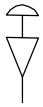
LEGEND


PUMP


PRESSURE GAUGE


GATE VALVE


CHECK VALVE

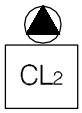

SOLENOID

#2 COMPONENT ID. No.
(SEE TABLE ON FOLLOWING PAGE)

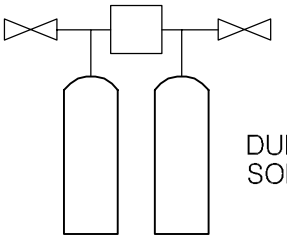
FLOW METER

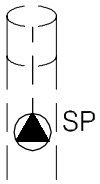
WATER FILTER
(CARTRIDGE TYPE)

PRESSURE TANK

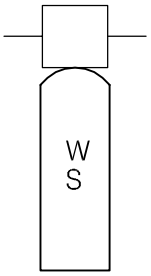


CHLORINE RESERVOIR AND
INJECTION PUMP


DUPLEX WATER
SOFTENER

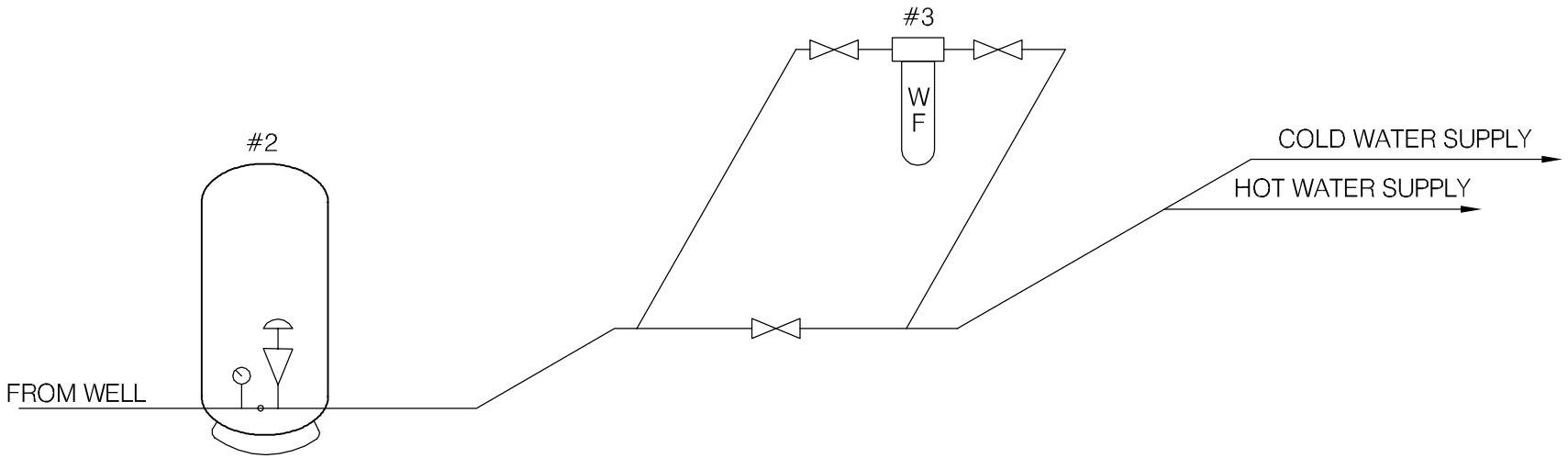


WELL WITH
SUBMERSIBLE PUMP



ACTIVATED
CARBON

EBA Engineering Consultants Ltd.			PROJECT	SMALL PUBLIC WATER SYSTEMS ASSESSMENT WESTERN REGION	
CLIENT Yukon Highways and Public Works Property Management Branch			TITLE	SCHEMATIC SYSTEM LEGEND	
DATE APRIL 2006	DWN. JSB	CHKD. RMM	FILE NO. 1260002		DRWG. LEGEND



DRAWING IS BASED UPON SCHEMATIC PROVIDED BY BERT ALBISSER OF AQUA TECH SUPPLIES AND SERVICES LTD.

EBA Engineering Consultants Ltd.			PROJECT	SMALL PUBLIC WATER SYSTEMS ASSESSMENT NORTHERN REGION	
CLIENT Yukon Highways and Public Works Property Management Branch			TITLE	WATER SYSTEM DISTRIBUTION/TREATMENT SCHEMATIC SYSTEM ID.: 5650 WILDLIFE WORKSHOP - MAYO, YT.	
DATE SEPT. 2005	DWN. JSB	CHKD. RMM	FILE NO. 1260002.004		DWG.: FIGURE 5650-B

Z:\0201Drawings\1260002 Water Assessment YTG\004 - Northern Region\mayo\1260002004 Mayo Wildlife Workshop_5650B Schematic.dwg, 4/5/2006 2:48:02 PM, Adobe PDF, jbuyck

Northern Region – Mayo Wildlife Workshop
Building # 5650

DISTRIBUTION & TREATMENT SYSTEM DATA

Item	Description	Manufacturer	Model	Part No.	Serial No.	Size
1	SUB PUMP.	?				?
2	PRESSURE TANK	WELL X TROL	WX-201			
3	INLINE FILTER	AMETEK	10" BB			10" x 1"
4						
5						
6						
7						
8						
9						
10						

TABLE 5650 - 1: SUMMARY OF BACTERIOLOGICAL RESULTS

Building #	Building Name	Number of Sampling Events	Time Period over which Sampling was Done	Any Positive Total Coliform Results? (yes or no)	Fraction of Positive Total Coliform Results vs. Total Sampling Events	Any positive E.Coli results? (yes or no)	Most Recent Sampling Event Available for EBA Review	Is Most Recent Result Positive?
5650	Mayo Wildlife Workshop	8	Oct-04 to Jun-05	no	0/8**	no	9-Jun-05	no

* Two out of eight samples were rejected due to high turbidity

Table 5650 - 2: Water Quality Results

SOURCE:	Building 5650 - Mayo Wildlife Workshop			GCDWQ Criteria		
Location/ Resident	Mayo					
Address						
Treatment	Filtration					
Disinfection	None					
Source of Water	On-site well					
Purpose of Sampling	Base Line	Base Line	Additional Sampling			
Sample Location			Kitchen faucet			
Date Sampled	27-Sep-04	8-Jun-05	17-Aug-05	**Lower**	**Upper Limit**	
Physical Tests *(ALS)*				**AO**	**MAC**	**AO**
Colour (CU)	**>60**	<5.0				15
Conductivity (uS/cm)		638				
Total Dissolved Solids	338	354				500
Hardness CaCO3	273	280	282	AO >200 = poor, > 500 unacceptable[A]		
pH	8.01	8.14		6.5		8.5
Turbidity (NTU)	**96.1**	**92.7**			1	5
UV Absorbance			0.046			
% UV Transmittance			90			
Dissolved Anions *(ALS)*						
Alkalinity-Total CaCO3	268	269				
Chloride Cl	12	13.9				250
Fluoride F	0.09	0.1			1.5	
Silicate SiO4			8.4			
Sulphate SO4	41.8	44.9				500
Nitrate Nitrogen N	0.01	<0.10			10	
Nitrite Nitrogen N	<0.005	<0.10			1	
Ammonia Nitrogen N						
Total Phosphate PO4			0.0072			
Total Metals *(ALS)*						
Aluminum T-Al	<0.005	<0.010	<0.010		0.1	
Antimony T-Sb	<0.0002	<0.00050	<0.00050		0.006	
Arsenic T-As	*0.0087*	*0.0142*	*0.00828*		0.025	
Barium T-Ba	**1.53**	**1.38**	**1.44**		1	
Boron T-B	0.011	<0.10	<0.10		5	
Cadmium T-Cd	<0.00001	<0.00020	<0.00020		0.005	
Calcium T-Ca		87.9	90			
Chromium T-Cr	0.0018	<0.0020	<0.0020		0.05	
Copper T-Cu	0.002	<0.0010	<0.0010		1	
Iron T-Fe	**6.53**	**4.3**	**5.5**			0.3
Lead T-Pb	0.0003	<0.0010	<0.0010		0.01	
Magnesium T-Mg		14.6	14.3			
Manganese T-Mn	**0.683**	**0.626**	**0.677**			0.05
Mercury T-Hg		<0.00020	<0.00020		0.001	
Potassium T-K		12.6	16.8			
Selenium T-Se		<0.0010	<0.0010		0.01	
Sodium T-Na		9.3	9.5			200
Uranium T-U	0.0006	0.00081	0.00051		0.02	
Vanadium T-V			<0.030			
Zinc T-Zn	0.004	<0.050	<0.050			5
Dissolved Metals						
Aluminum D-Al			<0.010		0.1	
Antimony D-Sb			<0.00050		0.006	
Arsenic D-As			0.00177		0.025	
Barium D-Ba			**1.31**		1.0	
Boron D-B			<0.10		5	
Cadmium D-Cd			<0.00020		0.005	
Calcium D-Ca			89.7			
Chromium D-Cr			<0.0020		0.05	
Copper D-Cu			<0.0010			1.0
Iron D-Fe			<0.030			0.3
Lead D-Pb			<0.0010		0.01	
Magnesium D-Mg			14.2			
Manganese D-Mn			**0.657**			0.05
Mercury D-Hg			<0.00020		0.001	
Potasium D-K			16.8			
Selenium D-Se			<0.0010		0.01	
Sodium D-Na			9.5			200
Uranium D-U			0.00051		0.02	
Vanadium D-V			-			
Zinc D-Zn			<0.050			5.0
Organic Parameters						
Tannin and Lignin			0.38			
Total Organic Carbon C			4.04			
Field Chemistry (EBA)						
pH			7.88	6.5		8.5
TDS (ppm)			291			500
EC (uS/cm)			580			
Temperature (°C)			7.88			
Free Available Chlorine						

Notes:

A. Guidelines indicated for hardness are not CDWQG, rather they are general aesthetic guidelines - exceedences are indicated in yellow highlighting.

Italics and underline indicates exceedence of proposed MAC (ie. arsenic)

Bold with Yellow highlighting indicates exceedence of CDWQG Aesthetic Objective (AO)

Bold Underline with Yellow highlighting indicates exceedence of CDWQG MAC

Results are expressed as milligrams per litre except for pH and Colour (CU) Conductivity (umhos/cm),Temperature (°C) and Turbidity (NTU)

< = Less than the detection limit indicated.

AO = Aesthetic Objective

MAC = Maximum Acceptable Concentration (Health Based)

eba

EBA Engineering Consultants Ltd.
Creating and Delivering Better Solutions

SMALL PUBLIC WATER SYSTEM ASSESSMENT

PART A: EBA Site Inspection

Inspector: Ryan Martin, Luke Lebel Date August 17, 2005

WELL ID #	Owner	Location Description
5650	YTG	Mayo wildlife workshop

1. Well Location and Potential Contaminant Sources

a. General location of well: (Community, Subdivision, etc.)
Mayo

b. Specific location: (Road or street, Building number, name of owner and/, legal description,

c. GPS location: N 7053891 E 456556 elv 511m ±8m

d Is there electric power? ☒ Yes ☐ No

e Is there outside water access? ☐ Yes ☒ No

f. Does the well system have:

☐ 15 or more service connections to a piped distribution system ? If so how many_____
Mayo wildlife workshop

☐ 5 or more delivery sites on a trucked distribution system? If so how many_____

g. Nearest building, specify wildlife workshop

h. Distance from well to building ~4m

i. If there is an effluent disposal field, is its location known? ☒ Yes ☐ No

j. Distance from well to nearest point of known field: ~6m to tank, Field between 6m and 28m

k. Well location relative to field: ☐ upslope ☐ downslope ☐ lateral

l. Is there any part of a sewage disposal system(s)or other potential sources of pollution that may pose a health and safety risk within 30 m? ☒ Yes ☐ No

---

m. Is the well located within 300 m from a sewage lagoon or pit? ☐ Yes ☒ No unlikely

n. Is the well located within 120 m from a solid waste site or dump, cemetery? ☐ Yes ☒ No unlikely

o. Is the infrastructure protecting the wellhead, pumphouse, storage tank and/or water treatment plant designed and secured to prevent:

Unauthorized access by humans? ☐ Yes ☒ No Unlocked enclosure

Entrance by animals? ☐ Yes ☒ No Access possible

p. Is well site subject to flooding? ☒ Yes ☐ No enclosure damp

q. Is the well site well drained? ☒ Yes ☐ No

r. Is there a buried fuel tank on the property? ☐ Yes ☒ No unlikely

If yes, is it ☐ in use ☐ abandoned

Is the location known? ☐ Yes ☐ No

Distance from the well to known buried tank _____

s. Are there any other known contaminant sources on the property?

☒ Yes ☐ No Describe _____

If yes, specify the source: ☐ dump ☐ sewage lagoon ☐ cemetery ☐ other

Potential Source 1: Jet fuel Drums; Distance from well to Potential Source 1: ~34m

Potential Source 2: AST; Distance from well to Potential Source 2: ~7m

Potential Source 3: Vehicle Parking (Roads); Distance from well to Potential Source 3: ~2m

Potential Source 4: _____; Distance from well to Potential Source 4: _____

t. Are there other wells on this property? ☐ Yes ☐ No

How many? _____ ☐ in use ☐ abandoned ☐ require proper sealing

2. Well and Wellhead information:

a. When was well installed? Year unknown Month _____

b. Type: ☒ drilled ☐ dug ☐ sand point ☐ other _____

c. Is there a drillers log for the well: ☐ Yes ☒ No

d. Is there a surface seal to 6 m ☐ Yes ☒ No ☐ unknown ☒ unlikely

e. Surface casing: ☐ Yes Diameter _____ ☒ No

f. Well casing: Diameter 15 cm Material: ☒ steel ☐ plastic ☐ concrete

g. Depth of well: unknown ☐ measured (if possible) ☐ reported ☐ from log

h. Static water level below ground: unknown

☐ measured (if possible) ☐ reported ☐ from log ☐ flowing

i. (If granular) Is the well completed: ☐ open end casing ☐ with a well screen

☐ with slotted pipe ☒ unknown other _____

j. (If bedrock) Does the well have a liner? ☐ yes ☐ No ☐ steel ☐ plastic

k. If there is a well screen: length unknown slot size(s) _____
Location of screen: from _____ to _____ from log reported

l. Is there a sump below the screen? ☐ Yes ☐ No unknown

m. Is the well head: ☐ in pumphouse ☒ in pit ☐ pitless adaptor ☐ in a building

☐ in a wooden enclosure other, describe _____

n. If the well head is located in a wooden enclosure,

i. Is the well head below grade? describe in detail ~1.0m bg

ii. Are there signs of ponding on the enclosure(e.g. water stains, etc.)? ☒ Yes ☐ No

iii. Is the wellhead enclosed by fiberglass insulations? ☐ Yes ☒ No styrofoam

iv. Any evidence of rodents? Specify Access possible

v. Does the well casing have a proper seal cap? ☒ Yes ☐ No

If no, describe condition split gasket cap

3. Water Supplying This Well:

a. By definition is the water from a surface water source or under the direct influence of surface water?

☒ Yes ☐ No ☐ farther investigation required.

If yes is there treatment or disinfection ☒ Yes ☐ No

Explain (filtration, disinfection etc...) filtration

---

4. Aquifer Supplying This Well:

a. The aquifer is: ☐ bedrock ☐ granular sediment ☒ unknown

b. Does water level and/or well capacity show seasonal fluctuation? ☐ Yes ☒ No unlikely

5. Pump Installation:

a. Is the well equipped with a pump? ☒ yes ☐ No

b. Type of pump: ☐ hand ☒ electric submersible ☐ jet

☐ shallow well centrifugal ☐ other, _____

c. Description: Manufacturer _____ Model _____

horsepower _____ capacity _____ voltage _____

d. Date installed: _____ By: _____

e. For submersible pump, depth of setting below surface _____

f. Drop pipe for submersible pump: ☐ steel ☒ plastic likely

g. Pump delivers water to: ☒ pressure tank ☐ elevated tank ☐ other

h. Are there automatic pump controls: ☒ Yes ☐ No

i. Is there provision for taking water samples before water reaches storage? ☐ Yes ☒ No

j. Is there a water meter on the system? ☐ Yes ☒ No

k. Is the pump and piping protected from freezing? ☒ Yes ☐ No

If yes, describe: Heat trace + insulation

l. Comments on pump installation: _____

_____

6. Conclusions

a. Comments on overall installation:

_____

_____

_____

_____

_____

_____

_____

b.Recommendations: _____

_____

_____

_____

_____

_____

_____

PART B: EBA Site Inspection

Inspector: BERT ALBISSER Date AUG 17/05

WELL ID #	Owner	Location Description
5650	YTG	MAYO WILDLIFE SHOP

6. Water Treatment

a. Is well water treated? ☐ Yes ☑ No; Type of treatment:

☐ chlorination ☐ iron and or manganese removal ☐ other _____

b. Is water entering plumbing or piped distribution system treated with chlorine or another treatment that is as effective as chlorine used to achieve disinfection throughout the system?

☐ Yes ☑ No If so how _____

c. If treated with chlorine, is the free residual chlorine concentration less than 0.2 mg/L

☐ Yes ☑ No _____ reading.

Tested at _____ (location)

d. Is testing for chlorine residual concentration done at the tap (eg. Kitchen faucet) or from representative points in a piped distribution system, including a point from tap at the end line

☐ Yes ☑ No If yes how often? _____

e. If the drinking water is being transported by water delivery truck does it have a minimum chlorine free residual of 0.4 mg/L at the time of fill. ☐ Yes ☑ No

7. Water Quality (observations):

a. Does the water stain plumbing? ☑ yes ☐ No ☐ slight ☑ severe

Type of stain: ☐ brown ☐ red ☐ black

b. Does the water contain sediment? ☐ Yes ☑ No ☐ occasional ☐ constant

c. Is there an unpleasant odour? ☑ Yes ☐ No ☐ H_2S ☐ Other _____

d. Is there an unpleasant taste? ☑ Yes ☐ No ☐ brackish ☐ Other _____

e. Is there a history of bad bacterial analyses? ? ☐ Yes ☐ No

f. Is there a chemical analysis? ☑ Yes ☐ No ☐ adequate ☐ incomplete

g. Is there analysis of trihalomethanes (THMs) where the water source is a surface water supply or a well under the direct influence of surface water? ☐ Yes ☑ No

h. Is the drinking water tested daily with an accurate reading chlorine test kit capable of reading in the range 0 to 3.5 mg/L of free chlorine residual in increments of 0.1mg/L? ☐ Yes ☑ No ☐ unknown

i. If yes is the test performed in accordance with manufactures directions? ☐ Yes ☑ No ☐ unknown

j. Is a record of the date, time,name of person performing the test and results of the drinking water sample kept? ☐ Yes ☑ No

TANK AND PIPING DETAILS

Tank Room

Is there a water tank? Yes No Details: PRESSURE TANK

Where is it located?
Comments: SHOP AREA

Is the room in which the water tank is located heated to maintain an optimum temperature of 4°C for stored water?
YES NO
Comments: _____

Are there windows in the add-on that may allow direct sunlight onto the water holding tank? YES NO
Comments: _____

Are there other heat sources near the tank? YES NO
Comments: _____

Is there waterproof flooring with a sealed base to contain spills? YES NO
Comments: _____

Overall Tank

What are the tank size and dimensions?

_____

What material is the tank constructed of? _____

Is tank and associated piping constructed of safe materials (i.e. CSA approved and material that does not affect the taste of the water)? YES NO

Comments: _____

Tank Inlet, Outlet and Lid

Is there adequate access on the tank for cleaning (i.e. min 15" access lid)? YES NO

Does the lid have a tight seal and is it watertight when closed? YES NO

Does the tank have an overflow or high level whistle? YES NO

Is the water tank drain accessible? YES NO

WATER TANK AND WATER QUALITY CONDITION

Are there signs of staining or biofouling? YES NO
Comments: _____

Is there any sediment or scum in bottom of tank? YES NO
Comments: _____

Is there any odour associated with the water or tank? YES NO

Have there been any bacteriological analyses conducted previously? YES NO

Does the tank appear that it has been cleaned recently? YES NO

Are the tanks easily assessed for the purpose of cleaning and disinfection? YES NO

8. Conclusions

a. Comments on overall installation:

THE INSTALLATION IS SATISFACTORY
THE PRESSURE TANK IS WATER LOGGED - IT NEEDS TO BE REPLACED.

b. Recommendations:

Environment Canada Environnement Canada

Enforcement and Emergencies Section
91782 Alaska Highway, Whitehorse, YT Y1A 5B7
PH: 867.667.3400 FAX: 867.667.7962

Spill Report Information

Spill #	7613
Jurisdiction	Yukon
Community	Mayo
Address	
Highway	
Milepost	
Feature	Mayo
Location and Cause	WPYR tank farm - failure of loading hose
Latitude	63.6133333333333
Longitude	-135.879166666667
Incident Date	8/26/1976 10:00:00 PM
Lead Agency	Department of Indian Affairs and Northern Development
Other Agency	
Company(s)	White Pass & Yukon Route
Amount	1512
Units	Litres
Quantity	Actual
Release Description	Spilled
Additional Quanitit	
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Furnace Oil
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	spill dyked off immediately - contaminated area 15' x 150' - cleaned-up (contaminants removed to Mayo dump)

Environment Canada Environnement Canada

Enforcement and Emergencies Section
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Spill Report Information

Spill #	7718
Jurisdiction	Yukon
Community	Mayo
Address	
Highway	
Milepost	
Feature	Mayo
Location and Cause	tank farm - tank overfilled
Latitude	63.6133333333333
Longitude	-135.879166666667
Incident Date	8/22/1977 9:00:00 AM
Lead Agency	Environment Canada - Environmental Protection Service
Other Agency	Department of Indian Affairs and Northern Development
Company(s)	White Pass & Yukon Route
Amount	3742
Units	Litres
Quantity	Actual
Release Description	Spilled
Additional Quanitit	
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Fuel Oil
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	no fuel recovered - possible contamination of groundwaters but not known - suggests action be taken as too many spills with no recovery in area

Environment Canada Environnement Canada

Enforcement and Emergencies Section
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Spill Report Information

Spill #	7727
Jurisdiction	Yukon
Community	Mayo
Address	
Highway	
Milepost	
Feature	Mayo
Location and Cause	tank farm - tank overfilled
Latitude	63.6133333333333
Longitude	-135.879166666667
Incident Date	3/28/1977 9:00:00 AM
Lead Agency	Environment Canada - Environmental Protection Service
Other Agency	
Company(s)	White Pass & Yukon Route
Amount	1512
Units	Litres
Quantity	Actual
Release Description	Spilled
Additional Quanitit	
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Gasoline
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	spill within dyke - none reported outside dyke - cleaned-up

Environment Canada Environnement Canada

Enforcement and Emergencies Section
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Spill Report Information

Spill #	9130
Jurisdiction	Yukon
Community	Mayo
Address	
Highway	
Milepost	
Feature	Mayo
Location and Cause	White Pass yard - garage caught on fire - explosion ensued
Latitude	63.6166666666667
Longitude	-135.884444444444
Incident Date	11/26/1991
Lead Agency	Yukon Government - Fire Marshall
Other Agency	
Company(s)	White Pass
Amount	
Units	
Quantity	Unknown
Release Description	Burned
Additional Quanitit	
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Hydrocarbons
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	fuel or propane truck exploded inside building - building consumed - used 756,000L water - water runoff contained in ditch - oil and fuel in water

Environment Canada Environnement Canada

Enforcement and Emergencies Section
91782 Alaska Highway, Whitehorse, YT Y1A 5B7
PH: 867.667.3400 FAX: 867.667.7962

Spill Report Information

Spill #	9703
Jurisdiction	Yukon
Community	Mayo
Address	
Highway	
Milepost	
Feature	Mayo
Location and Cause	North 60 Petroleum Bulk Plant - overfill of bulk storage tank - miscommunication between truck operator and plant operator
Latitude	63.6134
Longitude	-135.8793
Incident Date	1/15/1997 6:40:00 PM
Lead Agency	Yukon Government - Public Safety
Other Agency	Environment Canada - Environmental Protection Service
Company(s)	North 60 Petroleum
Amount	1000
Units	Litres
Quantity	Estimate
Release Description	Spilled
Additional Quanitit	
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Diesel
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	300 L recovered - EC recommended excavation of contaminated soil and installation of monitoring wells - fuel discrpency of 22,000 L reported by Mayo plant - not verified

Environment Canada Environnement Canada

Enforcement and Emergencies Section
91782 Alaska Highway, Whitehorse, YT Y1A 5B7
PH: 867.667.3400 FAX: 867.667.7962

Spill Report Information

Spill #	9947
Jurisdiction	Yukon
Community	Mayo
Address	
Highway	
Milepost	
Feature	Mayo
Location and Cause	North 60 Petroleum Tank Farm - overfill of storage tank
Latitude	63.6134
Longitude	-135.8793
Incident Date	12/10/1999 5:10:00 PM
Lead Agency	Environment Canada - Environmental Protection Service
Other Agency	
Company(s)	North 60 Petroleum
Amount	
Units	
Quantity	Unknown
Release Description	Spilled
Additional Quanitit	negligible amount
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Diesel
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	overfill caused product to run down sides of tank and small amount to ground at base of tank within berm - no loss noted in records check - minimal amount spilled - no action

Photo 033: 5650 Wildlife Workshop (northeast side of building).

Photo 057: 5650 On site AST.

Photo 056: 5650 Wellhead enclosure.

Photo 194: 5650 Water system. (pressure tank and filter)