



# Laboratory Analysis Report

Carol Nagaruk  
Native Village of Elim  
P.O. Box 39070  
Elim, AK 99739

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<b>Work Order:</b>	1096372	<b>Released by:</b>
	Watershed Tubiktulik River	
<b>Client:</b>	Native Village of Elim	
<b>Report Date:</b>	February 26, 2010	

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Enclosed are the analytical results associated with the above work order. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions ([http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm)), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and AK100001 for NELAP (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6010B, 6020, 7470A, 7471B, 8021B, 8081B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, the National Environmental Laboratory Accreditation Program and other regulatory authorities. The following descriptors or qualifiers may be found in your report:

- \* The analyte has exceeded allowable regulatory or control limits.
- ! Surrogate out of control limits.
- B Indicates the analyte is found in a blank associated with the sample.
- CCV Continuing Calibration Verification
- CL Control Limit
- D The analyte concentration is the result of a dilution.
- DF Dilution Factor
- DL Detection Limit (i.e., maximum method detection limit)
- E The analyte result is above the calibrated range.
- F Indicates value that is greater than or equal to the DL
- GT Greater Than
- ICV Initial Calibration Verification
- J The quantitation is an estimation.
- JL The analyte was positively identified, but the quantitation is a low estimation.
- LCS(D) Laboratory Control Spike (Duplicate)
- LOD Limit of Detection (i.e., 2xDL)
- LOQ Limit of Quantitation (i.e., reporting or practical quantitation limit)
- LT Less Than
- M A matrix effect was present.
- MB Method Blank
- MS(D) Matrix Spike (Duplicate)
- ND Indicates the analyte is not detected.
- Q QC parameter out of acceptance range.
- R Rejected
- RPD Relative Percent Difference
- U Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content.  
All DRO/RRO analyses are integrated per SOP.

December 29, 2009

## Report to:

Forest Taylor  
SGS Environmental Services Inc. - Alaska  
200 W. Potter Dr.  
Anchorage, AK 99518

## Bill to:

Forest Taylor  
SGS Environmental Services Inc. - Alaska  
200 W. Potter Dr.  
Anchorage, AK 99518

Project ID: 1096372

ACZ Project ID: L79864

Forest Taylor:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on December 11, 2009. This project has been assigned to ACZ's project number, L79864. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L79864. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 29, 2010. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Tony Antalek has reviewed and approved this report.



**SGS Environmental Services Inc. - Alaska**

Project ID: 1096372  
Sample ID: FISH CAMP

ACZ Sample ID: **L79864-01**  
Date Sampled: 11/30/09 11:55  
Date Received: 12/11/09  
Sample Matrix: *Drinking Water*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Recoverable Digestion	M200.2 ICP-MS							12/15/09 18:24	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Uranium, total recoverable	M200.8 ICP-MS	0.0005			mg/L	0.0001	0.0005	12/16/09 13:48	erf

**SGS Environmental Services Inc. - Alaska**Project ID: 1096372  
Sample ID: PROP ROCKACZ Sample ID: **L79864-02**  
Date Sampled: 11/30/09 11:55  
Date Received: 12/11/09  
Sample Matrix: *Drinking Water*

## Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Recoverable Digestion	M200.2 ICP-MS							12/15/09 18:37	jjc

## Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Uranium, total recoverable	M200.8 ICP-MS	0.0005			mg/L	0.0001	0.0005	12/16/09 13:51	erf

**Report Header Explanations**

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

**QC Sample Types**

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

**ACZ Qualifiers (Qual)**

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

**Method References**

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995 & 20th edition (1998).

**Comments**

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

For a complete list of ACZ's Extended Qualifiers, please click:

<http://www.acz.com/public/extquallist.pdf>

**SGS Environmental Services Inc. - Alaska**

ACZ Project ID: **L79864**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
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No extended qualifiers associated with this analysis

**SGS Environmental Services Inc. - Alaska**

Project ID: 1096372

Sample ID: FISH CAMP

Locator:

ACZ Sample ID: **L79864-01**

Date Sampled: 11/30/09 11:55

Date Received: 12/11/09

Sample Matrix: *Drinking Water*

Gross Alpha &amp; Beta

Prep Method:

M900.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Alpha	12/28/09 9:44		-0.25	0.77	1.1	pCi/L	*	mwm
Beta	12/28/09 9:44		-0.58	1.6	2.6	pCi/L	*	mwm

Radium 226

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226	12/23/09 6:54		0.11	0.1	0.27	pCi/L		mwm

Radium 228

Prep Method:

M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228	12/16/09 14:11		-0.12	0.2	0.66	pCi/L	*	mwm

**SGS Environmental Services Inc. - Alaska**Project ID: 1096372  
Sample ID: PROP ROCK  
Locator:ACZ Sample ID: **L79864-02**  
Date Sampled: 11/30/09 11:55  
Date Received: 12/11/09  
Sample Matrix: Drinking WaterGross Alpha & Beta  
M900.0

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Alpha	12/28/09 9:46		-0.02	0.84	1.1	pCi/L	*	mwm
Beta	12/28/09 9:46		0.69	1.7	2.6	pCi/L	*	mwm

Radium 226  
M903.1

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226	12/23/09 6:55		0.03	0.12	0.29	pCi/L		mwm

Radium 228  
M904.0

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228	12/16/09 14:11		2.2	0.3	0.65	pCi/L	*	mwm



**Report Header Explanations**

Batch	A distinct set of samples analyzed at a specific time
Error(+/-)	Calculated sample specific uncertainty
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
LCL	Lower Control Limit, in % (except for LCSS, mg/Kg)
LLD	Calculated sample specific Lower Limit of Detection
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RER	Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.
UCL	Upper Control Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

**QC Sample Types**

DUP	Sample Duplicate	MS/MSD	Matrix Spike/Matrix Spike Duplicate
LCSS	Laboratory Control Sample - Soil	PBS	Prep Blank - Soil
LCSW	Laboratory Control Sample - Water	PBW	Prep Blank - Water

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Matrix Spikes	Determines sample matrix interferences, if any.

**ACZ Qualifiers (Qual)**

H	Analysis exceeded method hold time.
R	Poor spike recovery accepted because the other spike in the set fell within the given limits.
T	High Replicate Error Ratio (RER) accepted because sample concentrations are less than 10x the MDL.
U	No nuclides detected above the Lower Limit of Detection (LLD)
V	High blank data accepted because sample concentration is 10 times higher than blank concentration
X	QC is out of control. See Case Narrative.
Z	Poor spike recovery is accepted because sample concentration is four times greater than spike concentration.

**Method Prefix Reference**

M	EPA methodology, including those under SDWA, CWA, and RCRA
SM	Standard Methods for the Examination of Water and Wastewater, 19th edition (1995) & 20th edition (1998).
D	ASTM
RP	DOE
ESM	DOE/ESM

**Comments**

- (1) Solid matrices are reported on a dry weight basis.
- (2) Preparation method: "Method" indicates preparation defined in analytical method.
- (3) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.

For a complete list of ACZ's Extended Qualifiers, please click:

<http://www.acz.com/public/extquallist.pdf>

SGS Environmental Services Inc. - Alaska

ACZ Project ID: **L79864**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L79864-01	WG276176	Alpha	M900.0	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
		Beta	M900.0	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG275811	Radium 228	M904.0	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
L79864-02	WG276176	Alpha	M900.0	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
		Beta	M900.0	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG275811	Radium 228	M904.0	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.

**SGS Environmental Services Inc. - Alaska**

ACZ Project ID: **L79864**

No certification qualifiers associated with this analysis

**SGS Environmental Services Inc. - Alaska**  
 1096372

ACZ Project ID: L79864  
 Date Received: 12/11/09 0:00  
 Received By: gac  
 Date Printed: 12/11/2009

**Receipt Verification**

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA9944	2.7	18

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

**Notes**

**SGS Environmental Services Inc. - Alaska**  
 1096372

ACZ Project ID: L79864  
 Date Received: 12/11/09 0:00  
 Received By: gac

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L79864-01	FISH CAMP	Y										<input type="checkbox"/>
L79864-02	PROP ROCK	Y										<input type="checkbox"/>

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: gac





**SGS North America Inc.**  
**CHAIN OF CUSTODY RECORD**

- Location:  
 • Alaska  
 • New Jersey  
 • North Carolina  
 • West Virginia  
 WWW

1096372



1 CLIENT: Native Village of Elim  
 CONTACT: Carol Nagarsuk PHONE NO: (907) 890-3737  
 PROJECT: Watershed SITE/PSID#: Tubuktuk River  
 REPORTS TO: Native Village of Elim or backoff2girl@yahoo.com EMAIL: aningqu@g-mail.com  
 INVOICE TO: QUOTE #: P.O. #: 39070

2

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX/MATRIX CODE	# CONTAINERS	SAMPLE TYPE	Preservatives Used	Analysis Required	None	None	None	REMARKS/LOC ID
DA-HDA	Fish Camp	11/23/09	1:10 PM		8	G		3				
I-K	Fish Camp	11/23/09	1:30 PM		3	G						
A-HDA	Prop Rock	11/23/09	1:30 PM		8	G						
I-K	Prop Rock	11/23/09	1:30 PM		3	G						

3

4

5

Collected/Relinquished By: (1) Carol N.  
 Relinquished By: (2)  
 Relinquished By: (3)  
 Relinquished By: (4)

Date: 11/23/09 Time: 1:40 PM Received By:  
 Date: Time: Received By:  
 Date: Time: Received By:  
 Date: 11/24/09 Time: 1:55 Received By: [Signature]

DOD Project? YES  NO  
 Cooler ID \_\_\_\_\_  
 Cooler Temp °C \_\_\_\_\_

Special Deliverable Requirements:  
 Requested Turnaround Time and/or Special Instructions: unfiltered water

Temperature Blank Therm # \_\_\_\_\_  
 °C: None  
 or Ambient

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

SGS Reference #: page 01 of 01



SAMPLE RECEIPT FORM

SGS WO#:

Yes No NA

- Are samples **RUSH**, priority or *w/in 72 hrs* of hold time?
- If yes, have you done *e-mail ALERT* notification?
- Are samples *within 24 hrs.* of hold time or due date?
- If yes, have you also *spoken with supervisor*?
- Archiving bottles: Are lids marked w/ red "X"?
- Were samples collected with proper preservative?
- Any problems (ID, cond'n, HT, etc)? Explain:

TAT (circle one): Standard -or- Rush

Received Date: 11-30-09

Received Time: 1155

Cooler ID	Temperature	Measured w/ (Therm/IR ID#)
<u>1</u>	<u>A.M.B</u> °C	
<u>2</u>	<u>A.M.B</u> °C	
	°C	
	°C	

Note: Temperature readings include thermometer correction factors

Delivery method (circle all that apply):

- Client  Alert Courier / Lynden / SGS
- UPS / FedEx  USPS / DHL / Carlife
- AkAir Goldstreak / NAC / ERA / PenAir
- Other: \_\_\_\_\_

Additional Sample Remarks: ( if applicable)

- Extra Sample Volume?
- Limited Sample Volume?
- Multi-Incremental Samples?
- Lab-filtered for dissolved
- Ref Lab required for Radiocesium
- Foreign Soil? Rodon

- If this is for PWS, provide PWSID: \_\_\_\_\_
- Payment received: \$ 1160.00 by Check or Credit Card 2-Checks
- Will courier charges apply?
- Data package required? (Level: 1 / 2 / 3 / 4)
- Notes: \_\_\_\_\_
- Is this a DoD project? (USACE, Navy, AFCEE)

**This section must be filled out for DoD projects (USACE, Navy, AFCEE):**

- | Yes                      | No                       |  |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Is received temperature $\leq 6^{\circ}\text{C}$ ?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Were containers ice-free? <i>Notify PM immediately of any ice in samples.</i><br>If some cooler temperatures are non-compliant, see form FS-0029 (attached) for samples/analyses affected. |
| <input type="checkbox"/> | <input type="checkbox"/> | Was there an airbill? ( <i>If "yes," see attached.</i> )   |
| <input type="checkbox"/> | <input type="checkbox"/> | Was cooler sealed with custody seals & were they intact?<br># / where: _____   |
| <input type="checkbox"/> | <input type="checkbox"/> | Was there a COC with cooler?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Was COC sealed in plastic bag & taped inside lid of cooler?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Was the COC filled out properly? Did labels correspond?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Did the COC indicate USACE / Navy / AFCEE project?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Samples were packed to prevent breakage with ( <i>circle one</i> ):<br>Bubble Wrap Vermiculite Other (specify): _____  |
| <input type="checkbox"/> | <input type="checkbox"/> | Were all samples sealed in separate plastic bags?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Were all VOCs free of headspace and/or MeOH preserved?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Were correct container / sample sizes submitted?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Was the PM notified of arrival so they can send Sample Receipt Acknowledgement to client?  |

**This section must be completed if problems are noted.**

- Was client notified of problems? Yes / No
- By (SGS PM): \_\_\_\_\_
- Individual contacted: \_\_\_\_\_
- Via: Phone / Fax / E-mail (*circle one*)
- Date/Time: \_\_\_\_\_
- Reason for contact: \_\_\_\_\_
- Change Order Required? Yes / No

Notes: NOT SUFFICIENT CONTAINERS FOR RADON. CANCEL RADON. TAT 11/30/09

Completed by (sign): [Signature] (print): SHARON DOUGHTY

Login proof: Self-check completed [Signature] Peer-reviewer's Initials ala



