

24.0 BUILDING 4976: WATSON LAKE AMBULANCE BUILDING

24.1 Description of Existing Water system

Building 4976, the Watson Lake Ambulance Building, has water from a 5.3 m dug well located in a pit approximately 3 m from the ambulance building. The well location and other site details are provided in Figure 4976-A, provided in Appendix A24. The coordinates of the wellhead, as measured by a handheld GPS device, were recorded as:

- UTM ZONE 9
- Northing: 6650232
- Easting: 516892

There is no treatment system present on this water system. A schematic detailing the water system is provided as Figure 4976-B in Appendix A24.

24.2 Description of Existing Wastewater Systems

There is a holding tank near the northeast corner of the Watson Lake Ambulance Building approximately 10 m north of the well. A site plan that shows the position of the septic system relative to the well is given by Figure 4976-A in Appendix A24.

24.3 Water Quality Results

24.3.1 Water Quality Results from Previous Sampling

Bacteriological

No test results were provided to EBA for review. Bacteriological sampling of water from the Watson Lake Ambulance Building water system may not have been previously completed.

Potability

A water sample was collected by YTG representatives from the Watson Lake Ambulance Building water system on September 13, 2004. The sample was submitted to Northwest Labs in Surrey, BC for detailed potability analyses.

Additional results were also provided by YTG for a sample collected on June 22, 2005. The results of these analyses are summarized in Table 4976-2 and included in Appendix A24. EBA reviewed the analytical results to compare them with the Canadian Drinking Water Quality Guidelines (CDWQG) to observe general water quality, identify and recommend additional sampling and analytical, and to identify potential indicators of contamination.

- Turbidity was reported as 1.2 NTU in September 2004, which is in exceedence of the CDWQG MAC of 1.0 NTU, follow-up results from June 2005 indicate turbidity below the MAC;
- At 2.5 and 2.3 mg/L, the reported nitrate concentration, although not in exceedence of the CDWQG MAC of 10 mg/L, is considered high relative to normal background concentrations in the region;
- At 35.8 and 60.4 mg/L, the reported chloride concentration, although not in exceedence of the CDWQG aesthetic objective of 250 mg/L, is considered high;
- The water quality results indicated that all other health based and aesthetic objectives were met for the parameters analyzed; and,
- The hardness (as CaCO₃), is 286 and 247 mg/L, and is considered as poor for aesthetic purposes.

24.3.2 Identification of Additional Analytical Testing Required

Additional analytical for the Watson Lake Ambulance Building that was identified to be included during the water system assessments is detailed below:

- UV absorbance, as well as tannins and lignin, to determine potential for UV treatment as a disinfection option;
- As turbidity was in exceedence of CDWQG MAC, a sample was taken to retest for turbidity;
- As nitrates and chlorides were found to be high, a sample was taken for analysis of nitrates, nitrites, and chlorides, as well as ammonia, in order to determine if the water shows signs impact from surface water or septic wastes;
- Total Organic Carbon (TOC) to assist with treatment system selection; and,
- Measurements in the field for total dissolved solids, conductivity, pH, and temperature were completed during the system assessment.

Additional Analytical Results

A water sample was obtained by EBA during the field program on June 23, 2005, and was submitted to ALS Environmental in Vancouver, BC for analysis. These results are summarized in Table 4876-2 and the laboratory reports are included in Appendix B. Although there were no reported exceedences in CDWQG, it was found that there was a certain degree of variability in the parameters relative to previous sampling results.

24.3.3 Indicators of Potential Contamination

Chloride, nitrate and nitrite concentrations can indicate impacts from surface water sources or septic waste. Variations in water quality, including turbidity, can also indicate seasonal fluctuations in water quality caused by infiltration pathways of surface water. The chloride concentrations were reported as being 57.7 mg/L during the most recent sampling event, which was above the concentration of 35.3 mg/L that was reported previously. Nitrate concentrations were reported at 2.33 mg/L. In addition, turbidity had decreased from 1.2 NTU from previous sampling to 0.23 and 0.35 NTU in the additional analytical sampling. Therefore, these water quality results suggest that the aquifer from which the groundwater is obtained for the Watson Lake Ambulance Building may be under the influence of surface water sources and/or septic wastes.

24.4 Conceptual Hydrogeology

There is no log available for this dug well. This shallow water table well is completed at a depth of 5.3 m with a static water level of 3.0 m below grade. The well location is on the north side of a groundwater divide; groundwater flow in the area is likely northerly to northwesterly to Wye Lake. It is unlikely that there is protection of this aquifer from surface water or septic effluent contamination, as such this aquifer is considered to be highly vulnerable.

24.5 Potential Contaminant Sources

Potential contaminant sources observed during the site investigation are provided in field notes in Appendix A24. Photos of potential contaminant sources are provided in Appendix A24.

A summary of potential contaminant sources within 30 m of the well is provided below:

- Septic holding tank 10 m from well (not consistent with regulation); and,
- Horse corrals beginning at 1.5 m from the well.

24.5.1 Spills Records and Contaminated Sites Search Results

The Environment Canada Environmental Protection Agency did not identify any recorded spill events or contaminant issues for this site or neighbouring. There were spill records identified for neighbouring sites, and they are outlined below.

On April 28, 1994, it was reported that the spring melt was carrying waste oil from contaminated soils into ditches behind KPA Northern. The discharge was reported to have occurred near the corner of 3rd Street and Wye Drive, and the contaminated snow melt was traveling towards 2nd Wye Lake.

On April 7, 1997, it was reported that there were various industrial products found in a roadside ditch near the corner of 3rd Street and Adela Trail. The products included oil, diesel, and ethylene glycol.

On May 20, 1997, and again on April 14, 1998, it was reported that there was industrial product in the roadside ditch near the corner of 3rd Street and Adela Trail.

There is no record of clean-up of these reported spills. The exact proximity of these spills to the well is not known, however given the high vulnerability of this shallow aquifer and the documented frequency of these spill events in this area of commercial operations, this well should be considered at risk.

24.6 Identified Water System Deficiencies and Associated Risk

24.6.1 High and Medium Risk Deficiencies

Site investigations and system inspections of the Watson Lake Ambulance Building water system found the following high-risk deficiencies:

- The well is only 5.23 m deep, and it is very unlikely that there are any low permeability layers to prevent to prevent surface water infiltration;
- The well is located within 30 m of potential contaminant sources, including a septic holding tank and horse corrals;
- Turbidity levels, in addition to being above CDWQG MAC in previous sampling events, are variable. Chloride and nitrate concentrations were also found to be high and variable. Water quality results suggest that the aquifer from which the ambulance building receives its groundwater supply is under the direct influence of surface water sources and/or septic wastes;
- There are no available records of bacteriological testing, and it is unknown if bacteriological testing has been completed for this water system;
- The water system is not equipped with a disinfection or treatment system;
- Poor surface completion of the well (the well is located in a pit below grade, the wellhead is not equipped with a proper cap and is open);
- There is no surface sanitary seal (grout or bentonite seal as required by the Canadian Groundwater Association's Well Construction Guidelines). The well is shallower than the 6 m required for a proper surface sanitary seal; and
- By definition of the Draft Yukon GUDI Assessment Guideline, the well is potentially under the direct influence of surface water because it is a vulnerable type (unconfined aquifer with a production zone that is less than 15 m below grade) and does not meet the requirements of the Guidelines for Water Well Construction.

24.6.2 Low Risk Deficiencies

There were no low-risk deficiencies identified. All deficiencies are considered high-risk.

24.7 Mitigative Options for Deficiencies

Mitigative options were developed to address the deficiencies identified in the previous section. Deficiencies are categorized by recommended level of priority (with Priority 1 being most critical).

This well is not suitable for a potable water supply and use should be discontinued immediately.

24.7.1 Priority 1

Considering all of the known deficiencies with the current well, it is recommended that it be abandoned and decommissioned. Given the size of the property, existing land use, and distances to potential contaminant sources, it is unlikely that a new well could be safely located on the site. It is recommended that the water system be converted to bulk water delivery. The new water system should meet the following conditions:

- A water storage tank of adequate size should be installed. An addition to house the tank and pump may be required;
- A regular storage tank-cleaning schedule should be initiated and it should be ensured that the free available chlorine at the time of delivery is 0.4 mg/L and 0.2 mg/L at the point of consumption.

Additionally, until the new tank is installed and water is available from delivery, a sign should be posted stating that the water should not be used as a drinking water source. Bottled water should be provided. Consultation with YTG Environmental Health and Social Services is recommended.

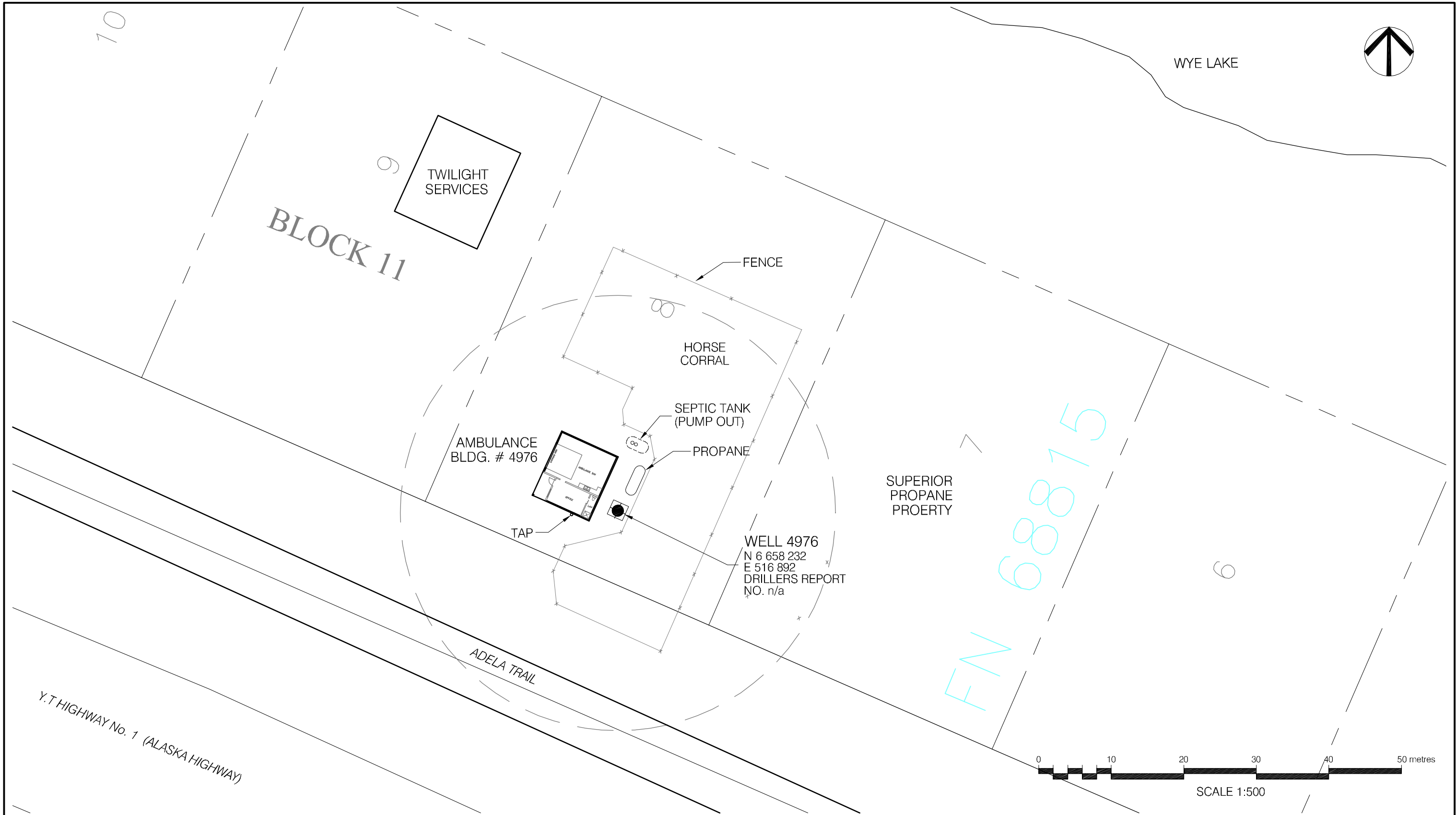
24.8 Cost Estimates for Mitigative Options

Engineering costs for mitigative options are estimated to be 20% of construction costs, and would include inspection and completion reporting. The costs for materials and labour (not including engineering) are provided in the sections below. An additional contingency allowance of 20% is suggested for budgetary purposes.


24.8.1 Priority 1

- A 2000 L water storage tank, and sufficiently sized jet pump, assuming that an addition to the ambulance building will not have to be built, would cost approximately **\$3,000** including installation in order to convert this system to water delivery. A contingency of **\$5,000** is suggested to cover the cost of an add-on if required.

- The existing well should be properly decommissioned in accordance with the Guidelines for Water Well Construction. It is estimated that this would cost approximately **\$1,000**.




NOTES:
 1. UTM COORDINATES OBTAINED WITH A HAND HELD GPS USING NAD83 SYSTEM AND ARE CONSIDERED TO BE ACCURATE TO 10.0 m, APPROXIMATELY.
 2. LOCATION OF BUILDINGS AND STRUCTURES ARE APPROXIMATE ONLY.

 30 m RADIUS FROM WATER WELL FOR CONSIDERATION OF PROXIMITY TO POTENTIAL CONTAMINANT SOURCES.

No.	DESCRIPTION	DATE	APPROVED
0	ISSUED FOR CLIENT REVIEW	DD/MM/YY	XXX
REVISION			

EBA Engineering Consultants Ltd.

DESIGNED BY: R. MARTIN
 DRAWN BY: J. BUYCK
 DATE: JULY 2005
 SCALE: AS SHOWN
 PROJECT No.: 1260002.002
 ACAD FILENAME: 002-EASTERN REGION

CLIENT:

 Highways and Public Works
 Property Management Branch

SMALL PUBLIC WATER SYSTEMS ASSESSMENT
 EASTERN REGION

GOVERNMENT OF YUKON
 HIGHWAYS & PUBLIC WORKS

WATSON LAKE AMBULANCE
 BUILDING # 4976
 SITE LOCATION DIAGRAM
 WELL ID: 4976-A

REVISION ISSUE
 0
 FIGURE No.
 4976-A

LEGEND



PUMP



PRESSURE GAUGE



GATE VALVE



CHECK VALVE



SOLENOID

#2

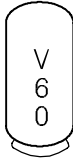
COMPONENT ID. No.
(SEE TABLE ON FOLLOWING PAGE)



FLOW METER



WATER FILTER
(CARTRIDGE TYPE)

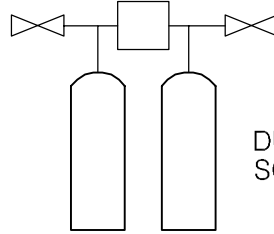


PRESSURE TANK

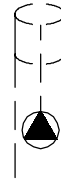


CL₂

CHLORINE RESERVOIR AND
INJECTION PUMP

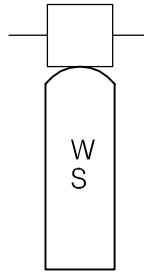


DUPLEX WATER
SOFTENER



SP

WELL WITH
SUBMERSIBLE PUMP



ACTIVATED
CARBON

Z:\0201\Drawings\1260002 - Water Assessment YTG\002 - Eastern Region\1260002\003 Eastern Schematic_LEGEND.dwg, 4/11/2006 10:31:08 AM, Adobe PDF, jbuyck



EBA Engineering Consultants Ltd.

PROJECT SMALL PUBLIC WATER SYSTEMS ASSESSMENT
EASTERN REGION

CLIENT



TITLE SCHEMATIC SYSTEM
LEGEND

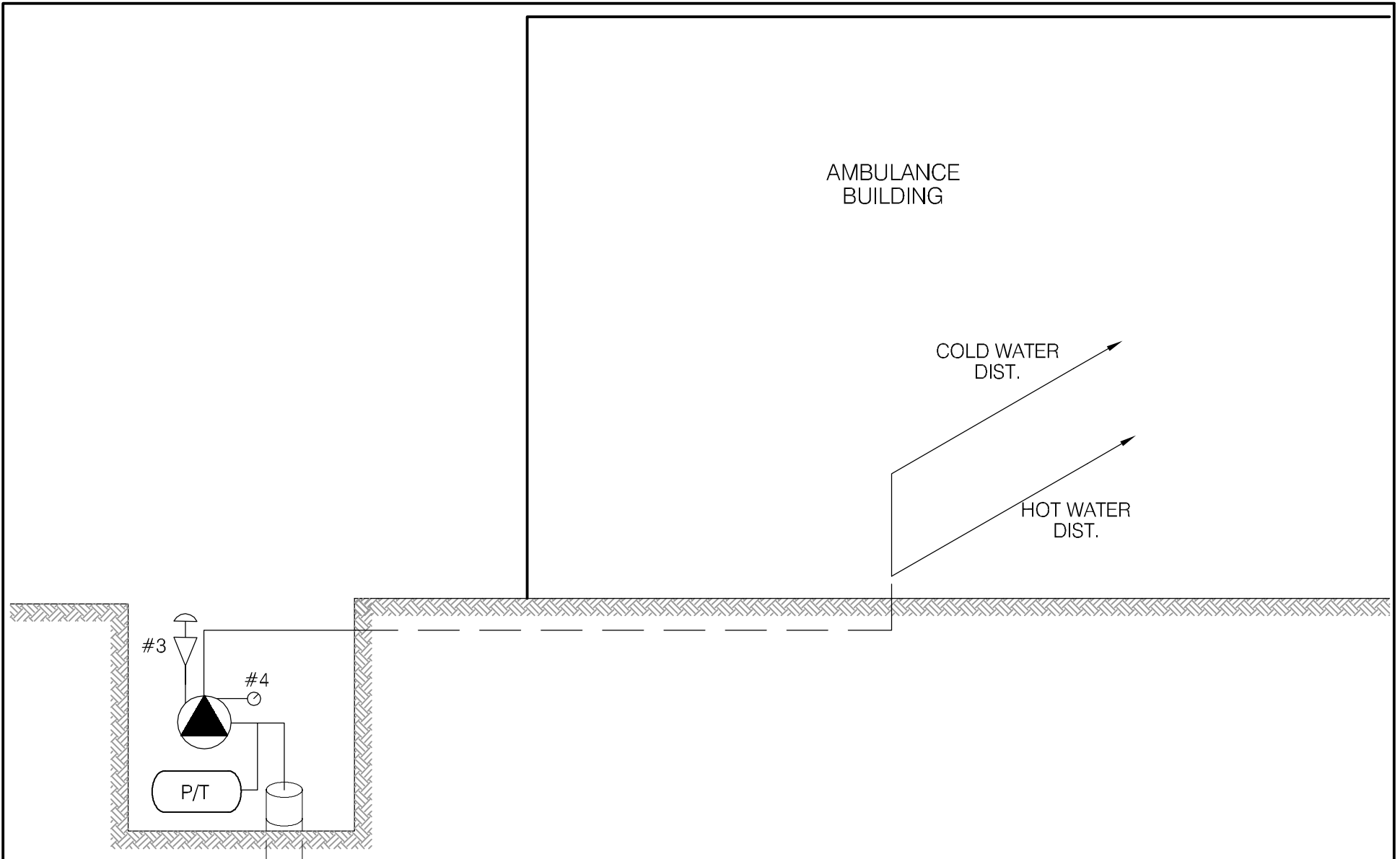
DATE APRIL 2006

DWN. JSB

CHKD. RMM

FILE NO. 1260002

DRWG. LEGEND



SCHEMATIC PRODUCED BY BERT ALBISSER OF AQUA TECH SUPPLIES & SERVICES LTD.



 EBA Engineering Consultants Ltd.		PROJECT SMALL PUBLIC WATER SYSTEMS ASSESSMENT EASTERN REGION	
CLIENT 		TITLE WATER SYSTEM DISTRIBUTION/TREATMENT SCHEMATIC SYSTEM ID.: 4976 WATSON LAKE AMBULANCE STATION	
DATE	JULY 2005	DWN.	JSB
CHKD.	FMM	FILE NO.	1260002.002
		DWG.:	FIGURE 4976-B

TABLE 4976- 1: SUMMARY OF BACTERIOLOGICAL RESULTS

		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?
Building #	Building Name							
4976	Ambulance Building	NO BACTERIOLOGICAL RESULTS ARE AVAILABLE FOR THIS SITE						



Table 4976-2: Water Quality Results

SOURCE:	Building 4976 - Ambulance Building		GCDWQ Criteria		
Location/Resident	Watson Lake				
Address					
Treatment	No				
Disinfection	No				
Source of Water	On-Site Well				
Purpose of Sampling	Baseline	Additional Sampling	Baseline		
Sample Location		Sink in Ambulance Bay			
Date Sampled	13-Sep-04	23-Jun-05	22-Jun-05	Limit	Upper Limit
Physical Tests (ALS)				AO	MAC
AO					
Temperature (°C)	<5		<5		15
Conductivity (µS/cm)			567		
Total Dissolved Solids	312		370		500
Hardness CaCO3	285		247	AO > 200 = poor > 500 unacceptable	
pH	7.60		7.8	6.5	8.5
Turbidity (NTU)	1.2	0.23	0.35		1
UV Absorbance		0.026			5
% Transmittance					
Dissolved Anions (ALS)					
Alkalinity Total CaCO3	232		197		
Chloride Cl	35.8	57.7	60.4		250
Fluoride F	<0.05		<0.020		1.5
Sulfate SO4					
Sulfate SO4	16.7		13.7		500
Nitrate Nitrogen N	2.5	2.33	2.3		10
Nitrite Nitrogen N	<0.05	<0.0010	<0.10		1
Ammonia Nitrogen N		0.037			
Total Phosphate PM					
Total Metals (ALS)					
Aluminum T-Al	<0.005		<0.010		
Antimony T-Sb	<0.0002		<0.010		0.006
Arsenic T-As	0.0005		0.00045		0.025
Barium T-Ba	0.316		0.245		1
Boron T-B	0.008		<0.10		5
Cadmium T-Cd	0.00000		<0.0002		0.005
Calcium T-Ca			80.2		
Chromium T-Cr	0.0013		<0.0070		0.05
Copper T-Cu	0.313		0.0092		1
Iron T-Fe	0.12		0.253		0.3
Lead T-Pb	0.0008		0.0044		0.01
Manganese T-Mn			1.56		0.05
Mercury T-Hg	<0.005		<0.00020		0.001
Potassium T-K			0.32		
Selenium T-Se			<0.0010		0.01
Sodium T-Na	12.8		<5.0		200
Titanium T-Ti	0.0008		0.00038		0.02
Vanadium T-V					
Zinc T-Zn	0.102		0.096		5
Dissolved Metals (ALS)					
Aluminum D-Al			0.1		
Antimony D-Sb			0.006		
Arsenic D-As			0.025		
Barium D-Ba			1.0		
Boron D-B			5		
Cadmium D-Cd			0.005		
Calcium D-Ca					
Chromium D-Cr			0.05		
Copper D-Cu			1.0		
Iron D-Fe			0.3		
Lead D-Pb			0.01		
Manganese D-Mn					0.05
Mercury D-Hg			0.001		
Potassium D-K					
Selenium D-Se			0.01		
Sodium D-Na			200		
Titanium D-Ti			0.02		
Vanadium D-V					
Zinc D-Zn			5.0		
Tribromomethanes					
Bromochloromethane					
Chloroform					
Dibromochloromethane					
Dibromomethane					
Dichloromethane					
Trichloromethane					
Organic Parameters					
Ammonia and Nitrogen	0.18				
Total Organic Carbon C	1.50				
Halocyclic Acids					
Bromochloroacetic Acid					
Chloroacetic Acid					
Dibromoacetic Acid					
Dibromoacetic Acid					
Dibromoacetic Acid (TCA)					
Trichloroacetic Acid (TCA)					
Halocyclic Aromatic Hydrocarbons					
Acenaphthene					
Acenaphthylene					
Acridine					
Anthracene					
Benzo[a]anthracene					
Benzo[a]pyrene					0.00001
Benzo[b]fluoranthene					
Benzo[k]fluoranthene					
Benzo[e]fluoranthene					
Chrysene					
Fluorene					
Phenanthrene					
Pyrene					
Anthracene					
Extractable Hydrocarbons					
EPH10					
EPH10-19					
EPH10-37					
EPH1					
EPH2					
Organochlorine Pesticides					
Aldrin					8.5
alpha-BHC					500
gamma-BHC					
delta-BHC					
trans-Chlordane (alpha)					
cis-Chlordane (gamma)					
1,1- DDD					
1,1- DDD					
1,1- DDD					
1,1- DDE					
1,1- DDE					
1,1- DDT					
1,1- DDT					
Endosulfan					
Endosulfan I					
Endosulfan II					
Endosulfan Sulfate					
Endrin					
Heptachlor					
Heptachlor Epoxide					
lindane (gamma - BHC)					
Methoxychlor					
Mirex					
o,p'-DDE					
o,p'-DDD					
o,p'-DDT					
o,p'-DDT					
Permethrin					
Endosulfan I					
Endosulfan II					
Endosulfan Sulfate					
Endrin					
Heptachlor					
Heptachlor Epoxide					
lindane (gamma - BHC)					
Methoxychlor					
Mirex					
o,p'-DDE					
o,p'-DDD					
o,p'-DDT					
Permethrin					
Field Chemistry (EBA)					
pH	7.89				8.5
TDS (ppm)	274				500
EC (µS/cm)	550				
Temperature (°C)					
Total Available Chlorine	6.1				

Notes:
 A. Guidelines indicated for hardness are not CDWQG, rather they are general aesthetic guidelines
 - exceedences are indicated in yellow highlighting
 - exceedences are indicated in yellow highlighting
 - underline 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 (µmhos/cm), Temperature (°C) and Turbidity (NTU)
 < = Less than the detection limit indicated.
 AO = Aesthetic Objective
 MAC = Maximum Acceptable Concentration (Health Based)



**Table 4976-3: Summary of Well Assessment Results
SMALL PUBLIC DRINKING WATER SYSTEMS**

Well Identification			GPS Coordinates		
Building #	Building Name	Location	Northing (+/- 10 m)	Easting (+/- 10 m)	Grade Elevation (+/- 10 m)
4976	Watson Lake Ambulance Building	Watson Lake	6658232	516892	696

Well Details							
Well Casing Diameter (mm)	Year Well Installed	Well Log?	Well Depth (m bg)	Reported Low Permeabilty Protective Layer?	Pump Setting (m bg)	Well Capacity - Tested, or Reported by User	Static Water Level Below Ground (m-btwe)
200 mm pvc pipe		No	5.3	Unlikely	Jet pump		3.0 m below grade

Potential Contaminant Sources					
Distance from well to nearest point of septic field (m)	Distance from well to nearest building (m)	Distance to surface water body (m)	AST present on property?	Distance from well to AST (m)	Other potential sources of contamination observed on property, and distance to well
10	3	Greater than 60 m	No	N/A	Horse corrals at 1.5 m from the well

Well Construction Details					
Wellhead Above ground (m)	Well Cap	Well Screen	Surface Seal	Apron Grading	Comments
0.6 m below grade	None present		No	No, well is at a low point on the property	This well is likely a dug well



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SMALL PUBLIC WATER SYSTEM ASSESSMENT

PART A: EBA Site Inspection

Inspector: Ryan Martin
Luke Lebel

Date June 23, 2005

WELL ID #	Owner	Location Description
4976	YTG	Watson Lake Ambulance Building

1. Well Location and Potential Contaminant Sources

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

Watson Lake

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

500 Adela Trail

c. GPS location: N 6650232 E 516892 elev 696m ±17m

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 _____

Ambulance building and horse corrals

5 or more delivery sites on a trucked distribution system? If so how many _____

g. Nearest building, specify Ambulance building

h. Distance from well to building ~ 3m

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

j. Distance from well to nearest point of known field: Septic tank 10 m from well

k. Well location relative to field: upslope downslope lateral

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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

Horse Corrals ~ 1.5m from well; Septic holding tank @ 10m

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

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

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 *un fastened lid* Entrance by animals? Yes No *signs of mice and insects*

p. Is well site subject to flooding? Yes No *some water staining*

q. Is the well site well drained? Yes No *low point on property*

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: _____; Distance from well to Potential Source 1: _____

Potential Source 2: _____; Distance from well to Potential Source 2: _____

Potential Source 3: _____; Distance from well to Potential Source 3: _____

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

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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 20cm Material: steel plastic concrete
pvc
- g. Depth of well: 5.32m below grade measured (if possible) reported from log
- h. Static water level below ground: 3.02m below grade
 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 unlikely
- j. (If bedrock) Does the well have a liner? yes No steel plastic
- k. If there is a well screen: length _____ slot size(s) _____
Location of screen: from _____ to _____ from log reported
- l. Is there a sump below the screen? Yes No unlikely
- m. Is the well head: in pumphouse in pit pitless adaptor in a building
pvc wooden -insulated- enclosure
 in a wooden enclosure other, describe _____
- n. If the well head is located in a wooden enclosure,

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- i. Is the well head below grade? describe in detail top of casing ~ 60cm below grade
- ii. Are there signs of ponding on the enclosure(e.g. water stains, etc.)? Yes No
some
- iii. Is the wellhead enclosed by fiberglass insulations? Yes No *in walls of enclosure*
- iv. Any evidence of rodents? Specify Yes
- v. Does the well casing have a proper seal cap? Yes No

If no, describe condition None

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.
shallow well

If yes is there treatment Yes No

Explain (filtration, disinfection etc...) _____

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
unknown

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 _____

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d. Date installed: _____ By: _____

e. For submersible pump, depth of setting below surface h/a

f. Drop pipe for submersible pump: steel plastic

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 → enclosure is insulated

l. Comments on pump installation: _____

6. Conclusions

a. Comments on overall installation:

b. Recommendations: _____

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PART B: EBA Site Inspection

Inspector: BERT ALBISSER

Date JUNE 23 / 05

WELL ID #	Owner	Location Description
<u>4976</u>	<u>YTG</u>	<u>WATSON LAKE AMBULANCE BLDG.</u>

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 H₂S Other _____

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- 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:

Where is it located?

Comments: _____

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:

THIS INSTALLATION IS TOTALLY INADEQUATE. THE WELL HEAD IS OPEN TO SEVERAL SOURCES OF CONTAMINATION. A HEAVY RAINFALL COULD FILL THE WELL PIT FROM SURROUNDING ANIMAL ENCLOSURES (HORSES) THERE IS EVIDENCE OF MICE LIVING IN THE WELL ENCLOSURE. THE WELL IS BASICALLY SURFACE WATER WITH NO FILTRATION OR TREATMENT.

b. Recommendations:

DRINK A PROPER WATER WELL OR HAVE A WATER DELIVERY SYSTEM INSTALLED. INSTALL PROPER TREATMENT IE FILTRATION, UV OR CHLORINATION.



Spill Report Information

Spill #	9417
Jurisdiction	Yukon
Community	Watson Lake
Address	3rd St N & Wye Dr
Highway	
Milepost	
Feature	Watson Lake
Location and Cause	spring melt carrying oil from contaminated soil into ditches - behind KPI Northern
Latitude	60.060277777778
Longitude	-128.684444444444
Incident Date	4/28/1994
Lead Agency	Municipality - identified in Community
Other Agency	
Company(s)	
Amount	
Units	
Quantity	Unknown
Release Description	Chronic Discharge
Additional Quantit	
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Waste Oil
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	oil sheen on water in ditches - ditches drain toward 2nd Wye Lake but dead end halfway - 100m from lake - no storm sewers nearby



Spill Report Information

Spill #	9724
Jurisdiction	Yukon
Community	Watson Lake
Address	Adela Trail & 3rd St N
Highway	
Milepost	
Feature	Watson Lake
Location and Cause	product in roadside ditch
Latitude	60.0596
Longitude	-128.6846
Incident Date	4/7/1997
Lead Agency	Yukon Government - Environmental Programs
Other Agency	
Company(s)	
Amount	
Units	
Quantity	Unknown
Release Description	
Additional Quantitit	oil, diesel, antifreeze mixture
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Oil
2nd Contaminant	Diesel
3rd Contaminant	Ethylene Glycol
4th Contaminant	
Outcome	suspect KPI Northern may be responsible as the business operates in the area - being investigated by the Watson Lake CO - no further information on file



Spill Report Information

Spill #	9731
Jurisdiction	Yukon
Community	Watson Lake
Address	3rd St N & Wye Drive
Highway	
Milepost	
Feature	Watson Lake
Location and Cause	product in roadside ditch - ditch is 1/2 full
Latitude	60.0605
Longitude	-128.6846
Incident Date	5/20/1997
Lead Agency	Yukon Government - Environmental Programs
Other Agency	
Company(s)	
Amount	
Units	
Quantity	Unknown
Release Description	Unknown
Additional Quantit	yellow, dark, turpentine smell
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Unknown Substance
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	Bryan Levia inspected spill site - samples taken to see if it was a hazardous waste - no other informaiton on file



Spill Report Information

Spill #	9816
Jurisdiction	Yukon
Community	Watson Lake
Address	3rd St N & Wye Drive
Highway	
Milepost	
Feature	Watson Lake
Location and Cause	oil in ditch on corner - was reported last year - Spill No 9731
Latitude	60.0605
Longitude	-128.6846
Incident Date	4/14/1998
Lead Agency	Yukon Government - Environmental Programs
Other Agency	
Company(s)	KPI Northern
Amount	
Units	
Quantity	Unknown
Release Description	Unknown
Additional Quantit	
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Oil
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	concern about waste getting into Second Wye Lake - CO in Watson Lake to investigate - no further information on file



Photo 0312: 4976 Watson Lake Ambulance Building



Photo 0310: 4976 Wellhead enclosure (centre), propane tank (behind), and horse corrals (back)



Photo 0308: 4976 Wellhead in pit (left), and jet pump (centre)



Photo 0311: 4976 Septic holding tank (front), and horse corrals (back)