CERTIFICATE OF ANALYSIS

Work Order	: **WP2425913**	Page	: 1 of 2
Client	: **Municipality of Pangnirtung**	Laboratory	: ALS Environmental - Winnipeg
Contact	: Jack Hicks	Account Manager	:
Address	: P.O. Box 253 Pangnirtung NU Canada X0A 0R0	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg MB Canada R2J 3T4
Telephone	: 867 473 8953	Telephone	: +1 204 255 9720
Project	: 00232735 A6	Date Samples Received	: 12-Nov-2024 13:31
PO	: ----	Date Analysis Commenced	: 14-Nov-2024
C-O-C number	: ----	Issue Date	: 24-Mar-2025 09:01
Sampler	: ----		
Site	: ----		
Quote number	: 2025 Testing		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Jeremy Byrnes	Senior Analyst	Limnology, Winnipeg, Manitoba

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.
Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	*CAS Number*	*Method/Lab*	*LOR*	*Unit*	*Client sample ID*	**PAN-3: N66 09.31', W65 40.52' #1**	----	----	----
					Client sampling date / time	06-Nov-2024 14:00	----	----	----	----
						WP2425913-001	--------	--------	--------	--------
						Result	----	----	----	----
Bioassays										
Trout bioassay (pass/fail)	----	E861A/WP	-	-		Pass	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WP2425913**	Page	: 1 of 4
Client	: **Municipality of Pangnirtung**	Laboratory	: ALS Environmental - Winnipeg
Contact	: Jack Hicks	Account Manager	:
Address	: P.O. Box 253 Pangnirtung NU Canada X0A 0R0	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
Telephone	: 867 473 8953	Telephone	: +1 204 255 9720
Project	: 00232735 A6	Date Samples Received	: 12-Nov-2024 13:31
PO	: ----	Issue Date	: 24-Mar-2025 09:01
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: 2025 Testing		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Bioassays : Trout Bioassay Pass/Fail										
HDPE Pail PAN-3: N66 09.31', W65 40.52' #1	E861A	06-Nov-2024	----	----	----		14-Nov-2024	5 days	7 days	× EHTR

Legend & Qualifier Definitions

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

- **No Quality Control data available for this section.**

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Trout Bioassay Pass/Fail	E861A ALS Environmental - Winnipeg	Water	EPS 1/RM/13, EPS 1/RM/9	Rainbow trout are introduced into a single 100% concentration of the test sample. When the sample is lethal to greater than 50% of the organisms, the sample fails to meet the toxicity criteria.

QUALITY CONTROL REPORT

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This Quality Control Report contains the following information:

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Jeremy Byrnes	Senior Analyst	Winnipeg Limnology, Winnipeg, Manitoba

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Rainbow Trout Bioassay Test Report - Pass/Fail

Sample ID:	WP2425913-001

Summary Results

96-hour Pass/Fail:	PASS

Sample Information

Sample Origin:	Municipality of Pangnirtung
Sample Description:	PAN-3:N66 09.31',W65 40.52'
Sampling Date and Time:	06-Nov-24 14:00
Sampling Method:	Grab
Sampled By:	Client
Container(s) Description:	2 x 10L Polyethylene Pails
Sample Volume:	20L
Date and Time Received:	12-Nov-24 16:26
Transit Irregularities:	None
Storage Temperature (°C):	4

Test Information

Test Organism:	Oncorhynchus mykiss
Test Description:	Acute, 96-hour, Static, Pass/Fail
Reference Method(s):	EPS 1/RM/13, 2nd Ed. Dec. 2000, with 2007, 2016, and 2023 amendments, Environment Canada EPS 1/RM/9, May 1996 with May 2007 amendments, Environment Canada
Performed By:	KS/JB
Starting Date and Time:	14-Nov-24 09:55
Deviations from Reference Method:	Sample past holding time. Analyzed at client's request.

Initial Parameters

Observations

Colour:	Dark Brown		
Odour:	Moderate		
Turbidity:	Low		
Solids:	Low		
Hardness (mg/L):	1.5 mL Titration Solution/ 50 mL of Sample x 1000 = 30		
Temperature (°C):	13.9	Thermometer	S/N 210615826
Dissolved Oxygen (mg/L):	10.19	YSI Dissolved Oxygen Meter	S/N 15M102668
Conductivity (µS/cm):	776	VWR Portable Conductivity Meter	S/N 51071543
pH (5.5-8.5 pH units):	6.40	VWR SympHony pH Meter	S/N D01908
pH Adjustment:	Not Adjusted		
pH Adjustment Procedure:	n/a		

Pre-Aeration

Aeration Time (min):	30	
Sample Test Concentration (v/v):	100%	0%
Aeration Rate (5.5-7.5 mL/min/L):	6.2±0.3	6.2±0.3
Dissolved Oxygen (D.O.) Before Pre-Aeration (%):	98.3	88.0
Average D.O. After Pre-Aeration (%):	97.3	91.4

Test Organism Data

Lot Number:	31/07/24 T4
Weekly Mortality Preceeding Test (%):	0
Sample Size:	10

Conditions Common to All Concentrations During Test

Source of Holding/Dilution Water:	Dechlorinated UV Treated City of Winnipeg Tap Water
Container Description:	20 L Polyethylene Pail with Liner
Aeration Method:	Compressed air bubbled through silica-glass air diffuser
Aeration Rate (5.5-7.5 mL/min/L):	(as set during pre-aeration above)
Test Solution Volume (L):	20
Test Solution Depth (cm):	34
Number of Test Organisms per Container:	10
Loading Density (g/L):	0.32

Conditions During Test

Concentration (% v/v)	Temperature (°C) (15 ± 1°C)					Dissolved Oxygen (mg/L)					pH (pH units)				
	0h	**24h**	**48h**	**72h**	**96h**	**0h**	**24h**	**48h**	**72h**	**96h**	**0h**	**24h**	**48h**	**72h**	**96h**
0	15	n/a	n/a	n/a	14	9.32	n/a	n/a	n/a	9.90	7.79	n/a	n/a	n/a	7.85
100	14	n/a	n/a	n/a	14	10.10	n/a	n/a	n/a	9.92	6.49	n/a	n/a	n/a	7.06

Conc. (% v/v)	Conductivity (µS/cm)	Number of Fish Dead				Number of Fish Stressed			
	0h	**24h**	**48h**	**72h**	**96h**	**24h**	**48h**	**72h**	**96h**
0	290	0	n/a	0	0	0	n/a	0	0
100	769	0	n/a	0	0	0	n/a	0	0

Control Fish Information at End of Test

Mean Fork Length (mm):	41
Lower Range Fork Length (mm):	36
Upper Range Fork Length (mm):	46
Mean Wet Weight (g):	0.64

Mortality and Stressed Behaviour Information

Conc. (% v/v)	Mean Number of Fish at End of Test		Mean Rate of Fish at End of Test (%)	
	Dead	**Stressed**	**Dead**	**Stressed**
0	0	0	0	0
100	0	0	0	0

Reference Toxicant Test Results

Reference Toxicant:	Zinc Sulfate
Date Reference Toxicant Initiated:	31-Oct-24
Recent 96h Reference Toxicant Test LC50 (mg/L Zinc):	0.28
Lower 95% Confidence Limit (mg/L Zinc):	0.19
Upper 95% Confidence Limit (mg/L Zinc):	0.38
Historic Geometric Mean LC50 (mg/L Zinc):	0.63
Lower 95% Confidence Limit (mg/L Zinc):	0.25
Upper 95% Confidence Limit (mg/L Zinc):	1.59
Method of Calculation:	Stephan LC50 Program, Probit
Confirmed by Graph:	Yes

Sublethal Biological Effects

No Sublethal Biological Effect Observed.

Observations/Comments

No Toxicity Observed.

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page of

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Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report
Company:	Hamlet of Pangnirtung
Contact:	SAO
Phone:	867-473-8953
	Company address below will appear on the final report
Street:	PO Box 253
City/Province:	Pangnirtung, NU
Postal Code:	X0A 0R0
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	Hamlet of Pangnirtung
Contact:	SAO

Reports / Recipients

Select Report Format: ☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☑ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax sao@pangnirtung.ca

Email 2

Email 3

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax sao@pangnirtung.ca

Email 2

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

☐ Same day [E2] if received by 10am M-S -

Additional fees may apply to rush

Date and Time Required for all E&P T

For all tests with rush T

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Environmental Division
Winnipeg
Work Order Reference
WP2425913

Telephone +1 204 255 9720

Project Information

ALS Account # / Quote #:	GMPN100
Job #:	00232735 A6
PO / AFE:	
LSD:	
ALS Lab Work Order # (ALS use only):	WP2425913

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact:	Sampler:

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	TO+	Indicate Filtered (F), Prese	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	PAN-3: N66° 09.31', W65° 40.52' #1	6/11/24	14:00	WATER	1	✓				
	RAD " #2	6/11/24	14:05	WATER	1	✓				

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?

☐ YES ☑ NO

Are samples for human consumption/ use?

☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
5.5	

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
	6/11/24	

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
AL	NOV 12	1:31

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Sample Intake						
Client: Hamlet of Pangnirtung					**COC receipt info complete**	☐
Express TAT?	no	same day	1 day	Yes: 2 day	3 days	4 day
Short hold time?	no	<24 hrs	1 day	Yes: 2 days	3 days	4 days
Matrix	Water	Soil/solid	Air	Biota	Food/micro	Other
Total number of bottles/fractions:	2					
Green/white			Orange/black			
Purple/white			Dark blue/white			
Red/white			Black/white			
Dark green/white			Brown/white			
Grey/white			Pink/white			
Yellow/black			Beige/white			
Light blue/white			Other (specify)		2 x pouches	
Comments: 5.5 No ice						

Sample Login					
Receipt Window	**✓/X**	**N/A**	**Bottles**	**✓/X**	**N/A**
# of fractions, matrix and submatrix			All received bottles have IDs		
Client, office, contact, quote, project			Type, volume, and locations		
Receipt time/date, PO, project, site			Labels and internal COCs printed		
Temp, cooling method, sampler			**Client Contacts**	**✓/X**	**N/A**
Sample Info	**✓/X**	**N/A**	Report/invoice/EDD recipients		
Sample date/time			Report types/formats		
Sample ID/description			**Post-committing**	**✓/X**	**N/A**
Sales items			Runs built and field data entered		
Guidelines/thresholds			Billing information entered		
Additional sample/WO information			**Action Required?**	**Yes**	**No**
Due Dates	**✓/X**	**N/A**	Update default receipt data		
COC/GEL/client due dates match			Update default report data		
Express TAT surcharges			Add sales/billing items to quote		
Clock running for all samples			SIF initiated (elaborate in comments)		
Comments:					