

# 2005 Hamlet of Tuktoyaktuk Annual Water Licence Report

Prepared by AECOM for the Hamlet of Tuktoyaktuk

October 28, 2009

## 1.0 Introduction

In 2005, the community infrastructure systems providing water, sewage and solid waste management to the residents of the Hamlet of Tuktoyaktuk were operated and maintained by the community. Figure 1 shows the general layout of the water and sewer systems.

## 2.0 Water Use

Tuktoyaktuk obtains its drinking water from Kudlak Lake. Water for winter use is pumped from Kudlak Lake to a raw water storage reservoir; in September 2005, the Hamlet pumped 23,188 cubic metres of water into this reservoir.

In 2005 the community used a total of 46,112 cubic metres (m<sup>3</sup>) of potable water. Monthly water use is shown in the table below. The estimated potable water use is 132 liters per capita per day based upon the 2007 estimated population of 956 (NWT Bureau of Statistics).

**Table 1: Water Consumption**

Month	Quantity Used (m <sup>3</sup> )
January	3,327
February	3,261
March	3,733
April	3,750
May	3,886
June	4,078
July	4,210
August	4,077
September	3,968
October	3,946
November	3,895
December	3,981
<b>Total</b>	<b>46,112</b>

## 3.0 Surveillance Network Program Monitoring

Water sample data is collected periodically to check the performance of the water and waste systems. As of June 28, 2005 when the community received its latest water licence, the SNP station numbers are:

- 0714-1 Supply line to reservoir

- 0714-2 Effluent discharge structure at the Sewage Disposal Facilities
- 0714-3 Water contained within the Solid Waste Lagoon

The Hamlet collected three samples during each of the Sewage Lagoon decants in 2005. The pH of the later decant samples was high (up to 9.58). SNP sampling results for 2005 (from Taiga Labs electronic records) are presented in Table 2.

In 2005, to the best of the community's knowledge, the community infrastructure systems providing water, sewage and solid waste management were mainly operating within the water quality criteria of the water licence. However, as mentioned previously, the pH of some lagoon decant samples was high.

#### **4.0 System Studies and Inspections**

The GNWT retained IEG Environmental (IEG) in 2004 to complete a Sewage Lagoon Discharge Assessment for Tuktoyaktuk. The draft Assessment submitted in February 2005 provided some information and recommended that Fisheries work including a fish and benthic organism study be done in fall 2005.

A sewage lagoon condition assessment report and landfill condition assessment report by Earth Tech (Canada) Inc. were submitted to the NWT Water Board on July 2, 2005 and August 2, 2005 respectively.

A Municipal Water Licence Inspection was carried out by Kevin R. Glowa of INAC on July 5, 2005.

#### **5.0 System Discharges**

The community infrastructure system providing water, sewage and solid waste management to Tuktoyaktuk residents has two licensed discharges. The sewage lagoon discharge is seasonal from the sewage lagoon into a saltwater inlet leading to Kugmallit Bay. The solid waste lagoon discharges into the mouth of a small, adjacent bay.

24,000 m<sup>3</sup> of treated wastewater was decanted from the sewage lagoon during the early decant in 2005. Another 33,000 m<sup>3</sup> was decanted on another occasion in 2005.

#### **6.0 System Excavations**

In 2005, there were no trench or sump excavations associated with the community's water, sewer and solid waste management systems.

#### **7.0 Lagoon Sludge**

In 2005, there was no removal of sludge from the sewage lagoon.

#### **8.0 Operation and Maintenance Plans**

Draft Operation and Maintenance Plans for the lagoon and landfill facilities were submitted to the NWT Water Board on June 28, 2005.

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**Table 2: SNP Sampling Results – Water Licence N7L3-0714**

SNP Location	Assumed SNP #	Sample Date	Fecal Coliforms	BOD <sub>5</sub>		Suspended Solids		pH	Oil/Grease Sheen Yes/No	NO <sub>2</sub> /NO <sub>3</sub>	NH <sub>3</sub>
			CFU/100 mL	mg/L		mg/L		(6-9)			
			grab	grab	MAC	grab	MAC	grab	grab	grab	grab
Sewage - Facility	0714-2	Aug 8 2005	1500	58	120	94	180	8.94	No		1.76
Unknown Water - Facility	0714-3	Aug 8 2005	12	2	120	4	180	9.19			
Sewage – Sewage Lagoon	0714-2	Aug 17 2005	450		120	82	180	9.34	No		0.184
Sewage – Sewage Lagoon	0714-2	Aug 17 2005	530		120	82	180	9.33	No		.165
Sewage - Facility	0714-2	Aug 30 2005	530	12	120	66	180	9.58	No		.674
Sewage – Sewage Lagoon	0714-2	Sept 9 2005			120	78	180	9.54	No		1.19
Sewage – Sewage Lagoon	0714-2	Sept 22 2005	1500	22	120	86	180	9.50	No		1.97

Location	SNP #	Sample Date	Polychlorinated biphenyls		Cadmium	Cobalt	Chromium	Copper	Iron	Mercury	Manganese	Nickel	Lead	Zinc
			µg/L	µg/L										
			grab	MAC	grab	grab	grab	grab	grab	grab	grab	grab	grab	grab
Unknown Water - Facility	0714-3	Aug 8 2005	< 0.05	25	< 0.1	0.2	0.6	15.6	449	< 0.02	13.1	2.1	1.5	12

## Appendix A

### Taiga Labs Sample Testing Results

## 2005 Taiga Labs electronic records for Tuktoyaktuk

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Client Name	Taiga Sample ID	Client Sample ID	Sample Type	Sampling Location	Sample Collect Date	Imple Received D	Lab Section	Parameter Name	Result Flag	Reported Result	Units	Calc MDL	mple Result Qual	lysis Result Qual	Analysis Date	Prep Method	Test Method
Hamlet of Tuktoyaktuk	252721	N7L3 0714-2	Sewage	Facility	8/8/2005	08-Aug-05	Micro. (w)	Coliforms, Fecal		1500	CFU/100mL	100			8/9/2005	none	SM9222:D
Hamlet of Tuktoyaktuk	252721	N7L3 0714-2	Sewage	Facility	8/8/2005	08-Aug-05	Nuts. (w)	Ammonia as N		1.76	mg/L	0.005			8/10/2005	none	SM4500-NH3:G
Hamlet of Tuktoyaktuk	252721	N7L3 0714-2	Sewage	Facility	8/8/2005	08-Aug-05	Nuts. (w)	Oxygen		58	mg/L	2			8/9/2005	none	SM5210:B
Hamlet of Tuktoyaktuk	252721	N7L3 0714-2	Sewage	Facility	8/8/2005	08-Aug-05	Organic (w)	(Visible)		Non-Visible					8/11/2005	none	Visual Exam.
Hamlet of Tuktoyaktuk	252721	N7L3 0714-2	Sewage	Facility	8/8/2005	08-Aug-05	Phys. (w)	pH		8.94	pH units				8/10/2005	none	SM4500-H:B
Hamlet of Tuktoyaktuk	252721	N7L3 0714-2	Sewage	Facility	8/8/2005	08-Aug-05	Phys. (w)	Suspended		94	mg/L	3			8/9/2005	GF/C Filt.	SM2540:D
Hamlet of Tuktoyaktuk	252722	N7L3 0714-3	Unknown Water	Facility	8/8/2005	08-Aug-05	Micro. (w)	Coliforms, Fecal		12	CFU/100mL	2			8/9/2005	none	SM9222:D
Hamlet of Tuktoyaktuk	252722	N7L3 0714-3	Unknown Water	Facility	8/8/2005	08-Aug-05	Nuts. (w)	Oxygen		2	mg/L	2			8/9/2005	none	SM5210:B
Hamlet of Tuktoyaktuk	252722	N7L3 0714-3	Unknown Water	Facility	8/8/2005	08-Aug-05	Phys. (w)	pH		9.19	pH units				8/10/2005	none	SM4500-H:B
Hamlet of Tuktoyaktuk	252722	N7L3 0714-3	Unknown Water	Facility	8/8/2005	08-Aug-05	Phys. (w)	Suspended		4	mg/L	3			8/9/2005	GF/C Filt.	SM2540:D
Hamlet of Tuktoyaktuk	252722	N7L3 0714-3	Unknown Water	Facility	8/8/2005	08-Aug-05	Sub - Org	Biphenyls	<	0.05	µg/L	0.05			8/17/2005		
Hamlet of Tuktoyaktuk	252722	N7L3 0714-3	Unknown Water	Facility	8/8/2005	08-Aug-05	T Metals (w)	Cadmium	<	0.1	µg/L	0.1			8/9/2005	Acid Digest	EPA200.8
Hamlet of Tuktoyaktuk	252722	N7L3 0714-3	Unknown Water	Facility	8/8/2005	08-Aug-05	T Metals (w)	Chromium		0.6	µg/L	0.3			8/9/2005	Acid Digest	EPA200.8
Hamlet of Tuktoyaktuk	252722	N7L3 0714-3	Unknown Water	Facility	8/8/2005	08-Aug-05	T Metals (w)	Cobalt		0.2	µg/L	0.1			8/9/2005	Acid Digest	EPA200.8
Hamlet of Tuktoyaktuk	252722	N7L3 0714-3	Unknown Water	Facility	8/8/2005	08-Aug-05	T Metals (w)	Copper		15.6	µg/L	0.3			8/9/2005	Acid Digest	EPA200.8
Hamlet of Tuktoyaktuk	252722	N7L3 0714-3	Unknown Water	Facility	8/8/2005	08-Aug-05	T Metals (w)	Iron		449	µg/L	50			8/9/2005	Acid Digest	EPA200.8
Hamlet of Tuktoyaktuk	252722	N7L3 0714-3	Unknown Water	Facility	8/8/2005	08-Aug-05	T Metals (w)	Lead		13.1	µg/L	0.1			8/9/2005	Acid Digest	EPA200.8
Hamlet of Tuktoyaktuk	252722	N7L3 0714-3	Unknown Water	Facility	8/8/2005	08-Aug-05	T Metals (w)	Manganese		1.5	µg/L	0.1			8/9/2005	Acid Digest	EPA200.8
Hamlet of Tuktoyaktuk	252722	N7L3 0714-3	Unknown Water	Facility	8/8/2005	08-Aug-05	T Metals (w)	Mercury	<	0.02	µg/L	0.02			8/9/2005	Acid Digest	EPA200.8
Hamlet of Tuktoyaktuk	252722	N7L3 0714-3	Unknown Water	Facility	8/8/2005	08-Aug-05	T Metals (w)	Nickel		2.1	µg/L	0.1			8/9/2005	Acid Digest	EPA200.8
Hamlet of Tuktoyaktuk	252722	N7L3 0714-3	Unknown Water	Facility	8/8/2005	08-Aug-05	T Metals (w)	Zinc		12	µg/L	10			8/9/2005	Acid Digest	EPA200.8

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Client Name	Taiga Sample ID	Client Sample ID	Sample Type	Sampling Location	Sample Collect Date	Imple Received D	Lab Section	Parameter Name	Result Flag	Reported Result	Units	Calc MDL	mple Result Qual	lysis Result Qual	Analysis Date	Prep Method	Test Method
Hamlet of Tuktoyaktuk	253061	N7L3 0714-2	Sewage	Sewage Lagoon	8/17/2005	18-Aug-05	Micro. (w)	Coliforms, Fecal		450	CFU/100mL	10			8/18/2005	none	SM9222:D
Hamlet of Tuktoyaktuk	253061	N7L3 0714-2	Sewage	Sewage Lagoon	8/17/2005	18-Aug-05	Nuts. (w)	Ammonia as N		0.184	mg/L	0.005			8/22/2005	none	SM4500-NH3:G
Hamlet of Tuktoyaktuk	253061	N7L3 0714-2	Sewage	Sewage Lagoon	8/17/2005	18-Aug-05	Nuts. (w)	Oxygen			mg/L					none	SM5210:B
Hamlet of Tuktoyaktuk	253061	N7L3 0714-2	Sewage	Sewage Lagoon	8/17/2005	18-Aug-05	Organic (w)	(Visible)		Non-Visual					8/19/2005	none	Visual Exam.
Hamlet of Tuktoyaktuk	253061	N7L3 0714-2	Sewage	Sewage Lagoon	8/17/2005	18-Aug-05	Phys. (w)	pH		9.34	pH units				8/18/2005	none	SM4500-H:B
Hamlet of Tuktoyaktuk	253061	N7L3 0714-2	Sewage	Sewage Lagoon	8/17/2005	18-Aug-05	Phys. (w)	Suspended		82	mg/L	3			8/20/2005	GF/C Filt.	SM2540:D
Hamlet of Tuktoyaktuk	253062	N7L3 0714-2	Sewage	Sewage Lagoon	8/17/2005	18-Aug-05	Micro. (w)	Coliforms, Fecal		530	CFU/100mL	10			8/18/2005	none	SM9222:D
Hamlet of Tuktoyaktuk	253062	N7L3 0714-2	Sewage	Sewage Lagoon	8/17/2005	18-Aug-05	Nuts. (w)	Ammonia as N		0.165	mg/L	0.005			8/22/2005	none	SM4500-NH3:G
Hamlet of Tuktoyaktuk	253062	N7L3 0714-2	Sewage	Sewage Lagoon	8/17/2005	18-Aug-05	Nuts. (w)	Oxygen			mg/L					none	SM5210:B
Hamlet of Tuktoyaktuk	253062	N7L3 0714-2	Sewage	Sewage Lagoon	8/17/2005	18-Aug-05	Organic (w)	(Visible)		Non-Visual					8/19/2005	none	Visual Exam.
Hamlet of Tuktoyaktuk	253062	N7L3 0714-2	Sewage	Sewage Lagoon	8/17/2005	18-Aug-05	Phys. (w)	pH		9.33	pH units				8/18/2005	none	SM4500-H:B
Hamlet of Tuktoyaktuk	253062	N7L3 0714-2	Sewage	Sewage Lagoon	8/17/2005	18-Aug-05	Phys. (w)	Suspended		82	mg/L	3			8/20/2005	GF/C Filt.	SM2540:D

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Client Name	Taiga Sample ID	Client Sample ID	Sample Type	Sampling Location	Sample Collect Date	Imple Received D	Lab Section	Parameter Name	Result Flag	Reported Result	Units	Calc MDL	mple Result Qual	lysis Result Qual	Analysis Date	Prep Method	Test Method
Hamlet of Tuktoyaktuk	253714	N7L3 0714-2	Sewage	Facility	8/30/2005	30-Aug-05	Micro. (w)	Coliforms, Fecal		530	CFU/100mL	10			8/30/2005	none	SM9222:D
Hamlet of Tuktoyaktuk	253714	N7L3 0714-2	Sewage	Facility	8/30/2005	30-Aug-05	Nuts. (w)	Ammonia as N		0.674	mg/L	0.005			9/8/2005	none	SM4500-NH3:G
Hamlet of Tuktoyaktuk	253714	N7L3 0714-2	Sewage	Facility	8/30/2005	30-Aug-05	Nuts. (w)	Oxygen		12	mg/L	2			8/31/2005	none	SM5210:B
Hamlet of Tuktoyaktuk	253714	N7L3 0714-2	Sewage	Facility	8/30/2005	30-Aug-05	Organic (w)	(Visible)		Non Vis					8/30/2005	none	Visual Exam.
Hamlet of Tuktoyaktuk	253714	N7L3 0714-2	Sewage	Facility	8/30/2005	30-Aug-05	Phys. (w)	pH		9.58	pH units				8/31/2005	none	SM4500-H:B
Hamlet of Tuktoyaktuk	253714	N7L3 0714-2	Sewage	Facility	8/30/2005	30-Aug-05	Phys. (w)	Suspended		66	mg/L	3			9/15/2005	GF/C Filt.	SM2540:D

254086.xls

Client Name	Taiga Sample ID	Client Sample ID	Sample Type	Sampling Location	Sample Collect Date	Imple Received D	Lab Section	Parameter Name	Result Flag	Reported Result	Units	Calc MDL	mple Result Qual	lysis Result Qual	Analysis Date	Prep Method	Test Method
Hamlet of Tuktoyaktuk	254086	N7L30714-2	Sewage	Sewage Lagoon	9/9/2005	13-Sep-05	Micro. (w)	Coliforms, Fecal			CFU/100mL					none	SM9222:D
Hamlet of Tuktoyaktuk	254086	N7L30714-2	Sewage	Sewage Lagoon	9/9/2005	13-Sep-05	Nuts. (w)	Ammonia as N		1.19	mg/L	0.005			9/13/2005	none	SM4500-NH3:G
Hamlet of Tuktoyaktuk	254086	N7L30714-2	Sewage	Sewage Lagoon	9/9/2005	13-Sep-05	Nuts. (w)	Oxygen			mg/L					none	SM5210:B
Hamlet of Tuktoyaktuk	254086	N7L30714-2	Sewage	Sewage Lagoon	9/9/2005	13-Sep-05	Organic (w)	(Visible)		non-visual					9/15/2005	none	Visual Exam.
Hamlet of Tuktoyaktuk	254086	N7L30714-2	Sewage	Sewage Lagoon	9/9/2005	13-Sep-05	Phys. (w)	pH		9.54	pH units				9/14/2005	none	SM4500-H:B
Hamlet of Tuktoyaktuk	254086	N7L30714-2	Sewage	Sewage Lagoon	9/9/2005	13-Sep-05	Phys. (w)	Suspended		78	mg/L	3			9/22/2005	GF/C Filt.	SM2540:D

254261.xls

Client Name	Taiga Sample ID	Client Sample ID	Sample Type	Sampling Location	Sample Collect Date	Imple Received D	Lab Section	Parameter Name	Result Flag	Reported Result	Units	Calc MDL	mple Result Qual	lysis Result Qual	Analysis Date	Prep Method	Test Method
Hamlet of Tuktoyaktuk	254261	N7L3 0714-2	Sewage	Sewage Lagoon	9/22/2005	23-Sep-05	Micro. (w)	Coliforms, Fecal		1500	CFU/100mL	100			9/22/2005	none	SM9222:D
Hamlet of Tuktoyaktuk	254261	N7L3 0714-2	Sewage	Sewage Lagoon	9/22/2005	23-Sep-05	Nuts. (w)	Ammonia as N		1.97	mg/L	0.005			9/28/2005	none	SM4500-NH3:G
Hamlet of Tuktoyaktuk	254261	N7L3 0714-2	Sewage	Sewage Lagoon	9/22/2005	23-Sep-05	Nuts. (w)	Oxygen		22	mg/L	2			9/23/2005	none	SM5210:B
Hamlet of Tuktoyaktuk	254261	N7L3 0714-2	Sewage	Sewage Lagoon	9/22/2005	23-Sep-05	Organic (w)	(Visible)		non-visual					9/29/2005	none	Visual Exam.
Hamlet of Tuktoyaktuk	254261	N7L3 0714-2	Sewage	Sewage Lagoon	9/22/2005	23-Sep-05	Phys. (w)	pH		9.50	pH units				9/26/2005	none	SM4500-H:B
Hamlet of Tuktoyaktuk	254261	N7L3 0714-2	Sewage	Sewage Lagoon	9/22/2005	23-Sep-05	Phys. (w)	Suspended		86	mg/L	3			9/29/2005	GF/C Filt.	SM2540:D

## Appendix B

### INAC Inspection Report



## MUNICIPAL WATER LICENCE INSPECTION REPORT

DATE:	July 5, 2005	COMPANY REP:	Dave Krengnektak (Acting Foreman)
LICENSEE:	Incorporated Hamlet of Tuktoyaktuk	LICENCE #:	N7L3-0714 (Renewal)

### WATER SUPPLY – Figures 1-6 below

Source:	Kudlak Lake	Quantity Used:	Refer to Annual Reports	Meter Rdg:	Does not work
Owner/Operator:	Incorporated Hamlet of Tuktoyaktuk				

Indicate:	A - Acceptable	U - Unacceptable	N/A - Not Applicable	N/I - Not Inspected			
Intake Facilities	U <sup>1</sup>	Storage Structures	A	Treatment Systems	A	Chem. Storage	U <sup>2</sup>
Flow Meas. Device	U <sup>3</sup>	Conveyance Lines	N/I	Pumping Stations	U <sup>4</sup>	Modifications	N/A

### Concerns:

1. Spill 04-572 clean up still in progress (figure 1-4).
2. Bag of chemical above the doorwell and should be stored in appropriate area (figure 5).
3. Water meter at the time of inspection did not work.
4. Relating to spill 04-572 pumping facilities at Kudlak Lake (figure 1) and water treatment facility (figure 13) are unacceptable. Specifically this relates to fuel storage and Spill 04-572 which has still not been cleaned up and remediated.

### Notes:

- GNWT Health Bob Mellett was present on this inspection.
- Incorporated Hamlet of Tuktoyaktuk meeting regarding the Kudlak Lake spill 04-572 occurred at 1:00 pm. Attendees were Debbie Raddi, John Picek, Bob Mellett, Mervin Gruben, Kyle Sherwin, Peter Nogasak, Barry Jacobson, Robert Gruben, Marylyn Cockney, and Sara Dando (by telecom).
- Water Treatment Plant was secure.

### WASTE DISPOSAL – Figures 7-12 below

Sewage	Sewage Treatment System (primary, secondary, or tertiary):		Primary Lagoon		
	Natural Water Body:	✓	Continuous Discharge (land or water):		
	Seasonal Discharge:	✓ Fall Decant	Wetlands Treatment:		Trench:

Solid Waste	Owner/Operator:	Incorporated Hamlet of Tuktoyaktuk			
	Landfill:	✓	Burn & Landfill:	No Longer Permitted	Other:

Indicate:	A - Acceptable	U - Unacceptable	N/A - Not Applicable	N/I - Not Inspected			
Discharge Quality:	N/I <sup>See notes</sup>	Construction:	N/A	Disch. Meas. Dev.	A	Freeboard:	A - >50cm
Decant Structures:	A	O&M Plan:	U <sup>3</sup>	Dams, Dykes:	A	Seepages:	A
Dyke Inspections:	A	A&R Plan:	N/A	Erosion:	A	Spills:	U <sup>4</sup> – 04-572

Periods of Discharge:	-Sewage Lagoon was decanted in October 2004. -Last decant of the Solid Waste Disposal Facilities (SWDF) Lagoon was in October 2003.	Effluent Discharge Rate:	Equal to pump rate.
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### Concerns:

1. As indicated in the 2003 and 2004 Inspection Reports the old/historic Solid Waste Disposal Facilities (SWDF) waste oil and hazardous materials area (Figure 10-12) are becoming permanent storage areas. It is recommended that every effort be made to dispose of these materials at a certified disposal facility. Long term/permanent storage of this material is not recommended. As indicated in the 2004 Inspection Report it is only a matter of time before spills occur. This in fact is now the case as various materials in and around the area have escaped included a large area where pooled oil was found (figure 12). Lastly, it seems that there is no designated area for these materials. It is assumed that these materials are being deposited in the domestic garbage disposal area which eventually make their way to the SWDF Lagoon (figure 9)
2. As indicated in the 2004 Inspection Report there are no signs seen for waste segregation at SWDF. Signs should be posted for various areas including but not limited to: domestic garbage, tires, appliances, wood, bulky metals, and hazardous wastes (oils, paints, lead-acid batteries) if accepted. It is understood that signs are being made and will be placed in and around the SWDF shortly. This was also flagged in the Tuktoyaktuk Landfill Condition Assessment Report submitted July 14, 2004.
3. As indicated in the 2003 and 2004 Inspection Reports the O&M plan was deemed incomplete by the NWT Water Board. September 2000 Drafts as prepared by UMA engineering have been received at this office. **As per the new "Renewed" Water Licence Part H1 this Plan is Due October 1, 2005.**
4. Spill 04-572 clean up still in progress (figure 1-4).
5. Currently unclear as to the location of the bagged toilet wastes disposal area (Part D8). Upon conversation with Dave it seems that there is no disposal location for honey bags.



Notes (Waste Disposal):

- No leaks found at the Sewage and SWDF Lagoon containment berms.
- No decant from Sewage Lagoon after the last inspection period. The last decant occurred in October 2004. An assessment will be made in the next Inspection Report. The 2004 Inspection report indicated high pH levels above MAC criteria.

**FUEL STORAGE** – Figures 13 below

Owner:	Hamlet	Operator:	Hamlet	Condition of Tanks:	Poor
Berms & Liners	N/A	Water within Berm:	N/A	Evidence of Leaks:	**Yes**
Drainage Pipes:	N/A	Pump Station and Catchment Berm:	None		
Pipeline Condition:	N/A	Distribution lines:	Corroded and leaking		

Concerns:

1. As indicated in the 2003 & 2004 Inspection Report there is a small fuel spill at water treatment plant (figure 13). Fuel tank and distribution/conveyance lines badly corroded.

Notes:

- The Hamlet is aware of the poor condition of this tank and the distribution lines both in 2003 and 2004.

**SERVELLANCE NETWORK PROGRAM (SNP)** – Figures 14-16 below

Samples Collected (Hamlet)	-Hamlet collected various samples from SNP 0714-2 in 2004 as per SNP Part B1.		
(DIAND)	-Samples taken at SNP 0714-1, 2, & 3 (all single composite grab samples). -Sample taken of ocean water at north east most end of town (boat launch). -All results pending. <b>Initial results indicated that pH is below 9.</b> -2004 sample results (attached) are summarized below. <ul style="list-style-type: none"><li>• 0714-1 – No concerns;</li><li>• 0714-2 – High pH (9.34) and above limit for discharge. Ammonia relatively low; and</li><li>• 0714-3 – Elevated parameters. As a result of elevated calcium, magnesium, sodium, potassium and chloride the increase is likely a result of ocean influence.</li></ul>		
Signs Posted: SNP	Yes but SNP 0714-2 and 3 are in wrong locations. Please see SNP, concern 1 in the 2004 Inspection Report.	Warning	No Warnings seen.
Records & Reporting:	-2003 and 2004 Annual Reports not received. -Sewage Lagoon Discharge Assessment received May 24, 2005. Please ensure the outstanding components as described in Part D9 are submitted before February 1, 2006. -Condition Assessment Report of Tuktoyaktuk Sewage Lagoon submitted August 11, 2004. - Tuktoyaktuk Landfill Condition Assessment Report submitted July 14, 2004.		
Geotechnical Inspection	Please see Condition Assessment Report of Tuktoyaktuk Sewage Lagoon submitted August 11, 2004 and Tuktoyaktuk Landfill Condition Assessment Report submitted July 14, 2004.		

Concerns:

1. SNP 0714-1 needs to be re-painted (figure 14).
2. SNP 0714-2 & 3 signs (figures 15&16 respectively) posted but should be relocated. Please see SNP, concern 1 in the 2004 Inspection Report.


Notes:

- As a reminder please note that any discharge from the SWDF lagoon must occur between September 15 and October 31 (Part D12) upon receipt of an Inspectors Approval (Part D11). Also see conditions for discharge (Part D13-D18).

<b>Non compliance / Violations of Act or License:</b>	<ol style="list-style-type: none"><li>1. Part B, section 1. 2003 Annual Report not submitted.</li><li>2. Part B, section 1. 2004 Annual Report not submitted.</li><li>3. Part B, section 4. Water meter not functioning.</li><li>4. Part B, section 5. SNP signage not maintained to the satisfaction of an inspector.</li><li>5. Part C, section 2. As a result of not receiving the Annual Report the Annual Water usage is unknown.</li><li>6. Part H, section 1. No board approved O&amp;M plan. Please ensure this is completed by October 1, 2005.</li></ol>
---	--

General / Additional Inspection Comments: No additional Comments.

Figures Below:	Yes	X	No	
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<b>Inspectors Name</b> Kevin R. Glowa (M.Sc., R.P. Bio.) Water Resource Officer	<b>Inspectors Signature</b> 
---	--



## LIST OF FIGURES FOR INSPECTION REPORT CONTINUED

**Figure 9. Waste Disposal.** SWDF general south view.



**Figure 10. Waste Disposal.** SWDF waste oil and hazardous wastes area.



**Figure 11. Waste Disposal.** SWDF waste oil and hazardous wastes area.



**Figure 12. Waste Disposal.** SWDF waste oil and hazardous wastes area and pooled/spilled oil.



**Figure 13. Fuel Storage.** Fuel storage at water treatment plant.



**Figure 14. SNP.** SNP 0714-1 Water Reservoir.



**Figure 15. SNP.** SNP 0714-2 Effluent Discharge structure at the Sewage Lagoon.



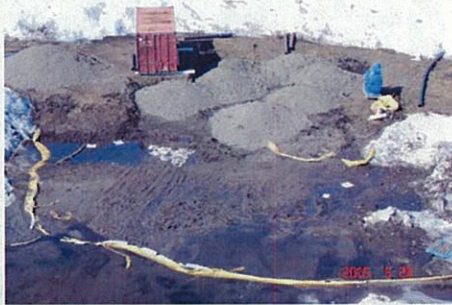
**Figure 16. SNP.** SNP 0714-3 at North east Solid Waste Lagoon.





## LIST OF FIGURES FOR INSPECTION REPORT

**Figure 1. Water Supply.** Kudlak Lake 050524 spill 04-572. Investigation Pending.



**Figure 2. Water Supply.** Kudlak Lake 050524 spill 04-572. Investigation Pending.



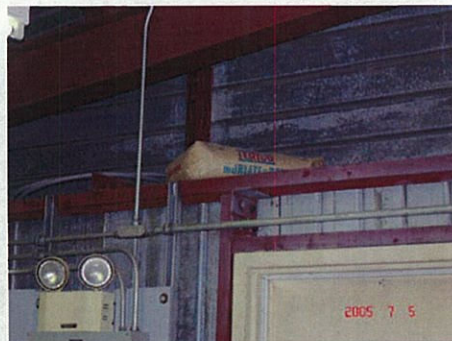
**Figure 3. Water Supply.** Kudlak Lake 050628 spill 04-572. Investigation Pending.



**Figure 4. Water Supply.** Kudlak Lake 050628 spill 04-572. Investigation Pending.



**Figure 5. Water Supply.** Water Treatment Building.



**Figure 6. Water Supply.** Water Reservoir.



**Figure 7. Waste Disposal.** Sewage Lagoon containment berm.



**Figure 8. Waste Disposal.** SWDF Lagoon containment berm.





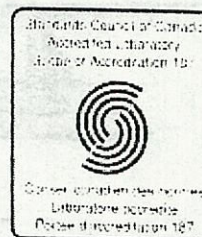
Tuktoyaktuk



# Taiga Environmental Laboratory

4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3

Tel: (867)-669-2788 Fax: (867)-669-2718



## - FINAL REPORT -

Prepared For: Water Resources - Inuvik  
DIAND

Address: Box 2100  
Inuvik, NT  
X0E 0T0

Attn: Kevin Glowa

0714-1 → From H<sub>2</sub>O Reservoir.  
0714-2 → Sewage lagoon  
0714-3 → 10 Part Composite taken  
from 10 Lysht of Containment Bern of  
SWDS.

Facimile: (867) 777-2090

Final report has been reviewed and approved by:

Teresa Joudrie  
A/Laboratory Manager

Ocean Tuk → Taken from NE Boat  
Launch

Indian & Northern  
Affairs  
Inuvik, N.W.T.  
NOV - 9 2004

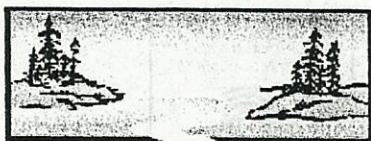
North Mackenzie  
District

### NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Standards Council of Canada (SCC) as a testing laboratory for specific tests registered with the Council.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

Report Date: Thursday, November 04, 2004  
Print Date: Thursday, November 04, 2004





## Taiga Environmental Laboratory

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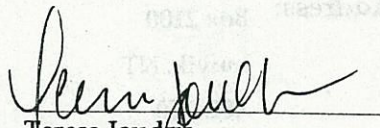


### - CERTIFICATE OF ANALYSIS -

Client Sample ID: 0714-1

Taiga Sample ID: 243217

Client Project: Tuk 0714  
Sample Type: Unknown Water  
Received Date: 28-Sep-04  
Sampling Date: 23-Sep-04  
Location: Tuktoyaktuk

Approved By   
Teresa Joudrie  
A/Laboratory Manager

Report Status: FINAL

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Physicals</b>						
pH	7.73	0.05	pH units	12-Oct-04	SM4500-H:B	
Conductivity, Specific	209	0.3	µS/cm	12-Oct-04	SM2510:B	
Solids, Total Suspended	46	3	mg/L	07-Oct-04	SM2540:D	
<b>Nutrients</b>						
Nitrate+Nitrite as Nitrogen	0.01	0.01	mg/L	01-Oct-04	SM4110:B	
Ammonia as N	< 0.005	0.005	mg/L	29-Sep-04	SM4500-NH3:G	
<b>Major Ions</b>						
Sulphate	19	1	mg/L	01-Oct-04	SM4110:B	
Calcium	24.0	0.1	mg/L	01-Oct-04	SM4110:B	
Magnesium	7.0	0.1	mg/L	01-Oct-04	SM4110:B	
Sodium	8.4	0.1	mg/L	01-Oct-04	SM4110:B	
Potassium	2.2	0.1	mg/L	01-Oct-04	SM4110:B	

Report Date: Thursday, November 04, 2004

Print Date: Thursday, November 04, 2004

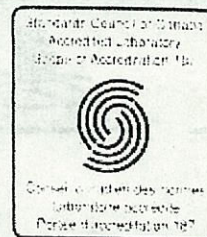




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### - CERTIFICATE OF ANALYSIS -

Client Sample ID: 0714-1

Taiga Sample ID: 243217

#### Subcontracted Routine/Nutrients

Phosphorous, Total	< 0.05	0.05	mg/L	09-Oct-04	SM4500-P:D
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#### Metals, Total

Aluminum	< 30	30	µg/L	29-Sep-04	EPA200.8
Iron	99	50	µg/L	29-Sep-04	SM3111:B
Mercury	< 0.02	0.02	µg/L	22-Oct-04	EPA200.8
Antimony	< 0.1	0.1	µg/L	29-Sep-04	EPA200.8
Barium	132	0.1	µg/L	29-Sep-04	EPA200.8
Beryllium	< 0.1	0.1	µg/L	29-Sep-04	EPA200.8
Cadmium	0.1	0.1	µg/L	29-Sep-04	EPA200.8
Cesium	< 0.1	0.1	µg/L	29-Sep-04	EPA200.8
Chromium	< 0.3	0.3	µg/L	29-Sep-04	EPA200.8
Cobalt	< 0.1	0.1	µg/L	29-Sep-04	EPA200.8
Copper	1.8	0.3	µg/L	29-Sep-04	EPA200.8
Lead	< 0.1	0.1	µg/L	29-Sep-04	EPA200.8
Lithium	3.5	0.3	µg/L	29-Sep-04	EPA200.8
Manganese	5.2	0.1	µg/L	29-Sep-04	EPA200.8
Molybdenum	0.8	0.1	µg/L	29-Sep-04	EPA200.8
Nickel	1.1	0.1	µg/L	29-Sep-04	EPA200.8
Rubidium	0.5	0.1	µg/L	29-Sep-04	EPA200.8
Selenium	< 1	1	µg/L	29-Sep-04	EPA200.8

Report Date: Thursday, November 04, 2004

Print Date: Thursday, November 04, 2004

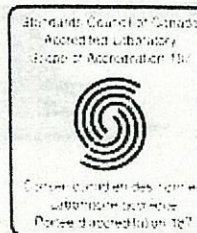




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### - CERTIFICATE OF ANALYSIS -

Client Sample ID: 0714-1

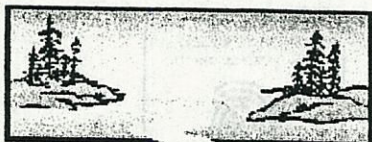
Taiga Sample ID: 243217

Silver	0.4	0.1	µg/L	29-Sep-04	EPA200.8
Strontium	77.6	0.1	µg/L	29-Sep-04	EPA200.8
Thallium	< 0.1	0.1	µg/L	29-Sep-04	EPA200.8
Titanium	0.2	0.1	µg/L	29-Sep-04	EPA200.8
Uranium	0.1	0.1	µg/L	29-Sep-04	EPA200.8
Vanadium	< 0.1	0.1	µg/L	29-Sep-04	EPA200.8
Zinc	< 10	10	µg/L	29-Sep-04	EPA200.8

Report Date: Thursday, November 04, 2004

Print Date: Thursday, November 04, 2004

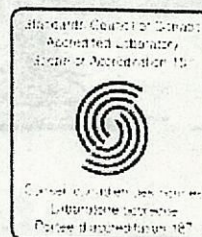




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### - CERTIFICATE OF ANALYSIS -

Client Sample ID: 0714-2

Taiga Sample ID: 243218

Client Project: Tuk 0714

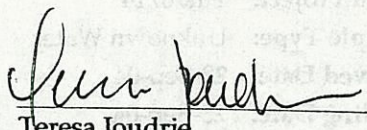
Sample Type: Unknown Water

Received Date: 28-Sep-04

Sampling Date: 23-Sep-04

Location: Tuktoyaktuk

Approved By

  
Teresa Joudrie  
A/Laboratory Manager

Report Status: FINAL

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Physicals</b>						
Conductivity, Specific	631	0.3	µS/cm	29-Sep-04	SM2510:B	
Solids, Total Suspended	46	3	mg/L	04-Oct-04	SM2540:D	
pH	9.34	0.05	pH units	29-Sep-04	SM4500-H:B	
<b>Nutrients</b>						
Ammonia as N	2.86	0.005	mg/L	29-Sep-04	SM4500-NH3:G	
Nitrate+Nitrite as Nitrogen	0.37	0.01	mg/L	01-Oct-04	SM4110:B	

Report Date: Thursday, November 04, 2004

Print Date: Thursday, November 04, 2004





## Taiga Environmental Laboratory

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Tel: (867)-669-2788 Fax: (867)-669-2718



### - CERTIFICATE OF ANALYSIS -

Client Sample ID: 0714-3

Taiga Sample ID: 243219

Client Project: Tuk 0714

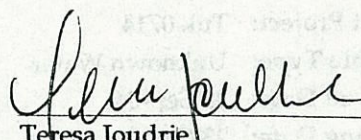
Sample Type: Unknown Water

Received Date: 28-Sep-04

Sampling Date: 23-Sep-04

Location: Tuktoyaktuk

Approved By

  
Teresa Joudrie  
A/Laboratory Manager

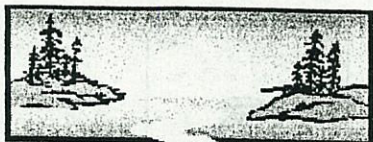
Report Status: FINAL

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Physicals</b>						
Conductivity, Specific	3020	0.3	µS/cm	29-Sep-04	SM2510:B	
Solids, Total Suspended	< 3	3	mg/L	04-Oct-04	SM2540:D	
pH	8.05	0.05	pH units	29-Sep-04	SM4500-H:B	
<b>Nutrients</b>						
Ammonia as N	0.031	0.005	mg/L	29-Sep-04	SM4500-NH3:G	
Nitrate+Nitrite as Nitrogen	0.08	0.01	mg/L	01-Oct-04	SM4110:B	
<b>Major Ions</b>						
Calcium	55.4	0.1	mg/L	01-Oct-04	SM4110:B	
Sulphate	34	1	mg/L	01-Oct-04	SM4110:B	
Magnesium	56.5	0.1	mg/L	01-Oct-04	SM4110:B	
Chloride	722	0.2	mg/L	01-Oct-04	SM4110:B	
Sodium	420	0.1	mg/L	01-Oct-04	SM4110:B	
Potassium	37.5	0.1	mg/L	01-Oct-04	SM4110:B	

Report Date: Thursday, November 04, 2004

Print Date: Thursday, November 04, 2004

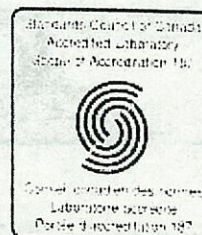




## Taiga Environmental Laboratory

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Tel: (867)-669-2788 Fax: (867)-669-2718



### - CERTIFICATE OF ANALYSIS -

Client Sample ID: 0714-3

Taiga Sample ID: 243219

#### Subcontracted Routine/Nutrients

Phosphorous, Total	< 0.05	0.05	mg/L	05-Oct-04	SM4500-P:D
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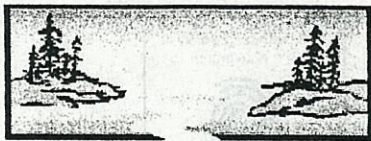
#### Metals, Total

Aluminum	33	30	µg/L	29-Sep-04	EPA200.8
Mercury	< 0.02	0.02	µg/L	29-Sep-04	EPA200.8
Iron	797	50	µg/L	29-Sep-04	SM3111:B
Antimony	0.7	0.1	µg/L	29-Sep-04	EPA200.8
Barium	198	0.1	µg/L	29-Sep-04	EPA200.8
Beryllium	< 0.1	0.1	µg/L	29-Sep-04	EPA200.8
Cadmium	0.1	0.1	µg/L	29-Sep-04	EPA200.8
Cesium	< 0.1	0.1	µg/L	29-Sep-04	EPA200.8
Chromium	< 0.3	0.3	µg/L	29-Sep-04	EPA200.8
Cobalt	0.2	0.1	µg/L	29-Sep-04	EPA200.8
Copper	21.4	0.3	µg/L	29-Sep-04	EPA200.8
Lead	0.7	0.1	µg/L	29-Sep-04	EPA200.8
Lithium	16.0	0.3	µg/L	29-Sep-04	EPA200.8
Manganese	28.3	0.1	µg/L	29-Sep-04	EPA200.8
Molybdenum	1.6	0.1	µg/L	29-Sep-04	EPA200.8
Nickel	3.0	0.1	µg/L	29-Sep-04	EPA200.8
Rubidium	5.0	0.1	µg/L	29-Sep-04	EPA200.8
Selenium	2	1	µg/L	29-Sep-04	EPA200.8

Report Date: Thursday, November 04, 2004

Print Date: Thursday, November 04, 2004





## Taiga Environmental Laboratory

4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3

Tel: (867)-669-2788 Fax: (867)-669-2718



### - CERTIFICATE OF ANALYSIS -

Client Sample ID: 0714-3

Taiga Sample ID: 243219

Silver	< 0.1	0.1	µg/L	29-Sep-04	EPA200.8
Strontium	332	0.1	µg/L	29-Sep-04	EPA200.8
Thallium	< 0.1	0.1	µg/L	29-Sep-04	EPA200.8
Titanium	0.4	0.1	µg/L	29-Sep-04	EPA200.8
Uranium	0.2	0.1	µg/L	29-Sep-04	EPA200.8
Vanadium	0.2	0.1	µg/L	29-Sep-04	EPA200.8
Zinc	34	10	µg/L	29-Sep-04	EPA200.8

#### Subcontracted Organics

Phenols	< 0.5	0.5	µg/L	04-Oct-04	SM5530:C
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ReportDate: Thursday, November 04, 2004

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## Taiga Environmental Laboratory

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### - CERTIFICATE OF ANALYSIS -

Client Sample ID: Ocean Tuk.

Taiga Sample ID: 243220

Client Project: Tuk 0714

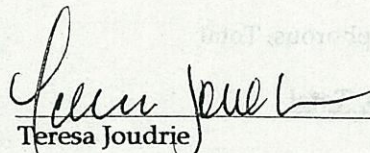
Sample Type: Unknown Water

Received Date: 28-Sep-04

Sampling Date: 23-Sep-04

Location: Tuktoyaktuk

Approved By

  
Teresa Joudrie

A/Laboratory Manager

Report Status: FINAL

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b>Physicals</b>						
Conductivity, Specific	19400	0.3	µS/cm	12-Oct-04	SM2510:B	
pH	7.76	0.05	pH units	12-Oct-04	SM4500-H:B	
<b>Nutrients</b>						
Ammonia as N	0.006	0.005	mg/L	29-Sep-04	SM4500-NH3:G	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	04-Oct-04	SM4110:B	
<b>Major Ions</b>						
Sulphate	990	1	mg/L	04-Oct-04	SM4110:B	
Calcium	185	0.1	mg/L	04-Oct-04	SM4110:B	
Magnesium	481	0.1	mg/L	04-Oct-04	SM4110:B	
Chloride	7140	0.7	mg/L	04-Oct-04	SM4110:B	
Sodium	3880	0.1	mg/L	04-Oct-04	SM4110:B	
Potassium	139	0.1	mg/L	04-Oct-04	SM4110:B	

#### Subcontracted Routine/Nutrients

Report Date: Thursday, November 04, 2004

Print Date: Thursday, November 04, 2004

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## Taiga Environmental Laboratory

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### - CERTIFICATE OF ANALYSIS -

Client Sample ID: Ocean Tuk.

Taiga Sample ID: 243220

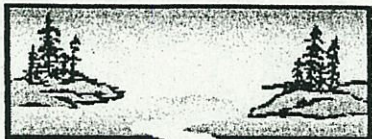
Phosphorous, Total	0.08	0.05	mg/L	09-Oct-04	SM4500-P:D
<b>Metals, Total</b>					
Iron	2310	50	µg/L	29-Sep-04	SM3111:B
Aluminum	762	30	µg/L	29-Sep-04	EPA200.8
Antimony	0.2	0.1	µg/L	29-Sep-04	EPA200.8
Barium	90.5	0.1	µg/L	29-Sep-04	EPA200.8
Beryllium	< 0.1	0.1	µg/L	29-Sep-04	EPA200.8
Cadmium	< 0.1	0.1	µg/L	29-Sep-04	EPA200.8
Cesium	0.1	0.1	µg/L	29-Sep-04	EPA200.8
Chromium	1.7	0.3	µg/L	29-Sep-04	EPA200.8
Cobalt	1.1	0.1	µg/L	29-Sep-04	EPA200.8
Copper	204	0.3	µg/L	29-Sep-04	EPA200.8
Lead	3.1	0.1	µg/L	29-Sep-04	EPA200.8
Lithium	46.5	0.3	µg/L	29-Sep-04	EPA200.8
Manganese	74.0	0.1	µg/L	29-Sep-04	EPA200.8
Molybdenum	5.2	0.1	µg/L	29-Sep-04	EPA200.8
Nickel	4.5	0.1	µg/L	29-Sep-04	EPA200.8
Rubidium	32.5	0.1	µg/L	29-Sep-04	EPA200.8
Selenium	7	1	µg/L	29-Sep-04	EPA200.8
Silver	< 0.1	0.1	µg/L	29-Sep-04	EPA200.8
Strontium	2460	0.1	µg/L	29-Sep-04	EPA200.8

ReportDate: Thursday, November 04, 2004

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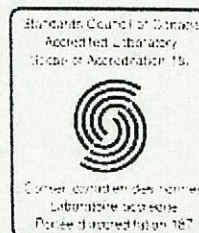




## Taiga Environmental Laboratory

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Tel: (867)-669-2788 Fax: (867)-669-2718



### - CERTIFICATE OF ANALYSIS -

Client Sample ID: Ocean Tuk.

Taiga Sample ID: 243220

Thallium	< 0.1	0.1	µg/L	29-Sep-04	EPA200.8
Titanium	32.4	0.1	µg/L	29-Sep-04	EPA200.8
Uranium	1.7	0.1	µg/L	29-Sep-04	EPA200.8
Vanadium	3.0	0.1	µg/L	29-Sep-04	EPA200.8
Zinc	22	10	µg/L	29-Sep-04	EPA200.8

#### Subcontracted Organics

Phenols	µg/L	SM5530:C	18
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### - DATA QUALIFIERS -

#### *Data Qualifier Descriptions:*

18 Sample lost/damaged during shipment to lab; analysis not possible.

#### \* Taiga analytical methods are based on the following standard analytical methods

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

CCME - Canadian Council of Ministers of the Environment

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Print Date: Thursday, November 04, 2004