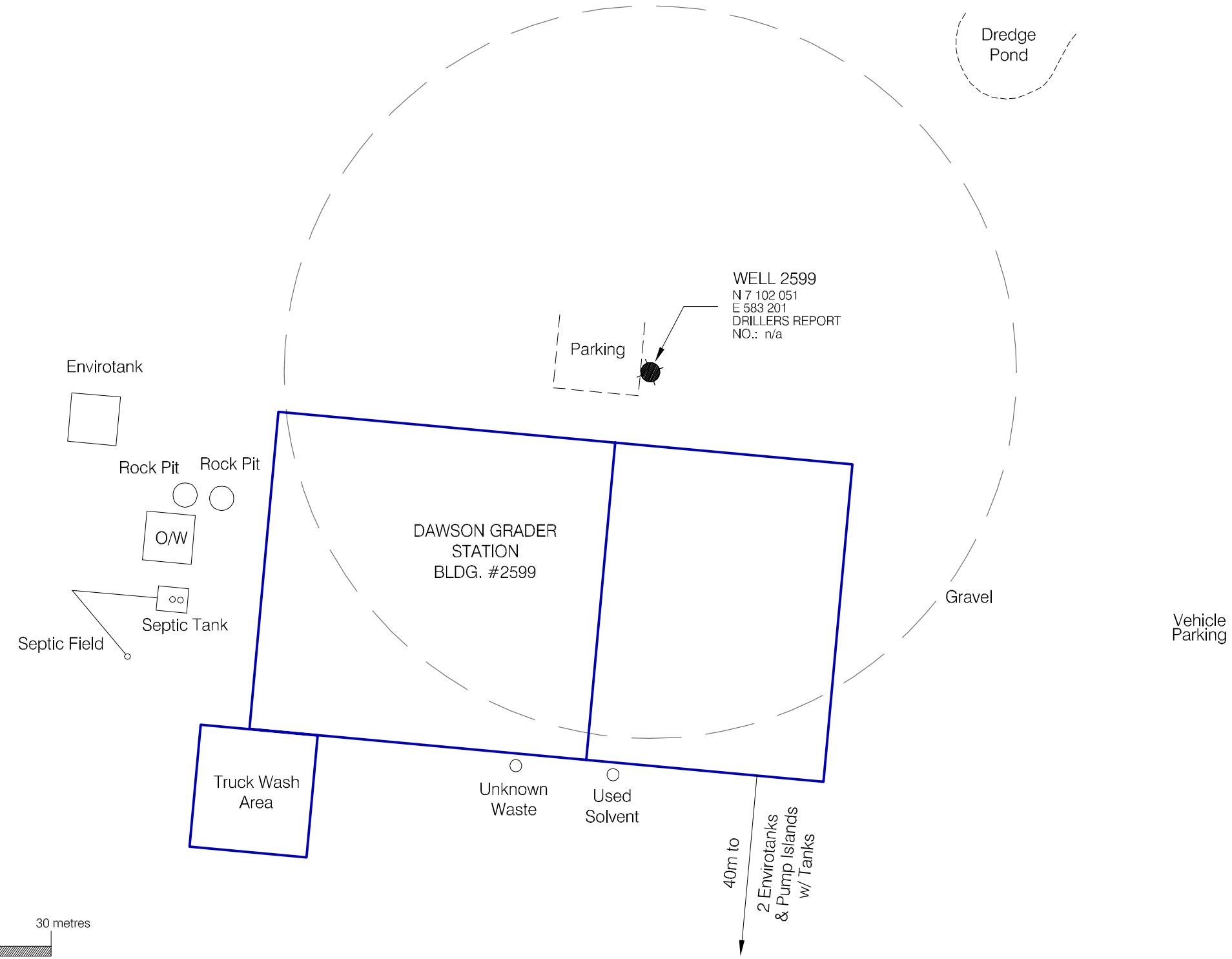


NOTES:

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.

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:	SEPT. 2005
SCALE:	AS SHOWN
PROJECT No.:	1260002.004
ACAD FILENAME:	004–NORTHERN REGION

CLIENT: Yukon
Highways and Public Works
Property Management Branch

SMALL PUBLIC WATER SYSTEMS ASSESSMENT
NORTHERN REGION

GOVERNMENT OF YUKON
HIGHWAYS & PUBLIC WORKS

DAWSON GRADER STATION
BUILDING # 2599
SITE LOCATION DIAGRAM
WELL ID: 2599

REVISION ISSUE 0

FIGURE No. FIGURE 2599–A

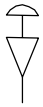
LEGEND


PUMP


PRESSURE GAUGE


GATE VALVE


CHECK VALVE

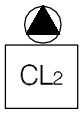

SOLENOID

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

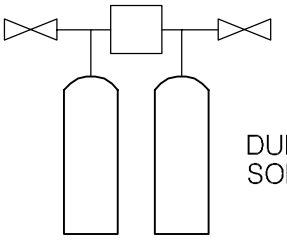
FLOW METER

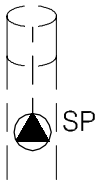
WATER FILTER
(CARTRIDGE TYPE)

PRESSURE TANK

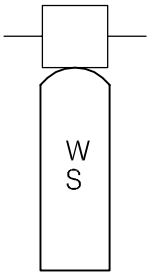


CHLORINE RESERVOIR AND
INJECTION PUMP


DUPLEX WATER
SOFTENER

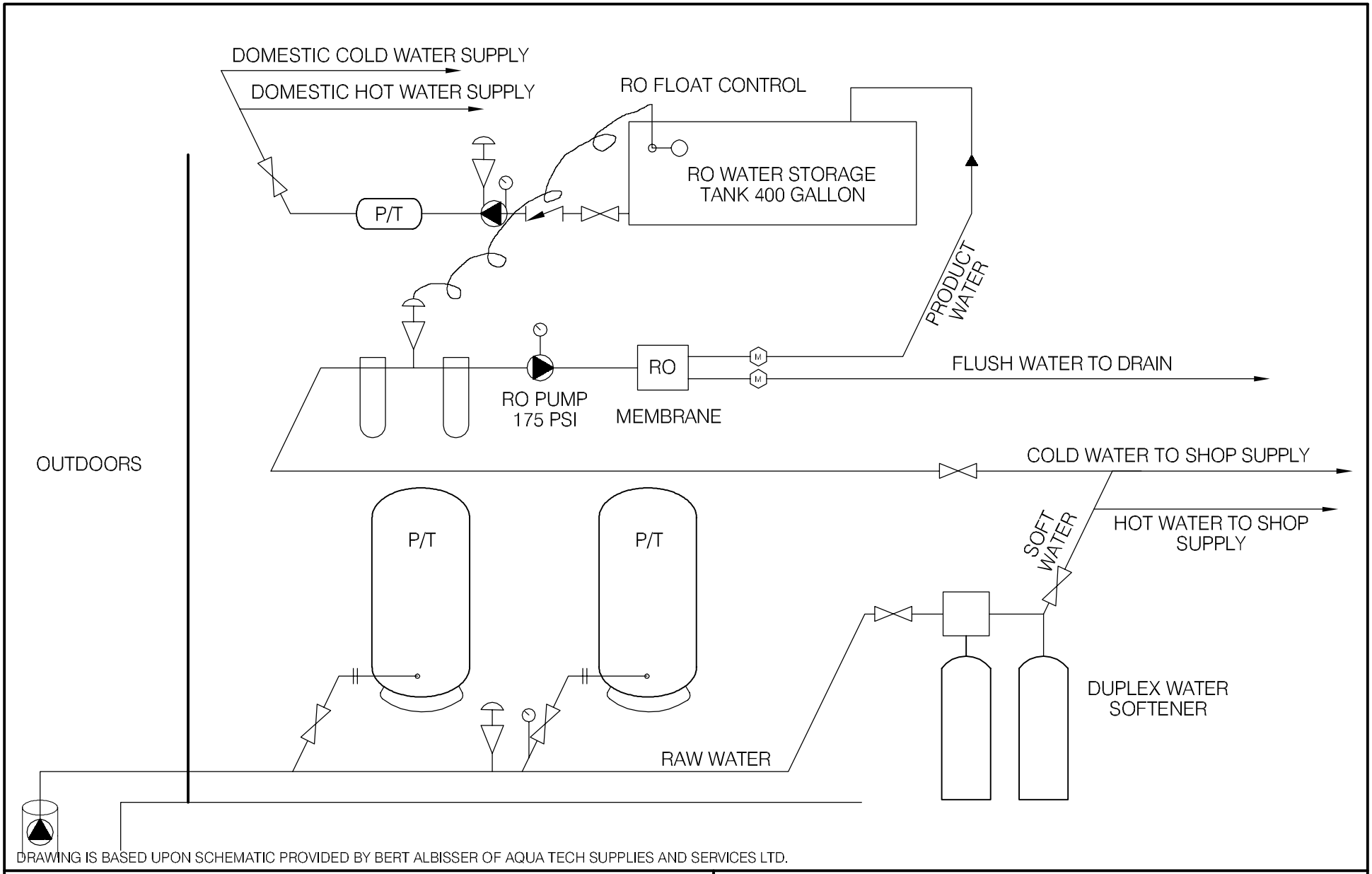


WELL WITH
SUBMERSIBLE PUMP



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



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.: 2599 DAWSON GRADER STATION - DAWSON, YT.	
DATE SEPT. 2005	DWN. JSB	CHKD. RMM	FILE NO. 1260002.004		DWG.: FIGURE 2599-B

Z:\0201Drawings\1260002 Water Assessment YTG\004 - Northern Region\dawson\1260002004 Dawson Grader Station_2599B Schematic.dwg, 4/4/2006 5:36:54 PM, Adobe PDF, jbuyck

Northern Region – Dawson City Grader Station
Building # 2599

DISTRIBUTION & TREATMENT SYSTEM DATA

Item	Description	Manufacturer	Model	Part No.	Serial No.	Size
1	SUB PUMP.	N/A	N/A			4"
2	PRESSURE TANKS	CON-AIRE	SCA220	X2		
3	PRESSURE SWITCH	SQUARE D	FSG 2			
4	PRESSURE GAUGE	WINTERS	0-100 4"			
5	WATER SOFTENER	AQUA TECH	AQUA 9500 98000-MI			90K DUPLEX
6	RO. SYSTEM	AQUA TECH	U SELECT 1800			22000 GPD
7	STORAGE TANK	N/A.				
8	JET PUMP					
9	PRESSURE TANK					
10	INLINE FILTER					

TABLE 2599 - 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?
2599	Dawson City Grader Station	8	Oct-04 to Jun-05	no	0/8	no	9-Jun-05	no

Table 2599 - 2: Water Quality Results

SOURCE:	Building 2599 - Dawson City Grader Station				GCDWQ Criteria		
Location/ Resident	Dawson City						
Address							
Treatment	Softener, filtration, reverse osmosis	None	Softener, filtration	Softener, filtration, reverse osmosis			
Disinfection	None						
Source of Water							
Purpose of Sampling	Base Line	Base Line	Additional Sampling	Additional Sampling			
Sample Location			faucet (Non-Potable)	Washroom			
Date Sampled	29-Sep-04	8-Jun-05	19-Aug-05	19-Aug-05	Lower	Upper Limit	
Physical Tests *(ALS)*					AO	MAC	AO
Colour (CU)	<5	8.5					15
Conductivity (uS/cm)		386					
Total Dissolved Solids	<1	243	<1.3				500
Hardness CaCO3	<0.9	185			AO >200 = poor, > 500 unacceptable[A]		
pH	6.14	7.96			6.5		8.5
Turbidity (NTU)	0.3	**41.1**	**1.22**			1	5
UV Absorbance			0.109				
% UV Transmittance			77.8				
Dissolved Anions *(ALS)*							
Alkalinity-Total CaCO3	<5	134					
Chloride Cl	<0.5	0.99					250
Fluoride F	<0.05	0.112				1.5	
Silicate SiO4			13.8				
Sulphate SO4	<0.2	72.7					500
Nitrate Nitrogen N	<0.1	<0.10				10	
Nitrite Nitrogen N	<0.05	<0.10				3.4	
Ammonia Nitrogen N							
Total Phosphate PO4			0.0159				
Total Metals *(ALS)*							
Aluminum T-Al	<0.005	0.092	<0.020			0.1	
Antimony T-Sb	<0.0002	<0.00050	<0.0010			0.006	
Arsenic T-As	0.0047	**0.0864**	**0.047**	0.00457		0.025	
Barium T-Ba	<0.001	0.165	<0.040			1	
Boron T-B	0.002	<0.10	<0.20			5	
Cadmium T-Cd	<0.00001	<0.00020	<0.00040			0.005	
Calcium T-Ca		48.7	<0.20				
Chromium T-Cr	<0.0005	<0.0020	<0.0040			0.05	
Copper T-Cu	0.259	0.0423	0.0097			1	
Iron T-Fe	<0.01	**8.39**	0.171				0.3
Lead T-Pb	0.0039	**0.0174**	<0.0020			0.01	
Magnesium T-Mg		15.3	<0.20				
Manganese T-Mn	<0.005	**0.651**	<0.0040				0.05
Mercury T-Hg		<0.00020	<0.00020			0.001	
Potassium T-K		0.81	172				
Selenium T-Se		<0.0010	<0.0020			0.01	
Sodium T-Na	<0.4	4.3	<2.0				200
Uranium T-U	<0.0005	0.00189	0.00084			0.02	
Vanadium T-V			<0.030				
Zinc T-Zn	0.019	0.134	<0.10				5
Dissolved Metals							
Aluminum D-Al			<0.020			0.1	
Antimony D-Sb			<0.0010			0.006	
Arsenic D-As			***0.0441***			0.025	
Barium D-Ba			<0.040			1.0	
Boron D-B			<0.20			5	
Cadmium D-Cd			<0.00040			0.005	
Calcium D-Ca			<0.20				
Chromium D-Cr			<0.0040			0.05	
Copper D-Cu			0.0138				1.0
Iron D-Fe			0.043				0.3
Lead D-Pb			<0.0020			0.01	
Magnesium D-Mg			<0.20				
Manganese D-Mn			<0.0040				0.05
Mercury D-Hg			<0.00020			0.001	
Potasium D-K			172				
Selenium D-Se			<0.0020			0.01	
Sodium D-Na			<2.0				200
Uranium D-U			0.0008			0.02	
Vanadium D-V			<0.030				
Zinc D-Zn			<0.10				5.0
Organic Parameters							
Tannin and Lignin			0.24				
Total Organic Carbon C			4.61				
Field Chemistry (EBA)							
pH			7.81	7.83	6.5		8.5
TDS (ppm)			267	3			500
EC (uS/cm)			535	6			
Temperature (°C)			1.1	17.2			
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), Temperatura (°C) and Turbidity (NTU)

< = Less than the detection limit indicated.

AO = Aesthetic Objective

MAC = Maximum Acceptable Concentration (Health Based)

SMALL PUBLIC WATER SYSTEM ASSESSMENT

PART A: EBA Site Inspection

Inspector: Ryan Martin, Luke Lebel Date August 19, 2009

WELL ID #	Owner	Location Description
2599	YTG	Dawson City Grader Station

1. Well Location and Potential Contaminant Sources

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

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

c. GPS location: N 7102051 E583201 elv 343 m ±10 m

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

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

g. Nearest building, specify Grader Station

h. Distance from well to building ~6m

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

j. Distance from well to nearest point of known field: 50 m

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
Tank @ ~42m, Rock Pits @ ~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, but unlikely

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

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 _____

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: ASTs ; Distance from well to Potential Source 1: ~44m
Potential Source 2: Fueling station ; Distance from well to Potential Source 2: ~74m
Potential Source 3: Drums ; Distance from well to Potential Source 3: ~33m
Potential Source 4: Oil/water seperator Distance from well to Potential Source 4: ~40m

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

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 unknown

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 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 ~2.3m below 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 No.

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...) Softener for regular water + RO for drinking water

---

4. Aquifer Supplying This Well:

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

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 unknown

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
But tap against floor

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: Styrofoam insulation + heat trace

l. Comments on pump installation: _____

_____

6. Conclusions

a. Comments on overall installation:

_____

_____

_____

_____

_____

_____

_____

b.Recommendations: _____

_____

_____

_____

_____

_____

_____

_____

PART B: EBA Site Inspection

Inspector: BERT ALBISSER Date AUG 19/05

WELL ID #	Owner	Location Description
2599	YTG	

6. Water Treatment

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

☐ chlorination ☑ iron and or manganese removal ☑ other REVERSE OSMOSIS

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 TANKS & R.O. WATER STORAGE TANK

Where is it located? RO TANK UNDER REAR STAIRWELL
Comments: PRESSURE TANKS UNDER FRONT STAIRWELL

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? FIBRE GLASS

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 IN GOOD ORDER

b. Recommendations:

INSTALL FILTRATION AND UV SYSTEM (MFE55) ON DOMESTIC LOOP.

Photo 087: 2599 Wellhead enclosure.

Photo 086: 2599 Wellhead in pit.

Photo 230: 2599 Pressure tank, pump controls and softener system.

Photo 234: 2599 Reverse osmosis system (front) water storage tank (back)