

The Corporation of the City of Kawartha Lakes
Agenda
Lindsay-Ops Landfill Public Review Committee Meeting

2021-004

Wednesday, May 19, 2021

**Online participation begins at 3:00pm. For Zoom link to access meeting contact
ksnoddy@kawarthalakes.ca**

Public Works and Engineering Boardroom

322 Kent Street West

Lindsay, ON K9V 4T7

Members:

Councillor Pat Dunn

Chris Appleton

Barry Hodgson

Lloyd Robertson

Larry Scrivens

David Webb

Accessible formats and communication supports are available upon request. The City of Kawartha Lakes is committed to accessibility for persons with disabilities. Please contact AgendaItems@kawarthalakes.ca if you have an accessible accommodation request.

1.	Call to Order	
2.	Adoption of Agenda	
3.	Disclosures of Pecuniary Interest	
4.	Approval of the Minutes of the Previous Meeting	3 - 6
5.	Reports	
5.1.	PRC Activity Summary Spreadsheet	7 - 7
6.	Landfill Complaints	
7.	Leachate Outbreaks	
8.	Other New Business	
8.1.	2021 Biomonitoring Report	
8.2.	2020 Lindsay Ops Landfill Annual Monitoring Report	
9.	Public Comment Period	
10.	Next Meeting	
11.	Adjournment	8 - 10

The Corporation of the City of Kawartha Lakes

Minutes

Lindsay-Ops Landfill Public Review Committee Meeting

2021-003

Wednesday, April 21, 2021

3:00 P.M.

Public Works and Engineering Boardroom

322 Kent Street West

Lindsay, ON K9V 4T7

Members:

Councillor Pat Dunn

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1. Call to Order

The chair called the meeting to order at 3:03pm.

2. Adoption of Agenda

Moved By Councillor Dunn

Seconded By C. Appleton

Resolved that the Agenda be adopted as printed.

Carried

3. Disclosures of Pecuniary Interest

There were no declarations of pecuniary interest disclosed.

4. Approval of the Minutes of the Previous Meeting

Moved By L. Scrivens

Seconded By Councillor Dunn

Resolved that the minutes from the previous meeting be approved.

Carried

5. Reports

5.1 PRC Activity Summary Spreadsheet

The PRC discussed items on the spreadsheet. Kerri will forward the PowerPoint presentation on the carbon capture technology which was presented to the Waste Management Advisory Committee to the PRC.

6. Landfill Complaints

There was a complaint on April 20th from a resident regarding litter and odour. The complaint was forwarded to the MECP and operations staff were notified of the issue and will work to collect more litter and rectify the odour issue.

7. Leachate Outbreaks

No leachate outbreaks.

8. Other New Business

8.1 Improvements to Mattress Recycling Program

Kerri summarized information that will be going to council in June with a proposal to stop accepting mattresses at the Fenelon, Eldon, Laxton, and Sommerville landfill sites beginning in 2022. This will ensure all mattresses are recycled through the curbside pick up program or when brought to the Lindsay Ops landfill and will increase the amount of mattresses recycled per year by 2500 units. Education and advertising was discussed. Questions asked by PC members included where the extra operational costs would come from, how long would

mattresses be outside at the curb, and if we could fit a mattress trailer at the Fenelon landfill.

Moved By C. Appleton

Seconded By Councillor Dunn

Resolved that the Lindsay Ops Landfill Public Review Committee receive the report, and that the PRC supports recycling all mattresses in the City of Kawartha Lakes and no longer accepting mattresses at the Laxton, Eldon, Somerville, and Fenelon landfills beginning in 2022.

Carried

8.2 Construction and Demolition Pilot

Kerri reviewed a memo with information which will go to Council in June recommending that the Construction and Demolition (C&D) recycling pilot program become a permanent program. The memo looked at the history of the multi year pilot, costs, and tonnages diverted from the landfill. Questions from PRC members included why the consultant's report estimated that we could divert 10%, and whether the City could provide reuse of C&D material.

Moved By Councillor Dunn

Seconded By L. Scrivens

Resolved that the Lindsay Ops Landfill PRC receive the report, and that the PRC supports a permanent Construction and Demolition recycling program at the Lindsay Ops landfill, with consideration of an annual operating budget of \$155,000 for 2022.

Carried

8.3 Landfill Congestion-David Webb

David Webb provided an overview of the work he completed on reducing landfill congestion. The PRC asked questions and provided comments and staff indicated they will review the recommendations and continue to work with David in determining which would be feasible to implement.

9. Public Comment Period

Larry asked about a stockpile of soil he saw at the landfill near the tipping face. He will send pictures to staff to discuss. Staff indicated it would be either cover material or soil received at the landfill from the Bobcaygeon Beach Park project.

10. Next Meeting

The next meeting will be Wednesday, May 19th at 3:00 pm over Zoom.

11. Adjournment

Moved By L. Scrivens

Seconded By C. Appleton

Resolved that the meeting be adjourned at 4:45pm.

Carried

**Lindsay Ops Landfill Public Review Committee
Action List**

Meeting Date of Activity	Action	Responsibility	Action Item Date:	Status
17-Jun-15	MECP Comments	CKL	As Available	May 19 Meeting: No comments.
21-Jan-15	Provide update on quarterly PCB testing (SW3/ SW13)	CKL	Quarterly	May 19 Meeting: First sampling event occurred on April 20th, 2021. No PCBs were detected.
23-Nov-16	Biomonitoring	CKL	As Available	May 19 Meeting: To be discussed as Agenda Item
21-Jan-19	Leachate Water Quality Results	CKL	As Available	May 19 Meeting: See attached spreadsheet.
15-May-13	Generator, Wellfield, Flare Operations	CKL	Monthly	May 19 Meeting: Generator has been running consistently so far in 2021. Leak in compressor line-looking into cost effective repair solutions. More landfill staff being trained on restarts resulting in very minimal downtime. Computer system was recently upgraded.
20-Jun-18	Lindsay Ops EA Process Update	CKL	As Available	May 19 Meeting: Dillon awarded work. Future Options Study to be completed by June 30, 2021.
15-Jan-14	That the PRC is copied on Staff Reports to Council regarding the Lindsay Ops Landfill	CKL	As Available	May 19 Meeting: Bulky Plastic Pilot Program approved by council for 2022. C&D and Mattress Report will go to June 1, COW meeting.
17-May-17	Waste Management Advisory Committee Update	CKL	As Available	May 19 Meeting: No meeting held in May.
17-Jan-17	Updates on Blue Box markets and Legislation	CKL	As Available	May 19 Meeting: Draft regulation comment period ended. Final regulation expected any time. AMO reports final regulation will be very similar to draft, especially in regards to transition dates for each municipality.
16-May-18	Construction and Demolition Update	CKL	As Available	May 19 Meeting: Pilot program to continue in 2021. Our goal is to increase to 1000 tonnes. As of May 10th we have diverted 392.54 tonnes.
8-Jan-20	Update on Implementation of Waste Strategy Initiatives	CKL	As Available	May 19 Meeting: Work proceeding on schedule. Research beginning on SSO pilot study and corporate waste reduction initiatives.

Lindsay Ops Leachate 2019			Exceeds Bylaw Value Exceeds PW/QO Value														
Parameters	CKL Sewer Bylaw Limits (mg/L)	Provincial Water Quality Objectives (mg/L)	Jan. Results (mg/L)	Feb. Results (mg/L)	Mar. Results (mg/L)	April. Results (mg/L)	April. Results (mg/L) new cell	May Results (mg/L)	June Results (mg/L)	July Results (mg/L)	August Results (mg/L)	September Results (mg/L)	October. Results (mg/L) new cell	Oct Results (mg/L)	Nov Results (mg/L)	Dec Results (mg/L)	
Hardness (CaCO3)	N/A	N/A	593	596	544	653	925	557	475	628	649	664	1090	666	610	580	
Alkalinity (CaCO3)	N/A	N/A	609	599	601	482	1270	528	531	693	773	759	2380	731	610	543	
Biochemical Oxygen Demand (BOD)	300	N/A	<3	19	8	7	262	4	3	5	4	n/a	62	< 3	5	5	
TDS	N/A	N/A	991	1005	972	928	1550	796	743	1045	1144	1258	4318	1226	1017	868	
Dissolved Organic Carbon	N/A	N/A	13.1	13.4	13.5	12.9	207	14.8	12.1	16.1	18.5	1.3	130	11.4	10	8.2	
COD	N/A	N/A	73	62	63	56	644	40	38	76	78	112	692	87	59	50	
Chloride	N/A	N/A	176	199	198	127	27.5	107	106	138	202	307	887	278	201	146	
Ammonia (N) - Total	N/A	1.11	17.6	17.6	16.9	14.1	10	9.71	10.5	20.9	26.6	28.4	350	27.9	17.4	11.8	
Fluoride	10	N/A	0.2	0.1	< 0.1	< 0.1	0.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 3	< 0.1	< 0.1	< 0.1	
Phenolic, 4AAP	1	0.001	0.012	<0.002	< 0.002	< 0.002	0.14	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Sulphate	N/A	N/A	45	42	48	139	10	38	34	33	22	15	121	17	49	50	
Nitrite	N/A	N/A	<0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 1	< 0.05	< 0.05	< 0.05	
Nitrate	N/A	N/A	0.08	0.15	0.18	0.16	< 0.05	0.42	0.32	< 0.05	< 0.05	< 0.05	< 1	< 0.05	0.21	0.49	
Kjeldahl Nitrogen - Total	50	N/A	19.7	20.5	20.8	17.6	104	10.9	10.5	25.2	30.7	35.8	364	35.3	18	14.9	
Aluminum - Total	50	0.075*	0.27	0.12	0.12	0.68	0.13	0.1	0.08	0.15	0.1	0.07	0.62	0.1	0.11	0.11	
Antimony - Total	5	0.02	<0.0005	<0.0001	< 0.0005	0.0006	0.0022	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.002	< 0.0005	< 0.0005	< 0.0005	
Arsenic - Total	1	0.1	0.0024	0.0013	0.0008	0.0013	0.0107	0.0013	0.0009	0.0026	0.0012	0.0014	0.0189	0.0013	0.0015	0.0012	
Barium	N/A	N/A	0.331	0.297	0.253	0.245	0.362	0.211	0.159	0.394	0.382	0.471	0.82	0.462	0.313	0.226	
Beryllium	N/A	1.1**	<0.002	<0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Boron	N/A	0.2	0.382	0.426	0.37	0.299	2.95	0.281	0.278	0.509	0.54	0.632	9.68	0.605	0.411	0.3	
Cadmium - Total	0.7	0.0002	<0.00007	<0.00015	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	
Calcium	N/A	N/A	179	175	160	211	273	184	154	184	186	180	267	182	184	185	
Chromium - Total	2.8	0.0099	0.017	0.011	0.012	0.161	0.013	0.004	0.001	0.013	< 0.001	0.004	0.037	0.003	0.01	0.004	
Cobalt - Total	5	0.0009	0.0013	0.007	0.0013	0.0025	0.0052	0.0009	0.0011	0.0015	0.001	0.0011	0.0159	0.0013	0.001	0.0008	
Copper - Total	2	0.005	0.0042	0.0011	0.0011	0.0062	0.011	0.001	0.0015	0.0021	< 0.0005	< 0.0005	0.008	< 0.0005	0.0006	0.0011	
Iron	N/A	0.3	27.7	11	5.64	21	7.96	20.9	10.8	45.5	14.4	15.1	59.6	11.8	13.9	13	
Lead - Total	1	0.005	0.0025	0.00012	0.0002	0.0016	0.0016	0.0004	0.0001	0.0005	< 0.0001	< 0.0001	0.0013	0.0002	0.0005	0.0002	
Magnesium	N/A	N/A	35.3	38.6	35.1	30.6	59.1	23.6	21.9	40.9	44.8	52	104	51.3	36.6	28.5	
Manganese - Total	5	N/A	0.45	0.363	0.355	0.618	0.63	0.439	0.35	0.447	0.379	0.299	0.837	0.272	0.404	0.416	
Mercury - Total	0.01	0.0002	<0.00002	<0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	
Molybdenum - Total	5	0.04	<0.0005	0.0002	< 0.0005	0.0022	0.0009	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0021	< 0.0005	0.0007	< 0.0005	
Nickel - Total	2	0.025	0.01	0.01	0.01	0.07	0.03	< 0.01	< 0.01	0.01	< 0.01	0.01	0.09	0.01	0.01	< 0.01	
Potassium	N/A	N/A	18.1	21.3	19.1	14.5	139	11.7	10.8	24	27.4	28.9	260	31.5	19	12.8	
Phosphorus	N/A	N/A	<0.1	<0.1	< 0.1	0.1	0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	3.3	< 0.1	< 0.1	< 0.1	
Phosphorus - Total	10	0.01	0.05	0.03	0.03	0.1	0.29	0.05	0.02	0.05	0.03	0.03	3.21	0.06	0.02	0.04	
Selenium - Total	1	0.1	<0.005	<0.0001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.012	< 0.005	< 0.005	< 0.005	
Silver - Total	0.4	0.0001	<0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	
Sodium	N/A	N/A	121	136	123	97.6	257	81.6	73	136	149	168	740	179	124	91.6	
Strontium	N/A	10 bq/L	0.64 mg/L	0.715 mg/L	0.622	0.678	1.35	0.572	0.515	0.774	0.732	0.794	2.73	82.80%	0.679	0.6	
Thallium	N/A	0.0003	<0.0003	<0.00005	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	
Vanadium	N/A	0.006	0.0018	0.0009	0.0008	0.0025	0.0074	0.0009	0.0005	0.0018	0.0007	0.001	0.0239	0.001	0.001	0.0007	
Zinc - Total	2	0.03	0.023	0.009	0.03	0.035	0.034	0.009	< 0.005	0.006	< 0.005	0.005	0.185	< 0.005	0.018	< 0.005	
Benzene	0.01	0.1	0.0023	0.0007	0.0006	< 0.5	0.0007	< 0.0005	<0.0016	0.0006	< 0.0005	0.0018	0.0017	0.0015	0.0019	0.0019	
Toluene	0.02	0.0008	<0.0005	<0.0005	<0.0005	< 0.0005	0.0126	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
Ethylbenzene	0.06	0.008	0.0027	<0.0005	<0.0005	< 0.0005	0.0006	< 0.0005	<0.0011	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0008	
Xylene, m, p -	N/A	N/A	0.0042	<0.001	<0.001	< 0.001	0.0012	<0.001	<0.0011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Xylene, o -	N/A	0.04	0.0005	<0.0005	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Xylene, m, p, o -	N/A	N/A	0.0042	<0.0011	<0.0011	<0.0011	0.0018	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	

Parameters	Limits	Provincial Water Quality Objectives	Jan. Results	Feb. Results	Mar. Results	April. Results	Apr. Results New Cell	May. Results	June. Results	July. Results	Aug. Results	Sept. Results	Oct. Results New Cell	Oct Results	Nov Results	Dec Results
pH (at 25 °C)	6.0 - 9.5	6.5 - 8.5	7.34	7.68	7.6	7.34	7.74	7.13	7.35	6.95	7.4	7.28	7.87	7.66	7.6	7.37
Conductivity (at 25 °C)	N/A	N/A	1750 µm ho/cm	1780 µm ho/cm	1790 µmho/cm	1590 µmho/cm	3490 µmho/cm	1370 µmho/cm	1350 µmho/cm	1860 µmho/cm	2000 µmho/cm	2160 µmho/cm	7050 µmho/cm	2110 µmho/cm	1750 µmho/cm	1540 µmho/cm
Conductivity (calculated)	N/A	N/A	1650 µm ho/cm	1720 µm ho/cm	1664 µmho/cm	1563 µmho/cm	2403 µmho/cm	1344 µmho/cm	1267 µmho/cm	1692 µmho/cm	1928 µmho/cm	2141 µmho/cm	6453 µmho/cm	2103 µmho/cm	1725 µmho/cm	1479 µmho/cm
Anion Sum	N/A	N/A	18.1 meq/L	18.5 meq/L	18.6 meq/L	16.1 meq/L	26.4 meq/L	14.4 meq/L	14.3 meq/L	18.4 meq/L	21.6 meq/L	24.1 meq/L	75.1 meq/L	22.8 meq/L	18.9 meq/L	16 meq/L
Cation Sum	N/A	N/A	20.3 meq/L	20.2 meq/L	18.2 meq/L	18.7 meq/L	34.4 meq/L	16.8 meq/L	14.3 meq/L	23 meq/L	22.8 meq/L	24.1 meq/L	88.5 meq/L	24.5 meq/L	20.1 meq/L	17.4 meq/L
% Difference	N/A	N/A	5.77%	4.51%	1.09%	7.29%	13.10%	7.78%	0.18%	11.00%	2.68%	0.02%	8.17%	3.55%	2.94%	415.00%
Ion Ratio (AS/CS)	N/A	N/A	0.891	0.914	1.02	0.864	0.769	0.856	1	0.801	0.948	1	0.849	0.931	0.943	0.92
Sodium Adsorption Ratio	N/A	N/A	2.16	2.42	2.29	1.66	3.68	1.5	1.46	2.36	2.54	2.84	9.73	3.02	2.18	1.66
TDS (calc.) / EC (actual)	N/A	N/A	0.567	0.565	0.542	0.585	0.444	0.58	0.551	0.561	0.572	0.582	0.612	0.581	0.582	0.562
Langelier Index (at 25°C)	N/A	N/A	0.875	1.19	1.08	0.845	1.77	0.635	0.78	0.543	1.05	0.903	2.12	1.27	1.14	0.88

Lindsay Ops Leachate 2020		Exceeds Bylaw Value Exceeds PWQO Value														
Parameters	CKL Sewer Bylaw Limits (mg/L)	Provincial Water Quality Objectives (mg/L)	Jan. Results (mg/L)	Feb. Results (mg/L)	Mar. Results (mg/L)	April. Results (mg/L)	April. Results (mg/L) new cell	May Results (mg/L)	June Results (mg/L)	July Results (mg/L)	August Results (mg/L)	September Results (mg/L)	October. Results (mg/L) new cell	Oct Results (mg/L)	Nov Results (mg/L)	Dec Results (mg/L)
Hardness (CaCO3)	N/A	N/A	609	616	556	574	370	602	654	694	684	620	875	864	571	672
Alkalinity (CaCO3)	N/A	N/A	579	560	529	603	442	626	697	710	719	688	1910	950	556	777
Biochemical Oxygen Demand (BOD)	300	N/A	5	5	< 3	4	4	3	5	5	7	6	80	< 3	< 10	< 10
TDS	N/A	N/A	896	927	791	906	1095	936	1076	1148	1178	1059	3296	1422	925	954
Dissolved Organic Carbon	N/A	N/A	11.1	12.9	10.9	10.6	34.4	12.4	11.6	15.8	17.5	12.5	67.5	13.4	9.5	17
COD	N/A	N/A	44	51	35	73	104	54	63	80	88	63	548	99	47	46
Chloride	N/A	N/A	135	162	116	136	274	142	185	215	241	199	705	149	185	87.1
Ammonia (N) - Total	N/A	1.11	13.6	12.8	10.6	16.6	0.31	16.2	21.2	25.4	29.6	21.6	250	31.6	14.7	20.8
Fluoride	10	N/A	< 0.1	0.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 0.1	< 0.1	< 0.1
Phenolic, 4AAP	1	0.001	< 0.002		< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.036	< 0.002	< 0.002	< 0.002
Sulphate	N/A	N/A	46	44	42	45	94	39	34	29	19	21	58	9	34	17
Nitrite	N/A	N/A	< 0.05	< 0.05	< 0.05	< 0.05	0.07	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	< 0.05	< 0.05	< 0.05
Nitrate	N/A	N/A	0.11	0.18	0.36	0.16	8.54	0.15	0.09	0.91	0.99	0.18	0.61	0.35	0.09	2.49
Kjeldahl Nitrogen - Total	50	N/A	15.8	15.8	13.2	18	4.1	19.1	27.8	33.3	38.2	25.1	309	31.8	19.6	25.7
Aluminum - Total	50	0.075*	0.18	0.06	0.09	0.09	0.07	0.08	0.02	0.09	0.11	0.1	0.29	0.17	0.09	0.08
Antimony - Total	5	0.02	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0009	< 0.0005	0.0012	< 0.0005	< 0.0005	< 0.0005	0.0021	0.0008	< 0.0005	< 0.0005
Arsenic - Total	1	0.1	0.0022	0.0016	0.0014	0.0012	0.0018	0.001	0.0055	0.0012	0.0014	0.001	0.0171	0.0075	0.0011	0.0012
Barium	N/A	N/A	0.299	0.27	0.213	0.23	0.076	0.255	0.353	0.427	0.489	0.396	0.649	1.56	0.271	0.363
Beryllium	N/A	1.1**	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Boron	N/A	0.2	0.336	0.327	0.258	0.334	2.74	0.324	0.519	0.559	0.668	0.484	6.5	1.28	0.344	0.635
Cadmium - Total	0.7	0.0002	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.000070	< 0.00010	< 0.000059	< 0.000070	< 0.000070	< 0.000070
Calcium	N/A	N/A	192	196	182	179	83.3	188	194	202	192	183	239	217	175	181
Chromium - Total	2.8	0.0099	0.023	0.048	0.001	0.004	0.004	0.001	0.003	0.001	0.001	0.001	0.025	0.005	0.001	0.001
Cobalt - Total	5	0.0009	0.0008	0.0009	0.001	0.0009	0.0039	0.0008	0.0046	0.0012	0.0012	0.0013	0.013	0.0041	0.001	0.0014
Copper - Total	2	0.005	0.0021	0.0006	0.0036	< 0.0005	0.0055	< 0.0005	0.0022	0.0006	0.0015	< 0.0005	0.0009	0.01	< 0.0005	0.0015
Iron	N/A	0.3	33.6	26	21.3	15.3	0.226	14.8	16.4	15.3	14.1	15.8	36.1	188	7.47	16.8
Lead - Total	1	0.005	0.0005	0.0004	0.0002	< 0.0001	0.0002	< 0.0001	0.0006	0.0001	0.0003	0.0002	0.00031	0.0115	0.0001	0.0006
Magnesium	N/A	N/A	31.4	30.7	24.5	30.9	39.4	32.1	41.2	45.9	49.6	39.5	86.7	78.3	32.5	53.5
Manganese - Total	5	N/A	0.487	0.44	0.424	0.431	0.026	0.463	0.408	0.361	0.29	0.322	0.519	0.472	0.416	0.35
Mercury - Total	0.01	0.0002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00013	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum - Total	5	0.04	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0017	< 0.0005	0.0009	< 0.0005	< 0.0005	< 0.0005	0.0029	< 0.0005	< 0.0005	< 0.0005
Nickel - Total	2	0.025	< 0.01	0.01	< 0.01	< 0.01	0.03	< 0.01	0.01	0.01	< 0.01	0.01	0.06	0.02	< 0.01	< 0.01
Potassium	N/A	N/A	14.6	15.2	11.8	16.3	94.4	16.9	22.4	27.5	31.5	22.7	210	31.3	17.1	21.8
Phosphorus	N/A	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.04	< 0.1	< 0.1	1.1	1	< 0.1	0.1
Phosphorus - Total	10	0.01	0.03	0.03	0.02	0.01	0.05	0.02	0.02	< 0.1	0.04	0.04	2.29	0.61	0.03	0.18
Selenium - Total	1	0.1	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	< 0.001	0.005	< 0.005	< 0.005	< 0.005
Silver - Total	0.4	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0001
Sodium	N/A	N/A	95.8	100	75.4	99.5	244	107	137	155	161	138	496	139	121	83
Strontium	N/A	10 bq/L	0.664	0.641	0.54	0.6	0.671	0.644	0.73	0.734	0.78	0.695	2.39	0.89	0.637	0.656
Thallium	N/A	0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0001	0.00006	< 0.0003	< 0.0003	< 0.0003
Vanadium	N/A	0.006	0.0015	0.0007	0.0008	0.0006	0.0017	0.0006	0.0036	0.0008	0.0011	0.0011	0.0155	0.0061	< 0.0005	0.0006
Zinc - Total	2	0.03	0.006	0.006	0.007	< 0.005	0.363	< 0.005	0.013	< 0.005	0.016	0.011	0.194	0.026	0.008	< 0.005
Benzene	0.01	0.1	0.0014	0.001	0.0012	0.0015	< 0.0005	0.0016	0.0013	0.0014	0.0015	0.0012	n/a	0.025	0.011	0.0019
Toluene	0.02	0.0008	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	n/a	< 0.0005	< 0.0005	< 0.0005
Ethylbenzene	0.06	0.008	0.0003	0.0006	0.0007	0.0007	< 0.0005	0.0007	0.0006	< 0.0005	< 0.0005	< 0.0005	n/a	< 0.0005	< 0.0005	< 0.0005
Xylene, m, p -	N/A	N/A	0.0019	< 0.0001	< 0.0001	0.001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.001	< 0.001	n/a	0.0037	< 0.001	0.0035
Xylene, o -	N/A	0.04	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	n/a	< 0.0005	< 0.0005	< 0.0005
Xylene, m, p, o -	N/A	N/A	0.002	0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	n/a	0.0037	< 0.0011	0.0035

Parameters	Limits	Provincial Water Quality Objectives	Jan. Results	Feb. Results	Mar. Results	April. Results	Apr. Results New Cell	May. Results	June. Results	July. Results	Aug. Results	Sept. Results	Oct. Results New Cell	Oct Results	Nov Results	Dec Results
pH (at 25 °C)	6.0 - 9.5	6.5 - 8.5	7.27	7.6	7.29	8.00	8.54	7.53	7.31	7.36	7.5	7.34	7.80	7.07	7.36	7.61
Conductivity (at 25 °C)	N/A	N/A	1590	1590	1430	1600	2010	1650	1840	2010	2080	1870	5620	2230	1700	1730
Conductivity (calculated)	N/A	N/A	1448	1557	1309	1530	1852	1584	1814	1954	2024	1803	5181	1962	1609	1597
Anion Sum	N/A	N/A	16.3	16.7	14.7	16.8	19.1	17.3	19.9	20.9	21.6	19.8	59.2	23.4	17	18.5
Cation Sum	N/A	N/A	18.5	19.4	15.8	18.2	20.5	19.1	22	23.9	24.3	21.3	65.5	36.5	18.6	20
% Difference	N/A	N/A	6.32%	7.33%	3.62%	3.96%	3.34%	4.76%	5.07%	671.00%	5.84%	3.75%	5.02%	21.80%	4.23%	3.74%
Ion Ratio (AS/CS)	N/A	N/A	0.881	0.863	0.93	0.924	0.935	0.909	0.903	0.874	0.89	0.928	0.904	0.642	0.919	0.928
Sodium Adsorption Ratio	N/A	N/A	1.69	1.75	1.39	1.81	5.52	1.9	2.33	2.56	2.68	2.41	6.99	2.06	2.2	1.39
TDS (calc.) / EC (actual)	N/A	N/A	0.564	0.582	0.554	0.568	0.545	0.567	0.584	0.571	0.566	0.568	0.587	0.638	0.544	0.551
Langelier Index (at 25°C)	N/A	N/A	0.823	1.14	0.791	1.53	1.59	1.1	0.929	1	1.13	0.928	1.93	0.872	0.846	1.26

Lindsay Ops Leachate 2020		Exceeds Bylaw Value Exceeds PWQO Value														
Parameters	CKL Sewer Bylaw Limits (mg/L)	Provincial Water Quality Objectives (mg/L)	Jan. Results (mg/L)	Feb. Results (mg/L)	Mar. Results (mg/L)	April. Results (mg/L)	April. Results (mg/L) new cell	May Results (mg/L)	June Results (mg/L)	July Results (mg/L)	August Results (mg/L)	September Results (mg/L)	October. Results (mg/L) new cell	Oct Results (mg/L)	Nov Results (mg/L)	Dec Results (mg/L)
Hardness (CaCO3)	N/A	N/A	612	563	537											
Alkalinity (CaCO3)	N/A	N/A	578	518	420											
Biochemical Oxygen Demand (BOD)	300	N/A	6	<10	3											
TDS	N/A	N/A	927	841	963											
Dissolved Organic Carbon	N/A	N/A	13.7	8.8	19.3											
COD	N/A	N/A	42	25	135											
Chloride	N/A	N/A	155	147	79.6											
Ammonia (N) - Total	N/A	1.11	14.2	10.1	4.91											
Fluoride	10	N/A	< 0.1	< 0.1	< 0.1											
Phenolic, 4AAP	1	0.001	< 0.002	< 0.002	< 0.002											
Sulphate	N/A	N/A	34	44	35											
Nitrite	N/A	N/A	< 0.05	0.06	0.09											
Nitrate	N/A	N/A	0.27	0.64	0.98											
Kjeldahl Nitrogen - Total	50	N/A	18	14.4	9.4											
Aluminum - Total	50	0.075*	0.1	0.08	0.55											
Antimony - Total	5	0.02	< 0.0005	< 0.0005	< 0.0005											
Arsenic - Total	1	0.1	0.0013	0.0005	0.0128											
Barium	N/A	N/A	0.286	0.241	1.03											
Beryllium	N/A	1.1**	< 0.002	< 0.002	< 0.002											
Boron	N/A	0.2	0.336	0.273	0.361											
Cadmium - Total	0.7	0.0002	< 0.000070	< 0.000070	< 0.000070											
Calcium	N/A	N/A	192	179	185											
Chromium - Total	2.8	0.0099	0.003	< 0.001	0.009											
Cobalt - Total	5	0.0009	0.0008	0.0007	0.0027											
Copper - Total	2	0.005	< 0.0005	0.0005	0.0033											
Iron	N/A	0.3	19.4	8.86	319											
Lead - Total	1	0.005	0.0002	0.0001	0.0034											
Magnesium	N/A	N/A	32.2	28.1	18.4											
Manganese - Total	5	N/A	0.517	0.461	0.439											
Mercury - Total	0.01	0.0002	< 0.00002	< 0.00002	< 0.00002											
Molybdenum - Total	5	0.04	< 0.0005	< 0.0005	0.0012											
Nickel - Total	2	0.025	< 0.01	< 0.01	< 0.01											
Potassium	N/A	N/A	16.3	11.5	7.5											
Phosphorus	N/A	N/A	< 0.1	< 0.1	0.3											
Phosphorus - Total	10	0.01	0.02	0.02	1.21											
Selenium - Total	1	0.1	< 0.005	< 0.005	< 0.005											
Silver - Total	0.4	0.0001	< 0.0001	< 0.0001	< 0.0001											
Sodium	N/A	N/A	112	98.5	59.2											
Strontium	N/A	10 bq/L	0.679	0.657	0.623											
Thallium	N/A	0.0003	< 0.0003	< 0.0003	< 0.0003											
Vanadium	N/A	0.006	0.0006	< 0.0005	0.0067											
Zinc - Total	2	0.03	< 0.005	0.013	0.107											
Benzene	0.01	0.1	0.012	0.001	0.006											
Toluene	0.02	0.0008	< 0.0005	< 0.0005	< 0.0005											
Ethylbenzene	0.06	0.008	< 0.0005	0.0006	0.006											
Xylene, m, p -	N/A	N/A	< 0.001	< 0.001	< 0.001											
Xylene, o -	N/A	0.04	< 0.0005	< 0.0005	< 0.0005											
Xylene, m, p, o -	N/A	N/A	< 0.0011	< 0.0011	< 0.0011											

Parameters	Limits	Provincial Water Quality Objectives	Jan. Results	Feb. Results	Mar. Results	April. Results	Apr. Results New Cell	May. Results	June. Results	July. Results	Aug. Results	Sept. Results	Oct. Results New Cell	Oct Results	Nov Results	Dec Results
pH (at 25 °C)	6.0 - 9.5	6.5 - 8.5	7.29	7.35	7.53											
Conductivity (at 25 °C)	N/A	N/A	1640	1540	1140											
Conductivity (calculated)	N/A	N/A	1578	1453	936											
Anion Sum	N/A	N/A	16.7	15.5	11.5											
Cation Sum	N/A	N/A	19.6	17	31											
% Difference	N/A	N/A	8.05	4.81%	46.00%											
Ion Ratio (AS/CS)	N/A	N/A	0.851	0.908	0.37											
Sodium Adsorption Ratio	N/A	N/A	1.97	1.81	1.11											
TDS (calc.) / EC (actual)	N/A	N/A	0.565	0.545	0.842											
Langelier Index (at 25°C)	N/A	N/A	0.833	0.824	0.917											