Deline Water Licence S12L3-006

Surveillance Network Program (SNP)

Field Manual

July 2015

SNP Field Manual

- The purpose of this Manual is to ensure safe and effective sampling for Licence S12L3-006
  - Board acknowledges SNP amended in October 2013 to include monitoring locations associated with new solid waste disposal facility and new sewage lagoon which are not yet in service

Overview – Table of Contents

- Step 1. – Safety
- Step 2. – Preparation
- Step 3. – Sample Collection
- Step 4. – Locations & Requirements
- Step 5. – Shipment to Lab & Analysis
- Step 6. – Storing & Reporting Data

Step 1. Safety

BEFORE SAMPLING, MAKE SURE YOU ARE PREPARED WITH THE FOLLOWING:

<u>Vaccinations</u>

It is **recommended that you get the** vaccinations for:

1. Hepatitis A & B
2. Tetanus

<u>Hand Sanitizer</u>

Use hand sanitizer wipes after each sample

<u>Gloves + Field Gear</u>

- Make sure you wear proper field gear such as boots
- Use gloves during sampling and discard afterwards inside cooler

Step 2. Preparation

BEFORE SAMPLING, MAKE SURE THAT YOU PREPARE THE NECESSARY EQUIPMENT AND CONTACTS

Pick a Date!
Select a date each month to collect samples

Bottles and Cooler
Order bottles and a cooler from Taiga Lab **7 days before** sampling date (use Taiga bottle order form)

Ice packs
Have ice packs ready to keep samples cold (but not frozen)

Taiga Lab
Contact Taiga Lab and let them know you are planning to send them samples

Step 2. Preparation

BEFORE SAMPLING, MAKE SURE THAT YOU PREPARE THE NECESSARY EQUIPMENT AND CONTACTS:

Label Bottles

Label each bottle with Licence # (Submission No.), SNP # (Field Sample No.) , "DelineSNP" as the sample description, with the sample date and time

Transport Bottles

1. Sample **the same day (e.g. the morning)**
2. Complete Laboratory Order Form
3. Arrange with North-Wright for delivery of samples to Yellowknife
4. Arrange with Taiga Lab to pick up samples from North-Wright
5. Samples should be submitted within **24 hours of sampling**

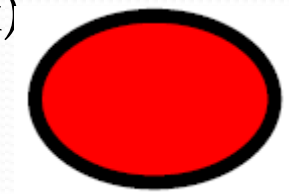
Step 3. Sample Collection – Part 1

1. Sample at the cleanest location first
2. At each SNP Station:
    a) Wear gloves
    b) Ensure bottles are labeled before collecting samples
    c) Collect samples
    d) Place sampled bottles in cooler and keep unused bottles in separate bag
    e) Discard used gloves in cooler
    f) Use hand sanitizer wipes

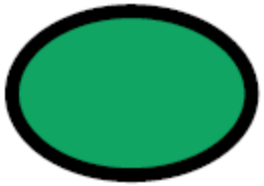
Note: The sample preservatives provided (in bottles) by the laboratory are corrosive and will cause a burning sensation on your skin. If you spill any on your skin or clothes, rinse the area immediately with lots of cool water. Call a doctor if the burning sensation continues. Wearing gloves will protect your hands from direct contact. However, if you spill any preservatives on your gloves, remove and discard the gloves immediately.

Step 3. Sample Collection – Part 2

- Rinse bottles 3 times in the water that you're sampling before taking actual sample filled to the top and capping ("Fill and dump" x 3)
- Add contents of preservative vial (cap & mix)

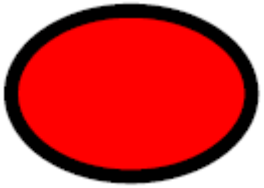


FOR SAMPLING REQUIREMENTS:

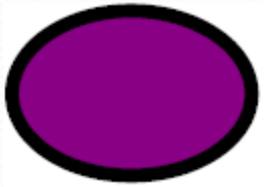


Routine – pH, Mg, K, NO_3, Conductivity, Ca, Na, SO_4

Nutrients – TSS, TOC, TN, NH_3, TP



Mercury & Total Metals

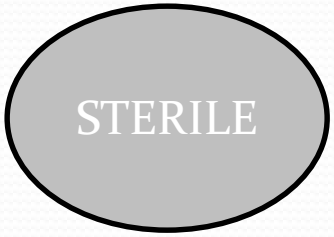


BOD

Phenols

Step 3. Sample Collection – Part 3

- DO NOT rinse bottle before taking actual sample.
- Instead, fill bottle to the top and record the time of day the sample was taken



Fecal Coliforms

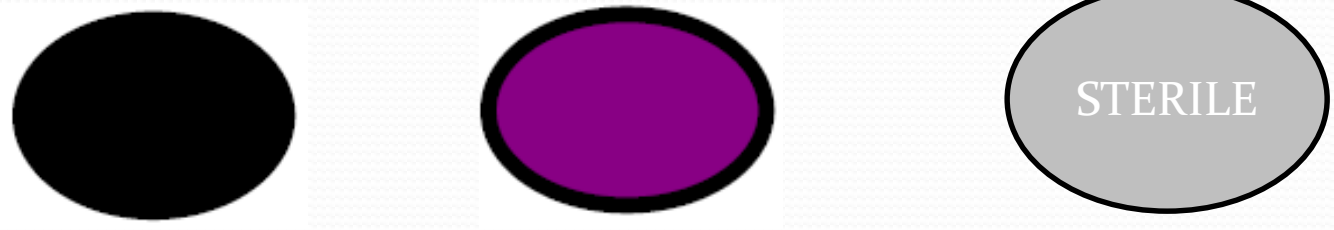
BTEX: 2 vials per sample; NO AIR IN BOTTLES

TPH – Extractable Hydrocarbons

Step 4. Location & Requirements

Bottles needed for Deline's SNP Program

- Sewage Effluent
  - 0555-1 & 0555-2 (current lagoon)
  - 0555-4 & 0555-5 (new lagoon facilities)



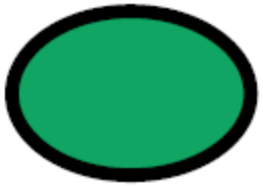
TSS **BOD** **Fecal Coliforms**

Step 4. Location & Requirements

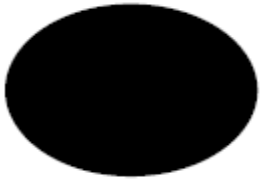
Bottles needed for Deline's SNP Program

- Solid Waste Facility Run-off/discharge
  - 0555-3 (current facility)
  - 0555-6 & 0555-7 (new facility)

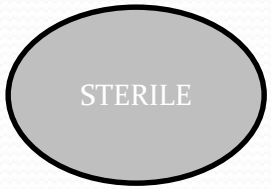
TPH – Extractable Hydrocarbons



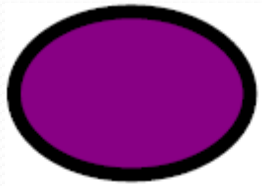
Routine – pH, Mg, K, NO_3, Conductivity, Ca, Na, SO_4



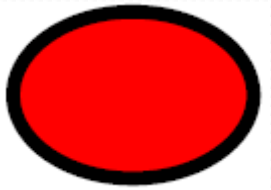
Nutrients – TSS, TOC, TN, NH_3, TP



Fecal Coliforms



BOD



Mercury & Total Metals (As, Pb, Ni, Cr, Cd, Fe, Zn, Cu)

Phenols

BTEX

Sampling Summary

Location of Sampling	Frequency of Sampling	Bottles Needed
0555-1	At beginning and every 3 days thereafter during decant	
0555-2	At request of Inspector	
0555-3	Monthly during periods of flow	
0555-6		
0555-7		
0555-4		
0555-5		

TAIGA

Environmental Laboratory
Laboratoire d'environnement

Bottle Order Request Form

Date Ordered: 201__	Date Required: 201__		
Name:	Company: Chartor Community Deline	Project Name or Location: 51213-006	
Address: Deline, NT X0E 0G0			
Phone: 867 589 5590		Fax:	
Pick Up: ☐ Yes ☐ No	Ship by Air: ☒ Yes ☐ No	Pack as TDG: ☐ Yes ☐ No	Cooler Required: ☒ Yes ☐ No
Date Filled: 200__		Filled By:	

NOTE: Bottles and preservatives are provided free of charge for analysis carried out at Taiga. Bottles, preservatives and laboratory supplies for other use, may be subject to additional charges. Unused bottles and preservative cannot be returned to the laboratory for reuse.

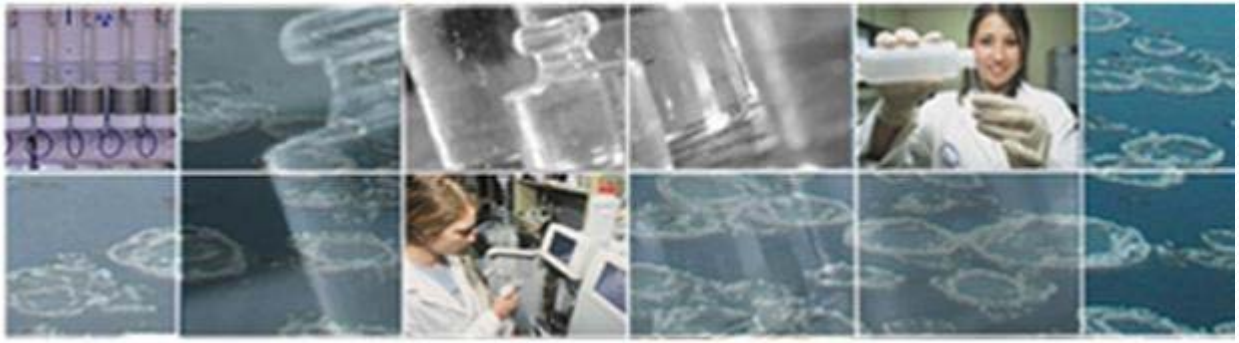
Parameter Type	No. of Field Blanks	No. of Travel Blanks	No. of Bottles for Samples	QC Batch # of Bottles Sent	Number of Preservatives	QC Batch # of Pres. Sent
Routine (Green)			6		Not Required	
Nutrients (Black)			11		Not Required	
Bacti (Sterile sealed)	Not Required	Not Required	11		Not Required	
BOD (Purple)	Not Required	Not Required	11		Not Required	
Total Metals (Red)			6			
Dissolved Metals (Red) *see note 1*						
Arsenic Speciation Bottle	Not Required	Not Required			Not Required	
Cyanide (Blue)						
Thiocyanate (Orange)						
Hexane Extractable Material (Oil & Grease) (Brown glass, wide or narrow-mouth)						
Phenol (Brown glass, narrow-mouth)			6			
Sulphide						
Radionuclide						
Chlorophyll A	Not Required	Not Required			Not Required	
Extractable Hydrocarbons (Brown glass) *see note 2*			6		Not Required	
BTEX/Purgeable HC *see notes 2 and 3*					Not Required	
THM (Glass vial 40mL) *see note 3*					Not Required	
Metals or Hydrocarbons in sediment (500mL jar)	Not Required	Not Required			Not Required	
Metals or Hydrocarbons in sediment (250mL jar)	Not Required	Not Required			Not Required	
Metals or Hydrocarbons in sediment (125mL jar)	Not Required	Not Required			Not Required	
Metals or Hydrocarbons in sediment (60mL jar or Whirl Pak Bag)	Not Required	Not Required			Not Required	
Other:						
Other Field Supplies: (e.g. Type I UV water) sampling gloves (size L, latex or nitrile), ice packs						

Notes:

1- Dissolved metals bottles will be preserved at the laboratory if the sample is not filtered in the field. The filtering and addition of preservative is $20.00/sample.
2- For TPH requests, both the extractable hydrocarbons (brown glass bottle) and the BTEX/Purgeable HC (40mL vial) have to be submitted.
3- For BTEX/Purgeable HC and THM, please submit two vials for each sample (in the event air bubbles occur in the vials, a back-up sample can be analyzed)

Shaded areas are for laboratory use only.

Step 5. Analysis



Send samples to the Taiga Environmental Laboratory in Yellowknife for analysis along with the laboratory order form

Taiga will send you your results back in 14 days

TAIGA
Environmental Laboratory
Laboratoire Environnemental

LABORATOIRE ENVIRONNEMENTAL TAIGA
4601 – 52 Avenue, P.O. Box 1500, Yellowknife, NT X1A 2R3
Tel: (867) 669-2788 • Fax: (867) 669-2718
www.enr.gov.ca

Batch No.:

Send Results & Invoice to:
(Please notify if results or invoice are to be sent to different locations)
Company/Agency: Charter Community Deline
Address:
City/Town: Deline Province/Territory: NT
Postal Code: X0E 0G0
Phone: 867 589 5590 Fax:
E-mail:
Signature :

Client Project No: 51213-006 SNP
Date collected:
Time collected:
Sampler:
Location:
Rush Required: ☐Yes ☐No (Surcharge applies, please check with Laboratory for price and availability)
Note: *Analysis may be subcontracted without prior notice.*

Date Received: Received By:
Comments:
(Laboratory use only)

-WATER SAMPLES –

Sample Type (freshwater, sewage, wastewater, potable , groundwater, salt water, etc)	sewage effluent	if requested	drainage/runoff
Client Sample ID (As it should appear on final report)	0555-1	0555-2	0555-3
Taiga Sample ID (Laboratory use only)			

Bottle Type and Parameter — **[√] PLEASE CHECK PARAMETERS REQUESTED BELOW:**

Routine	pH, Conductivity, Alkalinity	pH Cond Alk	pH Cond Alk	pH Cond Alk
	Individual Anions Suite ☐	Cl SO_4 F NO_3-N NO_2-N	Cl SO_4 F NO_3-N NO_2-N	Cl SO_4 F NO_3-N NO_2-N
	Total Nitrite (NO_2) + Nitrate (NO_3)	NO_2 + NO_3-N	NO_2 + NO_3-N	NO_2 + NO_3-N
	Individual Cations Suite ☐	Ca Mg Na K	Ca Mg Na K	Ca Mg Na K
	Hardness (Calculated)	Hardness	Hardness	Hardness
	Reactive Silica	SiO_2	SiO_2	SiO_2
	Color	Apparent True	Apparent True	Apparent True
	Laboratory use only	Rec'd: Y N	Rec'd: Y N	Rec'd: Y N
Nutrients	Chemical Oxygen Demand	COD	COD	COD
	Nitrogen: Total, Dissolved	TN DN	TN DN	TN DN
	Turbidity	Turbidity	Turbidity	Turbidity
	Total Suspended Solids, Dissolved Solids	TSS TDS	TSS TDS	TSS TDS
	Ammonia	NH_3	NH_3	NH_3-N
	Phosphorus: Total, Dissolved, Ortho	TP DP OP	TP DP OP	TP DP OP
	Carbon: Total, Dissolved	TOC DOC	TOC DOC	TOC DOC
	Chlorine: Total, Residual	T. Cl R. Cl	T. Cl R. Cl	T. Cl R. Cl
	Visible Oil and Grease	Visible	Visible	Visible
	Laboratory use only	Received: Y N	Received: Y N	Received: Y N
Sterile	Fecal Coliforms (FC)	FC	FC	FC
	Total Coliforms (TC), E. Coli (EC)	TC EC	TC EC	TC EC
	Fecal Streptococcus (FS)	FS	FS	FS
	Laboratory use only	Received: Y N T: ____°C Sterile container: Y N	Received: Y N T: ____°C Sterile container: Y N	Received: Y N T: ____°C Sterile container: Y N
	Biological Oxygen Demand	BOD	BOD	BOD
	Laboratory use only	Received: Y N T: ____°C	Received: Y N T: ____°C	Received: Y N T: ____°C
Metals	Please indicate if sample is preserved and/or filtered	Pres ☐ Filt ☐ Pres ☐	Pres ☐ Filt ☐ Pres ☐	Pres ☐ Filt ☐ Pres ☐
	ICP-MS(1): Cd, Cr, Cu, Co, Mn, Ni, Pb, Zn, Fe	Total Dissolved	Total Dissolved	Total Dissolved
	ICP-MS(2): 25 element scan includes As (not included: B, Bi, Hg, Sn)	Total Dissolved	Total Dissolved	Total Dissolved
	Individual Metals by ICP-MS: (please circle each metal): Ag, Al, As, B, Ba, Be, Bi, Cd, Co, Cr, Cs, Cu, Fe, Hg, Li, Mn, Mo, Ni, Pb, Rb, Sb, Se, Sn, Sr, Ti, Tl, U, V, Zn	Total Dissolved	Total Dissolved	Total ✓ Dissolved
	Laboratory use only	TM rec'd: Y N DM rec'd: Y N	TM rec'd: Y N DM rec'd: Y N	TM rec'd: Y N DM rec'd: Y N
	Hexane Extractable Material (O&G)	HEM	HEM	HEM
	Laboratory use only	Rec'd: Y N Pres: Y N	Rec'd: Y N Pres: Y N	Rec'd: Y N Pres: Y N
	BTEX, Purgeable HC (40mL x 2 vials)	BTEX Purg HC	BTEX Purg HC	BTEX Purg HC
	Extractable HC (1L amber glass bottle)	Ext HC	Ext HC	Ext HC
	Trihalomethanes (40 mL x 2 vials)	THM	THM	THM
	Laboratory use only	Vial rec'd: Y N Ext rec'd: Y N	Vial rec'd: Y N Ext rec'd: Y N	Vial rec'd: Y N Ext rec'd: Y N
	Other: *see special request form*			phenols

For safety purposes, please disclose any contaminants (e.g. heavy metals, cyanide, etc.) that may be present at high levels and pose a risk to human health:

TAIGA
Environmental Laboratory
Laboratoire Environnemental

LABORATOIRE ENVIRONNEMENTAL TAÏGA
4601 52nd Avenue, C.P. 1500, Yellowknife, NT X1A 2R3
Téléphone : 867-669-2788 • Télécopieur : 867-669-2718
www.enr.gov.ca

Special Request Form

(to be attached/submitted with original field sheet)

Date Received: _____ Received By: _____
Laboratory Use Only

Sample Type (freshwater, sewage, potable, wastewater, groundwater)	runoff - solid waste disposal			
Client Sample ID (As it should appear on final report)	S12L3-006			
Taiga Sample ID *Laboratory Use Only*				

Description of Analysis Required:
(Including method, subcontractor, special instructions, etc.)

[√] PLEASE CHECK PARAMETERS REQUESTED BELOW:

	☑ phenols	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
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	☐	☐	☐

Step 6. Storing & Reporting Data

When results come back from Taiga:

Record results and Fill out template for annual reporting (DUE MARCH 31 EACH YEAR)

(Electronic Template available from SLWB)

TAIGA

Environmental Laboratory
Laboratoire Environnemental

7. Contacts

4601 - 52nd Avenue
Yellowknife, NT X1A 3Z4
Phone: (867) 765-6645
Lab Analysis (After hours): (867) 444-8378
Fax: (867) 920-8740
Email: taiga@gov.nt.ca
*To order Bottles and Cooler: Fax or email the form to Taiga Lab

Sahtu Land and Water Board
Box 1, Fort Good Hope, NT X0E 0H0
Telephone: 867-598-2413
Fax: 867-598-2325

8. Reference - Analysis Abbreviations

Parameter	Symbol	Parameter	Symbol
Suspended Solids	TSS	Sodium	Na
Magnesium	Mg	Total Phosphate	TP
Potassium	K	Sulphate	SO_4
Biological Oxygen Demand	BOD	Arsenic	As
Total Organic Carbon	TOC	Lead	Pb
Nitrate	NO_3	Nickel	Ni
Nitrogen	N	Chromium	Cr
Ammonia Nitrogen	NH_3-N	Cadmium	Cd
Total Petroleum Hydrocarbons	TPH	Iron	Fe
Calcium	Ca	Zinc	Zn
Mercury	Hg	Copper	Cu