Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada
Box 278
COPPERMINE, NT X0E 0E0

Telephone: (403) 982-4306
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October 05, 1995

Your file Votre référence
N4L3-1532
Our file Notre référence

1532-2
WB
MACKA-1K

Hamlet of Cambridge Bay
P.O. Box 16
CAMBRIDGE BAY, NT X0E 0C0

Attention: Mike O'Gorman
Mayor

Dear Mr. O'Gorman

RE: Water Inspection, Water Licence N4L3-1532
Cambridge Bay, N.W.T.

Enclosed please find a copy of the 1995 Municipal Inspection Report for the Hamlet of Cambridge Bay. The Inspection was conducted on September 18, 1995 by Mike Collie, Water Inspector under the Northwest Territories Water Act. The Inspection Report is self explanatory, but I would like to bring to your attention several items.

1) The Hamlet currently does not operate a separate bagged sewage pit. Although there are no units remaining on the honey bag system, it was indicated to the inspector that some outpost camps use the landfill for disposal of honey bags. This fact as well as the requirement under the Water Licence **PART B, Item 6 and PART D, Item 6** makes it necessary to maintain and post a bagged toilet waste disposal area.

2) There are several reporting requirements that will need to be addressed.

   a) **PART H, Item 11** of the Water Licence requires that an O & M plan for the Waste Disposal Facilities be submitted to the Board within six (6) months of the issuance of the licence.

   b) **PART B, Item 1** requires that the Licensee file an Annual Report with the Board not later than March 31st. To facilitate the completion of the report I have enclosed, for your consideration, a blank form that can be used as a template for completing the Annual Report. Please feel free to use additional pages if more space is required to provide the necessary information.

   c) **PART D, Items 8-11** concern the assessment of the solid waste disposal facility. The terms of reference for an assessment of the site shall be submitted to the Board for approval by January 1, 1996. If you have any questions regarding these requirements, please contact Mr. Brian Collins at (403) 920-8219 or Mr. John Wittemann at (403) 920-8240 of the Water Resources Division.

UC

Canada

3) **PART B, Item 5 and Item 6** require that within sixty (60) days of the issuance of this licence signs are posted to identify the stations of the Surveillance Network Program (SNP) and the water supply and "waste disposal facilities". The solid waste disposal facilities, water supply and SNP stations were not posted.

4) The Inspector has recommended that sampling be undertaken upstream of the culvert under the Float Base Road during periods of peak run off. The location is indicated on the attached map. The Surveillance Network Program can be modified at the discretion of the Board. A request for any proposed change to the Surveillance Network Program should be forwarded to the Board in Writing, including a rationale of change. This may be necessary if initial sampling results indicate higher values than licence limits at this site.

I have included a copy of the Cambridge Bay Water Licence, as the Senior Administrative Officer had indicated to the inspector that he did not have a copy at the time of the Inspection.

The Inspector would like to thank Mr. Henry Brown for his time, assistance and hospitality accorded to him during the Inspection.

Should you have any questions, please contact Mike Collie, Land Use Inspector, at (403) 982-4306 or the undersigned at (819) 979-4405.

Sincerely,

Dan Elliott

Dan Elliott
A\District Manager
Nunavut District

cc: Kitikmeot Health Board, Cambridge Bay
MACA, Cambridge Bay
Water Resources, Yellowknife, NT

WATER INSPECTION

HAMLET OF CAMBRIDGE BAY

September 18, 1995

Mike Collie
Resouce Management Officer
Department of Indian Affairs & Northern Development
Nunavut District\Kitikmeot Region
COPPERMINE, NT

October 11, 1995

MUNICIPAL INSPECTION REPORT
HAMLET OF CAMBRIDGE BAY
WATER LICENCE N4L3-1532

Introduction

This licence allows for the use of water and disposal of waste for municipal purposes at the Hamlet of Cambridge Bay, Northwest Territories, N 69°07' and W 105°03'. This licence became effective August 01, 1995 and expires July 31, 2000.

An Inspection of the water supply and waste disposal facilities was conducted by Mike Collie, Resource Management Officer, Nunavut District, Kitikmeot Region, September 18, 1995.

This new licence issued under the Northwest Territories Water Act has requirements in the licence concerning the assessment and remediation of the solid waste disposal facility. This assessment and remediation is a major undertaking and the Hamlet should seek assistance from MACA.

The contact for the inspection was Mr. Henry Brown, Senior Administrative Officer, Cambridge Bay.

A. WATER SUPPLY

Water is obtained from Water Supply Lake located 2km northwest of the Hamlet. Water is transported via underground pipeline from the pumphouse at the lake to the treatment plant and reservoir in town. A boiler is located in an additional building located adjacent to the pumphouse to supply heat for the pumphouse during winter. The pumphouse was neat and tidy. The pumphouse was not posted. It was explained to Mr. Brown that this is a "Surveillance Network Program" (SNP) station, number 1532-1, and it is a requirement for it to be posted.

Water is stored in a 50,000 gallon reservoir tank located behind the treatment plant. Water is delivered, by the Hamlet, to the residences and facilities by water truck. The meter in the treatment plant records water quantities pumped from water supply lake. Mr. Brown advised the inspector that the reservoir was recently cleaned and repainted.

The raw water is chlorinated at the treatment plant by automatic injection utilizing liquid calcium hypochlorite.

No problems were noted with the water supply. Raw water samples were taken at SNP station number 1532-1, Water Lake. Results will be forwarded when available.

B. SEWAGE DISPOSAL

The sewage lagoon, a natural water body, is located approximately 1 km northeast of the community and adjacent to the solid waste Disposal site. The lagoon is bermed on the southwest in order to direct effluent around the solid waste landfill. Currently effluent from the lagoon flows south into the Waste metal disposal area located east of the landfill. The effluent which is visible in the Waste metal dump, during periods of open water, flows through a berm placed around the south permitter of the Waste Metal Disposal Area, and then follows natural drainage flowing in two directions toward the Bay. The flow can be delineated in the summer due to the increase in vegetation due to the high levels of nutrients originating from the effluent. Effluent flows south down a natural drainage toward the Float Base road then along the north side of the access until it discharges in to the inlet via a culvert under the road nearly adjacent to the NWTEL repeater. There is no SNP station at this site, and at the time of the inspection no flow was evident. Effluent also flows west into a natural water body then continues downslope into a small pond before discharging into the bay via culverts under the Float Base road. This site is SNP station 1532-2.

Sewage pumpout service is done by the Hamlet. All buildings and residences are on sewage pumpout. The hamlet does not collect any bagged sewage, however, approximately 20 bags of sewage are disposed of in the Land fill annually from outpost camps. There was no bagged sewage pit. It is a requirement of the water Licence, **PART B, Item 6** and **Part D Item 6**, to maintain and post a bagged toilet waste disposal area.

The pumpout area utilizes two halved steel corrugated culverts for pump out chutes. The culverts do not extend into the lagoon and erosion is evident around the culverts. In order to ensure proper mixing and reduce any potential health hazards the apron should be extended to the edge of the lagoon allowing the culverts to extend out into the lagoon.

Solid garbage is still evident in the lagoon. Plans are being discussed to remove some of the solid waste in the lagoon.

The Sewage Lagoon was posted.

Sewage quantities are measured by truck load and records are kept at the Hamlet Office.

Samples were taken at SNP station number 1532-2. Results will be forwarded when available. This site was not posted and Mr. Brown was advised that as part of the SNP it is a requirement to be posted to ensure consistent data from the SNP station.

C. SOLID WASTE DISPOSAL

Garbage is deposited at the solid waste disposal site adjacent to the sewage lagoon. The landfill is operated and maintained using a cut and fill method. Garbage is burned weekly. There was no dead animal pit at the landfill. Dead animals are deposited and burned with the domestic waste. There is segregation of bulky metal waste. The site is located to the east of the Landfill and was posted. During the inspection residents were observed disposing wood and other construction materials in the Bulky metal disposal area. Better posting of the facilities may help to alleviate this practice. The landfill was not fenced, and no posting was noted. The Hamlet indicated that a O & M plan was being initiated for the Land fill. I indicated that **PART H, Item 11** of the Water Licence required an O & M plan for the Waste Disposal Facilities to be submitted to the board within six (6) months of the issuance of this licence. The Solid Waste Disposal Site was not posted.

D. SURVEILLANCE NETWORK PROGRAM (SNP)

There were no requirements for sampling under the new licence to date. Station Number 1532-2 must be sampled once per month during June and analyzed for parameters as indicated in the licence Under the Section titled **SURVEILLANCE NETWORK PROGRAM, PART B, Item 1**.

E. RECORDS AND REPORTING

The Hamlet has had a history of tardy and incomplete reporting practices. I am hopeful that this will not continue in the future. The requirement for the Annual Report is outlined in **PART B, ITEM 1.** Any assistance in these matters can be obtained from the Coppermine office or the District Office in Iqaluit.

F. ADDITIONAL REPORTING

As a result of a survey entitled **Survey of Materials Disposed of in Cambridge Bay and the State of the Marine Environment** by Royal Roads and Environment Canada PART D, Items 8-11 were incorporated into the Water Licence. The survey found high levels of PCB contamination near the discharge from the Hamlet's waste facilities. It is likely that the source of the contamination is the solid waste disposal facility, but this, to our knowledge, has not been confirmed. The purpose, therefore, of these items is to assess the site in order to confirm the presence of PCBs and prevent any further spread of the contamination.

PART H, Item 1 requires the licensee to submit to the Board for approval, within six (6) months of the issuance of the Water Licence, a plan for the operation and Maintenance of the Waste disposal Facilities.

G. POSTING

The solid waste disposal facilities, water supply and SNP stations were not posted.

PART B, Item 5 of the Water Licence States: "The Licensee shall, within sixty (60) days of issuance of this licence, post the necessary signs, where possible to identify the stations of the "Surveillance Network Program (SNP)".

PART B, Item 6 of the Water Licence States: "The Licensee shall, within sixty (60) days of issuance of this licence, post signs, in the appropriate areas to inform the public of the water supply and waste disposal facilities".

H. ABANDONMENT AND RESTORATION

No abandonment or restoration was noted at the time of the Inspection.

I. OTHER CONCERNS

It would be advisable to consider sampling, at the inlet to the culvert under the Float Base Road during periods of peak runoff. This culvert is located southeast of the Blue NWTEL building. The vegetation in the drainage to the culvert appears to indicate evidence of elevated levels of nutrients which are indicative of sewage effluent. This drainage originates from the Lagoon and flows through the edge of the Waste Metal dump. The Lagoon is not an engineered facility and the only means of control other than natural topography is a gravel berm placed along the south edge of the lagoon to direct flow around the landfill. In discussion with Mr. Henry Brown and from visual inspection it is apparent that the berm has been breached in the past. It is impossible to control decant and, therefore, retention time can not be controlled. Currently effluent from the lagoon drains through the edge of the Waste Metal dump and then follows two natural drainages toward the inlet.

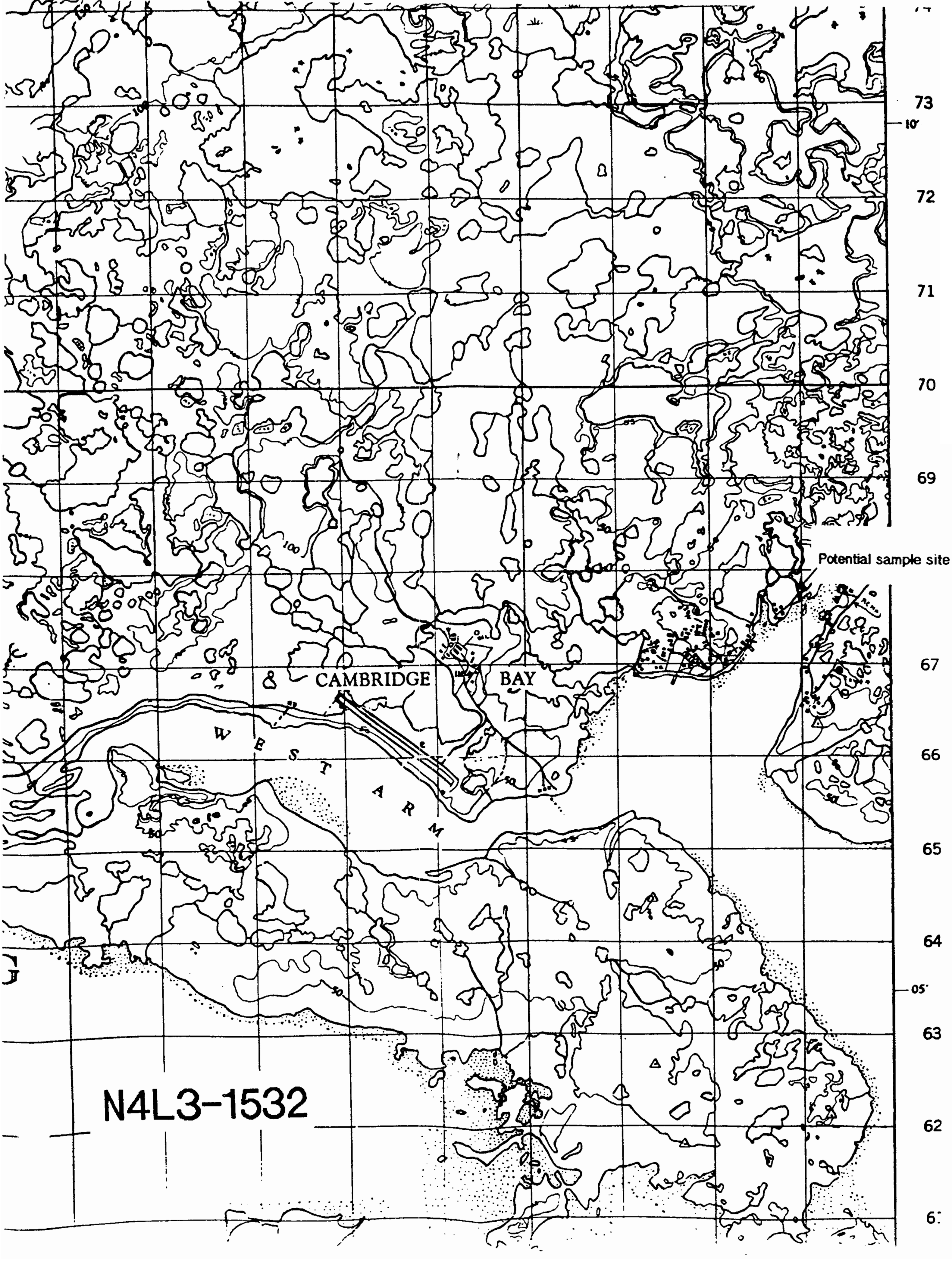
J. ONSITE DISCUSSION

During the Inspection concerns were discussed and question were answered about the licence during the Inspection. Concerns identified, were related to the Waste Disposal Facilities, specifically the operation of the solid waste disposal facilities and the liquid waste facilities. The Hamlet advised that plans were being discussed to remove some of the metal debris from the Lagoon. Mr. Brown advised that the Hamlet would be implementing some controls on the Landfill to allow for better segregation of materials such as HAZ MAT and wood, etc. It was advised that portable fences such as snow fencing and signs would help designate areas. It was also recommended to the hamlet to construct a segregated and posted area for disposal of animals to reduce any potential health hazards.

Mr. Brown indicated that he was not familiar with the Water Licence so time was taken to explain the reporting requirements and give a general overview of the licence. Mr. Brown indicated that he had not yet seen a copy of the Water Licence , so I said I would forward an additional copy with the Report and that if he had any questions to call my self or the District office in Iqaluit.

The Inspector would like to thank Mr. Henry Brown for his time and assistance during the Inspection.

Mike Collie
Inspector under the
Northwest Territories Water Act


CAMBRIDGE
BAY
W E S T A R M
Potential sample site
73
72
71
70
69
67
66
65
64
63
62
10'
05'
100
50
N4L3-1532

TELEPHONE: 403-920-8129 FAX: 403-873-9300

FIELD SAMPLE SHEET

CLIENT NAME: DIAND

ADDRESS: Box 278
COPPERMINE, NT
X0E 0E0

TEL#: (403) 982-4306

FAX#: (403) 982-4307

PROJECT: Hamlet of Cambridge Bay
94L3-1532

DATE SAMPLED: 25 September, 18

DATE RECEIVED:

SAMPLER: Mike Gillie

SAMPLE TYPE: Surface Grab

Water Temp 1532-1
1523-2

BOTTLE TYPE: PARAMETER

	STATION NO.	SNP 1532-1	SNP 1532-2	
	STN LOCATION/TIME	0700	0720	
	LAB. NO.			
ROUTINE: (GREEN)	pH	✓	✓	
	Fluoride	A	A	
	Sp. Conduct	✓	✓	
	Colour	✓		
	Alkalinity		✓	
	Calcium	✓	✓	
	Magnesium	✓	✓	
	Sodium	✓	✓	
	Potassium	✓	✓	
	Chloride	✓	✓	
	Sulphate	✓	✓	
	R. Silica			
NUTRIENTS: (BLACK)	Turbidity	✓		
	NFR (TSS)	✓	✓	
	FR (TDS)	✓	✓	
	Nitrate+ Nitrite-N	✓	✓	
	Nitrate-N			
	Ammonia-N		✓	
	Total Phosphorus-P	✓	✓	
	Ortho-P			
	Diss-P			
PRESERVED NUTS: (PINK)	Tot. Phosphorus-P			
	Nitrate+ Nitrite-N			
	Ammonia-N			
	Chem. Oxy Demand			
BACTI: (AUTOCLAVED TAPE)	Tot. Coliform		✓	
	Fecal Coliform		✓	
	Fecal Streptococci		✓	
	BOD		✓	
CYANIDE: (BLUE)	Tot. Cyanide			
	Tot. Cyanide (Low)			
	WAD Cyanide			
SULPHIDE: (PURPLE)	Sulphide			
PHENOL: (YELLOW)	Phenol			
OIL AND GREASE: (YELLOW)	O+G			
OTHER PARAMETER:				
MERCURY: (ORANGE) Not Preserved	Tot. Mercury	✓	✓	
METALS: (RED) Not preserved	Tot. Arsenic	✓	✓	
	Tot. Selenium			
	Tot. Antimony			
	LAB NUMBER (IF REQUIRED)			
ICP-MS(1):Cd, Cr, Cu, Co, Mn, Ni, Pb, Zn, Fe		✓	✓	
CP-MS(2):total scan - 23				
ICP-MS(3): extractable - 23				
ICP-MS(4): t quant. - 60				
OTHER METALS:				

AMPLER: RETAIN FOR YOUR RECORDS

ELD SAMPLE NOTES: PROJECT: Cambridge Bay N423-1532

	(1)	(2)	(3)	(4)
STATION NO.	1532-1	1532-2		
WATER TEMP (°C)	0°	0°		
SAMPLING DEPTH (m)	Surface grab	Surface grab		
FLOW, ICE, etc.	Shore ice	2-3in ice 24L/m		
pH	—	—		
COND.	—	—		
DO	—	—		
TURB	—	—		
OTHER	Air temp -3°C	Air temp -3°C		

SITE LOCATION/DESCRIPTION
1) 1532-1 Water Lake, near intake
2) 1532-2 Taken @ inflow to culvert
3)
4)

COMMENTS: Metals & Mercury were not preserved. Flow @ 1532-2 Discharge 24 litres / minute (measured.)

RESERVATION CODE GUIDE

BOTTLE TYPE	DESCRIPTION	PRESERVATIVE	COLOUR
ROUTINE (R)	1 litre plastic (HDPE)	4 degrees C	green
NUTRIENTS (NUT)	500 mL plastic (HDPE)	4 degrees C	black
PRES. NUTRIENTS (p-nut)	125 mL plastic (HDPE)	1 mL 1:1 sulphuric acid	pink
[illegible]	250 or 500 or 1 litre plastic (HDPE)	autoclave (time) tape	white
SULPHIDE (S)	250 mL plastic (HDPE)	1 mL 6N zinc acetate	purple
PHENOL (P-OH)	1 litre glass	4 mL 1:1 sulphuric acid	yellow
OIL + GREASE (O+G)	1 litre glass	4 mL 1:1 sulphuric acid	yellow
CYANIDE (CN)	500 mL brown plastic	5 mL 10% sodium hydroxide	blue
MERCURY (Hg)	150 mL glass	2 mL 1:1 sulphuric acid + 1 mL 5% potassium dichromate	orange
METAL (M)	500 mL clear plastic	5 ml 1:1 nitric acid	red