.56	96.75	3.08	44.89	0.11	0.11	54.00	4.60	126.00
Max	2,588	86	2.74	39.9	0.10	0.10	48	4.1	112	1,330	7.56	96.75	3.08	44.89	0.11	0.11	54.00	4.60	126.00
Min	1,125	86	2.74	39.9	0.10	0.10	48	4.1	112	1,330	7.56	96.75	3.08	44.89	0.11	0.11	54.00	4.60	126.00

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Date Apr-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	2,258																		
2	2,045																		
3	2,850																		
4	2,376																		
5	2,376																		
6	2,468																		
7	2,073	133	4.14	42.4	0.1	0.1	59.3	6.32	176	1480	7.97	275.709	8.58222	87.8952	0.2073	0.2073	122.929	13.1014	364.848
8	2,019																		
9	1,973																		
10	1,919																		
11	1,898																		
12	2,007																		
13	2,061																		
14	1,837																		
15	1,803																		
16	1,744																		
17	1,629																		
18	1,714																		
19	2,051																		
20	1,942																		
21	1,936																		
22	1,799																		
23	1,707																		
24	1,643																		
25	1,550																		
26	1,670																		
27	1,939																		
28	1,775																		
29	1,709																		
30	1,642																		
Total	58,413																		
Average	1,947	133	4.14	42.4	0.10	0.10	59	6.3	176	1,480	7.97	275.71	8.58	87.90	0.21	0.21	122.93	13.10	364.85
Max	2,850	133	4.14	42.4	0.10	0.10	59	6.3	176	1,480	7.97	275.71	8.58	87.90	0.21	0.21	122.93	13.10	364.85
Min	1,550	133	4.14	42.4	0.10	0.10	59	6.3	176	1,480	7.97	275.71	8.58	87.90	0.21	0.21	122.93	13.10	364.85

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Date May-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,608																		
2	1,575																		
3	1,572																		
4	1,646																		
5	1,509	162	0.021	54.4	0.10	0.10	57.6	5.56	256	1430	7.5	244.458	0.031689	82.0896	0.1509	0.1509	86.9184	8.39004	386.304
6	1,580																		
7	1,570																		
8	1,511																		
9	1,468																		
10	1,513																		
11	1,532																		
12	1,453																		
13	1,390																		
14	1,363																		
15	1,458																		
16	1,447																		
17	1,499																		
18	1,472																		
19	1,573																		
20	1,399																		
21	1,353																		
22	1,372																		
23	1,320																		
24	1,393																		
25	1,514																		
26	1,386																		
27	1,321																		
28	1,291																		
29	1,315																		
30	1,259																		
31	1,410																		
Total	45,072																		
Average	1,454	162	0.02	54.4	0.10	0.10	58	5.6	256	1,430	7.50	244.46	0.03	82.09	0.15	0.15	86.92	8.39	386.30
Max	1,646	162	0.02	54.4	0.10	0.10	58	5.6	256	1,430	7.50	244.46	0.03	82.09	0.15	0.15	86.92	8.39	386.30
Min	1,259	162	0.02	54.4	0.10	0.10	58	5.6	256	1,430	7.50	244.46	0.03	82.09	0.15	0.15	86.92	8.39	386.30

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Appendix A – 2025 Influent Summary

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Date Jun-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,495																		
2	1,334	32	2.91	39.7	0.1	0.1	40.3	3.04	141	1580	7.75	42.7	3.9	53.0	0.1	0.1	53.8	4.1	188.1
3	1,296																		
4	1,299																		
5	1,290																		
6	1,193																		
7	1,235																		
8	1,350																		
9	1,255																		
10	1,315																		
11	1,249																		
12	1,240																		
13	1,177																		
14	1,228																		
15	1,310																		
16	1,228																		
17	1,278																		
18	1,255																		
19	1,191																		
20	1,155																		
21	1,216																		
22	1,415																		
23	1,247																		
24	1,249																		
25	1,227																		
26	1,194																		
27	1,192																		
28	1,333																		
29	1,242																		
30	1,204																		
Total	37,892																		
Average	1,263	32	2.91	39.7	0.10	0.10	40	3.0	141	1,580	7.75	42.69	3.88	52.96	0.13	0.13	53.76	4.06	188.09
Max	1,495	32	2.91	39.7	0.10	0.10	40	3.0	141	1,580	7.75	42.69	3.88	52.96	0.13	0.13	53.76	4.06	188.09
Min	1,155	32	2.91	39.7	0.10	0.10	40	3.0	141	1,580	7.75	42.69	3.88	52.96	0.13	0.13	53.76	4.06	188.09

Township of Russell
Russell Sewage Treatment System
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Annual Performance Report 2025

Date Jul-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,491																		
2	1,379																		
3	1,431																		
4	1,375																		
5	1,371																		
6	1,539																		
7	1,538	43	2.24	30	0.1	0.1	45.9	3.34	82	1580	7.7	66.134	3.44512	46.14	0.1538	0.1538	70.5942	5.13692	126.116
8	1,487																		
9	1,438																		
10	1,382																		
11	1,292																		
12	1,331																		
13	1,431																		
14	1,299																		
15	1,287																		
16	1,248																		
17	1,226																		
18	1,207																		
19	1,247																		
20	1,350																		
21	1,212																		
22	1,161																		
23	1,113																		
24	1,175																		
25	1,156																		
26	1,188																		
27	1,278																		
28	1,141																		
29	1,128																		
30	1,122																		
31	1,104																		
Total	40,127																		
Average	1,294	43	2.24	30.0	0.10	0.10	46	3.3	82	1,580	7.70	66.13	3.45	46.14	0.15	0.15	70.59	5.14	126.12
Max	1,539	43	2.24	30.0	0.10	0.10	46	3.3	82	1,580	7.70	66.13	3.45	46.14	0.15	0.15	70.59	5.14	126.12
Min	1,104	43	2.24	30.0	0.10	0.10	46	3.3	82	1,580	7.70	66.13	3.45	46.14	0.15	0.15	70.59	5.14	126.12

Township of Russell
Russell Sewage Treatment System
Appendix A – 2025 Influent Summary

Annual Performance Report 2025

Date Aug-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,070																		
2	1,081																		
3	1,106																		
4	1,176																		
5	1,088																		
6	1,086																		
7	1,140																		
8	1,102																		
9	1,167																		
10	1,241																		
11	1,204	177	2.2	38.2	0.1	0.1	48.5	4.21	124	1180	7.17	213.108	2.6488	45.9928	0.1204	0.1204	58.394	5.06884	149.296
12	1,146																		
13	1,195																		
14	1,149																		
15	1,143																		
16	1,186																		
17	1,283																		
18	1,143																		
19	1,134																		
20	1,097																		
21	1,120																		
22	1,106																		
23	1,168																		
24	1,258																		
25	1,168																		
26	1,138																		
27	1,211																		
28	1,199																		
29	1,137																		
30	1,112																		
31	1,097																		
Total	35,651																		
Average	1,150	177	2.20	38.2	0.10	0.10	49	4.2	124	1,180	7.17	213.11	2.65	45.99	0.12	0.12	58.39	5.07	149.30
Max	1,283	177	2.20	38.2	0.10	0.10	49	4.2	124	1,180	7.17	213.11	2.65	45.99	0.12	0.12	58.39	5.07	149.30
Min	1,070	177	2.20	38.2	0.10	0.10	49	4.2	124	1,180	7.17	213.11	2.65	45.99	0.12	0.12	58.39	5.07	149.30

Township of Russell
Russell Sewage Treatment System
Appendix A – 2025 Influent Summary

Annual Performance Report 2025

Date Sep-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,236																		
2	1,211	68	3.28	38.2	0.1	0.17	47.4	4.1	67	1170	7.51	82.3	4.0	46.3	0.1	0.2	57.4	5.0	81.1
3	1,157																		
4	1,207																		
5	1,105																		
6	1,192																		
7	1,313																		
8	1,182																		
9	1,140																		
10	1,130																		
11	1,131																		
12	1,095																		
13	1,171																		
14	1,301																		
15	1,138																		
16	1,113																		
17	1,123																		
18	1,138																		
19	1,081																		
20	1,157																		
21	1,293																		
22	1,179																		
23	1,158																		
24	1,166																		
25	1,210																		
26	1,134																		
27	1,174																		
28	1,244																		
29	1,167																		
30	1,190																		
Total	35,236																		
Average	1,175	68	3.28	38.2	0.10	0.17	47	4.1	67	1,170	7.51	82.35	3.97	46.26	0.12	0.21	57.40	4.97	81.14
Max	1,313	68	3.28	38.2	0.10	0.17	47	4.1	67	1,170	7.51	82.35	3.97	46.26	0.12	0.21	57.40	4.97	81.14
Min	1,081	68	3.28	38.2	0.10	0.17	47	4.1	67	1,170	7.51	82.35	3.97	46.26	0.12	0.21	57.40	4.97	81.14

Township of Russell
Russell Sewage Treatment System
Appendix A – 2025 Influent Summary

Annual Performance Report 2025

Date Oct-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,150																		
2	1,156																		
3	1,103																		
4	1,170																		
5	1,275																		
6	1,131																		
7	1,206																		
8	1,151																		
9	1,136																		
10	1,122																		
11	1,171																		
12	1,179																		
13	1,297																		
14	1,116	188	4.78	46.1	0.1	0.1	62	6.37	187	978	7.32	209.808	5.33448	51.4476	0.1116	0.1116	69.192	7.10892	208.692
15	1,120																		
16	1,129																		
17	1,082																		
18	1,166																		
19	1,263																		
20	1,158																		
21	1,134																		
22	1,144																		
23	1,130																		
24	1,130																		
25	1,219																		
26	1,316																		
27	1,154																		
28	1,133																		
29	1,124																		
30	1,277																		
31	1,479																		
Total	36,521																		
Average	1,178	188	4.78	46.1	0.10	0.10	62	6.4	187	978	7.32	209.81	5.33	51.45	0.11	0.11	69.19	7.11	208.69
Max	1,479	188	4.78	46.1	0.10	0.10	62	6.4	187	978	7.32	209.81	5.33	51.45	0.11	0.11	69.19	7.11	208.69
Min	1,082	188	4.78	46.1	0.10	0.10	62	6.4	187	978	7.32	209.81	5.33	51.45	0.11	0.11	69.19	7.11	208.69

Township of Russell
Russell Sewage Treatment System
Appendix A – 2025 Influent Summary

Annual Performance Report 2025

Date Nov-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,482																		
2	1,548																		
3	1,325																		
4	1,273	144	2.89	29.3	0.1	0.1	39.5	4.33	114	1310	7.21	183.312	3.67897	37.2989	0.1273	0.1273	50.2835	5.51209	145.122
5	1,326																		
6	1,312																		
7	1,296																		
8	1,400																		
9	1,437																		
10	1,345																		
11	1,330																		
12	1,317																		
13	1,319																		
14	1,320																		
15	1,472																		
16	1,654																		
17	1,479																		
18	1,423																		
19	1,393																		
20	1,347																		
21	1,410																		
22	1,346																		
23	1,462																		
24	1,564																		
25	1,327																		
26	1,439																		
27	1,442																		
28	1,422																		
29	1,495																		
30	1,588																		
Total	42,293																		
Average	1,410	144	2.89	29.3	0.10	0.10	39.50	4.3	114	1,310	7.21	183.31	3.68	37.30	0.13	0.13	50.28	5.51	145.12
Max	1,654	144	2.89	29.3	0.10	0.10	40	4.3	114	1,310	7.21	183.31	3.68	37.30	0.13	0.13	50.28	5.51	145.12
Min	1,273	144	2.89	29.3	0.10	0.10	40	4.3	114	1,310	7.21	183.31	3.68	37.30	0.13	0.13	50.28	5.51	145.12

Township of Russell
Russell Sewage Treatment System
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Date Dec-25	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
1	1,413	39	0.091	41.4	0.1	0.1	46.1	5	368	1060	6.78	55.107	0.128583	58.4982	0.1413	0.1413	65.1393	7.065	519.984
2	1,405																		
3	1,377																		
4	1,352																		
5	1,308																		
6	1,379																		
7	1,448																		
8	1,329																		
9	1,279																		
10	1,274																		
11	1,242																		
12	1,230																		
13	1,317																		
14	1,442																		
15	1,292																		
16	1,270																		
17	1,297																		
18	1,260																		
19	1,418																		
20	1,529																		
21	1,537																		
22	1,393																		
23	1,395																		
24	1,453																		
25	1,352																		
26	1,364																		
27	1,380																		
28	1,409																		
29	1,354																		
30	1,289																		
31	1,336																		
Total	42,123																		
Average	1,359	39	0.09	41.4	0.10	0.10	46	5.0	368	1,060	6.78	55.11	0.13	58.50	0.14	0.14	65.14	7.07	519.98
Max	1,537	39	0.09	41.4	0.10	0.10	46	5.0	368	1,060	6.78	55.11	0.13	58.50	0.14	0.14	65.14	7.07	519.98
Min	1,230	39	0.09	41.4	0.10	0.10	46	5.0	368	1,060	6.78	55.11	0.13	58.50	0.14	0.14	65.14	7.07	519.98

Township of Russell
Russell Sewage Treatment System
Appendix A – 2025 Influent Summary

Annual Performance Report 2025

INFLUENT CHARACTERIZATION

Test Dates	Inflow m3/day	BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
07-10-2024	1,242	81	2.36	25.9	0.1	0.1	27.9	3.36	85	1080	7.26	107.00	3.12	34.21	0.13	0.13	36.86	4.44	112.29
04-11-2024	1,241	296	0.26	51.60	0.10	0.10	64.20	7.88	396	964	6.92	344.84	0.31	60.11	0.12	0.12	74.79	9.18	461.34
09-12-2024	1,460	206	2.90	38.70	0.14	0.10	49.70	5.07	253	1,100	7.16	257.91	3.63	48.45	0.18	0.13	62.22	6.35	316.76
13-01-2025	1,338	285	3.96	43.10	0.14	0.10	62.30	5.63	245	1,070	7.34	370.79	5.15	56.07	0.18	0.13	81.05	7.32	318.75
03-02-2025	1,138	173	2.82	38.40	0.10	0.10	42.30	3.99	86	1,240	7.43	192.72	3.14	42.78	0.11	0.11	47.12	4.44	95.80
04-03-2025	1,651	86	2.74	39.90	0.10	0.10	48.00	4.09	112	1,330	7.56	96.75	3.08	44.89	0.11	0.11	54.00	4.60	126.00
07-04-2025	1,947	133	4.14	42.40	0.10	0.10	59.30	6.32	176	1,480	7.97	275.71	8.58	87.90	0.21	0.21	122.93	13.10	364.85
05-05-2025	1,454	162	0.02	54.40	0.10	0.10	57.60	5.56	256	1,430	7.50	244.46	0.03	82.09	0.15	0.15	86.92	8.39	386.30
02-06-2025	1,263	32	2.91	39.70	0.10	0.10	40.30	3.04	141	1,580	7.75	42.69	3.88	52.96	0.13	0.13	53.76	4.06	188.09
07-07-2025	1,294	43	2.24	30.00	0.10	0.10	45.90	3.34	82	1,580	7.70	66.13	3.45	46.14	0.15	0.15	70.59	5.14	126.12
11-08-2025	1,150	177	2.20	38.20	0.10	0.10	48.50	4.21	124	1,180	7.17	213.11	2.65	45.99	0.12	0.12	58.39	5.07	149.30
02-09-2025	1,175	68	3.28	38.20	0.10	0.17	47.40	4.10	67	1,170	7.51	82.35	3.97	46.26	0.12	0.21	57.40	4.97	81.14
14-10-2025	1,178	188	4.78	46.10	0.10	0.10	62.00	6.37	187	978	7.32	209.81	5.33	51.45	0.11	0.11	69.19	7.11	208.69
17-11-2025	1,410	144	2.89	29.30	0.10	0.10	39.50	4.33	114	1,310	7.21	183.31	3.68	37.30	0.13	0.13	50.28	5.51	145.12
01-12-2025	1,359	39	0.09	41.40	0.10	0.10	46.10	5.00	368	1,060	6.78	55.11	0.13	58.50	0.14	0.14	65.14	7.07	519.98
Total Characteristics																			
Average	1,361	145.14	2.52	40.81	0.11	0.11	50.94	4.92	186.21	1,248.00	7.38	188.26	3.36	54.35	0.14	0.14	68.13	6.59	249.16
Max	2,850	296	4.78	54.40	0.14	0.17	64.20	7.88	396	1,580	7.97	370.79	8.58	87.90	0.21	0.21	122.93	13.10	519.98
Min	1,032	32	0.02	29.30	0.10	0.10	39.50	3.04	67	964	6.78	42.69	0.03	37.30	0.11	0.11	47.12	4.06	81.14
STD DEV	221.8973	85.05	1.48	6.86	0.01	0.02	8.49	1.33	104.40	209.62	0.32	106.71	2.26	14.44	0.03	0.03	19.60	2.43	143.63
% of Avg	16.30%	58.60%	58.70%	16.82%	13.74%	17.82%	16.67%	26.94%	56.07%	16.80%	4.37%	56.68%	67.44%	26.57%	21.41%	22.74%	28.77%	36.83%	57.65%
2025 Characteristics																			
Average	1,363	128	2.67	40.1	0.10	0.11	49.9	4.7	163	1284	7.44	169	3.59	54.4	0.14	0.14	68.1	6.4	226
Max	2,850	285	4.78	54.4	0.14	0.17	62.3	6.4	368	1580	7.97	371	8.58	87.9	0.21	0.21	122.9	13.1	520
Min	1,067	32	0.02	29.3	0.10	0.10	39.5	3.0	67	978	6.78	43	0.03	37.3	0.11	0.11	47.1	4.1	81
2025 Total	498,969																		

SPRING 2025 DISCHARGE LOADING

Loading Calculated by Monthly Influent Volumes

	Influent Stored (m3)	Monthly Influent Characteristics								Loadings							
		BOD5 mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	BOD5 kg/mo	React P kg/mo	N-NH3 kg/mo	N-NO2 kg/mo	N-NO3 kg/mo	TKN kg/mo	TP kg/mo	TSS kg/mo
Oct-24	29,344	81	2	26	0.10	0.10	28	3	85	2,377	69	760	2.9	2.9	819	99	2,494
Nov-24	37,232	296	0	52	0.10	0.10	64	8	396	11,021	10	1,921	3.7	3.7	2,390	293	14,744
Dec-24	45,266	206	3	39	0.14	0.10	50	5	253	9,325	131	1,752	6.3	4.5	2,250	229	11,452
Jan-25	41,470	285	4	43	0.14	0.10	62	6	245	11,819	164	1,787	5.8	4.1	2,584	233	10,160
Feb-25	32,989	173	3	38	0.10	0.10	42	4	86	5,707	93	1,267	3.3	3.3	1,395	132	2,837
Mar-25	51,182	86	3	40	0.10	0.10	48	4	112	4,402	140	2,042	5.1	5.1	2,457	209	5,732
Apr-25	2,662	133	4	42	0	0	59	6	176	354	11	113	0.3	0.3	158	17	469
May-25																	
Totals	237,483									45,004	619	9,642	27.5	24.0	12,052	1,213	47,889

Loading Calculated by Average Day Mass

	Days of Influent Stored	Daily Loading Characteristics								Loadings							
		BOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day	BOD5 kg/mo	React P kg/mo	N-NH3 kg/mo	N-NO2 kg/mo	N-NO3 kg/mo	TKN kg/mo	TP kg/mo	TSS kg/mo
Oct-24	24	107	3	34	0.13	0.13	37	4	112	2568	75	821	3.2	3.2	885	107	2695
Nov-24	30	345	0	60	0.12	0.12	75	9	461	10345	9	1803	3.5	3.5	2244	275	13840
Dec-24	31	258	4	48	0.18	0.13	62	6	317	7995	113	1502	5.4	3.9	1929	197	9819
Jan-25	31	371	5	56	0.18	0.13	81	7	319	11494	160	1738	5.6	4.0	2513	227	9881
Feb-25	29	193	3	43	0.11	0.11	47	4	96	5589	91	1241	3.2	3.2	1367	129	2778
Mar-25	29	97	3	45	0.11	0.11	54	5	126	2806	89	1302	3.3	3.3	1566	133	3654
Apr-25	2	276	9	88	0.21	0.21	123	13	365	551	17	176	0.4	0.4	246	26	730
May-25																	
Totals	176									41,349	554	8,583	24.7	21.5	10,748	1,094	43,398

ΔTotals (kg)	3,655	65	1059	2.8	2.5	1304	118	4,491
% Difference	8.1%	10.5%	11.0%	10.3%	10.5%	10.8%	9.8%	9.4%

2024 Spring Discharge: April 2 to April 29

2024 Fall Discharge: Oct 8 to Dec 25

2025 Spring Discharge: April 3 to April 25

Assume that each release includes influent from the first day of the previous release up to the first day of the current release.

FALL 2025 DISCHARGE LOADING

Loading Calculated by Monthly Influent Volumes

	Influent Stored (m3)	Monthly Influent Characteristics								Loadings							
		CBOD mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	CBOD kg/mo	React P kg/mo	N-NH3 kg/mo	N-NO2 kg/mo	N-NO3 kg/mo	TKN kg/mo	TP kg/mo	TSS kg/mo
Mar-25	0	86	3	39.90	0.10	0	48	4	112	0	0	0	0.0	0.0	0	0	0
Apr-25	54,110	133	4	42.40	0.10	0	59	6	176	7,197	224	2,294	5.4	5.4	3,209	342	9,523
May-25	45,072	162	0	54.40	0.10	0	58	6	256	7,302	1	2,452	4.5	4.5	2,596	251	11,538
Jun-25	37,892	32	3	39.70	0.10	0	40	3	141	1,213	110	1,504	3.8	3.8	1,527	115	5,343
Jul-25	40,127	43	2	30.00	0.10	0	46	3	82	1,725	90	1,204	4.0	4.0	1,842	134	3,290
Aug-25	35,651	177	2	38.20	0.10	0	49	4	124	6,310	78	1,362	3.6	3.6	1,729	150	4,421
Sep-25	35,236	68	3	38.20	0.10	0	47	4	67	2,396	116	1,346	3.5	6.0	1,670	144	2,361
Oct-25	5,854	188	5	46.10	0.10	0	62	6	187	1,101	28	270	0.6	0.6	363	37	1,095
Nov-25		144	3	29.30	0.10	0	40	4	114	0	0	0	0.0	0.0	0	0	0
Totals	253,942									27,243	647	10,432	25.4	27.9	12,936	1,174	37,571

Loading Calculated by Average Day Mass

	Days of Influent Stored	Daily Loading Characteristics								Loadings							
		CBOD kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day	CBOD kg/mo	React P kg/mo	N-NH3 kg/mo	N-NO2 kg/mo	N-NO3 kg/mo	TKN kg/mo	TP kg/mo	TSS kg/mo
Mar-25	0	97	3	44.89	0.11	0.11	54	5	126	0	0	0	0.0	0.0	0	0	0
Apr-25	28	276	9	87.90	0.21	0.21	123	13	365	7,720	240	2,461	5.8	5.8	3,442	367	10,216
May-25	31	244	0	82.09	0.15	0.15	87	8	386	7,578	1	2,545	4.7	4.7	2,694	260	11,975
Jun-25	30	43	4	52.96	0.13	0.13	54	4	188	1,281	116	1,589	4.0	4.0	1,613	122	5,643
Jul-25	31	66	3	46.14	0.15	0.15	71	5	126	2,050	107	1,430	4.8	4.8	2,188	159	3,910
Aug-25	31	213	3	45.99	0.12	0.12	58	5	149	6,606	82	1,426	3.7	3.7	1,810	157	4,628
Sep-25	30	82	4	46.26	0.12	0.21	57	5	81	2,470	119	1,388	3.6	6.2	1,722	149	2,434
Oct-25	5	210	5	51.45	0.11	0.11	69	7	209	1,049	27	257	0.6	0.6	346	36	1,043
Nov-25		183	4	37.30	0.13	0.13	50	6	145	0	0	0	0.0	0.0	0	0	0
Totals	186									28,755	692	11,096	27.2	29.7	13,816	1,249	39,849

ΔTotals (kg)	1,512	45	664	1.8	1.9	880	76	2,278
% Difference	5.5%	7.0%	6.4%	7.0%	6.7%	6.8%	6.5%	6.1%

2024 Fall Discharge: Oct 8 to Dec 25

2025 Spring Discharge: April 3 to April 25

2025 Fall Discharge: Oct 6 to Nov 15

Assume that each release includes influent from the first day of the previous release up to the first day of the current release.

Annual Performance Report 2025

Spring 2025 Pre-Discharge

Test Date	Cell Number	CBOD mg/L	Cond. µs/cm	React. P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	pH	TKN mg/L	TP mg/L	TSS mg/L	H2S mg/L	DO mg/L	Temp C°
2025-02-24	A	10	1560	0.01	52.80	0.10	0.1	7	56	0.379	40	2.0	2.95	0.8
	B	57	1430	0.01	62.40	0.10	0.1	6.86	158	66.5	2300	2	4.08	0.7
	C	1	1440	0.01	24.90	0.10	0.93	7.19	27.6	0.147	11	0.0	7.04	0.6
	D	1	1250	0.11	2.66	0.10	1.48	7.32	4.61	0.212	6	0.0	7.65	0.6
	E	54	1250	0.01	50.70	0.10	0.1	6.95	60.9	2.25	181	0.0	2.97	0.6

Test Date	Cell Number	CBOD mg/L	Cond. µs/cm	React. P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	pH	TKN mg/L	TP mg/L	TSS mg/L	H2S mg/L	DO mg/L	Temp C°
2025-03-17	D			0.078	1.54	0.1	0.5	6.91		0.178	4	0	11.99	1.5

Test Date	Cell Number	CBOD mg/L	Cond. µs/cm	React. P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	pH	TKN mg/L	TP mg/L	TSS mg/L	H2S mg/L	DO mg/L	Temp C°
2025-03-27	A				41.8			7.12		0.446	34	2.25	2.89	5.8
	C				5.11			7.26		0.218	4	0	6.95	4.5
	D				19.9			7.56		0.124	2	0	12.79	2.1

Test Date	Cell Number	CBOD mg/L	Cond. µs/cm	React. P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	pH	TKN mg/L	TP mg/L	TSS mg/L	H2S mg/L	DO mg/L	Temp C°
2025-03-31	D				3.97									

Fall 2025 Pre-Discharge

Test Date	Cell Number	CBOD mg/L	Cond. µs/cm	React. P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	pH	TKN mg/L	TP mg/L	TSS mg/L	H2S mg/L	DO mg/L	Temp C°
2025-09-23	A	9	883	0.103	0.158	0.1	0.1	9.41	2.7	0.455	21	0	8.54	19.7
	B	9	732	0.097	0.185	0.12	0.12	10.43	3.52	0.58	81	0	12.07	19.5
	C	9	975	0.153	0.283	0.1	0.17	8.17	2.73	0.169	66	0	6.86	19.5
	D	13	983	0.154	0.34	0.1	0.17	8.39	3.25	0.207	30	0	7.84	19.6
	E	17	1050	0.01	33.1	0.1	0.1	8.31	35.2	0.76	67	0	8.25	19.6

Annual Performance Report 2025

Note: Values in *orange italics* are averages of the preceeding and following test values

Township of Russell
Russell Sewage Treatment System
Appendix B – 2025 Discharge Summary

Annual Performance Report 2025

Date	Discharge m³/day	CBOD mg/L	React P mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	TKN mg/L	TP mg/L	TSS mg/L	Cond µg/L	pH	TBOD5 kg/day	React P kg/day	N-NH3 kg/day	N-NO2 kg/day	N-NO3 kg/day	TKN kg/day	TP kg/day	TSS kg/day
6-Oct-25		1	0.112	0.155	0.10	0.33	1.63	0.224	3	1010	7.38	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7-Oct-25	5,731	2	0.1185	0.224	0.16	0.22	1.69	0.2255	2.5	986.5	7.18	11.462	0.679	1.284	0.917	1.232	9.657	1.292	14.328
8-Oct-25	6,351	3	0.125	0.293	0.22	0.10	1.74	0.227	2	963	6.97	19.053	0.794	1.861	1.397	0.635	11.051	1.442	12.702
9-Oct-25	6,279	2	0.103	0.2805	0.16	0.10	1.64	0.1995	2	981.5	6.79	12.558	0.647	1.761	1.005	0.628	10.298	1.253	12.558
10-Oct-25	6,534	1	0.081	0.268	0.10	0.10	1.54	0.172	2	1000	6.75	6.534	0.529	1.751	0.653	0.653	10.062	1.124	13.068
11-Oct-25	5,900	2.5	0.076	0.2345	0.26	0.10	1.60	0.1735	2	1005	6.77	14.750	0.448	1.384	1.534	0.590	9.440	1.024	11.800
12-Oct-25	6,172	2.5	0.076	0.2345	0.26	0.10	1.60	0.1735	2	1005	6.77	15.430	0.469	1.447	1.605	0.617	9.875	1.071	12.344
13-Oct-25	6,387	2.5	0.076	0.2345	0.26	0.10	1.60	0.1735	2	1005	6.77	15.968	0.485	1.498	1.661	0.639	10.219	1.108	12.774
14-Oct-25	6,174	4	0.071	0.201	0.42	0.10	1.66	0.175	2	1010	6.79	24.696	0.438	1.241	2.593	0.617	10.249	1.080	12.348
15-Oct-25	6,155	1	0.052	0.174	0.10	0.33	1.51	0.162	2	1000	6.84	6.155	0.320	1.071	0.616	2.031	9.294	0.997	12.310
16-Oct-25	6,024	2.0	0.0425	0.151	0.10	0.32	1.40	0.152	2	998	7.01	12.048	0.256	0.910	0.602	1.928	8.434	0.916	12.048
17-Oct-25	6,011	3	0.033	0.128	0.10	0.31	1.29	0.142	2	996	7.17	18.033	0.198	0.769	0.601	1.863	7.754	0.854	12.022
18-Oct-25	5,830	2.0	0.032	0.1325	0.10	0.33	1.49	0.1435	2	1293	6.98	11.660	0.187	0.772	0.583	1.924	8.658	0.837	11.660
19-Oct-25	6,196	2.0	0.032	0.1325	0.10	0.33	1.49	0.1435	2	1293	6.98	12.392	0.198	0.821	0.620	2.045	9.201	0.889	12.392
20-Oct-25	6,241	1	0.031	0.137	0.10	0.35	1.68	0.145	2	1590	6.78	6.241	0.193	0.855	0.624	2.184	10.485	0.905	12.482
21-Oct-25	5,911	2.5	0.04	0.1605	0.10	0.39	1.57	0.1225	2	1269.5	7.07	14.778	0.236	0.949	0.591	2.305	9.280	0.724	11.822
22-Oct-25	6,841	4	0.049	0.184	0.10	0.43	1.46	0.1	2	949	7.35	27.364	0.335	1.259	0.684	2.942	9.988	0.684	13.682
23-Oct-25	5,880	4.5	0.0415	0.1995	0.10	0.43	1.62	0.093	2	937.5	7.32	26.460	0.244	1.173	0.588	2.528	9.526	0.547	11.760
24-Oct-25	6,011	5	0.034	0.215	0.10	0.43	1.78	0.086	2	926	7.28	30.055	0.204	1.292	0.601	2.585	10.700	0.517	12.022
25-Oct-25	6,101	4.0	0.032	0.263	0.10	0.41	1.86	0.0795	2	921.5	7.25	24.404	0.195	1.605	0.610	2.471	11.317	0.485	12.202
26-Oct-25	6,198	4.0	0.032	0.263	0.10	0.41	1.86	0.0795	2	921.5	7.25	24.792	0.198	1.630	0.620	2.510	11.497	0.493	12.396
27-Oct-25	6,216	3	0.03	0.311	0.10	0.38	1.93	0.073	2	917	7.22	18.648	0.186	1.933	0.622	2.362	11.997	0.454	12.432
28-Oct-25	6,000	2.0	0.0275	0.3685	0.10	0.47	3.13	0.086	2	933.5	7.14	12.000	0.165	2.211	0.600	2.820	18.750	0.516	12.000
29-Oct-25	5,987	1	0.025	0.426	0.10	0.56	4.32	0.099	2	950	7.06	5.987	0.150	2.550	0.599	3.353	25.864	0.593	11.974
30-Oct-25	5,828	2.0	0.0225	0.5955	0.10	0.55	3.08	0.097	2	921	7.43	11.656	0.131	3.471	0.583	3.176	17.921	0.565	11.656
31-Oct-25	6,152	3	0.02	0.765	0.10	0.53	1.83	0.095	2	892	7.80	18.456	0.123	4.706	0.615	3.261	11.258	0.584	12.304
1-Nov-25	5,590	3.0	0.0165	1.0425	0.11	0.69	2.63	0.096	2	879.5	7.52	16.770	0.092	5.828	0.587	3.857	14.702	0.537	11.180
2-Nov-25	6,915	3.0	0.0165	1.0425	0.11	0.69	2.63	0.096	2	879.5	7.52	20.745	0.114	7.209	0.726	4.771	18.186	0.664	13.830
3-Nov-25	6,335	3	0.013	1.32	0.11	0.85	3.43	0.097	2	867	7.24	19.005	0.082	8.362	0.697	5.385	21.729	0.614	12.670
4-Nov-25	6,255	4	0.0115	1.35	0.14	0.99	3.01	0.1015	2	871.5	7.24	25.020	0.072	8.444	0.844	6.161	18.828	0.635	12.510
5-Nov-25	6,336	5	0.01	1.38	0.16	1.12	2.59	0.106	2	876	7.24	31.680	0.063	8.744	1.014	7.096	16.410	0.672	12.672
6-Nov-25	6,692	4	0.012	1.575	0.18	1.13	3.94	0.088	2.5	867	7.24	26.768	0.080	10.540	1.205	7.562	26.366	0.589	16.730
7-Nov-25	6,394	3	0.014	1.77	0.20	1.14	5.29	0.07	3	858	7.23	19.182	0.090	11.317	1.279	7.289	33.824	0.448	19.182
8-Nov-25	10,523	2	0.012	2.475	0.20	1.18	5.29	0.086	6	846	7.24	21.046	0.126	26.044	2.105	12.365	55.667	0.905	63.138
9-Nov-25	10,382	2	0.012	2.475	0.20	1.18	5.29	0.086	6	846	7.24	20.764	0.125	25.695	2.076	12.199	54.921	0.893	62.292
10-Nov-25	9,948	1	0.01	3.18	0.20	1.21	5.29	0.102	9	834	7.24	9.948	0.099	31.635	1.990	12.037	52.625	1.015	89.532
11-Nov-25	9,674	1.0	0.01	3.995	0.18	1.16	6.21	0.147	22.5	840.5	7.24	9.674	0.097	38.648	1.693	11.222	60.027	1.422	217.665
12-Nov-25	10,244	1	0.01	4.81	0.15	1.11	7.12	0.192	36	847	7.24	10.244	0.102	49.274	1.537	11.371	72.937	1.967	368.784
13-Nov-25	9,668	3.5	0.01	4.02	0.18	1.16	6.08	0.22	25.5	859.5	7.24	33.838	0.097	38.865	1.740	11.167	58.781	2.127	246.534
14-Nov-25	9,686	3.5	0.01	4.02	0.18	1.16	6.08	0.22	25.5	859.5	7.24	33.901	0.097	38.938	1.743	11.187	58.891	2.131	246.993
15-Nov-25	7,154	6	0.01	3.23	0.21	1.20	5.04	0.248	15	872	7.24	42.924	0.072	23.107	1.502	8.585	36.056	1.774	107.310
Total	274,906											743	9	373	42	180	883	37	1810
Average	6,873	2.72	0.04	1.05	0.15	0.59	2.84	0.14	5.11	964.28	7.14	18.12	0.23	9.09	1.04	4.39	21.53	0.91	44.15
Max	10,523	6	0.13	4.81	0.42	1.21	7.12	0.25	36	1,590	7.80	42.92	0.79	49.27	2.59	12.36	72.94	2.13	368.78
Min	5,590	1	0.01	0.13	0.10	0.10	1.29	0.07	2	834	6.75	5.99	0.06	0.77	0.58	0.59	7.75	0.45	11.18

Note: Values in orange italics are averages of the preceding and following test values

SPRING 2025 DISCHARGE COMPLIANCE AND EFFICIENCIES

	Effluent Limits		Effluent Objectives		Actual Discharge Ave.		% of Conc. Objective	%of Mass Limits
	Concentrations mg/L	Mass Kg	Concentrations mg/L	Mass Kg	Concentrations mg/L	Mass Kg		
CBOD	30	6,043	20	4,029	2.20	430	10.7%	7.1%
TSS	30	6,043	20	4,029	7.64	1574	39.1%	26.0%
TP	0.50	101	0.40	81	0.13	24	30.1%	24.1%
N-NH3	10	2,014	5	1,007	5.11	1018	101.1%	50.5%
H2S	0	0	0	0	0.00	0.00	0.0%	0.0%
DO(min)	-	-	-	-	-	-	n/a	-
pH	6.0 - 9.5		6.5 - 8.5		7.04 to 8.3 with an avg. 7.68		-	
In-River Dilution	67:1		-	-	Max 395.84 Min 77.72 Average 181.4		High Dilution range	

Removal Efficiencies

	Effluent Mass total kg	By Monthly Influent Volume		By Average Daily Mass	
		Influent Mass kg	Removal eff.	Influent Mass kg	Removal eff.
CBOD	430	45,004	99.0%	41,349	99.0%
TSS	1574	47,889	96.7%	43,398	96.4%
TP	24	1,213	98.0%	1,094	97.8%
N-NH3	1018	9,642	89.4%	8,583	88.1%

FALL 2025 DISCHARGE COMPLIANCE AND EFFICIENCIES

	Effluent Limits		Effluent Objectives		Actual Discharge Ave.		% of Conc. Objective	%of Mass Limits
	Concentrations mg/L	Mass Kg	Concentrations mg/L	Mass Kg	Concentrations mg/L	Mass Kg		
CBOD	30	8,247	20	5,498	2.72	743	13.5%	9.0%
TSS	30	8,247	20	5,498	5.11	1810	32.9%	21.9%
TP	0.5	137	<0.5	135	0.14	37	27.7%	27.2%
N-NH3	2	550	1	275	1.05	373	135.6%	67.8%
H2S	0	0	0	0	0.00	0.00	0.0%	0.0%
DO(min)	-	-	-	-	-	-	n/a	-
pH	6.0 - 9.5		6.5 - 8.5		6.75 to 7.8 with an avg. 7.14		-	
In-River Dilution	13:1		-		Max 78.43 Min 22.45 Average 51.1		High Dilution range	

Removal Efficiencies

	Effluent Mass total kg	By Monthly Influent Volume		By Average Daily Mass	
		Influent Mass kg	Removal eff.	Influent Mass kg	Removal eff.
CBOD	743	27,243	97.3%	28,755	97.4%
TSS	1810	37,571	95.2%	39,849	95.5%
TP	37	1,174	96.8%	1,249	97.0%
N-NH3	373	10,432	96.4%	11,096	96.6%

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Date	Time	Meter Reading	Discharge Flow		Total m3	River Flow L/s	Dilution in River	Lagoon DO mg/L	U/S River DO mg/L	D/S River DO mg/L	Effluent H2S mg/L	Effluent Quality	Temp °C
3-Apr-25	9:34 AM	4924745	100.0			33,045		14.06			0.00		4
4-Apr-25		4933229	101.0	8,484	8,484	39,980	395.8	14.51	11.82	11.75	0.00		4.1
5-Apr-25		4941532	96.5	8,303	16,787	35,740	370.4						
6-Apr-25		4950050	97.6	8,518	25,305	34,680	355.3						
7-Apr-25		4958391	96.0	8,341	33,646	26,420	275.2	14.44			0.00		4.2
8-Apr-25		4967830	109.1	9,439	43,085	22,045	202.1						
9-Apr-25		4977401	107.5	9,571	52,656	16,055	149.3	13.88			0.00		3.6
10-Apr-25		4986431	105.2	9,030	61,686	14,745	140.2						
11-Apr-25		4995721	108.6	9,290	70,976	18,020	165.9	12.9			0.00		6.2
12-Apr-25	5004900	106.8	9,179	80,155	23,750	222.4							
13-Apr-25	5014426	106.7	9,526	89,681	20785	194.8							
14-Apr-25	5023594	109.2	9,168	98,849	16535	151.4	11.27	10.82	11.09	0.00		9.3	
15-Apr-25	5032960	106.5	9,366	108,215	14335	134.6							
16-Apr-25	5042520	106.1	9,560	117,775	14065	132.6	8.82	11.06	11.27	0.00		8	
17-Apr-25	5051801	105.0	9,281	127,056	9835	93.7							
18-Apr-25	5061191	108.6	9,390	136,446	8440	77.7	10.62			0.00		9.1	
19-Apr-25	5071171	107.3	9,980	146,426	17795	165.8							
20-Apr-25	5080363	110.0	9,192	155,618	18780	170.7							
21-Apr-25	5089358	106.2	8,995	164,613	15295	144.0	9.02			0.00		10.2	
22-Apr-25	5098469	109.1	9,111	173,724	15350	140.7							
23-Apr-25	5107469	106.4	9,000	182,724	12395	116.5	7.8			0.00		8.9	
24-Apr-25	5116776	107.1	9,307	192,031	10955	102.3							
25-Apr-25	8:33 AM	5126180	107.1	9,404	201,435	9530	89.0	5.27	9.81	10.08	0.00		13.4
Total	526.98 hrs			201,435									
Average			105.4	9,156		181.4	11.1445	10.8775	11.0475		0		7.36364
Max			110	9,980		395.8	14.51	11.82	11.75		0		13.4
Min			96	8303		77.7	5.27	9.81	10.08		0		3.6

SPRING 2025 DISCHARGE - RIVER WATER QUALITY

Location	Date	CBOD mg/L	Cond. µS/cm	React P. mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	pH	TKN mg/L	TP mg/L	TSS mg/L	DO mg/L	Temp °C
U/S	4-Apr	2	331	0.033	0.092	0.10	2.19	7.89	0.794	0.177	40	11.82	5.3
	14-Apr							7.4				10.82	6.9
	16-Apr	1	675	0.01	0.03	0.10	2.74	7.6	1.18	0.05	13	11.06	5.1
	30-Apr	1	697	0.01	0.067	0.10	1.89	7.68	0.629	0.057	3	9.81	11.4
D/S	4-Apr	1	330	0.033	0.056	0.10	2.15	7.76	0.958	0.177	49	11.75	5.5
	14-Apr							7.52				11.09	6.5
	16-Apr	1	668	0.01	0.036	0.10	3.05	7.76	0.734	0.037	16	11.27	4.1
	30-Apr	1	698	0.01	0.149	0.10	1.97	7.94	0.933	0.069	8	10.08	11.2

Toxicity			
Date	Species	Test Length	Mortality
21-Apr	Daphnia Magna	48 hr	0
	Rainbow Trout	96 hr	0

Effluent Un-Ionized Ammonia Calculation				
Date	Temp. °C	pH	N-NH3 mg/L	Un-Ionized NH3(µg/L)
3-Apr	4	8.04	4.03	50.29
4-Apr	4.1	8.08	3.7	50.97
7-Apr	4.2	8.26	4.51	94.13
9-Apr	3.6	8.10	5.12	70.89
11-Apr	6.2	8.30	4.32	115.58
14-Apr	9.3	7.84	5.95	71.72
16-Apr	8	7.25	4.94	13.94
18-Apr	9.1	7.36	4.76	18.85
21-Apr	10.2	7.16	4.36	11.90
23-Apr	8.9	7.04	3.31	6.19
25-Apr	13.4	7.07	11.2	31.81

115.58	Max
6.19	Min
48.75	Average

Township of Russell
Russell Sewage Treatment System
Appendix D – 2025 Effluent Discharge

Annual Performance Report 2025

FALL 2025 DISCHARGE

Date	Time	Meter Reading	Discharge Flow L/s	m3/d	Total m3	River Flow L/s	Dilution in River	Lagoon DO mg/L	U/S River DO mg/L	D/S River DO mg/L	Effluent H2S mg/L	Effluent Quality	Temp °C
6-Oct-25	8:37 AM	5126295	70.5			3360	47.66	4.74	7.83	8.09	0.00		19.1
7-Oct-25		5132026	73.6	5,731	5,731	3720	50.54						
8-Oct-25		5138377	72.1	6,351	12,082	4135	57.35	3.51			0.00		18.2
9-Oct-25		5144656	73	6,279	18,361	4480	61.37	4.79			0.00		16.1
10-Oct-25		5151190	70.2	6,534	24,895	3305	47.08	3.71			0.00		14.5
11-Oct-25		5157090	71	5,900	30,795	3880	54.65						
12-Oct-25		5163262	72	6,172	36,967	3960	55.00						
13-Oct-25		5169649	71	6,387	43,354	3645	51.34						
14-Oct-25		5175823	70	6,174	49,528	3660	52.29	3.8			0.00		14.9
15-Oct-25		5181978	72.9	6,155	55,683	3380	46.36	4.22			0.00		14.3
16-Oct-25		5188002	71.4	6,024	61,707	3360	47.06						
17-Oct-25		5194013	70.4	6,011	67,718	3410	48.44	5.98	9.97	9.5	0.00		11.9
18-Oct-25		5199843	70	5,830	73,548	3690	52.71						
19-Oct-25		5206039	69	6,196	79,744	3650	52.90						
20-Oct-25		5212280	70	6,241	85,985	3905	55.79	6.36			0.00		15.4
21-Oct-25		5218191	77.4	5,911	91,896	3935	50.84						
22-Oct-25		5225032	69	6,841	98,737	4150	60.14	5.82			0.00		14.8
23-Oct-25		5230912	70	5,880	104,617	4105	58.64						
24-Oct-25		5236923	70.9	6,011	110,628	3905	55.08	5.72			0.00		11.6
25-Oct-25		5243024	70.4	6,101	116,729	3540	50.28						
26-Oct-25		5249222	69.7	6,198	122,927	1565	22.45						
27-Oct-25		5255438	73.9	6,216	129,143	2815	38.09	5.61			0.00		8.7
28-Oct-25		5261438	68	6,000	135,143	2200	32.35						
29-Oct-25		5267425	70.8	5,987	141,130	3445	48.66	5.66			0.00		8.9
30-Oct-25		5273253	69.2	5,828	146,958	3625	52.38						
31-Oct-25		5279405	70.8	6,152	153,110	5475	77.33	7.79	10.7	10.57	0.00		8.1
1-Nov-25		5284995	71.4	5,590	158,700	5600	78.43						
2-Nov-25		5291910	73.4	6,915	165,615	5705	77.72						
3-Nov-25		5298245	71.7	6,335	171,950	5380	75.03	6.65			0.00		6.4
4-Nov-25		5304500	71.6	6,255	178,205	2570	35.89						
5-Nov-25		5310836	71.7	6,336	184,541	4745	66.18	7.6			0.00		6.2
6-Nov-25		5317528	77.2	6,692	191,233	3560	46.11						
7-Nov-25		5323922	71.1	6,394	197,627	4770	67.09	7.33			0.00		4.6
8-Nov-25		5334445	122	10,523	208,150	3150	25.82						
9-Nov-25		5344827	120.4	10,382	218,532	4615	38.33						
10-Nov-25		5354775	114.7	9,948	228,480	4595	40.06	9.49			0.00		2.6
11-Nov-25		5364449	114.2	9,674	238,154	4510	39.49						
12-Nov-25		5374693	113.6	10,244	248,398	4720	41.55	10.78			0.00		1.6
13-Nov-25		5384361	112.5	9,668	258,066	4780	42.49						
14-Nov-25		5394047	101.4	9,686	267,752	4795	47.29		12.79	13.4	0.00		
15-Nov-25	10:10 AM	5401201	73	7,154	274,906	3445	47.19	8.3	12.97	12.14	0.00		1.9
Total	927.38 hrs			274,906									
Average			78.70976	6,873			51.11	6.20	10.852	10.74	0		10.52
Max			122	10,523			78.43	10.78	12.97	13.4	0		19.1
Min			68	5,590			22.45	3.51	7.83	8.09	0		1.6

FALL 2025 DISCHARGE - RIVER WATER QUALITY

Location	Date	CBOD mg/L	Cond. µS/cm	React P. mg/L	N-NH3 mg/L	N-NO2 mg/L	N-NO3 mg/L	pH	TKN mg/L	TP mg/L	TSS mg/L	DO mg/L	Temp °C
U/S	06-Oct	1	1190	0.024	0.02	0.1	0.1	7.45	0.525	0.127	2	7.83	16.8
	17-Oct	1	1060	0.01	0.02	0.1	0.1	7.01	0.491	0.111	2	9.97	9.4
	31-Oct	4	873	0.016	0.02	0.1	0.1	7.92	0.513	0.081	4	10.7	7.5
	14-Nov	4	1120	0.06	0.02	0.1	1.4	7.65	0.748	0.033	6	12.79	3.8
	15-Nov	2	1150	0.01	0.02	0.1	1.48	8.01	0.55	0.034	5	12.97	3.6
D/S	06-Oct	1	1080	0.013	0.02	0.1	0.1	7.37	0.589	0.108	7	8.09	17.1
	17-Oct	1	1090	0.019	0.032	0.1	0.1	7.33	0.76	0.126	3	9.5	10.9
	31-Oct	3	1030	0.015	0.06	0.1	0.1	7.69	0.485	0.076	2	10.57	7.4
	14-Nov	4	1060	0.01	0.197	0.1	1.29	7.98	0.905	0.037	3	13.4	3.3
	15-Nov	4	1120	0.01	0.12	0.1	1.3	7.78	0.798	0.046	5	12.14	3.5

Toxicity			
Date	Species	Test Length	Mortality
09-Oct	Daphnia Magna	48 hr	0
	Rainbow Trout	96 hr	0

Effluent Un-Ionized Ammonia Calculation				
Date	Temp. °C	pH	N-NH3 mg/L	Un-Ionized NH3(µg/L)
6-Oct-25	19.1	7.38	0.155	1.37
8-Oct-25	18.2	6.97	0.293	0.95
10-Oct-25	14.5	6.75	0.268	0.40
14-Oct-25	14.9	6.79	0.201	0.34
15-Oct-25	14.3	6.84	0.174	0.31
17-Oct-25	11.9	7.17	0.128	0.41
20-Oct	15.4	6.78	0.137	0.23
22-Oct	14.8	7.35	0.184	1.10
24-Oct	11.6	7.28	0.215	0.86
27-Oct	8.7	7.22	0.311	0.87
29-Oct	8.9	7.06	0.426	0.83
31-Oct	8.1	7.8	0.765	7.66
3-Nov	6.4	7.24	1.32	3.20
5-Nov	6.2	7.24	1.38	3.30
7-Nov	4.6	7.23	1.77	3.63
10-Nov	2.6	7.24	3.18	5.67
12-Nov	1.6	7.24	4.81	7.89
15-Nov	1.9	7.24	3.23	5.43
				0.00
				0.00

Max	7.89
Min	0.23
Average	2.47