

**2024 ANNUAL REPORT
FOR THE MUNICIPALITY OF ARCTIC BAY**

YEAR BEING REPORTED: 2024

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water Licence No. **3BM-ARC1924** issued to the **Municipality of Arctic Bay**.

I – III. Tabular summaries of all data generated under the “Monitoring Program”;
monthly and annual quantities in cubic metres of freshwater obtained from all sources;
monthly and annual quantities in cubic metres of each and all wastes discharged;

Attached are the quantities of water used as recorded with the Fluid Manager program and the estimated discharge of waste. The water consumption volume is considered equal to the sewage discharge volume because there is no meter at the end of the discharge pipe.

2024 ANNUAL REPORT
FOR THE MUNICIPALITY OF ARCTIC BAY

Month Reported	Quantity of Water Obtained from all sources (m ³)	Quantity of Sewage Waste Discharged (m ³)	Hazardous Waste Accepted (m ³)	Non-Hazardous Waste Accepted (m ³)
January	See Note below	Same	0.97	873.26
February	See Note below	Same	0.97	873.26
March	1,505.92	Same	0.97	873.26
April	1,878.91	Same	0.97	873.26
May	2,322.32	Same	0.97	873.26
June	2,149.18	Same	0.97	873.26
July	2,338.47	Same	0.97	873.26
August	2,394.82	Same	0.97	873.26
September	2,351.09	Same	0.97	873.26
October	2,494.46	Same	0.97	873.26
November	2,578.49	Same	0.97	873.26
December	1,965.17	Same	0.97	873.26
ANNUAL TOTAL	21,979.82	Same	11.59	10,479.17

Note: The Fluid Manager program was down in January and February and possibly part of March as well.

**2024 ANNUAL REPORT
FOR THE MUNICIPALITY OF ARCTIC BAY**

IV. A summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities:

No modifications or major maintenance work carried out in 2024.

V. A list of unauthorized discharges and summary of follow-up action taken:

There were no spills associated with licensed infrastructure in 2024.

VI. A summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year:

There was no abandonment and restoration work completed during 2024. There is no abandonment and restoration work anticipated for 2025.

VII. A summary of any studies requested by the Board that relate to waste disposal, water use or reclamation, and a brief description of any future studies planned:

A detailed design is being developed for the water treatment plant upgrade with an anticipated completion date of March 31, 2025. Construction contract to be awarded anticipated to begin on site summer 2026.

VIII. Any other details on water use or waste disposal requested by the Board by November 1st of the year being reported; and

No other details on water use or waste disposal requested by the Board by November 1st of 2024.

IX. Updates or revisions to the approved Operation and Maintenance Plans:

Updated Operation and Maintenance Plans for the Sewage Disposal Facility and Solid Waste Disposal Facility, and updated Environmental Emergency Spill Contingency and Environmental Monitoring and QA/QC Plans were provided within the 2024 Application for Amendment and Renewal of the Water Licence for approval.

The changes to the Plans ensure that all information is up to date for the infrastructure, personnel, and procedures for handling regulatory requirements.

2024 ANNUAL REPORT

FOR THE MUNICIPALITY OF ARCTIC BAY

X. ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

Annual decanting of the wastewater lagoon started on September 4. Decanting paused on September 12 due to winds causing waves within the lagoon breaking the suction of the decanting intake hose as well as gravel and silt uplift plugging the intake hose. Decanting resumed on September 26 and completed October 1.

- No sludge has been removed from the Wastewater Treatment Facility
- No modifications to the Monitoring Program
- The Dillon Study for the recommended frequency of engineer inspections will be provided separately from this Annual Report by the Government of Nunavut – Community and Government Services by March 31, 2025

XI. FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

The 2024 CIRNAC Inspection took place on June 27, 2024. The Inspection Report has not been received yet.

2024 Plan for Compliance actions:

- A new flowmeter within the water treatment plant will be installed within 6 months
- The berm within the solid waste facility to control divert surface water away from the solid waste facility will be repaired in the upcoming summer
- Secondary containment for hazardous waste will be added to the solid waste facility as part of the new water treatment project

**2024 ANNUAL REPORT
FOR THE MUNICIPALITY OF ARCTIC BAY**

APPENDICES:

Appendix A: Summary of Monitoring Data

Appendix B: Certificate of Analyses for Sampling Program

**2024 ANNUAL REPORT
FOR THE MUNICIPALITY OF ARCTIC BAY**

Appendix A

Tabular Summary of Monitoring Data

Parameter	Maximum Concentration of any Grab Sample for <i>ARC-4</i>	Units	Sept. 4, 2024 <i>ARC-4</i> Once Prior to Decant	Sept. 9, 2024 <i>ARC-3</i> Once Prior to Licence Renewal	Sept. 9, 2024 Middle of Wetland Treatment Area Onset of Decant	Sept. 9, 2024 <i>ARC-6B</i> End of Wetland Treatment Area Onset of Decant
BOD ₅	120	mg/L	90	76	33	13
Total Suspended Solids	180	mg/L	22	20	23	5
Fecal Coliform	1x10 ⁶	CFU/100 mL	1.98x10 ⁵	3.7x10 ⁵	3.7x10 ⁴	1.8x10 ⁴
Oil and Grease	No visible sheen	N/A	13.2 mg/L	10.4 mg/L	3.9 mg/L	3.1 mg/L
pH	Between 6 and 9	N/A	7.84	7.91	7.86	7.87

Based on the results, compliance with the effluent quality limits at ARC-4 is achieved. Furthermore, the wetland appears to be effective in treating the effluent.

**2024 ANNUAL REPORT
FOR THE MUNICIPALITY OF ARCTIC BAY**

Appendix B

C.O.C.: G 107627

REPORT No: 24-027680 - Rev. 0

Report To:

Hamlet of Arctic Bay

Box 150

Arctic Bay, NU X0A 0A0

CADUCEON Environmental Laboratories

2378 Holly Lane

Ottawa, ON K1V 7P1

Attention: Sam Willie

DATE RECEIVED: 2024-Sep-09

CUSTOMER PROJECT: Annual Decant WW

DATE REPORTED: 2024-Sep-16

P.O. NUMBER: 21774

SAMPLE MATRIX: Waste Water

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	LMACGREGOR	2024-Sep-09	A-IC-01	SM 4110B
BOD5 (Liquid)	1	KINGSTON	DCASSIDY	2024-Sep-11	BOD-001	SM 5210B
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SBOUDREAU	2024-Sep-10	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
Fecal Coliforms (Liquid)	1	OTTAWA	HALIPDA	2024-Sep-09	FC-001	SM 9222D
ICP/MS Total (Liquid)	1	OTTAWA	AOZKAYMAK	2024-Sep-10	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	1	OTTAWA	NHOGAN	2024-Sep-10	D-ICP-01	SM 3120B
Mercury (Liquid)	1	OTTAWA	TBENNETT	2024-Sep-10	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	1	KINGSTON	JYEARWOOD	2024-Sep-11	NH3-001	SM 4500NH3
Oil & Grease (Liquid)	1	KINGSTON	DCHAUDHARI	2024-Sep-10	O&G-001	SM 5520
Phenols (Liquid)	1	KINGSTON	EHINCH	2024-Sep-10	PHEN-01	MECP E3179
Total Organic Carbon (TOC)	1	OTTAWA	SLOZO	2024-Sep-09	C-OC-01	EPA 415.2
TSS (Liquid)	1	KINGSTON	DCASSIDY	2024-Sep-10	TSS-001	SM 2540D

R.L. = Reporting Limit

NC = Not Calculated

Test methods may be modified from specified reference method unless indicated by an *



Michelle Dubien

Data Specialist

Parameter	Units	R.L.	Client I.D.	Waste water Samples before 2024 annual Decanting starts, Arctic Bay W.W.
			Sample I.D.	24-027680-1
			Date Collected	2024-09-04
Fecal Coliform	CFU/100mL	1		198000
Alkalinity(CaCO3) to pH4.5	mg/L	5		360
Conductivity @25°C	uS/cm	1		974
pH @25°C	pH units	-		7.84
Chloride	mg/L	0.5		53.1
Nitrate (N)	mg/L	0.05		<0.05
Nitrite (N)	mg/L	0.05		<0.05
Sulphate	mg/L	1		<1
BOD5	mg/L	3		90
Total Suspended Solids	mg/L	3		22
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		111
Total Organic Carbon	mg/L	0.2		86.6
Phenolics	mg/L	0.001		0.744
Hardness (as CaCO3)	mg/L	0.02		63.8
Aluminum (Total)	mg/L	0.01		0.16
Cadmium (Total)	mg/L	0.005		<0.005
Calcium (Total)	mg/L	0.02		11.0
Chromium (Total)	mg/L	0.002		<0.002
Cobalt (Total)	mg/L	0.005		<0.005
Copper (Total)	mg/L	0.002		0.056
Iron (Total)	mg/L	0.005		0.669



Michelle Dubien
Data Specialist

The analytical results reported herein refer to the samples as received and relate only to the items tested. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

		Client I.D.	Waste water Samples before 2024 annual Decanting starts, Arctic Bay W.W.
		Sample I.D.	24-027680-1
		Date Collected	2024-09-04
Parameter	Units	R.L.	-
Lead (Total)	mg/L	0.02	<0.02
Magnesium (Total)	mg/L	0.02	8.84
Manganese (Total)	mg/L	0.001	0.228
Nickel (Total)	mg/L	0.01	<0.01
Potassium (Total)	mg/L	0.1	24.0
Sodium (Total)	mg/L	0.2	50.4
Zinc (Total)	mg/L	0.005	0.041
Arsenic (Total)	mg/L	0.0005	0.0010
Mercury	mg/L	0.00002	0.00003

		Client I.D.	Waste water Samples before 2024 annual Decanting starts, Arctic Bay W.W.
		Sample I.D.	24-027680-1
		Date Collected	2024-09-04
Parameter	Units	R.L.	-
Oil & Grease (Total)	mg/L	1.0	13.2

Bacteria passed holding time.



Michelle Dubien
Data Specialist

C.O.C.: G 100269

REPORT No: 24-028193 - Rev. 0

Report To:
 Hamlet of Arctic Bay
 Box 150
 Arctic Bay, NU X0A 0A0

CADUCEON Environmental Laboratories
 2378 Holly Lane
 Ottawa, ON K1V 7P1

Attention: Sam Willie

DATE RECEIVED: 2024-Sep-11
DATE REPORTED: 2024-Sep-18
SAMPLE MATRIX: Waste Water

CUSTOMER PROJECT: Annual Decant WW
P.O. NUMBER: 21778

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	3	OTTAWA	LMACGREGOR	2024-Sep-12	A-IC-01	SM 4110B
BOD5 (Liquid)	3	KINGSTON	JWOLFE2	2024-Sep-13	BOD-001	SM 5210B
Cond/pH/Alk Auto (Liquid)	3	OTTAWA	SBOUDREAU	2024-Sep-12	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
Fecal Coliforms (Liquid)	3	OTTAWA	HALIPDA	2024-Sep-11	FC-001	SM 9222D
ICP/MS Total (Liquid)	3	OTTAWA	AOZKAYMAK	2024-Sep-12	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	3	OTTAWA	NHOGAN	2024-Sep-12	D-ICP-01	SM 3120B
Mercury (Liquid)	3	OTTAWA	TBENNETT	2024-Sep-12	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	3	KINGSTON	JYEARWOOD	2024-Sep-16	NH3-001	SM 4500NH3
Oil & Grease (Liquid)	3	KINGSTON	DCHAUDHARI	2024-Sep-13	O&G-001	SM 5520
Phenols (Liquid)	3	KINGSTON	EHINCH	2024-Sep-13	PHEN-01	MECP E3179
Total Organic Carbon (TOC)	3	OTTAWA	SLOZO	2024-Sep-16	C-OC-01	EPA 415.2
TSS (Liquid)	3	KINGSTON	MCLOSS	2024-Sep-13	TSS-001	SM 2540D

R.L. = Reporting Limit

NC = Not Calculated

Test methods may be modified from specified reference method unless indicated by an *



Michelle Dubien
Data Specialist

Parameter	Units	R.L.	Client I.D.	9 Piece WW Decant Sample Kit from ARC 6B	W.W Decant Kit Middle of treatment area	W.W Decant Kit End of treatment area
			Sample I.D.	24-028193-1	24-028193-2	24-028193-3
			Date Collected	2024-09-09	2024-09-09	2024-09-09
Fecal Coliform	CFU/100mL	1		370000	37000	18000
Alkalinity(CaCO ₃) to pH4.5	mg/L	5		360	340	284
Conductivity @25°C	uS/cm	1		971	905	806
pH @25°C	pH units	-		7.91	7.86	7.87
Chloride	mg/L	0.5		53.1	50.8	50.3
Nitrate (N)	mg/L	0.05		<0.05	<0.05	2.82
Nitrite (N)	mg/L	0.05		<0.05	0.12	0.09
Sulphate	mg/L	1		2	2	2
BOD ₅	mg/L	3		76	33	13
Total Suspended Solids	mg/L	3		20	23	5
Ammonia (N)-Total (NH ₃ +NH ₄)	mg/L	0.05		98.2	80.3	64.3
Total Organic Carbon	mg/L	0.2		71.7	36.4	28.9
Phenolics	mg/L	0.001		0.796	0.009	0.002
Hardness (as CaCO ₃)	mg/L	0.02		66.6	70.9	86.5
Aluminum (Total)	mg/L	0.01		0.16	0.11	0.07
Cadmium (Total)	mg/L	0.005		<0.005	<0.005	<0.005
Calcium (Total)	mg/L	0.02		11.7	12.9	16.2
Chromium (Total)	mg/L	0.002		<0.002	<0.002	<0.002
Cobalt (Total)	mg/L	0.005		<0.005	<0.005	<0.005
Copper (Total)	mg/L	0.002		0.059	0.042	0.030
Iron (Total)	mg/L	0.005		0.744	0.491	0.281



Michelle Dubien
Data Specialist

The analytical results reported herein refer to the samples as received and relate only to the items tested. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

			Client I.D.	9 Piece WW Decant Sample Kit from ARC 6B	W.W Decant Kit Middle of treatment area	W.W Decant Kit End of treatment area
			Sample I.D.	24-028193-1	24-028193-2	24-028193-3
			Date Collected	2024-09-09	2024-09-09	2024-09-09
Parameter	Units	R.L.		-	-	-
Lead (Total)	mg/L	0.02		<0.02	<0.02	<0.02
Magnesium (Total)	mg/L	0.02		9.09	9.41	11.2
Manganese (Total)	mg/L	0.001		0.249	0.385	0.007
Nickel (Total)	mg/L	0.01		<0.01	<0.01	<0.01
Potassium (Total)	mg/L	0.1		24.4	22.4	21.7
Sodium (Total)	mg/L	0.2		48.7	45.0	45.0
Zinc (Total)	mg/L	0.005		0.036	0.021	0.012
Arsenic (Total)	mg/L	0.0005		0.0008	0.0010	0.0016
Mercury	mg/L	0.00002		<0.00002	<0.00002	0.00002
			Client I.D.	9 Piece WW Decant Sample Kit from ARC 6B	W.W Decant Kit Middle of treatment area	W.W Decant Kit End of treatment area
			Sample I.D.	24-028193-1	24-028193-2	24-028193-3
			Date Collected	2024-09-09	2024-09-09	2024-09-09
Parameter	Units	R.L.		-	-	-
Oil & Grease (Total)	mg/L	1.0		10.4	3.9	3.1



Michelle Dubien
Data Specialist