PRESENTATION FOR THE TYPE A WATER LICENCE APPLICATION OF THE MUNICIPAL OF IGLOOLIK

PUBLIC HEARING

DECEMBER 8 & 9, 2020

PRESENTED BY:

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Water Licence

- The Municipality of Igloolik is the licensee
- Water licence No. 3BM-IGL1520 Type “B” expired on March 30, 2020
- Applied for new water licence for 10-year term with annual Water Permit Volume 102,800 cubic metres.
- Following the new regulations of NWB, the new water Licence will be considered as Type A.
- The New Licence is expected to be expired on March 29,2030.

POPULATION PROJECTION
(Exp's Sewage Lagoon Design Brief, 2010)

YEAR	POPULATION	YEAR	POPULATION
2015	1784	2028	2161
2016	1811	2029	2193
2017	1837	2030	2226
2018	1867	2031	2266
2019	1898	2032	2294
2020	1922	2033	2329
2021	1949	2034	2364
2022	1976	2035	2397
2023	2005	2036	2431
2024	2035		
2025	2067		
2026	2098		
2027	2129		

Water Licence

Type “B” versus Type “A”

- Municipality’s daily water use may be higher than 300 cubic metres per day when filling water reservoir
- This could trigger a change from Type “B” water licence to Type “A” water licence
- Licensee estimated intake from reservoir between 2014 - 2019
- Reservoir filled annually between early July to mid-September

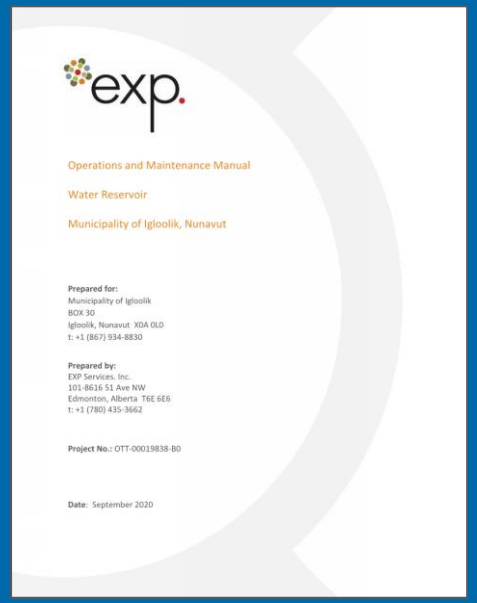
Year	Water Consumption (litres)
2014	55,085,386.82
2015	53,920,615.31
2016	50,023,000.01
2017	53,083,285.70
2018	51,048,251.80
2019	52,985,694.20

Source: Municipality of Igloolik

Note: The volume of the current reservoir is 102,800 m^3.
The Type A Water Licence has been recommended for 10 yrs. term with the water permit volume of 102,800 m^3 annually.

Operation and Maintenance Manuals

Water Reservoir


exp.

Operations and Maintenance Manual

Water Reservoir

Municipality of Igloolik, Nunavut

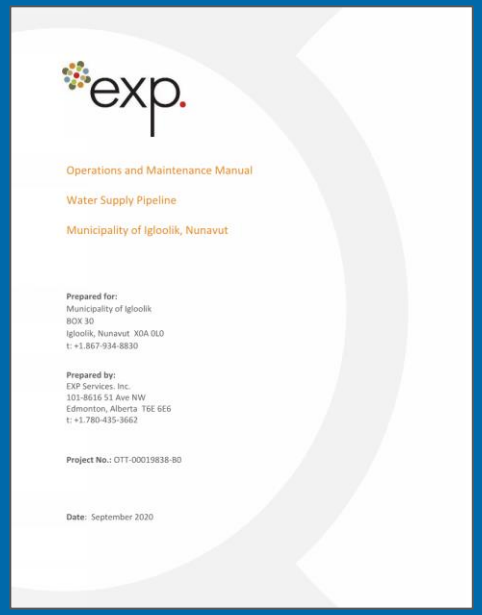
Prepared for:
Municipality of Igloolik
BOX 30
Igloolik, Nunavut X0A 0L0
t: +1 (867) 934-8830

Prepared by:
EXP Services. Inc.
101-8616 51 Ave NW
Edmonton, Alberta T6E 6E6
t: +1 (780) 435-3662

Project No.: OTT-00019838-B0

Date: September 2020

Water Supply Pipeline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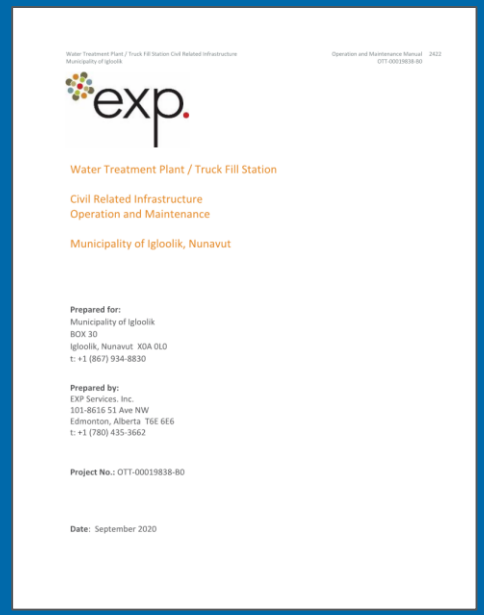
Water Treatment Plant / Truck Fill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Water Treatment Plant / Truck Fill Station

Civil Related Infrastructure
Operation and Maintenance

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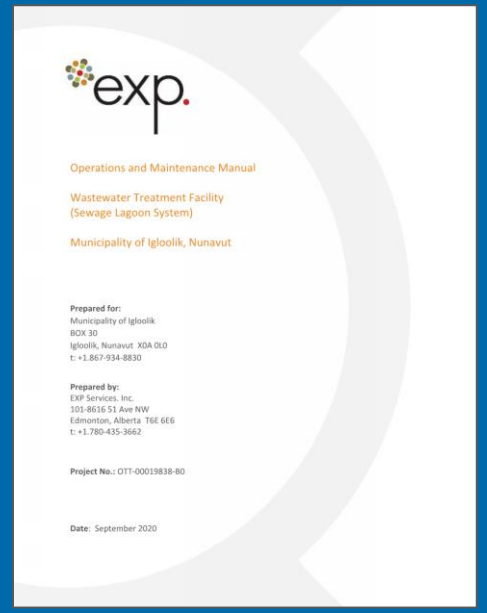
Wastewater Treatment


exp.

Operations and Maintenance Manual

Wastewater Treatment Facility
(Sewage Lagoon System)

Municipality of Igloolik, Nunavut

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Spill Contingency Plan


exp.

Spill Contingency Plan

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(QA/QC) Program


exp.

2020 Quality Assurance / Quality Control (QA/QC) Program

Wastewater Treatment Facility (Sewage Lagoon System)
Water Treatment Plant / Truck Fill Station
Solid Waste Facility

Municipality of Igloolik, Nunavut

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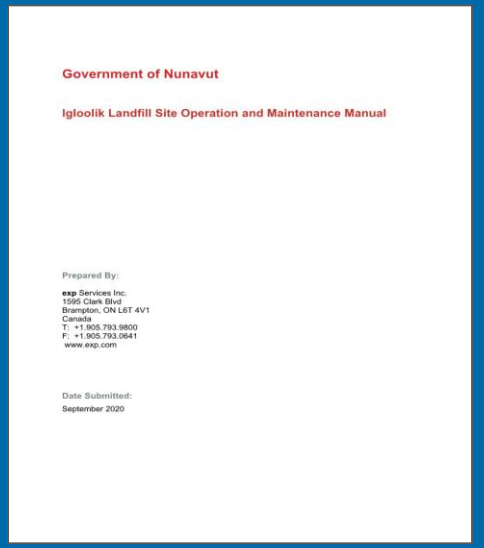
Solid Waste Facility


Government of Nunavut

Igloolik Landfill Site Operation and Maintenance Manual

Prepared By:

exp Services Inc.
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F: +1.905.793.0641
www.exp.com

Date Submitted:
September 2020

Water and Sanitation

Water

- South Lake
- Water Supply Pipeline
- Water Reservoir
- Water Treatment Plant / Truck Fill

Sanitation

- Sewage Lagoon System
- Solid Waste Facility

Water

water supply pipeline

water reservoir

water treatment plant / truck fill

Water Reservoir

102,800 m^3

capacity

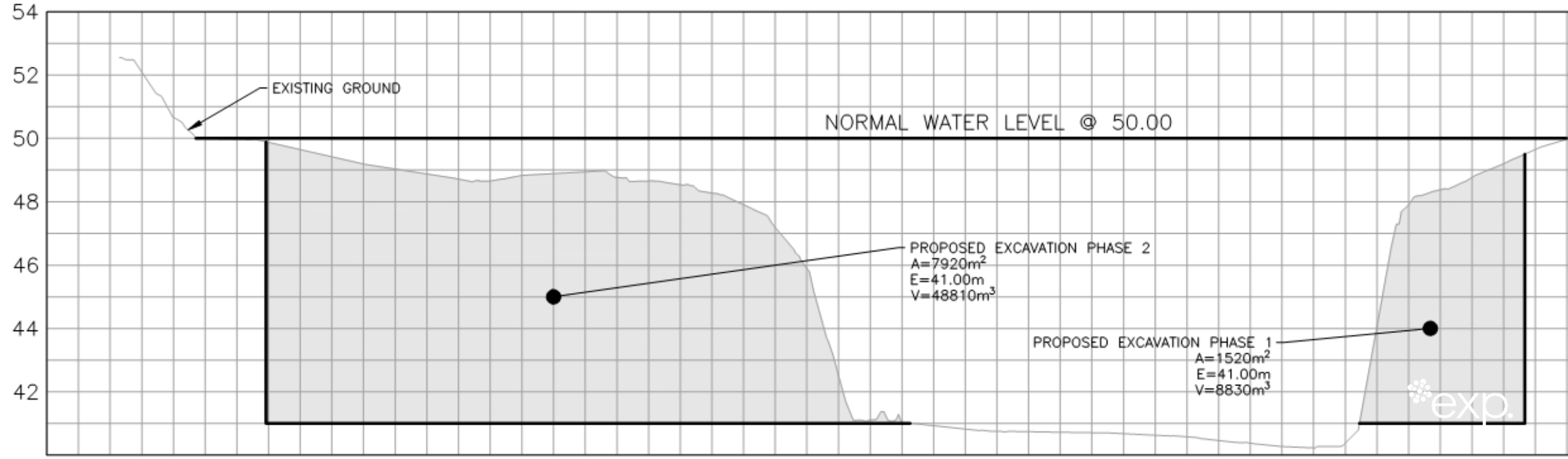
8.5 m

storage depth

Water Reservoir

Two-step excavation

CROSS SECTION A–A



Water Reservoir

Construction

- Drilling into rock and blasting
- Excavation of blasted rock
- Pressure washing reservoir walls
- Filling the reservoir

Water Reservoir Filling Mode

Operation

- Filling the reservoir
- Pumping into water treatment plant

Water Treatment Plant / Truck Fill

chlorination injection

water filters

HVAC

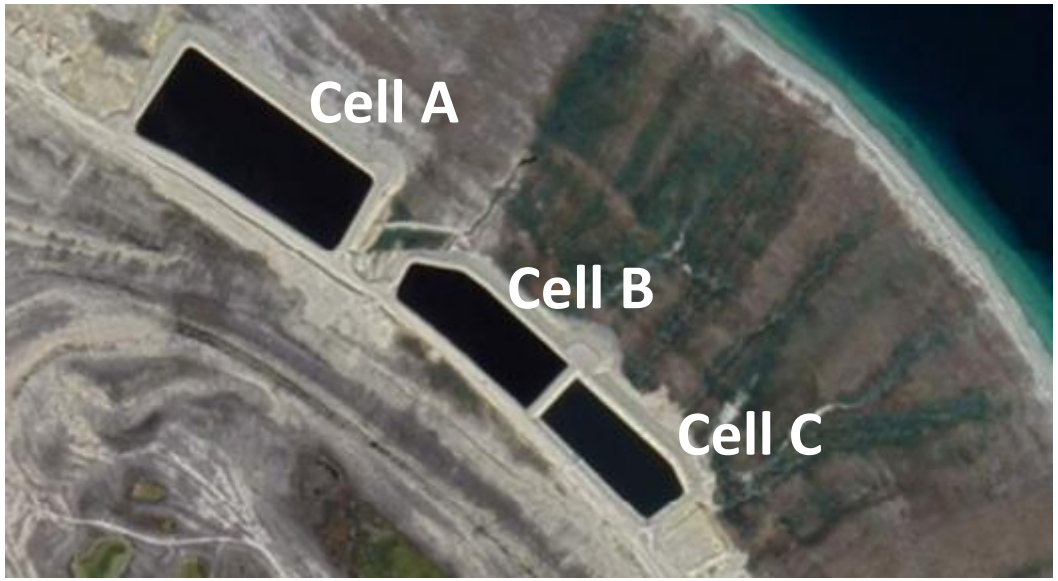
submersible pumps

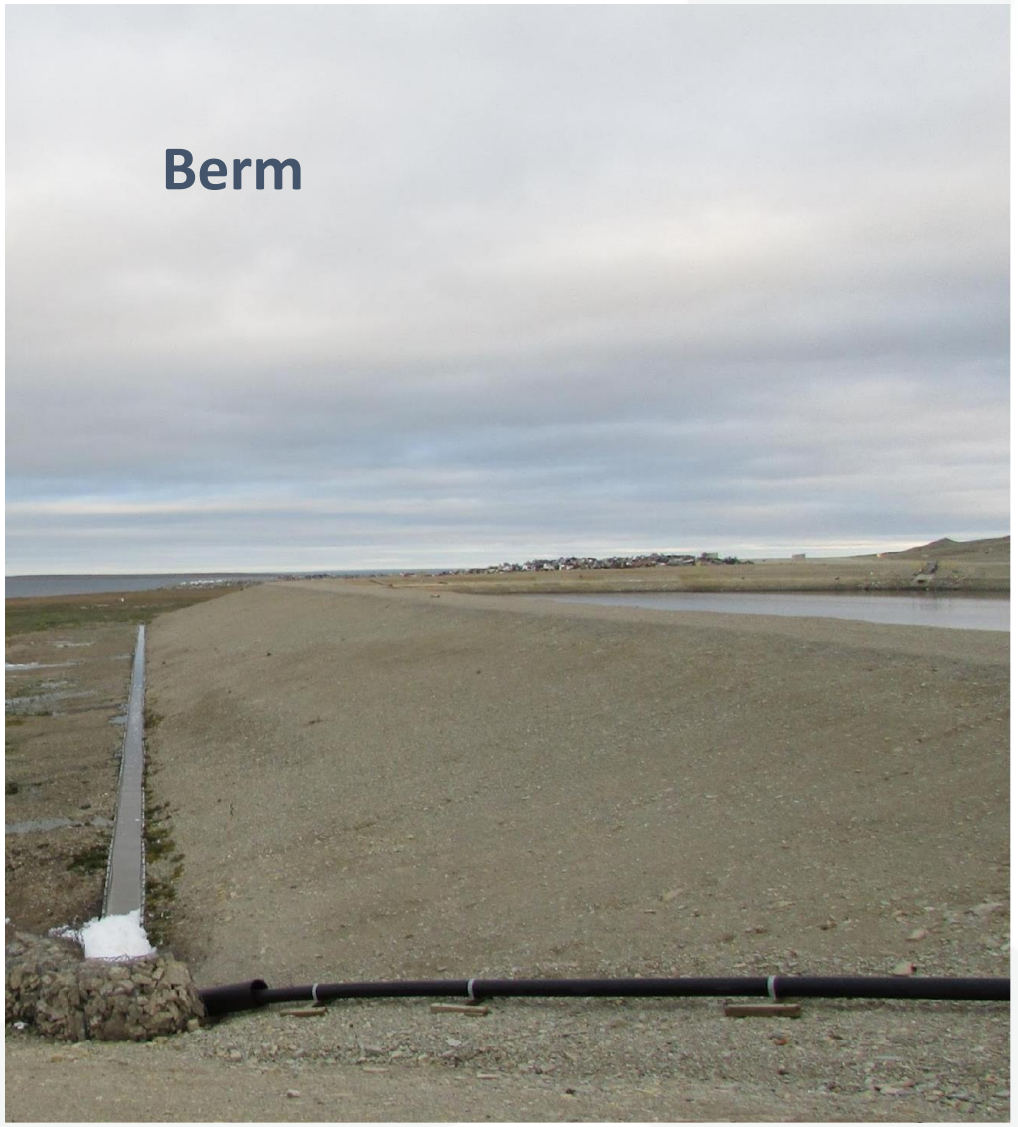
Water Treatment Plant / Truck Fill

Features

- Treats raw water from water reservoir
- Delivers to water trucks

Sewage Lagoons

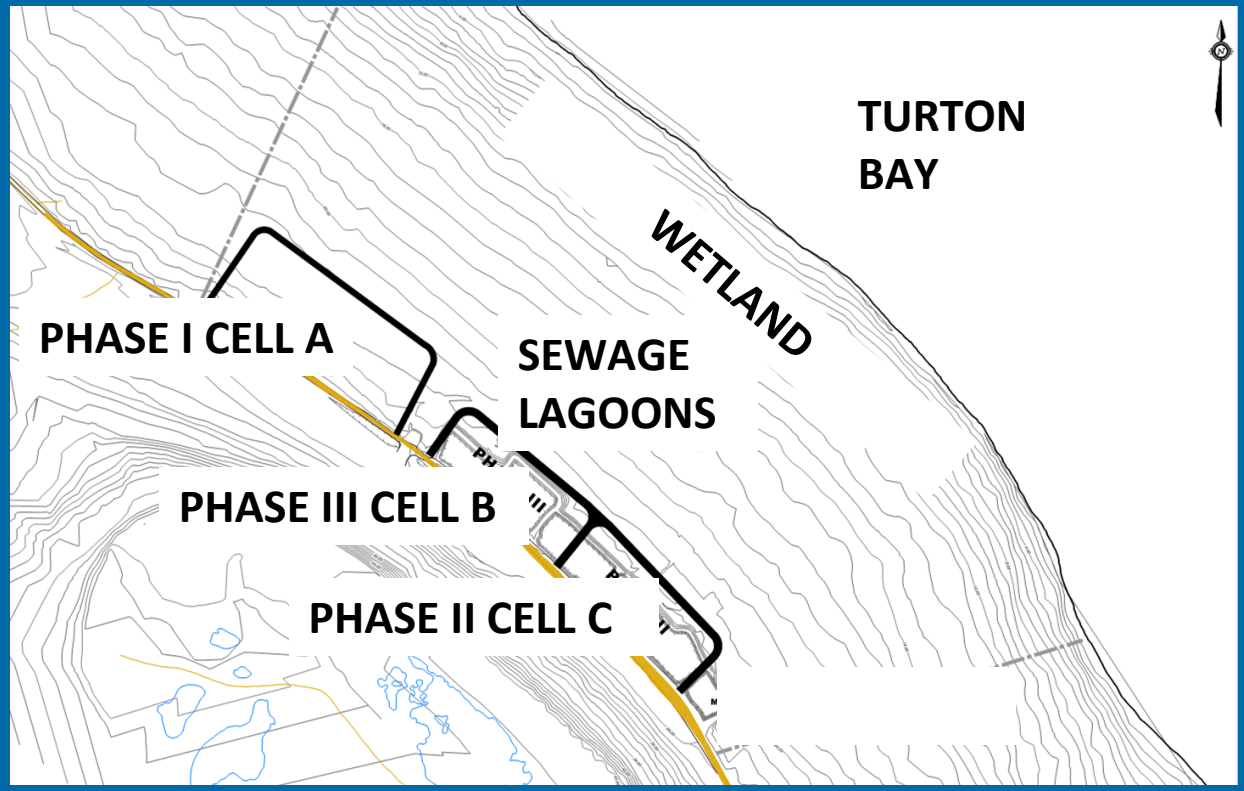




Sewage Lagoon

Features

- Three separate cells
- One-year retention
- 20-year design life



Cell	Length (m)	Width (m)	Base Area (m^2)	Active Volume (m^3)
Cell A	293	120	35,160	53,220
Cell B	250	83	20,750	35,500
Cell C	203	86	17,458	35,500

Sewage Lagoon

Construction 2016 - 2018

Construction sequence

- Remove soft soils
- Place geotextile
- Place liner
- Place 150 mm sand layer
- Place 300 mm gravel layer

Sewage Lagoon

Operation

- Collect sewage
- Discharge into lagoon
- Decanting lagoon annually into wetland

Sewage Lagoon

53,200 m^3

Cell A volume

35,500 m^3

Cell B volume

35,500 m^3

Cell C volume

Sanitation

sewage lagoon

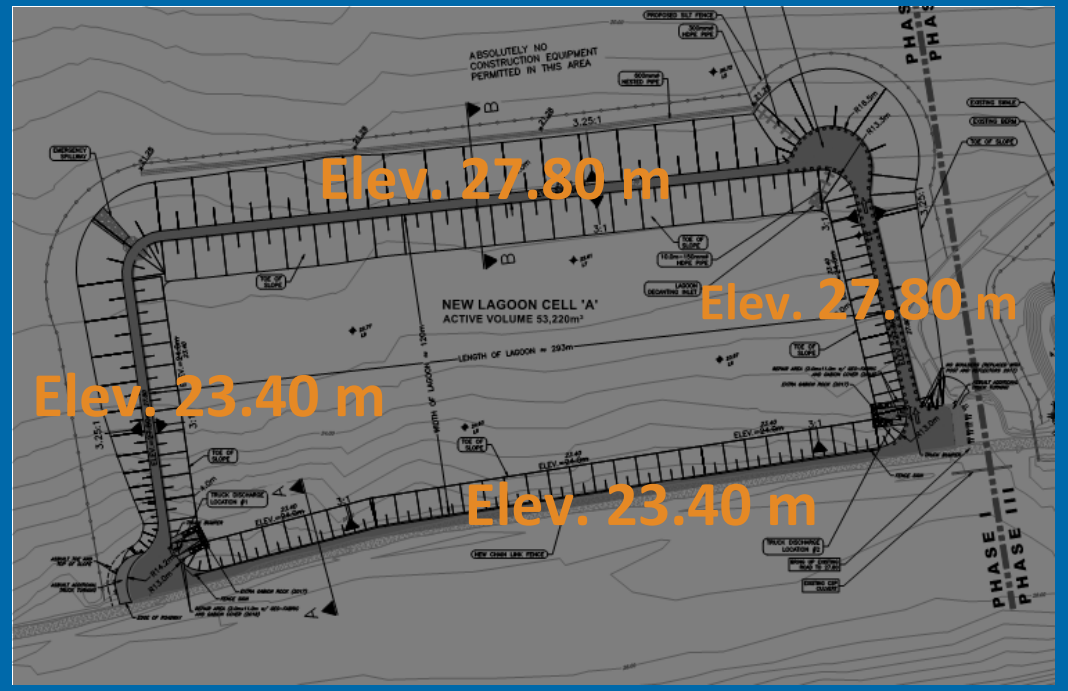
solid waste facility

wetland

Sewage Lagoon

Perimeter berms

- Purpose - impermeable containment, access to lagoon, 1.0 m freeboard
- Inspection – seepage and ponding, stability, settlement
- Settlement monitoring
  - Establish benchmark
  - Install monitoring points
  - Use survey level to measure elevations
  - Tabulate readings
  - Calculate difference between current and previous elevation readings



Sewage Lagoon Monitoring Stations

Monitoring and inspection

- Truck discharge points
- Water levels
- Sewage color
- Berm condition
- Discharge sampling
- Discharge lab testing

Sewage Lagoon

Compliance Effluent Quality:

Parameter	Maximum Average Concentration
BOD_5	100 mg/L
Total Suspended Solids (TSS)	120 mg/L
Faecal Coliforms	1×10^6 CFU/100 mL
Oil and Grease	No visible sheen
pH	Between 6 and 9

MONITORING PROGRAM

MONITORING STATION	DESCRIPTION	REQUIREMENT
IGL-1	Raw water supply intake at South Lake	Recording volume
IGL-2	Runoff from the Solid Waste Disposal Facility	Quality, 3 to 4 times in summer
IGL-3	Raw sewage at discharge point into the Sewage Disposal Facility	Three times in summer during decanting
IGL-4 (A, B & C)	Final Control Point from Sewage Disposal Facility	Three times during decanting period
IGL-5 (A, B & C)	Final effluent discharge point prior to entering Foxe Basin	Three times during decanting period

Water Supply Pipeline

200 mm

HDPE pipeline

2 km

long

flow meter

fish screen

Water Supply Pipeline

Intake screen

Flow meter

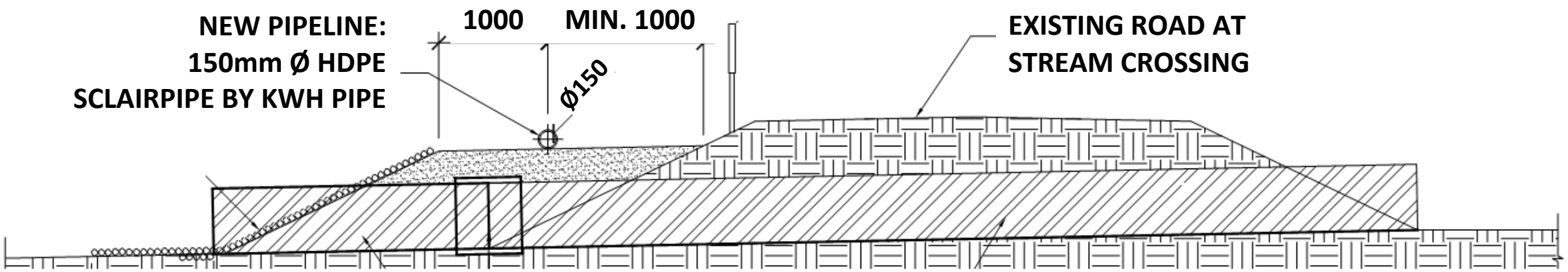
Stream crossing

- One of the three low points
- Elevation 22 m
- Require drainage prior to freeze up

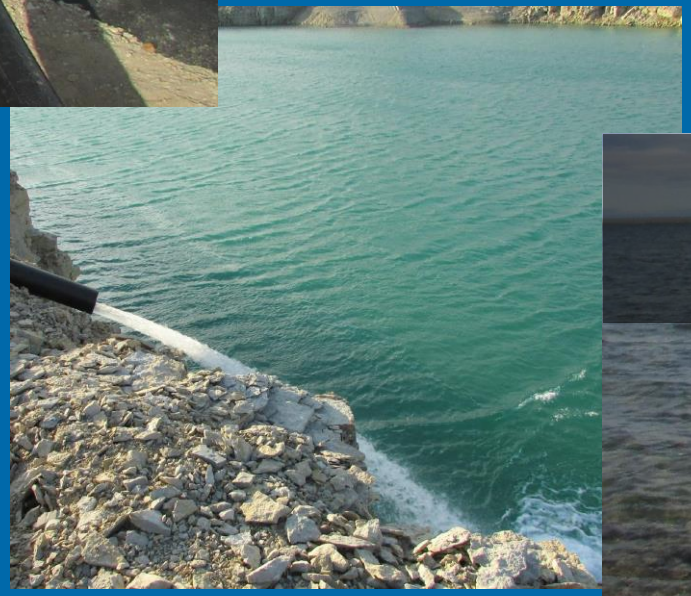
Water Supply Pipeline

Stream crossing

- 600 mm diameter
- Culvert was extended
- Culvert protected with 300 mm granular cover

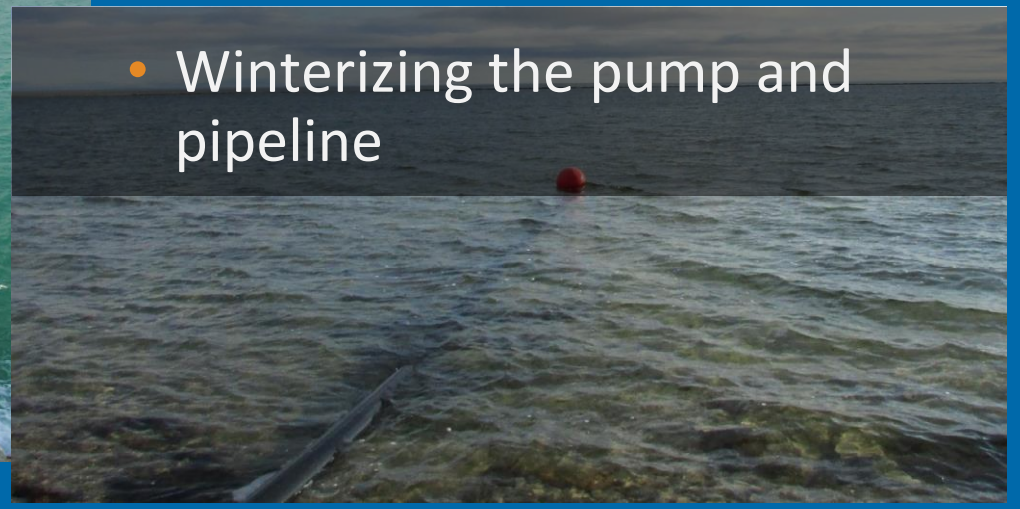


Water Supply Pumping and Pipeline



Operation

- Connecting pipeline before start of pumping
- Setting up pump
- Start up and continuous operation of pump
- Shutting down pump after reservoir full
- Winterizing the pump and pipeline



Water Supply Pipeline

Access road maintenance

- Required to access pipeline
- Grading frequency
- Surfacing with finer gravel
- Clearing snow
- Culvert at stream crossing
- Road markers
- Repair damage
- Protect from vehicles and equipment

Spill Contingency Plan

Applies to:

- Wastewater treatment and disposal
- Water supply and treatment
- Solid waste disposal

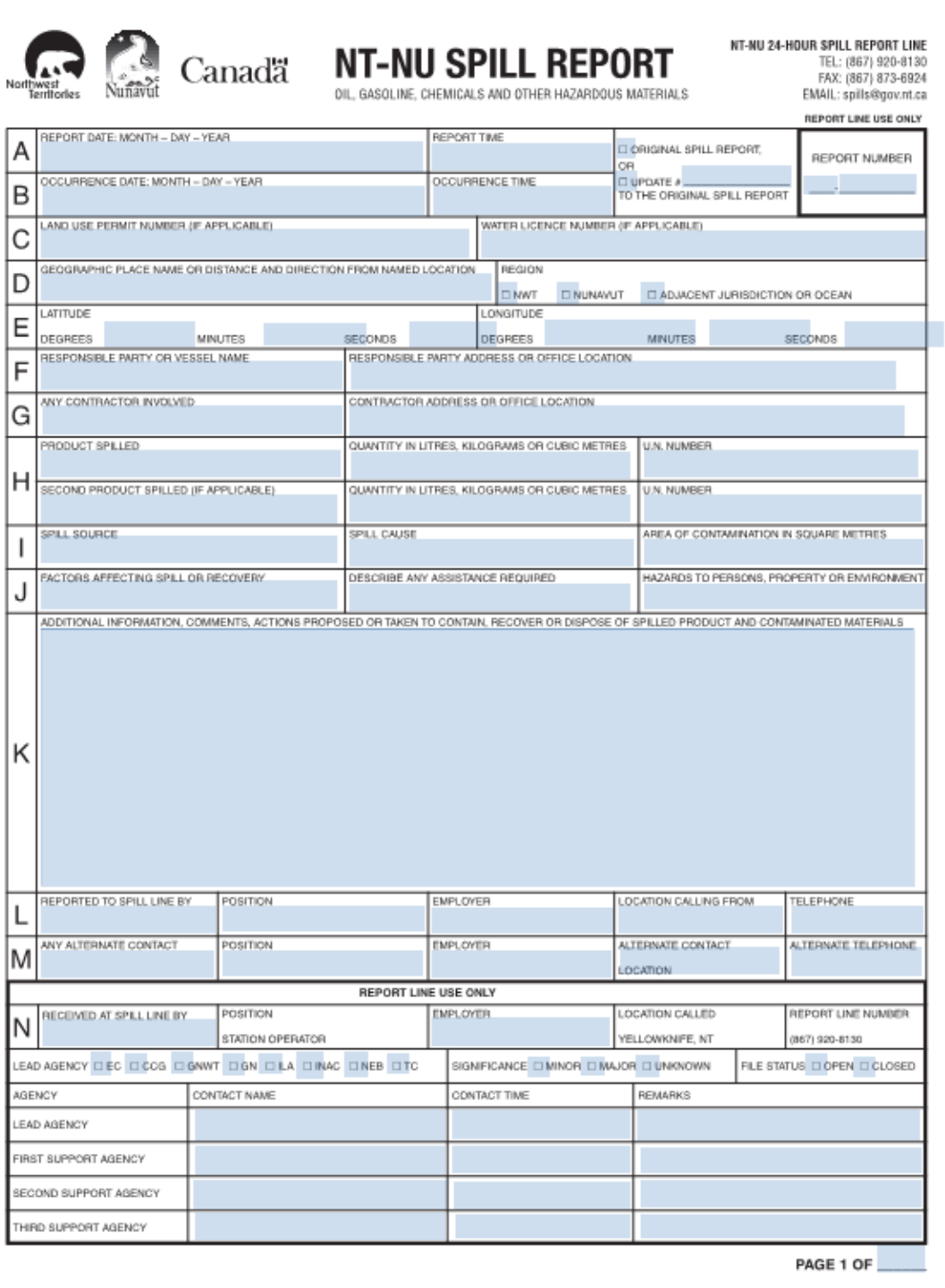
Spill Contingency Plan

Contains:

- Potential contaminants and spill scenarios
- Preventative measures
- Response organization
- Spill kit requirements

Action plan:

- Chemical and petroleum spills
- Potential impacts
- Procedures for containing spills
- Spill kit locations
- Spill reporting procedures



Northwest Territories Nunavut Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

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C	LAND USE PERMIT NUMBER (IF APPLICABLE)	WATER LICENCE NUMBER (IF APPLICABLE)		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION	REGION ☐ NWT ☐ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE DEGREES MINUTES SECONDS	LONGITUDE DEGREES MINUTES SECONDS		
F	RESPONSIBLE PARTY OR VESSEL NAME	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION		
G	ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION		
H	PRODUCT SPILLED	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
I	SPILL SOURCE	SPILL CAUSE	AREA OF CONTAMINATION IN SQUARE METRES	
J	FACTORS AFFECTING SPILL OR RECOVERY	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT	
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS			
L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM / TELEPHONE
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION / ALTERNATE TELEPHONE

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION: STATION OPERATOR	EMPLOYER	LOCATION CALLED: YELLOWKNIFE, NT / REPORT LINE NUMBER: (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC | SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN | FILE STATUS ☐ OPEN ☐ CLOSED

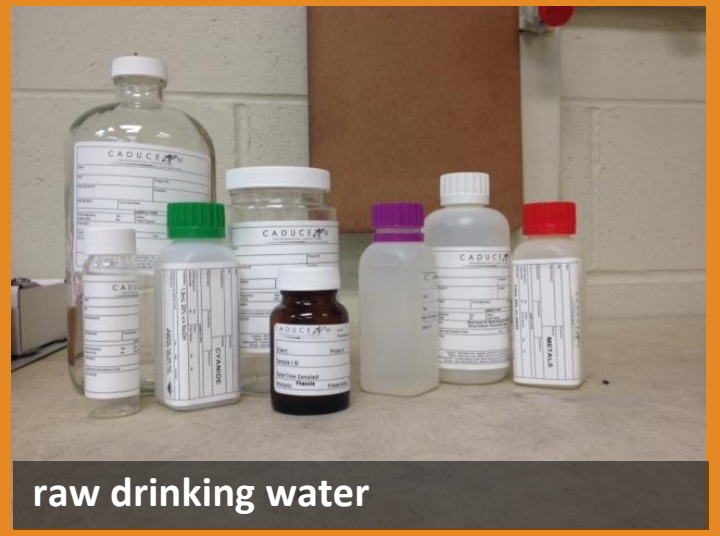
AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

PAGE 1 OF _____

QA / AC

Applied to:

- Monitoring programs to maintain standards
- Wastewater treatment and disposal
- Water supply and treatment
- Solid waste disposal


raw drinking water

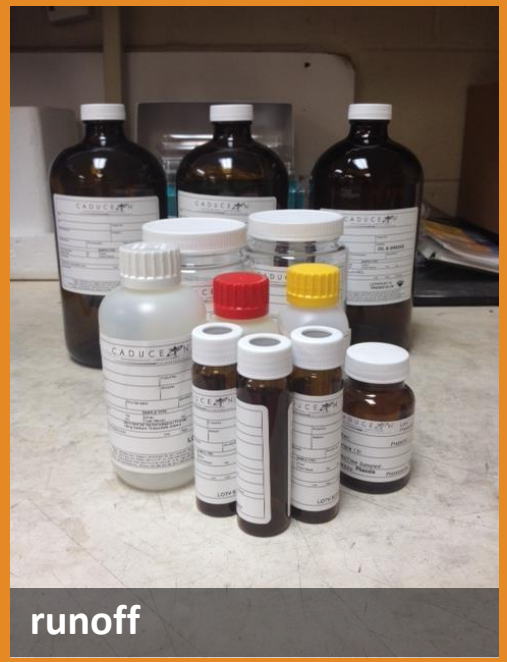

sewage

Field QA / QC:

- Field blanks - labelled as such – artificially introduced contamination
- Blind duplicates - no labelled as such – analytical precision

Laboratory QA / QC:

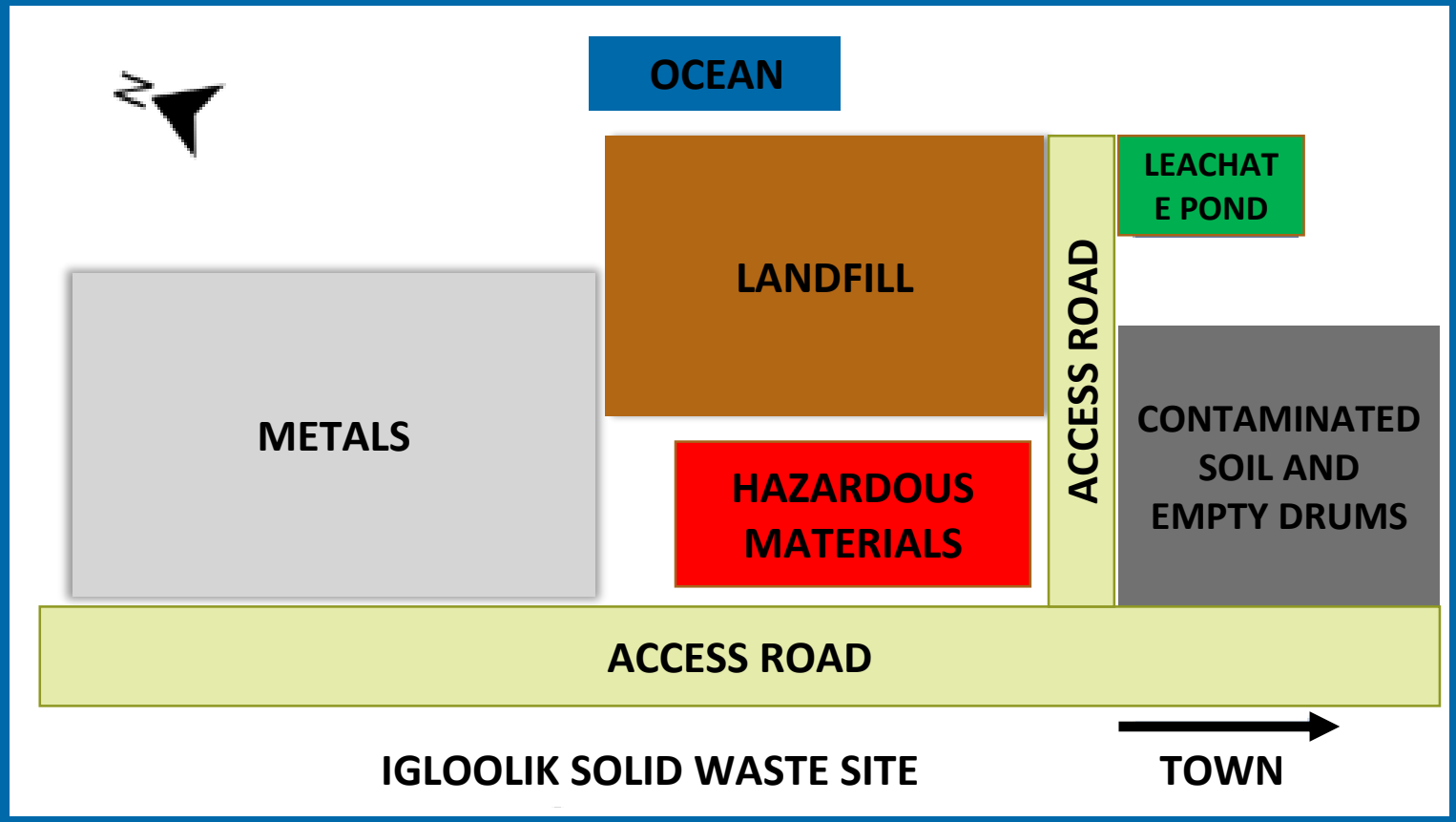
- Applied by laboratories


runoff

Solid Waste

Features

- Areas for domestic garbage, metal waste, hazardous waste and contaminated soil
- Operated using area method
- Periodically compacted and covered



Solid Waste

sanitary landfill

limited diversion of hazardous, bulky and construction waste

Solid Waste

Operation

- Solid waste deposit at designated areas
- Solid waste diversion
- Community inspections
- Waste material covering
- Runoff control

Solid Waste

Operation documentation

- Emergency response in event of fire
- Evacuation
- Medical emergencies
- Spills
- Prohibited waste
- Contaminated runoff impacts

Solid Waste

Monitoring

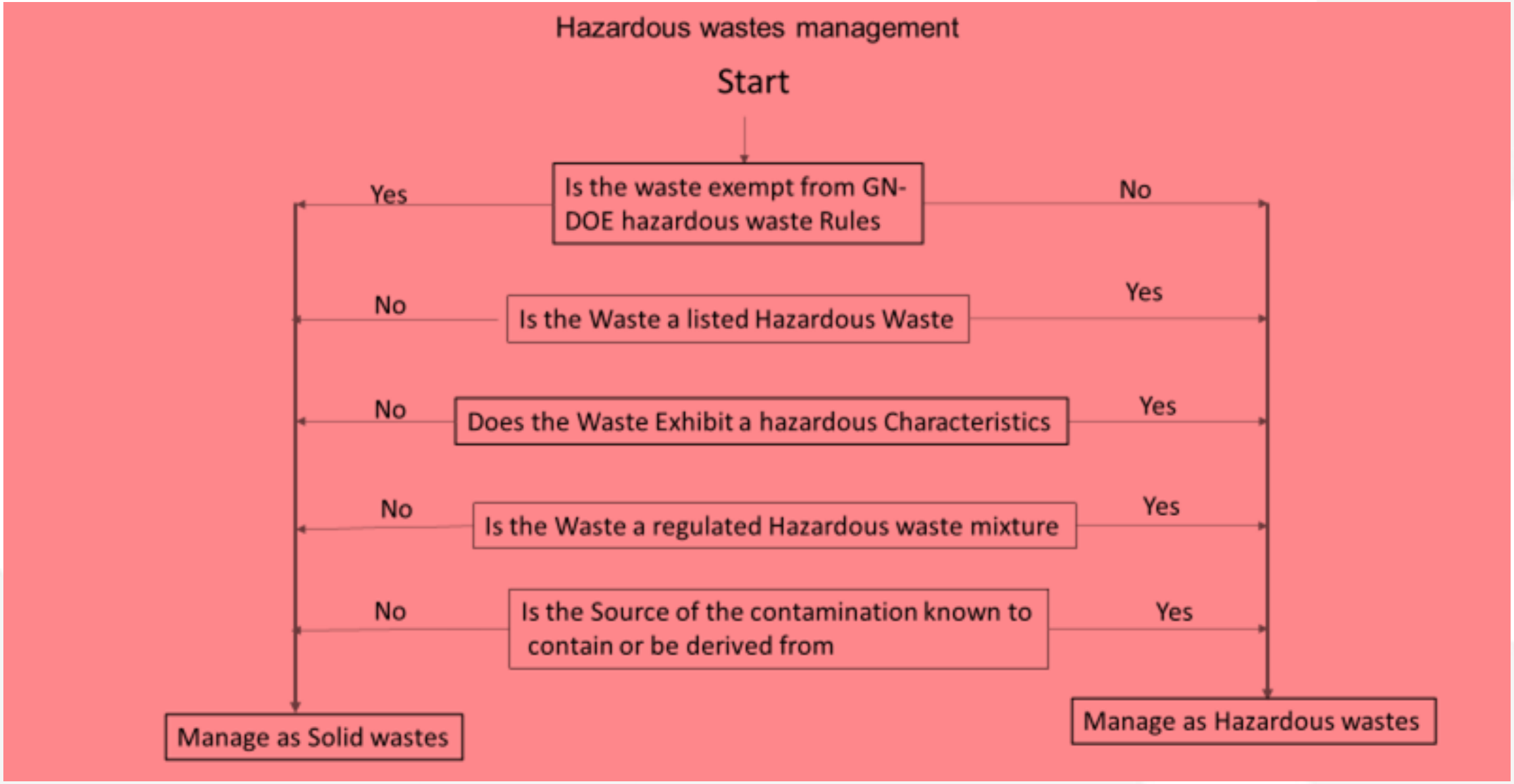
- Surface runoff monitoring at defined stations
- Checking the perimeter for seepages
- Testing seepages, if

Solid Waste Facility

Surface runoff from SWF monitoring

- Required under water licence
- Collect samples at monitoring program stations
- Monitoring program stations locations
  - Metal waste area
  - Landfill
  - Wood waste area
- Test collected samples at an accredited laboratory

Flow Chart How to Determine Hazardous Wastes



Solid Waste Facility

Hazardous waste management

Spill Contingency Plan

Contains:

- Potential contaminants and spill scenarios
- Preventative measures
- Response organization
- Spill kit requirements

Action plan:

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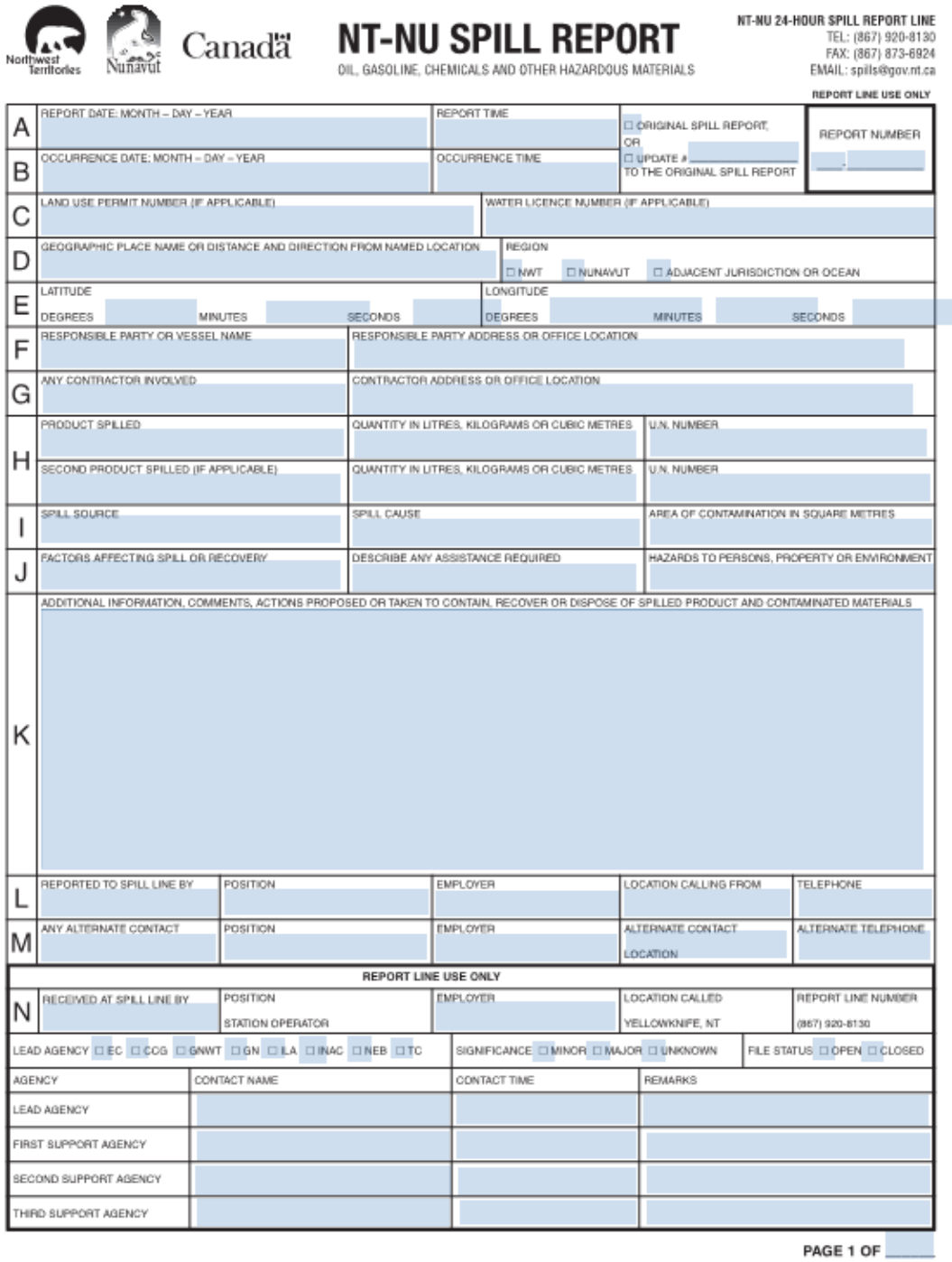

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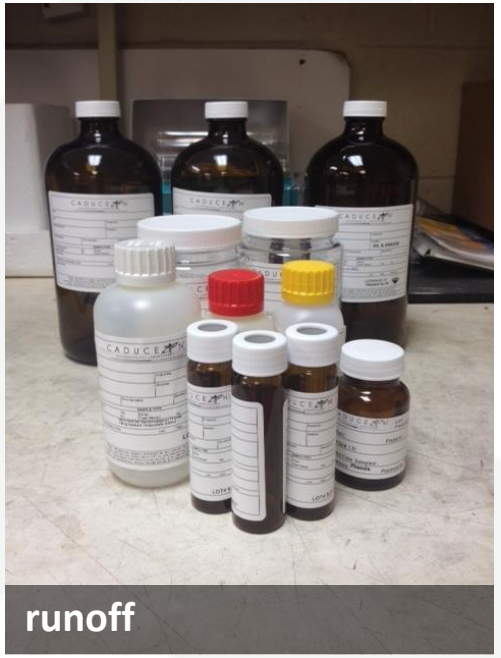
runoff

Laboratory Accreditation

- CADUCEON LAB IS USED FOR ALL TYPES OF WATER TESTING .
- CONTACT ADDRESS:
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