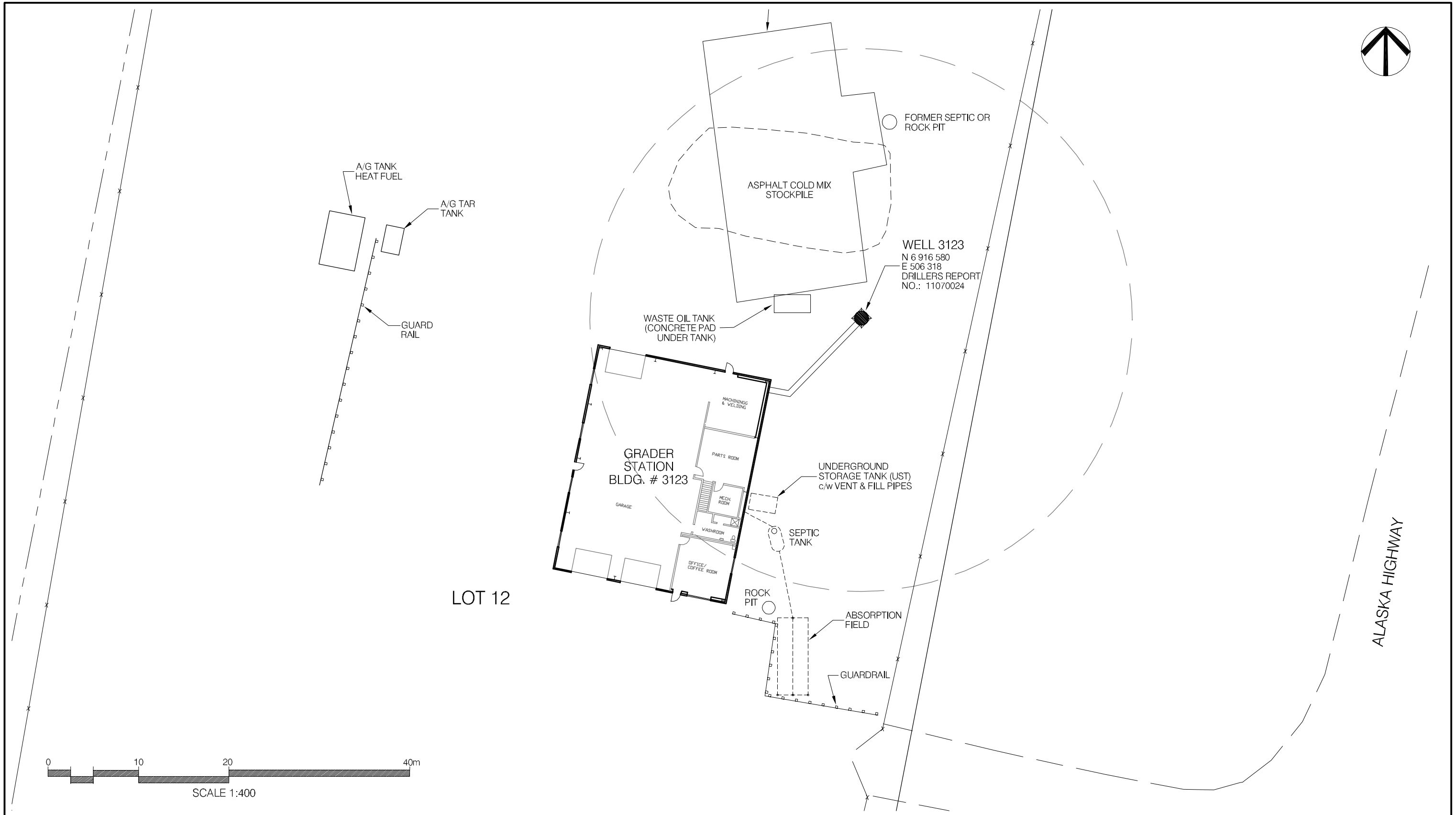


NOTES:

1. UTM COORDINATES OBTAINED WITH A HAND HELD GPS USING NAD83 SYSTEM AND ARE CONSIDERED TO BE ACCURATE TO 10.0 m, APPROXIMATELY.

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

BUILDING STRUCTURES RELATIVE TO PROPERTY LINES ARE APPROXIMATE ONLY.

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:	AUG. 2005
SCALE:	AS SHOWN
PROJECT No.:	1260002.003
ACAD FILENAME:	003-WESTERN REGION

CLIENT: Yukon Highways and Public Works Property Management Branch

SMALL PUBLIC WATER SYSTEMS ASSESSMENT
WESTERN REGION

GOVERNMENT OF YUKON
HIGHWAYS & PUBLIC WORKS

BEAVER CREEK GRADER STATION
BUILDING # 3123
SITE LOCATION DIAGRAM
WELL ID: 3123

REVISION ISSUE 0

FIGURE No. FIGURE 3123-A

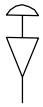
LEGEND


PUMP


PRESSURE GAUGE


GATE VALVE


CHECK VALVE

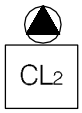

SOLENOID

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

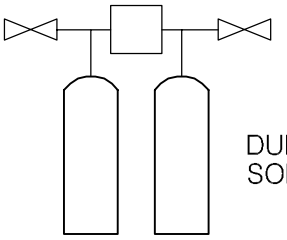
FLOW METER

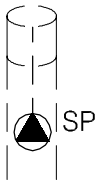
WATER FILTER
(CARTRIDGE TYPE)

PRESSURE TANK

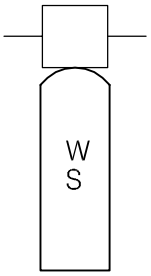


CHLORINE RESERVOIR AND
INJECTION PUMP


DUPLEX WATER
SOFTENER

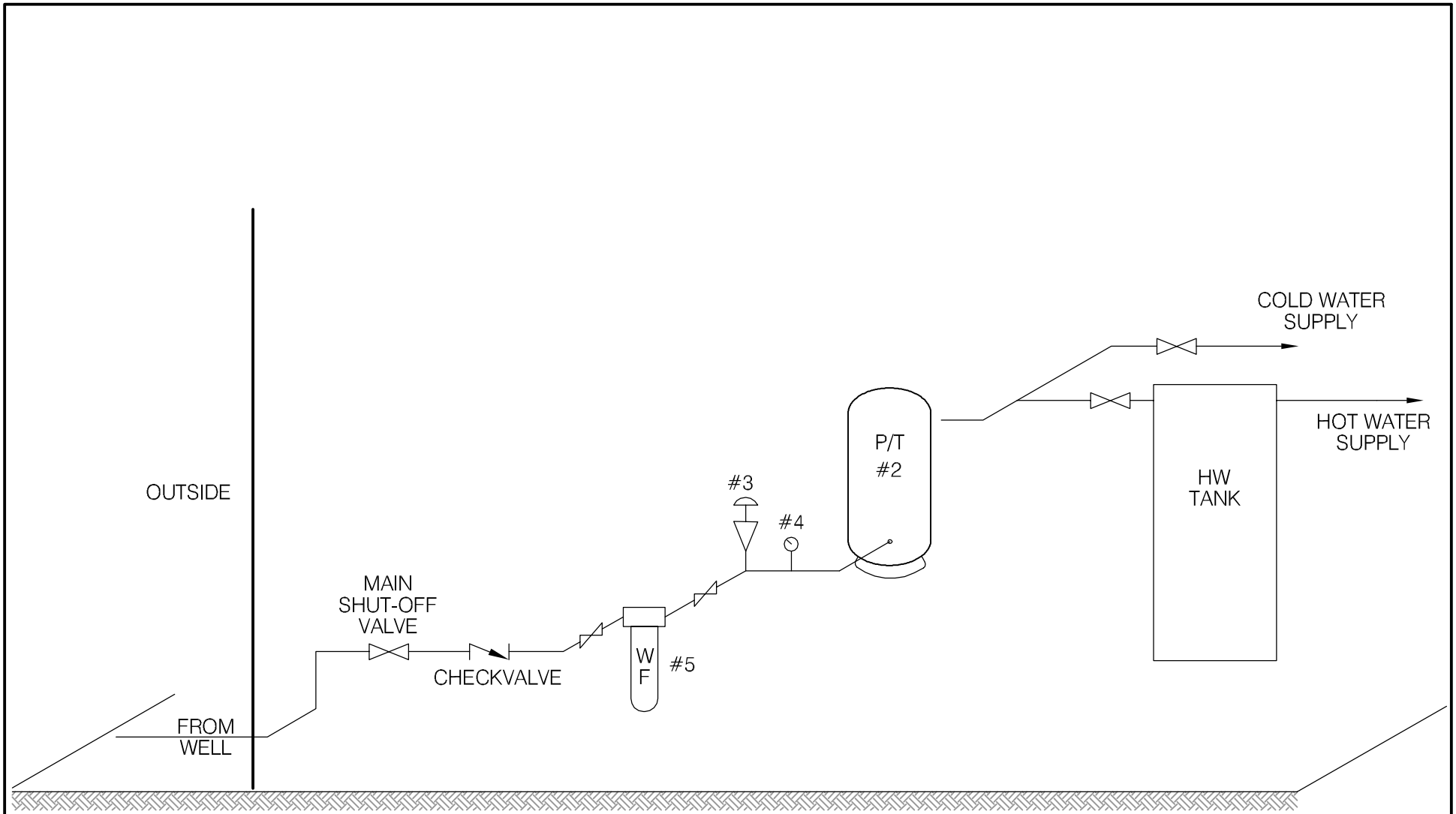


WELL WITH
SUBMERSIBLE PUMP



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



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

EBA Engineering Consultants Ltd.			PROJECT	SMALL PUBLIC WATER SYSTEMS ASSESSMENT WESTERN REGION	
CLIENT Yukon Highways and Public Works Property Management Branch			TITLE	WATER SYSTEM DISTRIBUTION/TREATMENT SCHEMATIC SYSTEM ID.: 3123 BEAVER CREEK GRADER STATION	
DATE SEPT. 2005	DWN. JSB	CHKD. RMM	FILE NO. 1260002.003		DWG.: FIGURE 3123-B

Z:\0201Drawings\1260002 Water Assessment YTG\003 -Western Region\beaver\1260002 B Crk Grader Station_3123B Schematic.dwg, 4/4/2006 12:47:05 PM, Adobe PDF, jbuyck

Western Region – Beaver Creek Grader Station
Building # 3123

DISTRIBUTION & TREATMENT SYSTEM DATA

Item	Description	Manufacturer	Model	Part No.	Serial No.	Size
1	SUB. PUMP.	?	?	NO CONTROL BOX		VISIBLE
2	PRESSURE TANK	CHALLENGER	PC 66			20 GALLON
3	PRESSURE SWITCH	SQUARE D	FSG-2	224310		2HP 1/4" NPT
4	PRESSURE GAUGE	MARSH	0-100 PST	633640		2" - 1/4" NPT
5	INLINE FILTER	AMETEK	10" CLEAR	AP-110		10" 5 MICRON
6						
7						
8						
9						
10						

TABLE 3123- 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?
3123	Beaver Creek Grader Station	8	Oct-04 to Jun-05	no	0/8	no	16-Jun-05	no

Table 3123-2: Water Quality Results

SOURCE:	Building 3123 - Beaver Creek Grader Station			GCDWQ Criteria		
Location/ Resident	Beaver Creek					
Address						
Treatment	Filtration					
Disinfection	None					
Source of Water	On-site well					
Purpose of Sampling	Base Line	Base Line	Additional Analytical			
Sample Location			Kitchen tap			
Date Sampled	21-Sep-04	15-Jun-05	27-Jul-05	Lower	Upper Limit	
Physical Tests *(ALS)*				AO	MAC	AO
Colour (CU)	<5.0	<5.0	-			15
Conductivity (uS/cm)		363	-			
Total Dissolved Solids	109	222	-			500
Hardness CaCO3	97.3	152	-	AO >200 = poor, > 500 unacceptable[A]		
pH	8.24	8.17	-	6.5		8.5
Turbidity (NTU)	0.3	0.36	-		1	5
UV Absorbance			0.007			
% UV Transmittance			98.4			
Dissolved Anions *(ALS)*						
Alkalinity-Total CaCO3	91	155	-			
Chloride Cl	5.7	3.08	-			250
Fluoride F	<0.05	0.057	-		1.5	
Silicate SiO4			-			
Sulphate SO4	9.73	34.0	-			500
Nitrate Nitrogen N	<0.1	0.60	-		10	
Nitrite Nitrogen N	<0.05	<0.10	-		3.2	
Ammonia Nitrogen N			-			
Total Phosphate PO4			-			
Total Metals *(ALS)*						
Aluminum T-Al	<0.005	<0.010	-			
Antimony T-Sb	<0.0002	<0.00050	-		0.006	
Arsenic T-As	0.0007	0.00036	-		0.025	
Barium T-Ba	0.067	0.033	-		1	
Boron T-B	0.009	<0.10	-		5	
Cadmium T-Cd	<0.00001	<0.00020	-		0.005	
Calcium T-Ca		48.6	-			
Chromium T-Cr	<0.0005	<0.0020	-		0.05	
Copper T-Cu	0.011	0.0295	-		1	
Iron T-Fe	0.03	<0.030	-			0.3
Lead T-Pb	0.0004	<0.0010	-		0.01	
Magnesium T-Mg		7.42	-			
Manganese T-Mn	<0.005	<0.0020	-			0.05
Mercury T-Hg		<0.00020	-		0.001	
Potassium T-K		1.05	-			
Selenium T-Se		<0.0010	-		0.01	
Sodium T-Na	1.5	2.9	-			200
Uranium T-U	<0.0005	0.00030	-		0.02	
Vanadium T-V			-			
Zinc T-Zn	0.058	0.140	-			5
Organic Parameters						
Tannin and Lignin			0.14			
Total Organic Carbon C			0.89			
Polycyclic Aromatic Hydrocarbons						
Acenaphthene			<0.000050			
Acenaphthylene			<0.000050			
Acridine			<0.000050			
Anthracene			<0.000050			
Benz(a)anthracene			<0.000050			
Benzo(a)pyrene			<0.000010		0.00001	
Benzo(b)fluoranthene			<0.000050			
Benzo(g,h,i)perylene			<0.000050			
Benzo(k)fluoranthene			<0.000050			
Chrysene			<0.000050			
Dibenz(a,h)anthracene			<0.000050			
Fluoranthene			<0.000050			
Fluorene			<0.000050			
Indeno(1,2,3-c,d)pyrene			<0.000050			
Naphthalene			<0.000050			
Phenanthrene			<0.000050			
Pyrene			<0.000050			
Quinoline			<0.000050			
Extractable Hydrocarbons						
EPH10-19			<0.30			
EPH19-32			<1.0			
LEPH			<0.30			
HEPH			<1.0			
Field Chemistry (EBA)						
pH			8.01	6.5		8.5
TDS (ppm)			186			500
EC (uS/cm)			370			
Temperature (°C)			13.9			
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

SMALL PUBLIC WATER SYSTEM ASSESSMENT

PART A: EBA Site Inspection

Inspector: Ryan Martin, Luke Lebel Date July 27, 2005

WELL ID #	Owner	Location Description
3123	YTG	Beaver Creek Grader Station

1. Well Location and Potential Contaminant Sources

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

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

c. GPS location: N 6916580 E 506318 elv 674m ± 5m

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_____
Grader Station Maintenance Garage

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

g. Nearest building, specify Maintenance Garage

h. Distance from well to building _____

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

j. Distance from well to nearest point of known field: 26m

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
Former septic or rock pit @~22m. Current septic field 34 - 36m

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. Evidence of mice and ants.

p. Is well site subject to flooding? ☒ Yes ☐ No
Enclose is at low point

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

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

If yes, is it ☐ in use ☐ abandoned

Is the location known? ☒ Yes ☐ No
Distance from the well to known buried tank ~22m

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

☒ Yes ☐ No Describe Assorted scrap metal around the site and industrial activities

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

Potential Source 1: Used oil AST ; Distance from well to Potential Source 1: ~7m
Potential Source 2: Asphault ; Distance from well to Potential Source 2: ~8m
Potential Source 3: Rock Pit ; Distance from well to Potential Source 3: 34m
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 1983 Month November

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 15cm Material: ☒ steel ☐ plastic ☐ concrete

g. Depth of well: 107.5 ft ☐ measured (if possible) ☐ reported ☒ from log

h. Static water level below ground: _____

☐ 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 3 ft slot size(s) 20 slot
Location of screen: from 104.5 ft to 107.5 ft (from log) reported

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

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 No, ~10cm above grade

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

iv. Any evidence of rodents? Specify Evidence of mice and ants

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

If no, describe condition _____

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...) _____

---

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

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 July 26/05

WELL ID #	Owner	Location Description
3123	YTG	BEAVER CREEK GRADER STATION

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: MECHANICAL ROOM

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 OF GOOD QUALITY IN BOTH WORKMANSHIP & INSTALLATION

b. Recommendations:

INSTALL TREATMENT ACCORDING TO WATER ANALYSIS TO SUIT UV INSTALLATION. INSTALL UV (NSF 55 CERTIFIED) TO SUIT FLOW REQUIREMENT; INITIATE BI-ANNUM SUPERCHLORINATION OF WATER WELL & PIPING SYSTEM.

MIDNIGHT SUN DRILLING CO. LTD.
WHITEHORSE Y.T.
PH. 633-3070
P.O. BOX 4391
WHITEHORSE, YUKON

Field Report

111070024

Started Nov. 2 198
Completed Nov. 3 198

NAME AND ADDRESS OF CLIENT	DESCRIPTION OF WORK	LOCATION OF WORK
Y.T.G. Beaver Creek	W/W	shop

FORMATION LOG FROM	TO	FORMATION	DESCRIPTION OF WORK	DATE	TIME FROM	TO	HOURS
			MOVE				
			Travel	Nov. 2	4:00	12:00	8
			move on setup	11	1:00	2:00	1
0'	25'	Gr.		11	2:00	6:00	4
25'	38'	Gr. Cobbs.					
38'	93'	clay Gr. silt					
93'	97'	Gr. some silt					
97'	107.5	Gr. Sire sand.		Nov. 3	8:00	9:30	1.5
			set screen	11	9:30	10:30	1
			Develop.	11	10:30	1:30	3
			move off.	11	1:30	2:00	0.5

Rcrd. of Casing & Pipe Size	Type	Size	Type
Feet	Inch	Feet	Inch
104'	6"		

Remarks:
1- Drive shoe.
20 slot
1- 5⅞" bit pin
2 riser lead packer.
30 GPM.

Static Level		Total Rig Time	hrs.
Ground Level		Total Standby	hrs.
Top Of Casing		Drilling Mud	sacks

SIGNATURES

MIDNIGHT SUN ... Les Torgerson ...
TITLE .... Carl McManus ...

CLIENT James A. Crook ......
TITLE ....

Willow Printers

Photo 0518: 3123 Beaver Creek Grader Station maintenance garage (back left), wellhead (front left), above ground used oil storage tank (back right)

Photo 0516: 3123 Wellhead in enclosure

Photo 0520: 3123 Leach pit (centre), maintenance garage (left), wellhead enclosure (back centre)

Photo 0515: 3123 Heating fuel and tar above ground storage tank

Photo 0519: 3123 Cold mix asphalt pile (rear), wellhead enclosure (front left)

Photo 0073: 3123 In-line filter

Photo 0074: 3123 Pressure tank and pump controls